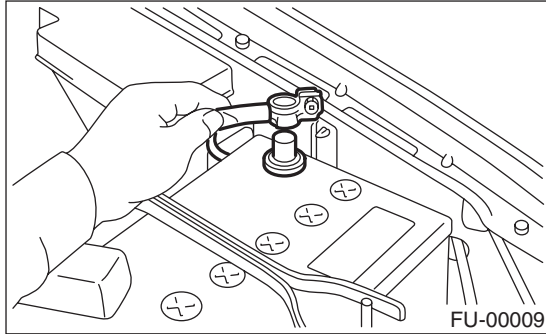


4. Oil Pump

A: REMOVAL

1) Disconnect the ground cable from battery.

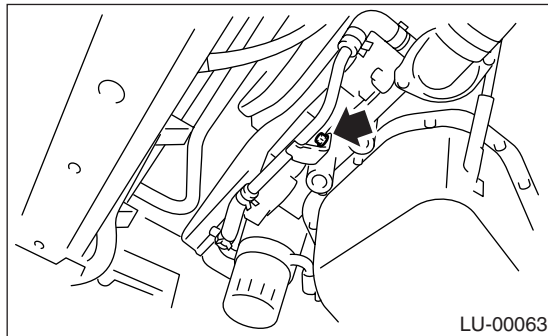


2) Lift-up the vehicle.

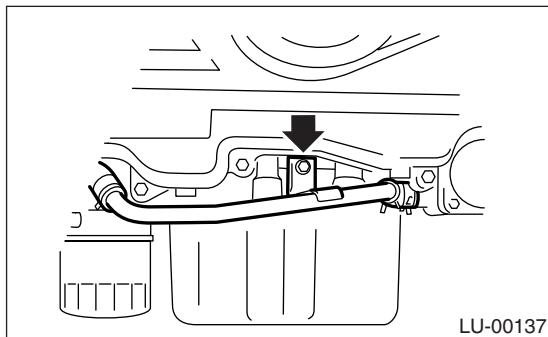
3) Remove the under cover.

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

- Non-turbo model

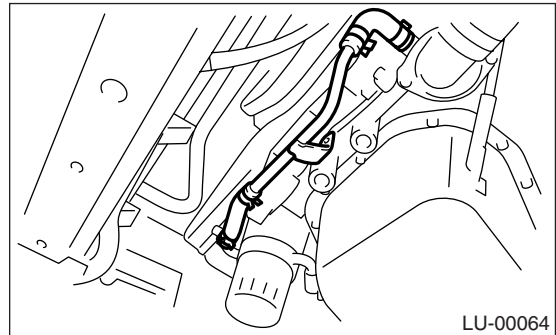


- Turbo model

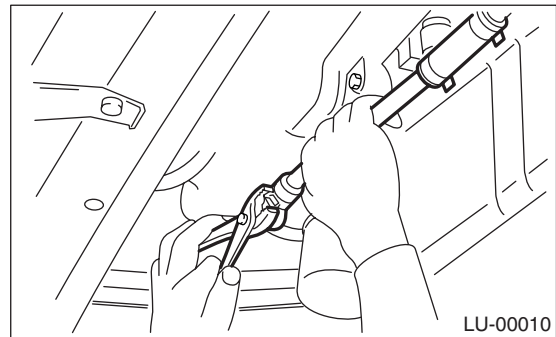


5) Remove the water pipe and hoses between oil cooler and water pump.

- Non-turbo model

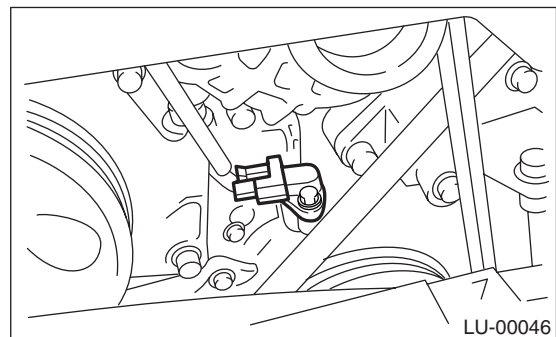


- Turbo model



6) Remove the radiator. <Ref. to CO(H4SO)-26, REMOVAL, Radiator.>

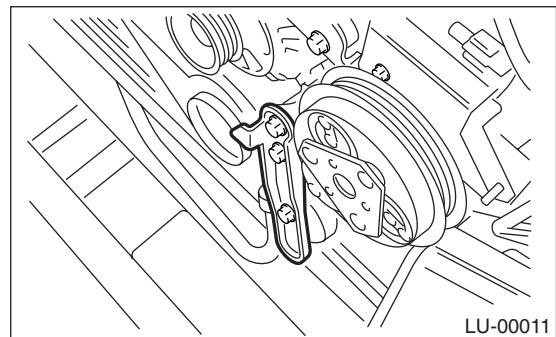
7) Remove the crankshaft position sensor.



8) Remove the V-belts. (Non-turbo model) <Ref. to ME(H4SO)-42, REMOVAL, V-belt.> (Turbo model)

<Ref. to ME(H4DOTC)-45, REMOVAL, V-belt.>

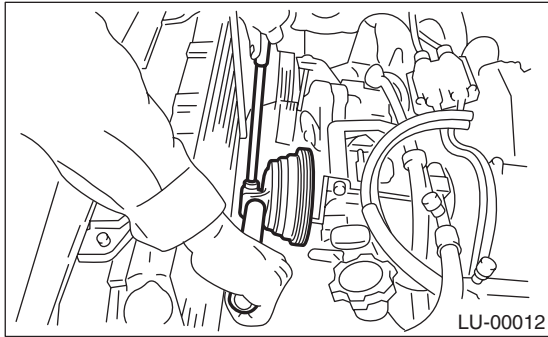
9) Remove the rear side V-belt tensioner.



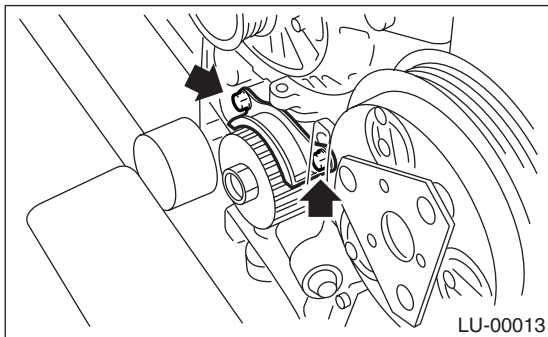
OIL PUMP

LUBRICATION

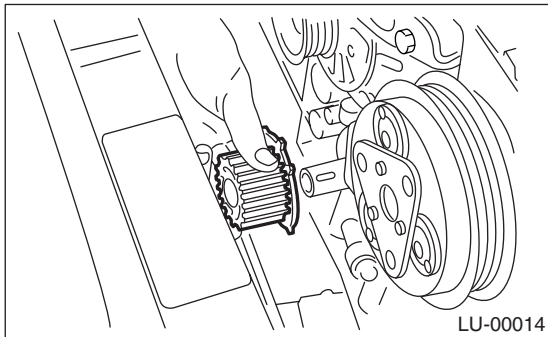
- 10) Remove the crank pulley by using ST.
ST 499977100 CRANK PULLEY WRENCH



- 11) Remove the water pump. <Ref. to CO(H4SO)-19, REMOVAL, Water Pump.>
12) Remove the timing belt guide. (MT model)



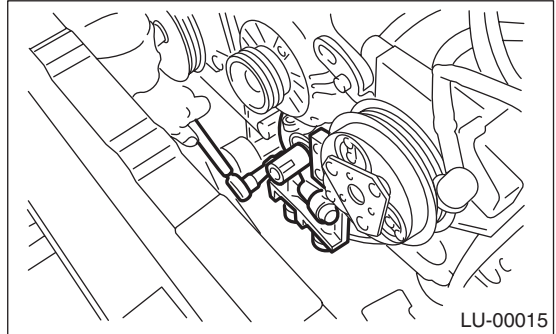
- 13) Remove the crank sprocket.



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

NOTE:

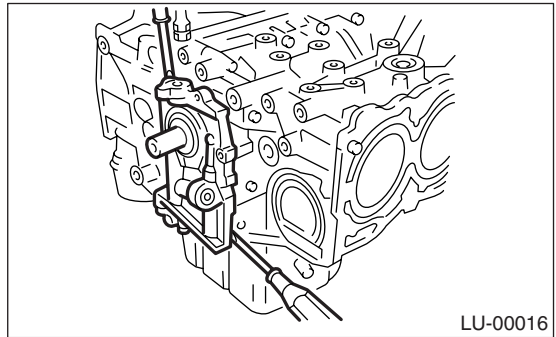
If disassembling or inspecting the oil pump, loosen the plug of relief valve before removing the oil pump.



- 15) Remove the oil pump by using 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.

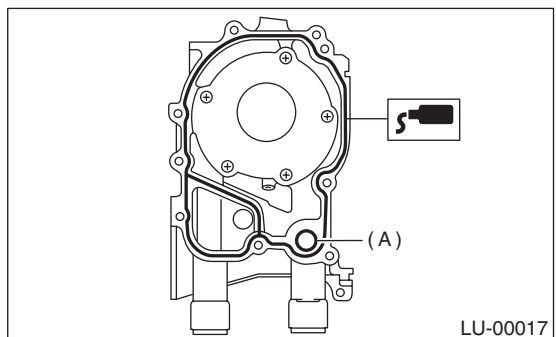
Do the following:

- 1) Apply liquid gasket to the matching surfaces of oil pump.

Liquid gasket:

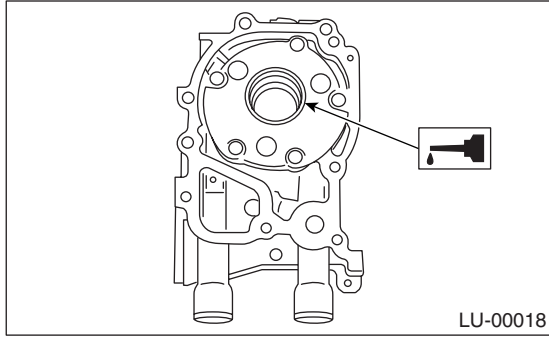
Parts No. 004403007

THREE BOND 1215 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 oil pump on cylinder block.

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

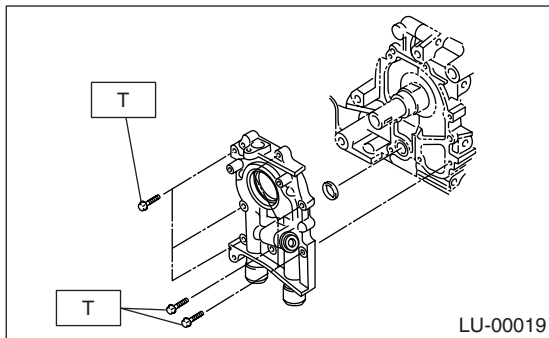
CAUTION:

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)

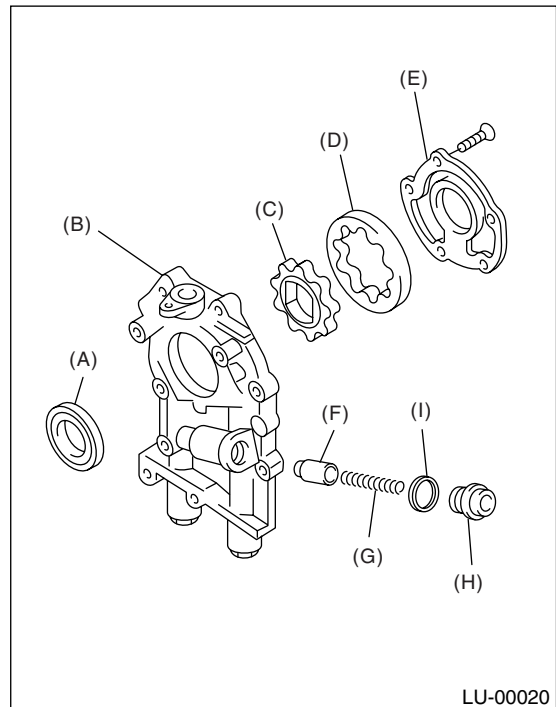


C: DISASSEMBLY

Remove the screws which secure 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) Oil pump case
- (C) Inner rotor
- (D) Outer rotor
- (E) Pump cover
- (F) Relief valve
- (G) Relief valve spring
- (H) Plug
- (I) Gasket

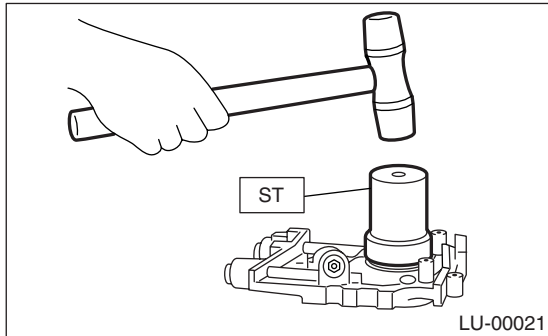
OIL PUMP

LUBRICATION

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 and relief valve spring and plug.

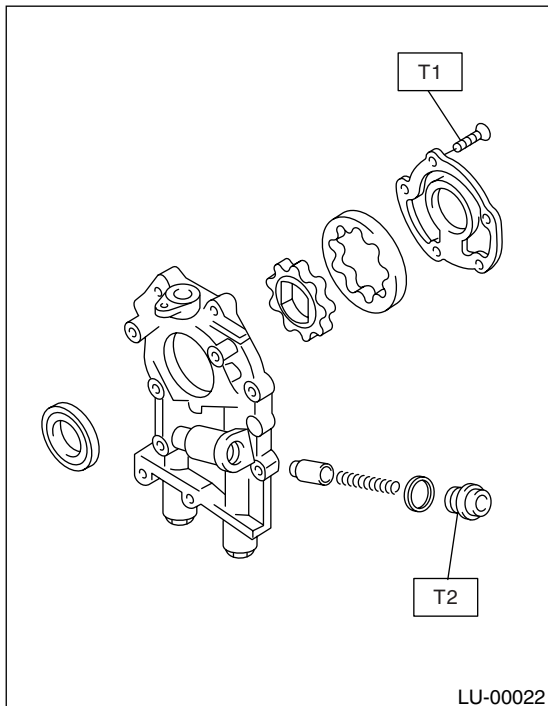
NOTE:
Use a new gasket.

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.

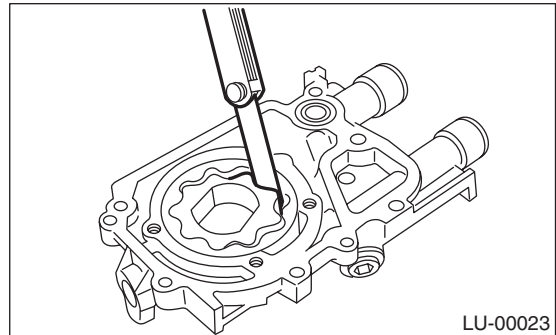
Tip clearance:

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 the outer rotor and oil pump case. If clearance exceeds the limit, replace the rotor.

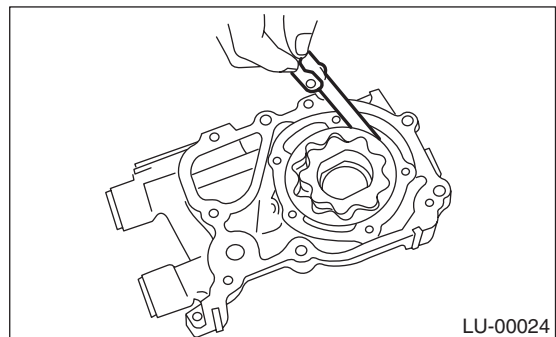
Case clearance:

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 oil pump cover. If clearance exceeds the limit, replace the rotor or oil pump case.

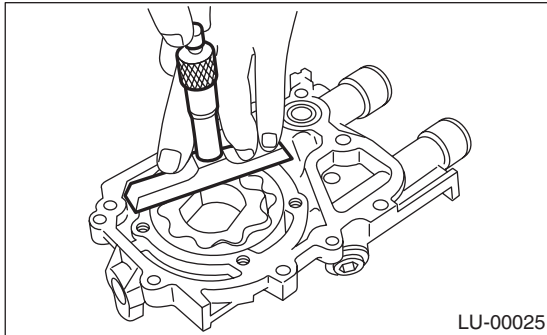
Side clearance:

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:

Non-turbo model

Free length

72.8 mm (2.866 in)

Installed length

54.7 mm (2.154 in)

Load when installed

81.3 N (7.27 kgf, 52.59 lb)

Turbo model

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.