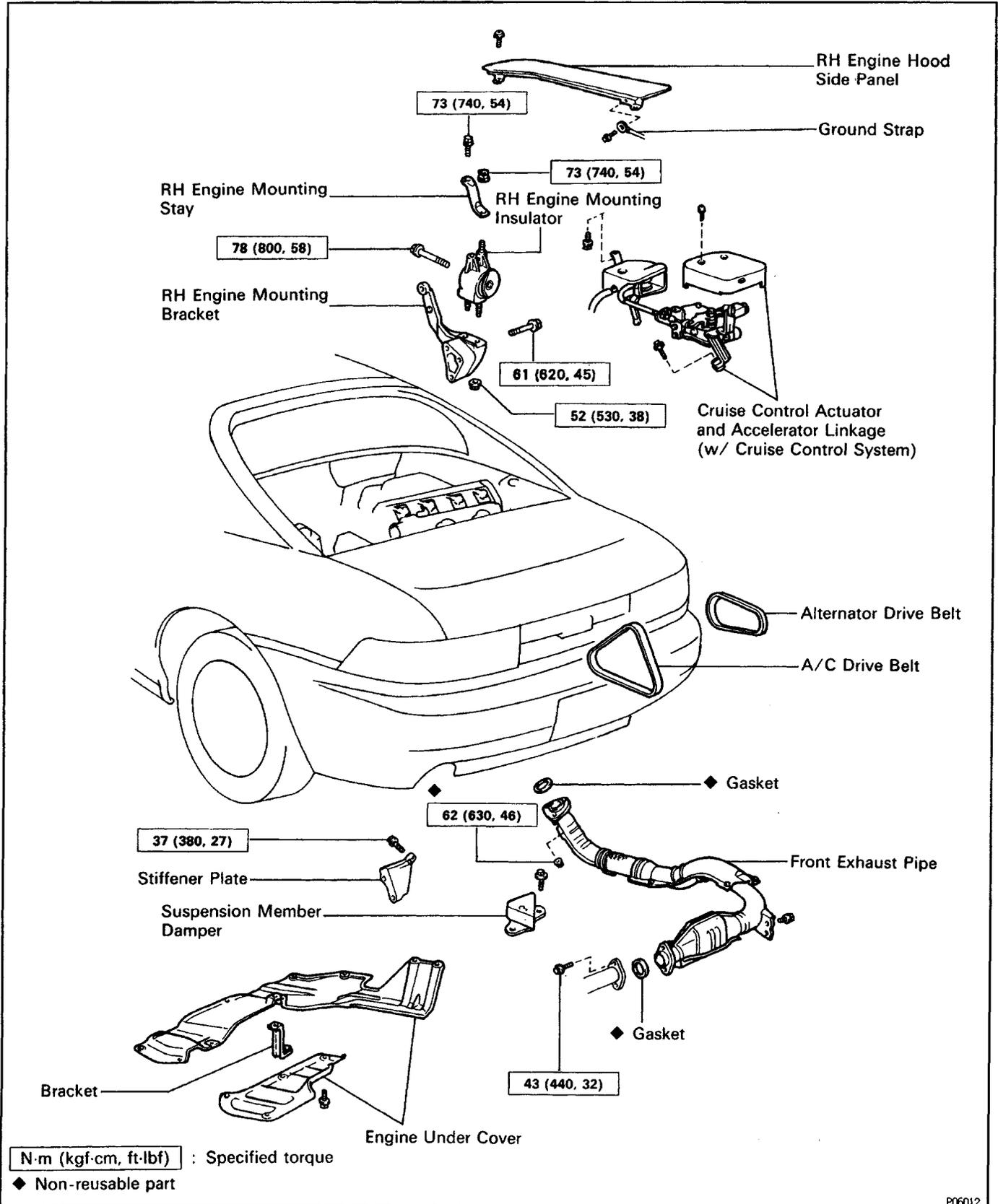
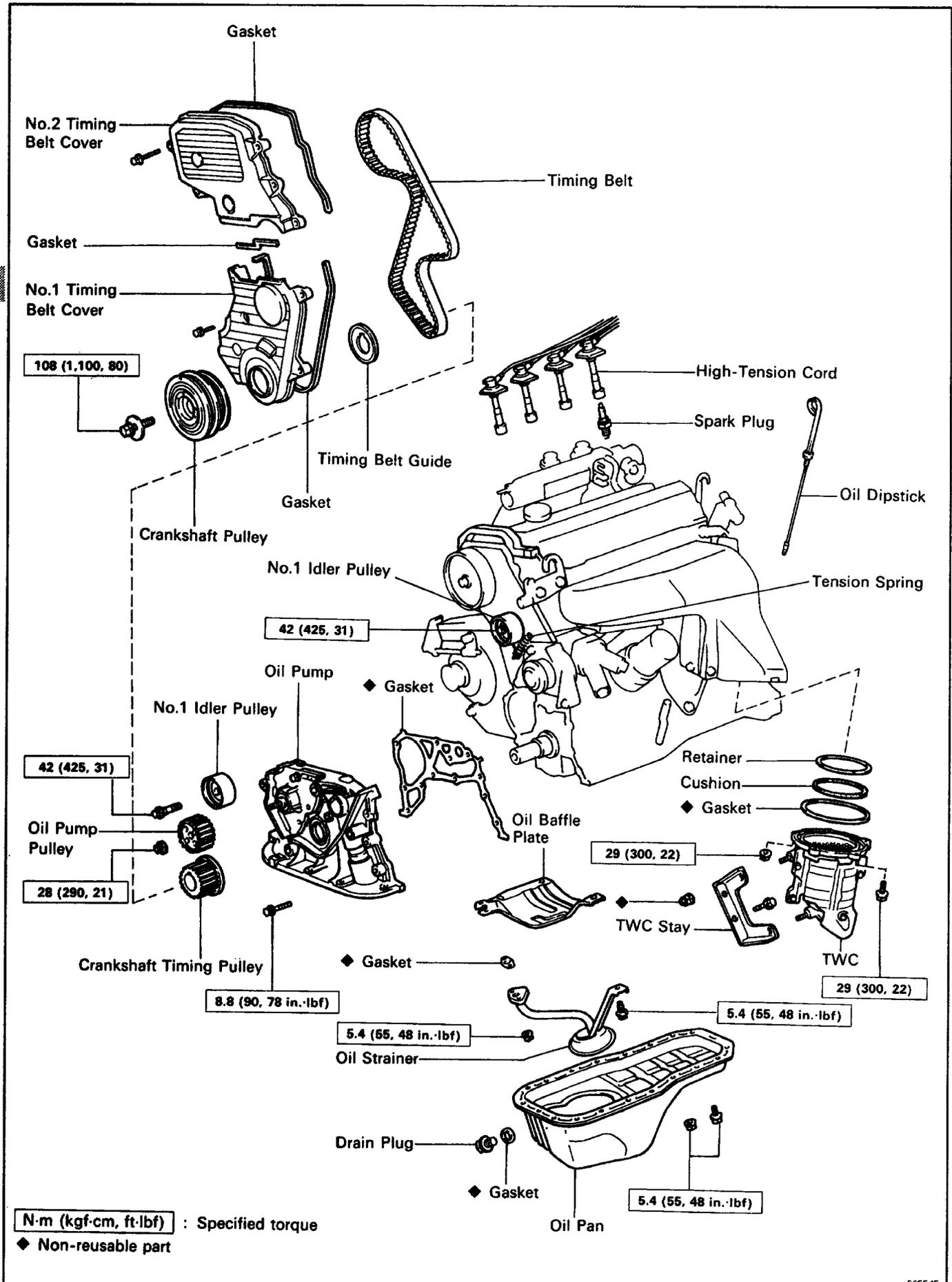


OIL PUMP COMPONENTS FOR REMOVAL AND INSTALLATION

EG182-01

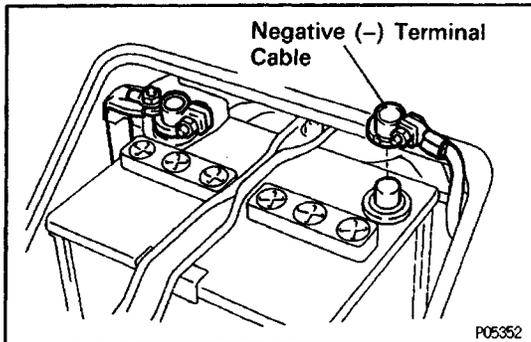




OIL PUMP REMOVAL

(See Components for Removal and Installation)

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



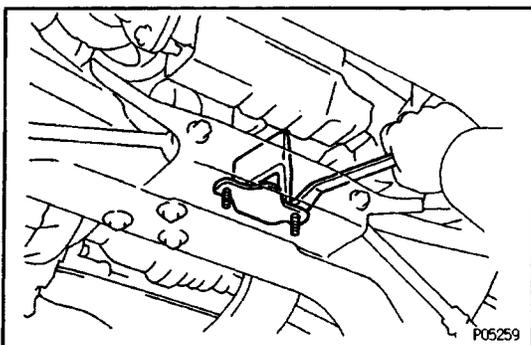
1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Turn the ignition switch to "LOCK". Disconnect the negative terminal from the battery. Wait at least 20 seconds before proceeding with work.

2. DRAIN ENGINE OIL

3. REMOVE ENGINE UNDER COVERS

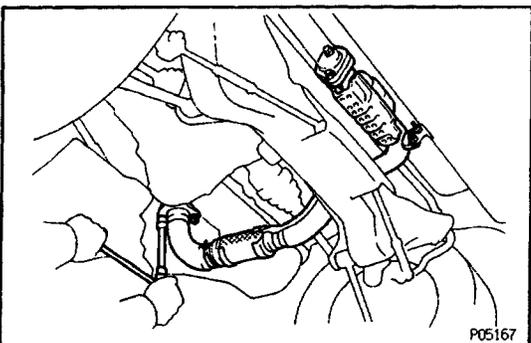
4. REMOVE RH ENGINE HOOD SIDE PANEL



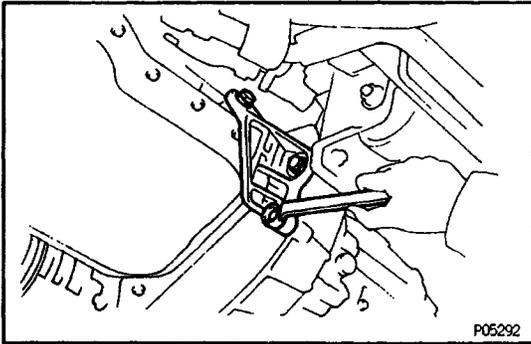
5. REMOVE EXHAUST PIPE

(a) (CALIF. only)

Remove the two bolts and damper.

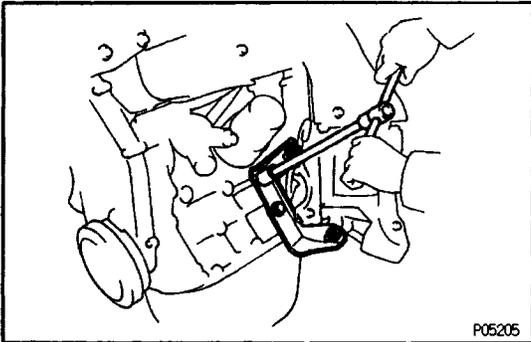


- (b) Remove the two bolts holding the front exhaust pipe bracket to the tailpipe bracket.
- (c) Remove the two bolts holding the front exhaust pipe to the tailpipe.
- (d) Using a 14 mm deep socket wrench, remove the three nuts holding the front exhaust pipe to the TWC.
- (e) Remove the front exhaust pipe.
- (f) Remove the two gaskets.



6. REMOVE STIFFENER PLATE

Remove the three bolts and stiffener plate.

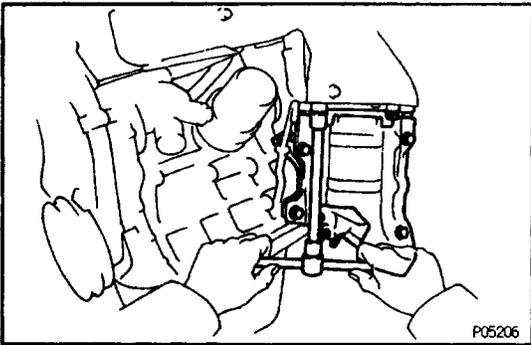


7. REMOVE TWC

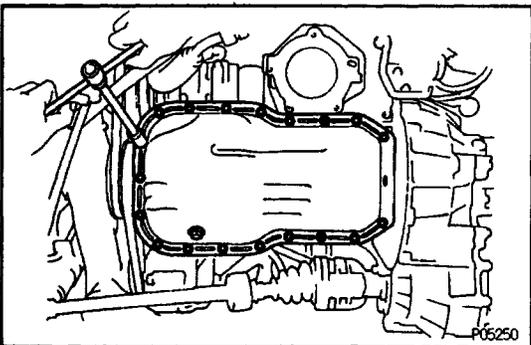
(a) (CALIF. only)

Disconnect the sub-oxygen sensor connector.

(b) Remove the two bolts and TWC stay.



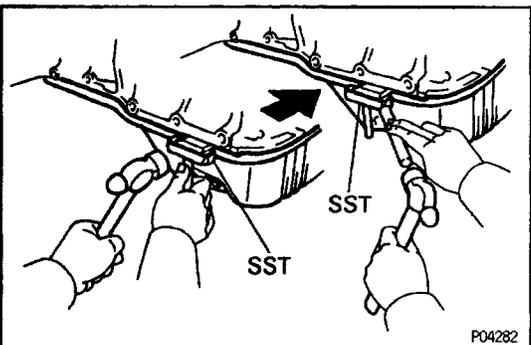
(c) Remove the three bolts, two nuts, TWC, gasket, retainer and cushion.



8. REMOVE OIL PAN

(a) Remove the oil dipstick.

(b) Remove the seventeen bolts and two nuts.

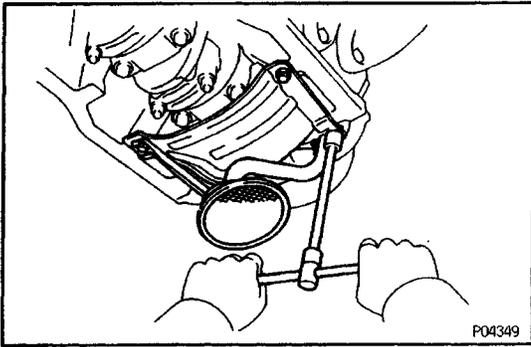


(c) Insert the blade of SST between the cylinder block and oil pan, and cut off applied sealer and remove the oil pan.

SST 09032-00100

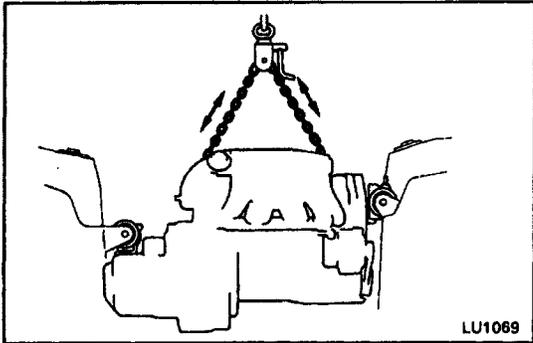
NOTICE:

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



9. REMOVE OIL STRAINER

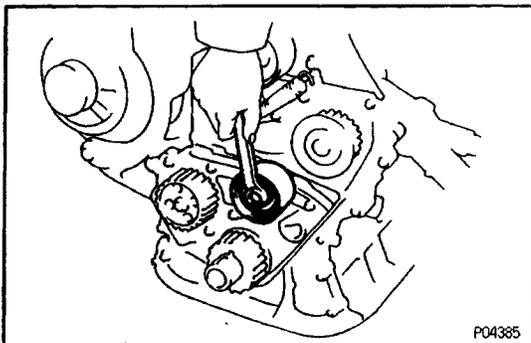
Remove the two bolts, nuts, oil strainer and gasket.



10. SUSPEND ENGINE WITH ENGINE SLING DEVICE

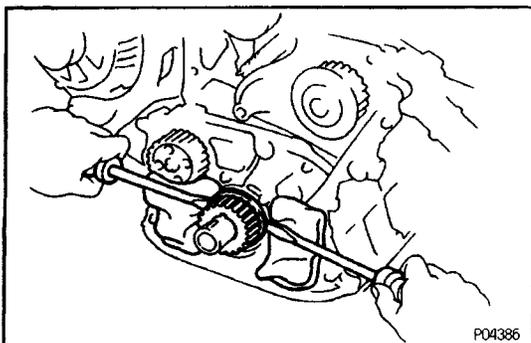
11. REMOVE TIMING BELT

(See steps 4 to 6 and 8 to 22 in Timing belt Removal under Engine Mechanical)



12. REMOVE NO.2 IDLER PULLEY

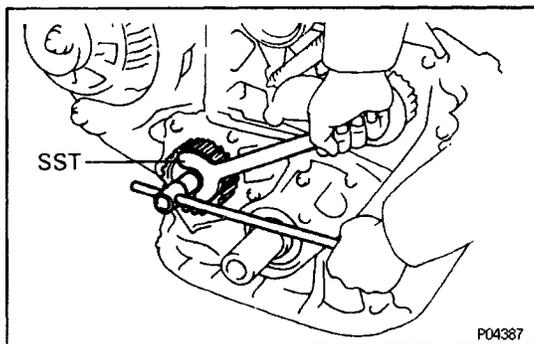
Remove the bolt and pulley.



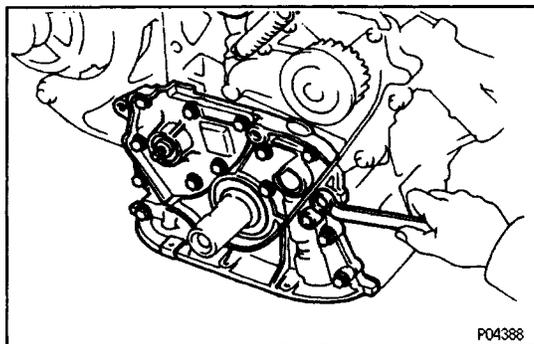
13. REMOVE CRANKSHAFT TIMING PULLEY

If the pulley cannot be removed by hand, use two screwdrivers.

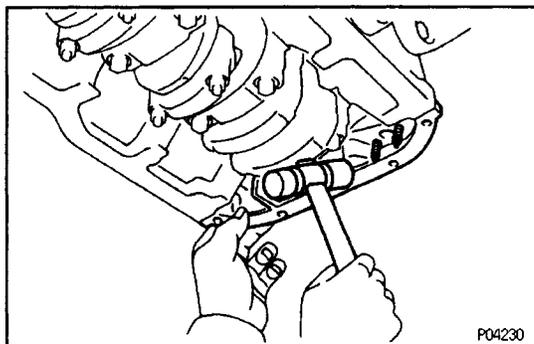
HINT: Position shop rags as shown to prevent damage.

**14. REMOVE OIL PUMP PULLEY**

Using SST, remove the nut and pulley.
SST 09616-30011

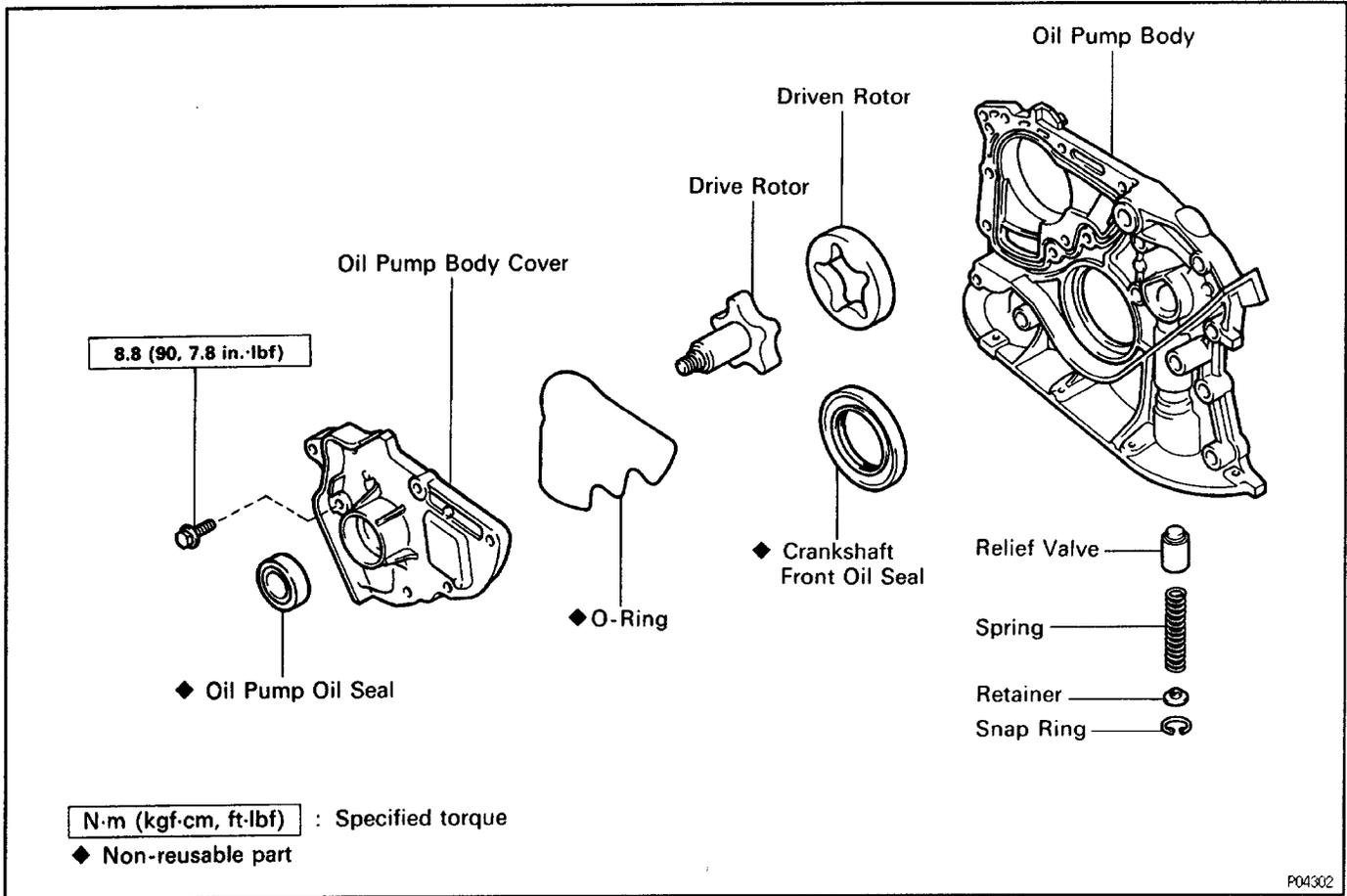
**15. REMOVE OIL PUMP**

(a) Remove the twelve bolts.

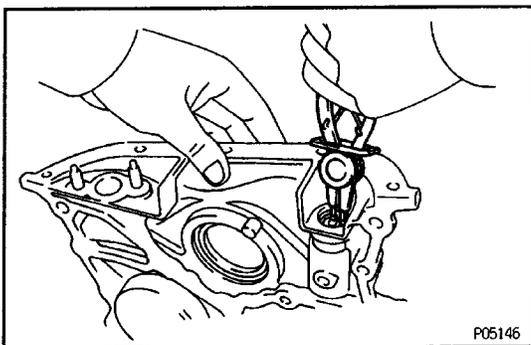


(b) Using a plastic-faced hammer, remove the oil pump
by carefully tapping the oil pump body.
(c) Remove the gasket.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



EG156-01

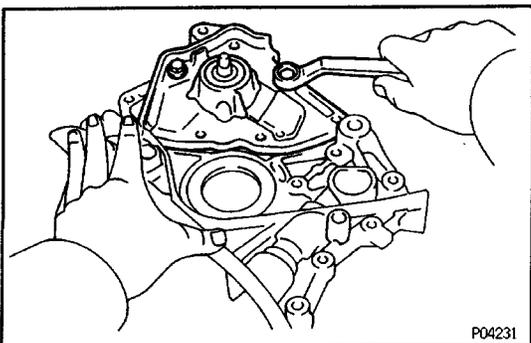


OIL PUMP DISASSEMBLY

(See Components for Disassembly and Assembly)

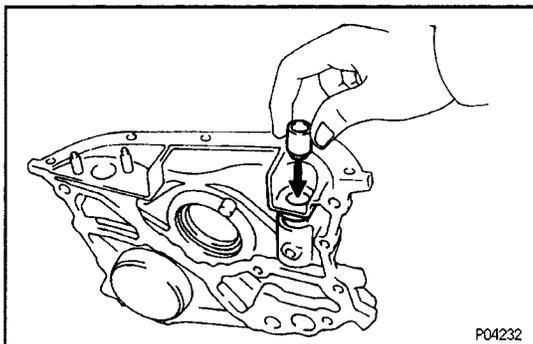
1. REMOVE RELIEF VALVE

- (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.



P04232

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 body clearance

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

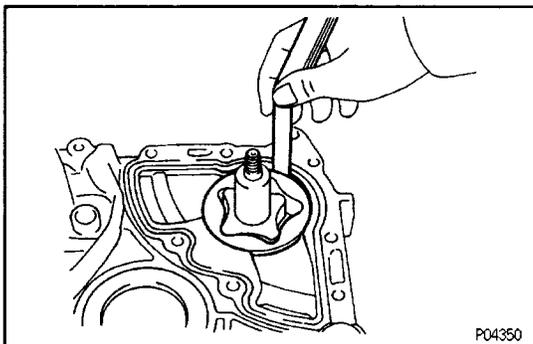
Standard body clearance:

0.10 – 0.16 mm (0.0039 – 0.0063 in.)

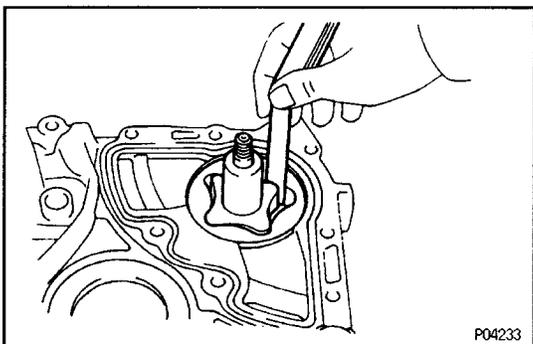
Maximum body clearance:

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.



P04350



P04233

B. Inspect rotor tip clearance

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

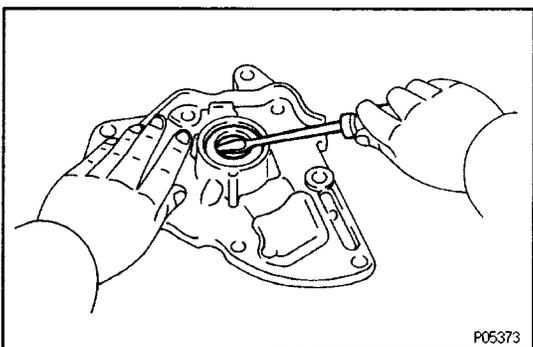
Standard tip clearance:

0.04 – 0.16 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.

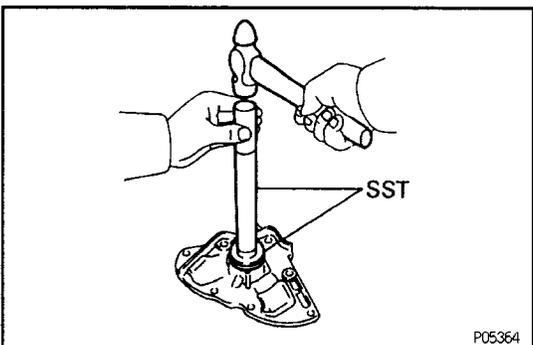


P05373

OIL PUMP OIL SEAL REPLACEMENT^{E0188-01}

1. REMOVE OIL SEAL

Using a screwdriver, pry out the oil seal.



P05364

2. INSTALL OIL SEAL

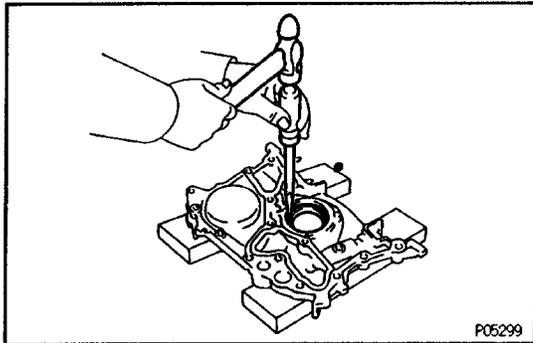
(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump cover edge.

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

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

CRANKSHAFT FRONT OIL SEAL REPLACEMENT

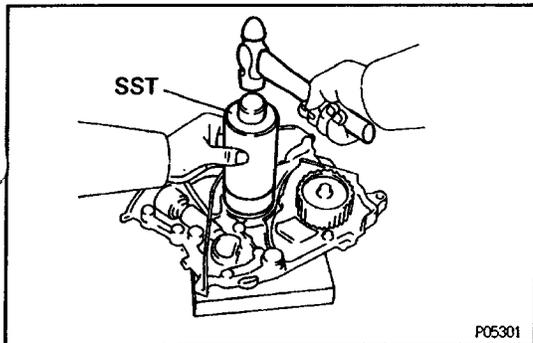
HINT: There are two methods (A and B) to replace the oil seal which are as follows:



REPLACE CRANKSHAFT FRONT OIL SEAL

A. If oil pump is removed from cylinder block:

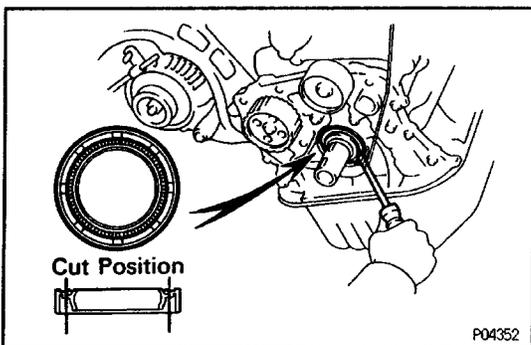
(a) Using a screwdriver and hammer, tap out the oil seal.



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

SST 09226-10010

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

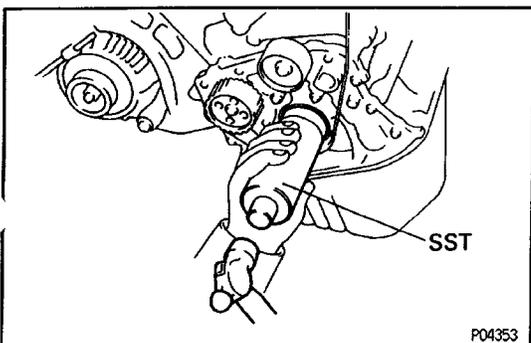


B. If oil pump is installed to the cylinder block:

(a) Using a knife, cut off the oil seal lip.

(b) Using a screwdriver, pry out the oil seal.

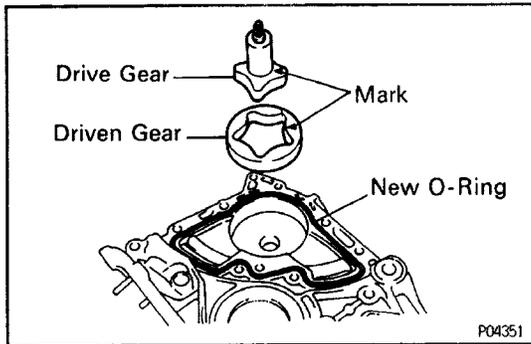
NOTICE: Be careful not to damage the crankshaft. Tape the screwdriver tip.



(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 09226-10010

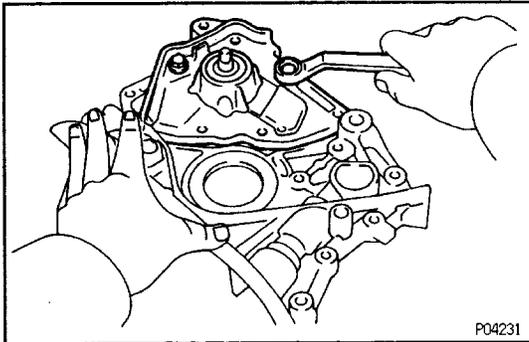


OIL PUMP ASSEMBLY

(See Components for Disassembly and Assembly)

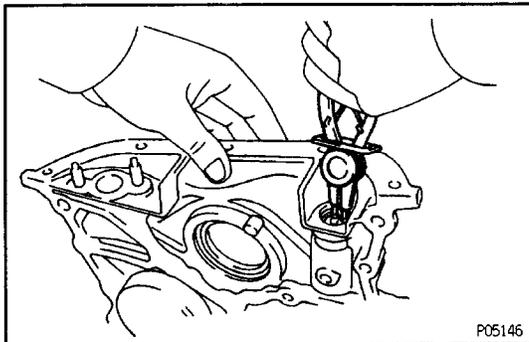
1. INSTALL DRIVE AND DRIVEN ROTORS

- (a) Place the drive and driven rotors into pump body with the marks facing the pump body cover side.
- (b) Install a new O-ring to the oil pump body.



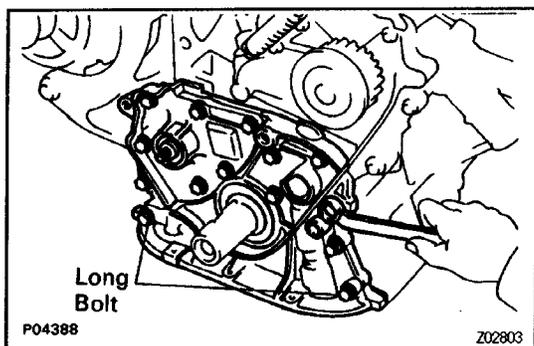
- (c) Install the oil pump body cover with the two bolts.

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 oil pump body hole.
- (b) Using snap ring pliers, install the snap ring.



OIL PUMP INSTALLATION

(See Components for Removal and Installation)

1. INSTALL OIL PUMP

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

Torque: 8.8 N-m (90 kgf-cm, 78 in.-lbf)

HINT: Long bolt are indicated in the illustration.

Bolt length:

35 mm (1.38 in.) for long bolt

25 mm (0.98 in.) for other bolts

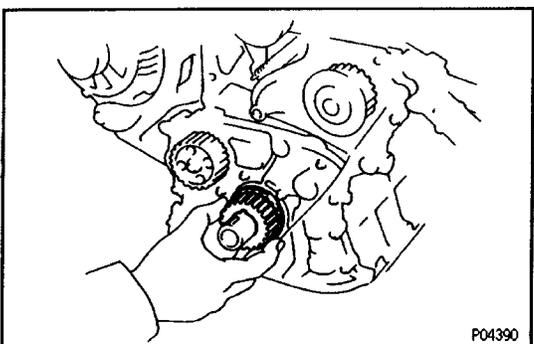
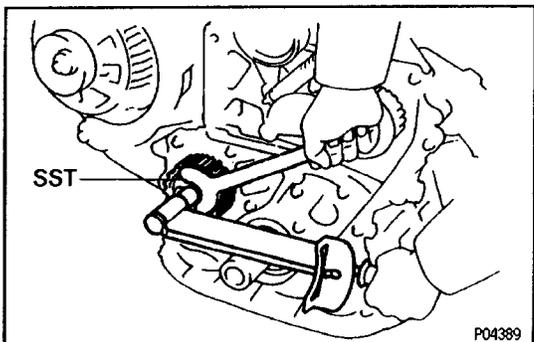
2. INSTALL OIL PUMP PULLEY

(a) Align the cutouts of the pulley and shaft, and slide on the pulley.

(b) Using SST, install the pulley nut.

SST 09616-30011

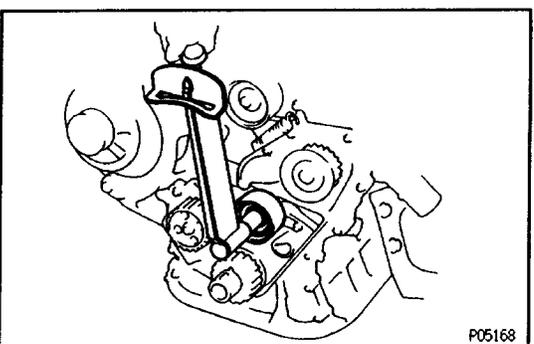
Torque: 28 N-m (290 kgf-cm, 21 ft-lbf)



3. INSTALL CRANKSHAFT TIMING PULLEY

(a) Align the timing pulley set key with the key groove of the pulley.

(b) Slide on the timing pulley, facing the flange side inward.



4. INSTALL NO.2 IDLER PULLEY

(a) Install the pulley with the bolt.

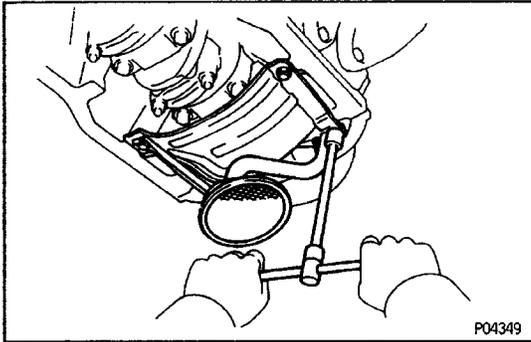
Torque: 42 N-m (425 kgf-cm, 31 ft-lbf)

(b) Check that the idler pulley moves smoothly.

5. INSTALL TIMING BELT

(See steps 5 to 19 and 21 to 23 in Timing Belt Installation under Engine Mechanical)

6. REMOVE ENGINE SLING DEVICE



7. INSTALL OIL STRAINER

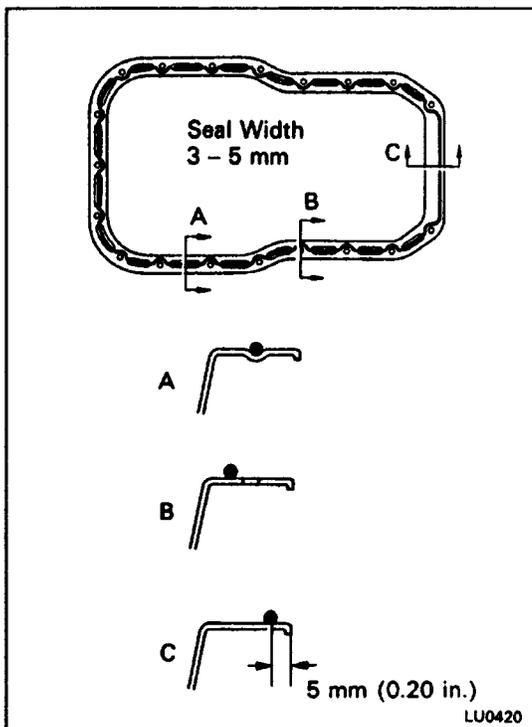
Install a new gasket and the oil strainer with the two bolts and nuts.

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

8. 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.

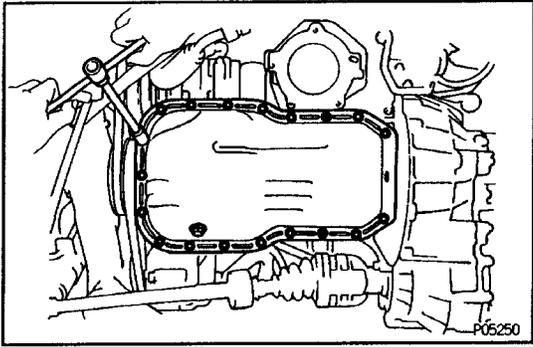


- (b) Apply seal packing to the oil pan as shown in the illustration.

Seal packing:

Part No. 08826-00080 or equivalent

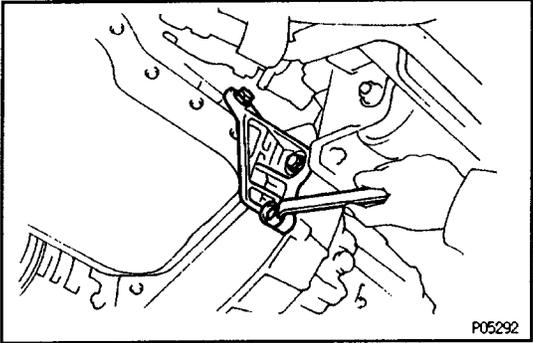
- Install a nozzle that has been cut to a 3 – 5 mm (0.12 – 0.20 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



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

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

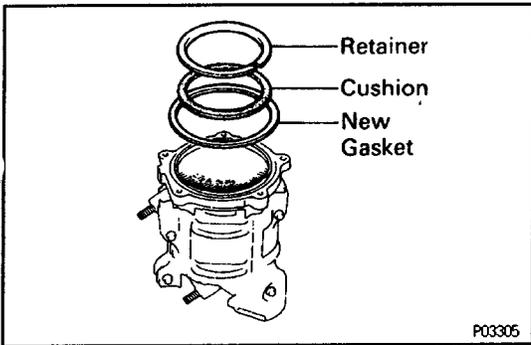
(d) Install the dipstick.



9. INSTALL STIFFENER PLATE

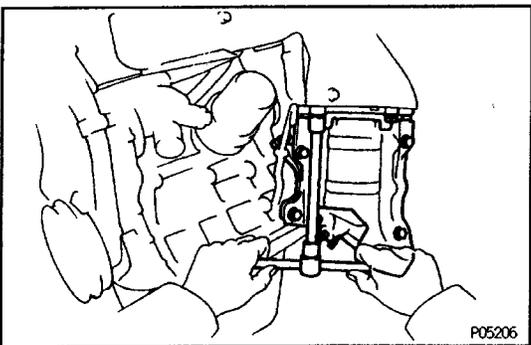
Install the stiffener plate with the three bolts.

Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)



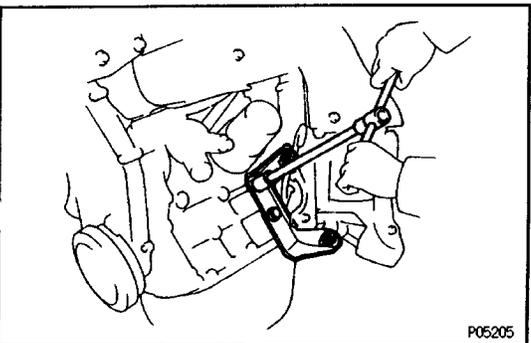
10. INSTALL TWC

(a) Place the cushion, retainer and a new gasket on the TWC.



(b) Install the TWC with the three bolts and two nuts.

Torque: 29 N-m (300 kgf-cm, 21 ft-lbf)

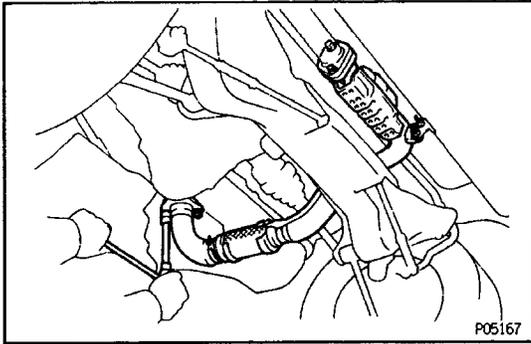


(c) Install the TWC stay with the two bolts.

Torque: 42 N-m (425 kgf-cm, 31 ft-lbf)

(d) (CALIF. only)

Connect the sub-oxygen sensor.



11. INSTALL FRONT EXHAUST PIPE

- (a) Place two new gaskets to the front and rear of the front exhaust pipe.
- (b) Using a 14 mm deep socket wrench, install the front exhaust pipe with three new nuts.

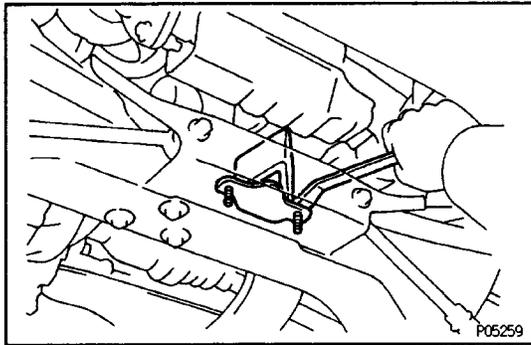
Torque: 62 N-m (630 kgf-cm, 46 ft-lbf)

- (c) Install the two bolts holding the front exhaust pipe to the tailpipe.

Torque: 43 N-m (440 kgf-cm, 32 ft-lbf)

- (d) Install the two bolts holding the front exhaust pipe bracket to the tailpipe bracket.

Torque: 19 N-m (190 kgf-cm, 14 ft-lbf)



- (e) Install the damper with the two bolts.

Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)

12 INSTALL RH ENGINE HOOD SIDE PANEL

13. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

14. FILL WITH ENGINE OIL

15. START ENGINE AND CHECK FOR OIL LEAKS

16. RECHECK ENGINE OIL LEVEL

17. INSTALL ENGINE UNDER COVERS