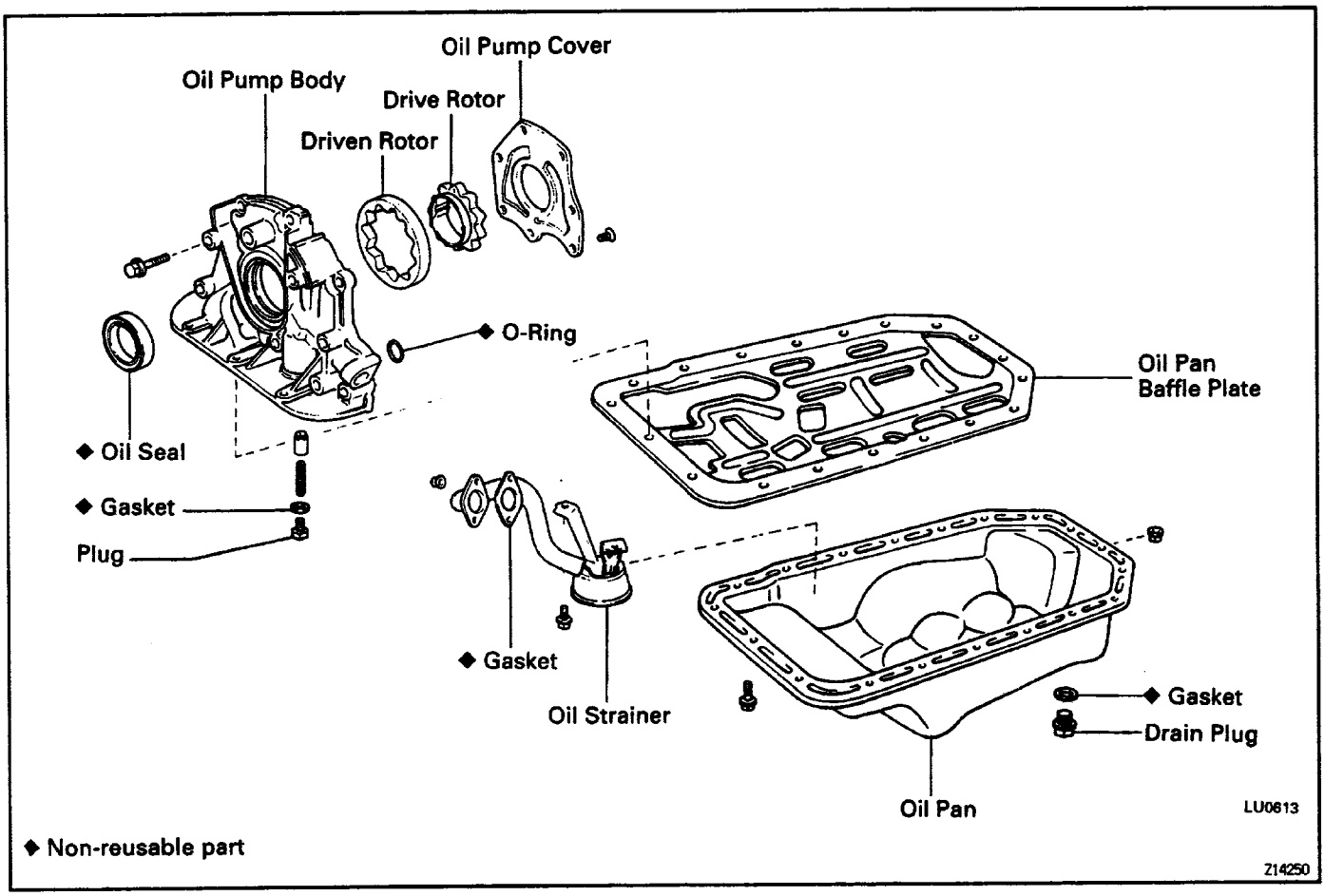
OIL PUMP

COMPONENTS FOR REMOVAL AND INSTALLATION



OIL PUMP REMOVAL

1. REMOVE ENGINE UNDER COVER

2. 4WD:

REMOVE FRONT DIFFERENTIAL
(See SA section)

3. DRAIN ENGINE OIL

4. REMOVE TIMING BELT

(See timing belt removal in timing belt in Engine Mechanical)

6. REMOVE CRANKSHAFT TIMING PULLEY

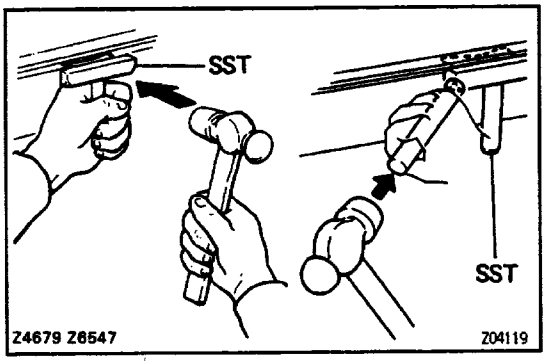
(See step 21 in timing belt removal in timing belt in Engine Mechanical)

6. REMOVE OIL PAN

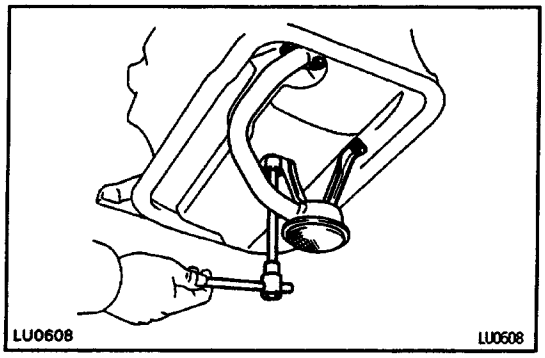
(a) Remove the 17 bolts and 2 nuts.

(b) Using SST and a brass bar, separate the oil pan from the baffle plate.

SST 09032–00100

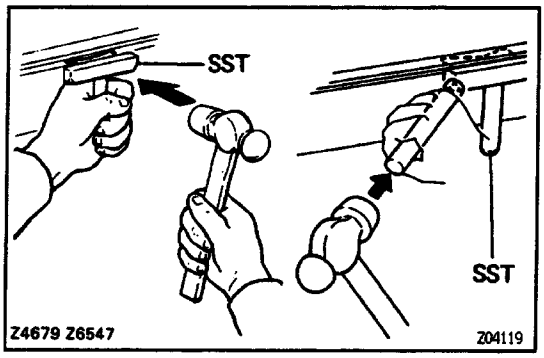


HINT: When removing the oil pan, be careful not to damage the oil pan flange.



7. REMOVE OIL STRAINER

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

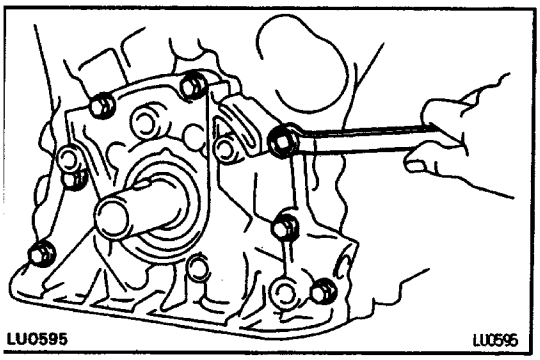


8. REMOVE OIL PAN BAFFLE PLATE

Insert the blade of SST between the cylinder block and baffle plate, cut off applied sealer and remove the baffle plate.

SST 09032 – 00100

HINT: When removing the baffle plate, be careful not to damage the baffle plate flange.



9. REMOVE OIL PUMP

(a) Remove the 7 bolts and oil pump.

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

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

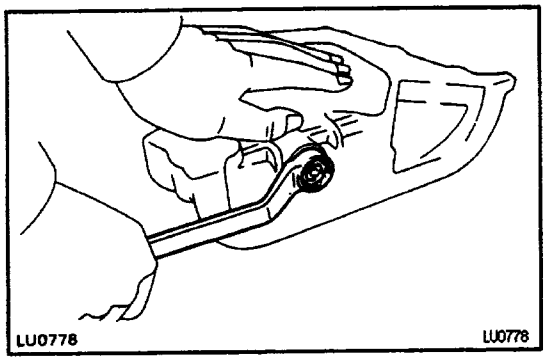
OIL PUMP DISASSEMBLY

(See components for Removal and Installation)

1. REMOVE DRIVEN AND DRIVE ROTORS

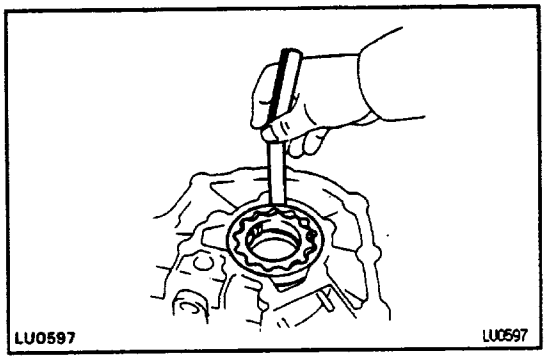
(a) Remove the 7 screws and pump body cover.

(b) Remove the drive and driven rotors.



2. REMOVE RELIEF VALVE

(a) Unscrew the relief valve plug and gasket.
(b) Remove the spring and relief valve.



OIL PUMP INSPECTION

1. INSPECT BODY CLEARANCE

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

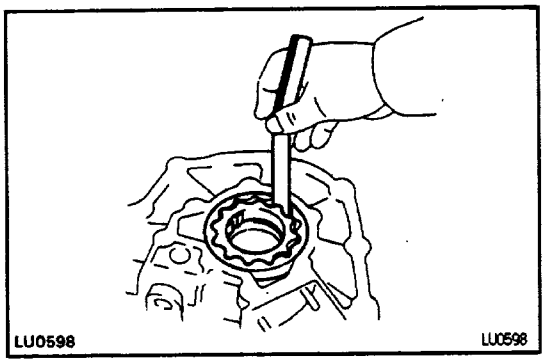
Standard clearance:

0.10 –0.13 mm (0.0039 – 0.0051 in.)

Maximum clearance:

0.30 mm (0.0118 in.)

If the 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.

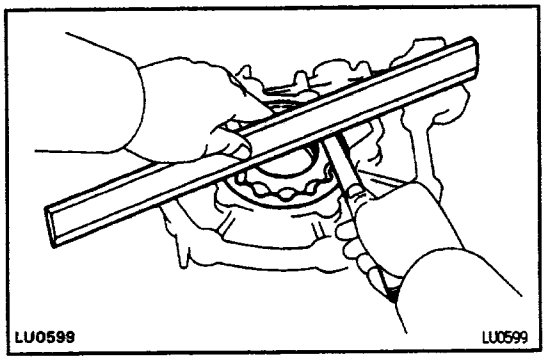
Standard clearance:

0.11 – 0.24 mm (0.0043 – 0.0094 In.)

Maximum clearance:

0.35 mm (0.0138 in.)

If the 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.

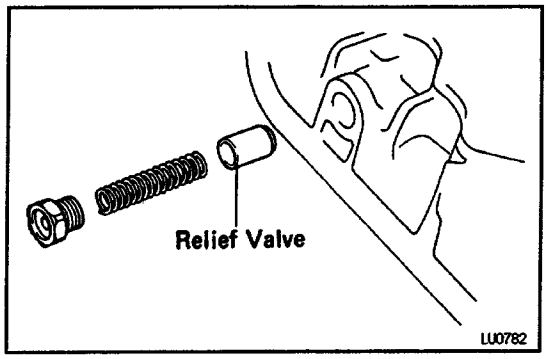
Standard clearance:

0.03 – 0.09 mm (0.0012 – 0.0035 in.)

Maximum clearance:

0.15 mm (0.0059 in.)

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

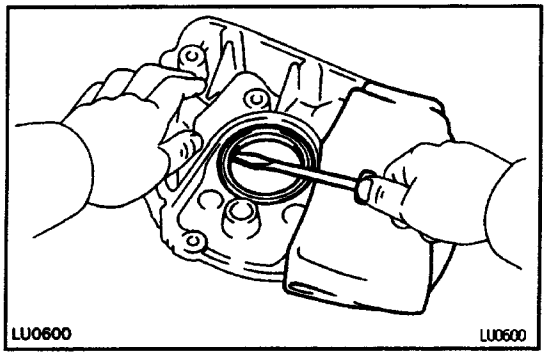


4. INSPECT RELIEF VALVE

Coat the relief valve with engine oil and check –that it falls smoothly into the valve hole by its own weight.
If the valve does not fall smoothly, replace the valve and/or oil pump assembly.

CRANKSHAFT FRONT OIL SEAL REPLACEMENT

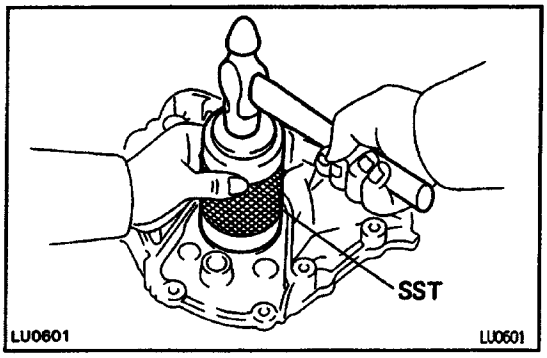
HINT: There are 2 methods (A and B) to replace the oil seal which are as follows:



REPLACE CRANKSHAFT FRONT OIL SEAL

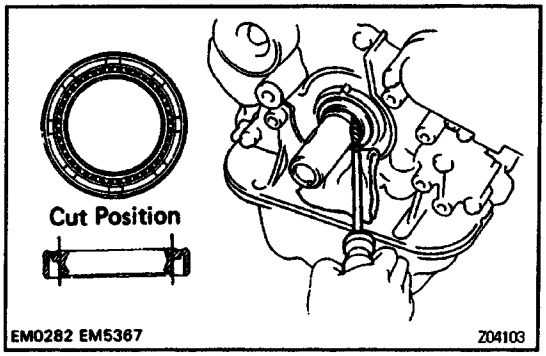
A. If oil pump is removed from cylinder block:

(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.

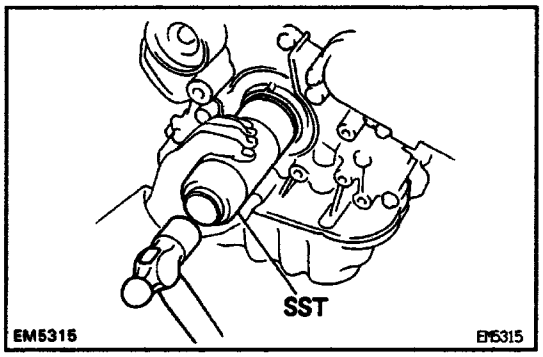


B. If oil pump is installed to the cylinder block:

(a) Using a knife, cut oft 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

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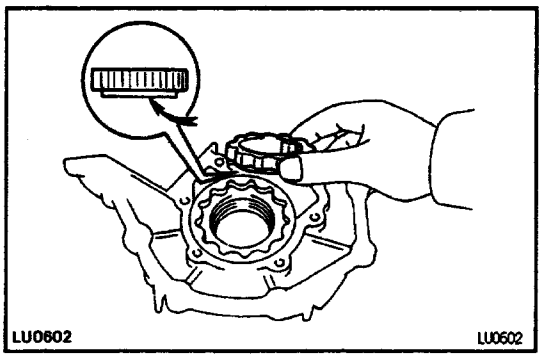
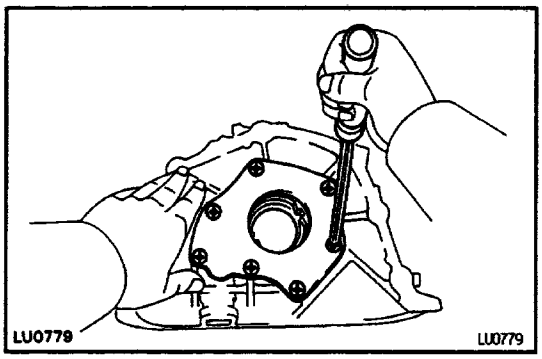
OIL PUMP ASSEMBLY



(See components for Removal and Installation)

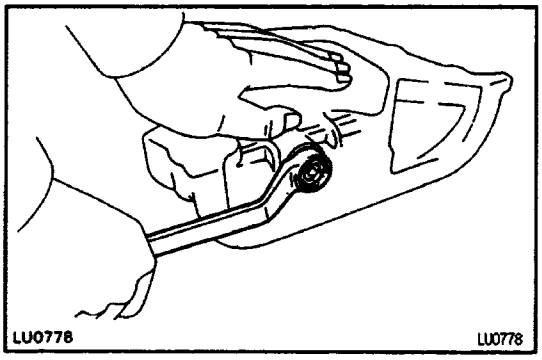
1. INSTALL DRIVE AND DRIVEN ROTORS

Put the drive and driven rotors in the pump body.



2. INSTALL PUMP BODY COVER

Install the pump body cover with the 7 screws.
Torque: 10 N–m (105 kgf–cm, 8 ft–lbf)



3. INSTALL RELIEF VALVE

Install relief valve and the spring in the body, and screw on the relief valve plug with a new gasket.
Torque: 37 N–m (375 kgf–cm, 37 ft–lbf)

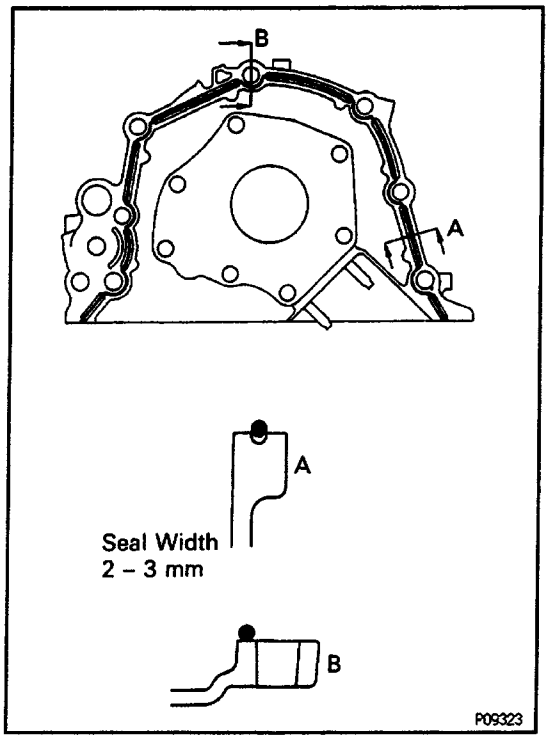
OIL PUMP INSTALLATION

(See components for Removal and 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.

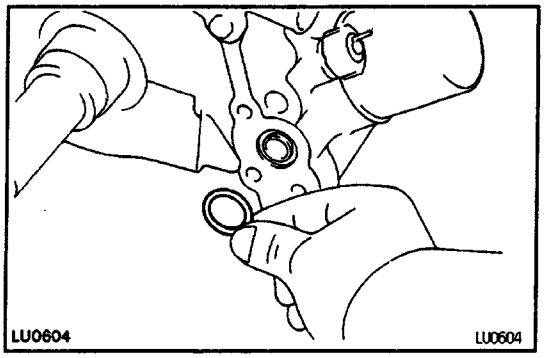
Seal pecking:

Part No. 08826–00080 or equivalent

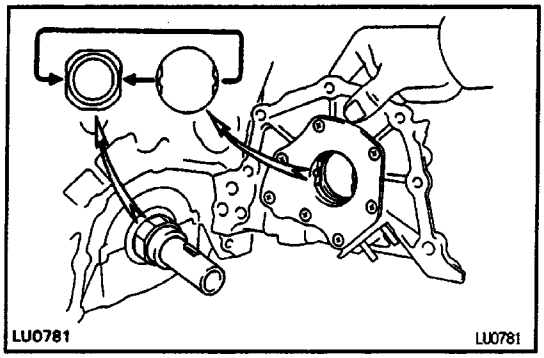
- Install nozzle that has been cut out to a 2 – 3 mm(0.08–0.12 in.) opening.

HINT: Avoid applying an excessive amount to the surface.

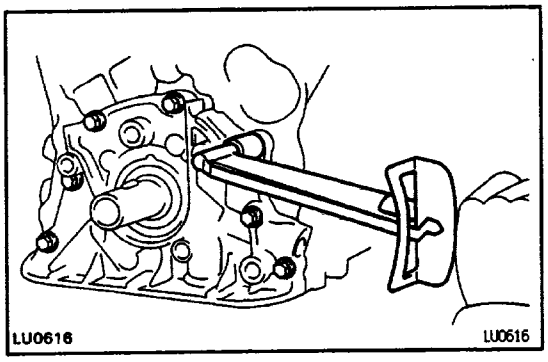
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(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 7 bolts.

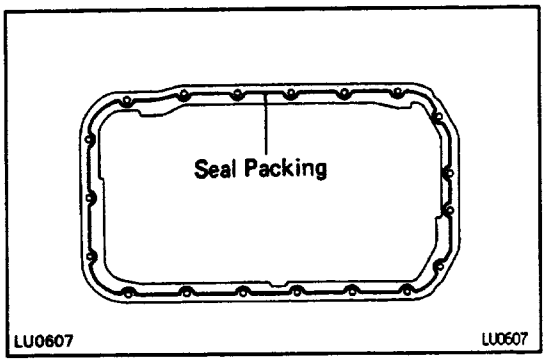
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)

2. CLEAN OIL PAN BAFFLE PLATE AND OIL PAN

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

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

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



3. INSTALL OIL PAN BAFFLE PLATE

Apply seal packing to the baffle plate as shown in the illustration.

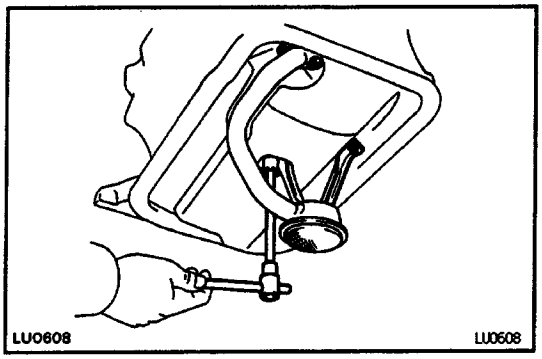
Seal packing:

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 excess amount to the surface.

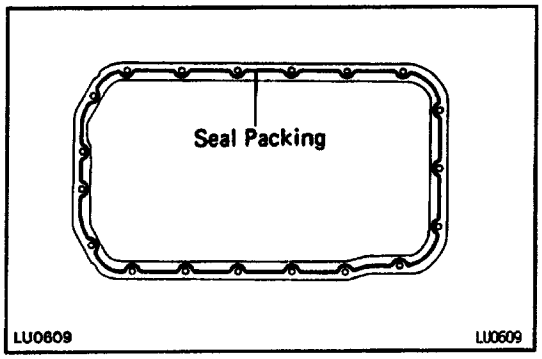
- If parts are not assembled within 5 minutes o1 applying the seal packing, the effectiveness o1 the seal packing is lost and the seal packing must be removed and reapplied.
- Immediately remove the nozzle from the tube an(reinstall the cap after using the seal packing.



4. INSTALL OIL STRAINER

Place a new gasket and install the oil strainer with the 2 nuts and 2 bolts.

Torque: 6.9 N–m (70 kgf–cm, 61 in.–lbf)



5. 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 excess amount to the surface.

- If parts are not assembled within 5 minutes of applying the seal packing, the effectiveness of the seal packing is lost and the seal packing 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: 5.9 N–m (60 kgf–cm. 52in.–lbf)

6. INSTALL TIMING BELT

(See timing belt installation in timing belt in Engine Mechanical)

7. INSTALL CRANKSHAFT TIMING PULLEY

(See step 6 in timing belt installation in timing belt in Engine Mechanical)

8. 4WD:

INSTALL FRONT DIFFERENTIAL

(See SA section)

9. ENGINE UNDER COVER

10. FILL WITH ENGINE OIL

11. START ENGINE AND CHECK FOR LEAKS

12. RECHECK ENGINE OIL LEVEL