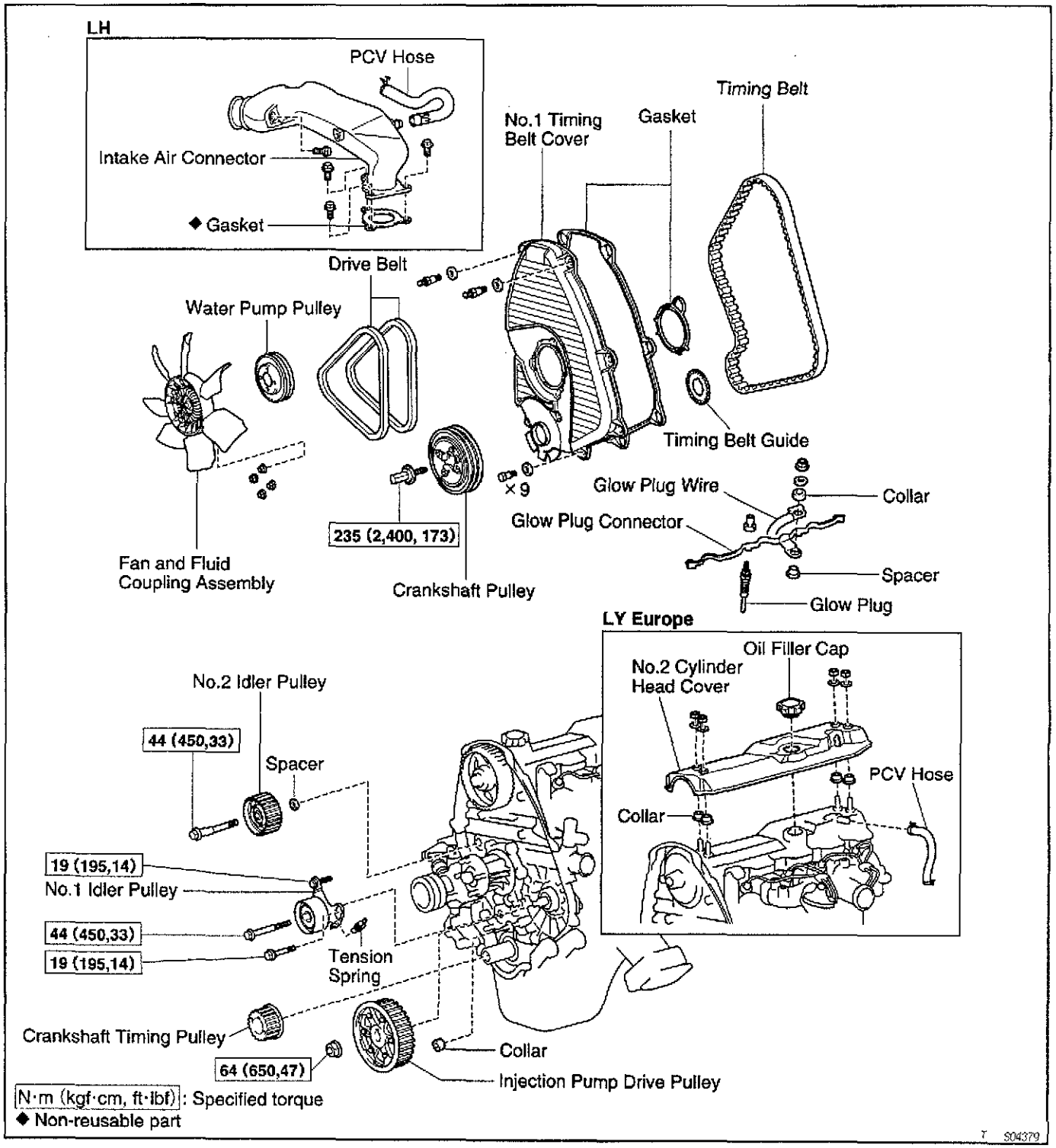
OIL PUMP

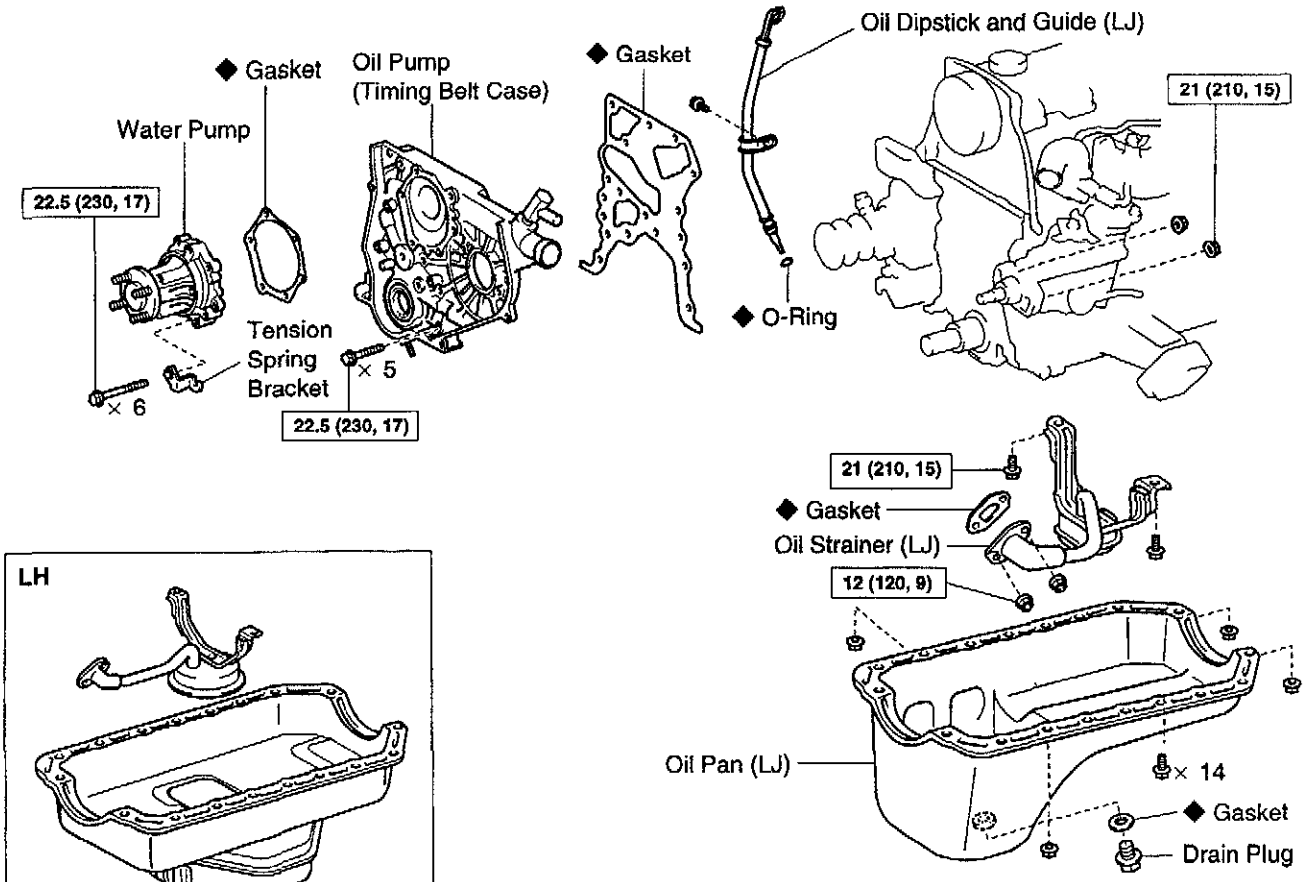
HINT: If replacing the timing belt before the timing belt warning light comes on, (light comes on after 100,000 km of driving), be sure to reset the timing belt counter of the speedometer to zero. E07AT-01

COMPONENTS FOR REMOVAL AND INSTALLATION

EG



EG



N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

Y

304377

EG7AU-01

OIL PUMP REMOVAL

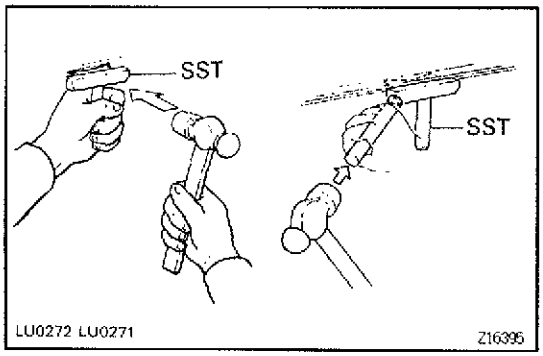
HINT: When repairing the oil pump, the oil pan and strainer should be removed and cleaned.

1. **DRAIN ENGINE COOLANT**
2. **DRAIN ENGINE OIL**
3. **REMOVE GLOW PLUGS**
   (See steps 2 to 5 in cylinder head removal)
4. **REMOVE DRIVE BELTS, FAN, FLUID COUPLING ASSEMBLY AND WATER PUMP PULLEY**
   (See step 2 in water pump removal in Cooling System)
5. **REMOVE TIMING BELT AND PULLEYS WITHOUT CAMSHAFT TIMING PULLEY**
   (See steps 3 to 8 and 10 to 12 in timing belt removal in Engine Mechanical)
6. **REMOVE WATER PUMP**
   (See step 5 in water pump removal in Cooling System)
7. **LJ:**
   REMOVE OIL DIPSTICK AND GUIDE

(a) Remove the bolt.
(b) Pull out the dipstick guide together with the dipstick.
(c) Remove the O—ring from the dipstick guide.

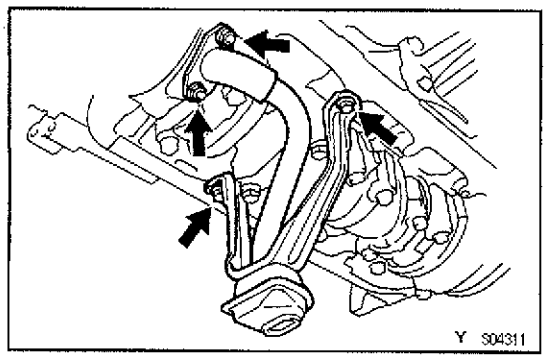
8. **REMOVE OIL PAN**

(a) Remove the 14 bolts and 4 nuts.

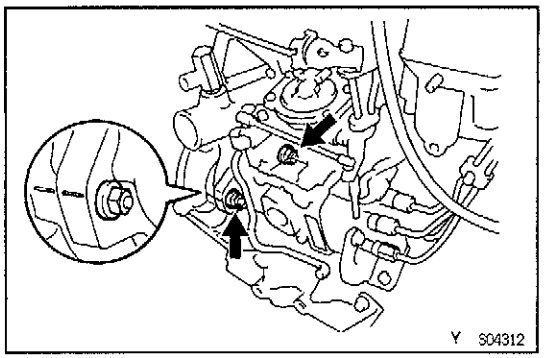


(b) Insert the blade of SST between the oil pan and cylinder block, and cut off applied sealer and remove the oil pan.
SST 09032—00100
NOTICE:

- **Do not use SST for the timing belt case side and rear oil seal retainer.**
- **Be careful not to damage the oil pan flange.**



9. **REMOVE OIL STRAINER**
   Remove the 2 bolts, 2 nuts, oil strainer and gasket.

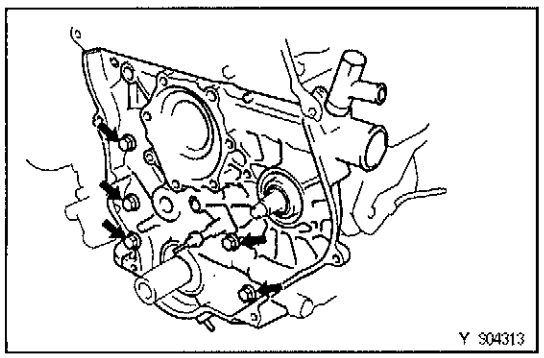


10. REMOVE OIL PUMP (TIMING BELT CASE)

(a) w/ ACSD:
Disconnect the thermo wax water bypass hose from the timing belt case.

(b) Before removing the 2 nuts holding the timing belt case to the injection pump, check if the injection pump period lines are aligned.
If not, place new matchmarks for reinstallation.

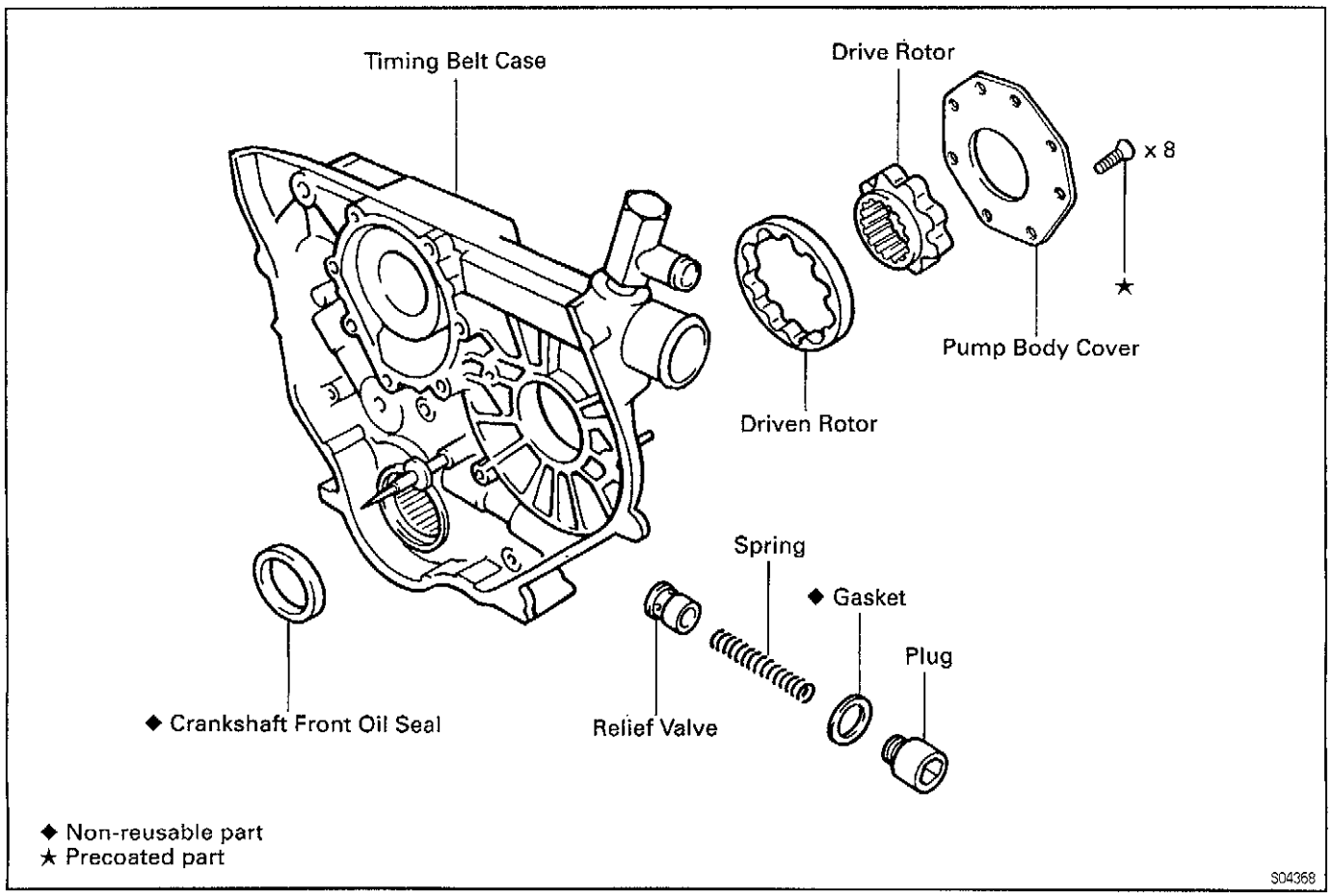
(c) Remove the 2 nuts.

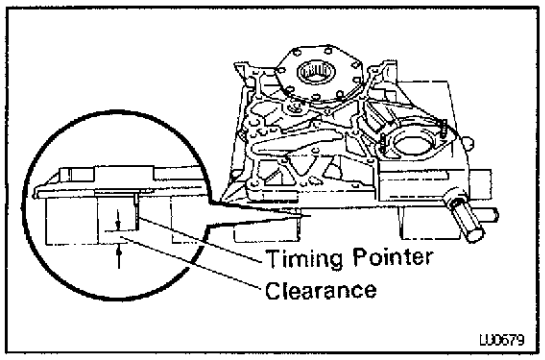


(d) Remove the 5 bolts, timing belt case and gasket.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

EG1B5-0Z



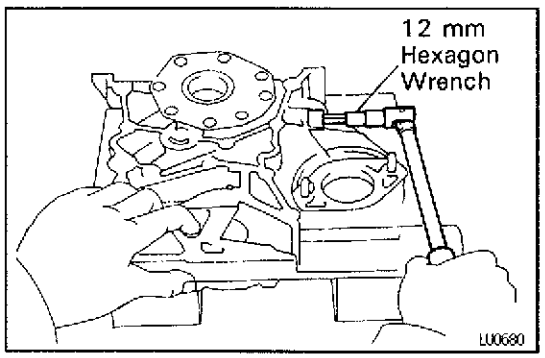


EG7AV-01

OIL PUMP DISASSEMBLY

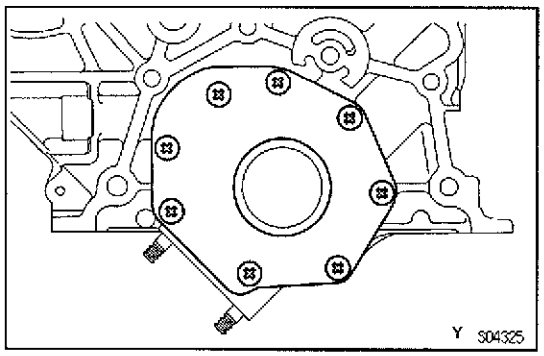
1. PLACE TIMING BELT CASE ON WOODEN BLOCKS

NOTICE: Be careful not to damage the timing pointer.



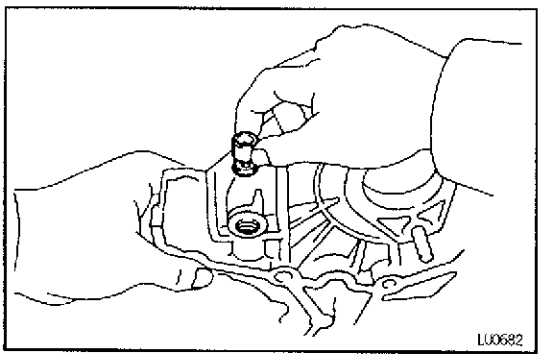
2. REMOVE RELIEF VALVE

Using a 12 mm hexagon wrench, remove the plug, gasket, spring and relief valve.



3. REMOVE DRIVE AND DRIVEN ROTORS

Remove the 8 screws, pump body cover, the drive and driven rotors.



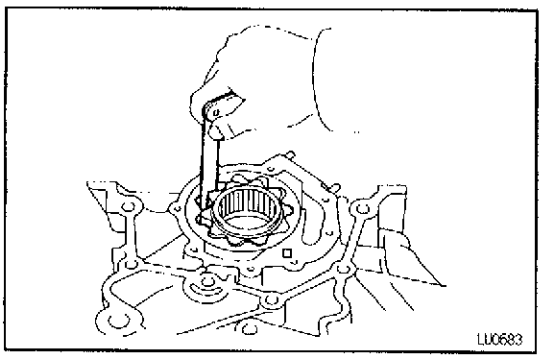
EG7AW-01

OIL PUMP INSPECTION

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 tip clearance

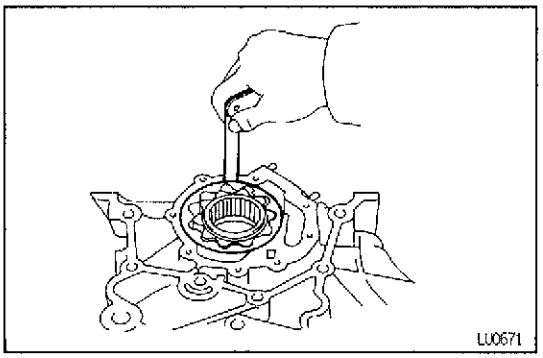
Using a feeler gauge, measure the clearance between the drive and driven rotor tips.

Standard tip clearance:

0.110 — 0.240 mm (0.0043 — 0.0094 in.)

Maximum tip clearance:

0.30 mm (0.0118 in.)



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

B. Inspect rotor body clearance

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

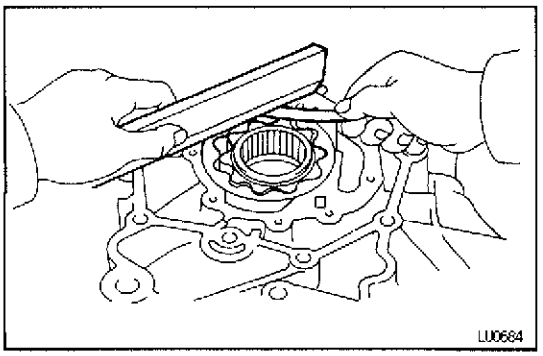
Standard body clearance:

0.144 – 0.219 mm (0.0057 – 0.0086 in.)

Maximum body clearance:

0.40 mm (0.0157 in.)

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



C. Inspect rotor side clearance

Using a feeler gauge and precision straight edge, measure the clearance between the rotors and precision straight edge.

Standard side clearance:

0.035 – 0.085 mm (0.0014 – 0.0033 in.)

Maximum side clearance:

0.15 mm (0.0059 in.)

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

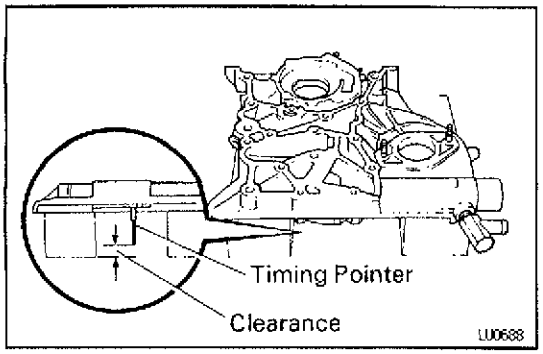
EG7AX-01

CRANKSHAFT FRONT OIL SEAL REPLACEMENT

(See crankshaft oil seals replacement in cylinder block in Engine Mechanical)

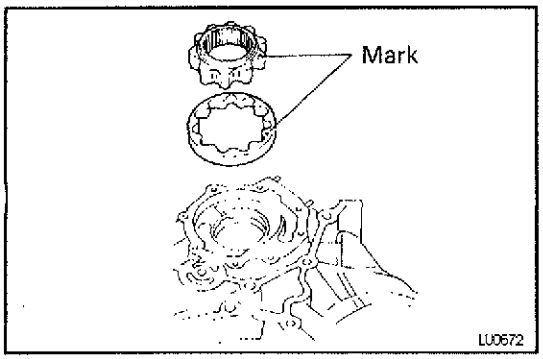
EG7AY-01

OIL PUMP ASSEMBLY



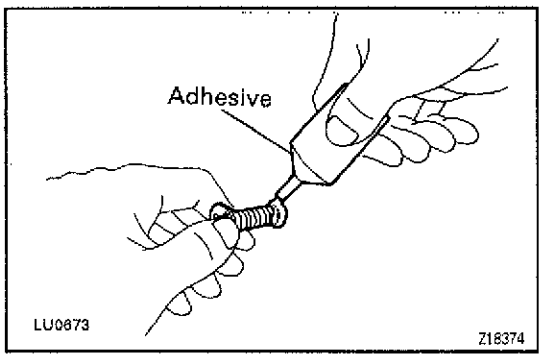
1. PLACE TIMING BELT CASE ON WOODEN BLOCKS

NOTICE: Be careful not to damage the timing pointer.



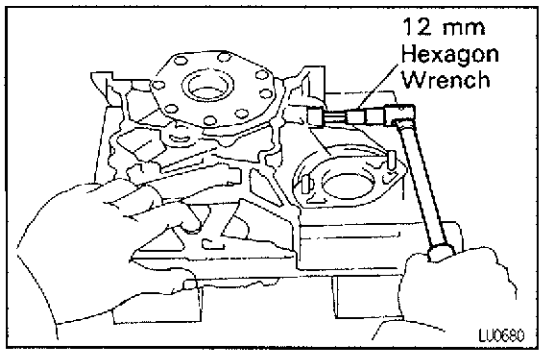
2. INSTALL DRIVE AND DRIVEN ROTORS

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



(b) Apply adhesive to 2 or 3 threads of the screws.
Adhesive:
Part No. 08833—00080, THREE BOND 1344
LOCTITE 242 or equivalent

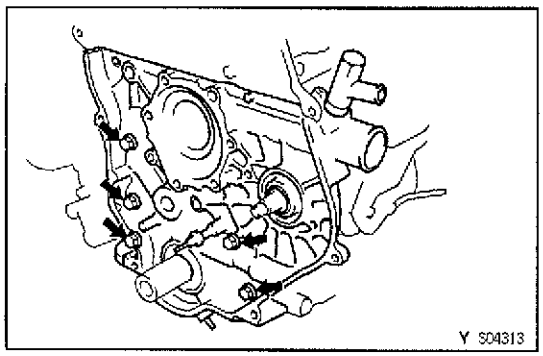
(c) Install the pump body cover with the 8 screws.
Torque: 10 N·m (105 kgf·cm, 8 ft·lbf)



3. INSTALL RELIEF VALVE

(a) Insert the relief valve and spring into the installation hole of the timing belt case.

(b) Using a 12 mm hexagon wrench, install a new gasket and the plug.
Torque: 37 N·m (375 kgf·cm, 27 ft·lbf)



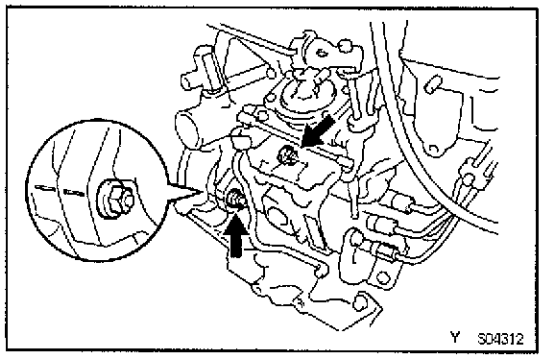
OIL PUMP INSTALLATION

EG7DP-01

1. INSTALL OIL PUMP (TIMING BELT CASE)

(a) Place a new gasket on the cylinder block.

(b) Install the timing belt case with the 5 bolts.
Torque: 22.5 N·m (230 kgf·cm, 17 ft·lbf)



(c) Install the 2 nuts holding the injection pump to the timing belt case.
Torque: 20.5 N·m (210 kgf·cm, 15 ft·lbf)

(d) Check that the injection pump period lines (or matchmarks) are aligned.
If not correct, align the period lines (or matchmarks) by tilting the injection pump.

(e) w/ ACSD:
Connect the thermo wax water bypass hose to the timing belt case.

2. INSTALL OIL STRAINER

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

Torque:

Nut

21 N·m (210 kgf·cm, 15 ft·lbf)

Bolt

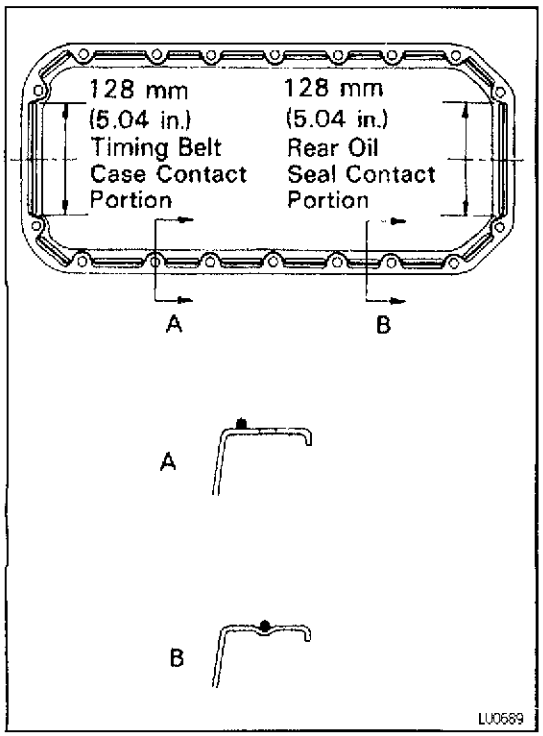
18 N·m (180 kgf·cm, 13 ft·lbf)

3. 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.

HINT: Apply at least 5 mm (0.20 in.) (preferably slightly more) of seal packing to the portions of the oil pan in contact with the timing belt case and rear oil seal retainer.

Seal packing:

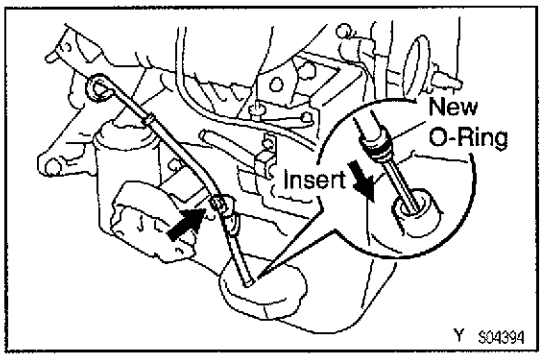
Part No. 08826—00080 or equivalent

- Install a nozzle that has been cut to a 4 — 5 mm (0.16 — 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 reinstall cap.

(c) Install the oil pan with the 14 bolts and 4 nuts. Uniformly tighten the bolts and nuts in several passes.
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)



4. **LJ:**
INSTALL OIL DIPSTICK GUIDE AND OIL DIPSTICK
(a) Install a new O—ring on the dipstick guide.
(b) Apply soapy water on the O—ring.
(c) Connect the dipstick guide end to the oil pan.
(d) Install the dipstick guide with the bolt.
(e) Install the dipstick.
5. **INSTALL WATER PUMP**
(See step 1 in water pump installation in Cooling System)
6. **INSTALL PULLEYS AND TIMING BELT**
(See steps 1 to 3 and 5 to 11 in timing belt installation in Engine Mechanical)
7. **INSTALL WATER PUMP PULLEY, FAN, FLUID COUPLING ASSEMBLY AND DRIVE BELTS**
(See step 4 in water pump installation in Cooling System)
8. **INSTALL GLOW PLUGS**
(See steps 13 to 16 in cylinder head installation in Engine Mechanical)
9. **FILL WITH ENGINE OIL**
10. **FILL WITH ENGINE COOLANT**
11. **START ENGINE AND CHECK FOR OIL LEAKS**
12. **RECHECK ENGINE OIL LEVEL**