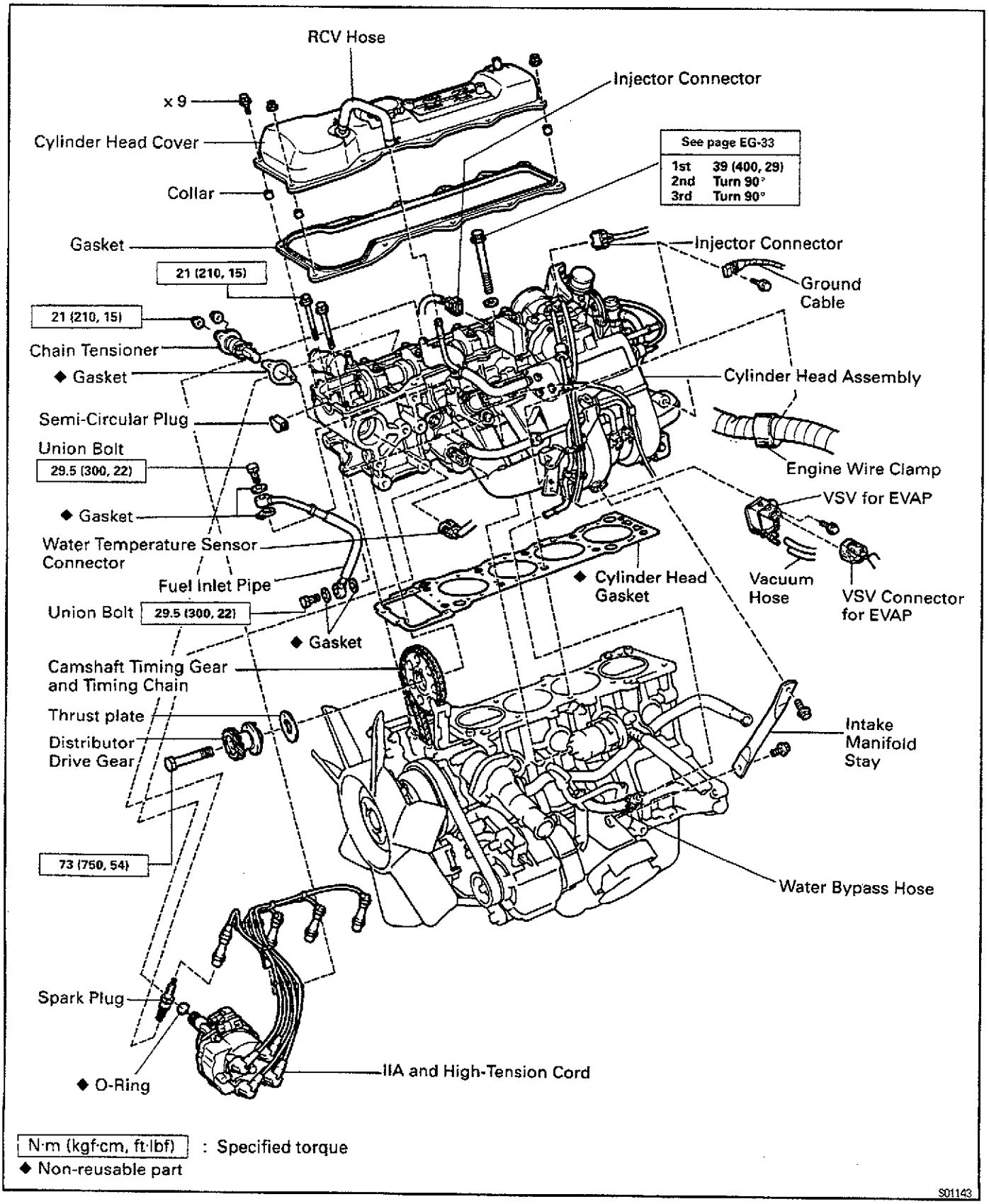
OIL PUMP

COMPONENTS FOR REMOVAL AND INSTALLATION

EG1570-03

EG

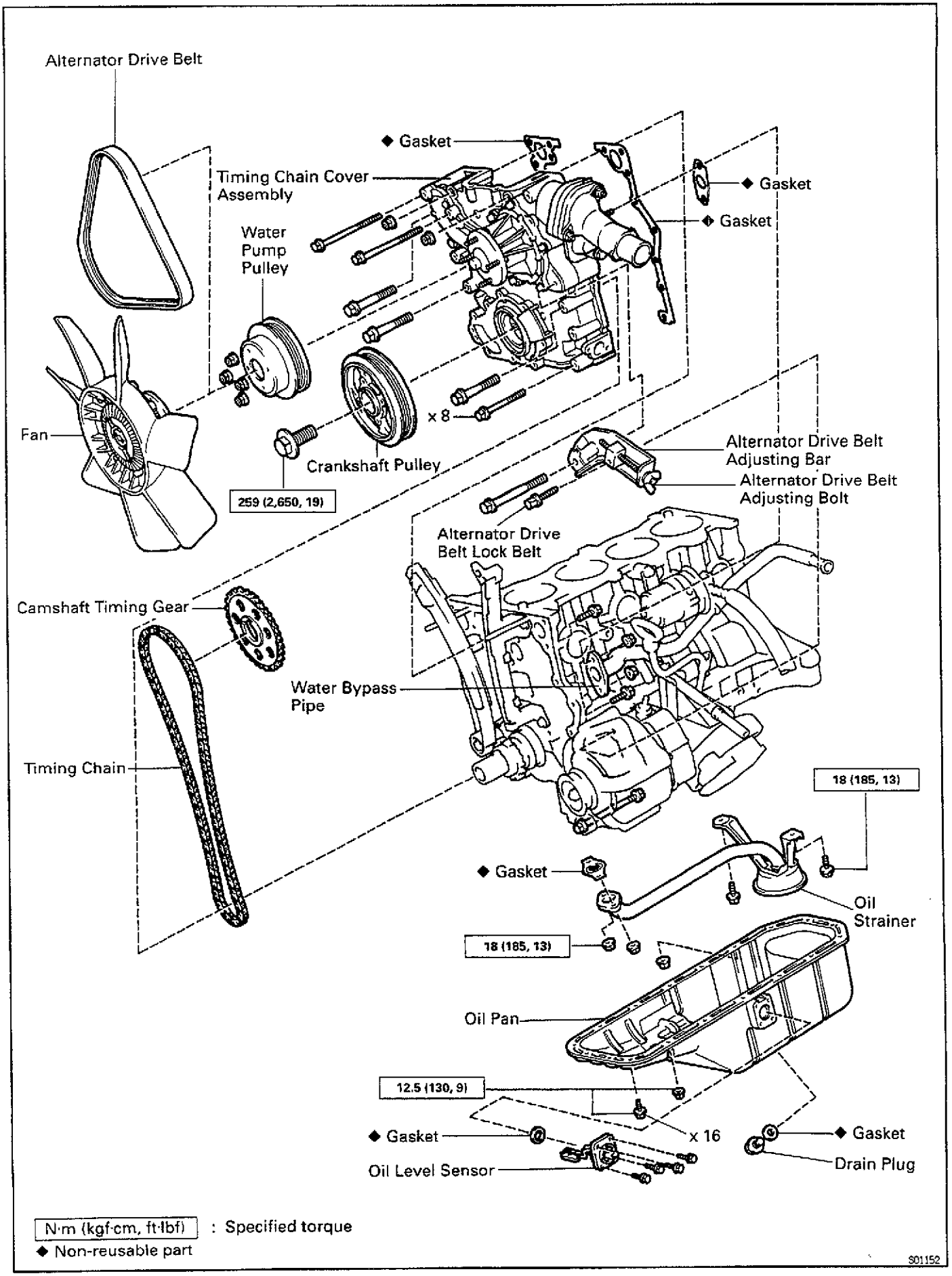


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

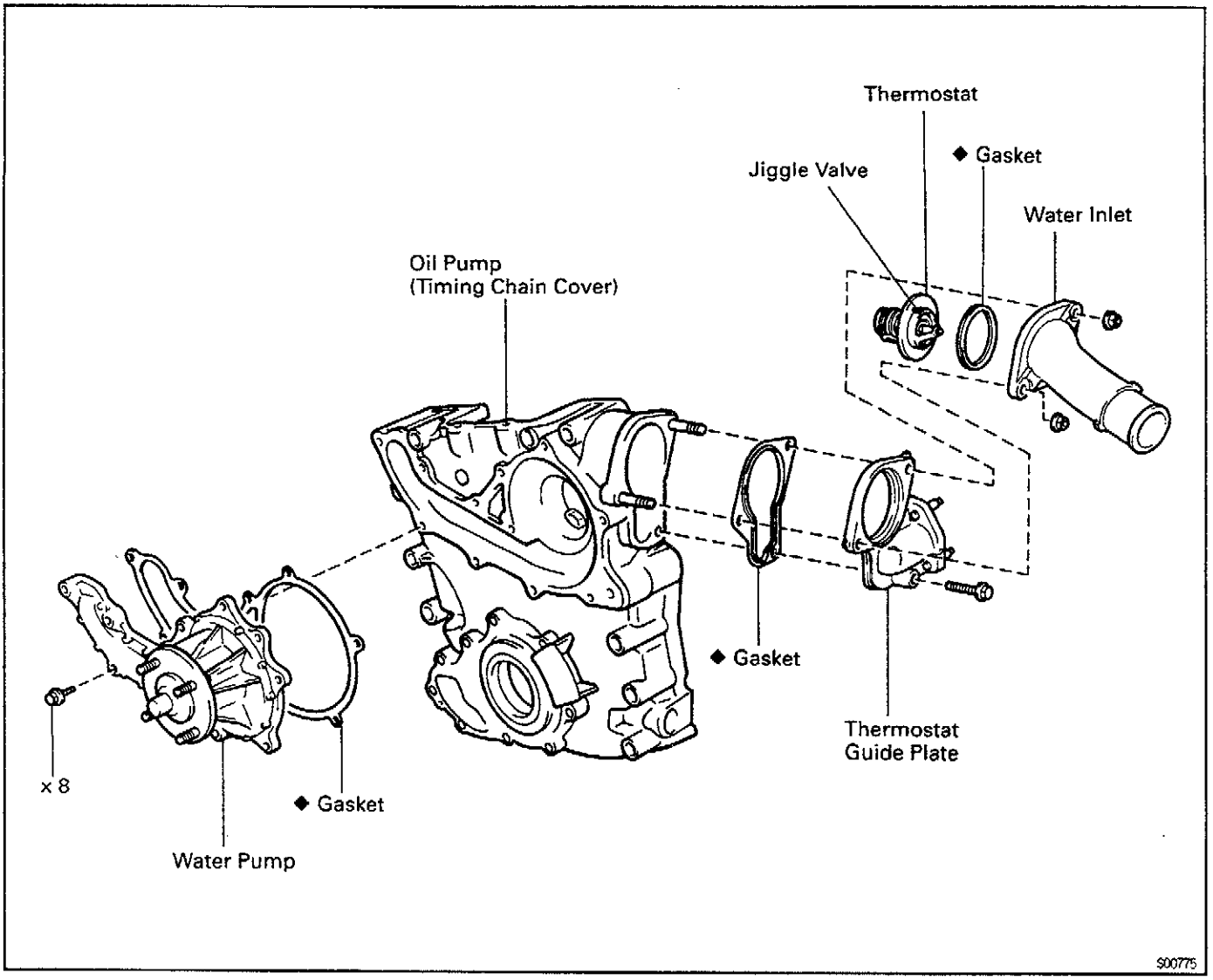
S01143

EG



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

S01152



EG

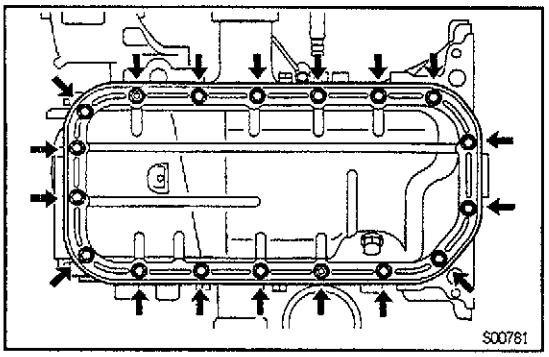
OIL PUMP REMOVAL

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 CYLINDER HEAD ASSEMBLY**
   (See cylinder head assembly removal in Engine Mechanical)
4. **REMOVE OIL LEVEL SENSOR**

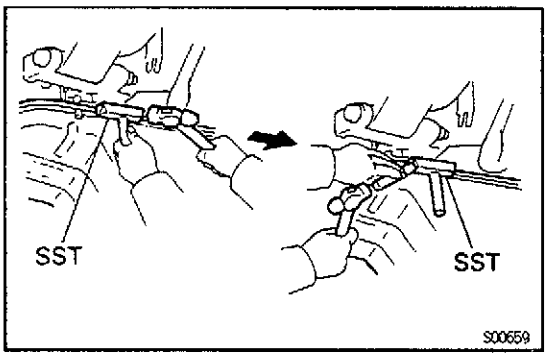
(a) Remove the 4 bolts, and disconnect the engine wire bracket.
(b) Remove the level sensor.
(c) Remove the gasket from the level sensor.

EG



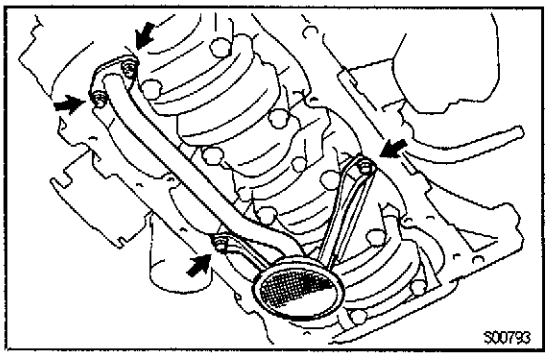
5. REMOVE OIL PAN

(a) Remove the 16 bolts and 2 nuts.



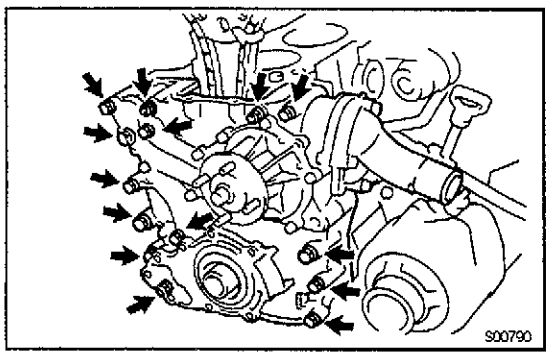
(b) Insert the blade of SST between the cylinder block and oil pan, and cut off applied sealer and remove the oil pan.
SST 09032–00100
NOTICE:

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



6. REMOVE OIL STRAINER

Remove the 2 bolts, 2 nuts, oil strainer and gasket. (See step 6 in cylinder head removal in Engine Mechanical)



7. REMOVE OIL PUMP ASSEMBLY (TIMING CHAIN COVER ASSEMBLY) AND TIMING CHAIN
(See steps 6 to 10 in timing chain removal in Engine Mechanical)

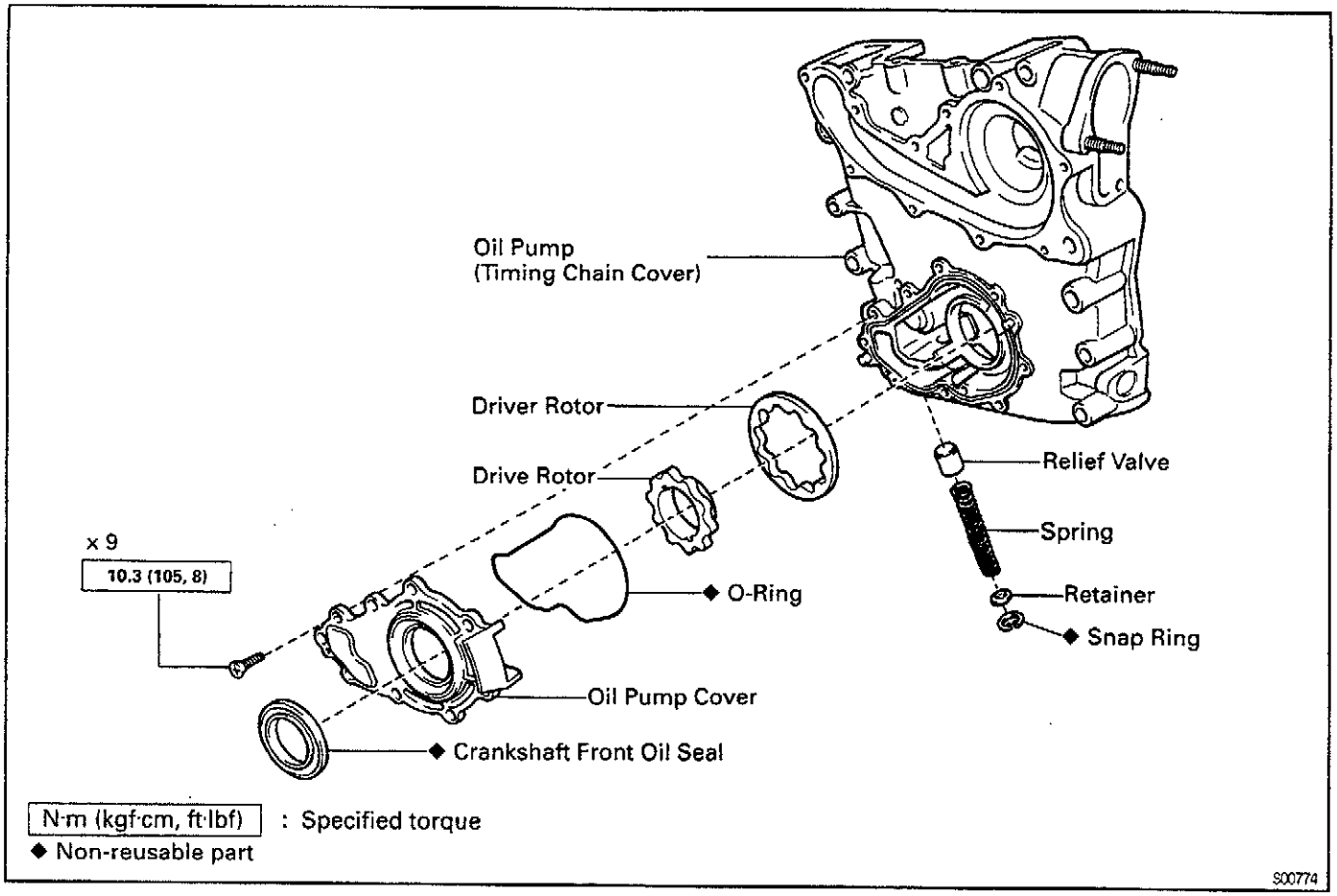
8. REMOVE WATER PUMP FROM OIL PUMP (TIMING CHAIN COVER)

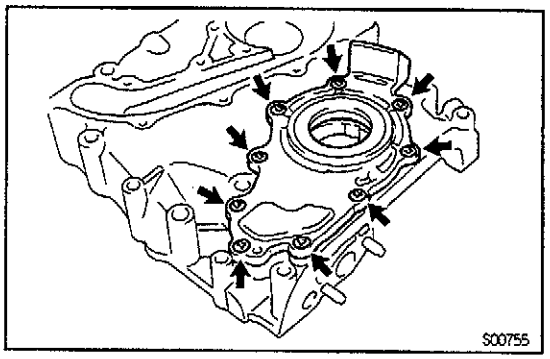
Remove the 8 bolts, water pump and gasket.

9. REMOVE WATER INLET, THERMOSTAT AND GUIDE PLATE FROM OIL PUMP (TIMING CHAIN COVER)

(a) Remove the 2 nuts, water inlet and thermostat.
(b) Remove the bolt, thermostat guide plate and gasket.
(c) Remove the gasket from the thermostat.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

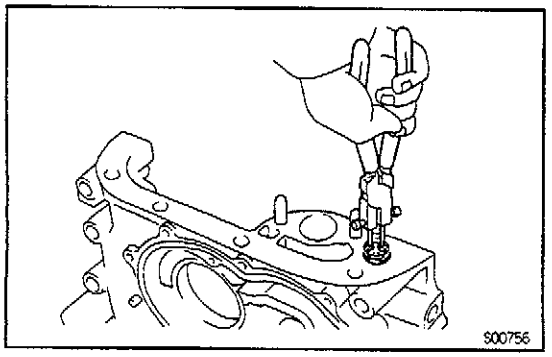




OIL PUMP DISASSEMBLY

1. REMOVE DRIVE AND DRIVEN ROTORS

Remove the 9 screws, pump body cover, the drive and driven rotors.



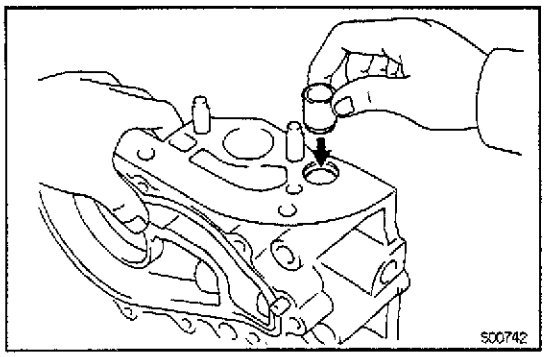
2. REMOVE RELIEF VALVE

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

(b) Remove these parts:

- Retainer
- Compression spring
- Relief valve

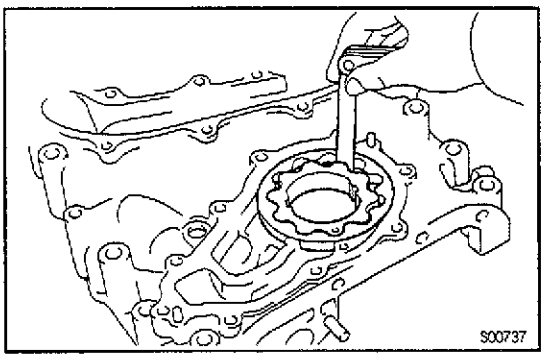
EG



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.

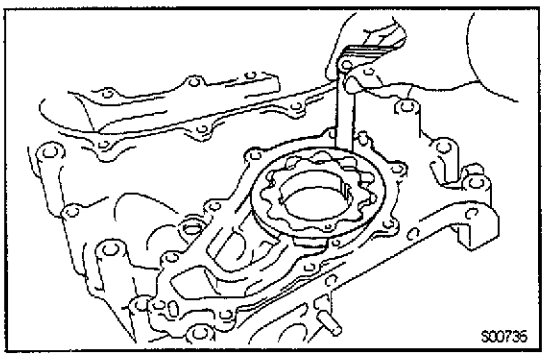
Standard tip clearance:

0.110 – 0.240 mm (0.0043 – 0.0094 in.)

Maximum tip clearance:

0.25 mm (0.0098 in.)

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



B. **Inspect rotor body clearance**

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

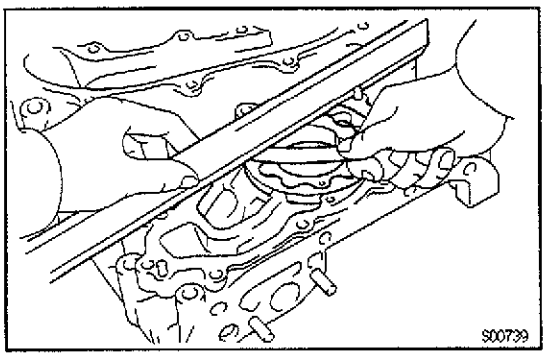
Standard body clearance:

0.100 – 0.175 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 assembly.



C. **Inspect rotor side clearance**

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

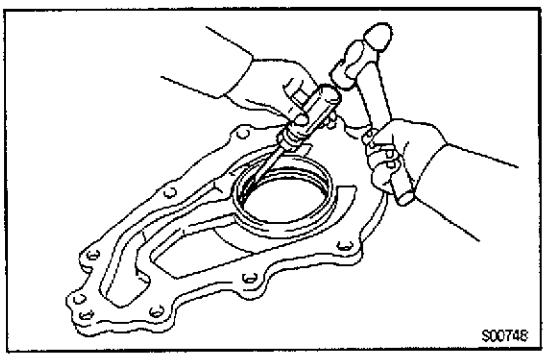
Standard side clearance:

0.030 – 0.090 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 assembly.



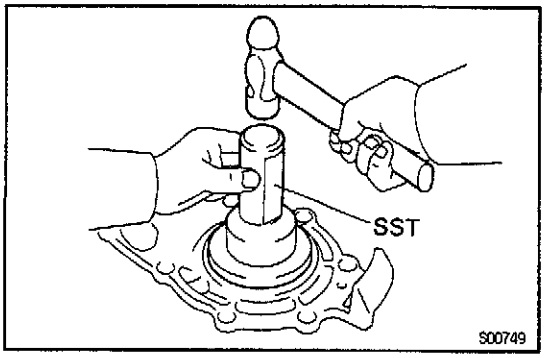
CRANKSHAFT FRONT OIL SEAL REPLACEMENT

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

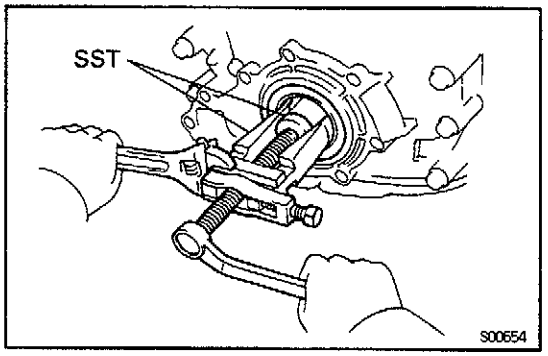
REPLACE CRANKSHAFT FRONT OIL SEAL

A. **If timing gear cover is removed from cylinder block:**

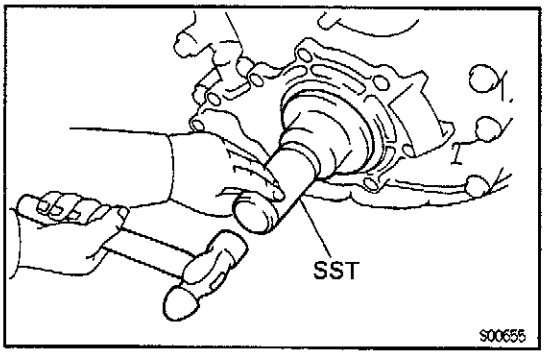
(a) Using a screwdriver and hammer, tap out the oil seal.



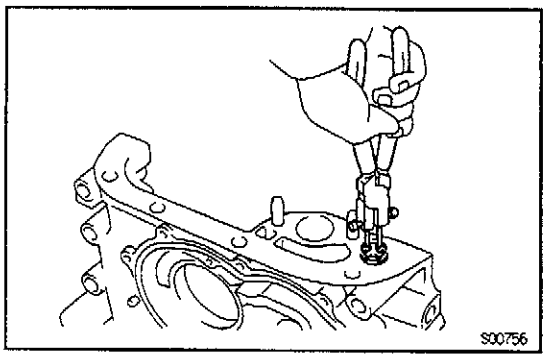
(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing gear cover edge.
SST 09223–50010
(c) Apply MP grease to the oil seal lip.



B. If timing gear cover is installed to the cylinder block:
(a) Using SST, remove the oil seal.
SST 09308–10010, 09950–60010 (09951–00330)



(b) Apply MP grease to a new oil seal lip.
(c) Using SST and a hammer, tap in the oil seal until its surface is flush with the timing gear cover edge.
SST 09223–50010



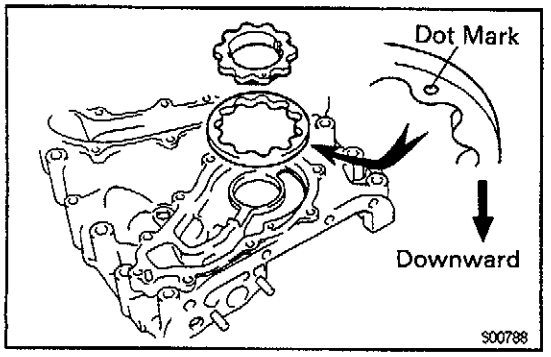
OIL PUMP ASSEMBLY

EG0B5-01

1. INSTALL RELIEF VALVE

(a) Insert these parts into the oil pump body hole:
- Relief valve
- Compression spring
- Retainer

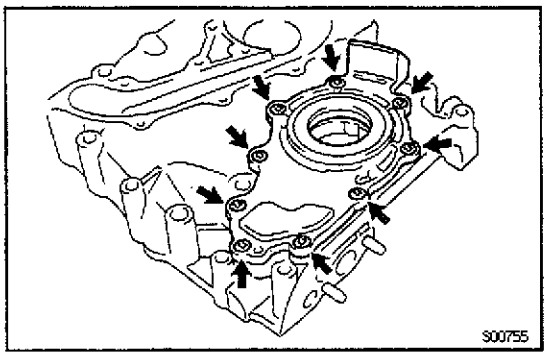
(b) Using snap ring pliers, install a new snap ring.



1. INSTALL DRIVE AND DRIVEN ROTORS

(a) Place the drive and driven rotors into pump body with the mark on the driven rotor facing the pump body side.
(b) Install a new O–ring to the oil pump body.

EG

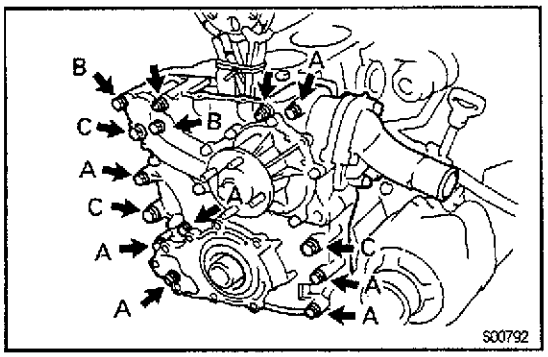


(c) Install the oil pump body cover with the 9 screws.
Torque: 10.3 N·m (105 kgf·cm, 8 ft·lbf)

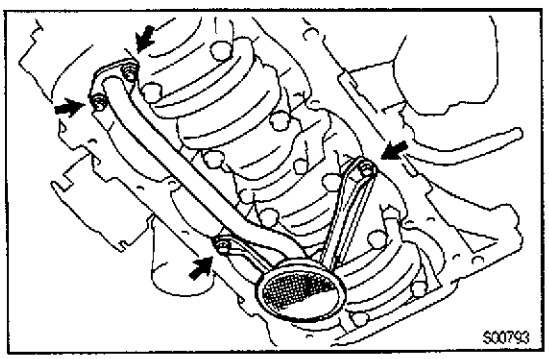
OIL PUMP INSTALLATION

1. **INSTALL WATER PUMP TO OIL PUMP (TIMING CHAIN COVER)**
Install a new gasket and the water pump with the 8 bolts.
Torque: 9 N·m (90 kgf·cm, 80 in.·lbf)
2. **INSTALL THERMOSTAT GUIDE PLATE, THERMOSTAT AND WATER INLET TO OIL PUMP (TIMING CHAIN COVER)**

(a) Temporarily install a new gasket and thermostat guide plate with the bolt.
(b) Install a new gasket to the thermostat.
(c) Install the thermostat with the jiggle valve upward.
(d) Install the water inlet with the 2 nuts.
Torque: 20 N·m (200 kgf·cm, 15 ft·lbf)
(e) Tighten the bolt.
Torque: 13.5 N·m (135 kgf·cm, 10 ft·lbf)



3. **INSTALL TIMING CHAIN AND OIL PUMP ASSEMBLY (TIMING CHAIN COVER ASSEMBLY)**
(See steps 6 to 11 in timing chain installation in Engine Mechanical)

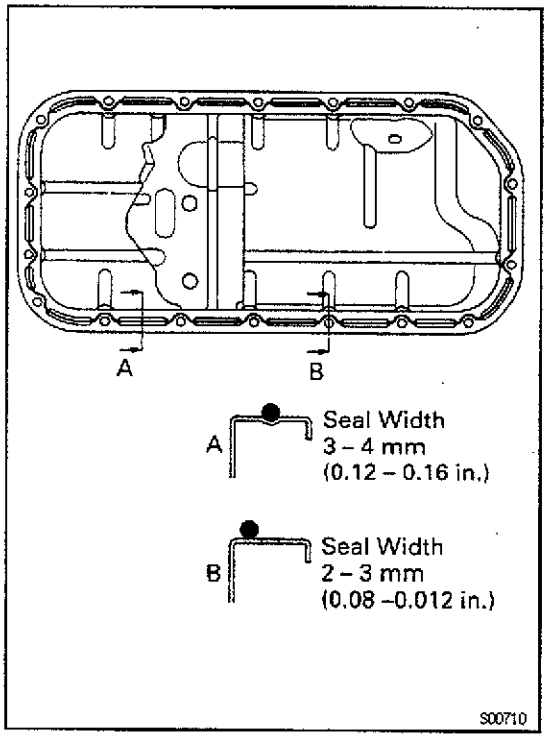


4. **INSTALL OIL STRAINER**
Install a new gasket and the oil strainer with the 2 bolts and 2 nuts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)
5. **INSTALL OIL PAN**

(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.

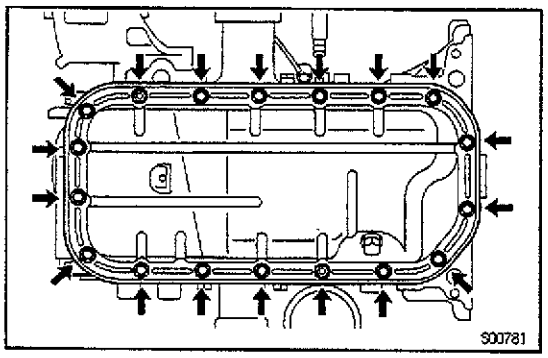


(b) Apply seal packing to the oil pan as shown in the illustration.

Seal packing:

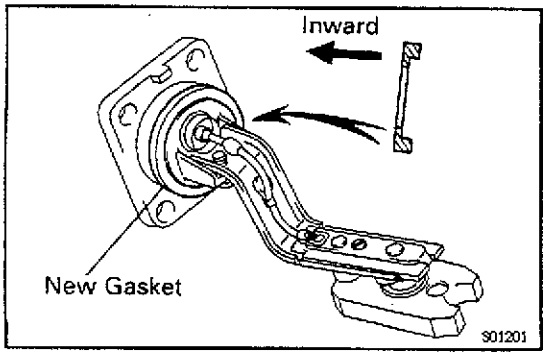
Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 4 – 5 mm (0.16 – 0.20 in.) opening.
- 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 16 bolts and 2 nuts. Uniformly tighten the bolts and nuts in several passes.

Torque: 12.5 N·m (130 kgf·cm, 9 ft·lbf)



6. INSTALL OIL LEVEL SENSOR

(a) Install a new gasket to the level sensor as shown in the illustration.

(b) Install a the level sensor with the 4 bolts.

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

(c) Connect the level sensor connector.