SERVICE PROCEDURE

Oil Pump

REMOVAL

1) Drain engine oil.
2) Remove belt covers and camshaft drive belts. (See Section 2-3 "Engine".)

Before removing camshaft drive belts, be sure to loosen oil pump pulley mounting nut.

3) Remove oil pump mounting bolts, and detach oil pump together with oil filter from cylinder block.

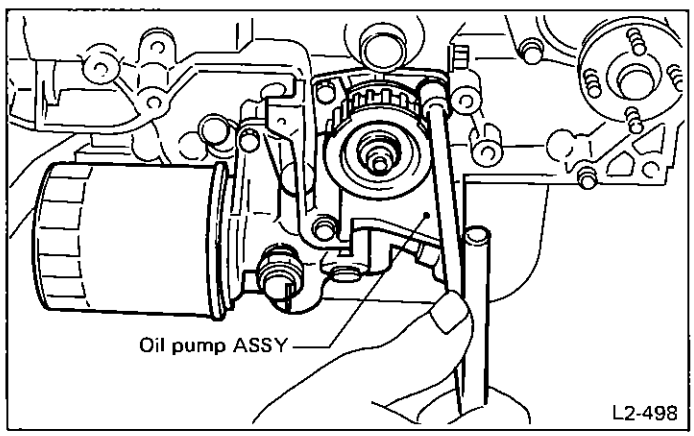

Fig. 10

4) Remove oil pump outer rotor from cylinder block.

DISASSEMBLY

1) Remove oil filter from oil pump.
2) Remove O-ring.
3) Remove oil pressure gauge or oil pressure switch.
4) Remove oil pump pulley, and draw out oil pump inner rotor.
5) Remove oil bypass valve plug, and take out spring and ball.
6) Remove oil relief valve plug, and take out spring and ball.

INSPECTION

Wash the disassembled parts, check them for the following items, and repair or replace if defective.

INNER ROTOR

Check the outside diameter of the inner rotor shaft portion, and replace it if worn or damaged.

Outside diameter of inner rotor shaft portion:
35.65 – 35.70 mm (1.4035 – 1.4055 in)

OUTER ROTOR

Check the outer rotor, and replace if worn or damaged.

Outside diameter of outer rotor:
49.95 – 50.00 mm (1.9665 – 1.9685 in)

OIL PUMP 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 – 0.18 mm (0.0039 – 0.0071 in)
Limit
0.22 mm (0.0087 in)

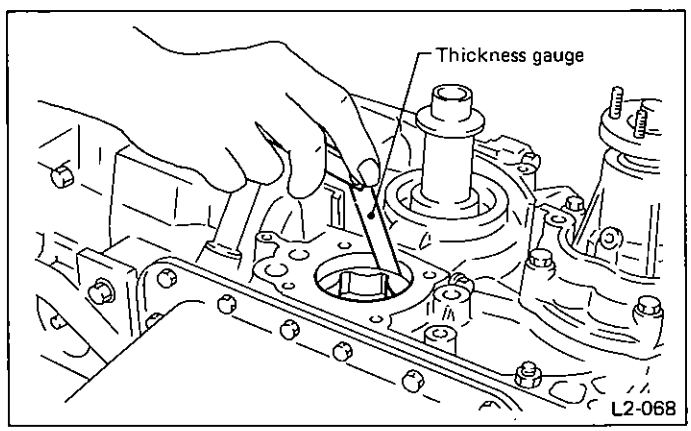

Fig. 11

OIL PUMP SIDE CLEARANCE

1) Measure total height of case projection (H1) plus oil pump inner and outer rotors (H2).

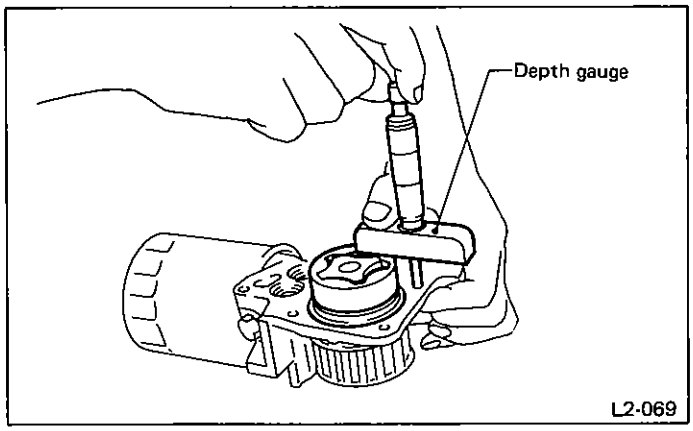

Fig. 12

2) Measure depth (L) of rotor housing bore in cylinder block.

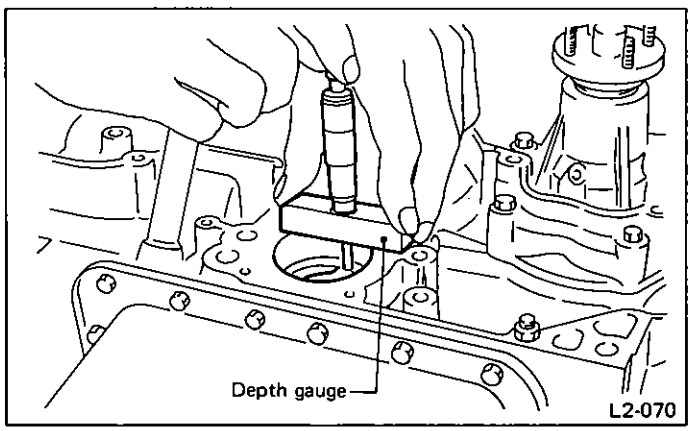

Fig. 13

3) Calculate side clearance (C) using the following equation:

$$C = L - (H1 + H2)$$

4) If side clearance value (C) is larger than "Limit" shown below, replace pump inner and outer rotors with the suitable ones selected from following table.

Side clearance: C
Standard
0.05 – 0.16 mm (0.0020 – 0.0063 in)
Limit
0.18 mm (0.0071 in)

Inner and Outer Rotor	
Marking	Height (H2)
A	13.89 – 13.91 mm (0.5468 – 0.5476 in)
B	13.90 – 13.92 mm (0.5472 – 0.5480 in)
C	13.91 – 13.93 mm (0.5476 – 0.5484 in)

Height of case projection: H1
7.97 – 8.00 mm (0.3138 – 0.3150 in)
Depth of rotor housing: L
21.96 – 22.04 mm (0.8646 – 0.8677 in)

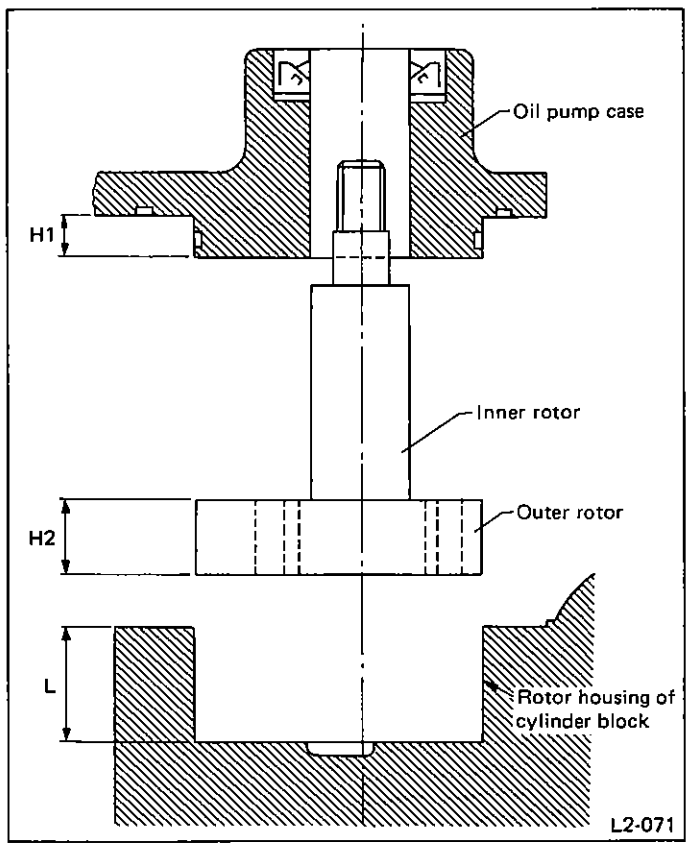

Fig. 14

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
47.1 mm (1.854 in)
Installed length
33.5 mm (1.319 in)
Load when installed
3.88 – 4.28 kg (8.555 – 9.437 lb)

OIL PUMP CASE

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