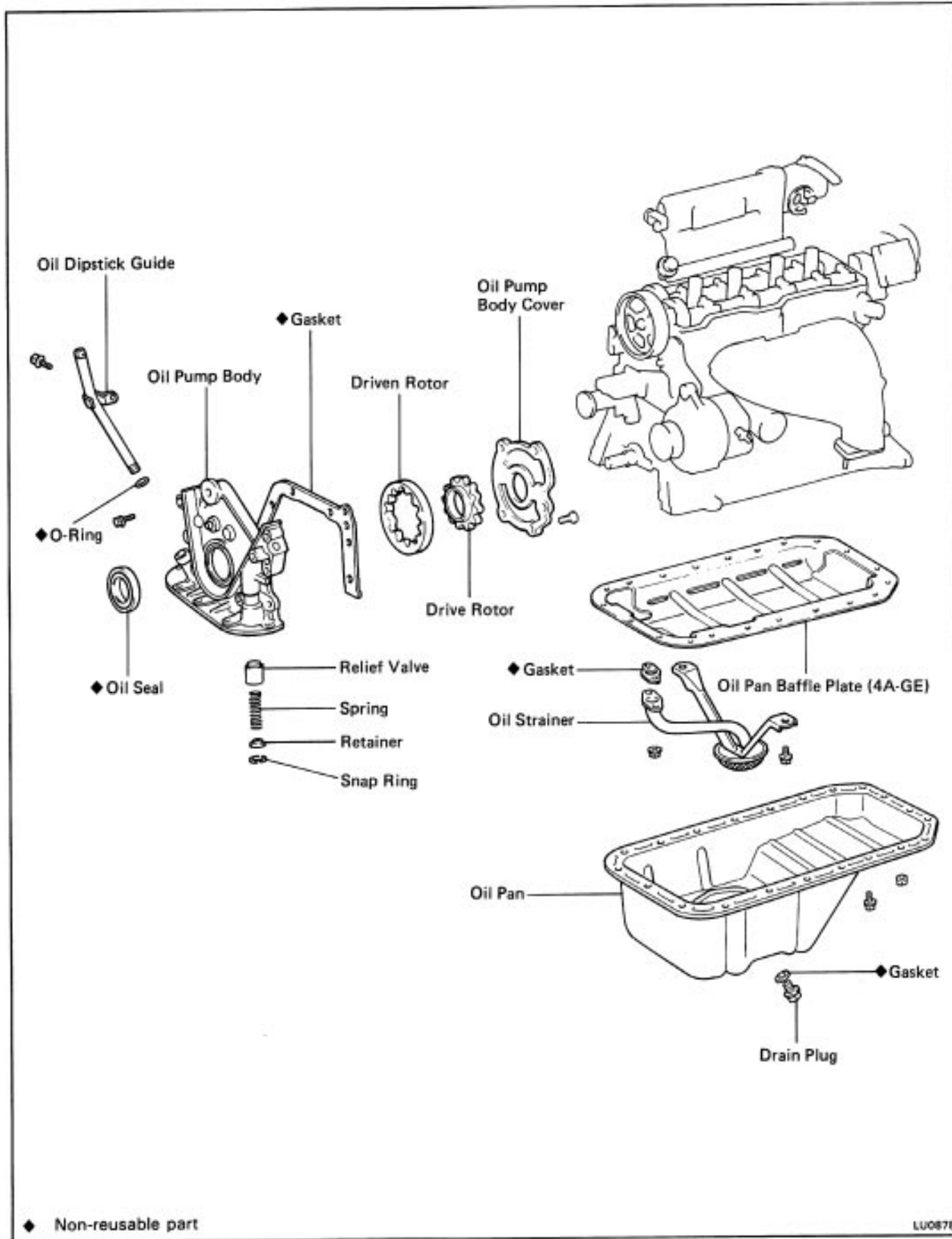


OIL PUMP COMPONENTS



REMOVAL OF OIL PUMP

(See page [LU-9](#))

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

1. REMOVE HOOD

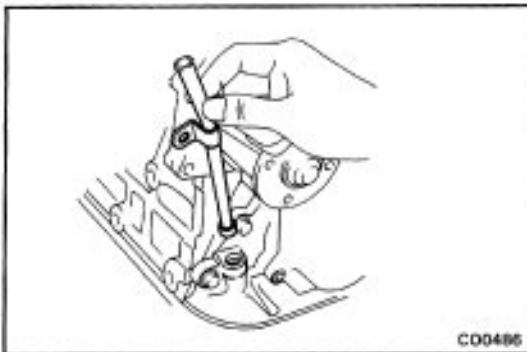
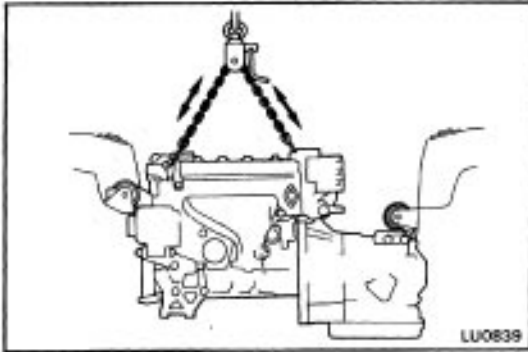
2. DRAIN ENGINE OIL (See page [LU-6](#))

3. REMOVE TIMING BELT, IDLER PULLEY AND CRANKSHAFT TIMING PULLEY

4A-FE (See steps 1 to 18 on pages [EM-30](#) to [EM-33](#))

4A-GE (See steps 1 to 17 on pages [EM-41](#) to [EM-45](#))

When removing the RH engine mounting, attach the engine hoist chain to the lifting bracket on the engine and lift the engine slightly.



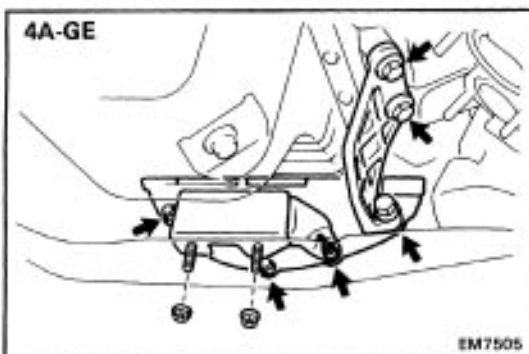
4. REMOVE OIL DIPSTICK GUIDE AND DIPSTICK

- Remove the dipstick.
- Remove the bolt, and pull out the dipstick guide.
- Remove the O-ring from the dipstick guide.

5. REMOVE FRONT EXHAUST PIPE

4A-FE (See step 25 on page [EM-121](#))

4A-GE (See step 24 on page [EM-127](#))



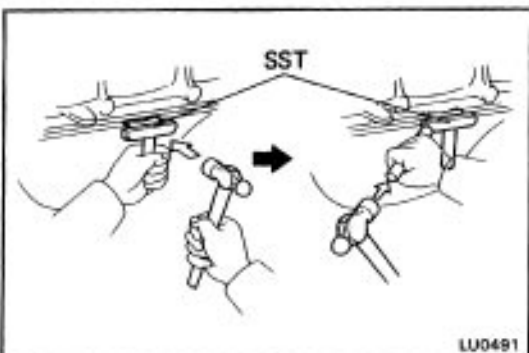
6. REMOVE CENTER MOUNTING AND STIFFENER PLATE

- (2WD)
Remove the bolt, three nuts and center mounting.
- (4A-GE)
Remove the three bolts and stiffener plate.

7. (4A-GE)

REMOVE FLYWHEEL HOUSING UNDER COVER

Remove the two bolts and under cover.

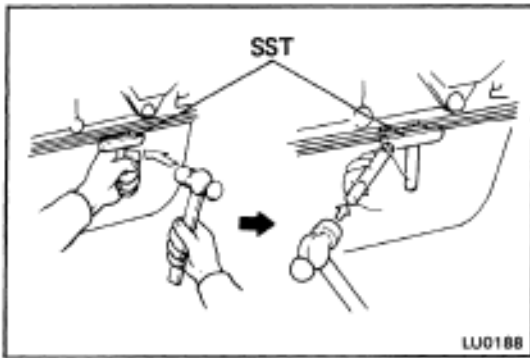


8. REMOVE OIL PAN

- Remove the oil cooler hose and union from the oil pan.
- Remove the two nuts and nineteen bolts.
- (4A-FE)

Insert the blade of SST between the oil pan and cylinder block, cut off applied sealer and then remove the oil pan.

SST 09032-00100



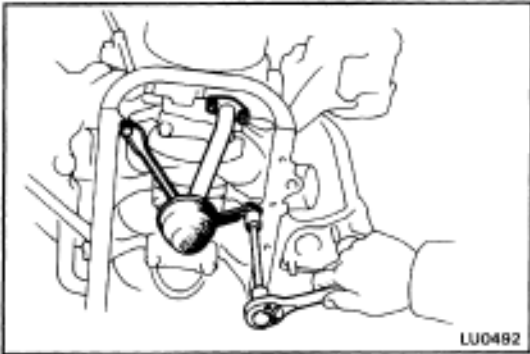
(e) (4A-GE)

Insert the blade of SST between the oil pan and baffle plate, cut off applied sealer and then remove the oil pan.

SST 09032-00100

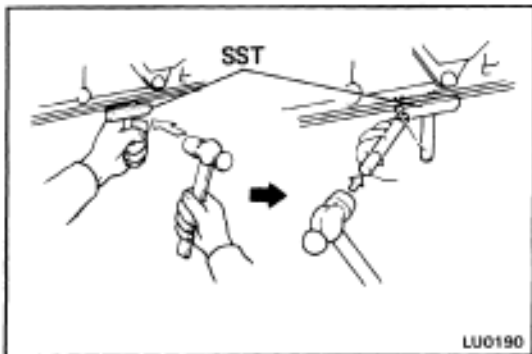
NOTICE:

- Do not use SST for the oil pump body side. If necessary, use a screwdriver.
- When removing the oil pan, be careful not to damage the oil pan flange.



9. REMOVE OIL STRAINER

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



10. (4A-GE)

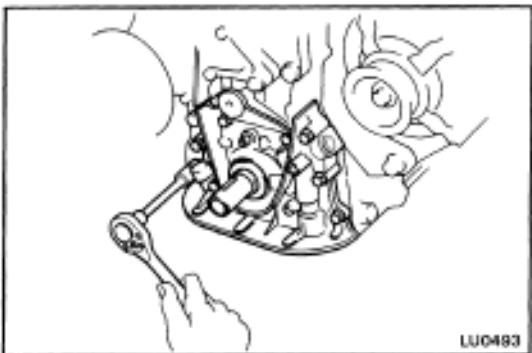
REMOVE OIL PAN Baffle PLATE

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

SST 09032-00100

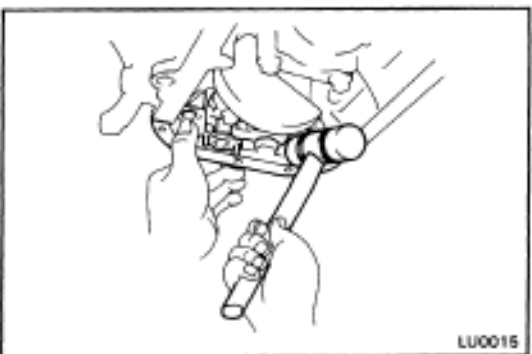
NOTICE:

- Do not use SST for the oil pump body side. If necessary, use a screwdriver.
- When removing the baffle plate, be careful not to damage the oil pan flange.

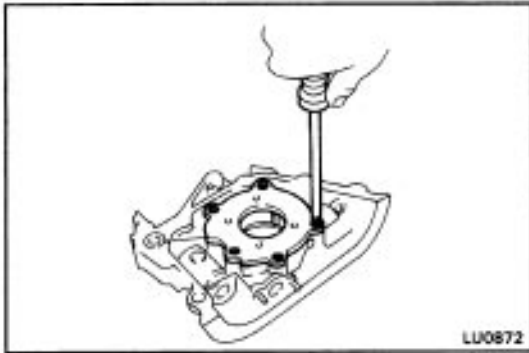


11. REMOVE OIL PUMP

(a) Remove the seven bolts.



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



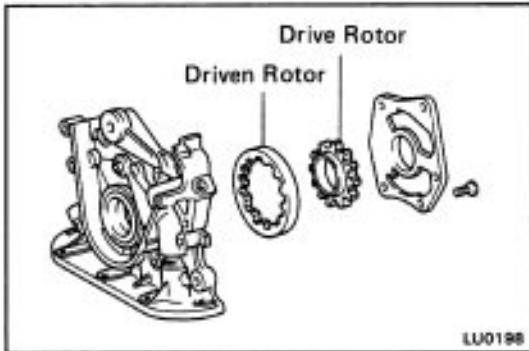
DISASSEMBLY OF OIL PUMP

(See page [LU-9](#))

1. REMOVE DRIVE AND DRIVEN ROTORS

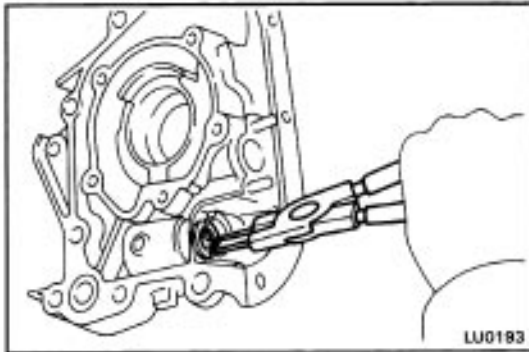
(a) Remove the five screws and oil pump cover.

(b) Remove the drive and driven rotors.

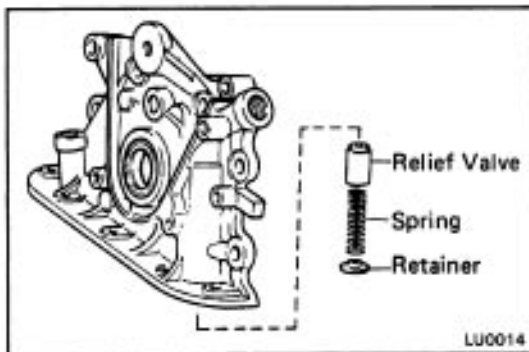


2. REMOVE RELIEF VALVE

(a) Using snap ring pliers, remove the snap ring.



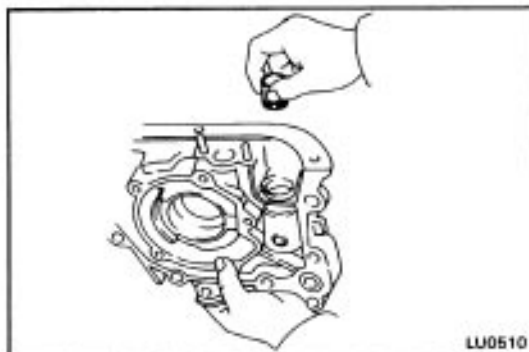
(b) Remove the retainer, spring and relief valve.

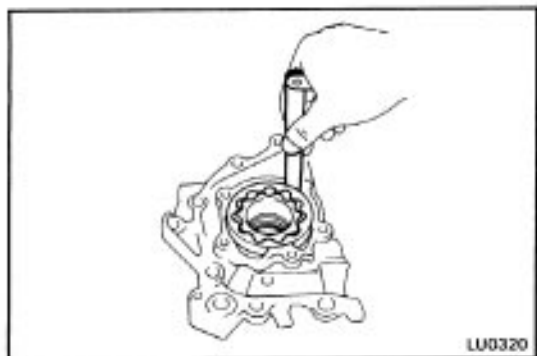


INSPECTION OF RELIEF VALVE

Coat the relief valve with engine oil and check that it falls smoothly into the valve hole by its own weight.

If it does not, replace the relief valve. If necessary, replace the oil pump assembly.





INSPECTION OF OIL PUMP

1. MEASURE BODY CLEARANCE

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

Standard clearance: 4A-FE 0.080 – 0.180 mm

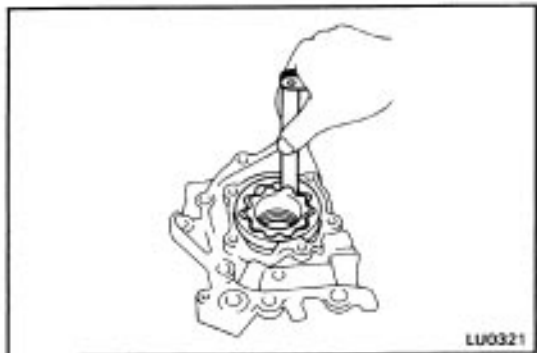
(0.0031 – 0.0071 in.)

4A-GE 0.100 – 0.191 mm

(0.0039 – 0.0075 in.)

Maximum clearance: 0.20 mm (0.0079 in.)

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



2. MEASURE TIP CLEARANCE

Using a feeler gauge, measure the clearance between both rotor tips.

Standard clearance: 4A-FE 0.025 – 0.085 mm

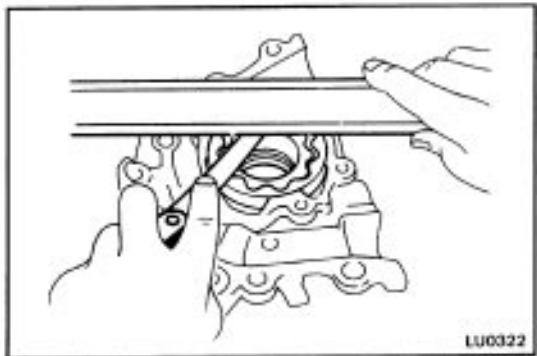
(0.0010 – 0.0033 in.)

4A-GE 0.060 – 0.180 mm

(0.0023 – 0.0071 in.)

Maximum clearance: 0.35 mm (0.0138 in.)

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



3. MEASURE SIDE CLEARANCE

Using a feeler gauge and flat block, measure the side clearance as shown.

Standard clearance: 4A-FE 0.025 – 0.085 mm

(0.0010 – 0.0033 in.)

4A-GE 0.025 – 0.075 mm

(0.0010 – 0.0030 in.)

Maximum clearance: 0.10 mm (0.0039 in.)

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

REPLACEMENT OF OIL SEAL

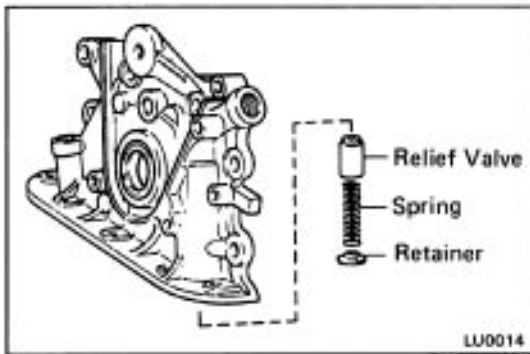
(See page [EM-148](#))

ASSEMBLY OF OIL PUMP

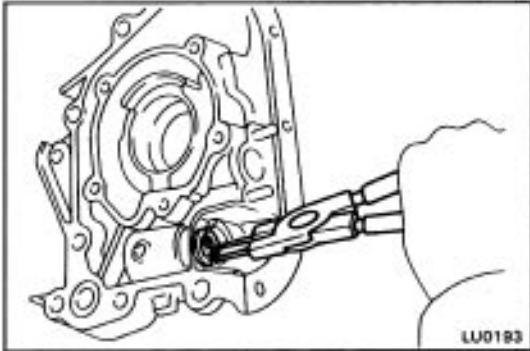
(See page [LU-9](#))

1. INSTALL RELIEF VALVE

- (a) Insert the relief valve, spring and retainer into the pump body.

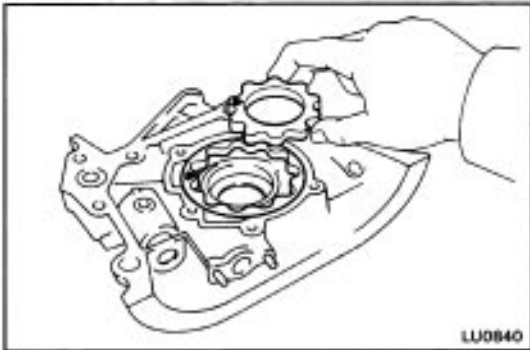


- (b) Using snap ring pliers, install the snap ring.



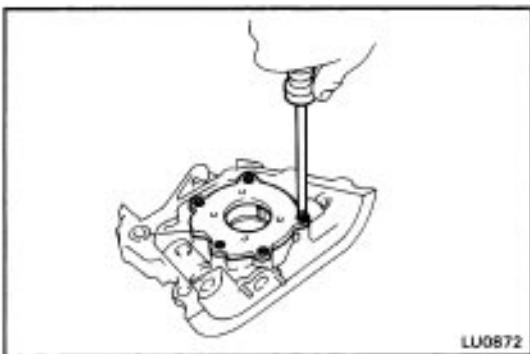
2. INSTALL DRIVE AND DRIVEN ROTORS

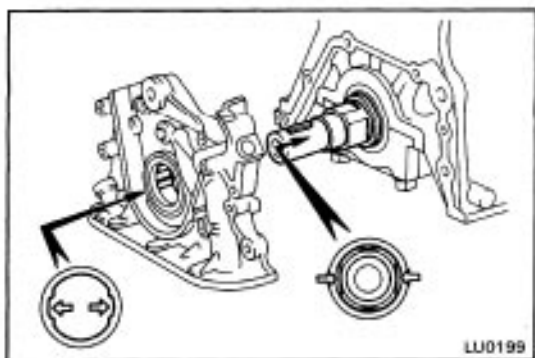
- (a) Install the drive and driven rotors in the pump body.
 HINT: Install the driven rotor with its delta mark facing the same direction as that of the drive rotor.



- (b) Install the oil pump cover with the five screws.
 Torque the screws.

Torque: 105 kg-cm (8 ft-lb, 10 N-m)



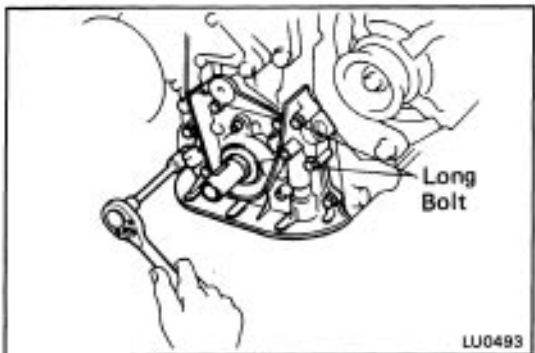


INSTALLATION OF OIL PUMP

(See page LU-9)

1. INSTALL OIL PUMP ASSEMBLY

- (a) Place a new gasket on the block.
- (b) Install the oil pump to the cylinder block with the spline teeth of the drive gear engaged with the large teeth of the crankshaft.



- (c) Install and torque the seven bolts.

Torque: 220 kg-cm (16 ft-lb, 21 N-m)

HINT: Each bolt length is as follows.

Bolt length: Long bolt 35 mm (1.38 in.)

Others 25 mm (0.98 in.)

2. (4A-GE)

INSTALL OIL PAN BAFFLE PLATE

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

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

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

- (b) Apply seal packing to the baffle plate as shown in the illustration.

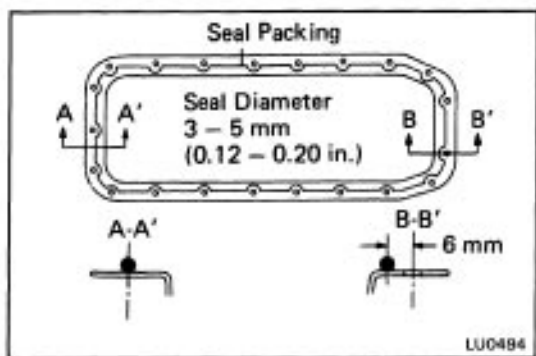
Seal packing: Part No. 08826-00080 or equivalent

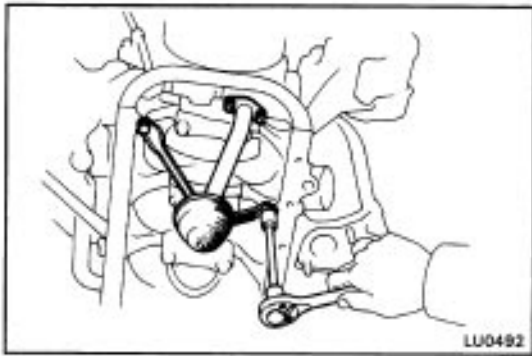
- Install a nozzle that has been cut to a 3 – 5 mm (0.12 – 0.20 in.) opening.

HINT: Avoid applying an excess amount to the surface.

- Parts must be assembled within 15 minutes of application. Otherwise, the seal packing will be of no effect.
- Immediately remove nozzle from tube and reinstall cap after use.

- (c) Install the baffle plate.

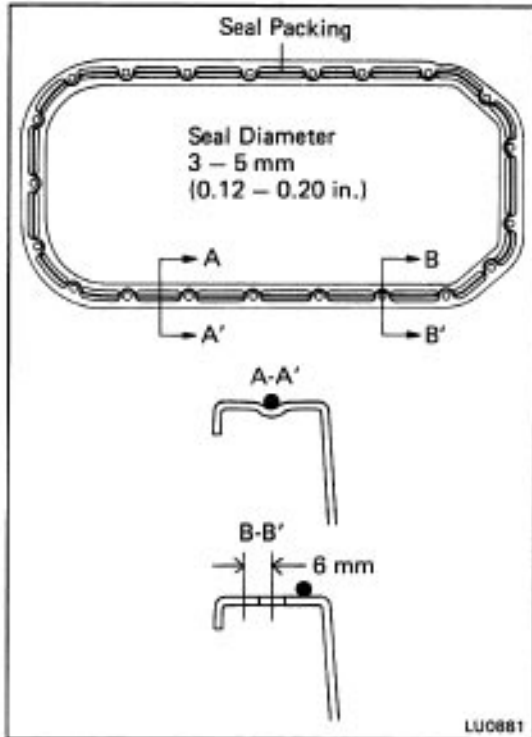




3. INSTALL OIL STRAINER

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

Torque: 95 kg-cm (82 in.-lb, 9.3 N-m)



4. INSTALL OIL PAN

(a) 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 (4A-FE) or baffle plate (4A-GE).

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

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

(b) 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 – 5 mm (0.12 – 0.20 in.) opening.

HINT: Avoid applying an excess amount to the surface.

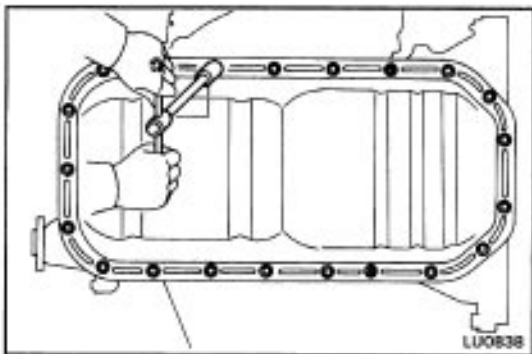
- Parts must be assembled within 15 minutes of application. Otherwise, the seal packing will be of no effect.
- Immediately remove nozzle from tube and reinstall cap.

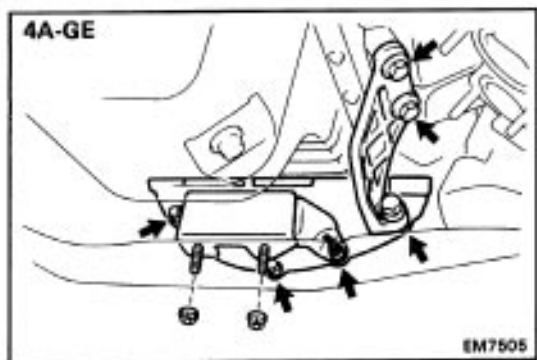
(c) Install the oil pan over the studs on the block with the nineteen bolts and two nuts. Torque the bolts and nuts.

Torque: 50 kg-cm (43 in.-lb, 4.9 N-m)

(d) Install the cooler pipe, two new gaskets and union bolt. Torque the union bolt.

Torque: 250 kg-cm (18 ft-lb, 25 N-m)



**5. (4A-GE)****INSTALL FLYWHEEL HOUSING UNDER COVER****6. INSTALL STIFFENER PLATE AND CENTER MOUNTING****(a) (4A-GE)**

Install the stiffener plate and three bolts.

Torque: 380 kg-cm (27 ft-lb, 37 N-m)

(b) (2WD)

Install the center mounting, bolt and three nuts.

Torque:

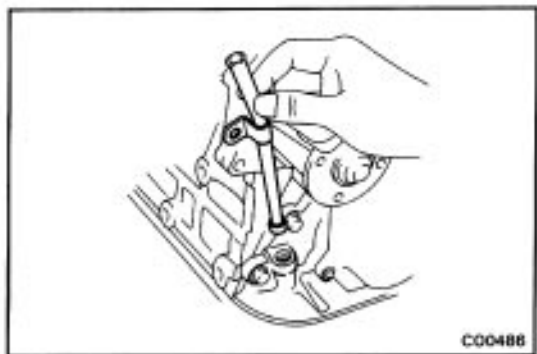
Member side 530 kg-cm (38 ft-lb, 52 N-m)

Plate side 230 kg-cm (17 ft-lb, 23 N-m)

7. INSTALL FRONT EXHAUST PIPE

4A-FE (See step 13 on page [EM-160](#))

4A-GE (See step 11 on page [EM-166](#))

**8. INSTALL 01L DIPSTICK GUIDE AND DIPSTICK**

(a) Push in the oil dipstick guide with the O-ring coated with a small amount of engine oil.

(b) Install a new O-ring to the oil dipstick guide.

(c) Install the mounting bolt.

(d) Insert the oil dipstick.

9. INSTALL CRANKSHAFT TIMING PULLEY, IDLER PULLEY AND TIMING BELT

4A-FE (See steps 2 to 22 on pages [EM-36](#) to [EM-40](#))

4A-GE (See steps 3 to 24 on pages [EM-48](#) to [EM-53](#))

10. REFILL WITH ENGINE OIL (See page [LU-7](#))**11. RECHECK OIL LEVEL**

Recheck the engine oil level and refill as necessary.

12. INSTALL HOOD