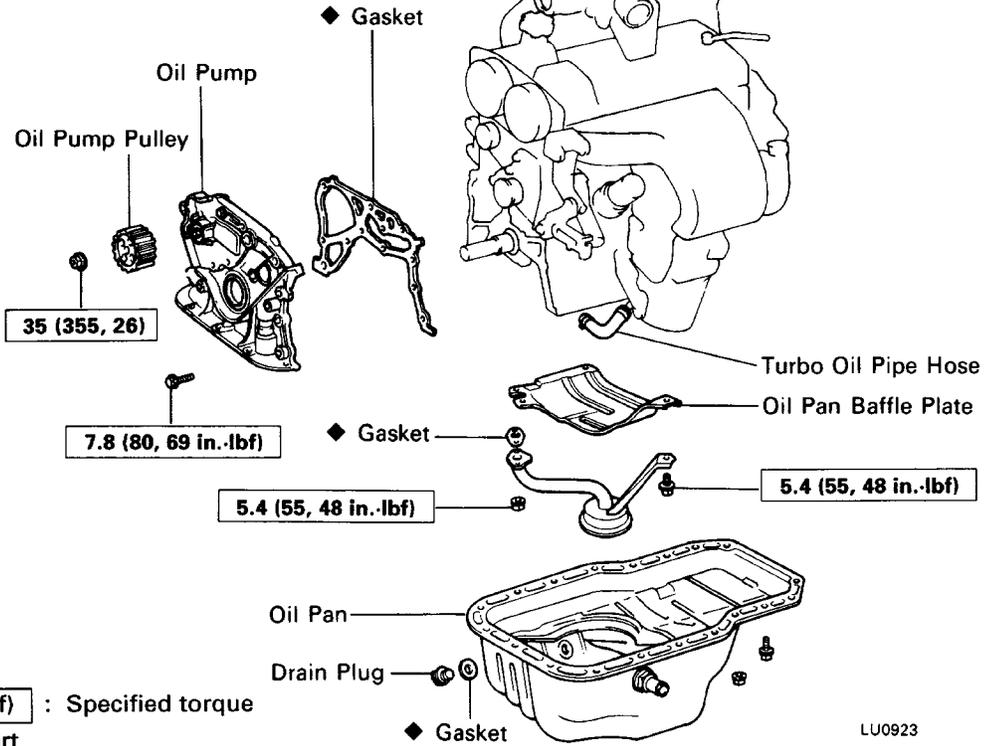


# OIL PUMP (3S-GTE and 5S-FE)

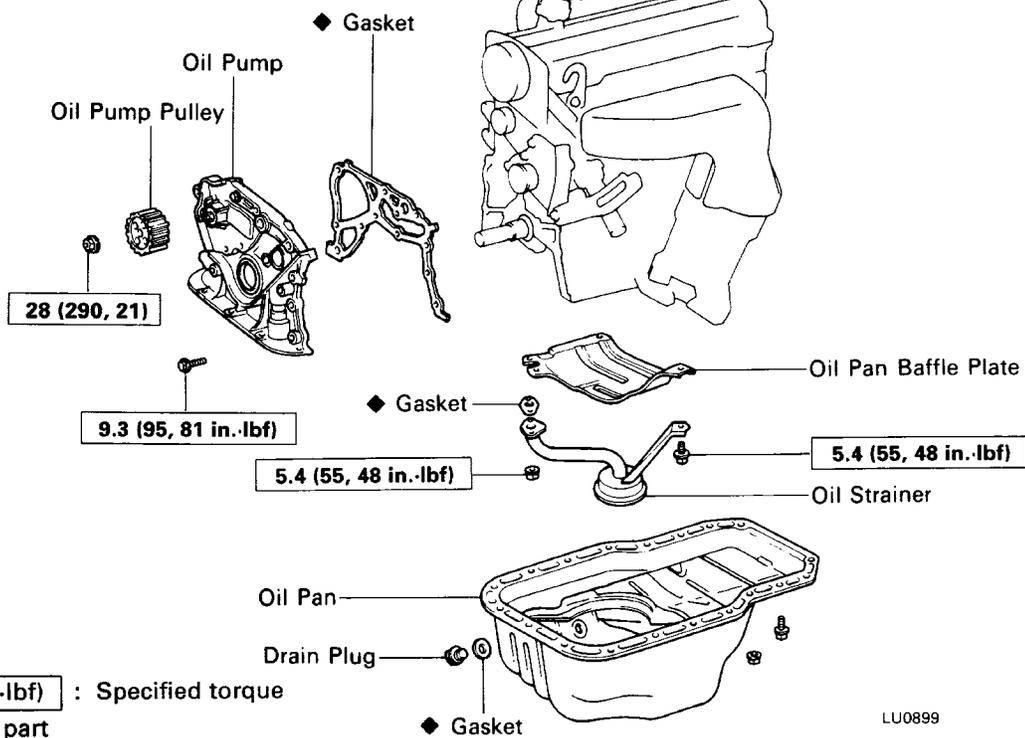
## REMOVAL OF OIL PUMP

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

### 3S-GTE



### 5S-FE



**1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY**

**CAUTION:** Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.

**2. REMOVE HOOD**

**3. REMOVE ENGINE UNDER COVERS**

**4. DRAIN ENGINE OIL (See page LU-7)**

**5. REMOVE SUSPENSION LOWER CROSSMEMBER**

3S-GTE (See step 33 on page EM-228)

5S-FE (See step 28 on page EM-274)

**6. REMOVE FRONT EXHAUST PIPE**

3S-GTE (See step 34 on page EM-229)

5S-FE (See step 29 on page EM-274)

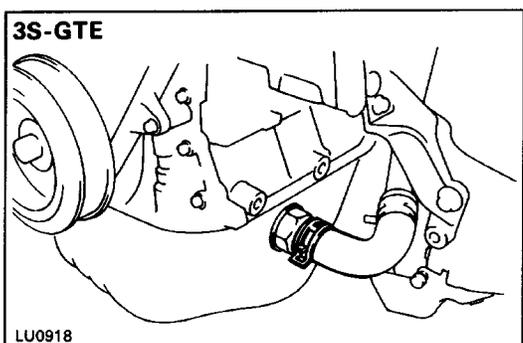
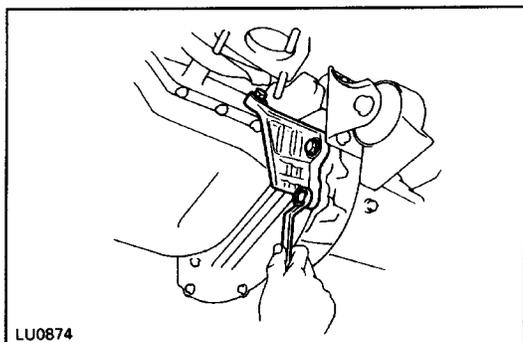
**7. REMOVE ENGINE MOUNTING CENTER MEMBER**

3S-GTE (See step 42 on page EM-229)

5S-FE (See step 34 on page EM-275)

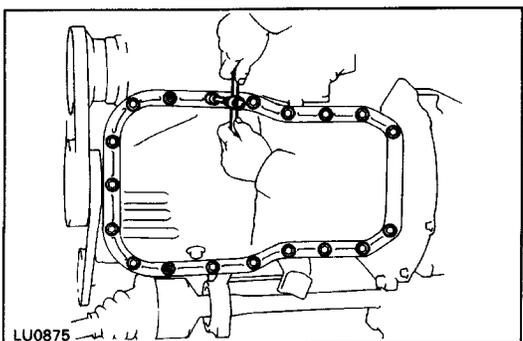
**8. REMOVE STIFFENER PLATE**

Remove the three bolts and stiffener plate.



**9. (3S-GTE)**

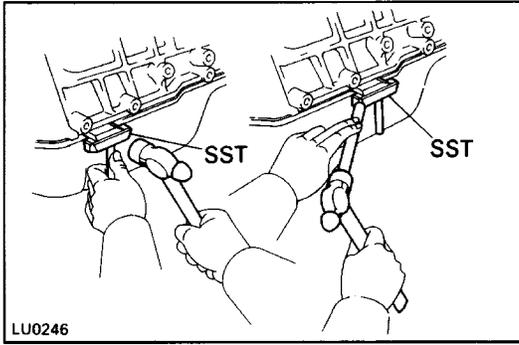
**DISCONNECT TURBO OIL PIPE HOSE FROM OIL-PAN**



**10. REMOVE OIL PAN**

(a) Remove the dipstick.

(b) Remove the seventeen bolts and two nuts.

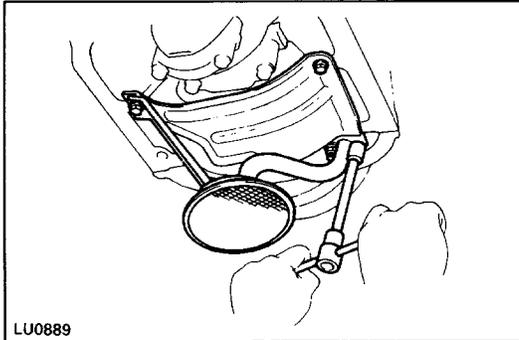


- (c) Insert the blade of SST between the cylinder block and oil pan, cut off applied sealer and remove the oil pan.

SST 09032-00100

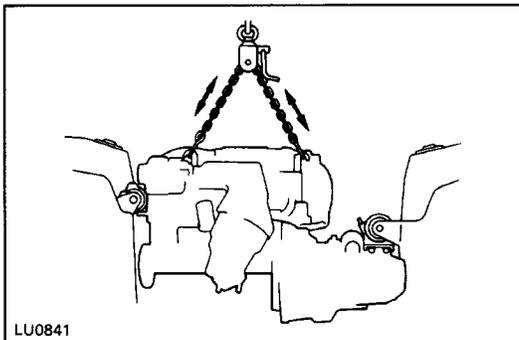
**NOTICE:**

- Do not use SST for the oil pump body side and rear oil seal retainer.
- Be careful not to damage the oil pan flange.



**11. REMOVE OIL STRAINER AND Baffle PLATE**

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



**12. SUSPEND ENGINE WITH ENGINE CHAIN HOIST**

**13. REMOVE TIMING BELT**

3S-GTE (See steps 2 to 18 and 20 to 23 on pages EM-46 to 51)

5S-FE (See steps 2 to 17 and 19 to 22 on pages EM-67 to 72)

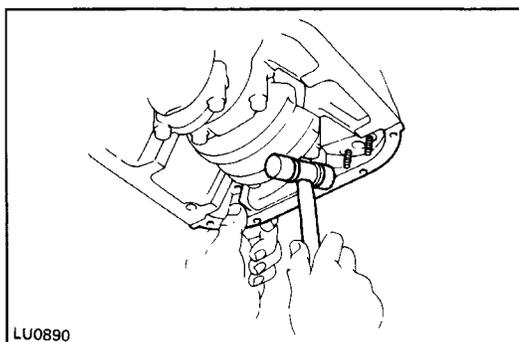
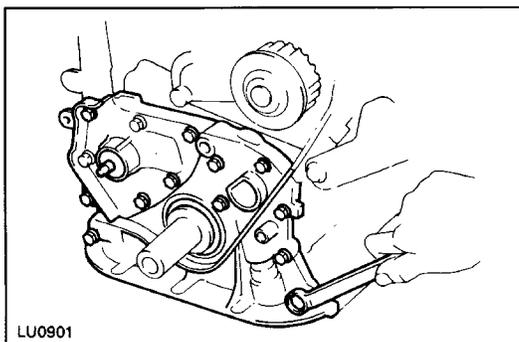
**14. REMOVE NO.2 IDLER PULLEY, CRANKSHAFT TIMING PULLEY AND OIL PUMP PULLEY**

3S-GTE (See steps 25 to 27 on page [EM-52](#))

5S-FE (See steps 24 to 26 on pages [EM-72](#) and 73)

**15. REMOVE OIL PUMP**

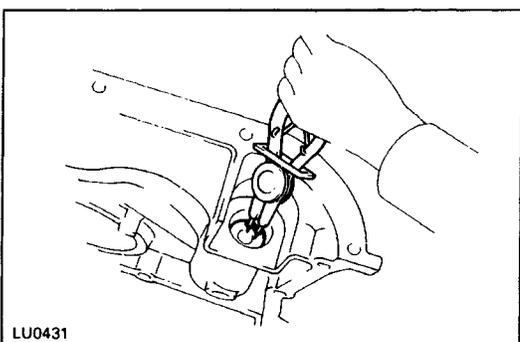
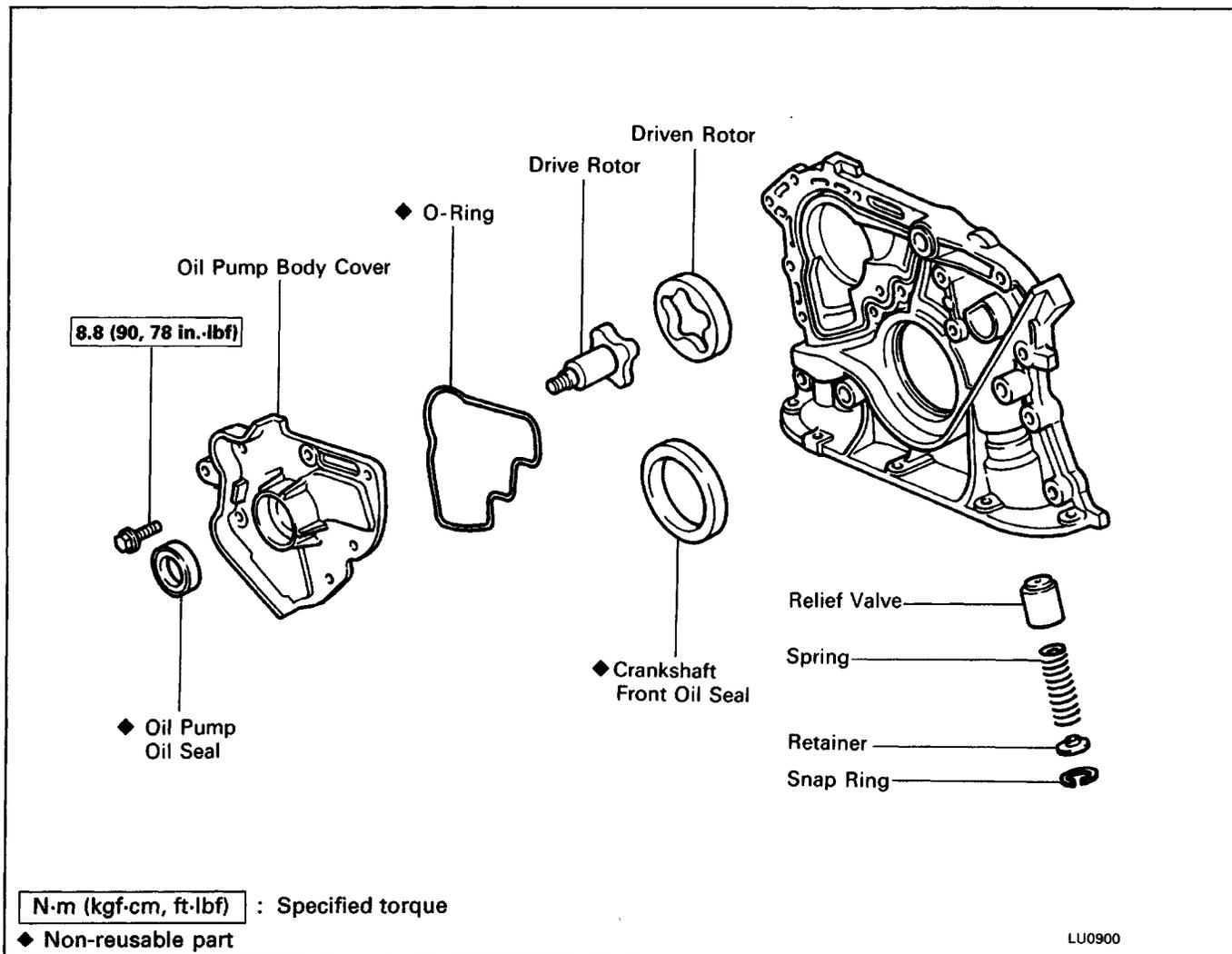
- (a) Remove the twelve bolts.



- (b) Using a plastic-faced hammer, remove the oil pump by carefully tapping the oil pump body.

- (c) Remove the gasket.

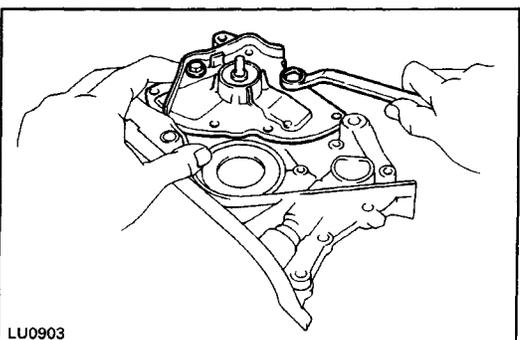
# COMPONENTS



## DISASSEMBLY OF OIL PUMP

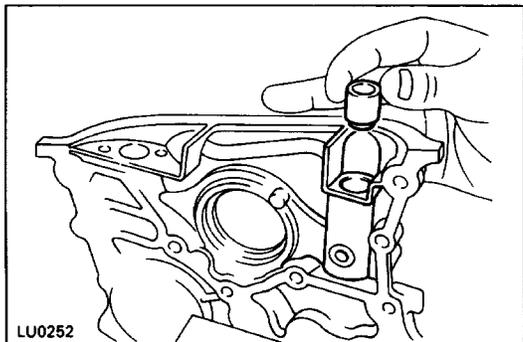
### 1. REMOVE RELIEF VALVE

- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove the retainer, spring and relief valve.



### 2. REMOVE DRIVE AND DRIVEN ROTORS

Remove the two bolts, pump body cover, O-ring, the drive and driven rotors.

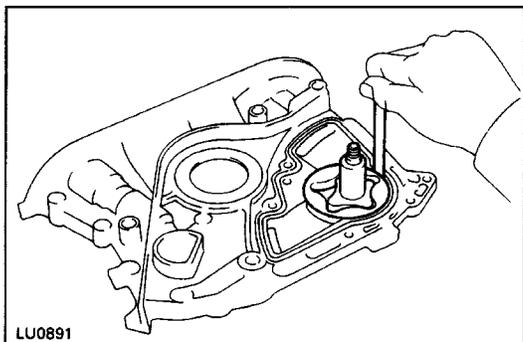


## INSPECTION OF OIL PUMP

### 1. INSPECT RELIEF VALVE

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

If it doesn't, replace the relief valve. If necessary, replace the oil pump assembly.



### 2. INSPECT DRIVE AND DRIVEN ROTORS

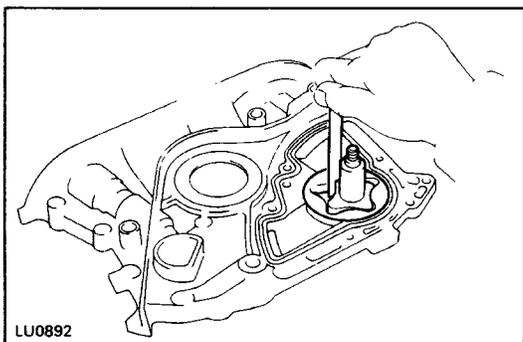
#### A. Inspect rotor body clearance

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

**Standard body clearance: 0.100 – 0.160 mm  
(0.0039 – 0.0063 in.)**

**Maximum body clearance: 0.20 mm (0.0079 in.)**

If the body clearance is greater than maximum, replace the rotors as a set. If necessary, replace the oil pump assembly.



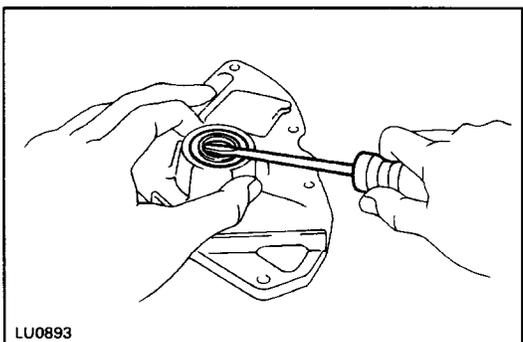
#### B. Inspect rotor tip clearance

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

**Standard tip clearance: 0.040 – 0.160 mm  
(0.0016 – 0.0063 in.)**

**Maximum tip clearance: 0.20 mm (0.0079 in.)**

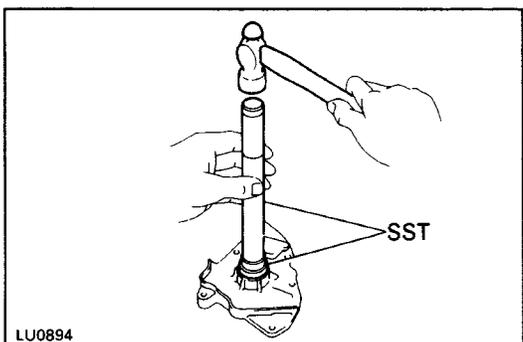
If the tip clearance is greater than maximum, replace the rotors as a set.



## REPLACEMENT OF OIL PUMP OIL SEAL

### 1. REMOVE OIL SEAL

Using a screwdriver, pry out the oil seal.



### 2. INSTALL OIL SEAL

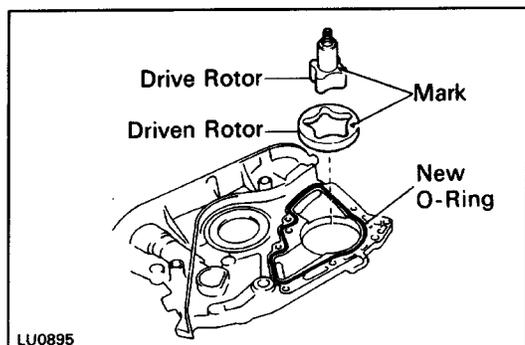
(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump cover edge.

SST 09620-30010 (09627-30010, 09631-00020)

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

## REPLACEMENT OF CRANKSHAFT FRONT OIL SEAL

(See page [EM-249](#))

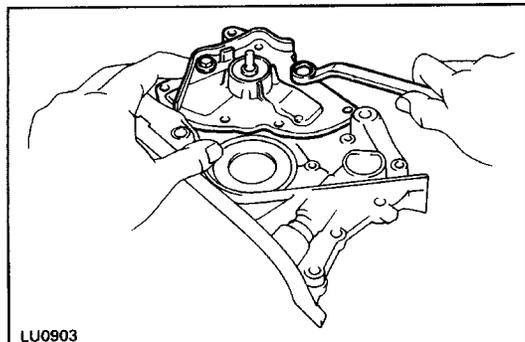


## ASSEMBLY OF OIL PUMP

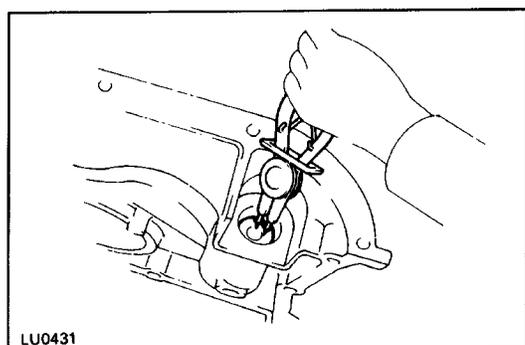
(See page [LU-19](#))

### 1. INSTALL DRIVE AND DRIVEN ROTORS

- (a) Place the drive and driven rotors into pump body with the marks facing the pump body cover side.

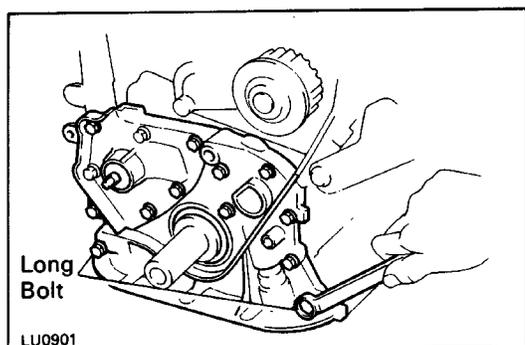


- (b) Install the pump body cover with the two bolts.  
Torque: 8.8 N-m (90 kgf-cm, 78 in-lbf)



### 2. INSTALL RELIEF VALVE

- (a) Insert the relief valve, spring and retainer into the pump body hole.  
(b) Using snap ring pliers, install the snap ring.



## INSTALLATION OF OIL PUMP

(See page [LU-16](#))

### 1. INSTALL OIL PUMP

Install a new gasket and the oil pump with the twelve bolts.

Torque: 3S-GTE 7.8 N-m (80 kgf-cm, 69in-lbf)

5S-FE 8.8 N-m (90 kgf-cm, 78in.-lbf)

HINT: Each bolt length is indicated in the illustration.

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

Others 25 mm (0.98 in.)

### 2. INSTALL OIL PUMP PULLEY, CRANKSHAFT TIMING PULLEY AND NO.2 IDLER PULLEY

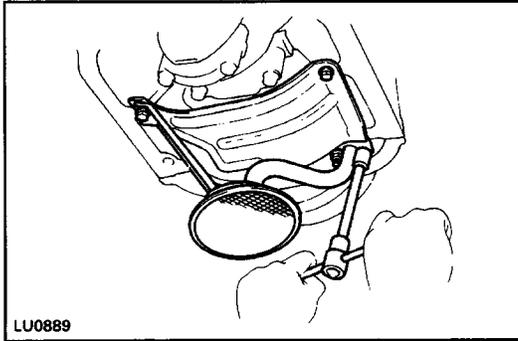
3S-GTE (See steps 1 to 3 on page [EM-55](#))

5S-FE (See steps 1 to 3 on page [EM-75](#))

### 3. INSTALL TIMING BELT

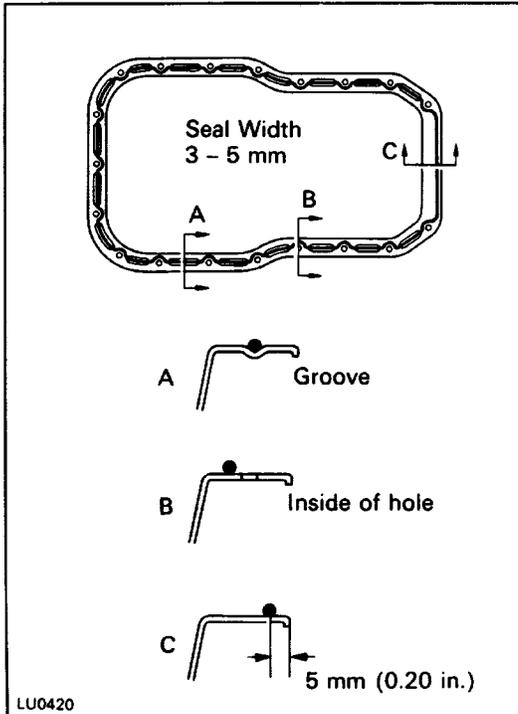
3S-GTE (See steps 5 to 8, 10 to 26 and 30 on pages [EM-55](#) to 61)

5S-FE (See steps 5 to 8 and 10 to 24 on pages [EM-75](#) to 80)

**4. REMOVE ENGINE CHAIN HOIST FROM ENGINE****5. INSTALL Baffle Plate and Oil Strainer**

Install a new gasket, the baffle plate and the oil strainer with the two bolts and two nuts.

**Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)**

**6. INSTALL OIL PAN**

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

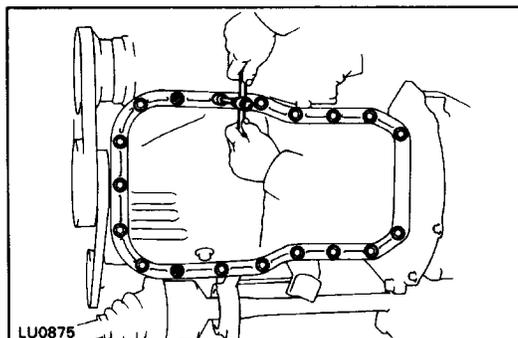
- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
- Thoroughly clean all components to remove all the loose material.
- Using a non-residue solvent, clean both sealing surfaces.

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

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

Seal packing: Part No.08826-00080 or equivalent

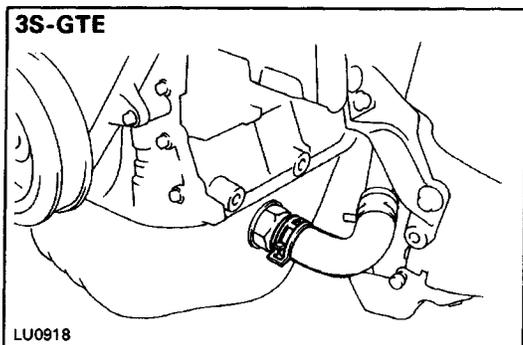
- Install a nozzle that has been cut to a 3 – 5 mm (0.12 – 0.20 in.) opening.
- HINT: Avoid applying an excessive amount to the surface. Be particularly careful near oil passages.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and re-install cap.



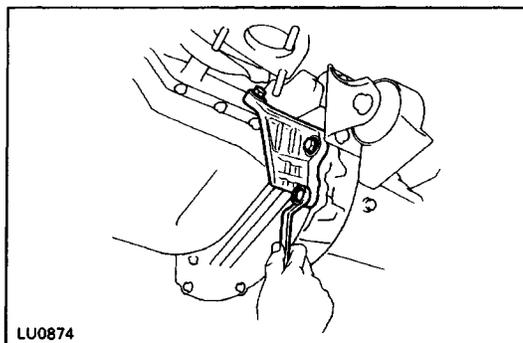
(c) Install the oil pan with the seventeen bolts and four nuts.

**Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)**

(d) Install the dipstick.



- 7. (3S-GTE)**  
**CONNECT TURBO OIL PIPE HOSE TO OIL PAN**



- 8. INSTALL STIFFENER PLATE**  
Install the stiffener plate with the three bolts.  
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)

- 9. INSTALL ENGINE MOUNTING CENTER MEMBER**  
3S-GTE (See step 9 on page [EM-260](#))  
5S-FE (See step 9 on page [EM-304](#))
- 10. INSTALL FRONT EXHAUST PIPE**  
3S-GTE (See step 18 on page [EM-261](#))  
5S-FE (See step 15 on page [EM-305](#))
- 11. INSTALL SUSPENSION LOWER CROSSMEMBER**  
3S-GTE (See step 19 on page [EM-262](#))  
5S-FE (See step 16 on page [EM-306](#))
- 12. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY**
- 13. FILL WITH ENGINE OIL** (See page [LU-8](#))
- 14. START ENGINE AND CHECK FOR LEAKS**
- 15. RECHECK ENGINE OIL LEVEL** (See page [LU-5](#))
- 16. INSTALL HOOD**
- 17. INSTALL ENGINE UNDER COVERS**