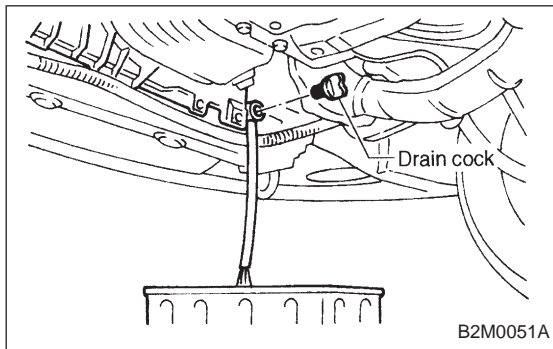


## 1. Oil Pump

### A: REMOVAL

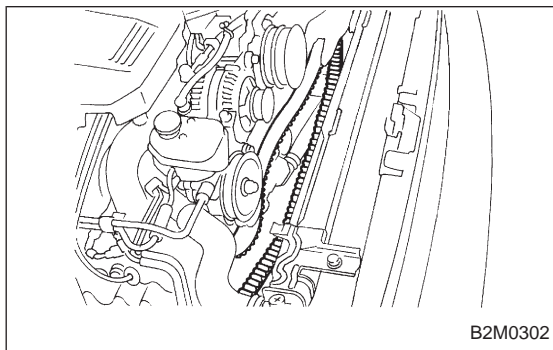
1) Drain engine oil.

Set container under the vehicle, and remove drain plug from oil pan.

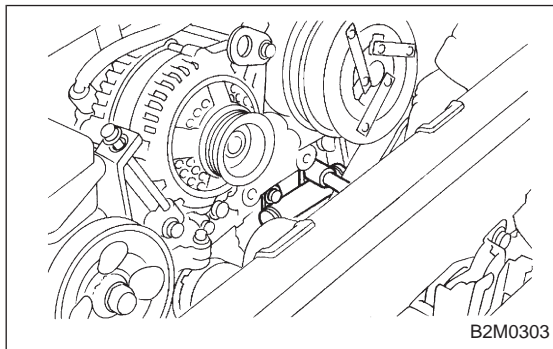


2) Drain coolant.

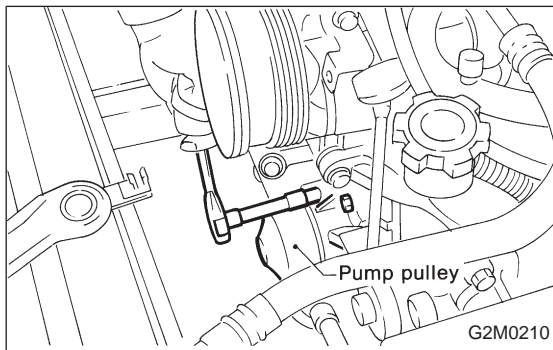
Set container under the vehicle, and remove drain cock from radiator.



3) Remove belt covers, timing belt and related parts.  
<Ref. to 1-5 [02A0].>

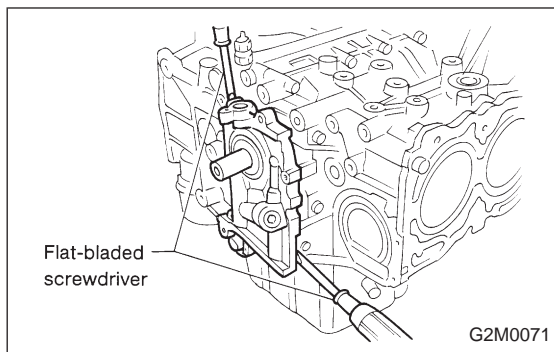


4) Remove belt tensioner bracket.



5) Remove left cam sprocket and left belt cover No. 2.

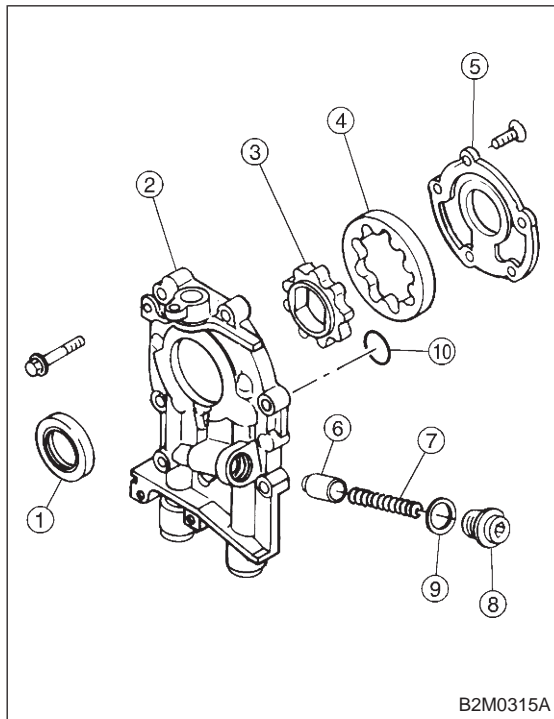
6) Remove water pump.



7) Remove oil pump by using flat-bladed screwdriver.

**CAUTION:**

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



**B: DISASSEMBLY**

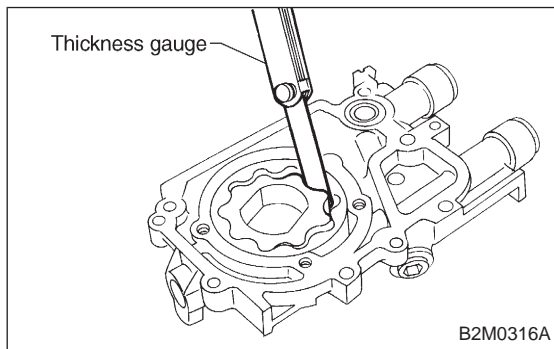
Remove screws which secure oil pump cover and disassemble oil pump.

Inscribe alignment marks on inner and outer rotors so that they can be replaced in their original positions during reassembly.

**CAUTION:**

Before removing relief valve, loosen plug when removing oil pump from cylinder block.

- ① Oil seal
- ② Pump case
- ③ Inner rotor
- ④ Outer rotor
- ⑤ Pump cover
- ⑥ Relief valve
- ⑦ Relief spring
- ⑧ Plug
- ⑨ Washer
- ⑩ O-ring



**C: INSPECTION**

**1. TIP CLEARANCE**

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

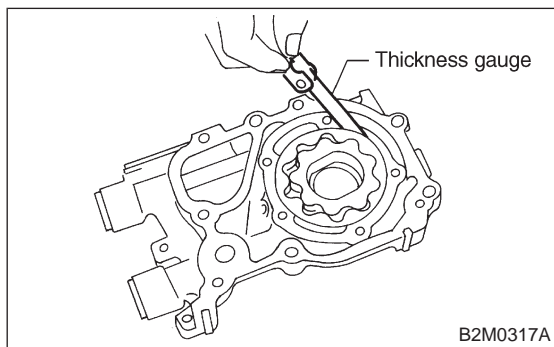
**Tip clearance:**

**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 the cylinder block rotor housing. If the clearance exceeds the limit, replace the rotor.

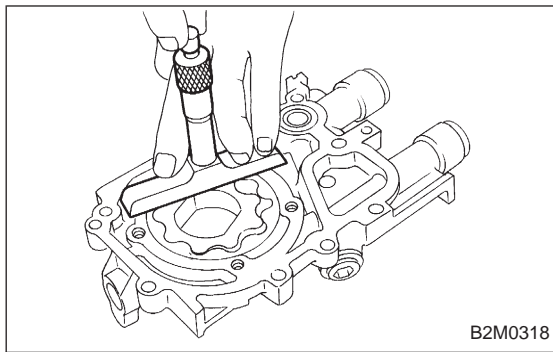
**Case clearance:**

**Standard**

**0.10 — 0.175 mm (0.0039 — 0.0069 in)**

**Limit**

**0.20 mm (0.0079 in)**



**3. SIDE CLEARANCE**

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

**Side clearance:**

**Standard**

**0.02 — 0.07 mm (0.0008 — 0.0028 in)**

**Limit**

**0.15 mm (0.0059 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; 71.8 mm (2.827 in)**

**Installed length; 54.7 mm (2.154 in)**

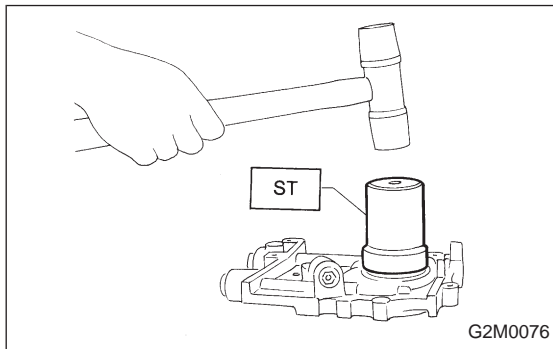
**Load when installed; 77.08 N (7.86 kg, 17.33 lb)**

**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.



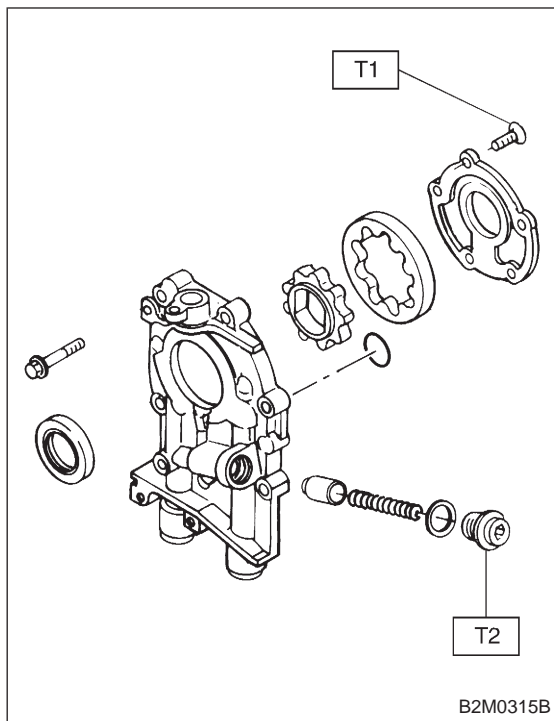
**D: ASSEMBLY**

1) Install front oil seal by using ST.

ST 499587100 OIL SEAL INSTALLER

**CAUTION:**

**Use a new oil seal.**

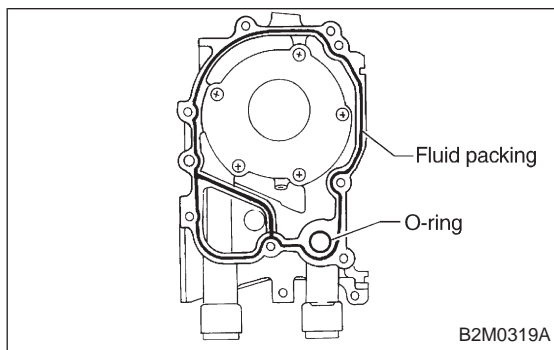


- 2) Install inner and outer rotors in their original positions.
- 3) Install oil relief valve and relief spring.
- 4) Install oil pump cover.

**Tightening torque:**

**T1:  $5_{-0}^{+1}$  N·m ( $0.5_{-0}^{+0.1}$  kg-m,  $3.6_{-0}^{+0.7}$  ft-lb)**

**T2:  $44.1 \pm 3.4$  N·m ( $4.5 \pm 0.35$  kg-m,  $32.5 \pm 2.5$  ft-lb)**



## E: INSTALLATION

Installation is in the reverse order of removal.

Do the following:

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

**Fluid packing:**

**THREE BOND 1215 or equivalent**

- 2) Replace O-ring with a new one.

- 3) Be careful not to scratch oil seal when installing oil pump on cylinder block.

**CAUTION:**

**Apply fluid packing to oil pressure switch threads before installation.**

**Fluid packing:**

**THREE BOND 1215 or equivalent**