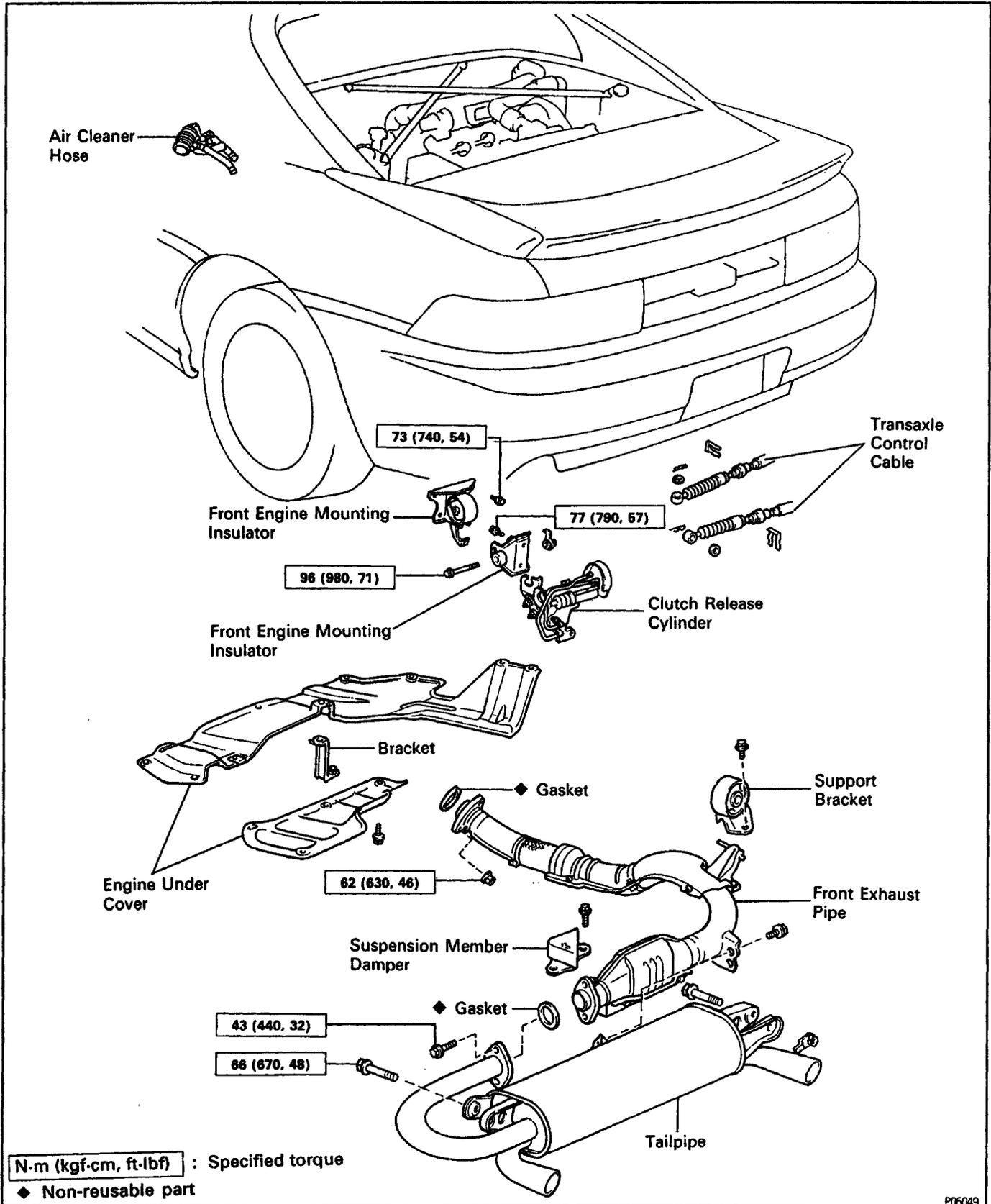
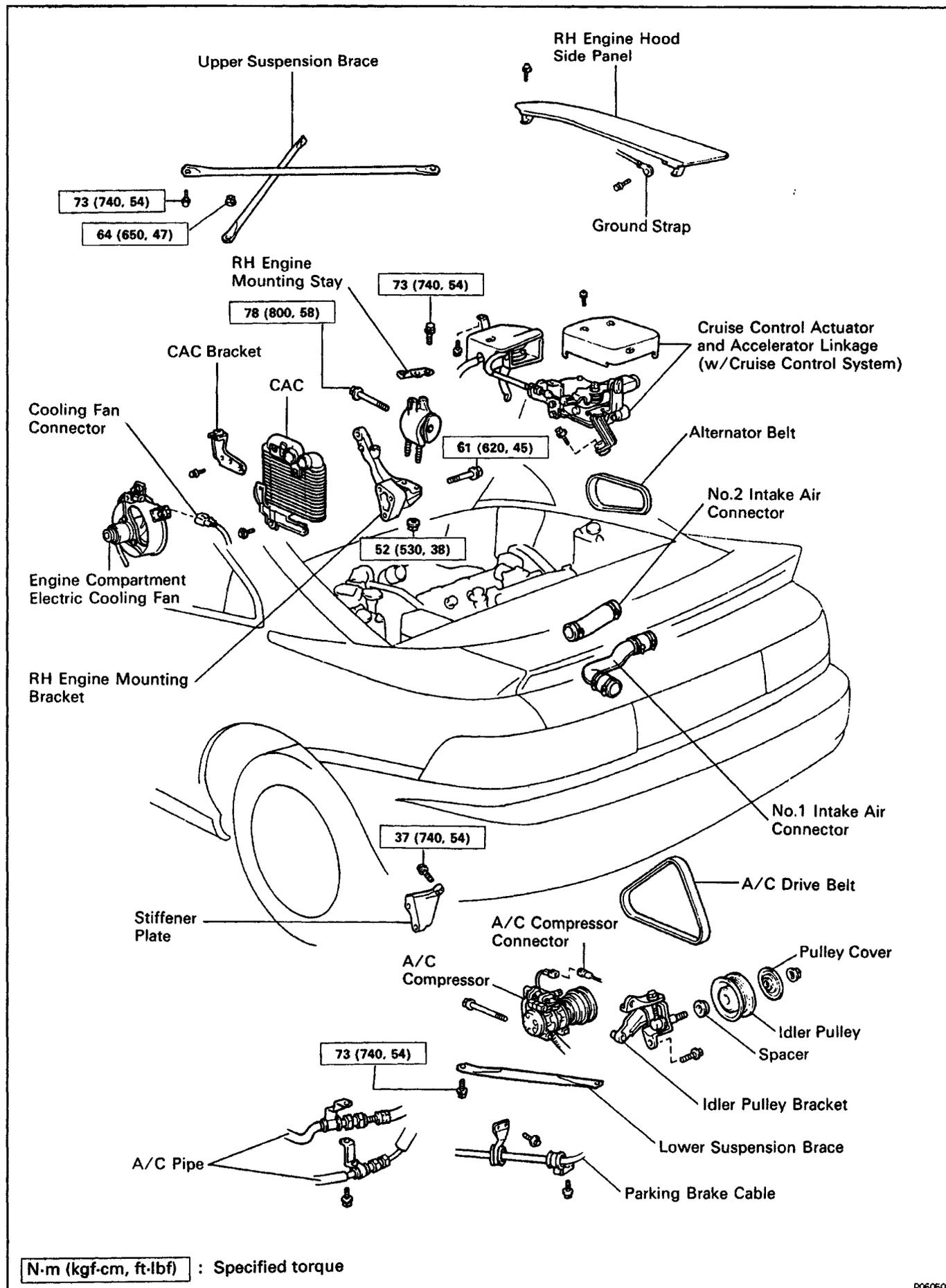


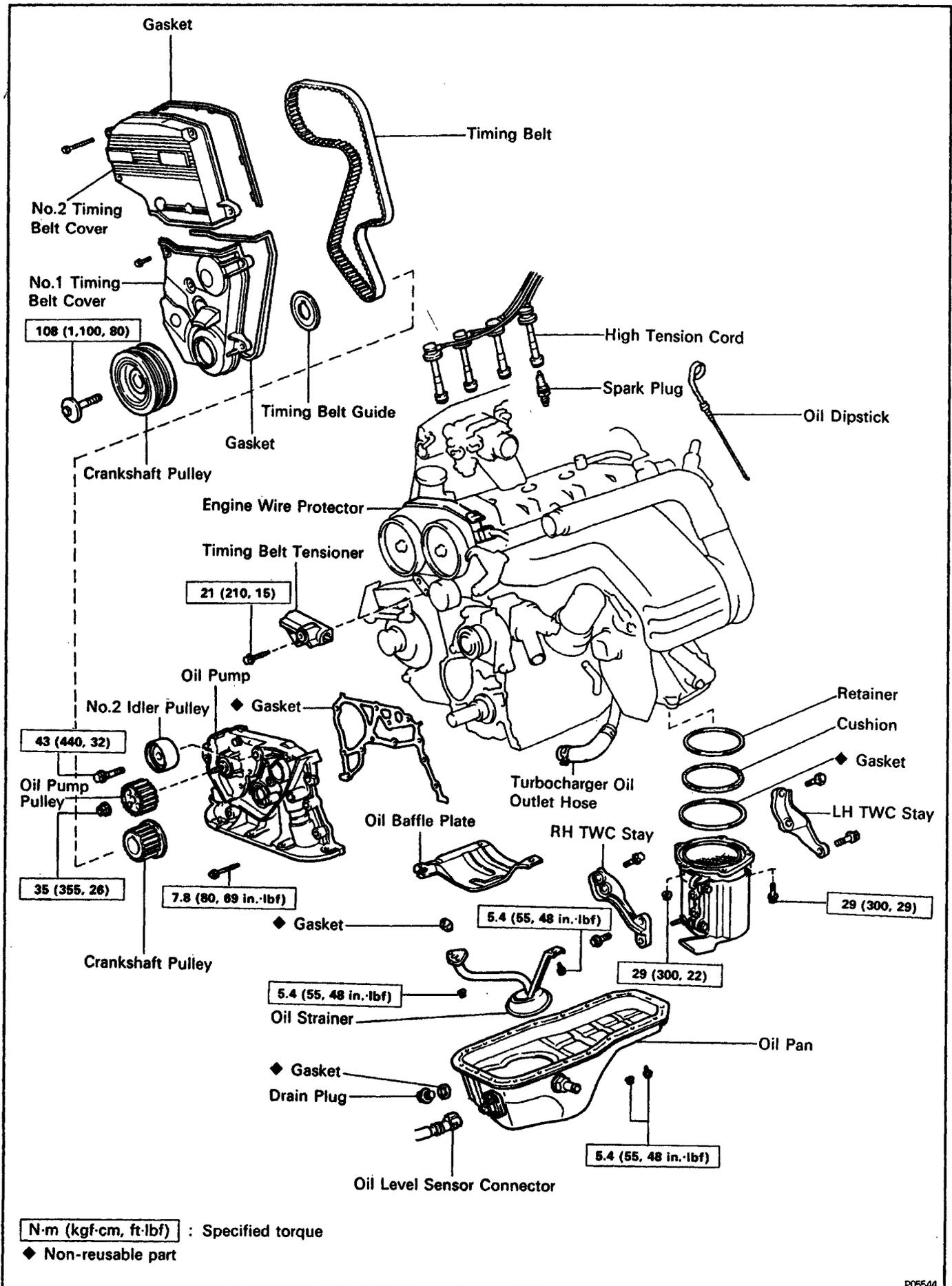
OIL PUMP COMPONENTS FOR REMOVAL AND INSTALLATION

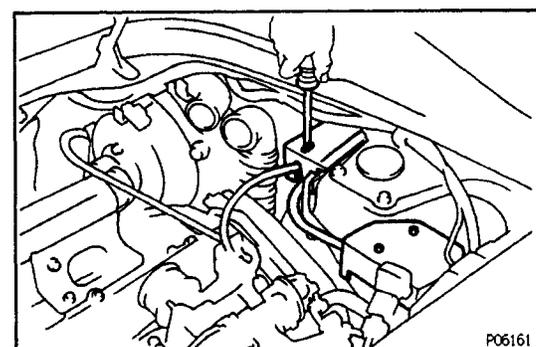
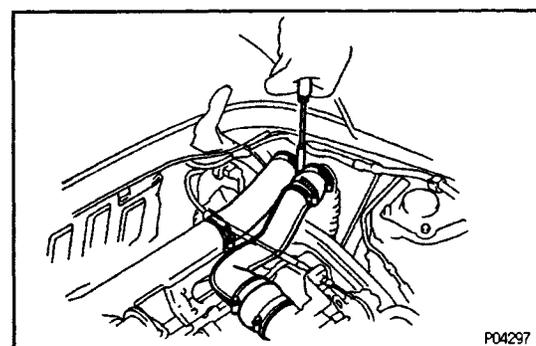
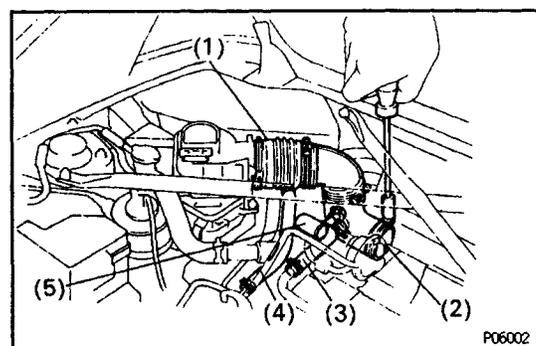
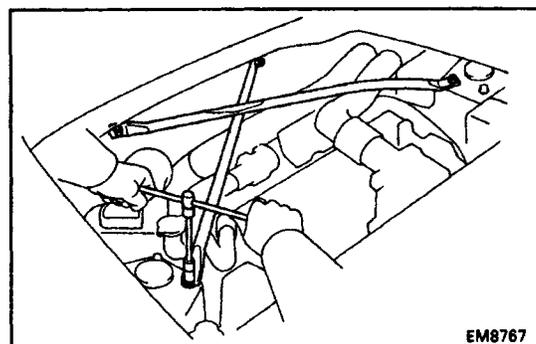
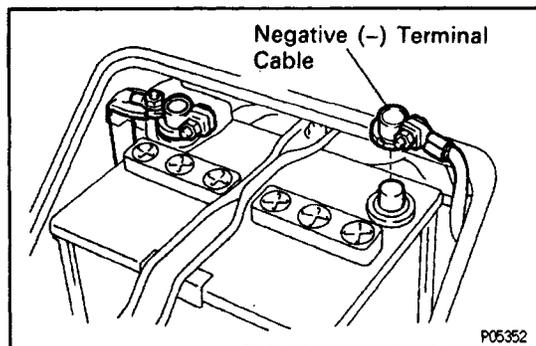
8210W-01





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





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 UPPER SUSPENSION BRACE

Remove the two bolts, two nuts and upper brace.

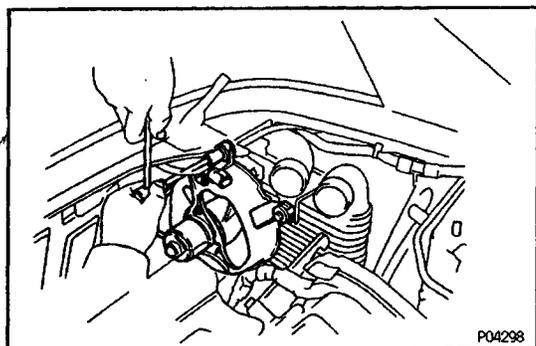
6. REMOVE AIR CLEANER HOSE

Disconnect the following hoses, and remove the air cleaner hose:

- (1) Air cleaner hose from air flow sensor
- (2) Air cleaner hose from turbocharger
- (3) PCV hose from cylinder head cover
- (4) Air hose from No.2 air hose
- (5) Air hose from air by-pass valve

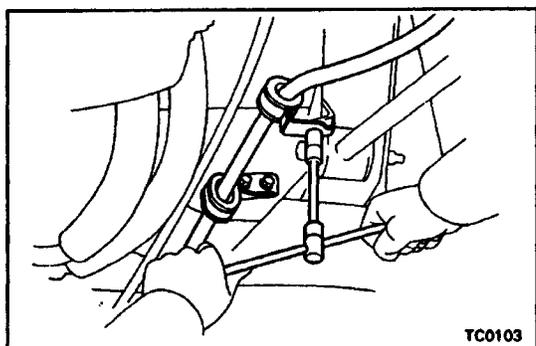
7. REMOVE NO.1 AND NO.2 INTAKE AIR CONNECTORS

8. (w/ CRUISE CONTROL SYSTEM) REMOVE CRUISE CONTROL ACTUATOR AND ACCELERATOR LINKAGE



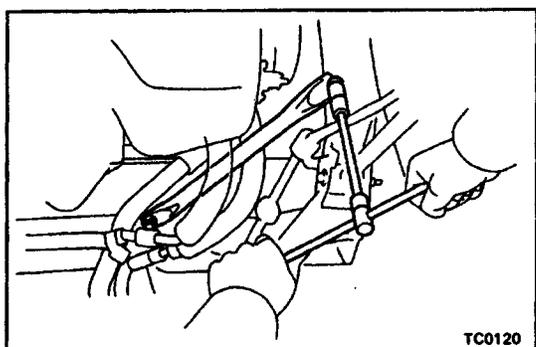
9. REMOVE ENGINE COMPARTMENT ELECTRIC COOLING FAN

- (a) Disconnect the cooling fan connector.
- (b) Loosen the three bolts, and remove the cooling fan.

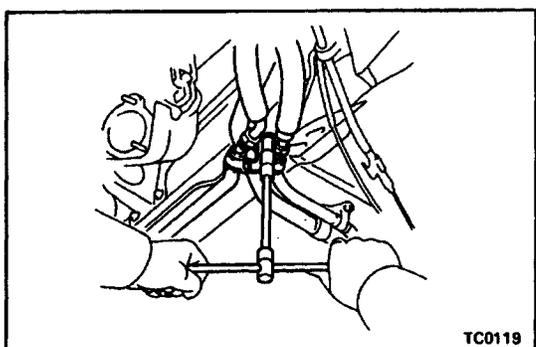


10. DISCONNECT A/C COMPRESSOR FROM ENGINE

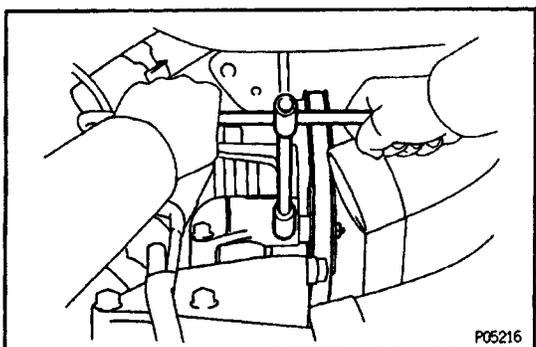
- (a) Remove the three clamp bolts, and disconnect the parking brake cable.



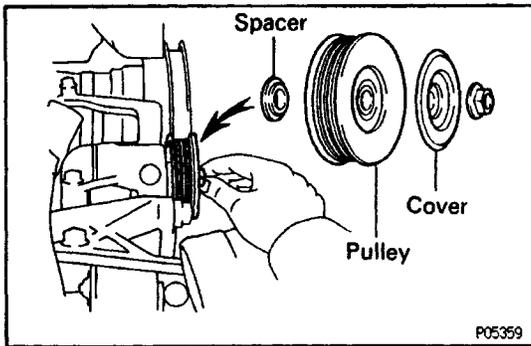
- (b) Remove the two bolts and lower suspension brace.



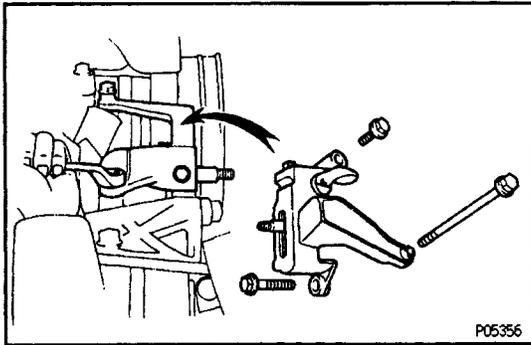
- (c) Remove the clamp nut, and disconnect the two A/C pipes.



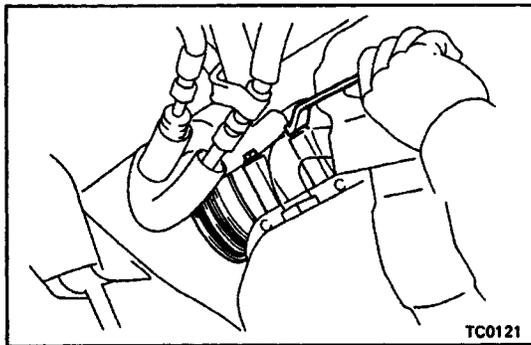
- (d) Loosen the idler pulley nut.
- (e) Loosen the adjusting bolt, and remove the drive belt.



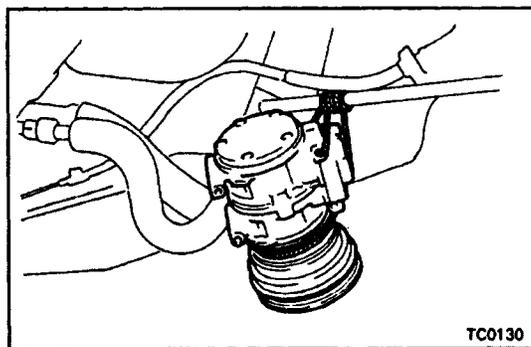
(f) Remove the nut, pulley cover, idler pulley and spacer.



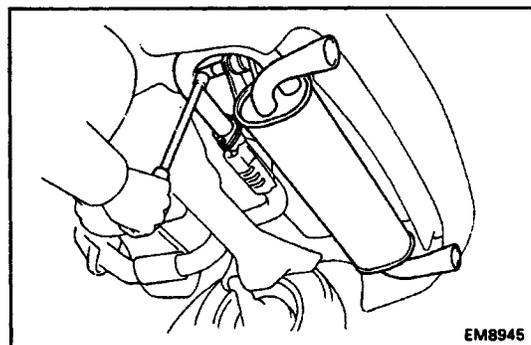
(g) Disconnect the A/C compressor connector.
 (h) Remove the three bolts and idler pulley bracket.



(i) Remove the two bolts, and disconnect the A/C compressor from the engine.

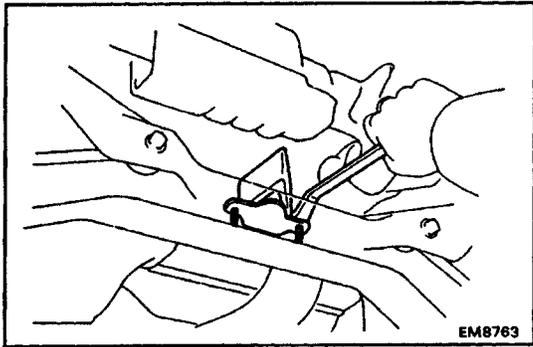


HINT: Suspend the A/C compressor to strut rod with a string.



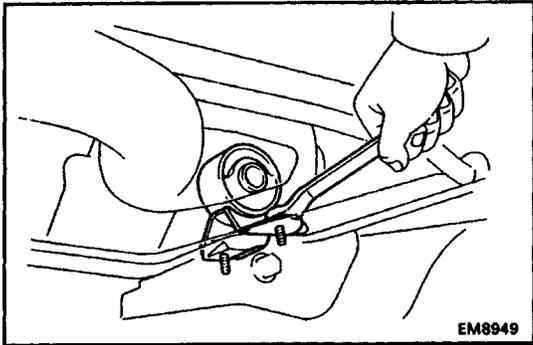
11. REMOVE TAILPIPE

- Remove the two bolts holding the front exhaust pipe to the tailpipe bracket.
- Remove the two bolts holding the front exhaust pipe to the tailpipe.
- Remove the two bolts, tailpipe and gasket.

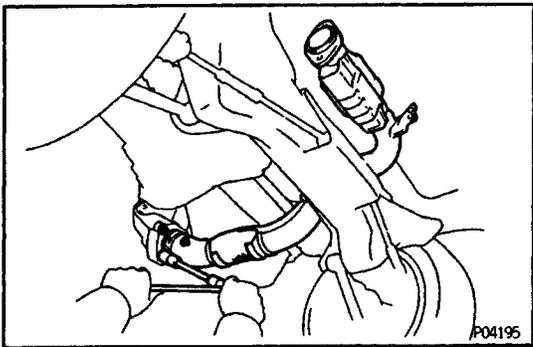


12. REMOVE FRONT EXHAUST PIPE

(a) Remove the two bolts and damper.

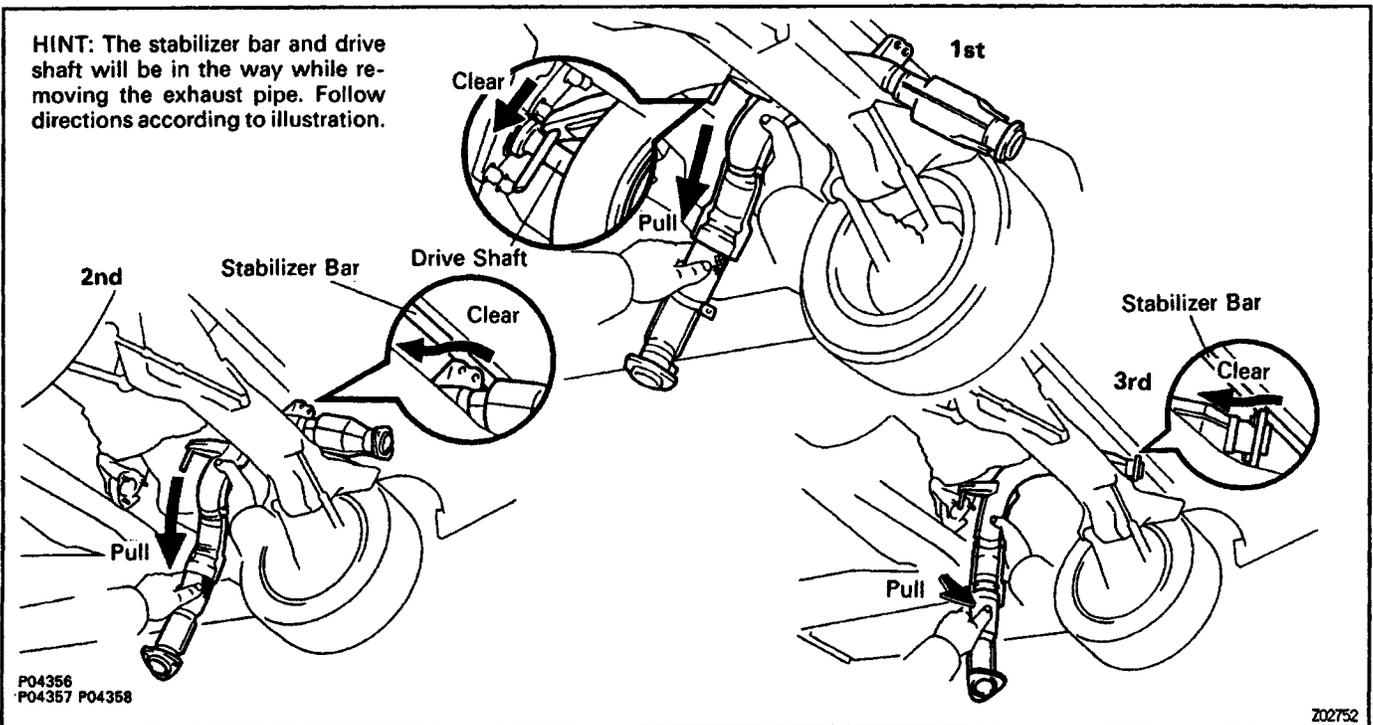


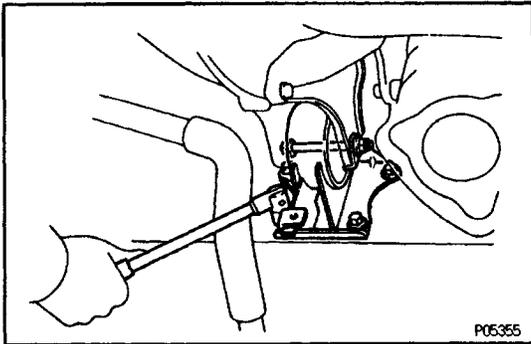
(b) Remove the two bolts and support bracket.



(c) Using a 14 mm deep socket wrench, remove the three nuts.

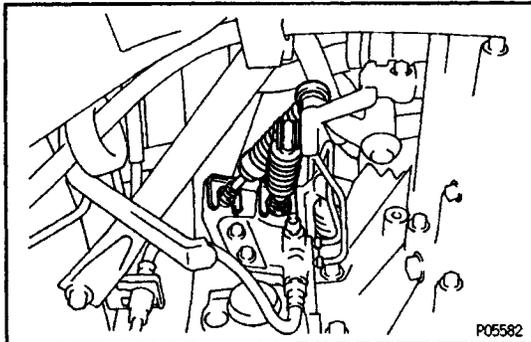
(d) Remove the front exhaust pipe and gasket.





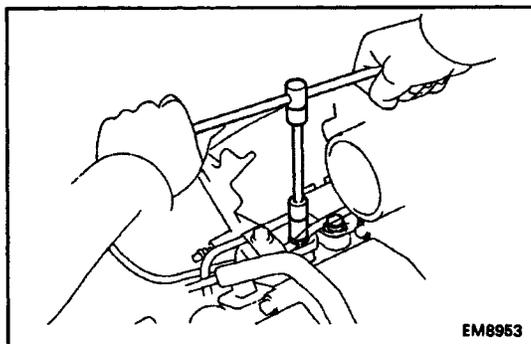
13. REMOVE FRONT ENGINE MOUNTING INSULATOR

- (a) Remove the through bolt and nut holding the mounting insulator to the mounting bracket.
- (b) Remove the four bolts and mounting insulator.

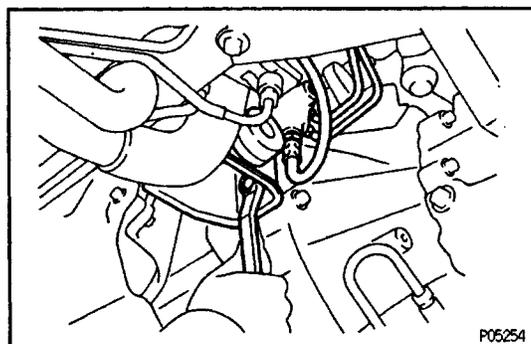


14. REMOVE FRONT ENGINE MOUNTING BRACKET AND CLUTCH RELEASE CYLINDER

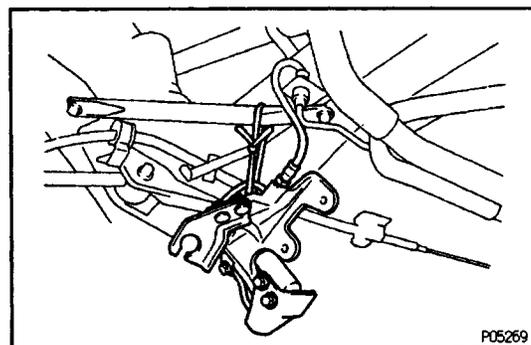
- (a) Disconnect the two transaxle control cables from the transaxle.



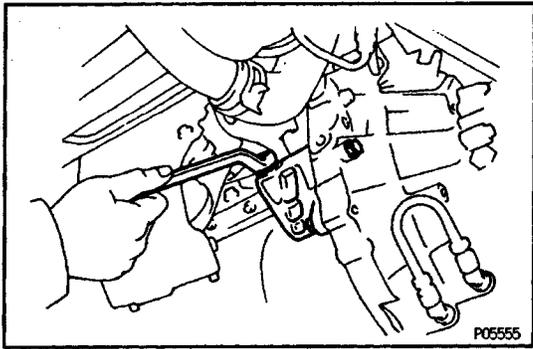
- (b) Remove the two bolts holding the clutch release cylinder to the transaxle.



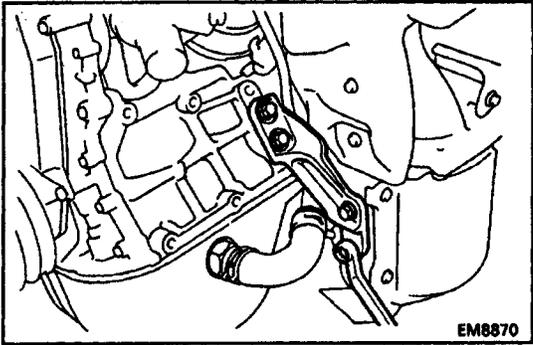
- (c) Remove the two bolts and mounting bracket.
- (d) Disconnect the clutch release cylinder from the transaxle.
Remove the three bolts and stiffener plate.



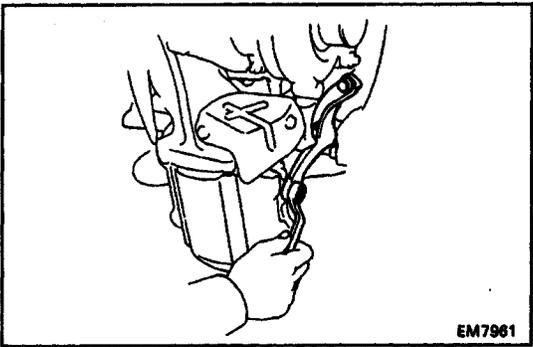
HINT: Suspend the clutch release cylinder to the suspension brace with a string.

**15. REMOVE STIFFENER PLATE**

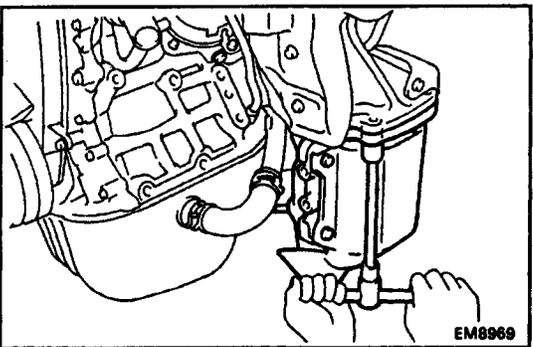
Remove the three bolts and stiffener plate.

**16. REMOVE MAIN TWC**

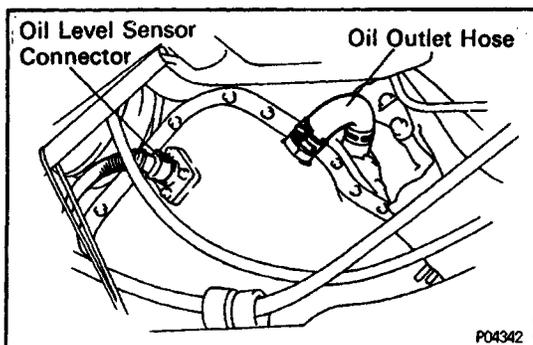
(a) Remove the four bolts and RH TWC stay.



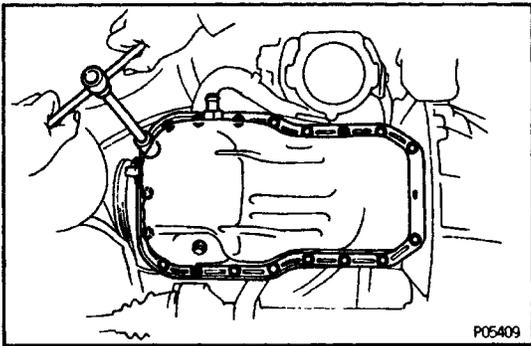
(b) Remove the three bolts and LH TWC stay.



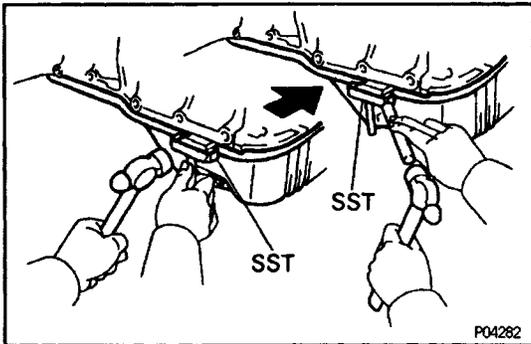
(c) Remove the three bolts, two nuts, TWC, gasket, retainer and cushion.

**17. REMOVE OIL PAN**

- (a) Disconnect the oil level sensor connector.
- (b) Disconnect the turbocharger oil outlet hose from the oil pan.
- (c) Remove the oil dipstick.



(d) Remove the seventeen bolts and two nuts.

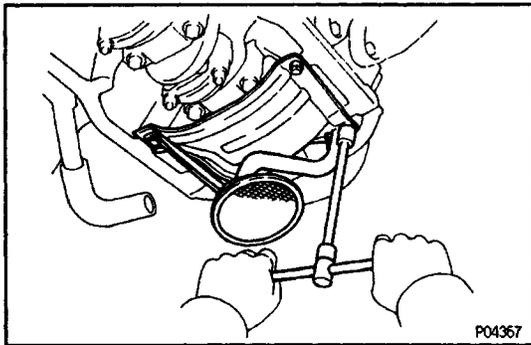


(e) Insert the blade of SST between the cylinder block and oil pan, and cut off applied sealer and remove the oil pan.

SST 09032-00100

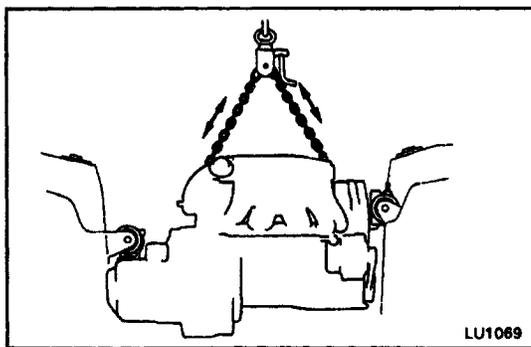
NOTICE:

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



18. REMOVE OIL STRAINER

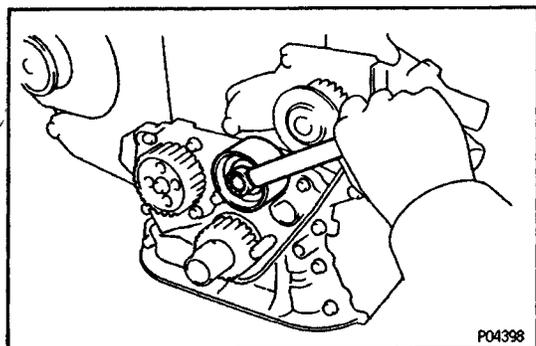
Remove the two bolts, nuts, oil strainer and gasket.



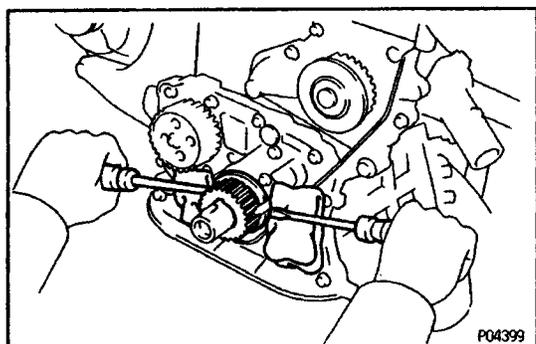
19. SUSPEND ENGINE WITH ENGINE SLING DEVICE

20. REMOVE TIMING BELT

(See steps 11, 12, 14 to 18, 23 to 26, 28 to 29 in Timing belt Removal under Engine Mechanical)

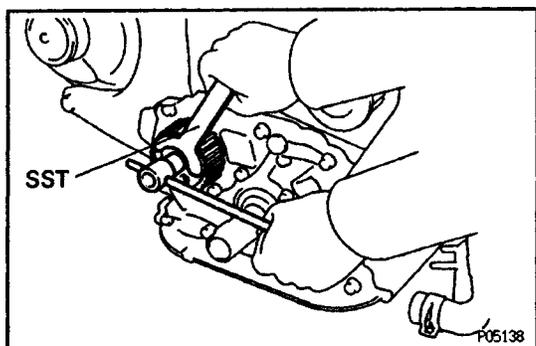
**21. REMOVE No.2 IDLER PULLEY**

Remove the bolt and pulley.

**22. REMOVE CRANKSHAFT TIMING PULLEY**

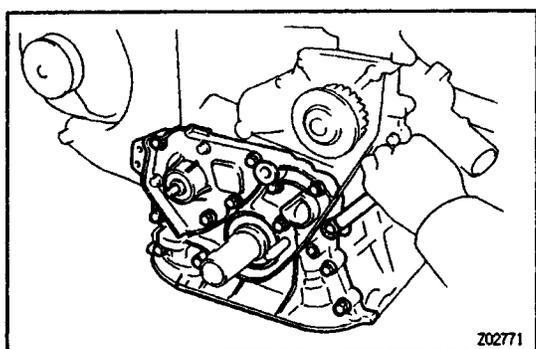
If the pulley cannot be removed by hand, use two screwdrivers.

HINT: Position shop rags as shown to prevent damage.

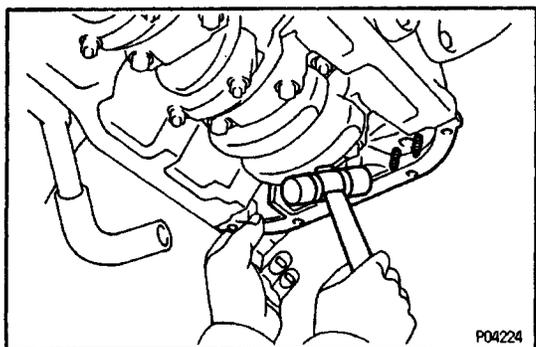
**23. REMOVE OIL PUMP PULLEY**

Using SST, remove the nut and pulley.

SST 09616-30011

**24. REMOVE OIL PUMP**

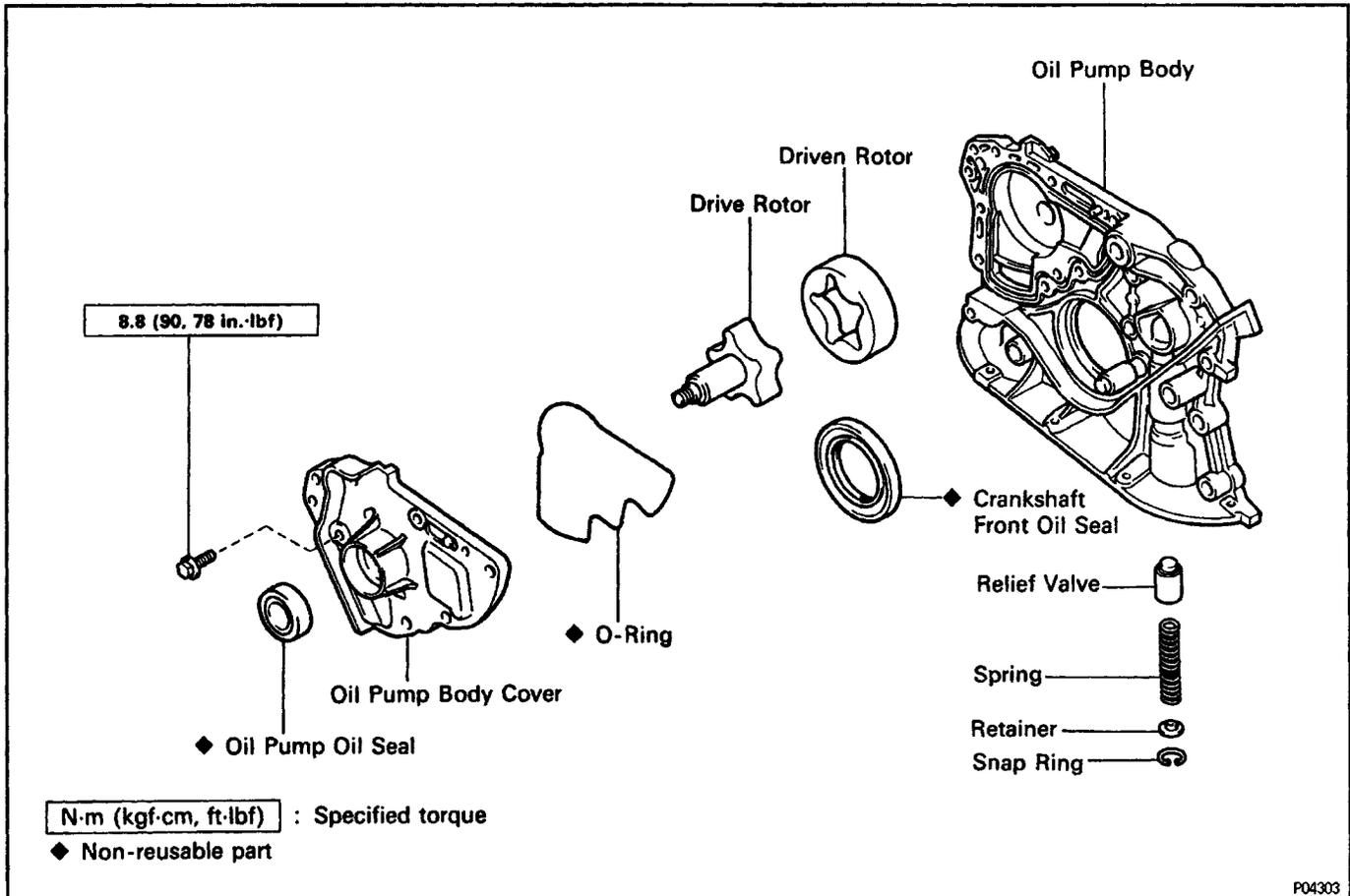
(a) Remove the twelve bolts.



(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



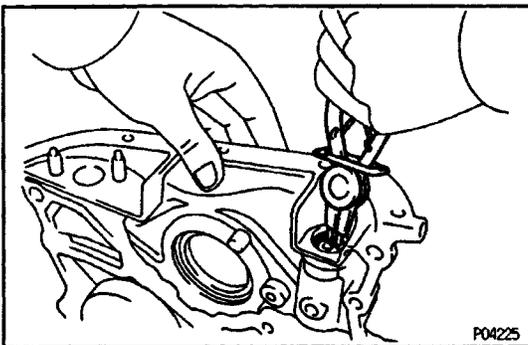
8007Y-02

OIL PUMP DISASSEMBLY

(See Components for Disassembly and Assembly)

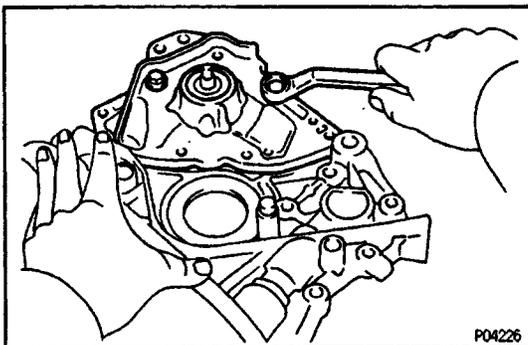
1. REMOVE RELIEF VALVE

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

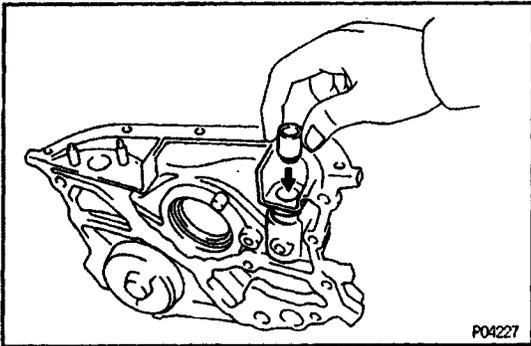


2. REMOVE DRIVE AND DRIVEN ROTORS

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



E007Z-02



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.

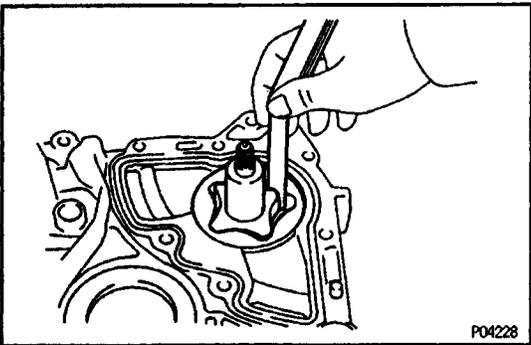
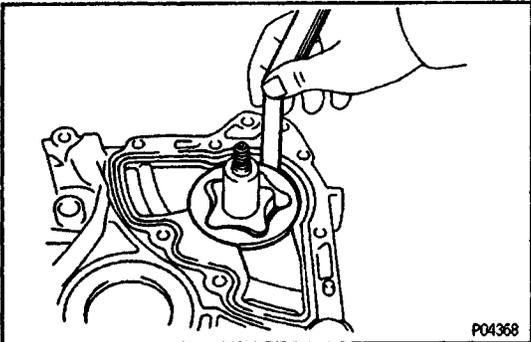
Standard body clearance:

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.



B. Inspect rotor tip clearance

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

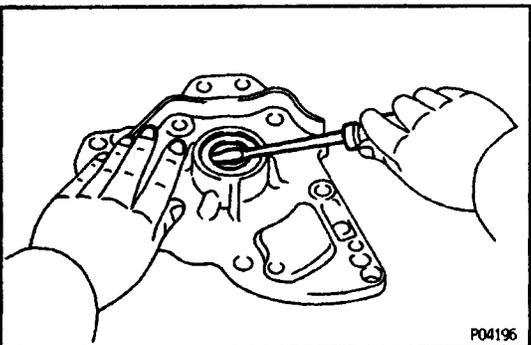
Standard tip clearance:

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.

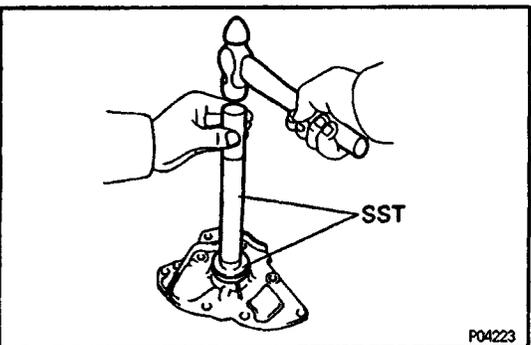


OIL PUMP OIL SEAL REPLACEMENT

E0080-02

1. REMOVE OIL SEAL

Using a screwdriver, pry out the oil seal.



2. INSTALL OIL SEAL

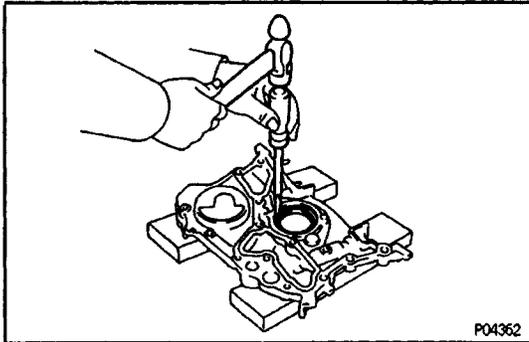
(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump cover edge.

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

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

CRANKSHAFT FRONT OIL SEAL REPLACEMENT

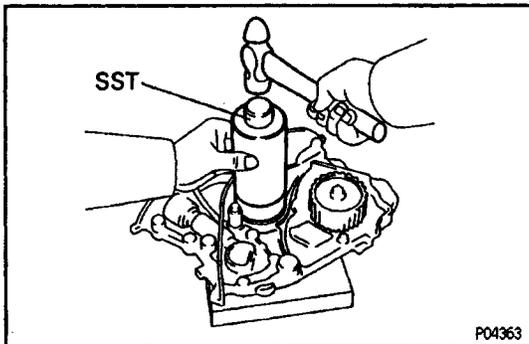
HINT: There are two methods (A and B) to replace the oil seal which are as follows:



REPLACE CRANKSHAFT FRONT OIL SEAL

A. If oil pump is removed from cylinder block:

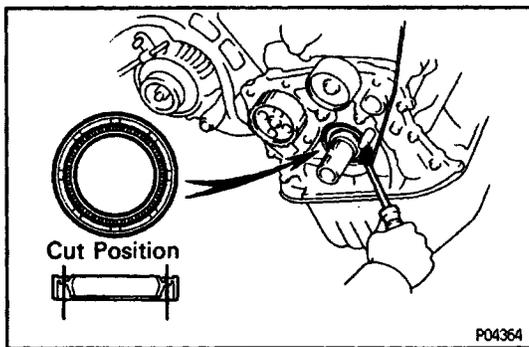
(a) Using a screwdriver and hammer, tap out the oil seal.



(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.

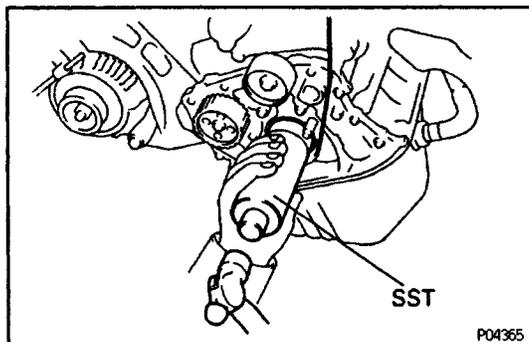


B. If oil pump is installed to the cylinder block:

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

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

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

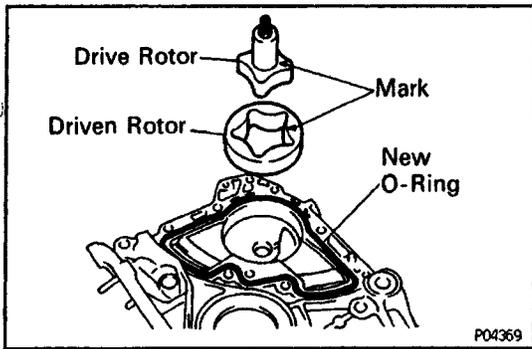


(c) Apply MP grease to a new oil seal lip.

(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

E0082-02

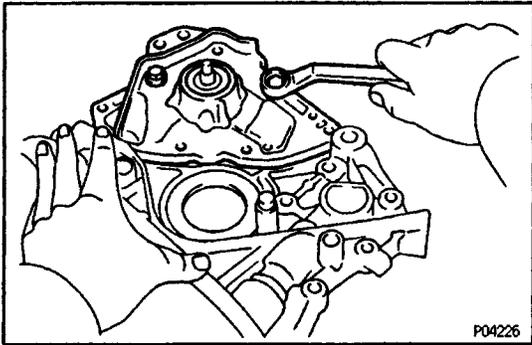


OIL PUMP ASSEMBLY

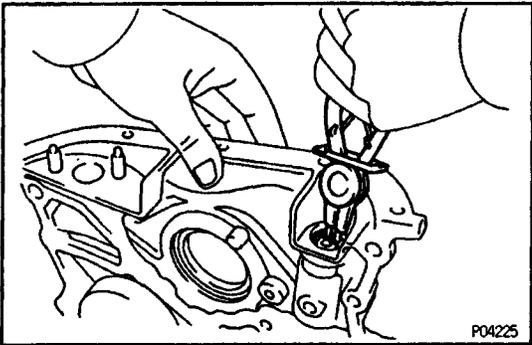
(See Components for Disassembly and Assembly)

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.

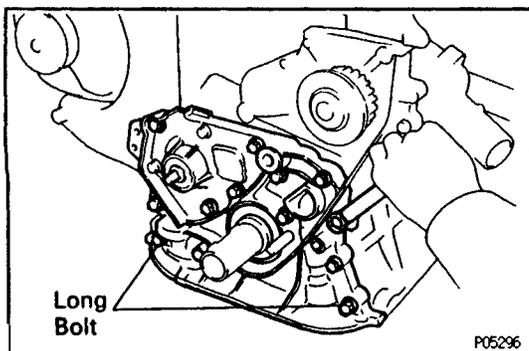


- (c) Install the oil pump body cover with the two bolts.
Torque: 8.8 N-m (90 kgf-cm, 78 in.-lbf)



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: 7.8 N-m (80 kgf-cm, 69 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

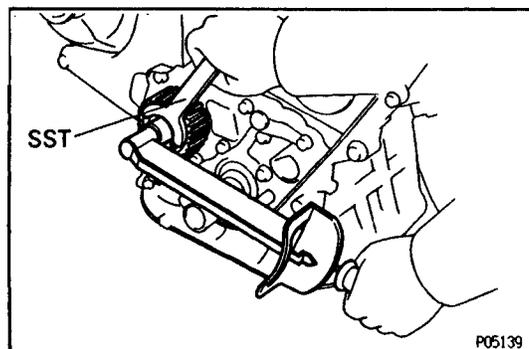
2. INSTALL OIL PUMP PULLEY

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

(b) Using SST, install the pulley nut.

SST 09616-30011

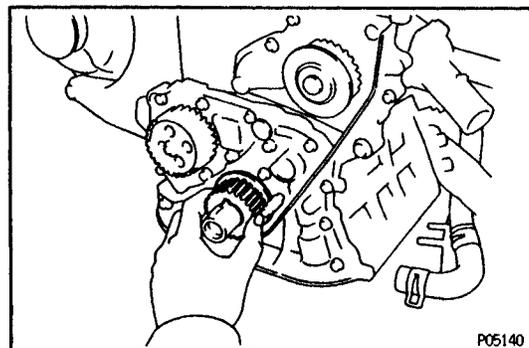
Torque: 35 N-m (355 kgf-cm, 26 ft-lbf)



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.

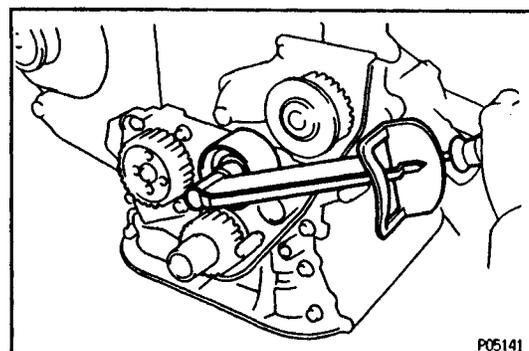


4. INSTALL NO.2 IDLER PULLEY

(a) Install the pulley with the bolt.

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

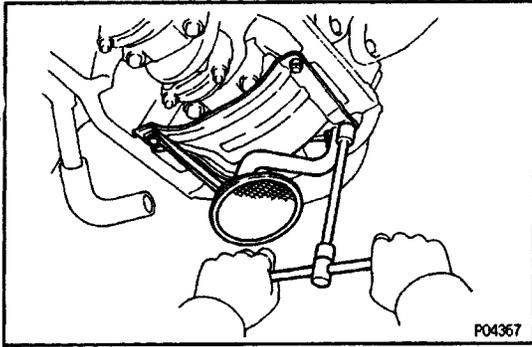
(b) Check that the idler pulley moves smoothly.



5. INSTALL TIMING BELT

(See steps 5 to 8, 10 to 11, 22 to 28 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.

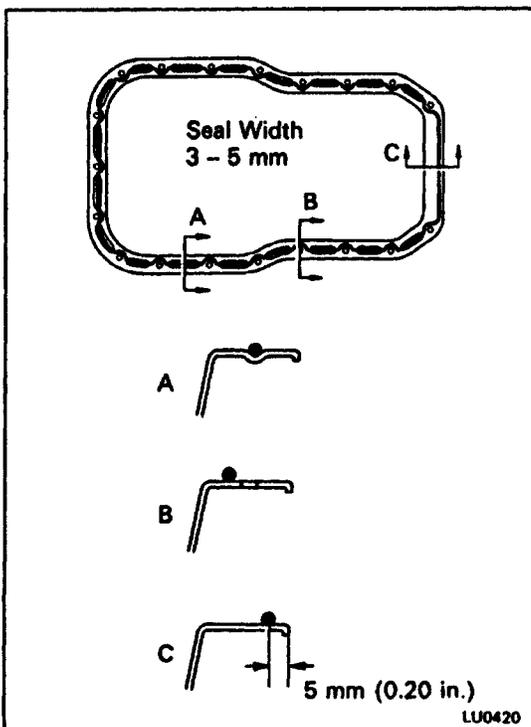
Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)

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.

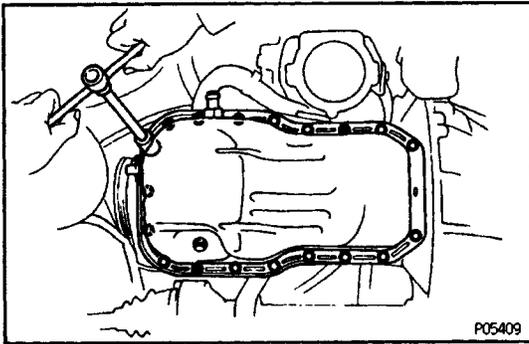


(b) Apply seal packing to the oil pan as shown in the illustration.

Seal packing:

Part No. 08826-00080 or equivalent

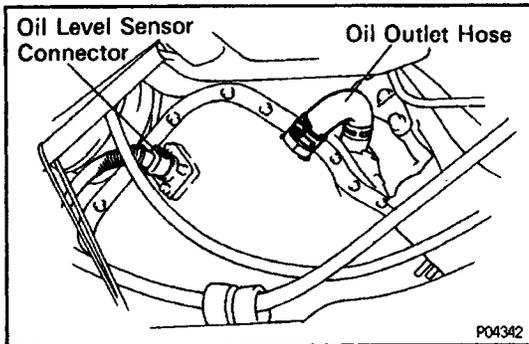
- Install a nozzle that has been cut to a 3 – 5 mm (0.12 – 0.20 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



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

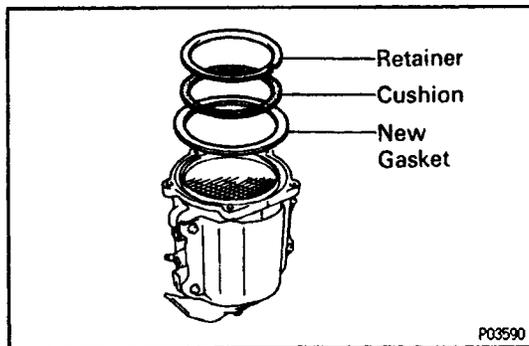
Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)

(d) Install the dipstick.



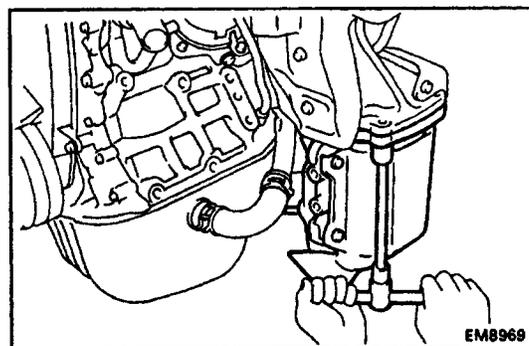
(e) Connect the turbocharger oil outlet hose to the oil pan.

(f) Connect the oil level sensor connector.



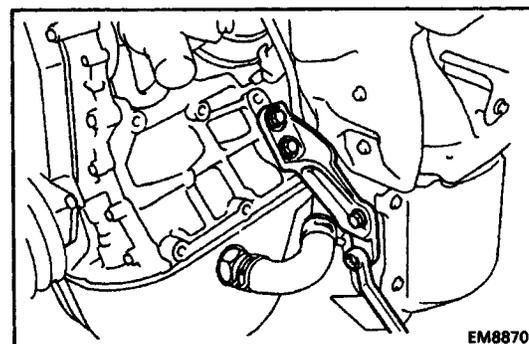
9. INSTALL MAIN TWC

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



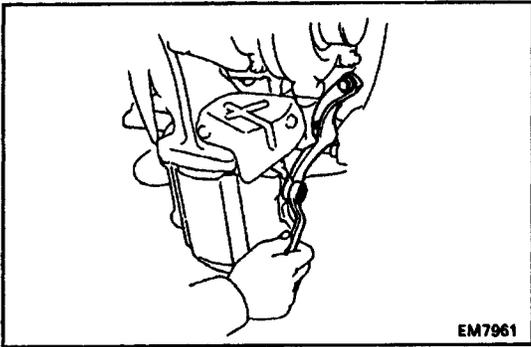
(b) Install the TWC with the three bolts and two nuts.

Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)

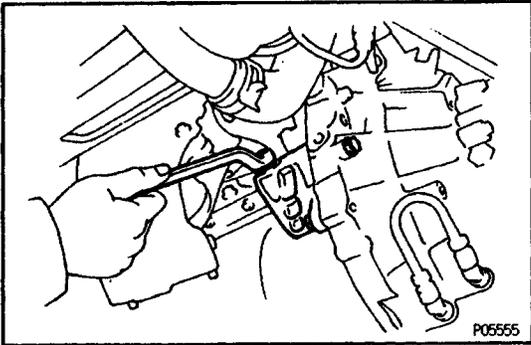


(c) Install the RH TWC stay with the four bolts.

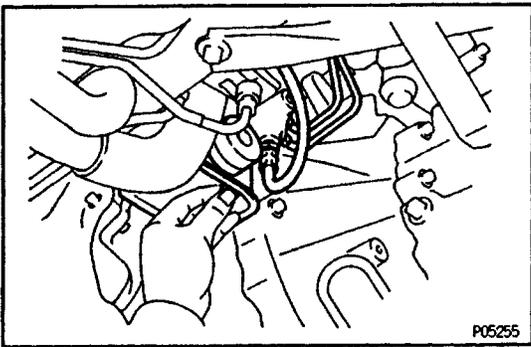
Torque: 59 N-m (600 kgf-cm, 43 ft-lbf)



- (d) Install the LH TWC stay with the three bolts.
Torque: 59 N-m (600 kgf-cm, 43 ft-lbf)

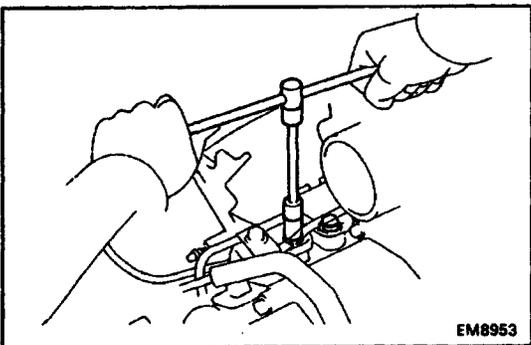


- 10. INSTALL STIFFENER PLATE**
 Install the stiffener plate with the three bolts.
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)

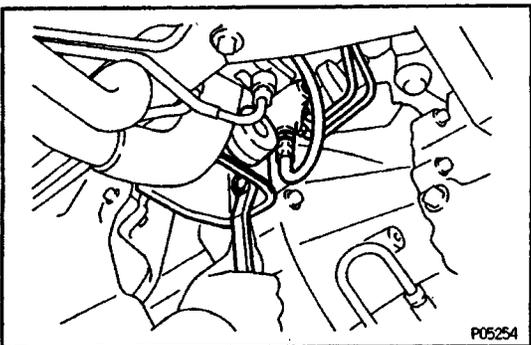


11. INSTALL CLUTCH RELEASE CYLINDER AND FRONT ENGINE MOUNTING BRACKET

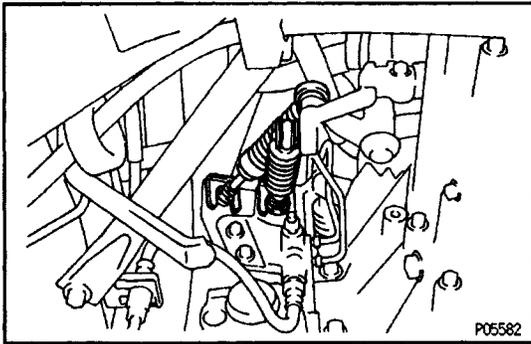
- (a) Temporarily install the release cylinder and mounting bracket with the two bolts.



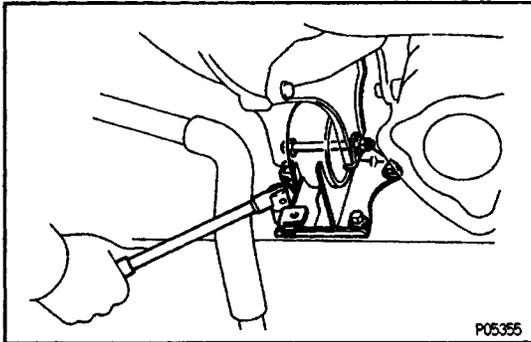
- (b) Install the clutch release cylinder with the two bolts.
Torque: 12 N-m (120 kgf-cm, 9 ft-lbf)



- (c) Tighten the two bolts holding the clutch release cylinder to the transaxle.
Torque: 77 N-m (790 kgf-cm, 57 ft-lbf)

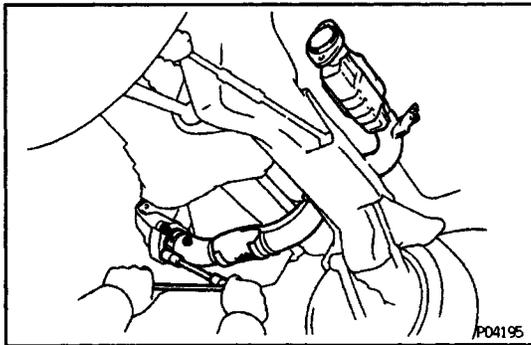


- (d) Connect the two transaxle control cables to the transaxle.



12. INSTALL FRONT ENGINE MOUNTING INSULATOR

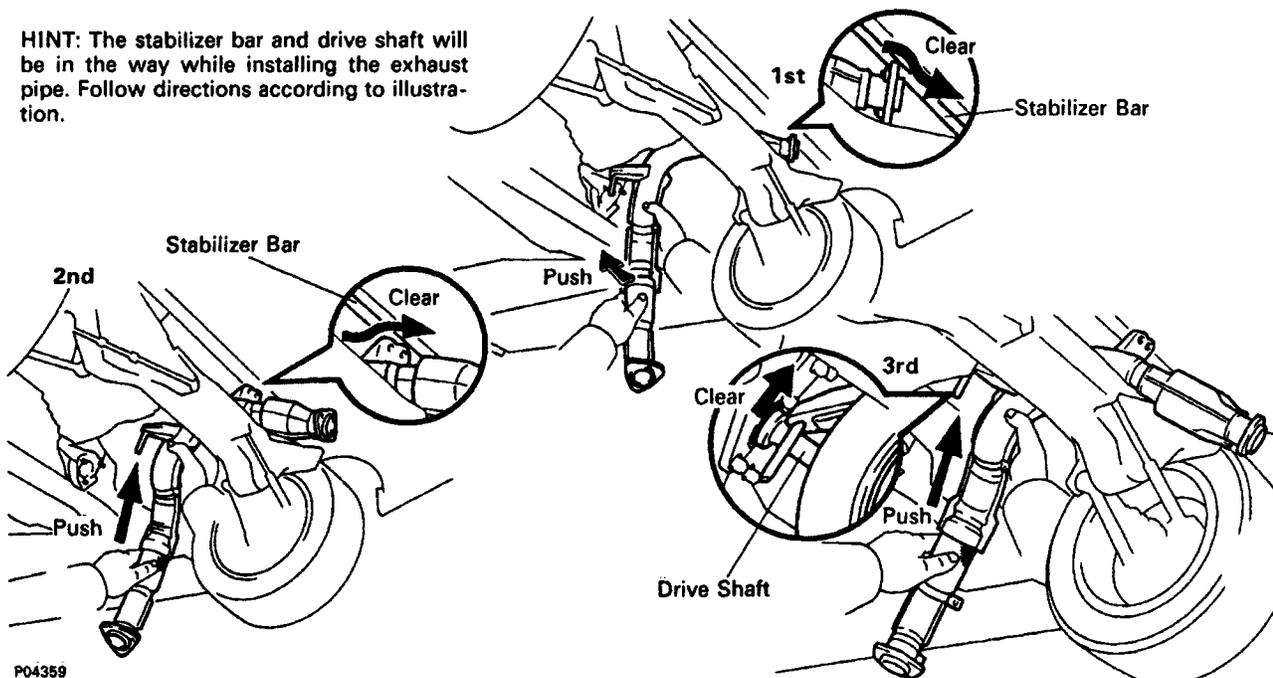
- (a) Install the mounting insulator to the body with the four bolts.
Torque: 77 N-m (790 kgf-cm, 57 ft-lbf)
- (b) Install the mounting insulator to the mounting bracket with the through bolt and nut.
Torque: 96 N-m (980 kgf-cm, 71 ft-lbf)

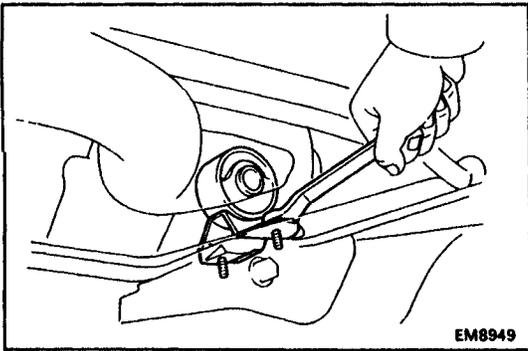


13. INSTALL FRONT EXHAUST PIPE

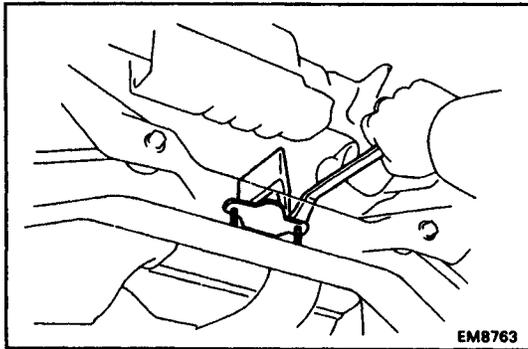
- (a) Place a new gasket to the front of the front exhaust pipe.
- (b) Using a 14 mm deep socket wrench, install the front exhaust pipe with three new nuts.
Torque: 62 N-m (630 kgf-cm, 46 ft-lbf)

HINT: The stabilizer bar and drive shaft will be in the way while installing the exhaust pipe. Follow directions according to illustration.

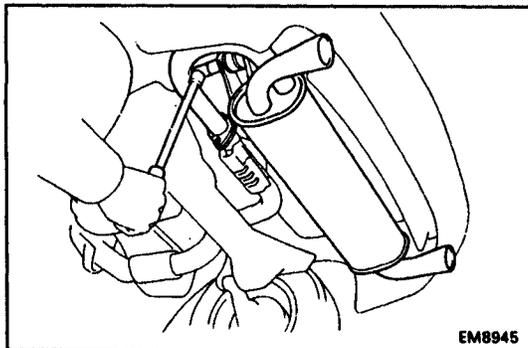




- (c) Install the support bracket with the two bolts.
Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)

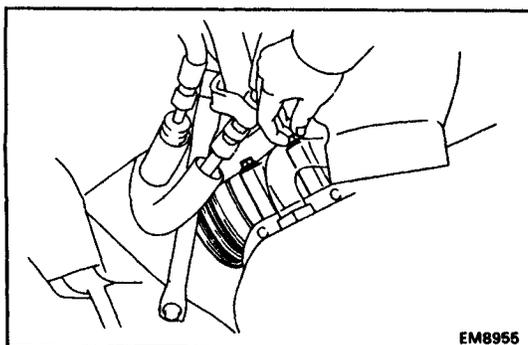


- (d) Install the damper with the two bolts.
Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)



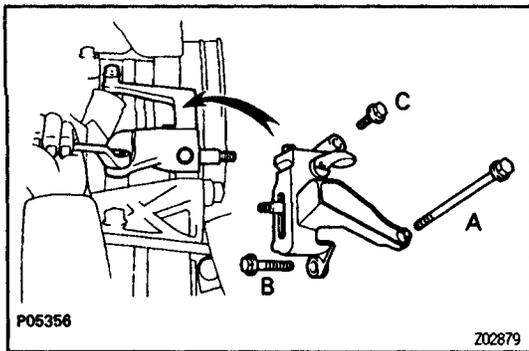
14. INSTALL TAILPIPE

- (a) Place a new gasket to the rear of the front exhaust pipe.
 (b) Install the tailpipe to the body bracket with the two bolts and nut.
Torque: 66 N-m (670 kgf-cm, 48 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)



15. INSTALL A/C COMPRESSOR

- (a) Temporarily install the A/C compressor with the two bolts.



(b) Install the idler pulley bracket with the three bolts.

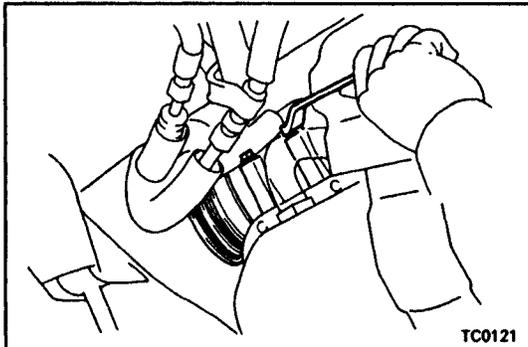
Torque:

25 N-m (250 kgf-cm, 18 ft-lbf) for A

27 N-m (275 kgf-cm, 20 ft-lbf) for B

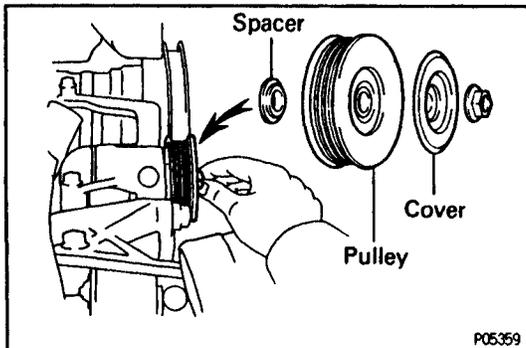
37 N-m (375 kgf-cm, 27 ft-lbf) for C

(c) Connect the A/C compressor connector.

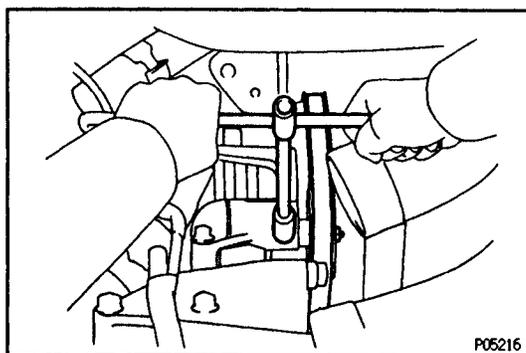


(d) Tighten the two bolts of the lower side of the A/C compressor.

Torque: 25 N-m (250 kgf-cm, 18 ft-lbf)

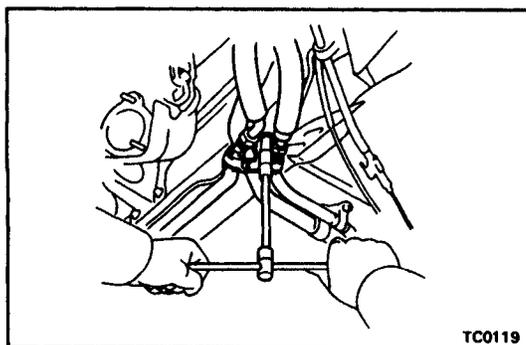


(e) Temporarily install the spacer, pulley and pulley cover with the nut.

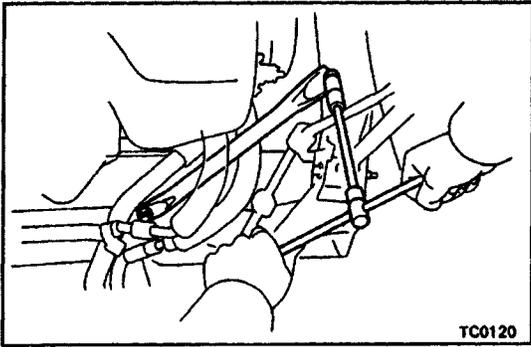


(f) Install the drive belt with the adjusting bolt.

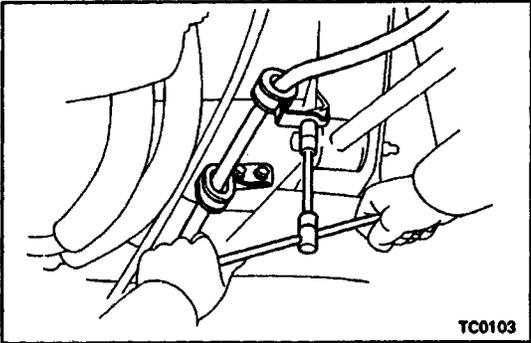
(g) Tighten the idler pulley nut.



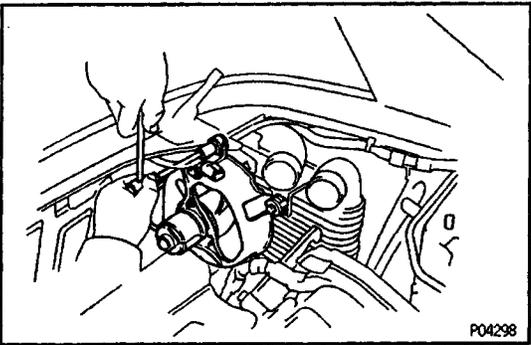
(h) Install the two A/C pipes with the two clamps and nut.



- (i) Install the lower suspension brace with the two bolts.
Torque: 73 N-m (740 kgf-cm, 54 ft-lbf)

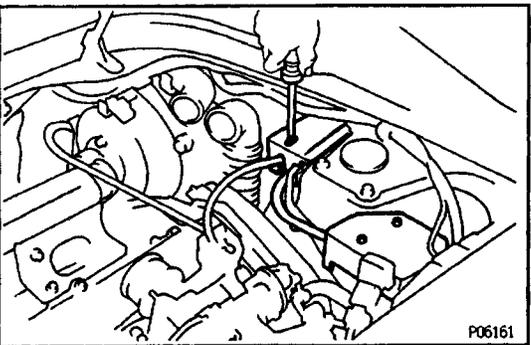


- (j) Install the parking brake cable with the two clamps and three bolts.

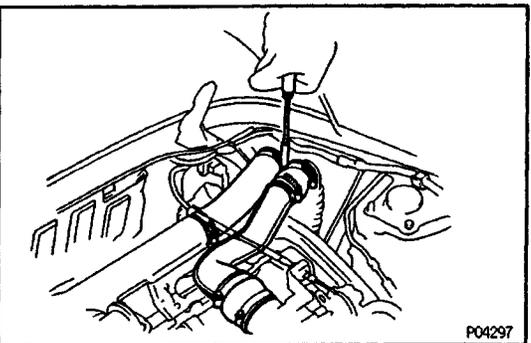


16. INSTALL ENGINE COMPARTMENT ELECTRIC COOLING FAN

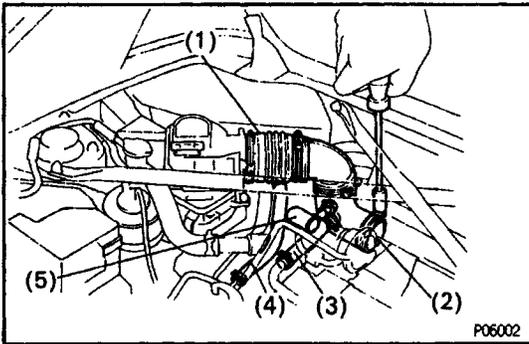
- (a) Install the cooling fan with the three bolts.
(b) Connect the cooling fan connector.



17. (w/ CRUISE CONTROL SYSTEM) INSTALL CRUISE CONTROL ACTUATOR AND ACCELERATOR LINKAGE

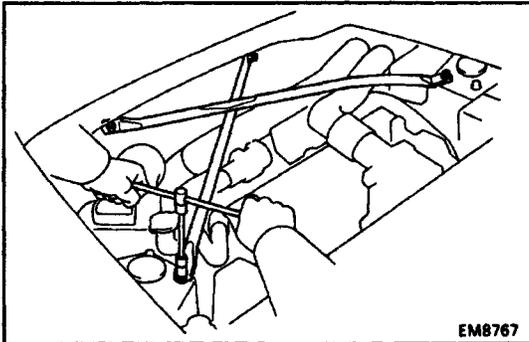


18. INSTALL NO.1 AND NO.2 INTAKE AIR CONNECTORS

**19. INSTALL AIR CLEANER HOSE**

Reconnect the following hoses, and install the air cleaner hose:

- (1) Air cleaner hose to air flow sensor
- (2) Air cleaner hose to turbocharger
- (3) PCV hose to cylinder head cover
- (4) Air hose to No.2 air hose
- (5) Air hose to air by-pass valve

**20. INSTALL UPPER SUSPENSION BRACE**

Install the upper brace with the two bolts and two nuts.

Torque:

- 73 N-m (740 kgf-cm, 54 ft-lbf) for bolt
- 64 N-m (650 kgf-cm, 47 ft-lbf) for nut

21. INSTALL RH ENGINE HOOD SIDE PANEL**22. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY****23. FILL WITH ENGINE OIL****24. START ENGINE AND CHECK FOR OIL LEAKS****25. RECHECK ENGINE OIL LEVEL****26. INSTALL ENGINE UNDER COVERS**