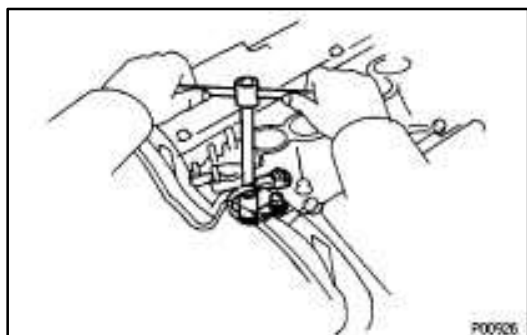


15. INSTALL INTAKE MANIFOLD

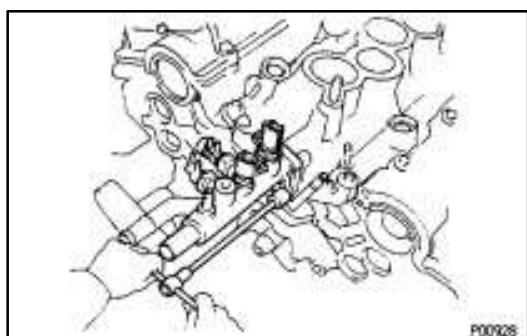
- (a) Install two new gaskets and the intake manifold with the eight bolts and four nuts. Uniformly tighten the bolts and nuts in several passes.

Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)



- (b) Install the No.2 idler pulley bracket stay and ground strap with the two bolts.

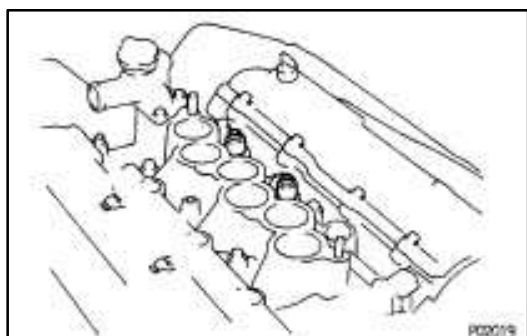
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



16. INSTALL WATER BY-PASS OUTLET

Install a new gasket and the water by-pass outlet with the two nuts.

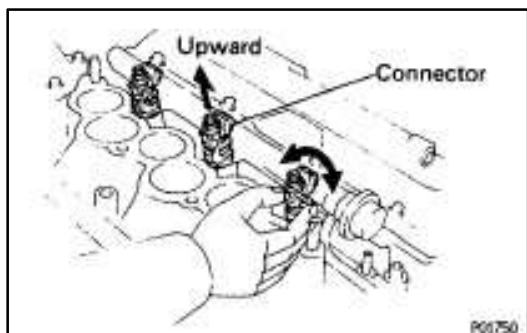
Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)



17. INSTALL RH DELIVERY PIPE AND INJECTORS

- (a) Place the two spacers in position on the intake manifold.

NOTICE: Clean the injector holes before installing the injectors into the intake manifold.

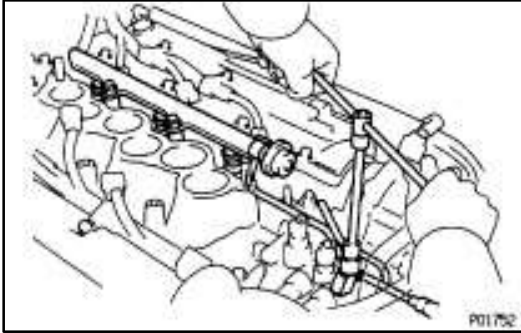


- (b) Place the three injectors together with the RH delivery pipe and No.1 fuel pipe in position on the intake manifold.

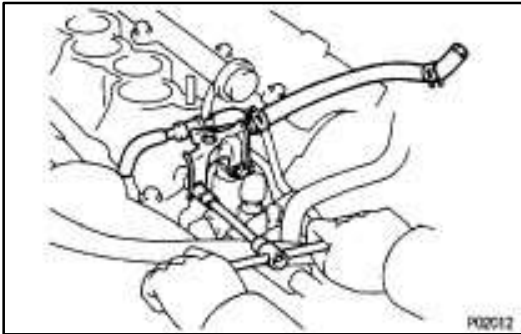
- (c) Check that the injectors rotate smoothly.

HINT: If injectors do not rotate smoothly, the probable cause is incorrect installation of O-rings. Replace the O-rings.

- (d) Position the injector connector upward.

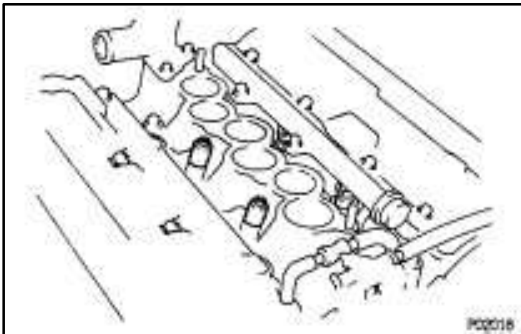


- (e) Install the three bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



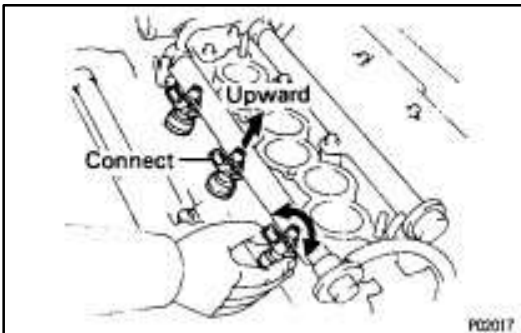
18. INSTALL AIR PIPE

- (a) Install the air pipe with the two bolts.
Torque: 8.3 N·m (85 kgf·cm, 73 in·lbf)

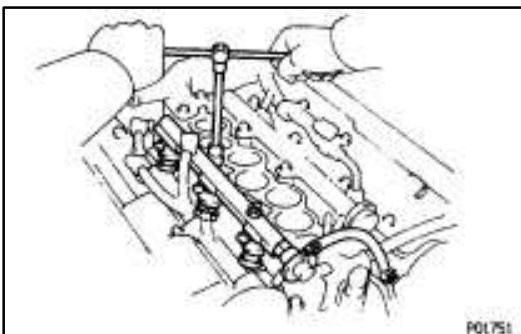


19. INSTALL LH DELIVERY PIPE AND INJECTORS

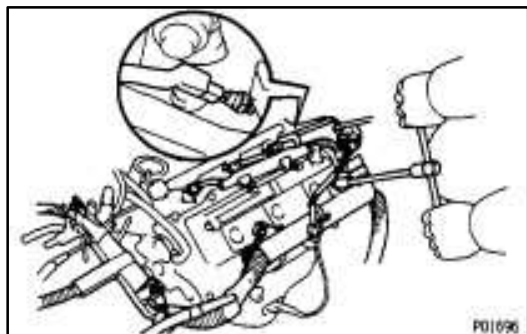
- (a) Place the two spacers in position on the intake manifold.
NOTICE: Clean the injector holes before installing the injectors into the intake manifold.



- (b) Place the three injectors together with the LH delivery pipe in position on the intake manifold.
 (c) Check that the injectors rotate smoothly.
HINT: If injectors do not rotate smoothly, the probable cause is incorrect installation of O-rings. Replace the O-rings.
 (d) Position injector connector upward.

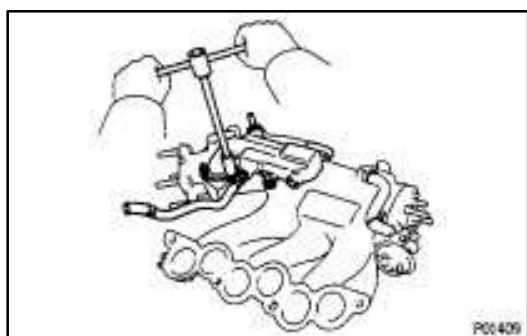


- (e) Install the two bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
 (f) Connect the fuel return hose to the No.1 fuel pipe (fuel inlet hose).



20. CONNECT RH ENGINE WIRE HARNESS

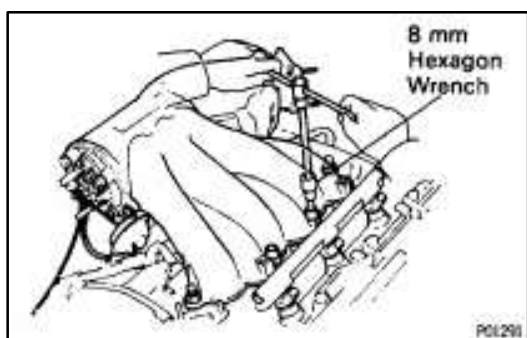
- (a) Connect the two clamps, and install the engine wire harness with the four bolts.
- (b) Connect the following connectors:
 - (1) Three injector connectors
 - (2) Engine coolant temp. sender gauge connector
 - (3) Oxygen sensor connector
 - (4) PS pump connector
 - (5) Oil pressure switch connector
 - (6) Engine oil level sensor connector
 - (7) A/C compressor connector
 - (8) Engine coolant temp. sensor connector (for hydraulic cooling fan)



21. INSTALL NO.1 EGR COOLER

Install a new gasket and the No.1 EGR cooler with the bolt and two nuts.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



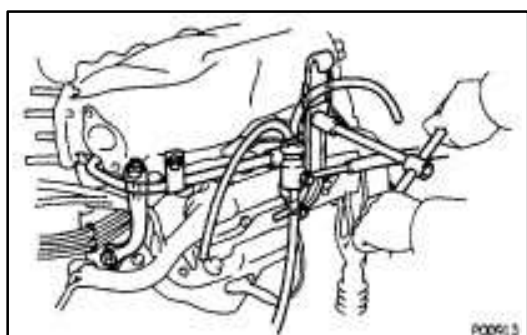
22. INSTALL AIR INTAKE CHAMBER

- (a) Using 8 mm hexagon wrench, install a new gasket and the air intake chamber with the two bolts and nuts.

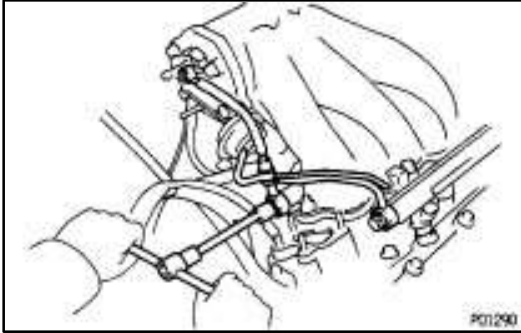
Uniformly tighten the bolts and nuts in several passes.

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

- (b) Connect the two ground straps with the nut.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (c) Connect the hydraulic pressure pipe with the bolt.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



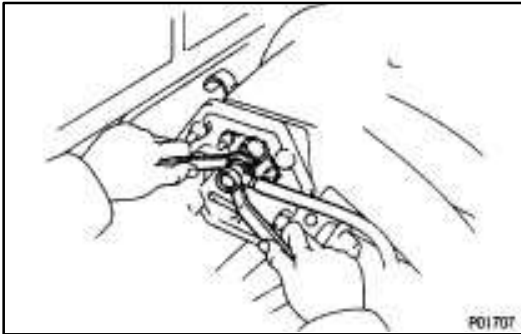
- (d) Install the air intake chamber stay.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
- (e) Install the No.1 engine hanger.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
- (f) Connect the PS ACV with the nut.

**23. INSTALL NO.2 FUEL PIPE**

- (a) Install the No.2 fuel pipe with four new gaskets and the union boots.

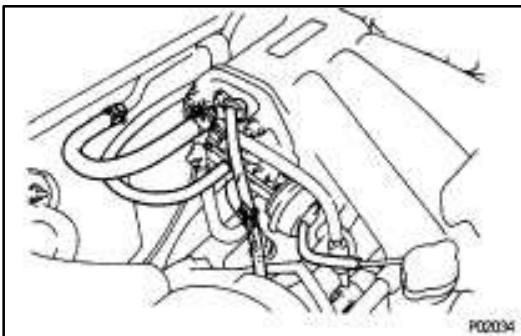
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

- (b) Connect the IACV vacuum hose.

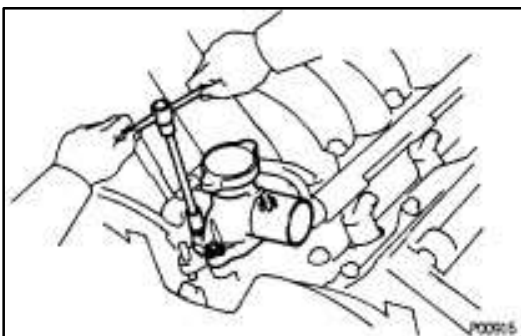


- (c) Connect the No.2 fuel pipe with two new gaskets and the union bolt.

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

**24. CONNECT COLD START INJECTOR CONNECTOR****25. CONNECT HOSES**

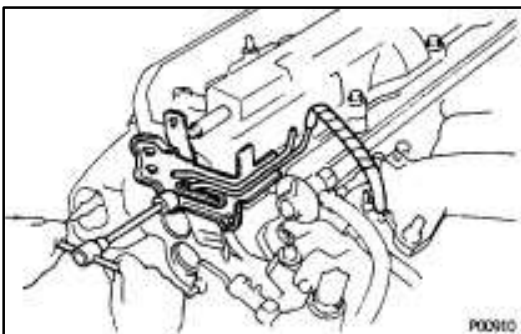
- (a) Brake booster vacuum hose
 (b) PS air hose
 (c) PCV hose
 (d) EGR water by-pass hose

**26. INSTALL WATER OUTLET**

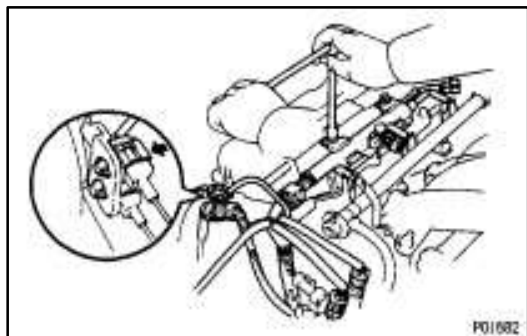
- (a) Install a new gasket and the water outlet with the three bolts.

Torque: 8.3 N·m (85 kgf·cm, 73 ft·lbf)

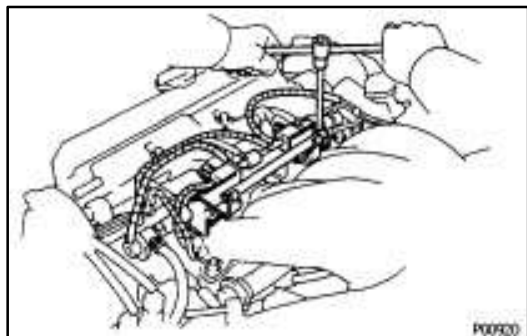
- (b) Connect the engine coolant reservoir hose.
 (c) Connect the radiator upper hose.

**27. INSTALL CYLINDER HEAD REAR PLATE**

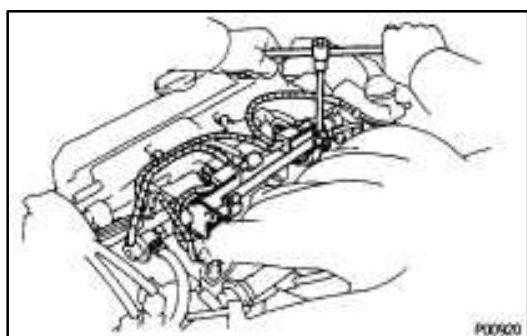
- (a) Install the rear plate with the bolt and nut.
 (b) Connect the vacuum hose to the air intake chamber.
 (c) Connect the two vacuum hoses to the vacuum tank.

**28. CONNECT LH ENGINE WIRE HARNESS**

- (a) Connect the three clamps of the LH engine wire harness and install the wire harness with the two bolts.
- (b) Connect the following connectors:
 - (1) Three injector connectors
 - (2) Cold start injector time switch connector
 - (3) Engine coolant temperature sensor connector
 - (4) Oxygen sensor connector
 - (5) Knock sensor connector

**29. INSTALL EMISSION CONTROL VALVE SET**

- (a) Install the emission control valve set with the two bolts.
Torque: 8.3 N·m (85 kgf·cm, 73 in.-lbf)
- (b) Connect the two VSV connectors.
- (c) Connect the two vacuum hoses to the IACV VSV.
- (d) Connect the two vacuum hoses to the fuel pressure control VSV.

**30. INSTALL EGR PIPE**

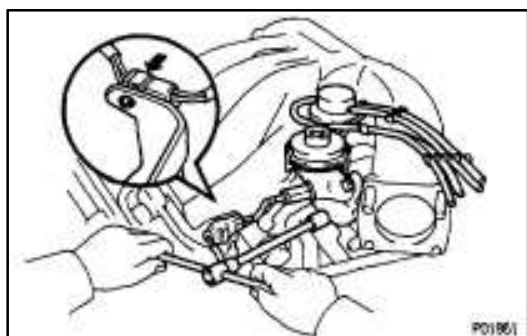
Install a new gasket, sleeve ball and the EGR pipe with the two bolts and union nut.

Bolt

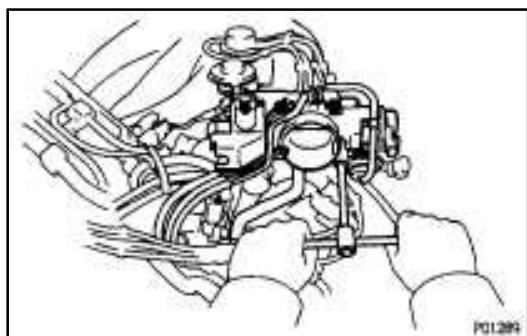
Torque: 18 N·m (185 kgf·cm, 13 ft-lbf)

Union nut

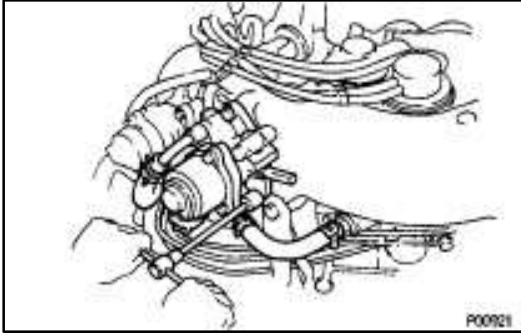
Torque: 78 N·m (800 kgf·cm, 58 ft-lbf)

31. INSTALL DISTRIBUTOR (See IG section)**32. INSTALL EGR VALVE AND VACUUM MODULATOR**

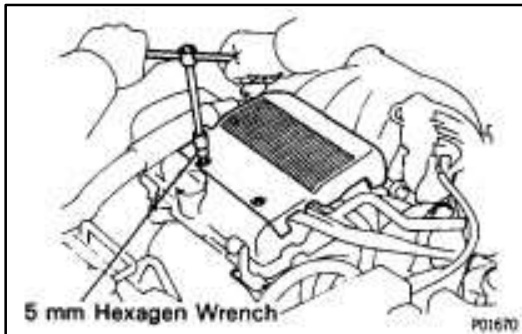
- (a) Install a new gasket and the EGR valve and vacuum modulator with the two nuts.
Torque: 18 N·m (185 kgf·cm, 13 ft-lbf)
- (b) (Calif. only)
Connect the EGR gas temp. sensor connector.

**33. INSTALL THROTTLE BODY**

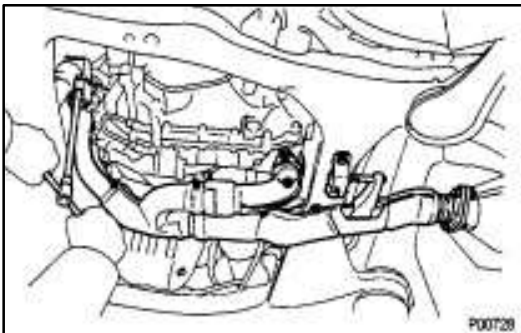
- (a) Install a new gasket and the throttle body with the two bolts and two nuts.
Torque: 13 N·m (130 kgf·cm, 9 ft-lbf)
- (b) Connect the throttle position sensor connector.
- (c) Connect the following hoses:
 - (1) Three TVV vacuum hoses
 - (2) Four EGR vacuum hoses
 - (3) Water by-pass hose

**34. INSTALL IAC VALVE**

- (a) Install a new gasket with the two bolts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (b) Connect the IAC valve connector.
- (c) Connect the following connectors:
 - (1) PS idle-up air hose
 - (2) Water by-pass hoses
 - (3) No.5 air hose

**35. INSTALL V-BANK COVER**

Using a 5 mm hexagon wrench, install the V-bank cover with the two nuts.

**36. INSTALL GENERATOR
(See CH section)****37. CONNECT FRONT EXHAUST PIPE**

- (a) Place three new gaskets on the front pipe.
- (b) Install the front pipe with the two bolts and six nuts.
Torque the nut.
To manifold
Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)
To three-way catalytic converter
Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)
- (c) Connect the bracket with the two bolts.

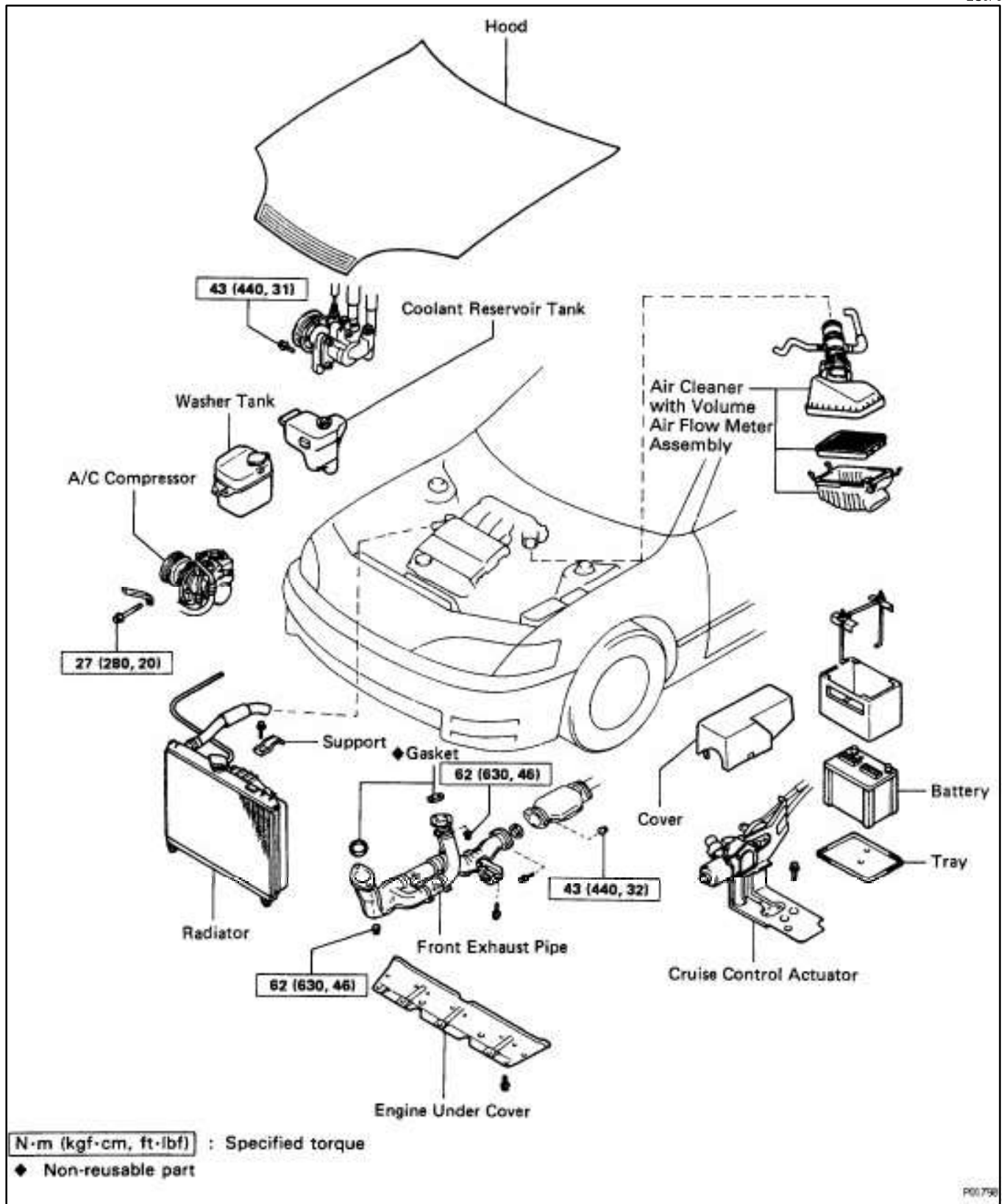
**38. INSTALL AIR CLEANER CAP, VOLUME AIR FLOW METER AND AIR CLEANER HOSE**

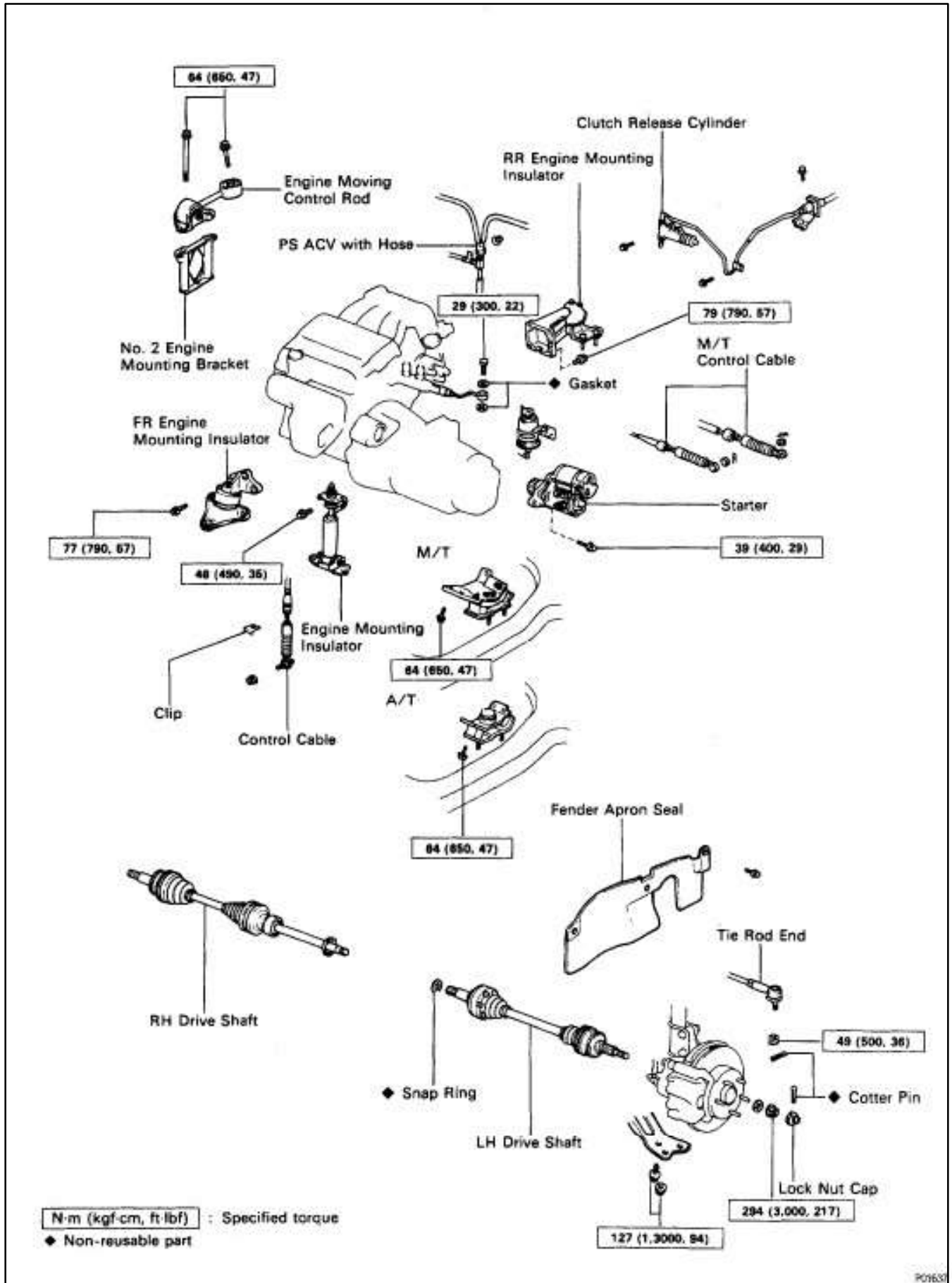
- (a) Connect the air cleaner hose, and install the air cleaner cap and volume air flow meter with the four clips.
- (b) Tighten the air cleaner hose clamp bolt.
- (c) Connect the air hoses.
- (d) Connect the coil cord clamp.
- (e) Connect the volume air flow meter connector.

39. (A/T)
CONNECT THROTTLE CABLE, AND ADJUST IT
40. INSTALL ACCELERATOR CABLE, AND ADJUST IT
41. FILL WITH ENGINE COOLANT
42. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY
43. START ENGINE AND CHECK FOR LEAKS
44. ADJUST IGNITION TIMING (See IG section)
Ignition timing:
10° BTDC @ idle
(w/ Terminals TE1 and E1 connected)
45. PERFORM ROAD TEST
Check for abnormal noise, shock, slippage, correct shift points and smooth operation.
46. RECHECK ENGINE COOLANT LEVEL AND OIL LEVEL

CYLINDER BLOCK ENGINE REMOVAL

EG0F8-02





1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION (w/ Airbag): Work must be started after approx. 30 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 BATTERY AND TRAY

3. REMOVE HOOD

4. REMOVE ENGINE UNDER COVER

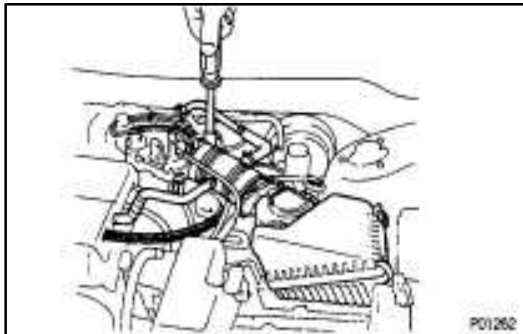
5. DRAIN ENGINE COOLANT

6. DRAIN ENGINE OIL

7. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

8. (A/T)

DISCONNECT THROTTLE CABLE FROM THROTTLE BODY



9. REMOVE AIR CLEANER ASSEMBLY, VOLUME AIR FLOW METER AND AIR CLEANER HOSE

(a) Disconnect the volume air flow meter connector.

(b) Disconnect the IAC valve and PCV hoses.

(c) Loosen the air cleaner hose clamp bolt.

(d) Disconnect the four air cleaner cap clips.

(e) Disconnect the air cleaner hose from the throttle body, and remove the air cleaner cap together with the volume air flow meter and air cleaner hose.

(f) Remove the air filter.

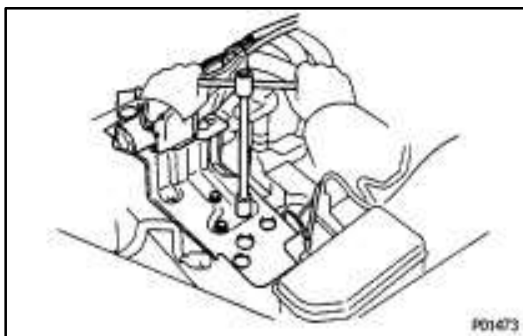
(g) Remove the three bolts and air cleaner case.

10. REMOVE CRUISE CONTROL ACTUATOR

(a) Remove the actuator cover.

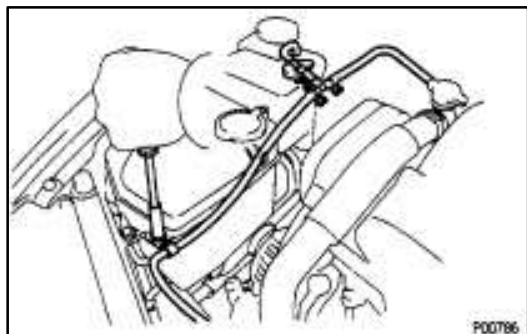
(b) Disconnect the actuator connector.

(c) Remove the three bolts, and disconnect the actuator with the bracket.



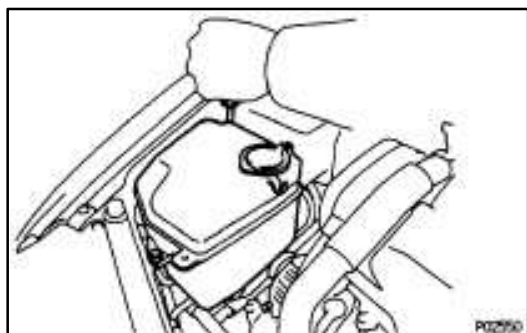
11. DISCONNECT GROUND STRAP FROM BATTERY CARRIER

12. REMOVE RADIATOR



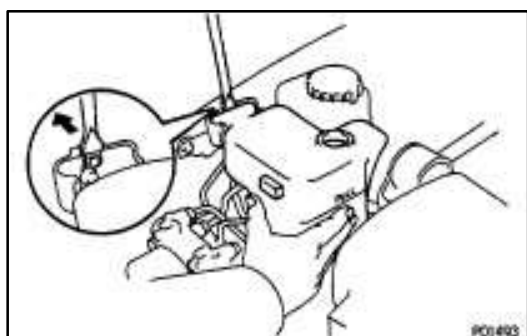
13. DISCONNECT ENGINE COOLANT RESERVOIR HOSE

Remove the bolt and disconnect the reservoir hose.



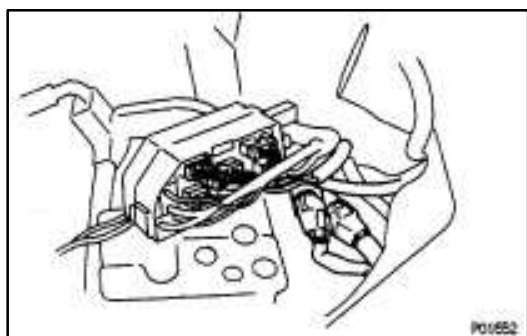
14. REMOVE WASHER TANK

- (a) Remove the three washer tank mounting bolts.
- (b) Disconnect the connector and hose, and remove the washer tank.



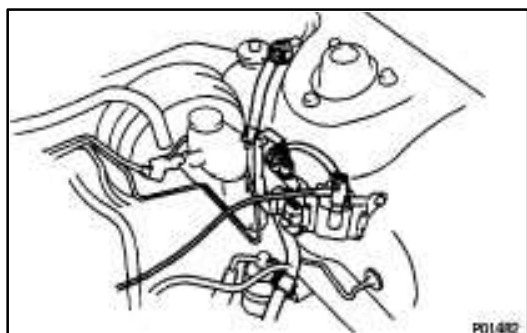
15. REMOVE ENGINE COOLANT RESERVOIR TANK

Using a screwdriver, remove the reservoir tank.

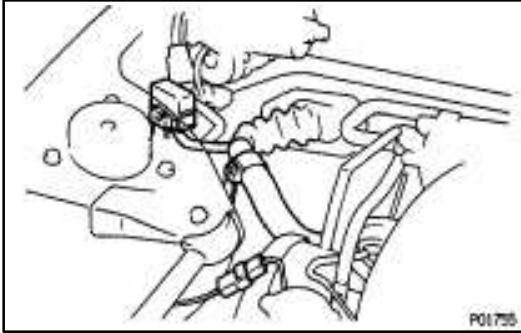


16. DISCONNECT WIRES AND CONNECTORS

- (a) Remove the engine relay box, and disconnect the three connectors.
- (b) Two connectors from LH fender apron

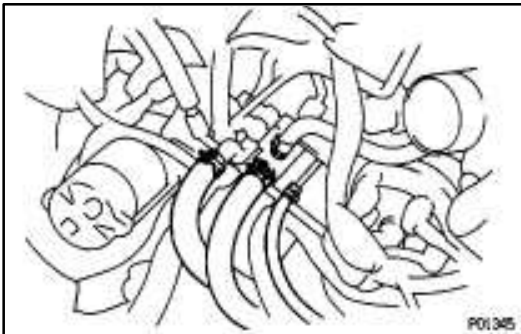


- (c) Igniter connector
- (d) Ignition coil connector
- (e) High-tension cord from ignition coil
- (f) Noise filter connector
- (g) Connector from fender apron

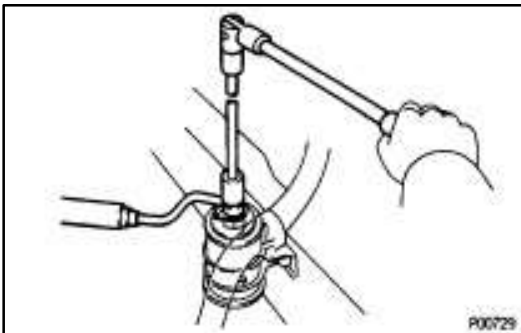


- (h) Data link connector 1
- (i) Ground strap from RH fender apron

- (j) (M/T)
Back-up light switch connector
- (k) (M/T)
Speed sensor connector

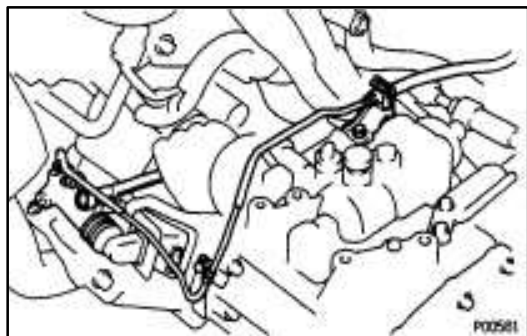


- 17. DISCONNECT HEATER HOSES
- 18. DISCONNECT FUEL RETURN HOSE
CAUTION: Catch leaking fuel in a container.



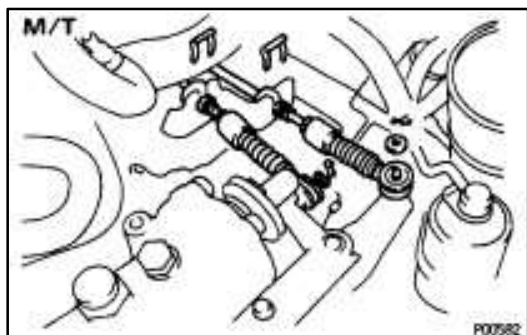
- 19. DISCONNECT FUEL INLET HOSE
CAUTION: Catch leaking fuel in a container.

- 20. (M/T)
REMOVE STARTER

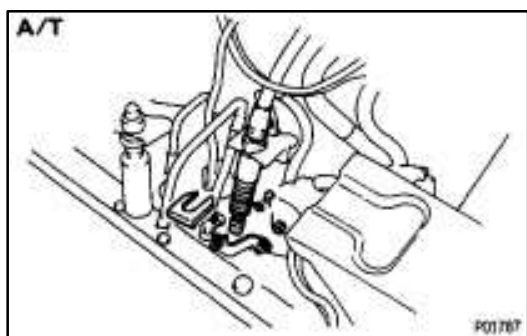


21. (M/T)
REMOVE CLUTCH RELEASE CYLINDER WITHOUT DISCONNECTING TUBE

Remove the four bolts, release cylinder and tube from the transaxle.



22. DISCONNECT TRANSAXLE CONTROL CABLE (S) FROM TRANSAXLE

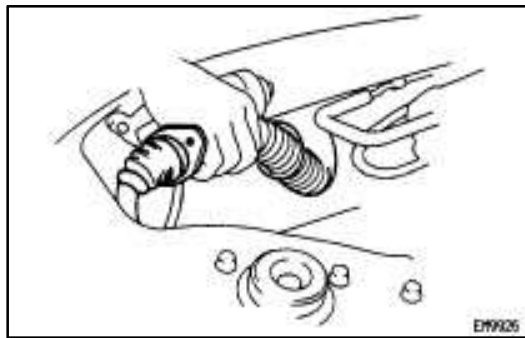
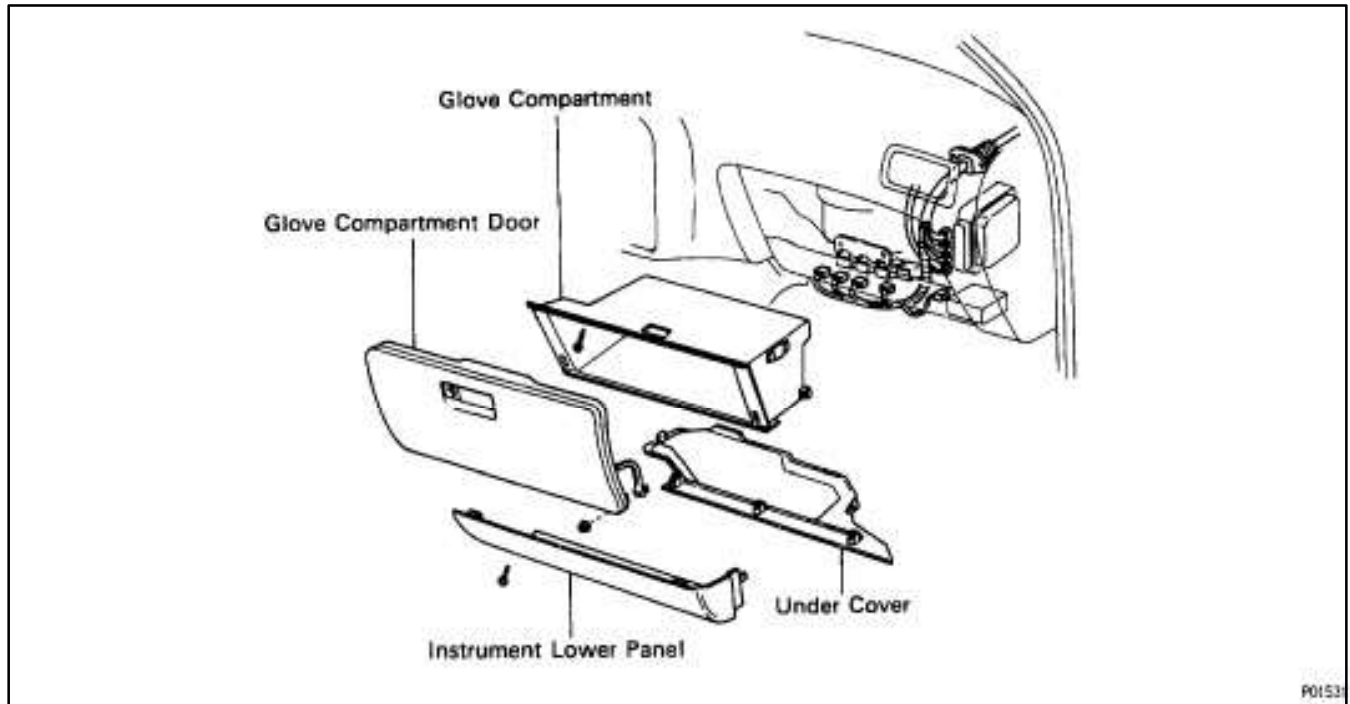


23. DISCONNECT VACUUM HOSES

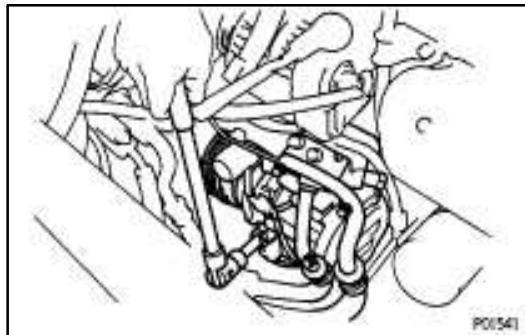
- (a) Brake booster vacuum hose from air intake chamber.
- (b) Charcoal canister vacuum hose
- (c) IACV vacuum tank vacuum hoses

24. DISCONNECT ENGINE WIRE FROM CABIN

- (a) Remove the under cover.
- (b) Remove the lower instrument panel.
- (c) Remove the glove compartment door.
- (d) Remove the glove compartment.
- (e) Disconnect the following connectors:
 - (1) Three engine control module (ECM) connectors
 - (2) Five cowl wire connectors
 - (3) Cooling fan ECU connector



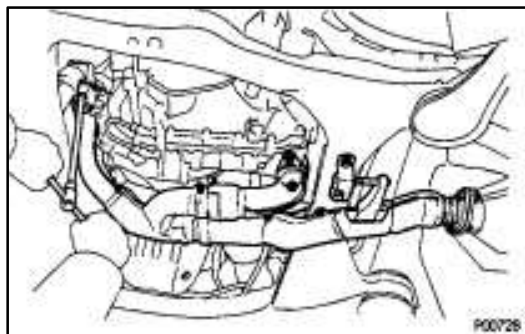
- (f) Remove the two nuts, and pull out the engine wire from the cowl panel.



25. REMOVE A/C COMPRESSOR WITHOUT DISCONNECTING HOSES

- Disconnect the A/C compressor connector.
- Remove the drive belt.
- Remove the five bolts, compressor stay and disconnect the A/C compressor.

HINT: Put aside the compressor, and suspend it to the radiator support with a string.

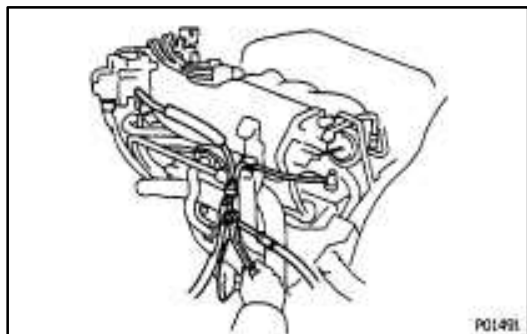


26. REMOVE FRONT EXHAUST PIPE

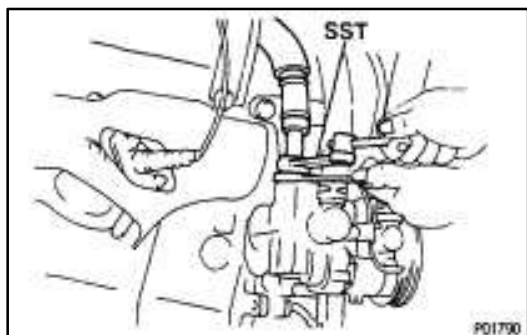
- Loosen the two bolts, and disconnect the bracket.
- Remove the two bolts and nuts holding the front exhaust pipe to the three-way catalytic converter.
- Remove the four nuts holding the exhaust pipe to the exhaust manifolds.
- Disconnect the front exhaust pipe and gaskets.

27. REMOVE DRIVE SHAFTS

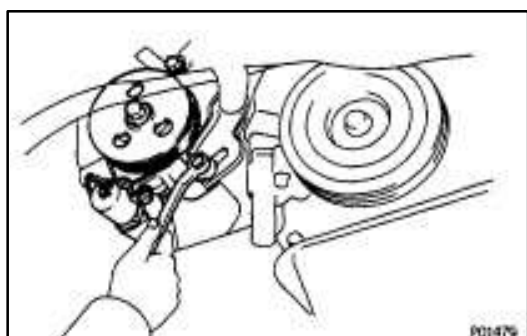
(See SA section)

**28. DISCONNECT PS ACV**

- (a) Disconnect the two PS air hoses.
- (b) Remove the nut and disconnect the PS ACV

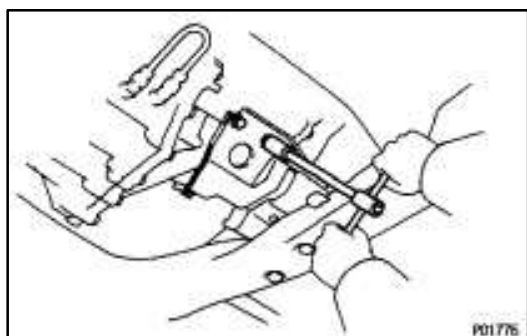
**29. DISCONNECT HYDRAULIC COOLING FAN PRESSURE HOSE**

Using SST, disconnect the pressure hose.
SST 09631-22020

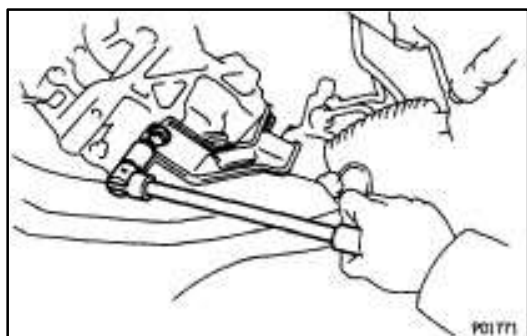
**30. REMOVE PS PUMP WITHOUT DISCONNECTING HOSES**

- (a) Remove the PS drive belt.
- (b) Remove the two bolts, and disconnect the PS pump from the engine.

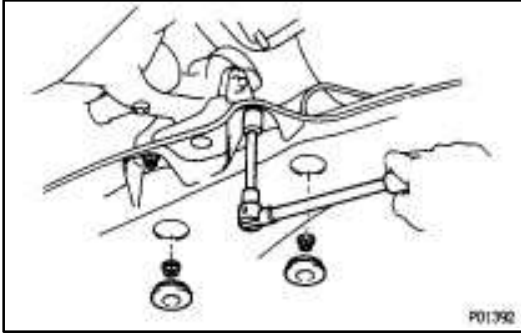
HINT: Put aside the pump and suspend it to the cowl with a string.

**31. DISCONNECT LH ENGINE MOUNTING INSULATOR (M/T)**

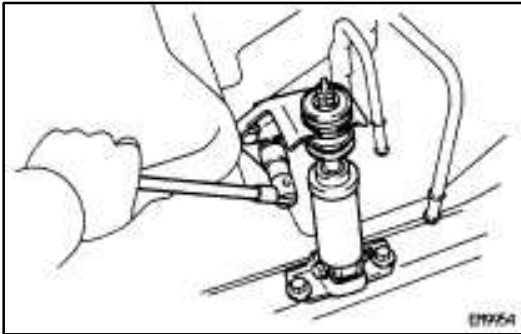
Remove the three bolts, and disconnect the mounting insulator.

**(A/T)**

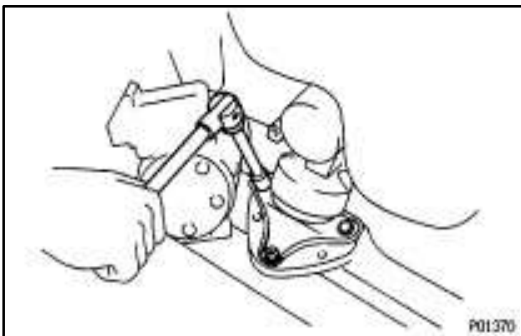
Remove the four bolts, and disconnect the mounting insulator.

**32. DISCONNECT RR ENGINE MOUNTING INSULATOR**

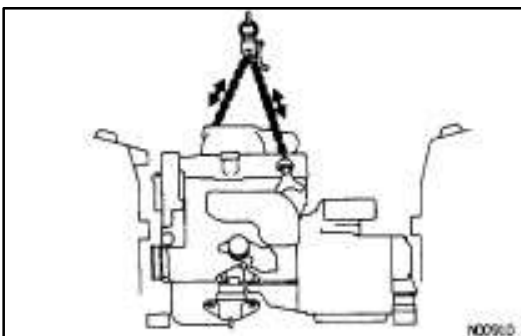
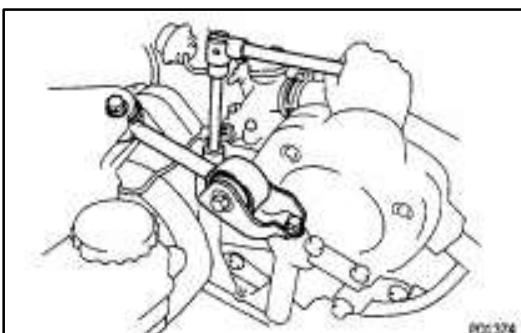
- (a) Remove the hole plugs.
- (b) Remove the four nuts, and disconnect the mounting insulator.

**33. REMOVE ENGINE MOUNTING ABSORBER**

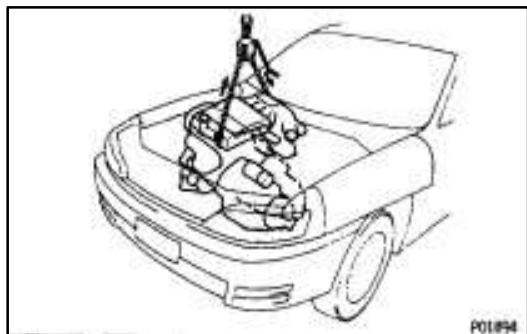
Remove the four bolts and engine mounting absorber.

**34. DISCONNECT FR ENGINE MOUNTING INSULATOR**

Remove the three bolts, and disconnect the mounting insulator.

**35. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS****36. REMOVE ENGINE MOVING CONTROL ROD**

Remove the three bolts and control rod.



37. REMOVE ENGINE AND TRANSAXLE ASSEMBLY FROM VEHICLE

- (a) Lift the engine out of the vehicle slowly and carefully.
NOTICE: Be careful not to hit the PS gear housing or park/neutral position switch (A/T).
- (b) Make sure the engine is clear of all wiring, hoses and cables.
- (c) Place the engine and transaxle assembly onto the stand.

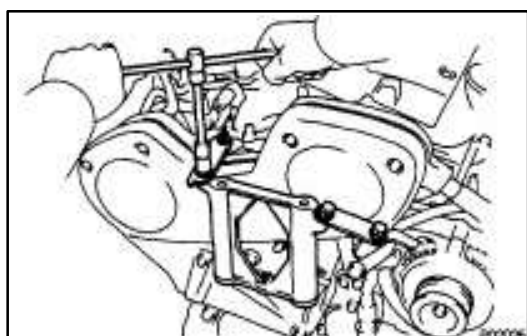
38. (A/T)

REMOVE STARTER

39. SEPARATE ENGINE AND TRANSAXLE

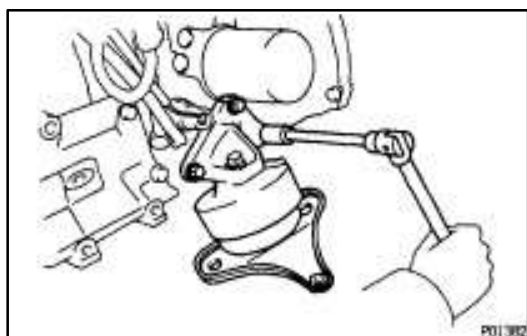
M/T (See MT section)

A/T (See AT section)



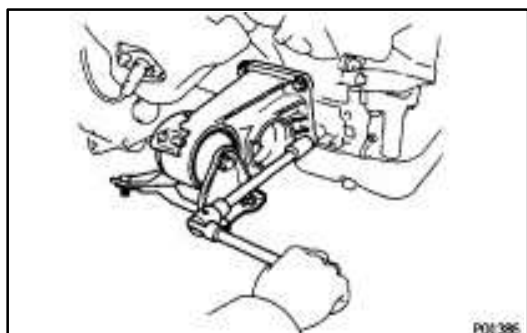
40. REMOVE NO.2 RH ENGINE MOUNTING BRACKET

Remove the three bolts and nut, RH engine mounting stays and engine mounting bracket.



41. REMOVE FR ENGINE MOUNTING INSULATOR

Remove the three bolts and mounting insulator.

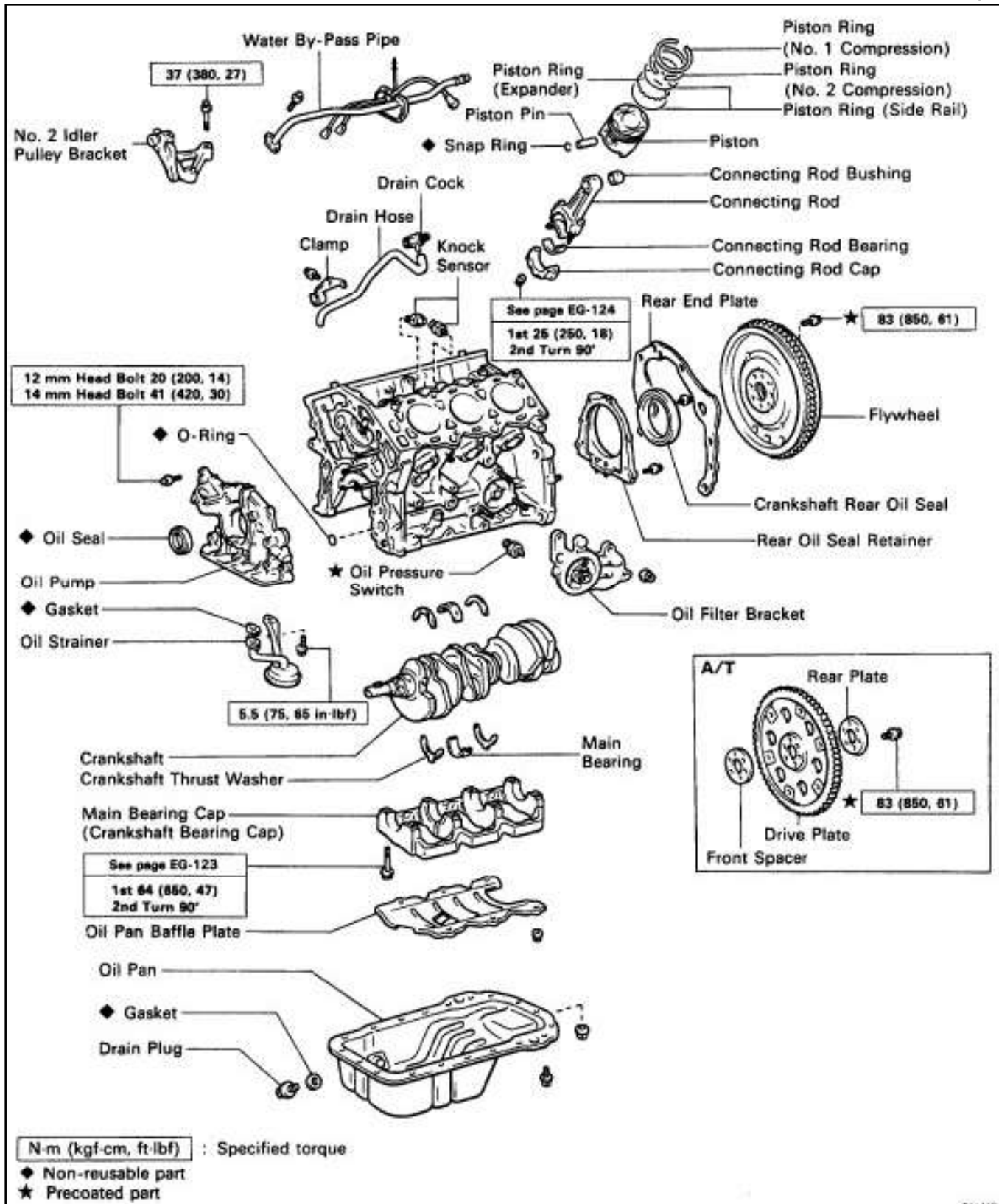


42. REMOVE RR ENGINE MOUNTING INSULATOR

Remove the four bolts and mounting insulator.

COMPONENTS

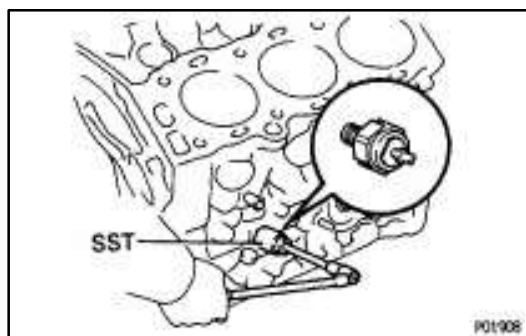
EG0F9-01



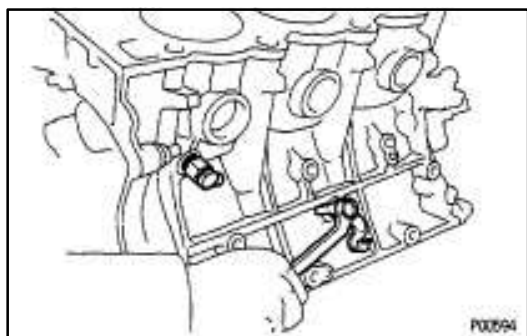
PREPARATION FOR DISASSEMBLY

EG0FA-01

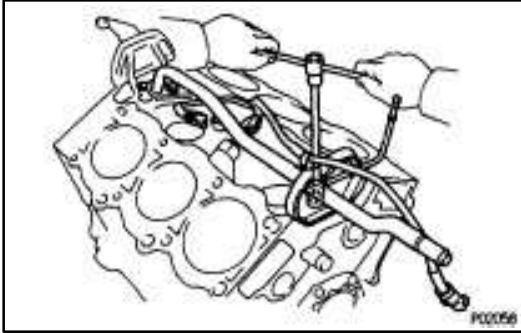
1. (M/T)
REMOVE CLUTCH COVER AND DISC
2. (M/T)
REMOVE FLYWHEEL
3. (A/T)
REMOVE DRIVE PLATE
4. REMOVE REAR END PLATE
Remove the bolt and end plate.
5. INSTALL ENGINE TO ENGINE STAND FOR DISASSEMBLY
6. REMOVE DISTRIBUTOR (See IG section)
7. REMOVE TIMING BELT AND PULLEYS
(See page [EG-29](#))
8. REMOVE CYLINDER HEADS
(See page [EG-47](#))
9. REMOVE WATER PUMP (See page [EG-246](#))
10. REMOVE OIL PAN AND OIL PUMP
(See page [EG-294](#))
11. REMOVE OIL FILTER AND FILTER BRACKET
(See page [EG-307](#))



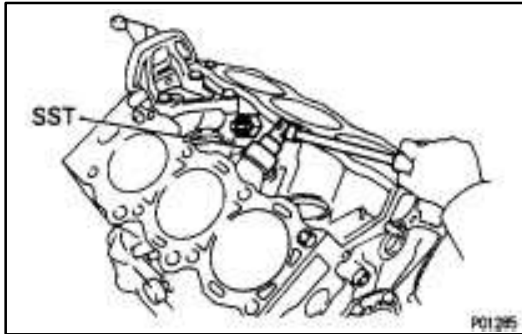
12. REMOVE OIL PRESSURE SWITCH
Using SST, remove the oil pressure switch.
SST 09816-30010



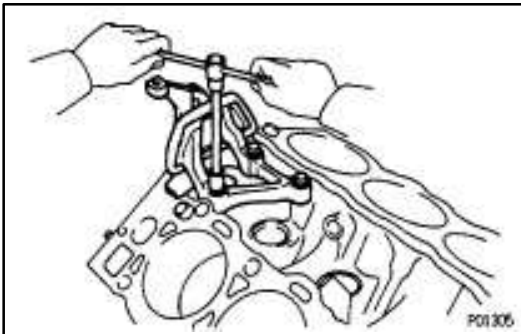
13. REMOVE ENGINE COOLANT DRAIN COCK
 - (a) Remove the water drain hose.
 - (b) Remove the bolt and hose clamp.
 - (c) Remove the drain cock.

**14. REMOVE WATER BY-PASS PIPE**

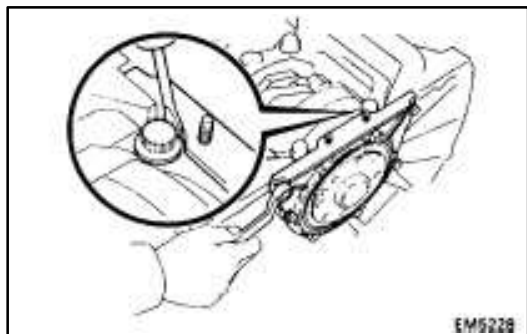
- (a) Disconnect the two knock sensor connectors.
- (b) Remove the two bolts, nut and water by-pass pipe.

**15. REMOVE KNOCK SENSORS**

- Using SST, remove the two knock sensors.
SST 09816-30010

**16. REMOVE NO.2 IDLER PULLEY BRACKET**

- Remove the three bolts and idler pulley bracket.



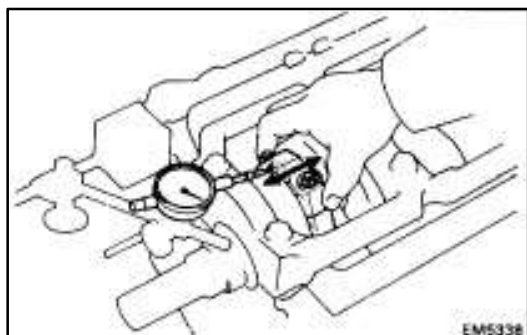
CYLINDER BLOCK DISASSEMBLY

EG0FB-01

(See page [EG-98](#))

1. REMOVE REAR OIL SEAL RETAINER

Remove the six bolts and retainer.



2. CHECK CONNECTING ROD THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance while moving the connecting rod back and forth.

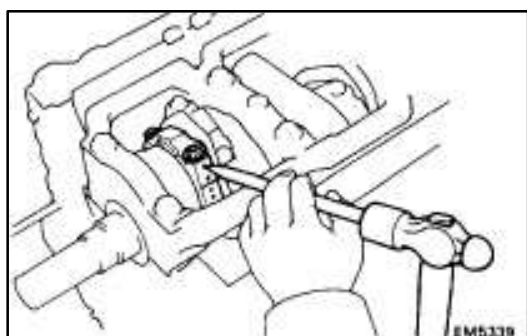
Standard thrust clearance:

0.150–0.330 mm (0.0059–0.0130 in.)

Maximum thrust clearance:

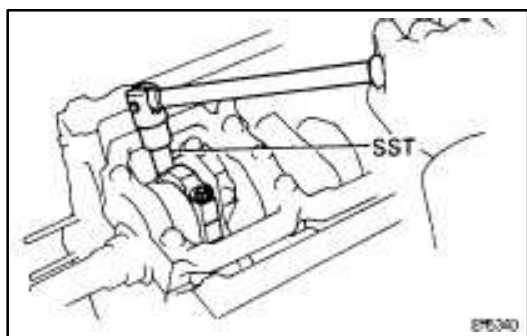
0.38 mm (0.0150 in.)

If the thrust clearance is greater than maximum, replace the connecting rod assembly. If necessary, replace the crankshaft.

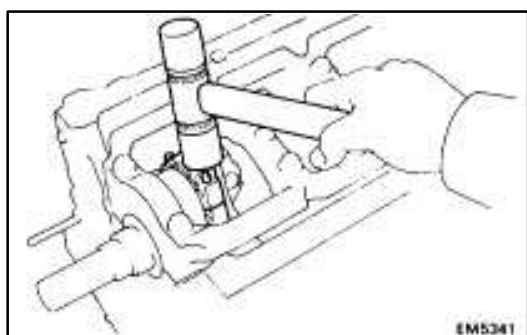


3. REMOVE CONNECTING ROD CAPS AND CHECK OIL CLEARANCE

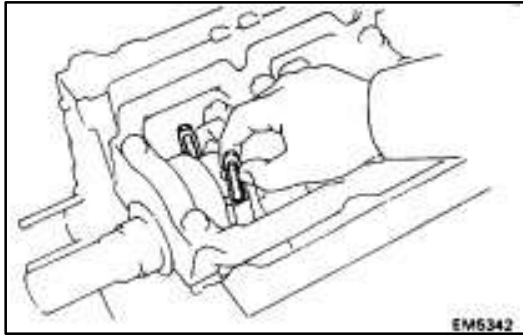
- (a) Using a punch or numbering stamp, mark the connecting rod and cap to ensure correct reassembly.



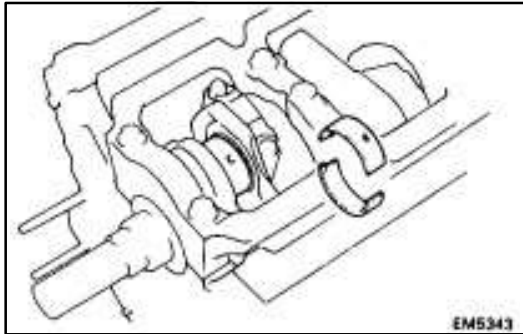
- (b) Using SST, remove the connecting rod cap nuts.
SST 09011-38121



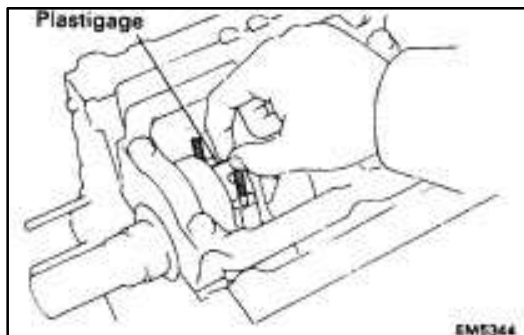
- (c) Using a plastic-faced hammer, lightly tap the connecting rod bolts and lift off the connecting rod cap.
HINT: Keep the lower bearing inserted with the connecting cap.



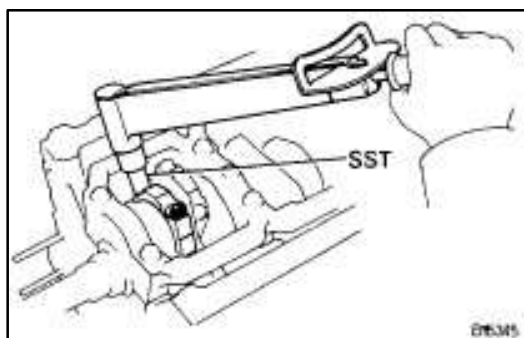
- (d) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft from damage.



- (e) Clean the crank pin and bearing.
 (f) Check the crank pin and bearing for pitting and scratches. If the crank pin or bearing is damaged, replace the bearings. If necessary, grind or replace the crankshaft.



- (g) Lay a strip of Plastigage across the crank pin.



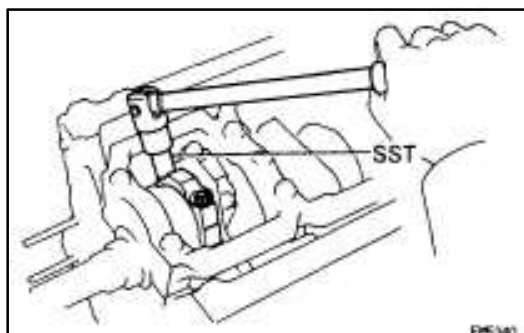
- (h) Install the connecting rod cap with the two nuts. (See step 6 on page [EG-124](#))

1st

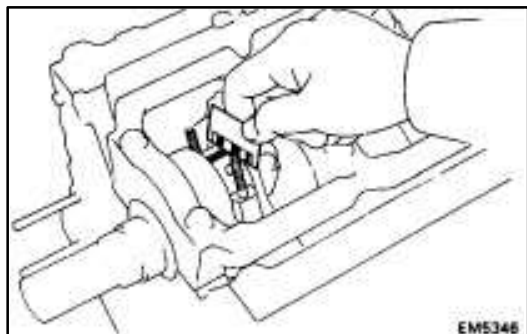
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

2nd Turn 90°

NOTICE: Do not turn the crankshaft.



- (i) Remove the two nuts and connecting rod cap. (See procedure (b) and (c) above)



- (j) Measure the Plastigage at its widest point.

Standard oil clearance:

STD

0.028–0.065 mm (0.0011–0.0026 in.)

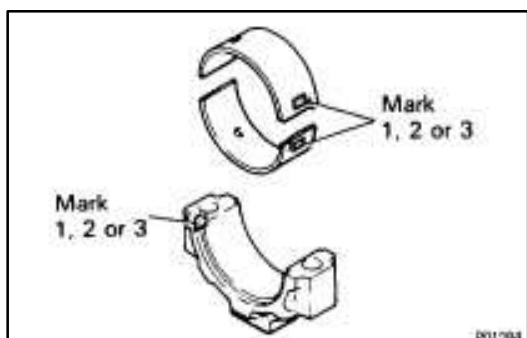
U/S 0.25

0.027–0.080 mm (0.0011–0.0031 in.)

Maximum oil clearance:

0.08 mm (0.0031 in.)

If the oil clearance is greater than maximum, replace the bearings. If necessary, grind or replace the crankshaft.



HINT: If using a standard bearing, replace with one having the same number marked on the connecting rod cap. There are three sizes of standard bearings, marked "1", "2" and "3" accordingly.

(Reference)

Standard sized bearing center wall thickness:

Mark "1"

1.484–1.488 mm (0.0584–0.0586 in.)

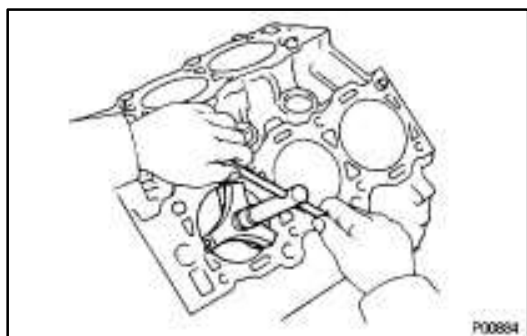
Mark "2"

1.488–1.492 mm (0.0586–0.0587 in.)

Mark "3"

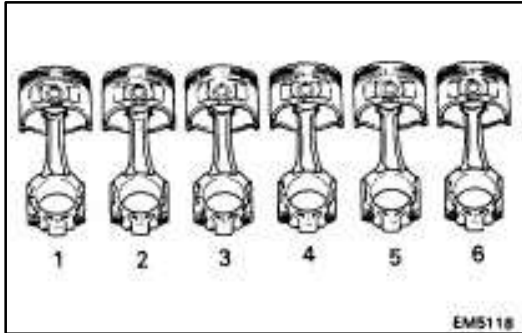
1.492–1.496 mm (0.0587–0.0589 in.)

- (k) Completely remove the Plastigage.

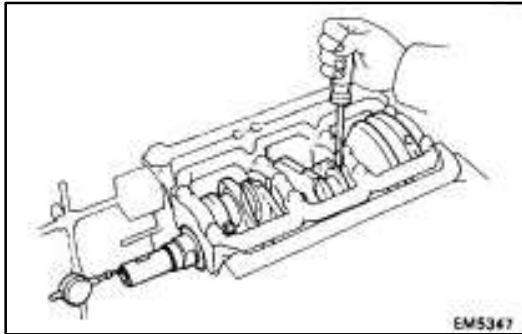


4. REMOVE PISTON AND CONNECTING ROD ASSEMBLIES

- (a) Using a ridge reamer, remove the all carbon from the top of the cylinder.
- (b) Push the piston, connecting rod assembly and upper bearing through the top of the cylinder block.

**HINT:**

- Keep the bearings, connecting rod and cap together.
- Arrange the piston and connecting rod assemblies in correct order.

**5. CHECK CRANKSHAFT THRUST CLEARANCE**

Using a dial indicator, measure the thrust clearance while prying the crankshaft back and forth with a screwdriver.

Standard thrust clearance:

0.020–0.220 mm (0.0008–0.0087 in.)

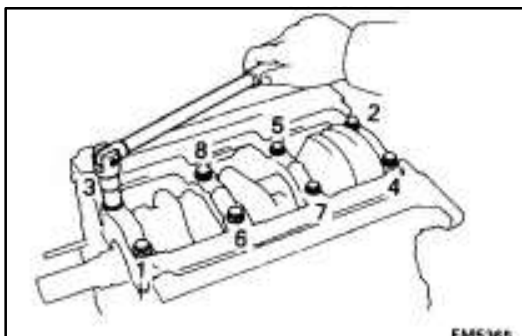
Maximum thrust clearance:

0.30 mm (0.0118 in.)

If the thrust clearance is greater than maximum, replace the thrust washers as a set.

Thrust washer thickness:

2.440–2.490 mm (0.0961–0.0980 in.)

**6. REMOVE MAIN BEARING CAP AND CHECK OIL CLEARANCE**

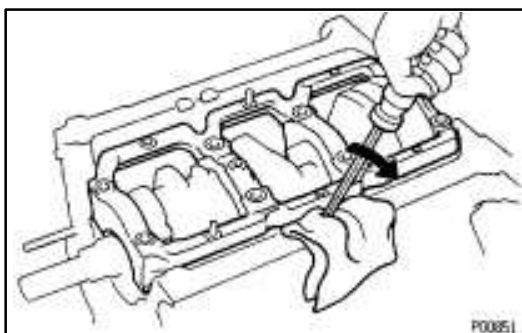
- (a) Uniformly loosen and remove the main bearing cap bolts in several passes, in the sequence shown.

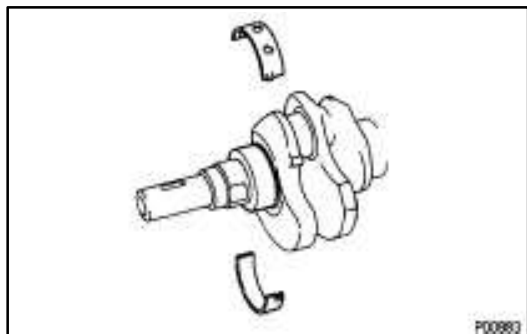
- (b) Using a screwdriver, pry up the main bearing cap, and remove the main bearing cap, lower main bearings and lower thrust washers (No.2 journal position of main bearing cap only).

HINT: Keep the lower main bearings and lower thrust washers together with the main bearing cap.

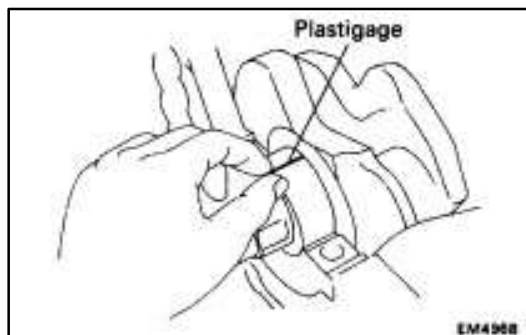
- (c) Lift out the crankshaft.

HINT: Keep the upper main bearings and upper thrust washers together with the cylinder block.

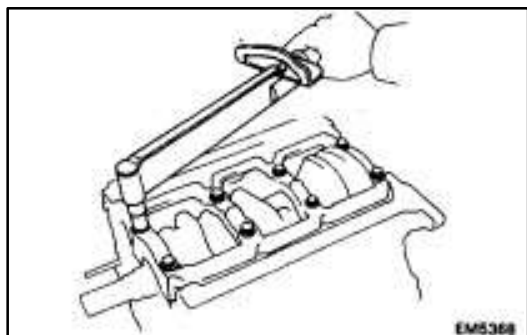




- (d) Clean each main journal and bearing.
 (e) Check each main journal and bearing for pitting and scratches.
 If the journal or bearing is damaged, replace the bearings.
 If necessary, grind or replace the crankshaft.



- (f) Place the crankshaft on the cylinder block.
 (g) Lay a strip of Plastigage across each journal.



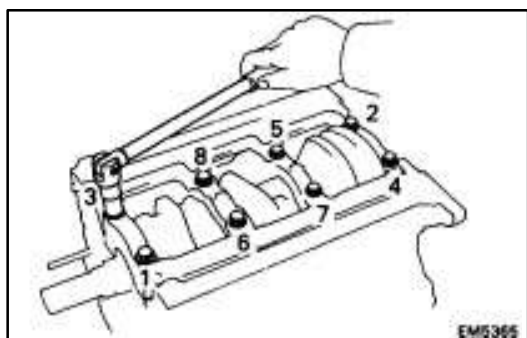
- (h) Install the main bearing cap with the eight bolts.
 (See step 4 on page [EG-122](#))

1st

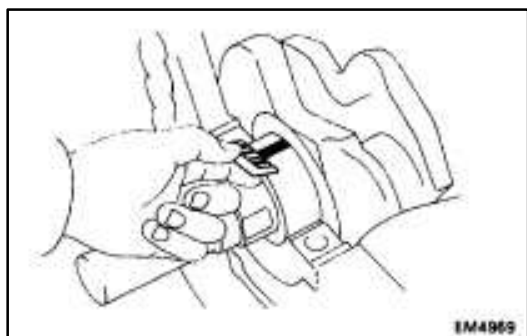
Torque: 61 N·m (625 kgf·cm, 45 ft·lbf)

2nd Turn 90°

NOTICE: Do not turn the crankshaft.



- (i) Remove the eight bolts and main bearing cap.
 (See procedure (a) and (b) above)



- (j) Measure the Plastigage at its widest point.

Standard clearance:

STD

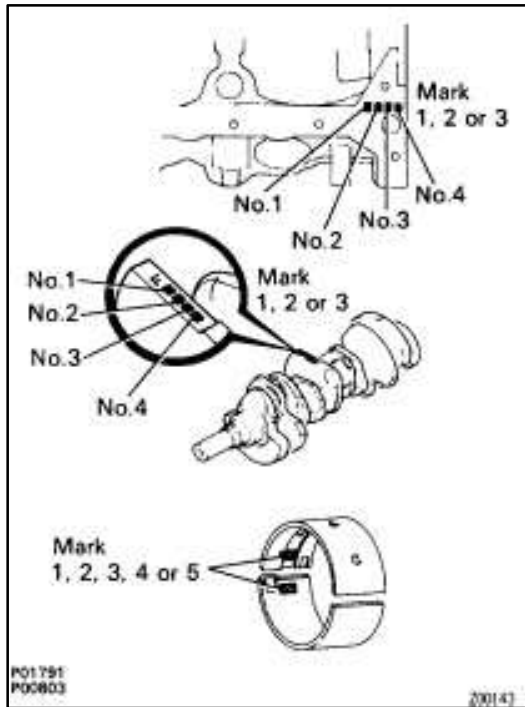
0.029–0.056 mm (0.0011–0.0022 in.)

U/S 0.25

0.028–0.080 mm (0.0011–0.0031 in.)

Maximum clearance:

0.08 mm (0.0031 in.)



HINT: If replacing the cylinder block subassembly, the bearing standard clearance will be:

0.031–0.067 mm (0.0012–0.0026 in.)

If the oil clearance is greater than maximum, replace the bearings. If necessary, grind or replace the crankshaft.

HINT: If using a standard bearing, replace with one having the same number. If the number of the bearing cannot be determined, select the correct bearing by adding together the numbers imprinted on the cylinder block and crankshaft, then selecting the bearing with the same number as the total. There are five sizes of standard bearings, marked "1", "2", "3", "4" and "5" accordingly.

	Number marked								
	1			2			3		
Cylinder block									
Crankshaft	0	1	2	0	1	2	0	1	2
Use bearing	1	2	3	2	3	4	3	4	5

EXAMPLE: Cylinder block "2" + Crankshaft "1" = Total number 3 (Use bearing "3")

(Reference)

Cylinder block main journal bore diameter:

Mark "1"

68.010–68.016 mm (2.6776–2.6778 in.)

Mark "2"

68.016–68.022 mm (2.6778–2.6780 in.)

Mark "3"

68.022–68.028 mm (2.6780–2.6783 in.)

Crankshaft journal diameter:

Mark "0"

63.996–64.000 mm (2.5195–2.5197 in.)

Mark "1"

63.990–63.996 mm (2.5193–2.5195 in.)

Mark "2"

63.985–63.990 mm (2.5191–2.5193 in.)

Standard sized bearing center wall thickness:

Mark "1"

1.989–1.992 mm (0.0783–0.0784 in.)

Mark "2"

1.992–1.995 mm (0.0784–0.0785 in.)

Mark "3"

1.995–1.998 mm (0.0785–0.0787 in.)

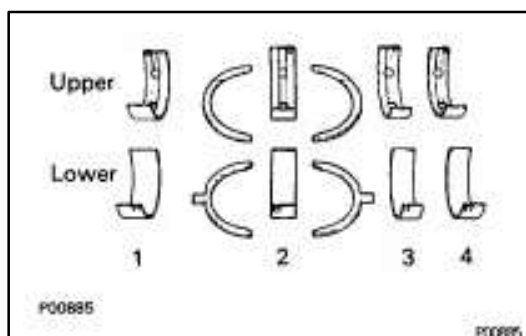
Mark "4"

1.998–2.001 mm (0.0787–0.0788 in.)

Mark "5"

2.001–2.004 mm (0.0788–0.0789 in.)

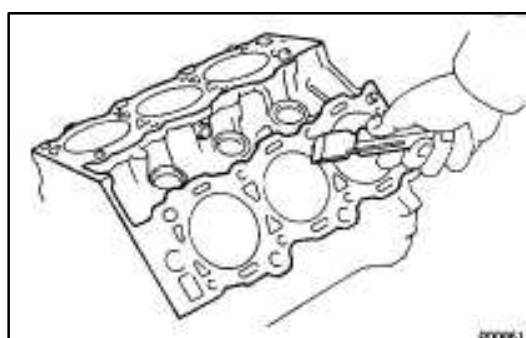
- (k) Completely remove the Plastigage.



7. REMOVE CRANKSHAFT

- (a) Lift out the crankshaft.
- (b) Remove the upper main bearings and upper thrust washers from cylinder block.

HINT: Arrange the main bearings and thrust washers in correct order.



CYLINDER BLOCK INSPECTION

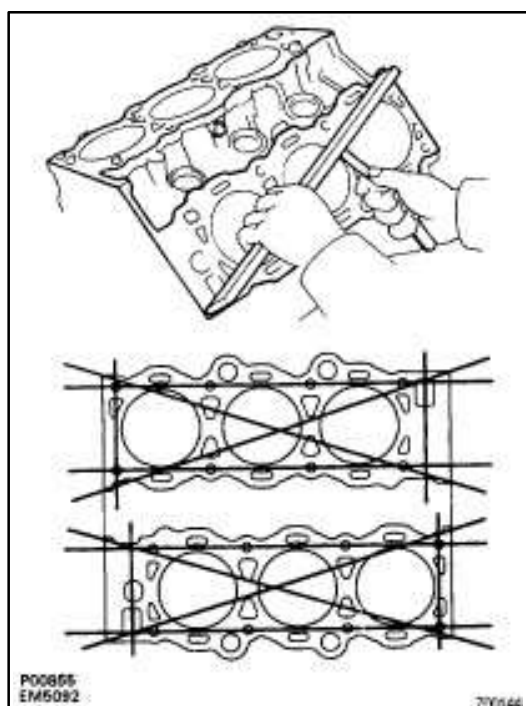
EG0FC-01

1. REMOVE GASKET MATERIAL

Using a gasket scraper, remove all the gasket material from the top surfaces of the cylinder block.

2. CLEAN CYLINDER BLOCK

Using a soft brush and solvent, thoroughly clean the cylinder block.



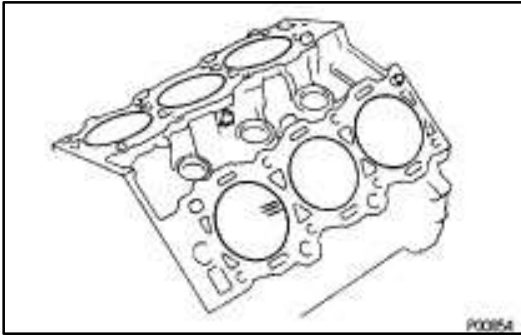
3. INSPECT TOP SURFACES OF CYLINDER BLOCK FOR FLATNESS

Using precision straight edge and feeler gauge, measure the top surfaces of the cylinder block for warpage.

Maximum warpage:

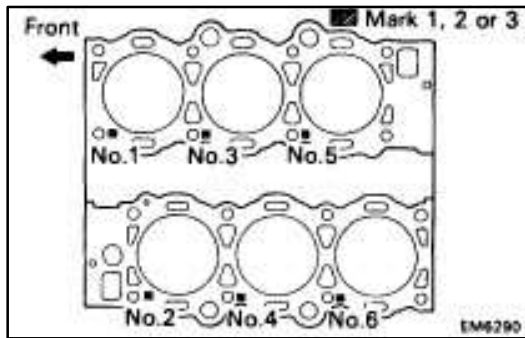
0.05 mm (0.0020 in.)

If warpage is greater than maximum, replace the cylinder block.



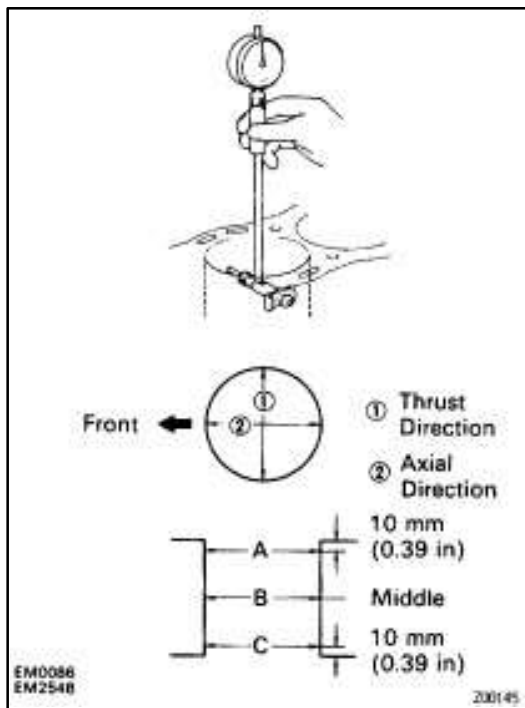
4. INSPECT CYLINDER FOR VERTICAL SCRATCHES

Visually check the cylinder for vertical scratches. If deep scratches are present, rebore all the six cylinders or replace the cylinder block.



5. INSPECT CYLINDER BORE DIAMETER

HINT: There are three sizes of the standard cylinder bore diameter, marked "1", "2" and "3" accordingly, The mark is stamped on the top of the cylinder block.



Using a cylinder gauge, measure the cylinder bore diameter at positions A, B and C in the thrust and axial directions.

Standard diameter:

STD

Mark "1"

87.500–87.510 mm (3.4449–3.4453 in.)

Mark "2"

87.510–87.520 mm (3.4453–3.4457 in.)

Mark "3"

87.520–87.530 mm (3.4457–3.4461 in.)

Maximum diameter:

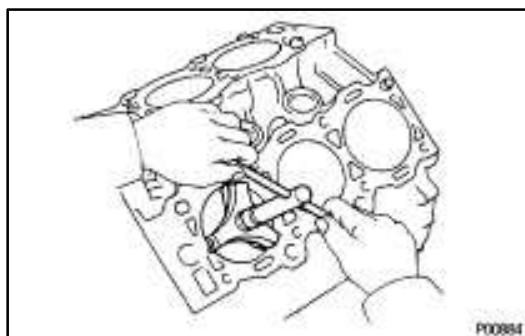
STD

87.73 mm (3.4539 in.)

O/S 0.50

88.23 mm (3.4736 in.)

If the diameter is greater than maximum, rebore all the six cylinders or replace the cylinder block.



6. REMOVE CYLINDER RIDGE

If the wear is less than 0.2 mm (0.008 in.), using a ridge reamer, grind the top of the cylinder.

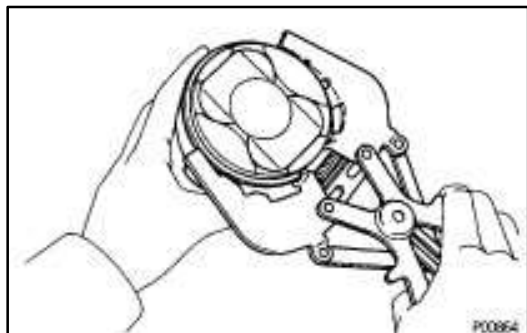


PISTON AND CONNECTING ROD ASSY DISASSEMBLY

EG0FD-01

1. CHECK FIT BETWEEN PISTON AND PISTON PIN

Try to move the piston back and forth on the piston pin.
If any movement is felt, replace the piston and pin as a set.

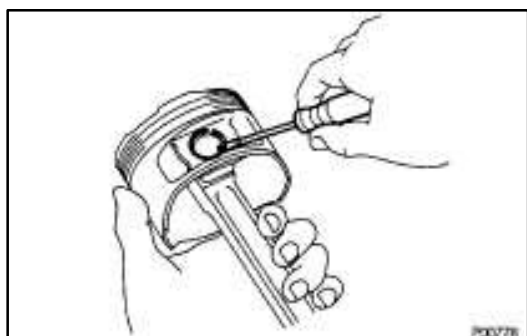


2. REMOVE PISTON RINGS

(a) Using a piston ring expander, remove the two compression rings.

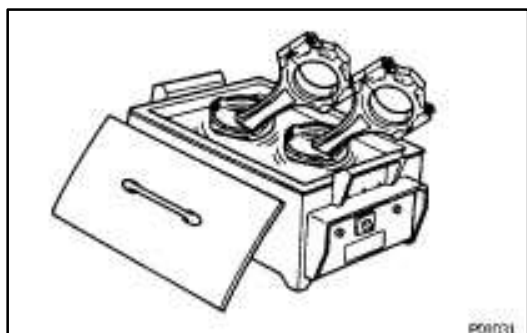


(b) Remove the two side rails and oil ring expander by hand.
HINT: Arrange the rings in correct order only.

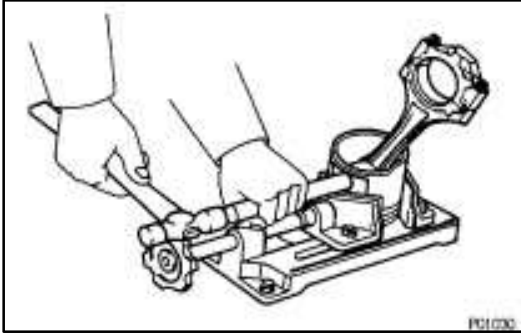


3. DISCONNECT CONNECTING ROD FROM PISTON

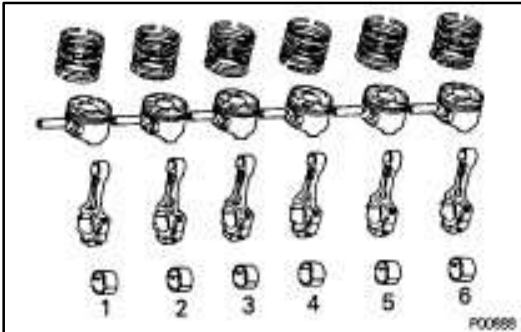
(a) Using a small screwdriver, pry off the snap ring from the piston.



(b) Gradually heat the piston to approx. 605C (1405F).



- (c) Using a plastic-faced hammer and brass bar, lightly tap out the piston pin and remove the connecting rod.



HINT:

- The piston and pin are a matched set.
- Arrange the pistons, pins, rings, connecting rods and bearings in correct order.

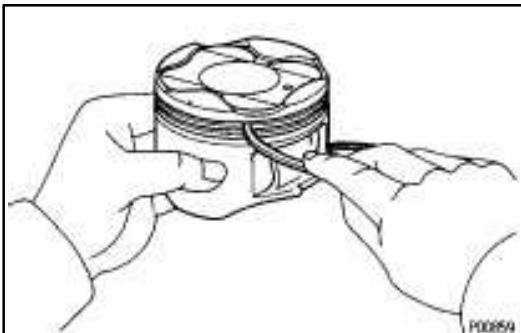


PISTON AND CONNECTING ROD INSPECTION

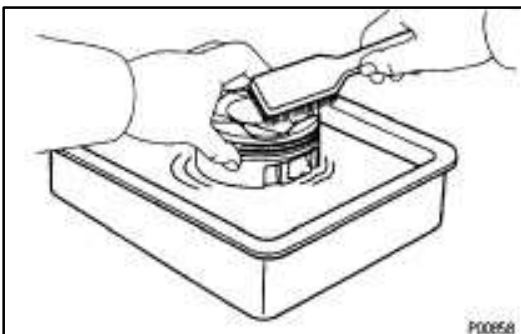
EG0FE-01

1. CLEAN PISTON

- (a) Using a gasket scraper, remove the carbon from the piston top.



- (b) Using a groove cleaning tool or broken ring, clean the piston ring grooves.



- (c) Using solvent and a brush, thoroughly clean the piston.
NOTICE: Do not use a wire brush.