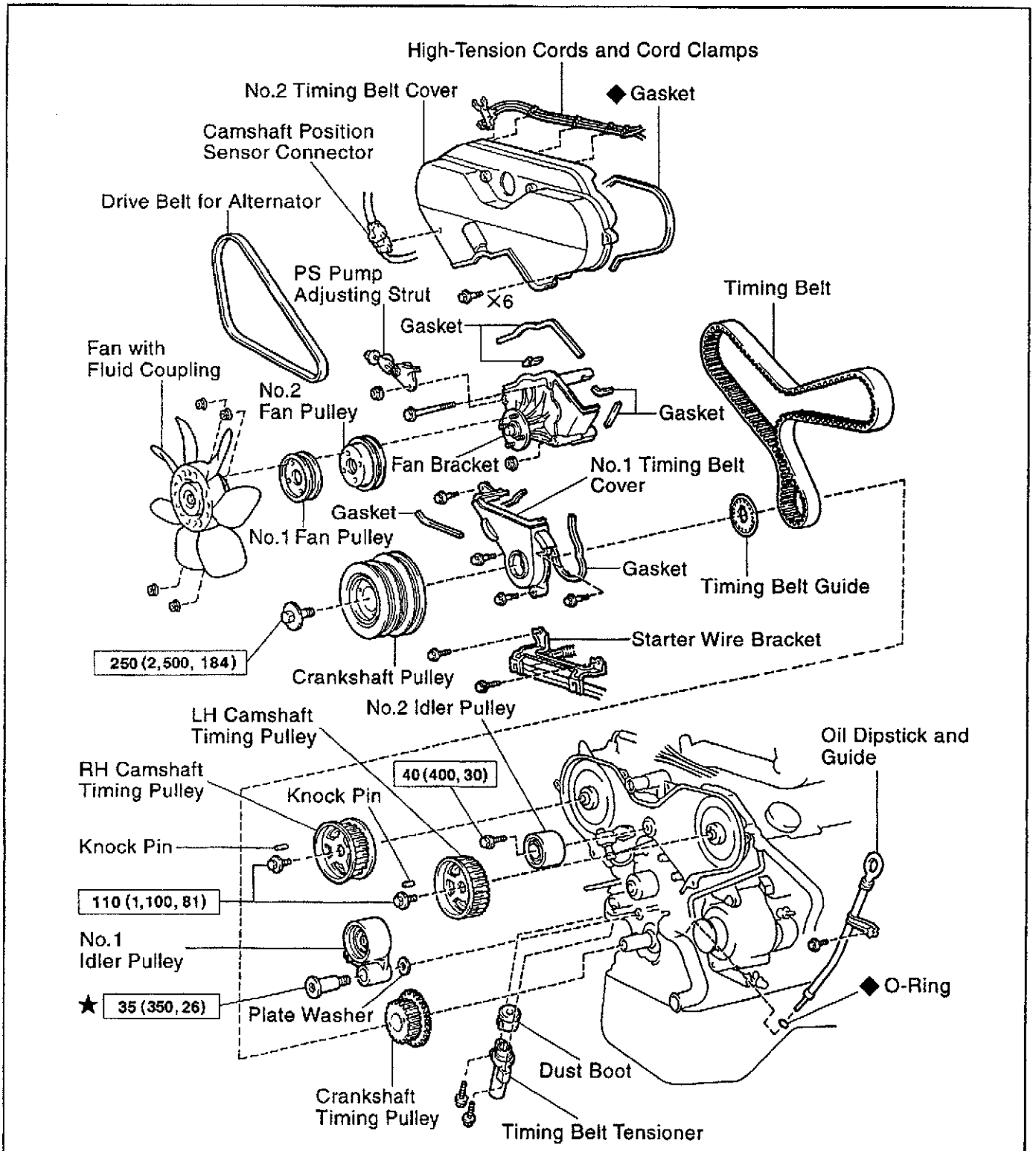
OIL PUMP

COMPONENTS FOR REMOVAL AND INSTALLATION

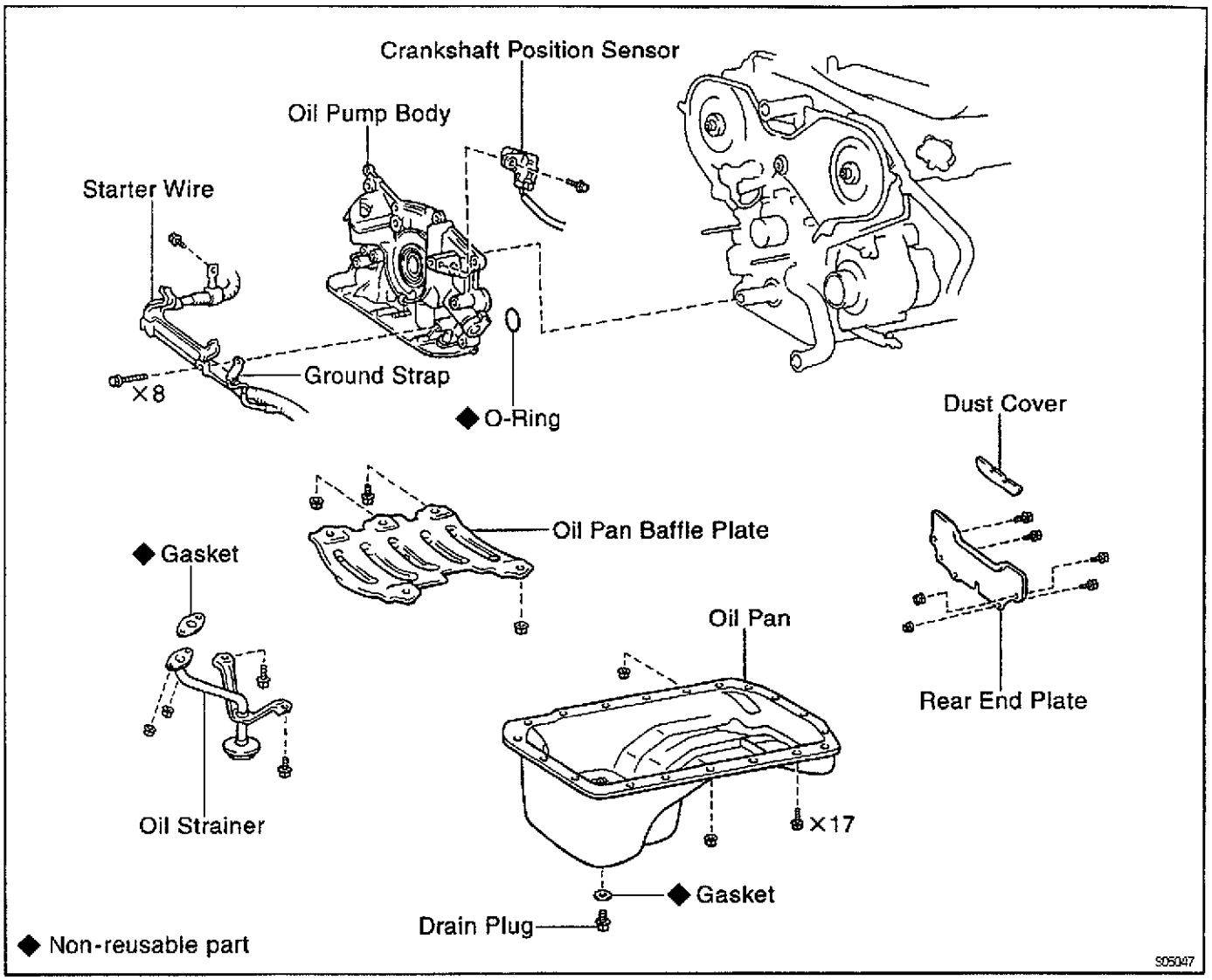
EG78M-01



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part

S05110

EG



EG5V8--02

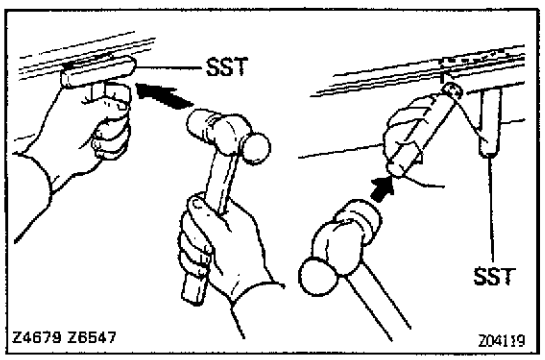
OIL PUMP REMOVAL

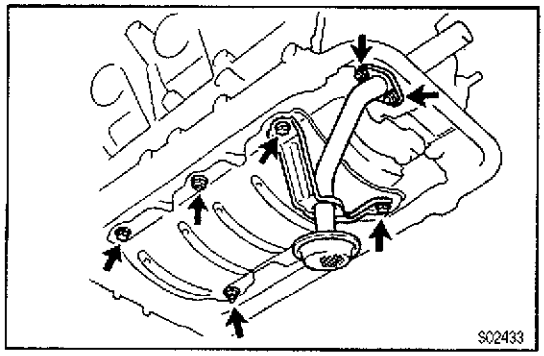
HINT: When repairing the oil pump, the oil pan and strainer should be removed and cleaned.

1. **DRAIN ENGINE OIL**
2. **REMOVE CRANKSHAFT TIMING PULLEY**
   (See timing belt removal in Engine Mechanical)
3. **REMOVE REAR END COVER AND DUST COVER**
4. **DISCONNECT STARTER WIRE CLAMP**
5. **REMOVE CRANKSHAFT POSITION SENSOR**
6. **REMOVE OIL PAN**

(a) Remove the 17 bolts and 2 nuts.

(b) Using SST and a brass bar, separate the oil pan from the cylinder block.
SST 09032–00100
HINT: When removing the oil pan, be careful not to damage the oil pan flange.



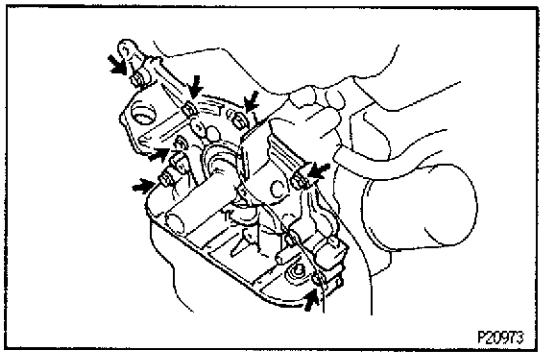


7. REMOVE OIL STRAINER

Remove the 2 bolts, nuts and oil strainer and gasket.

8. REMOVE OIL PAN BAFFLE PLATE

Remove the 2 bolt, nut and oil pan baffle plate.



9. REMOVE OIL PUMP

(a) Remove the 8 bolts, ground strap and oil pump.

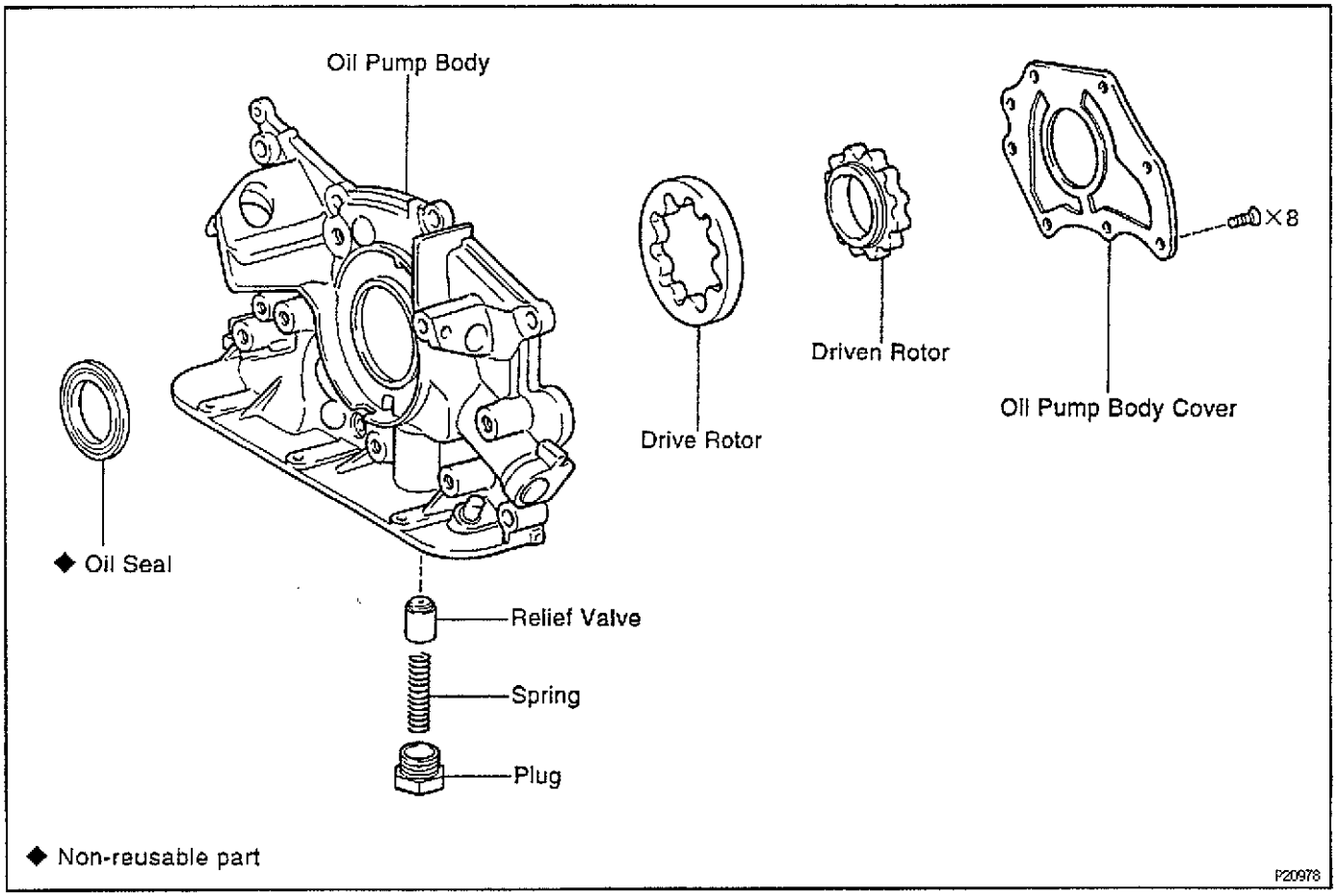
(b) Using a plastic–faced hammer, carefully tap the oil pump body.

(c) Remove the O–ring from the cylinder block.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

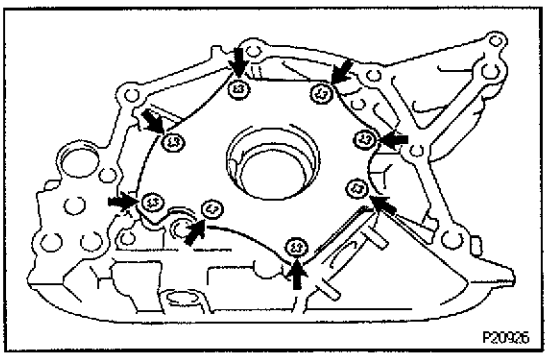
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EG78N-01

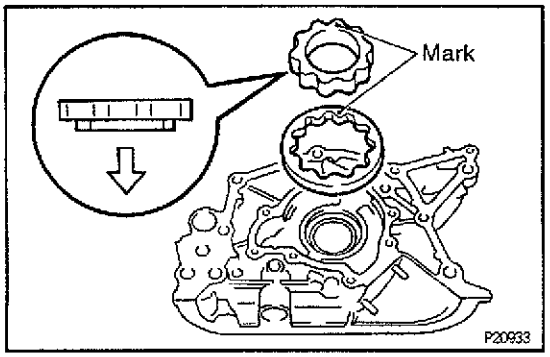
OIL PUMP DISASSEMBLY



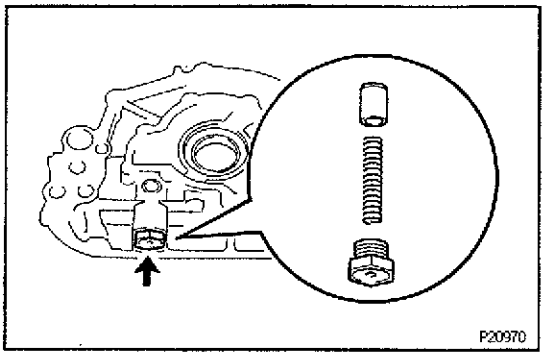
1. REMOVE DRIVEN AND DRIVE ROTORS

(a) Remove the 8 screws and pump body cover.
Torque: 10 N·m (105 kgf·cm, 8 ft·lbf)

(b) Remove the drive and driven rotors.



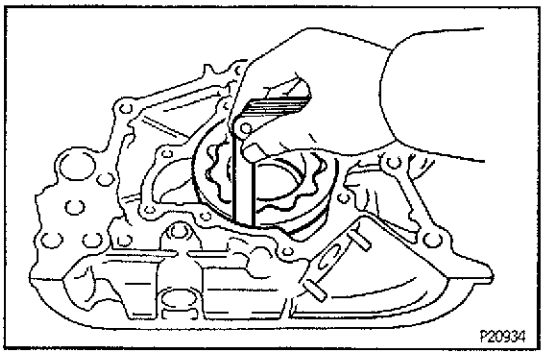
INSTALLATION HINT: Place the drive and driven rotor into pump body with the marks facing the pump body cover side.



2. REMOVE RELIEF VALVE

(a) Unscrew the relief valve plug and gasket.
Torque: 37 N·m (375 kgf·cm, 27 ft·lbf)

(b) Remove the spring and relief valve.



OIL PUMP INSPECTION

EG1CL-08

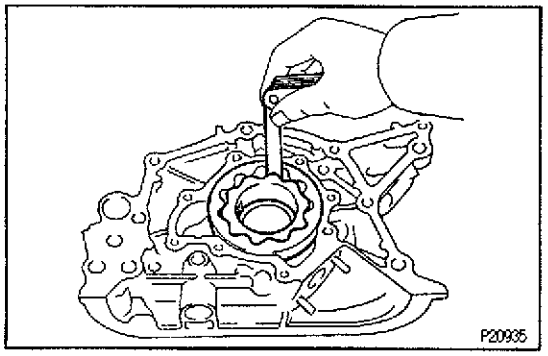
1. INSPECT BODY CLEARANCE

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

Standard body clearance:
0.10 — 0.18 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 oil pump rotor set and/or pump body.



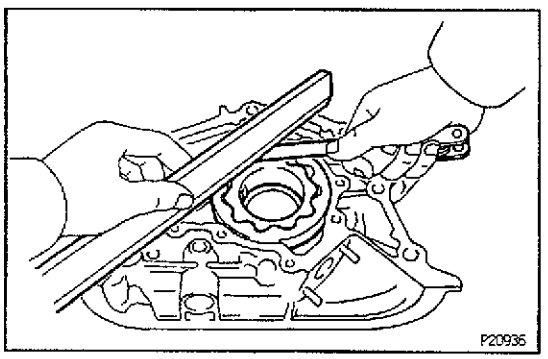
2. INSPECT TIP CLEARANCE

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

Standard tip clearance:
0.11 — 0.24 mm (0.0043 — 0.0094 in.)

Maximum tip clearance:
0.35 mm (0.0138 in.)

If the tip clearance is greater than maximum, replace the oil pump rotor set.



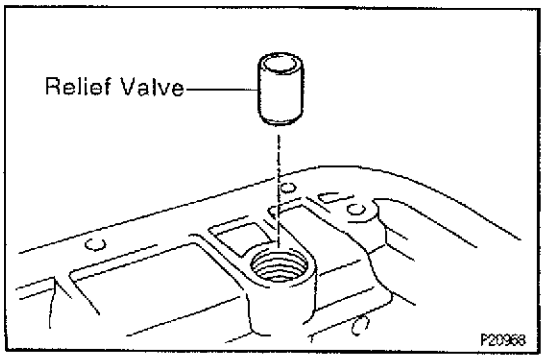
3. INSPECT SIDE CLEARANCE

Using a thickness gauge and precision straight edge, measure the side clearance, as shown.

Standard side clearance:
0.03 — 0.09 mm (0.0012 — 0.0035 in.)

Maximum side clearance:
0.15 mm (0.0059 in.)

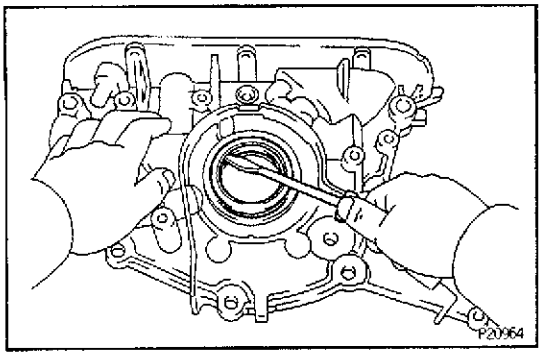
If the side clearance is greater than maximum, replace the oil pump rotor set and/or pump body.



4. INSPECT RELIEF VALVE

Coat the valve with engine oil and check that it falls smoothly into the valve hole by its own weight.
If is not, replace the relief valve. If necessary, replace the oil pump assembly.

EG



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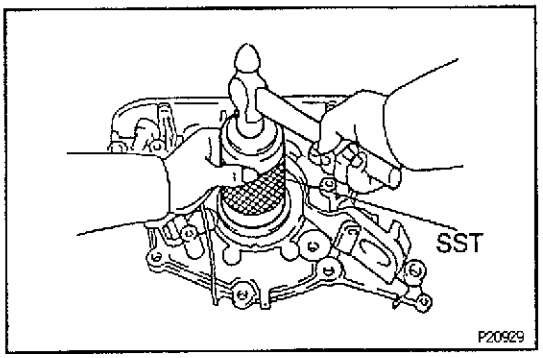
CRANKSHAFT FRONT OIL SEAL REPLACEMENT

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

REPLACE CRANKSHAFT FRONT OIL SEAL

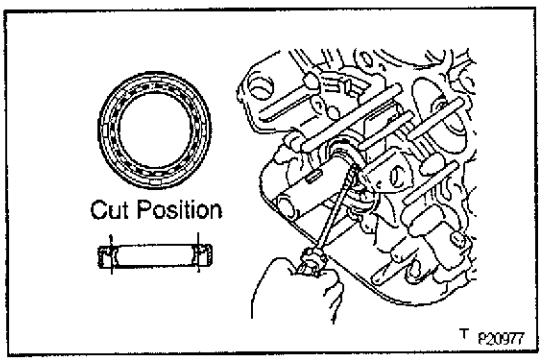
A. If oil pump is removed from cylinder block:

(a) Using a screwdriver, pry 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 body edge.
SST 09309—37010

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

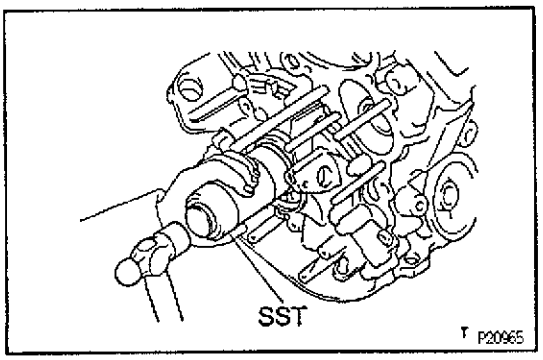


B. If oil pump is installed to the cylinder block:

(a) Using a knife, cut off the oil seal lip.

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

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



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

(d) Using SST and a hammer, tap in the oil seal until its surface is flush with the oil pump body edge.
SST 09306—37010

EG5V8-01

OIL PUMP ASSEMBLY

Assembly is in the reverse order of disassembly.

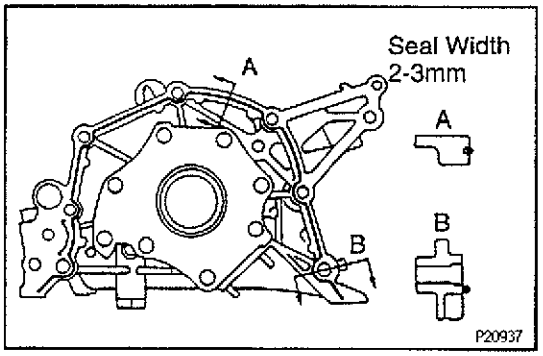
EG5VC-02

OIL PUMP INSTALLATION

1. INSTALL OIL PUMP

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the oil pump and cylinder block.

- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing grooves.
- Thoroughly clean all components to remove all the loose material.
- Using a non—residue solvent, clean both sealing surfaces.



(b) Apply seal packing to the oil pump, as shown in the illustration.

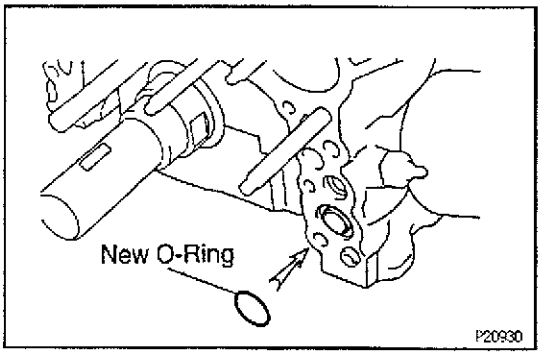
Seal packing:

Part No. 08826—00080 or equivalent

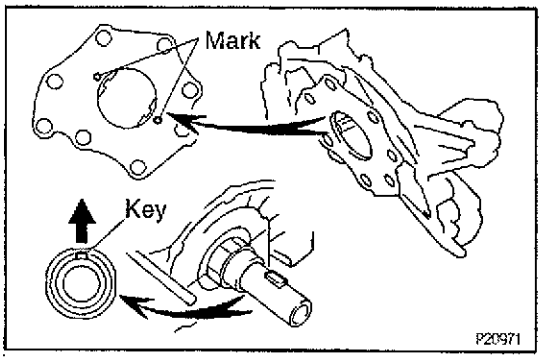
- Install nozzle that has been cut out to a 2—3 mm (0.08—0.12 in.) opening.

HINT: Avoid applying an excessive amount to the surface.

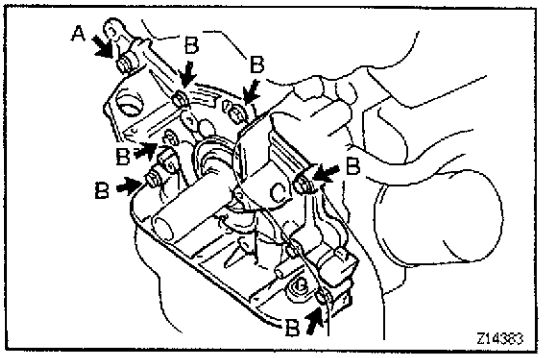
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(c) Place a new O—ring into the groove of cylinder block.



(d) Install the oil pump to the crankshaft with the spline teeth of the drive rotor engaged with the large teeth of the crankshaft.



(e) Install the oil pump with the 8 bolts, and ground strap.

Torque:

Bolt Ⓐ: 20 N·m (200 kgf·cm, 15 ft·lbf)

Bolt Ⓑ: 42 N·m (420 kgf·cm, 31 ft·lbf)

2. INSTALL CRANK SHAFT POSITION SENSOR

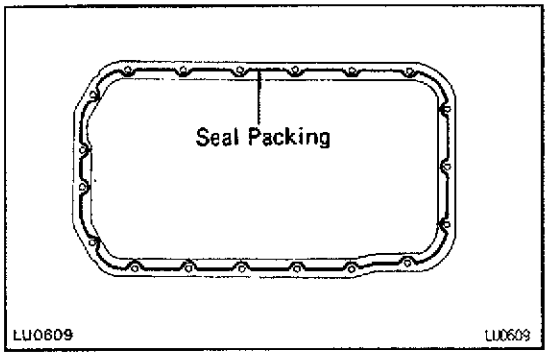
3. INSTALL OIL PAN BAFFLE PLATE

4. INSTALL OIL STRAINER

Place a new gasket and install the oil strainer.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)

EG



5. CLEAN OIL PAN

Remove any old packing (FIPG) material and be careful not to drop any oil on the contacting surfaces of the, oil pan and cylinder block.

- Using a razor blade and gasket scraper, remove all the remaining seal packing (FIPG) material from the gasket surfaces and sealing grooves.
- Thoroughly clean all components to remove all the loose material.
- Using a non–residue solvent, clean both sealing surfaces.

NOTICE: Do not use a solvent which will affect the painted surfaces.

6. INSTALL OIL PAN

(a) Apply seal packing to the oil pan, as shown in the illustration.

Seal packing:

Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 3 – 4 mm (0.12 – 0.16 in.) opening.

HINT: Avoid applying an excessive amount to the surface.

- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove the nozzle from the tube and reinstall the cap after using the seal packing.

(b) Install the oil pan with the 2 nuts and 17 bolts.

Torque: 7.6 N·m (78 kgf-cm, 67 in.-lbf)

7. CONNECT STARTER WIRE CLAMP

8. INSTALL CRANKSHAFT TIMING PULLEY

(See timing belt installation in Engine Mechanical)

9. FILL WITH ENGINE OIL

10. START ENGINE AND CHECK FOR LEAKS

11. RECHECK ENGINE OIL LEVEL