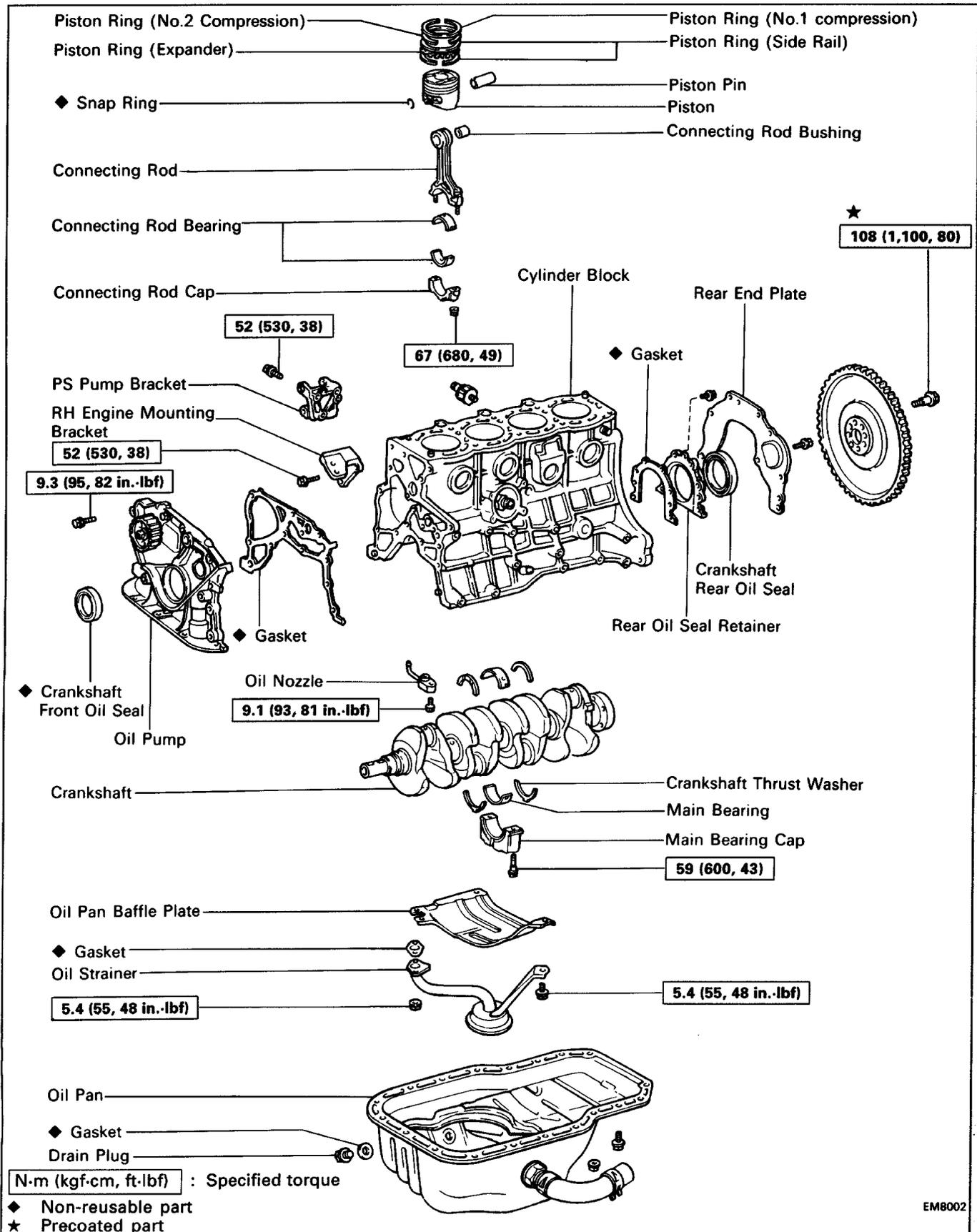


# CYLINDER BLOCK (3S-GTE) COMPONENTS



## REMOVAL OF ENGINE

### 1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

**CAUTION:** Work must be started after approx. 20 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.

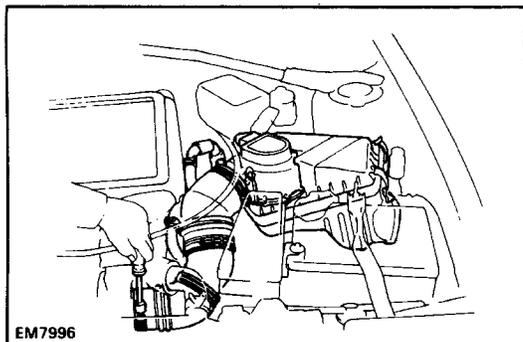
### 2. REMOVE HOOD

### 3. REMOVE ENGINE UNDER COVERS

### 4. DRAIN ENGINE COOLANT (See page [CO-6](#))

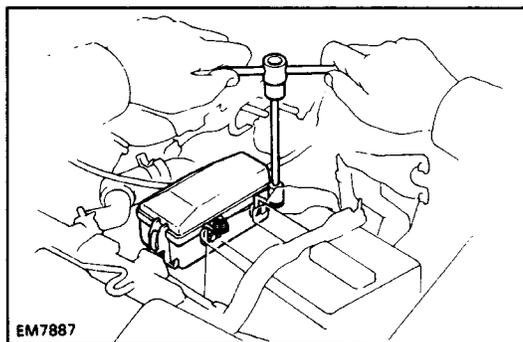
### 5. DRAIN ENGINE OIL (See page [LU-7](#))

### 6. DRAIN TRANSAXLE OIL



### 7. REMOVE AIR CLEANER

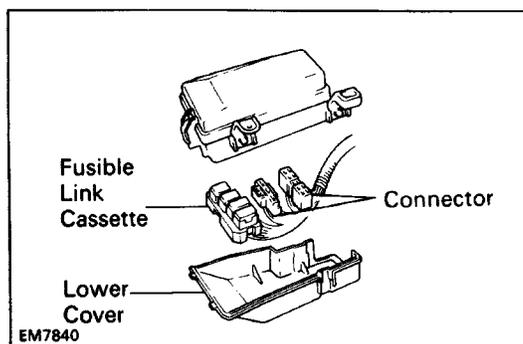
- (a) Disconnect the volume air flow meter connector.
- (b) Disconnect the four air cleaner cap clips.
- (c) Disconnect the following hoses:
  - (1) Air cleaner hose from turbocharger
  - (2) PCV hose from cylinder head cover
  - (3) Air hose from air tube
- (d) Remove the air cleaner cap, volume air flow meter assembly and filter.
- (e) Remove the three bolts and air cleaner case.



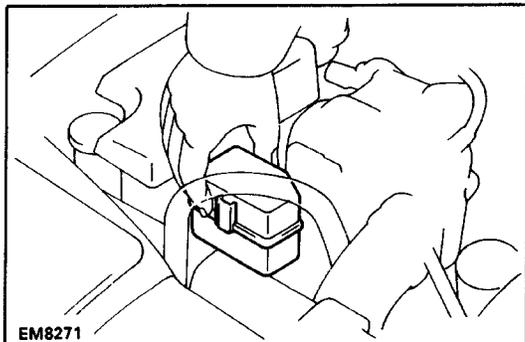
### 8. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

### 9. REMOVE ENGINE RELAY BOX, AND DISCONNECT ENGINE WIRE CONNECTORS

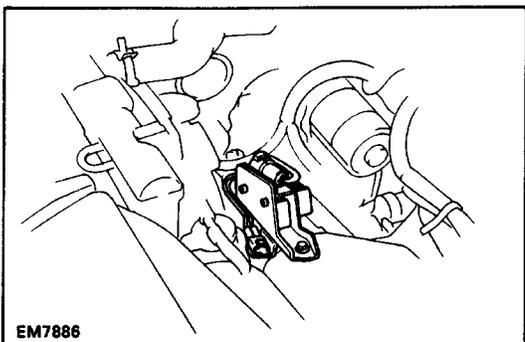
- (a) Remove the two nuts, and disconnect the relay box from the battery.



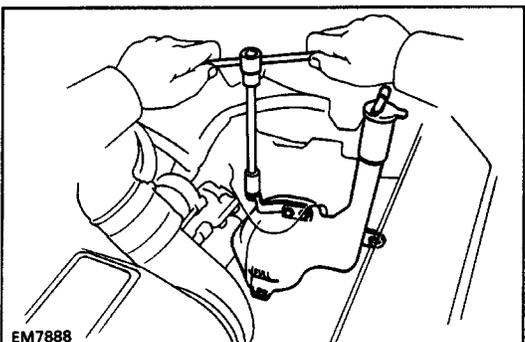
- (b) Remove the lower cover from the relay box.
- (c) Disconnect the fusible link cassette and two connectors of the engine wire from the relay box.

**10. REMOVE A/C RELAY BOX FROM BRACKET**

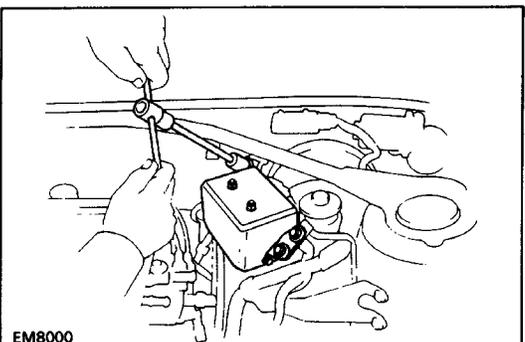
Remove the A/C relay box from the bracket.

**11. REMOVE BATTERY****12. REMOVE INJECTOR SOLENOID RESISTOR AND FUEL PUMP RESISTOR'**

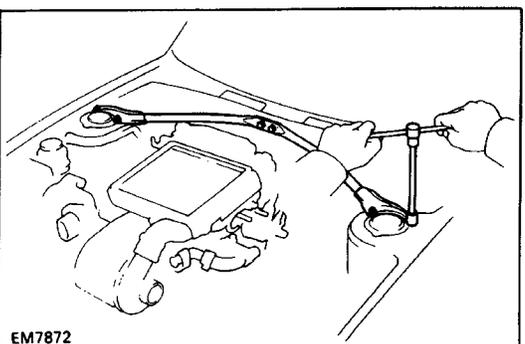
- (a) Disconnect the two connectors.
- (b) Remove the bolt, the solenoid resistor and fuel pump resistor assembly.

**13. REMOVE RADIATOR (See pages CO-22 and 23)****14. REMOVE RADIATOR RESERVOIR TANK**

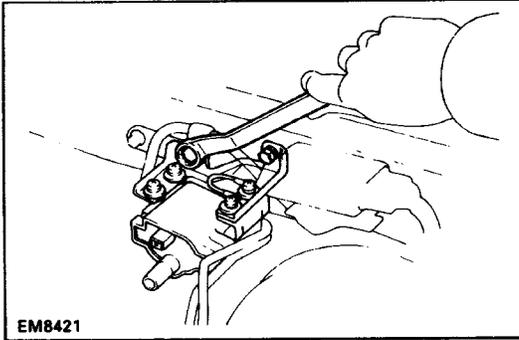
Remove the two nuts and reservoir tank.

**15. (w/ CRUISE CONTROL SYSTEM)****REMOVE CRUISE CONTROL ACTUATOR**

- (a) Remove the two nuts and actuator cover.
- (b) Remove the three bolts, and disconnect the actuator.
- (c) Disconnect the actuator connector
- (d) Disconnect the cable from the actuator.

**16. REMOVE SUSPENSION UPPER BRACE**

- (a) Remove the two wiper arms.
- (b) Remove the outside lower windshield moulding.
- (c) Remove the two bolts, four nuts and upper brace.



EM8421

**17. REMOVE IGNITION COIL**

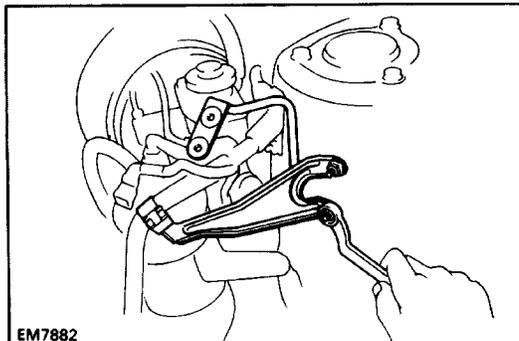
- (a) Disconnect the ignition coil connector.
- (b) Disconnect the high-tension cord.
- (c) Remove the two bolts and ignition coil.

**18. DISCONNECT WIRES AND CONNECTORS**

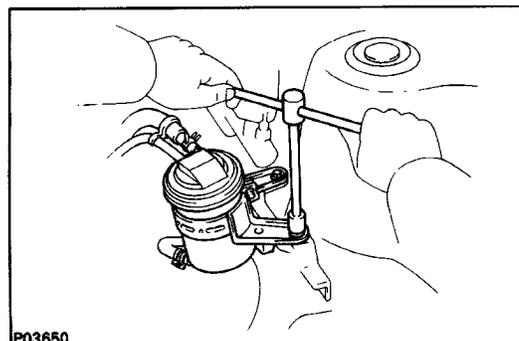
- (a) Data link connector 1
- (b) Igniter connector
- (c) Ground strap from LH fender apron

**19. REMOVE ENGINE WIRE BRACKET**

- (a) Disconnect the wire clamp from the wire bracket.
- (b) Remove the two bolts and wire bracket.



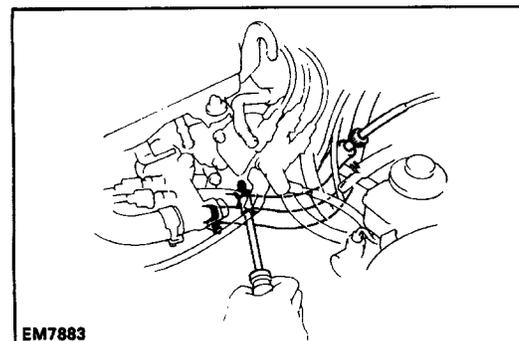
EM7882



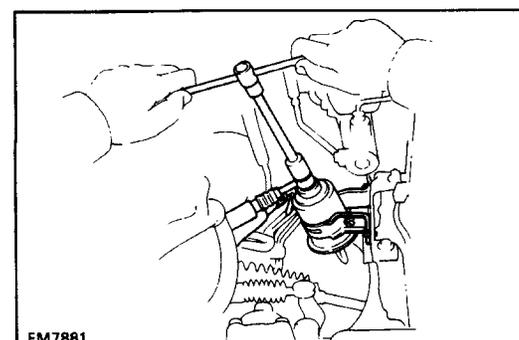
P03650

**20. REMOVE CHARCOAL CANISTER**

- (a) Disconnect the three hoses from the charcoal canister.
- (b) Remove the two bolts and charcoal canister.



EM7883

**21. DISCONNECT HEATER HOSES****22. DISCONNECT SPEEDOMETER CABLE**

EM7881

**23. DISCONNECT FUEL HOSES**

**CAUTION:** Catch leaking fuel in a container.

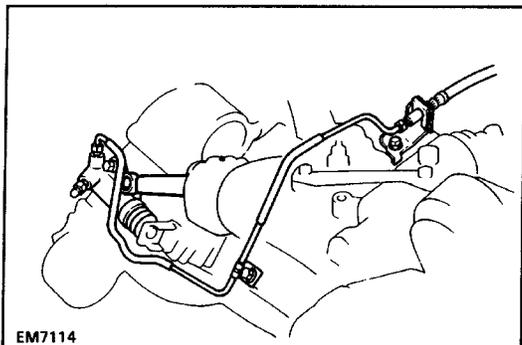
**24. DISCONNECT CONNECTORS**

- (a) Engine room wire connector.
- (b) Noise filter connector.

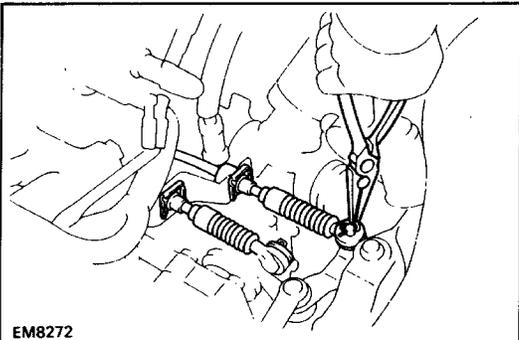
**25. REMOVE STARTER (See page [ST-4](#))**

## 26. REMOVE CLUTCH RELEASE CYLINDER WITHOUT DISCONNECTING TUBE

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

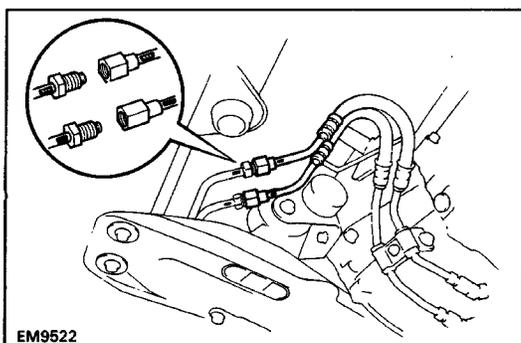


## 27. DISCONNECT TRANSAXLE CONTROL CABLES FROM TRANSAXLE



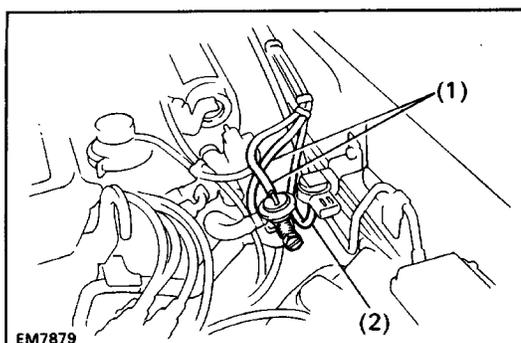
## 28. DISCONNECT TRANSAXLE OIL COOLER HOSES

- (a) Place matchmarks on the oil cooler hoses and tubes.
- (b) Disconnect the two oil cooler hoses from the tube.



## 29. DISCONNECT TURBOCHARGING PRESSURE SENSOR AND A/C ASV FROM BODY

- (a) Disconnect the turbocharging pressure sensor.
- (b) Disconnect the following hoses:
  - (1) Two vacuum hoses from A/C ASV
  - (2) Vacuum hose from turbocharging pressure sensor
- (c) Remove the bolt, and disconnect the turbocharging pressure sensor and A/C ASV from the body.

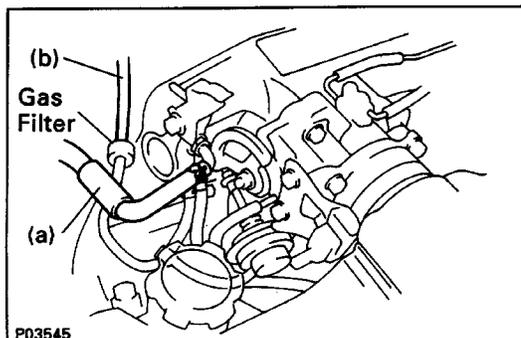


## 30. DISCONNECT HOSES

- (a) Brake booster vacuum hose from intake manifold
- (b) Turbocharging pressure sensor hose from gas filter

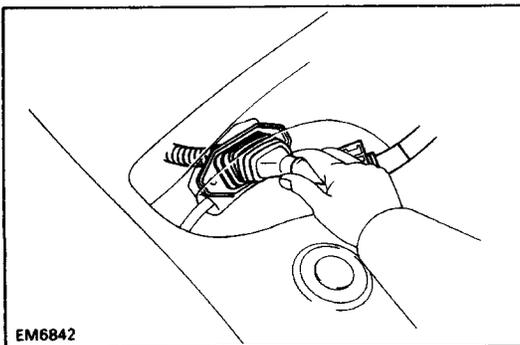
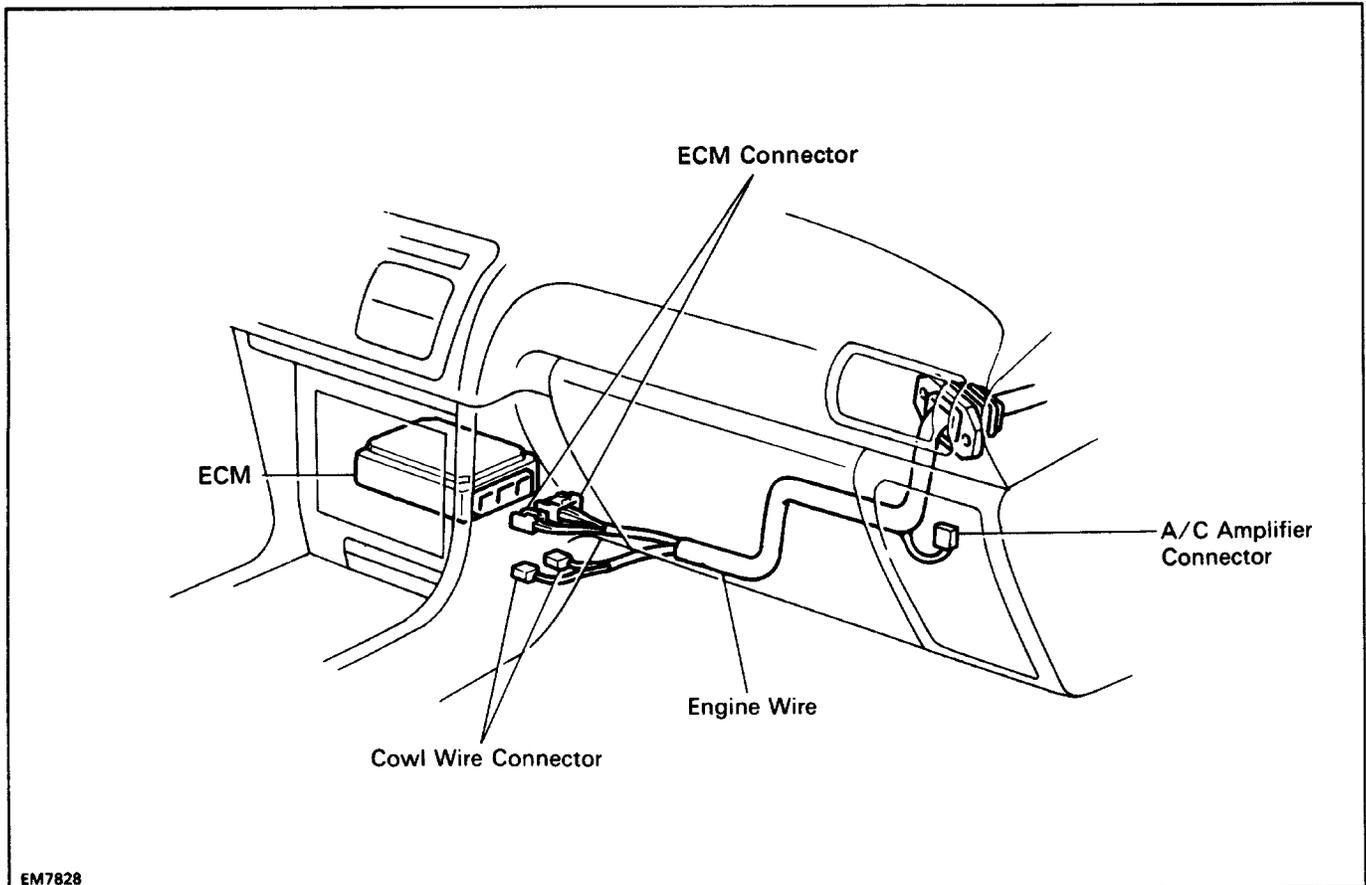
## 31. DISCONNECT ENGINE WIRE

- (a) Engine wire clamp from wire bracket on RH fender apron
- (b) Two cowl wire connectors

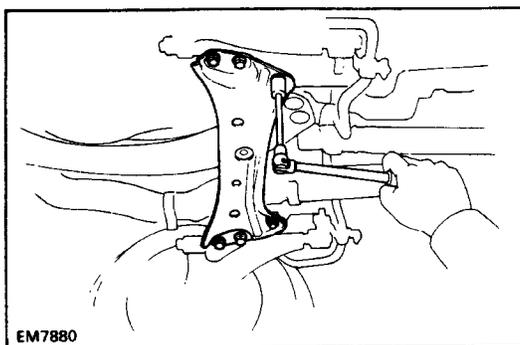


**32. DISCONNECT ENGINE WIRE FROM CABIN**

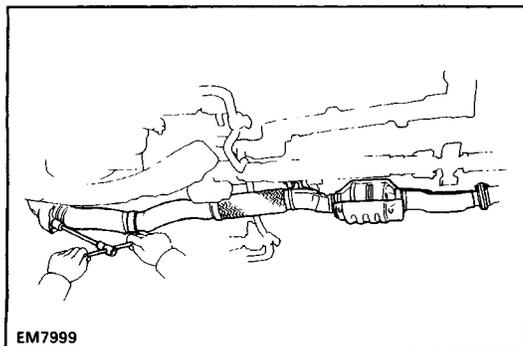
- (a) Disconnect the following connectors:
- (1) Two ECM connectors
  - (2) Two cowl wire connectors
  - (3) A/C amplifier connector



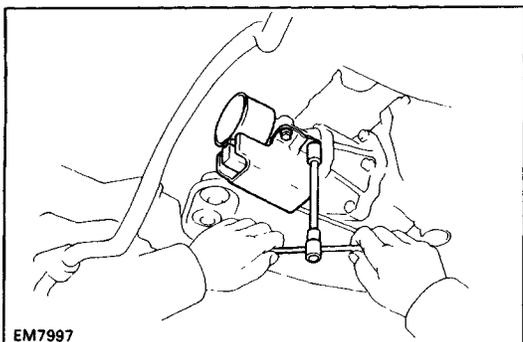
- (b) Remove the two nuts, and pull out the engine wire from the cowl panel.

**33. REMOVE SUSPENSION LOWER CROSSMEMBER**

Remove the four bolts, two nuts and lower crossmember.

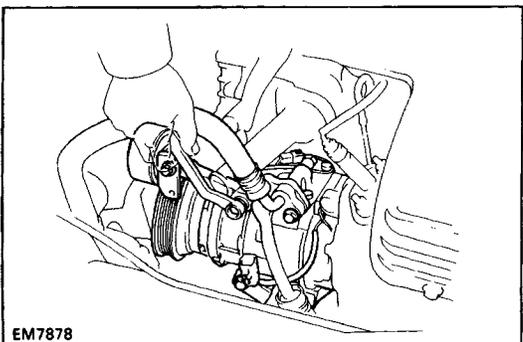
**34. REMOVE FRONT EXHAUST PIPE**

- (a) Loosen the bolt, and disconnect the clamp from the bracket.
- (b) Remove the two bolts and nuts holding the front exhaust pipe to the center exhaust pipe.
- (c) Using a 14 mm deep socket wrench, remove the three nuts holding the front exhaust pipe to the three-way catalytic converter.
- (d) Disconnect the support hook on the front exhaust pipe from the support bracket, and remove the front exhaust pipe and two gaskets.

**35. REMOVE DRIVE SHAFTS (See SA section)****36. REMOVE FRONT PROPELLER SHAFT (See PR section)****37. REMOVE DEFLECTOR FROM TRANSFER EXTENSION HOUSING****38. REMOVE DYNAMIC DAMPER FROM TRANSFER EXTENSION HOUSING****39. REMOVE GENERATOR (See page CH-7)****40. REMOVE IDLER PULLEY BRACKET AND A/C COMPRESSOR WITHOUT DISCONNECTING HOSES**

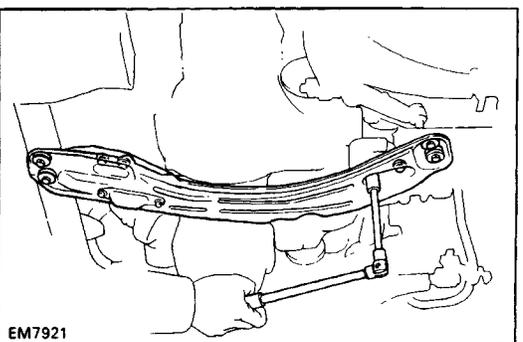
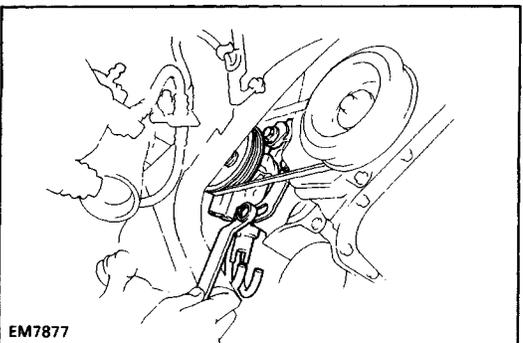
- (a) Disconnect the A/C compressor connector.
- (b) Remove the four bolts and idler pulley bracket, and disconnect the A/C compressor.

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

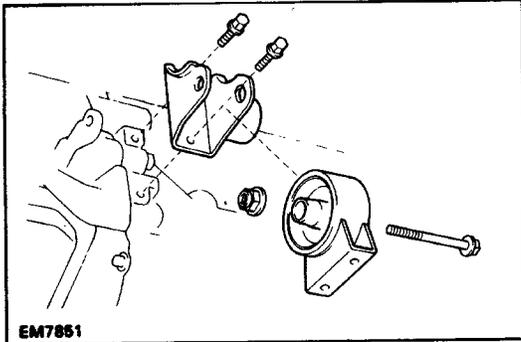
**41. REMOVE PS PUMP WITHOUT DISCONNECTING HOSES**

- (a) Disconnect the two air hoses from the air pipe.
- (b) Remove the PS drive belt.
- (c) Remove the four bolts, and disconnect the PS pump from the engine.

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

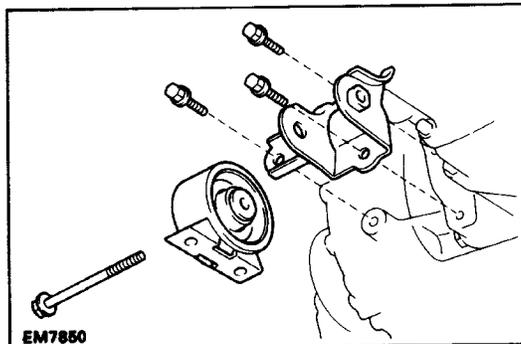
**42. REMOVE ENGINE MOUNTING CENTER MEMBER**

Remove the eight bolts and center member.



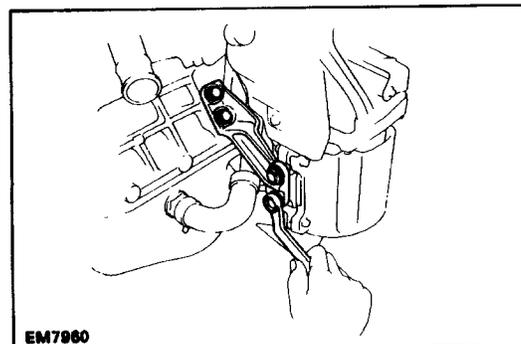
#### 43. REMOVE FRONT ENGINE MOUNTING INSULATOR AND BRACKET

- (a) Remove the through bolt, nut and mounting insulator.
- (b) Remove the two bolts and mounting bracket.



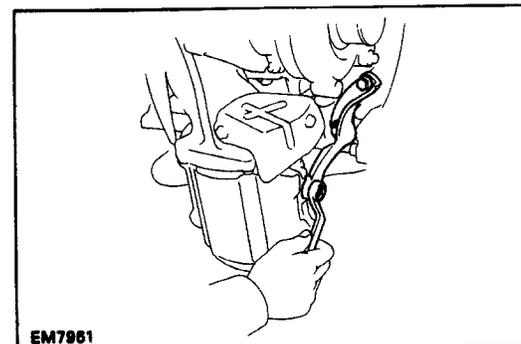
#### 44. REMOVE REAR ENGINE MOUNTING INSULATOR AND BRACKET

- (a) Remove the through bolt and mounting insulator.
- (b) Remove the three bolts and mounting bracket.

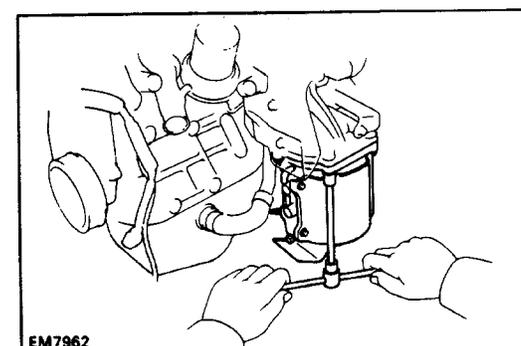


#### 45. REMOVE THREE-WAY CATALYTIC CONVERTER

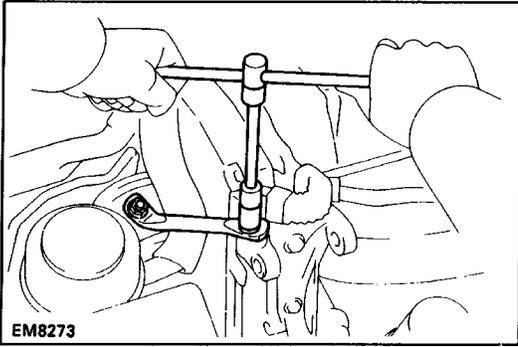
- (a) Remove the four bolts and RH converter stay.



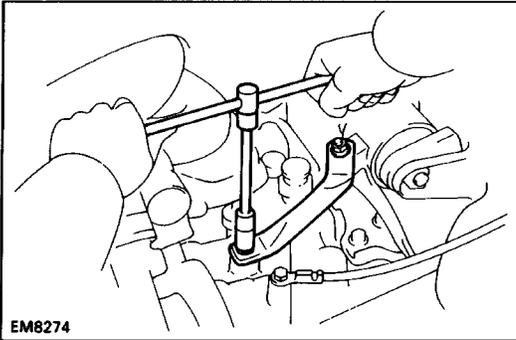
- (b) Remove the three bolts and LH converter stay.



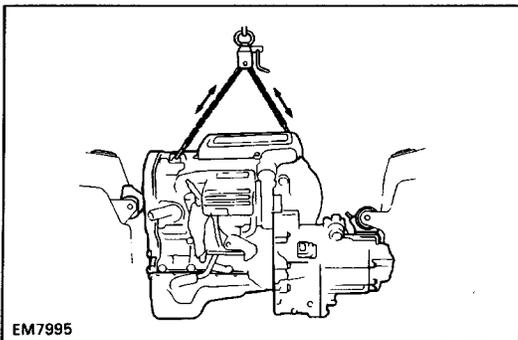
- (c) Remove the three bolts, two nuts, three-way catalytic converter, cushion, retainer and gasket.

**46. REMOVE RH ENGINE MOUNTING STAY**

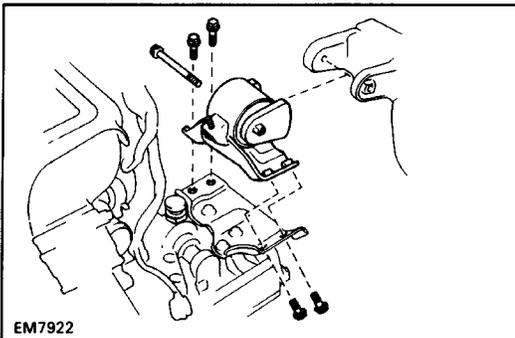
Remove the bolt, nut and mounting stay.

**47. REMOVE LH ENGINE MOUNTING STAY**

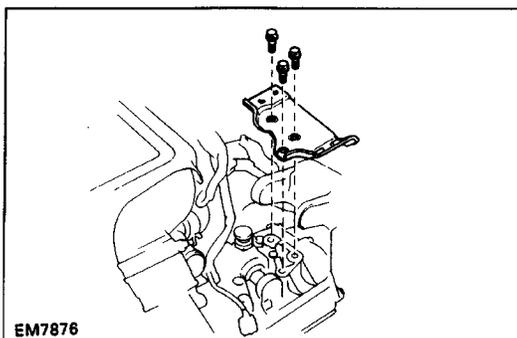
- (a) Remove the bolt, nut and mounting stay.
- (b) Remove the bolt, and disconnect the ground strap.

**48. REMOVE ENGINE AND TRANSAXLE ASSEMBLY FROM VEHICLE**

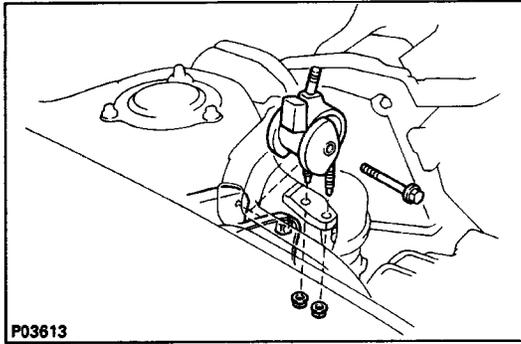
- (a) Attach the engine chain hoist to the engine hangers.



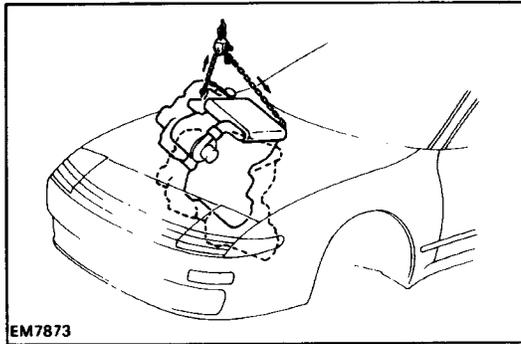
- (b) Remove the through bolt, four bolts and LH mounting insulator.



- (c) Remove the three bolts and LH mounting bracket.



- (d) Remove the through bolt, two nuts and RH mounting insulator.

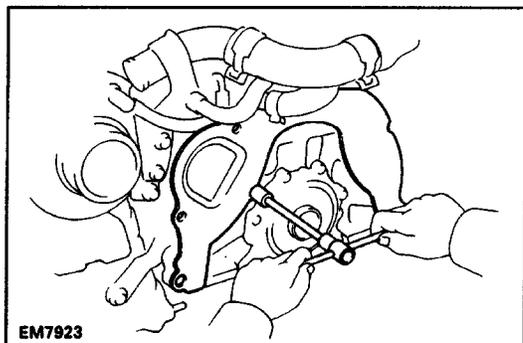


- (e) Lift the engine out of the vehicle slowly and carefully.
- NOTICE: Be careful not to hit the PS gear housing.**
- (f) Make sure the engine is clear of all wiring, hoses and cables.
- (g) Place the engine and transaxle assembly onto the stand.

#### 49. SEPARATE ENGINE AND TRANSAXLE (See MT section)

## PREPARATION FOR DISASSEMBLY

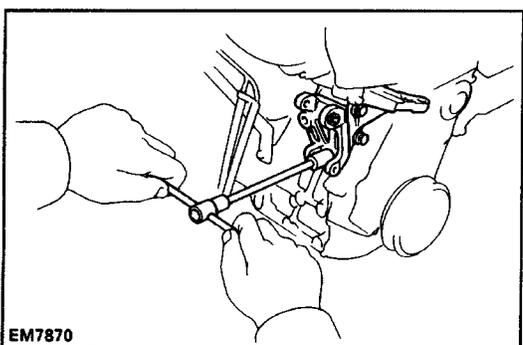
1. REMOVE CLUTCH COVER AND DISC
2. REMOVE FLYWHEEL



### 3. REMOVE REAR END PLATE

Remove the bolt and end plate.

4. INSTALL ENGINE TO ENGINE STAND FOR DISASSEMBLY



### 5. REMOVE RH ENGINE MOUNTING BRACKET

Remove the three bolts and mounting bracket.

### 6. REMOVE PS PUMP BRACKET

Remove the three bolts and PS pump bracket.

### 7. REMOVE TIMING BELT AND PULLEYS

(See pages [EM-48](#) to [52](#))

### 8. REMOVE TURBOCHARGER (See pages [TC-9](#) to [11](#))

### 9. REMOVE CYLINDER HEAD

(See pages [EM-118](#) to [125](#))

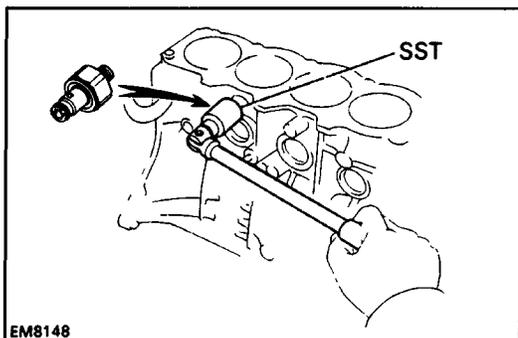
### 10. REMOVE WATER PUMP AND IDLER PULLEY BRACKET (See pages [CO-12](#) and [13](#))

### 11. REMOVE OIL PAN AND OIL PUMP

(See pages [LU-17](#) and [18](#))

### 12. REMOVE OIL FILTER (See page [LU-7](#))

### 13. REMOVE OIL COOLER (See pages [LU-24](#) and [25](#))



### 14. REMOVE KNOCK SENSOR

Using SST, remove the knock sensor.

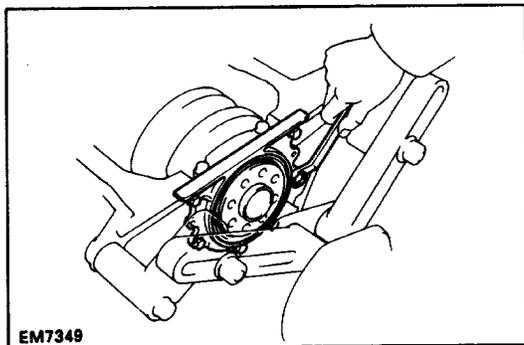
SST 09816-30010

## DISASSEMBLY OF CYLINDER BLOCK

(See page EM-223)

### 1. REMOVE REAR OIL SEAL RETAINER

Remove the six bolts, retainer and gasket.



EM7349

### 2. CHECK CONNECTING ROD THRUST CLEARANCE

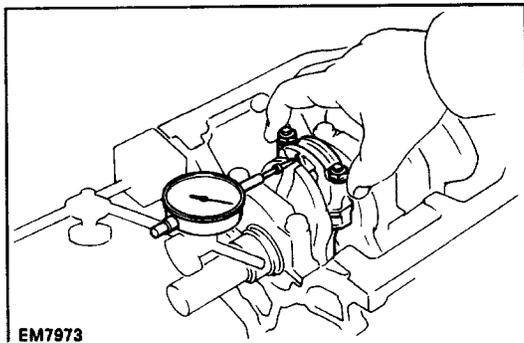
Using a dial indicator, measure the thrust clearance while moving the connecting rod back and forth.

**Standard thrust clearance: 0.160–0.312 mm**

(0.0063–0.0123 in.)

**Maximum thrust clearance: 0.35 mm (0.0138 in.)**

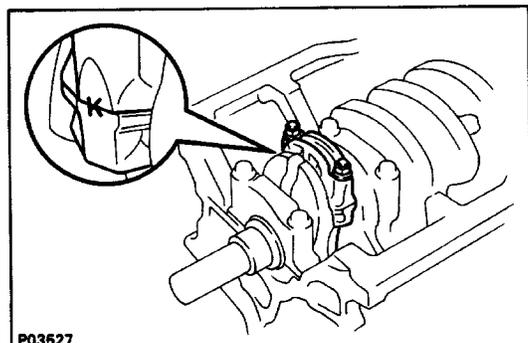
If the thrust clearance is greater than maximum, replace the connecting rod assembly. If necessary, replace the crankshaft.



EM7973

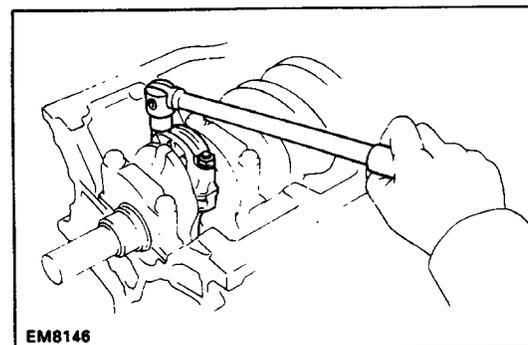
### 3. REMOVE CONNECTING ROD CAPS AND CHECK OIL CLEARANCE

- (a) Check the matchmarks on the connecting rod and cap to ensure correct reassembly.



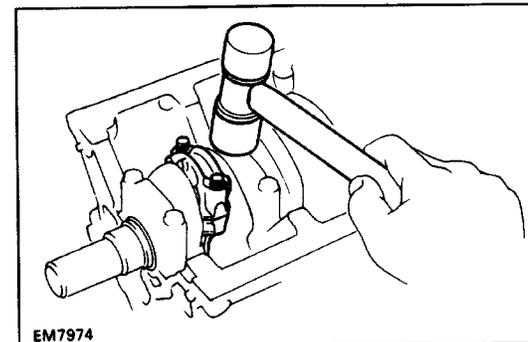
P03627

- (b) Remove the connecting rod cap nuts.

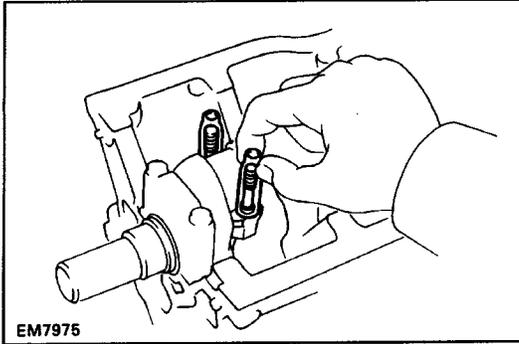


EM8146

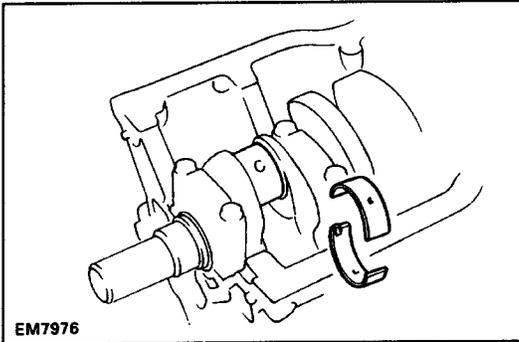
- (c) Using a plastic-faced hammer, lightly tap the connecting rod bolts and lift off the connecting rod cap.  
HINT: Keep the lower bearing inserted with the connecting cap.



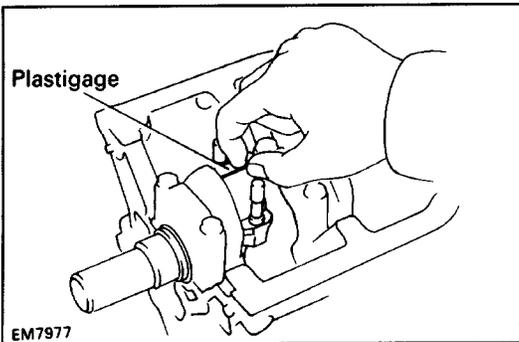
EM7974



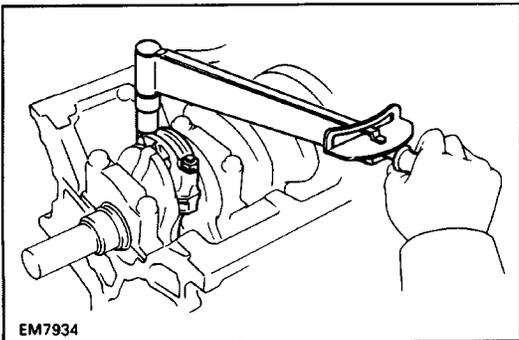
- (d) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft from damage.



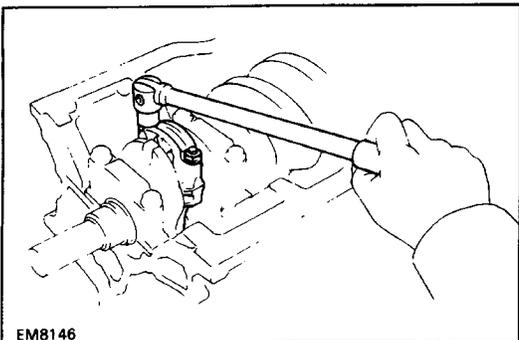
- (e) Clean the crank pin and bearing.  
 (f) Check the crank pin and bearing for pitting and scratches.  
 If the crank pin or bearing is damaged, replace the bearings. If necessary, grind or replace the crankshaft.



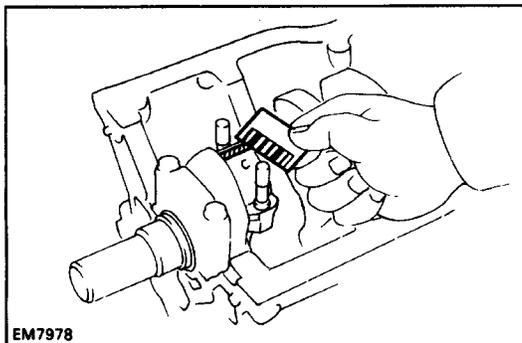
- (g) Lay a strip of Plastigage across the crank pin.



- (h) Install the connecting rod cap.  
 (See step 7 on page [EM-255](#))  
**Torque: 67 N·m (680 kgf·cm, 49 ft·lbf)**  
**NOTICE: Do not turn the crankshaft.**



- (i) Remove the connecting rod cap.  
 (See procedures (b) and (c) above)



(j) Measure the Plastigage at its widest point.

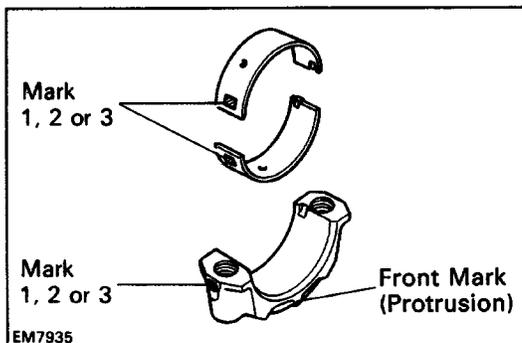
**Standard oil clearance:**

**STD**                      **0.024–0.055 mm**  
**(0–0009–0.0022 in.)**

**U/S 0.25**                **0.023–0.069 mm**  
**(0.0009–0.0027 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 it 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.

**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 all the carbon from the top of the cylinder.

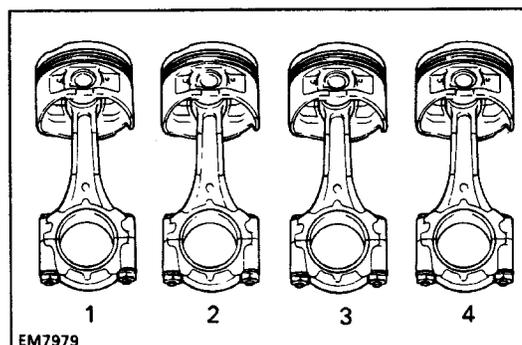
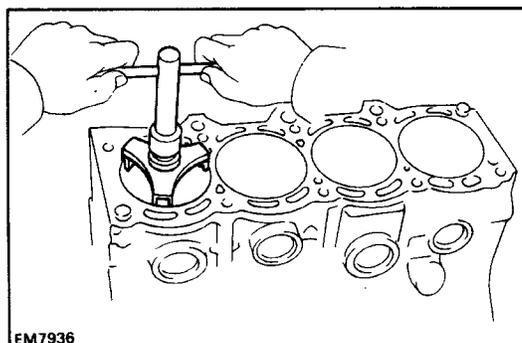
(b) Cover the connecting rod bolts.

(See page [EM-235](#))

(c) 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

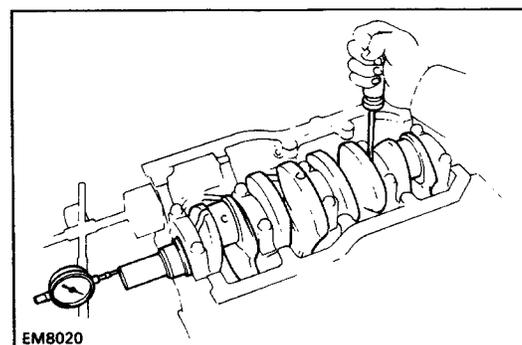
Using a dial indicator, measure the thrust clearance while prying the crankshaft back and forth with a screwdriver.

**Standard thrust clearance: 0.020–0.220 mm**  
**(0.0008–0.0087 in.)**

**Maximum thrust clearance: 0.30 mm (0.0118 in.)**

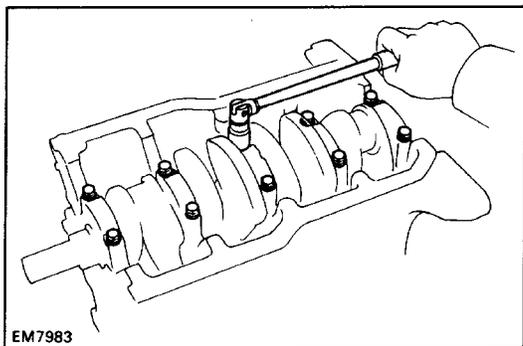
If the thrust clearance is greater than maximum, replace the thrust washers as a set.

**Thrust washer thickness: 2.440–2.490 mm**  
**(0.0961–0.0980 in.)**



## 6. REMOVE MAIN BEARING CAPS AND CHECK OIL CLEARANCE

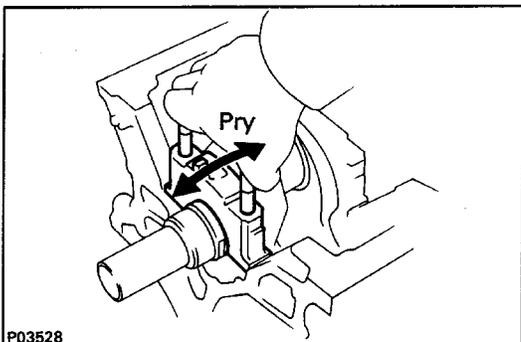
(a) Remove the main bearing cap bolts.



(b) Using the removed main bearing cap bolts, pry the main bearing cap back and forth, and remove the main bearing caps, lower bearings and lower thrust washers (No.3 main bearing cap only).

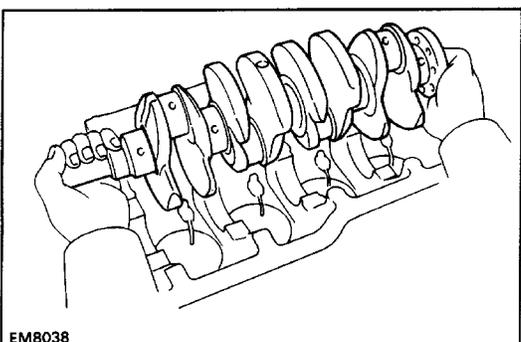
HINT:

- Keep the lower bearing and main bearing cap together.
- Arrange the main bearing caps and lower thrust washers in correct order.



(c) Lift out the crankshaft.

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

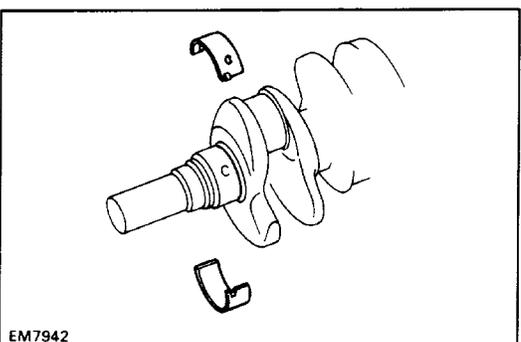


(d) Clean each main journal and bearing.

(e) Check each main journal and bearing for pitting and scratches.

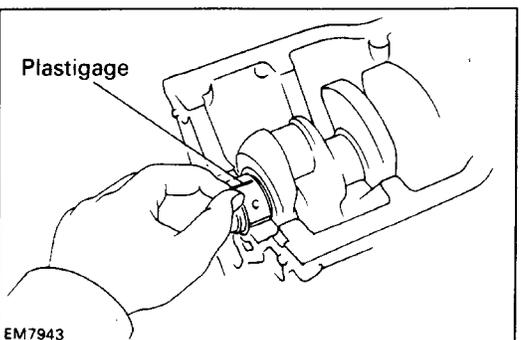
If the journal or bearing is damaged, replace the bearings.

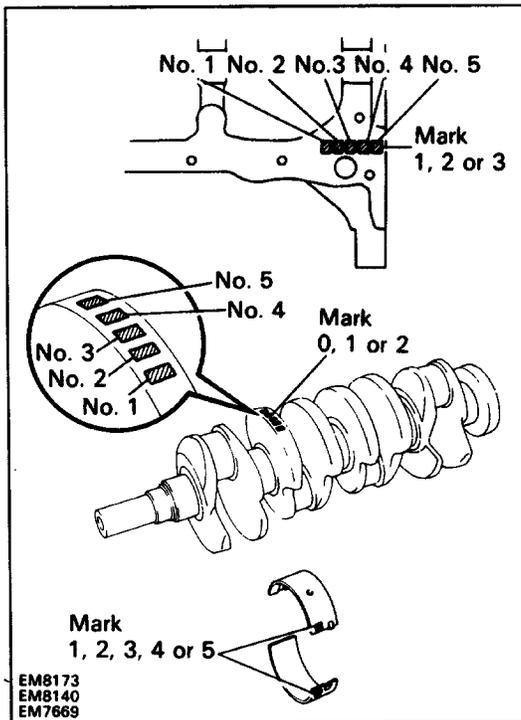
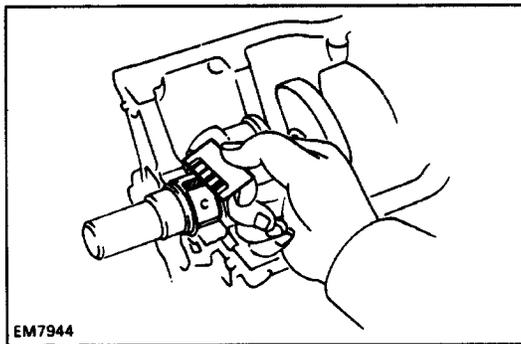
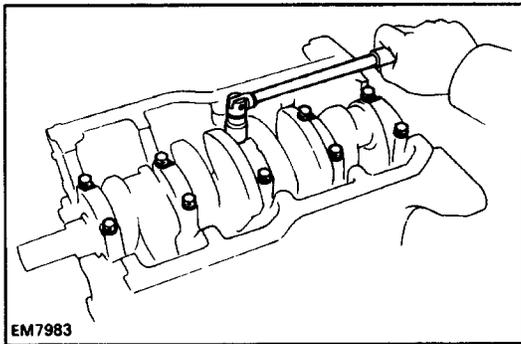
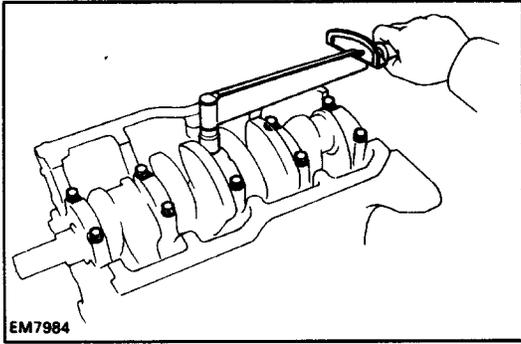
If necessary, grind or replace the crankshaft.



(f) Place the crankshaft on the cylinder block.

(g) Lay a strip of Plastigage across each journal.





(h) Install the main bearing caps.  
 (See step 5 on page [EM-254](#))  
**Torque: 59 N-m (600 kgf-cm, 43 ft-lbf)**  
**NOTICE: Do not turn the crankshaft.**

(i) Remove the main bearing caps.  
 (See procedures (a) and (b) above)

(j) Measure the Plastigage at its widest point.  
**Standard clearance:**

**N o.3 STD 0.025-0.044 m m**  
**(0.0010-0.0017 in.)**

**U/S 0.25 0.021-0.061 m m**  
**(0.0008-0.0024 in.)**

**Others STD 0.015-0.034 m m**  
**(0.0006-0.0013 in.)**

**U/S 0.25 0.029-0.069 m m**  
**(0.0011-0.0027 in.)**

**Maximum clearance: 0.08 mm (0.0031 in.)**

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

**No-3 0.027-0.054 m m**  
**(0.0011-0.0021 in.)**

**Others 0.017-0.044 m m**  
**(0.0007-0.0017 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 it 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 select 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									
	Cylinder block			Crankshaft						
Cylinder block	1 2 3									
Crankshaft	0	1	2	0	1	2	0	1	2	
Bearing	1	2	3	2	3	4	3	4	5	

EXAMPLE: Cylinder block "2" + Crankshaft "1"  
 = Bearing "3"

**(Reference)****Cylinder block main journal bore diameter:**

Mark "1" 59.020–59.026 m m  
(2.3236–2.3239 in.)

Mark "2" 59.026–59.032 m m  
(2.3239–2.3241 in.)

Mark "3" 59.032–59.038 m m  
(2.3241–2.3243 in.)

**Crankshaft journal diameter:**

Mark "0" 54.998–55.003 m m  
(2.1653–2.1655 in.)

Mark "1" 54.993–54.998 m m  
(2.1651–2.1653 in.)

Mark "2" 54.988–54.993 m m  
(2.1649–2.1651 in.)

**Standard sized: bearing center wall thickness:**

No.3 Mark "1" 1.992–1.995 mm  
(0.0784–0.0785 in.)

Mark "2" 1.995–1.998 m m  
(0.0785–0.0787 in.)

Mark "3" 1.998–2.001 m m  
(0.0787–0.0788 in.)

Mark "4" 2.001–2.004 m m  
(0.0788–0.0789 in.)

Mark "5" 2.004–2.007 mm  
(0.0789–0.0790 in.)

Others Mark "1" 1.997–2.000 mm  
(0.0786–0.0787 in.)

Mark "2" 2.000–2.003 mm  
(0.0787–0.0789 in.)

Mark "3" 2.003–2.006 m m  
(0.0789–0.0790 in.)

Mark "4" 2.006–2.009 m m  
(0.0790–0.0791 in.)

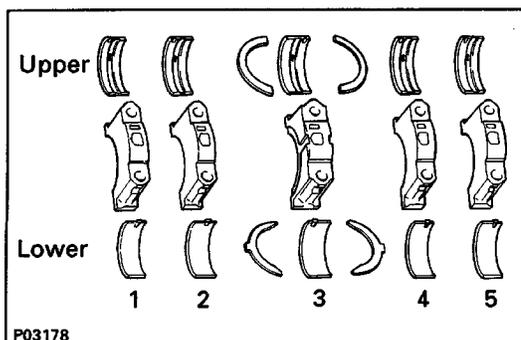
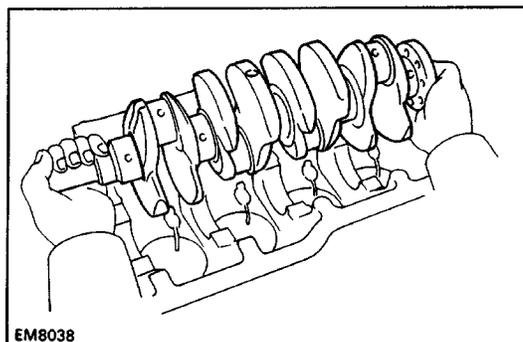
Mark "5" 2.009–2.012 m m  
(0.0791–0.0792 in.)

(k) Completely remove the Plastigage.

**7. REMOVE CRANKSHAFT**

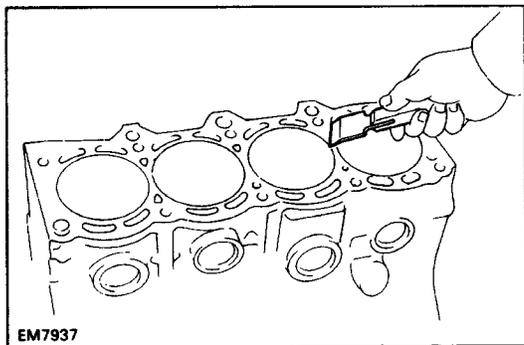
(a) Lift out the crankshaft.

(b) Remove the upper bearings and upper thrust washers from the cylinder block.



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

**8. REMOVE OIL NOZZLES (See page LU-31)**



## INSPECTION OF CYLINDER BLOCK

### 1. CLEAN CYLINDER BLOCK

#### A. Remove gasket material

Using a gasket scraper, remove all the gasket material from the surface contacting the cylinder head.

#### B. Clean cylinder block

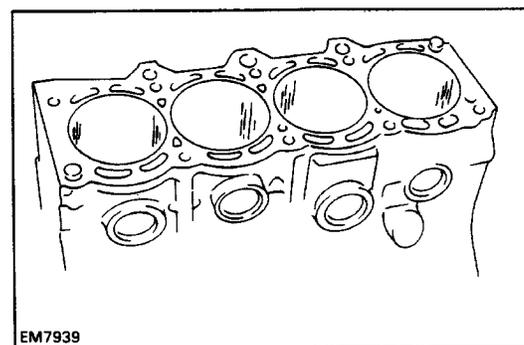
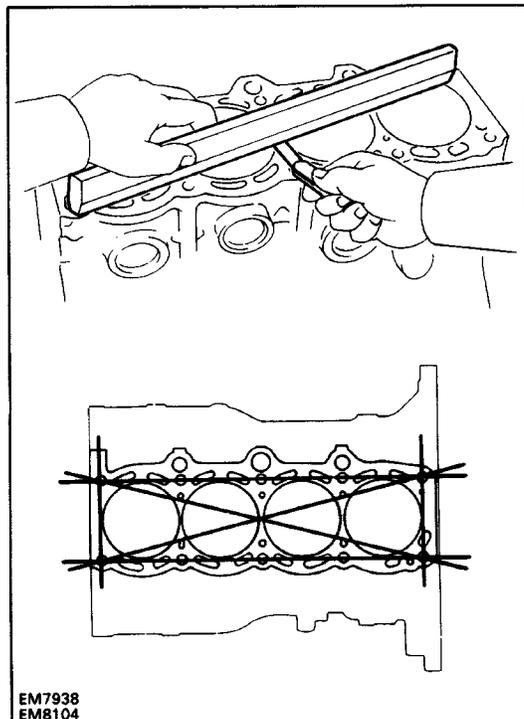
Using a soft brush and solvent, thoroughly clean the cylinder block.

### 2. INSPECT TOP SURFACE OF CYLINDER BLOCK FOR FLATNESS

Using a precision straight edge and feeler gauge, measure the surface contacting the cylinder head for warpage.

**Maximum warpage: 0.05 mm (0.0020 in.)**

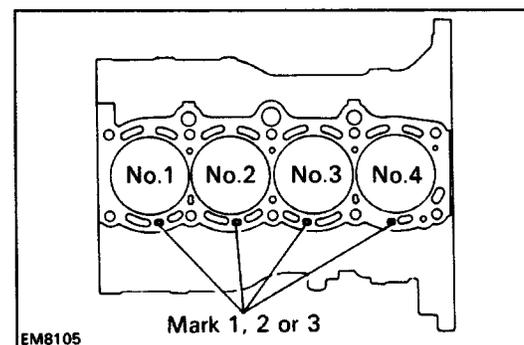
If warpage is greater than maximum, replace the cylinder block.



### 3. INSPECT CYLINDER FOR VERTICAL SCRATCHES

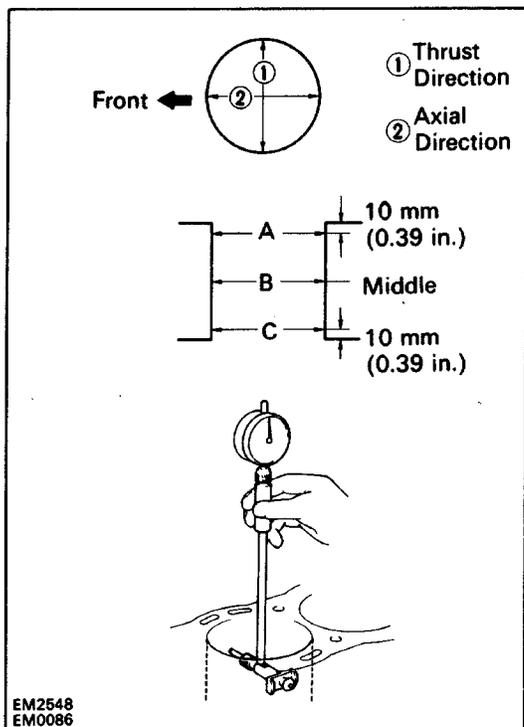
Visually check the cylinder for vertical scratches.

If deep scratches are present, replace the cylinder block.



### 4. 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:**

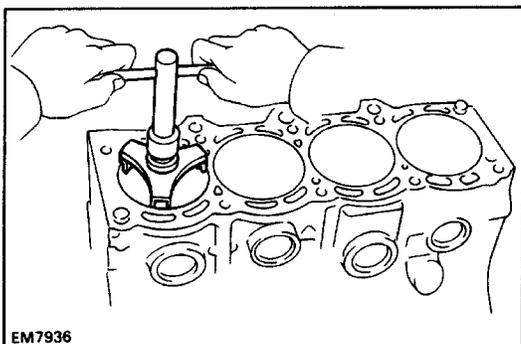
**Mark "1"** 86.000–86.010 mm  
(3.3858–3.3862 in.)

**Mark "2"** 86.010–86.020 mm  
(3.3862–3.3866 in.)

**Mark "3"** 86.020–86.030 mm  
(3.3866–3.3870 in.)

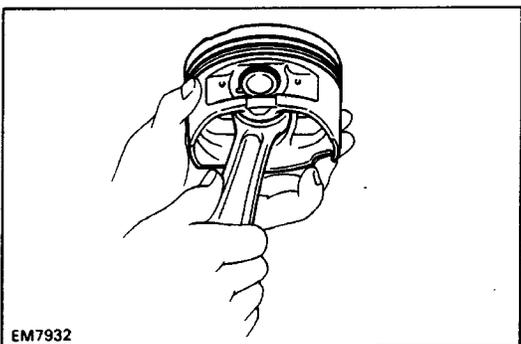
**Maximum diameter: 86.23 mm (3.3949 in.)**

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



## 5. 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.



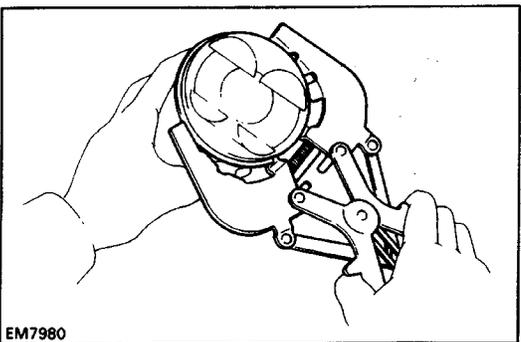
## DISASSEMBLY OF PISTON AND CONNECTING ROD ASSEMBLIES

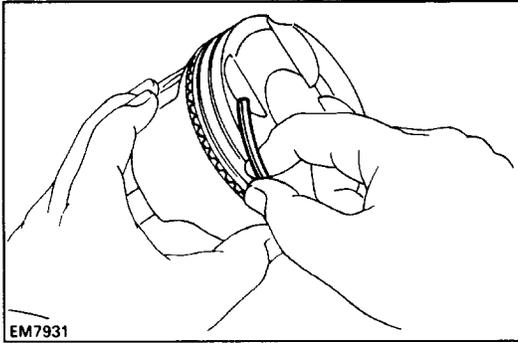
### 1. CHECK FIT BETWEEN PISTON AND PISTON PIN

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

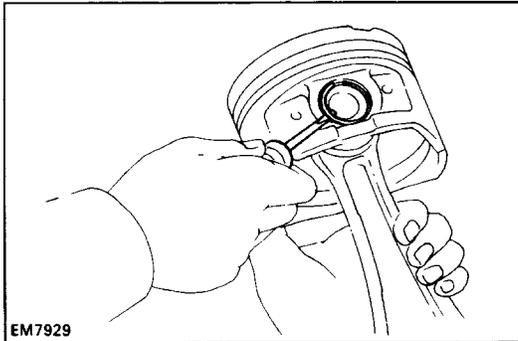
(a) Using a piston ring expander, remove the two compression rings.





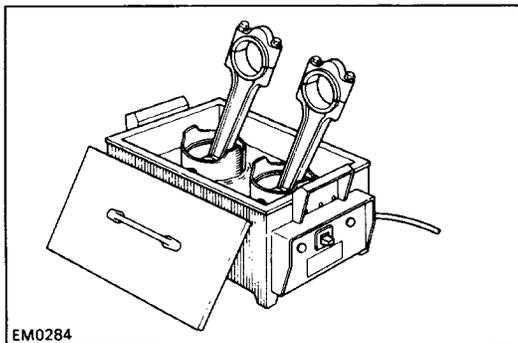
(b) Remove the two side rails and oil ring expander by hand.

HINT: Arrange the rings in correct order only.

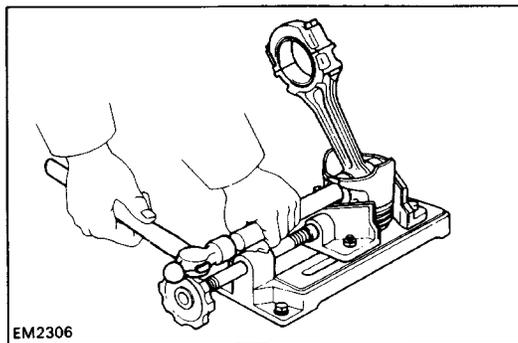


### 3. DISCONNECT CONNECTING ROD FROM PISTON

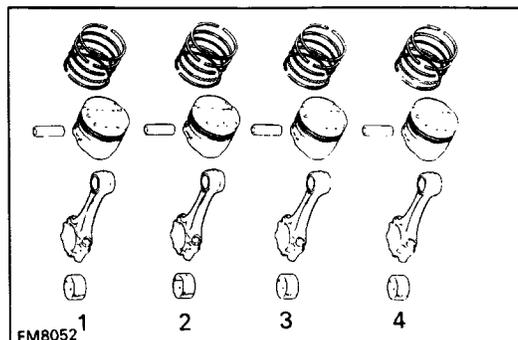
(a) Using a small screwdriver, pry out the two snap rings.



(b) Gradually heat the piston to 80–90°C (176–194°F).

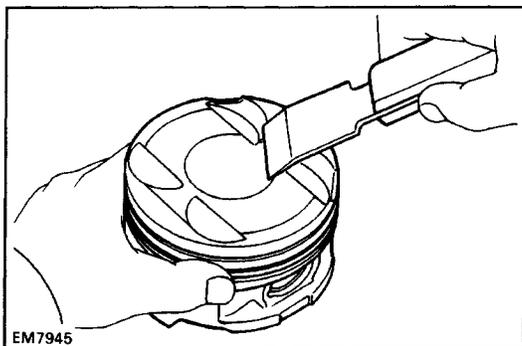


(c) Using plastic-faced hammer and brass bar, lightly tap out the piston pin and remove the connecting rod.



#### HINT:

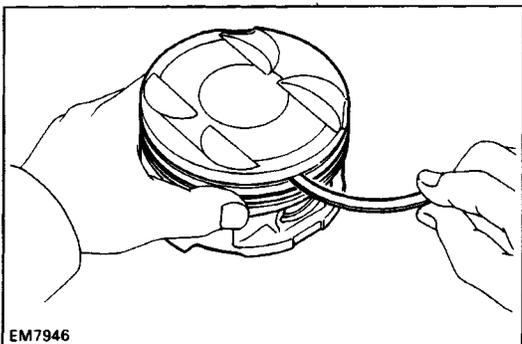
- The piston and pin are a matched set.
- Arrange the pistons, pins, rings, connecting rods and bearings in correct order.



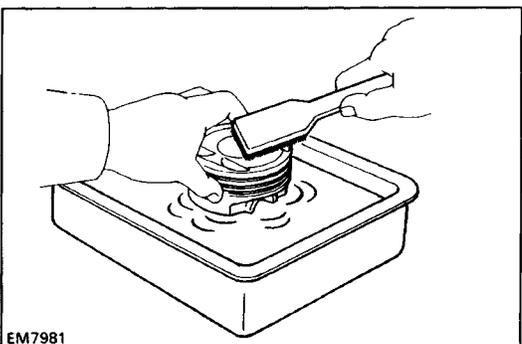
## INSPECTION OF PISTON AND CONNECTING ROD ASSEMBLIES

### 1. CLEAN PISTON

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

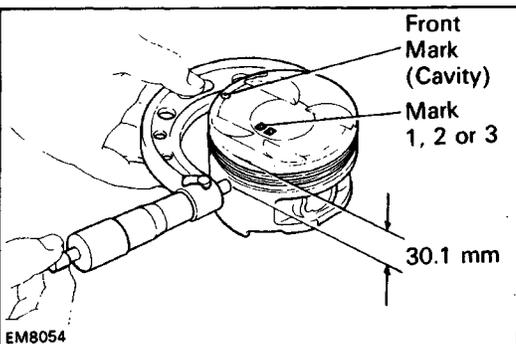


(b) Using a groove cleaner tool or broken ring, clean the piston ring grooves.



(c) Using solvent and a brush, thoroughly clean the piston.

**NOTICE:** Do not use a wire brush.



### 2. INSPECT PISTON

#### A. Inspect piston oil clearance

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

(a) Using a micrometer, measure the piston diameter at right angles to the piston pin center line, 30.1 mm (1.185 in.) from the piston head.

#### Piston diameter:

Mark "1"	85.920–85.930 mm (3.3827–3.3831 in.)
Mark "2"	85.930–85.940 mm (3.3831–3.3835 in.)
Mark "3"	85.940–85.950 mm (3.3835–3.3839 in.)

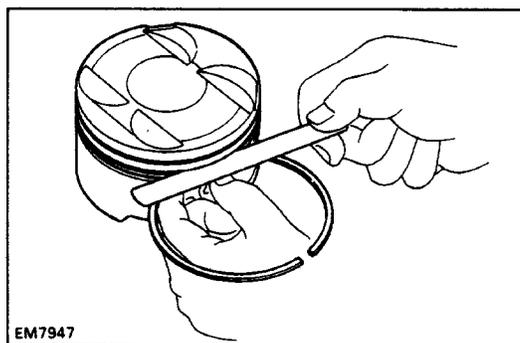
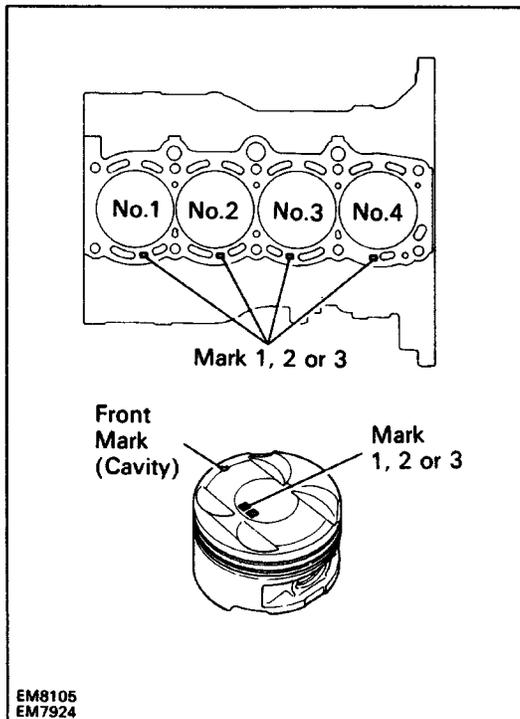
- (b) Measure the cylinder bore diameter in the thrust directions. (See step 4 on page EM-241)
- (c) Subtract the piston diameter measurement from the cylinder bore diameter measurement.

**Standard oil clearance: 0.070–0.090 mm  
(0.0028–0.0035 in.)**

**Maximum oil clearance: 0.110 mm (0.0043 in.)**

If the oil clearance is greater than maximum, replace all the four pistons. If necessary, replace the cylinder block.

**HINT** (Use new cylinder block): Use a piston with the same number mark as the cylinder bore diameter marked on the cylinder block.



### B. Inspect piston ring groove clearance

Using a feeler gauge, measure the clearance between new piston ring and the wall of the piston ring groove.

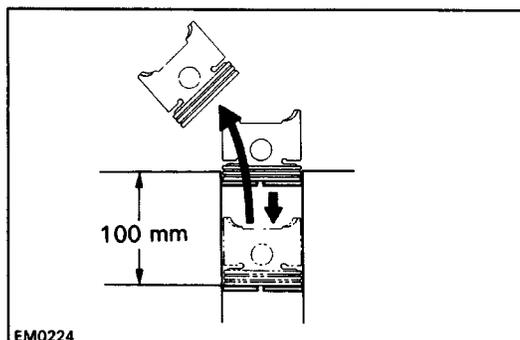
#### Ring groove clearance:

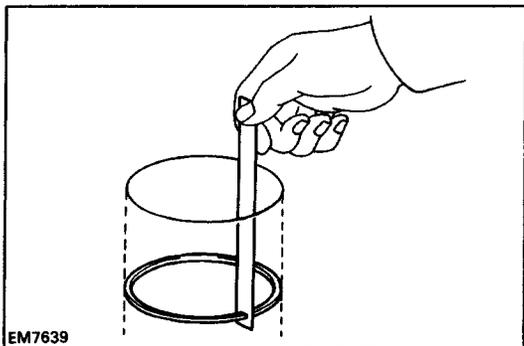
- No-1 0.040–0.080 mm  
(0.0016–0.0031 in.)**
- No .2 0.030–0.070 mm  
(0.0012–0.0028 in.)**

If the clearance is greater than maximum, replace the piston.

### C. Inspect piston ring end gap

- (a) Insert the piston ring into the cylinder bore.
- (b) Using a piston, push the piston ring a little beyond the bottom of the ring travel, 100 mm (3.94 in.) from the top of the cylinder block.





EM7639

(c) Using a feeler gauge, measure the end gap.

**Standard end gap:**

**No.1**            **0.330–0.550 mm**  
                           **(0.0130–0.0217 in.)**

**No. 2**            **0.450–0.670 mm**  
                           **(0.0177–0.0264 in.)**

**Oil (Side rail)**    **0.200–0.600 mm**  
                           **(0.0079–0.0236 in.)**

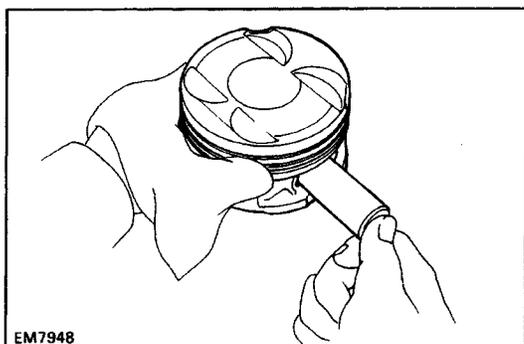
**Maximum end gap:**

**No.1**            **0.85 mm (0.0335 in.)**

**No.2**            **0.97 mm (0.0382 in.)**

**Oil (Side rail)** **0.90 mm (0.0354 in.)**

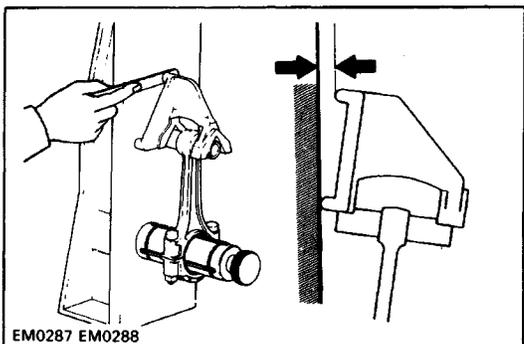
If the end gap is greater than maximum, replace the piston ring. If the end gap is greater than maximum, even with a new piston ring, replace the cylinder block.



EM7948

**D. Inspect piston pin fit**

At 60°C (140°F), you should be able to push the piston pin into the piston pin hole with your thumb.



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**3. INSPECT CONNECTING ROD**

**A. Inspect connecting rod alignment**

Using rod aligner and feeler gauge, check the connecting rod alignment.

- Check for bending.

**Maximum bending:**

**0.05 mm (0.0020 in.) per 100 mm (194 in.)**

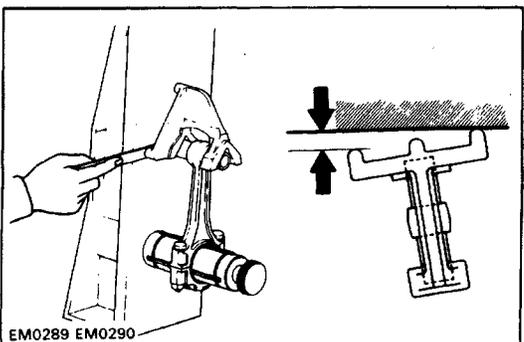
If bend is greater than maximum, replace the connecting rod assembly.

- Check for twist.

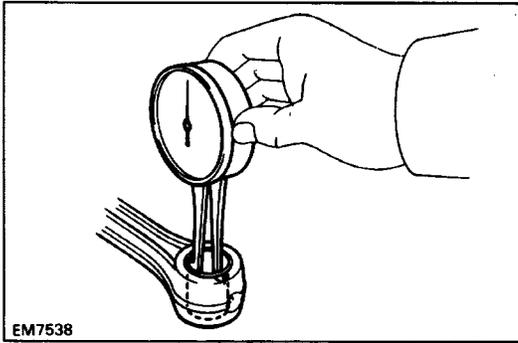
**Maximum twist:**

**0.15 mm (0.0059 in.) per 100 mm (3.94 in.)**

If twist is greater than maximum, replace the connecting rod assembly.



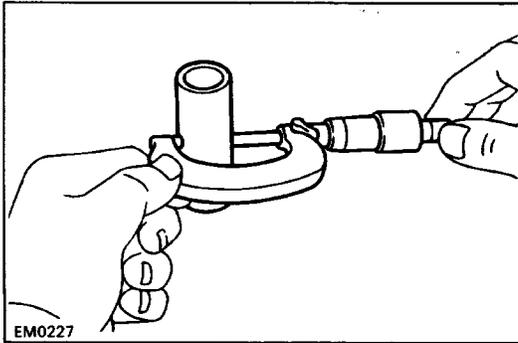
EM0289 EM0290



### B. Inspect piston pin oil clearance

- (a) Using a caliper gauge, measure the inside diameter of the connecting rod bushing.

**Bushing inside diameter: 22.005–22.017 mm  
(0.8663–0.8668 in.)**



- (b) Using a micrometer, measure the piston pin diameter.

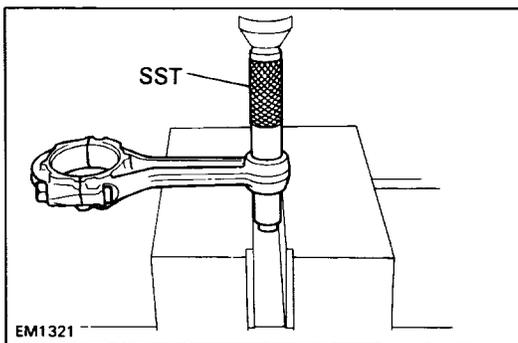
**Piston pin diameter: 21.997–22.009 mm  
(0.8660–0.8665 in.)**

- (c) Subtract the piston pin diameter measurement from the bushing inside diameter measurement.

**Standard oil clearance: 0.005–0.011 mm  
(0.0002–0.0004 in.)**

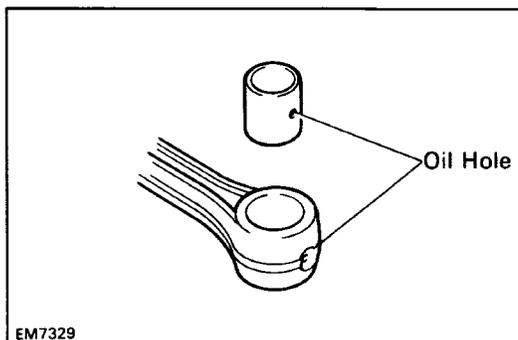
**Maximum oil clearance: 0.05 mm (0.0020 in.)**

If the oil clearance is greater than maximum, replace the bushing. If necessary, replace the piston and piston pin as a set.



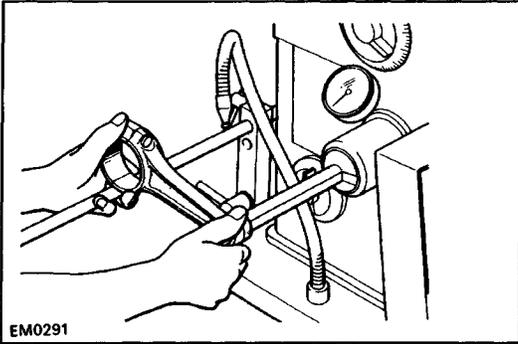
### C. If necessary, replace connecting rod bushing

- (a) Using SST and a press, press out the bushing.  
SST 09222-30010

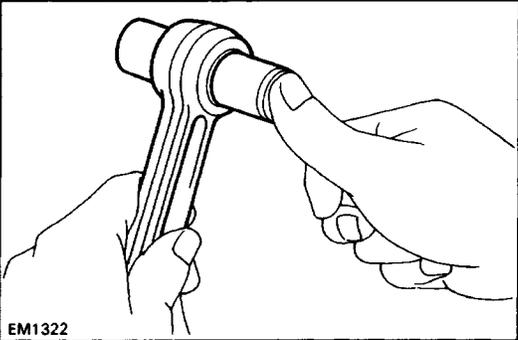


- (b) Align the oil holes of a new bushing and the connecting rod.

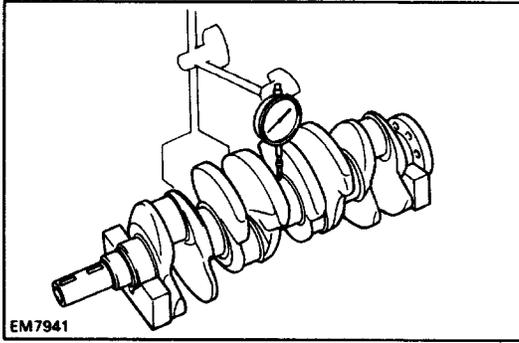
- (c) Using SST and a press, press in the bushing.  
SST 09222-30010



(d) Using a pin hole grinder, hone the bushing to obtain the standard specified clearance (see step B above) between the bushing and piston pin.



(e) Check the piston pin fit at normal room temperature. Coat the piston pin with engine oil, and push it into the connecting rod with your thumb.



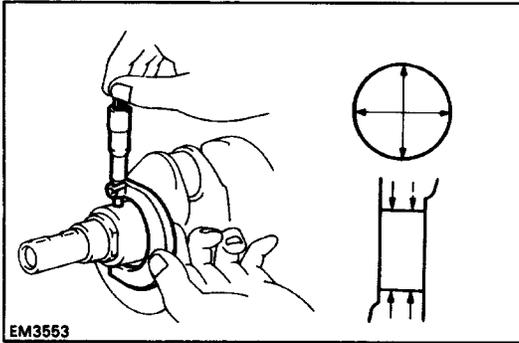
## INSPECTION AND REPAIR OF CRANKSHAFT

### 1. INSPECT CRANKSHAFT FOR RUNOUT

- (a) Place the crankshaft on V-blocks.
- (b) Using a dial indicator, measure the circle runout at the center journal.

**Maximum circle runout: 0.06 mm (0.0024 in.)**

If the circle runout is greater than maximum, replace the crankshaft.



### 2. INSPECT MAIN JOURNALS AND CRANK PINS

- (a) Using a micrometer, measure the diameter of each main journal and crank pin.

**Main journal diameter:**

**STD**      54.988–55.003 mm  
(2.1653–2.1655 in.)

**U/S 0.25**    54.745–54.755 mm  
(2.1553–2.1557 in.)

**Crank pin diameter:**

**STD**      47.985–48.000 mm  
(1.8892–1.8898 in.)

**U/S 0.25**    47.745–47.755 mm  
(1.8797–1.8801 in.)

If the diameter is not as specified, check the oil clearance (See pages [EM-234](#) to 238). If necessary, grind or re-place the crankshaft.

- (b) Check each main journal and crank pin for taper and out-of-round as shown.

**Maximum taper and out-of-round: 0.02 mm  
(0.0008 in.)**

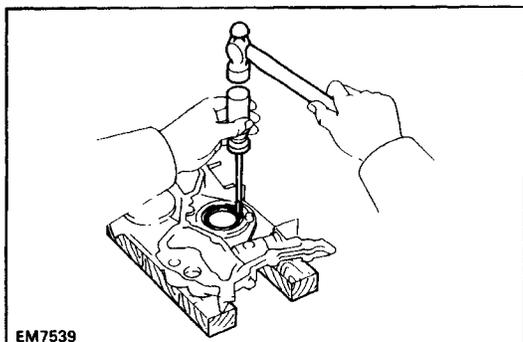
If the taper and out-of-round is greater than maximum, replace the crankshaft.

### 3. IF NECESSARY, GRIND AND HONE MAIN JOURNALS AND/OR CRANK PINS

Grind and hone the main journals and/or crank pins to the finished undersized diameter (See procedure step 2). Install new main journal and/or crank pin undersized bearings.

## REPLACEMENT OF CRANKSHAFT OIL SEALS

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

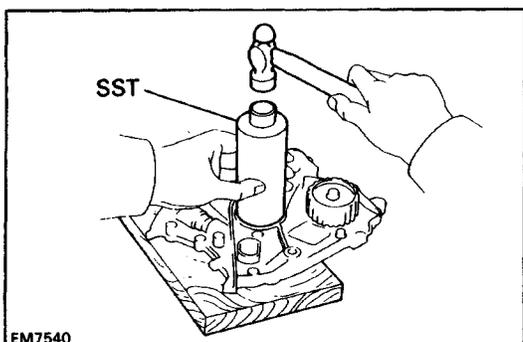


EM7539

### 1. REPLACE CRANKSHAFT FRONT OIL SEAL

#### A. If oil pump is removed from cylinder block:

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

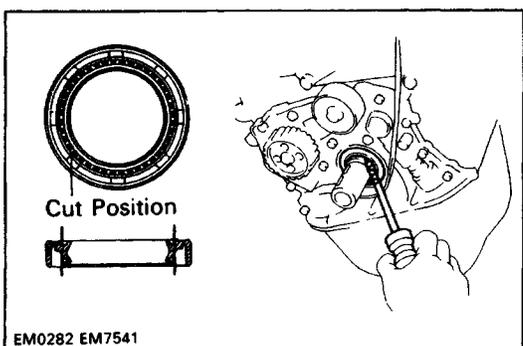


EM7540

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

SST 09226-10010

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



EM0282 EM7541

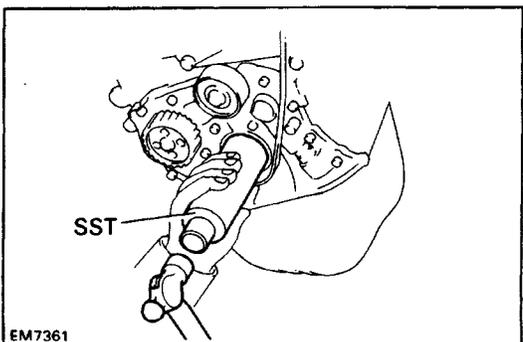
#### B. If oil pump is installed to the cylinder block:

(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.**

**Tap the screwdriver tip.**

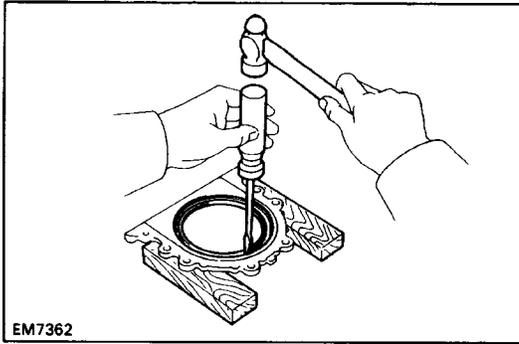


EM7361

(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 case edge.

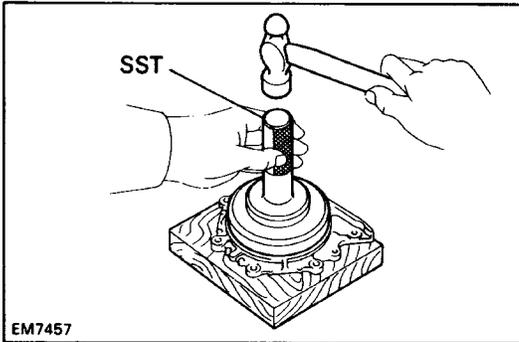
SST 09226-10010



## 2. REPLACE CRANKSHAFT REAR OIL SEAL

### A. If rear oil seal retainer is removed from cylinder block:

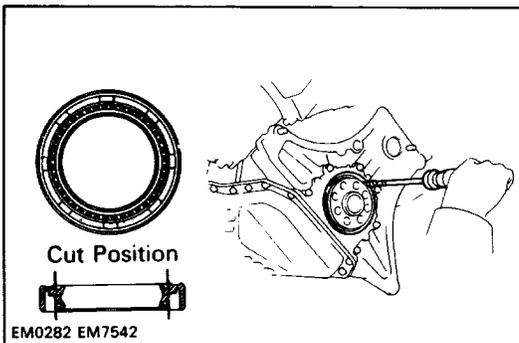
(a) Using screwdriver and hammer, tap out the oil seal.



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

SST 09223-63010

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



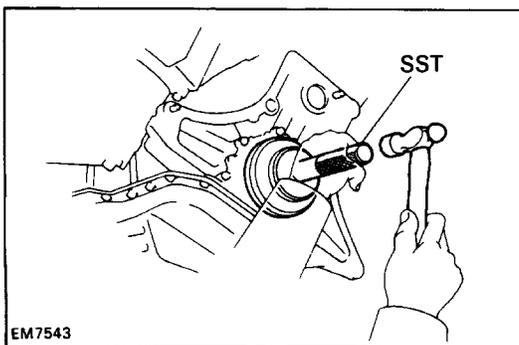
### B. If rear oil seal retainer is installed to cylinder block:

(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.

**Tap 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 rear oil seal retainer edge.

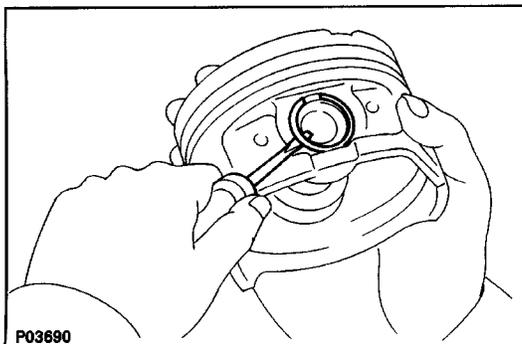
SST 09223-63010

## ASSEMBLY OF PISTON AND CONNECTING ROD ASSEMBLIES

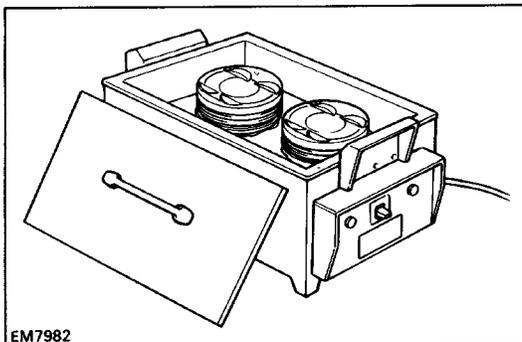
### 1. ASSEMBLE PISTON AND CONNECTING ROD

- (a) Using a small screwdriver, install a new snap ring on one side of the piston pin hole.

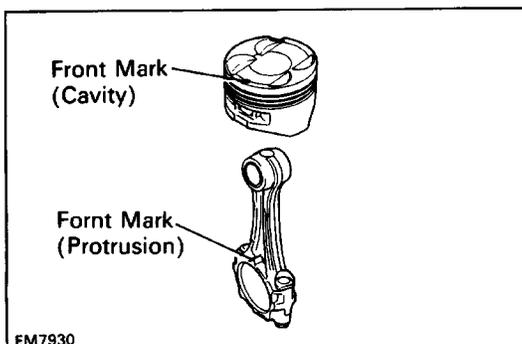
HINT: Be sure that end gap of the snap ring is not aligned with the pin hole cutout portion of the piston.



- (b) Gradually heat the piston to 80–90°C (176–194°F).

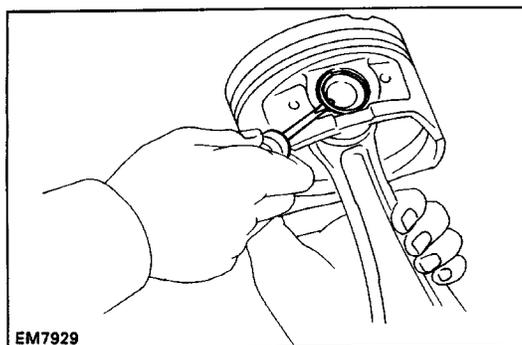


- (c) Coat the piston pin with engine oil.  
 (d) Align the front marks of the piston and connecting rod, and push in the piston pin with your thumb.



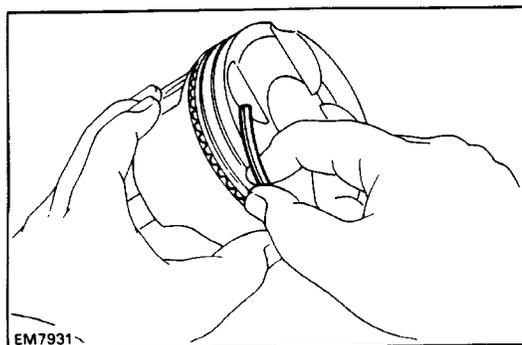
- (e) Using a small screwdriver, install a new snap ring on the other side of the piston pin hole.

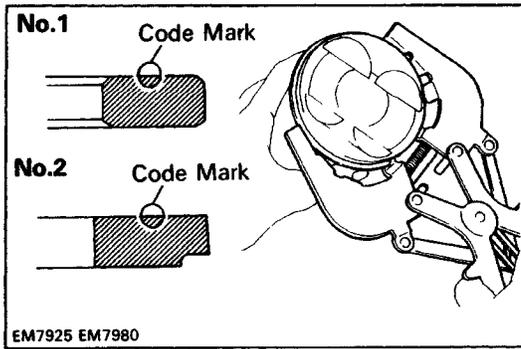
HINT: Be sure that end gap of the snap ring is not aligned with the pin hole cutout portion of the piston.



### 2. INSTALL PISTON RINGS

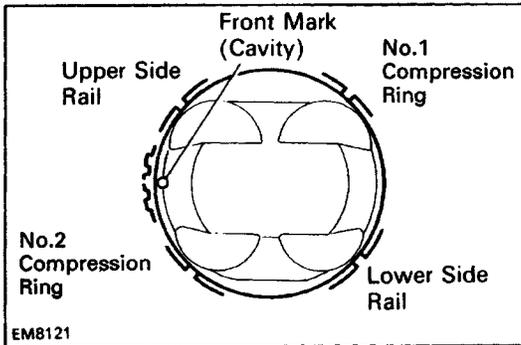
- (a) Install the oil ring expander and two side rails by hand.





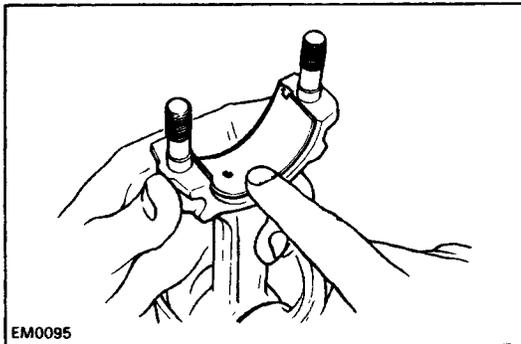
(b) Using a piston ring expander, install the two compression rings with the code mark facing upward.

**Code mark: R**



(c) Position the piston rings so that the ring ends are as shown.

**NOTICE: Do not align the ring ends.**



### 3. INSTALL BEARINGS

(a) Align the bearing claw with the groove of the connecting rod or connecting cap.

(b) Install the bearings in the connecting rod and connecting rod cap.

## ASSEMBLY OF CYLINDER BLOCK

(See page EM-223)

HINT:

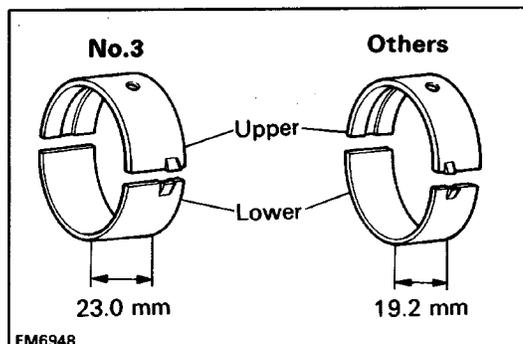
- Thoroughly clean all parts to be assembled.
- Before installing the parts, apply new engine oil to all sliding and rotating surfaces.
- Replace all gaskets, O-rings and oil seals with new parts.

### 1. INSTALL OIL NOZZLES (See page LU-31)

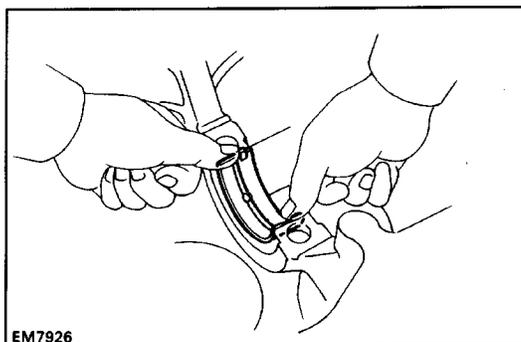
### 2. INSTALL MAIN BEARINGS

HINT:

- Main bearings come in widths of 19.2 mm (0.756 in.) and 23.0 mm (0.906 in.). Install the 23.0 mm (0.906 in.) bearings in the No.3 cylinder block journal position with the main bearing cap. Install the 19.2 mm (0.756 in.) bearings in the other positions.
- Upper bearings have an oil groove and oil holes; lower bearings do not.

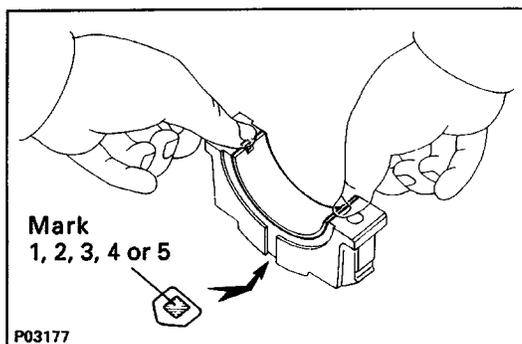


EM6948



EM7926

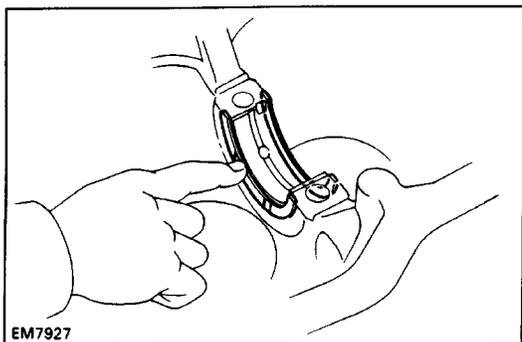
- (a) Align the bearing claw with the claw groove of the cylinder block, and push in the five upper bearings.



P03177

- (b) Align the bearing claw with the claw groove of the main bearing cap, and push in the five lower bearings.

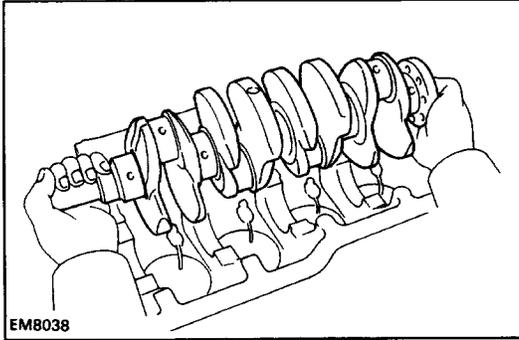
HINT: A number is marked on each main bearing cap to indicate the installation position.



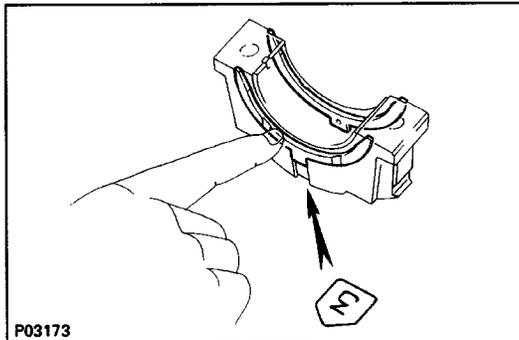
EM7927

### 3. INSTALL UPPER THRUST WASHERS

Install the two thrust washers under the No.3 journal position of the cylinder block with the oil grooves facing outward.

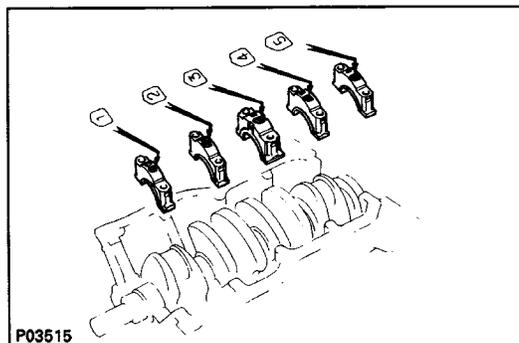


#### 4. PLACE CRANKSHAFT ON CYLINDER BLOCK



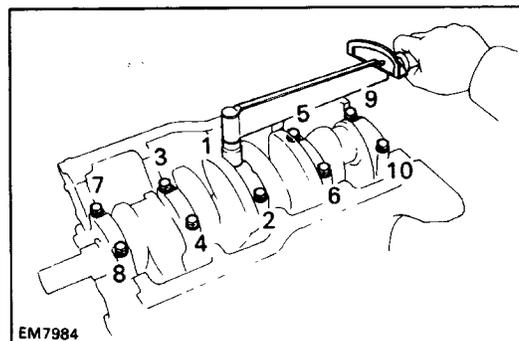
#### 5. INSTALL MAIN BEARING CAPS AND LOWER THRUST WASHERS

- (a) Install the two thrust washers on the No.3 bearing cap with the grooves facing outward.



- (b) Install the five main bearing caps in their proper locations.

HINT: Each bearing cap has a number and front mark.



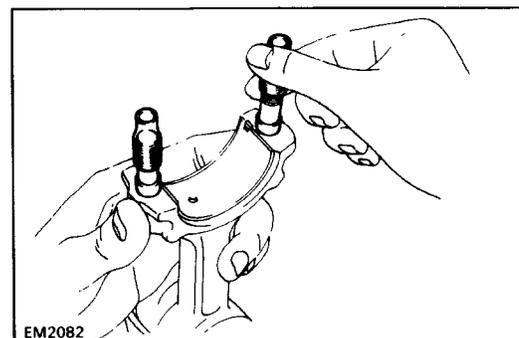
- (c) Apply a light coat of engine oil on the threads and under the heads of the main bearing caps.
- (d) Install and uniformly tighten the ten bolts of the main bearing caps in several passes in the sequence shown.

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

- (e) Check that the crankshaft turns smoothly.

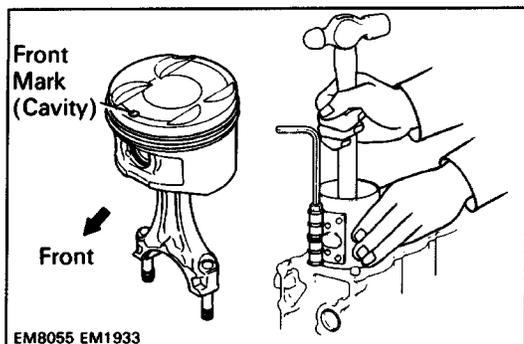
- (f) Check the crankshaft thrust clearance.

(See step 5 on page [EM-236](#))

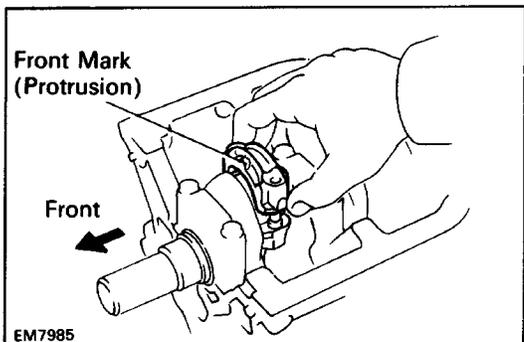


#### 6. INSTALL PISTON AND CONNECTING ROD ASSEMBLIES

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

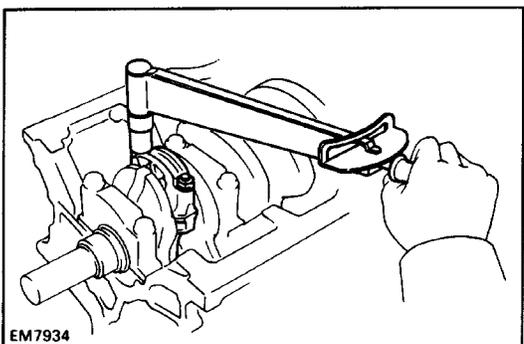


- (b) Using a piston ring compressor, push the correctly numbered piston and connecting rod assemblies into each cylinder with the front mark of the piston facing forward.



## 7. INSTALL CONNECTING ROD CAPS

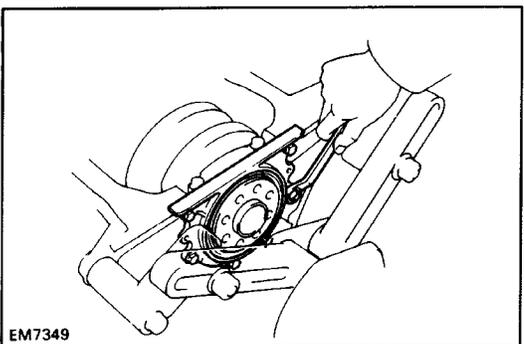
- (a) Match the numbered connecting rod cap with the connecting rod.
- (b) Install the connecting rod cap with the front mark facing forward.



- (c) Apply a light coat of engine oil on the threads and under the cap nuts.
- (d) Using SST, install and alternately tighten the cap-nuts in several passes.

**Torque: 67 N-m (680 kgf-cm, 49 ft-lbf)**

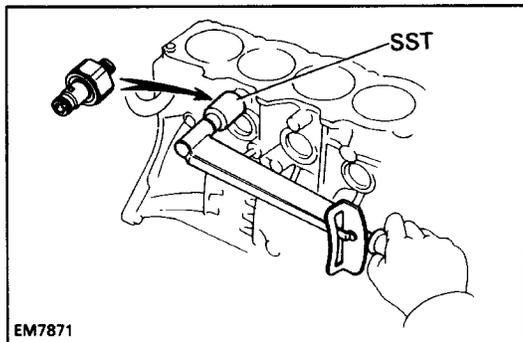
- (e) Check that the crankshaft turns smoothly.
- (f) Check the connecting rod thrust clearance.  
(See step 2 on page [EM-234](#))



## 8. INSTALL REAR OIL SEAL RETAINER

Install a new gasket and the retainer with the six bolts:

**Torque: 9.3 N-m (95 kgf-cm, 82 in.lbf)**



## POST ASSEMBLY

### 1. INSTALL KNOCK SENSOR

Using SST, install the knock sensor.

SST 09816-30010

Torque: 44 N-m (450 kgf-cm, 33 ft-lbf)

2. INSTALL OIL COOLER (See pages [LU-26](#) and 27)

3. INSTALL OIL FILTER (See page [LU-7](#))

4. INSTALL OIL PUMP AND OIL PAN

(See pages [LU-21](#) to 23)

5. INSTALL WATER PUMP AND IDLER PULLEY

BRACKET (See pages [CO-14](#) and 15)

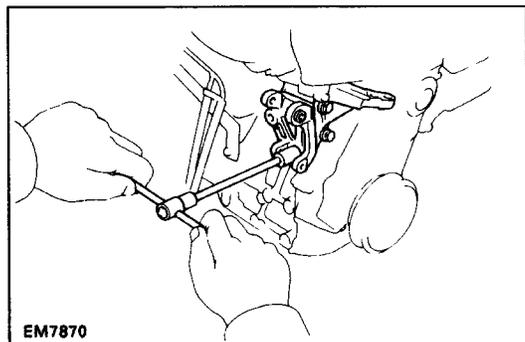
6. INSTALL CYLINDER HEAD

(See pages [EM-140](#) to 148)

7. INSTALL TURBOCHARGER (See pages [TC-15](#) to 17)

8. INSTALL PULLEYS AND TIMING BELT

(See pages [EM-55](#) to 60)



### 9. INSTALL RH ENGINE MOUNTING BRACKET

Install the mounting bracket with the three bolts.

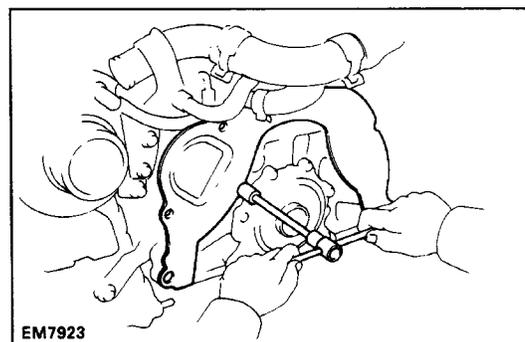
Torque: 52 N-m (530 kgf-cm, 38 ft.lbf)

### 10. INSTALL PS PUMP BRACKET

Install the PS pump bracket with the three bolts.

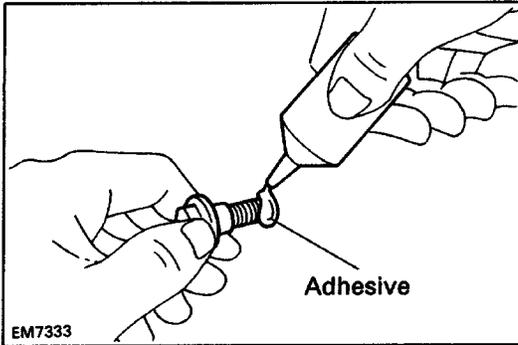
Torque: 43 N-m (440 kgf-cm, 32 ft-lbf)

### 11. REMOVE ENGINE STAND



### 12. INSTALL REAR END PLATE

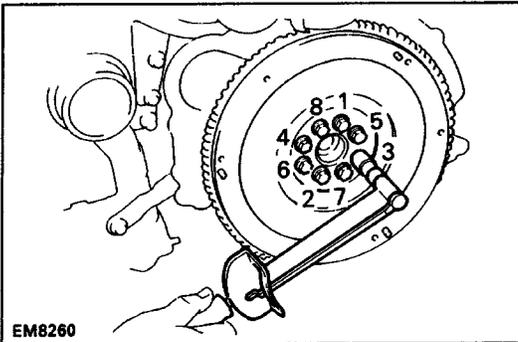
Torque: 9.3 N-m (95 kgf-cm, 82 in.-lbf)



### 13. INSTALL FLYWHEEL

- (a) Apply adhesive to two or three threads of the mounting bolt end.

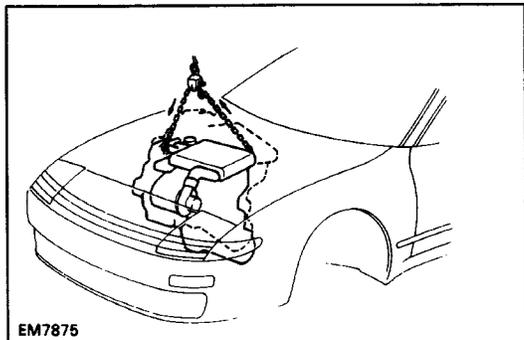
**Adhesive: Part No. 08833-00070, THREE BOND 1324 or equivalent**



- (b) Install the flywheel on the crankshaft.  
(c) Install and uniformly tighten the mounting bolts in several passes in the sequence shown.

**Torque: 108 N-m (1,100 kgf-cm, 80 ft-lbf)**

### 14. INSTALL CLUTCH DISC AND COVER (See CL section)



EM7875

## INSTALLATION OF ENGINE

### 1. ASSEMBLE ENGINE AND TRANSAXLE

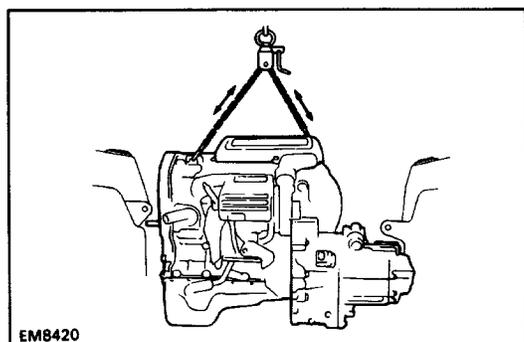
(See MT section)

### 2. INSTALL ENGINE AND TRANSAXLE ASSEMBLY IN VEHICLE

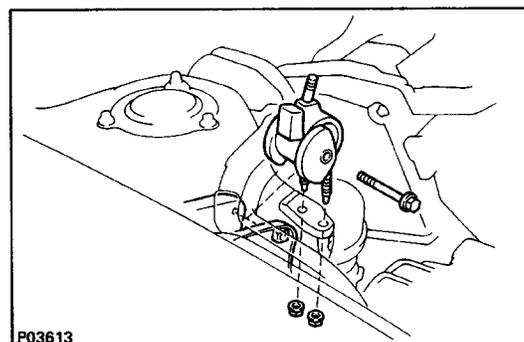
- (a) Attach the engine chain hoist to the engine hangers.
- (b) Lower the engine into the engine compartment. Tilt the transaxle downward, lower the engine and clear the LH mounting.

**NOTICE:** Be careful not to hit the PS gear housing.

- (c) Keep the engine level, and align RH and LH mountings with the body bracket.

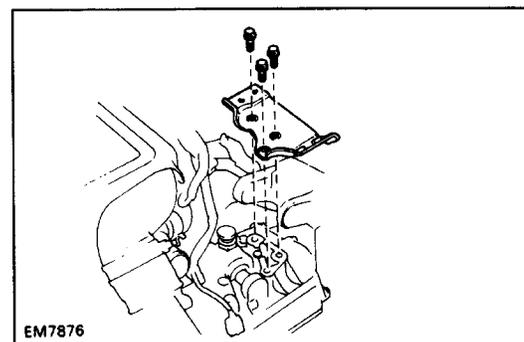


EM8420



P03613

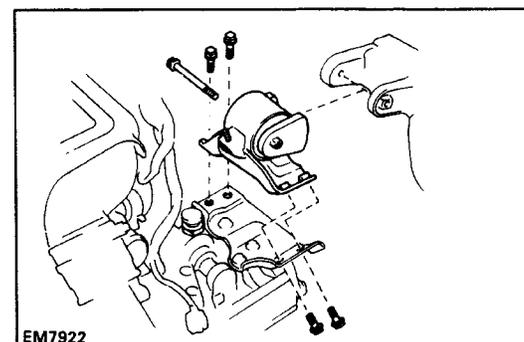
- (d) Attach the RH mounting insulator to the mounting bracket and body, and temporarily install the through bolt and two nuts.



EM7876

- (e) Install the LH mounting bracket to the transaxle case with the three bolts.

**Torque: 52 N-m (530 kgf-cm, 38 ft-lbf)**



EM7922

- (f) Attach the LH mounting insulator to the mounting bracket and body with the through bolt and four bolts. Tighten the bolts.

**Torque:**

**Bolt 63 N-m (650 kgf-cm, 47 ft-lbf)**

**Through bolt 87 N-m (890 kgf-cm, 64 ft-lbf)**

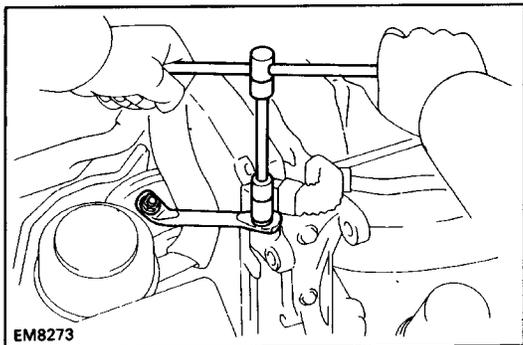
- (g) Tighten the through bolt and two nuts of the RH mounting insulator.

**Torque:**

**Nut 52 N-m (530 kgf-cm, 38 ft-lbf)**

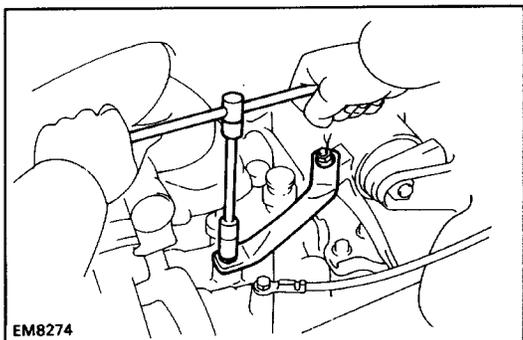
**Through bolt 87 N-m (890 kgf-cm, 64 ft-lbf)**

- (h) Remove the engine chain hoist from the engine.

**3. INSTALL RH ENGINE MOUNTING STAY**

Install the mounting stay with the bolt and nut.

**Torque: 73 N-m (740 kgf-cm, 54 ft-lbf)**

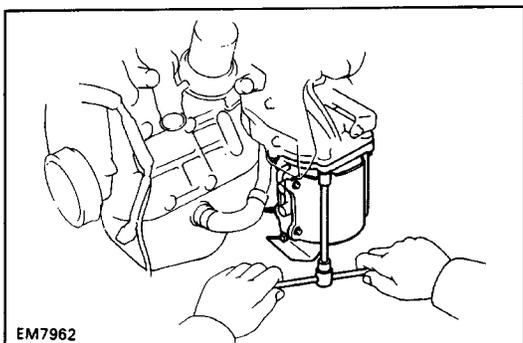
**4. INSTALL LH ENGINE MOUNTING STAY**

Install the mounting stay with the bolt and nut.

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

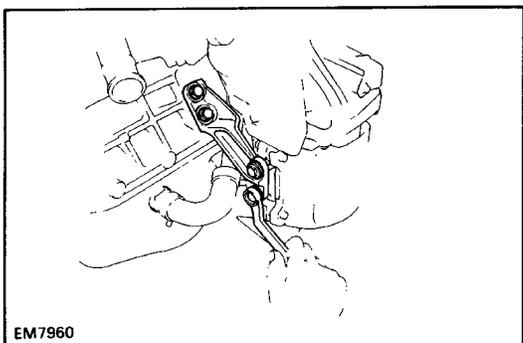
**5. CONNECT GROUND STRAP**

Connect the ground strap to the transaxle with the bolt.

**6. INSTALL THREE-WAY CATALYTIC CONVERTER**

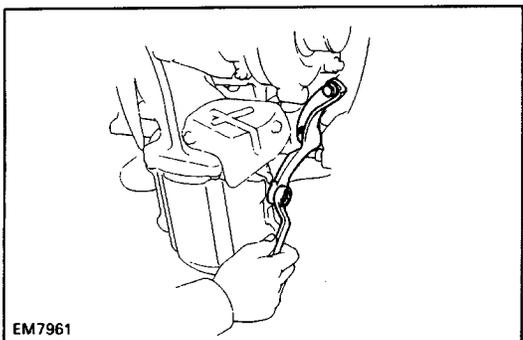
- (a) Place new cushion, retainer and gasket on the three-way catalytic converter.
- (b) Install the three-way catalytic converter with the three bolts and two nuts.

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



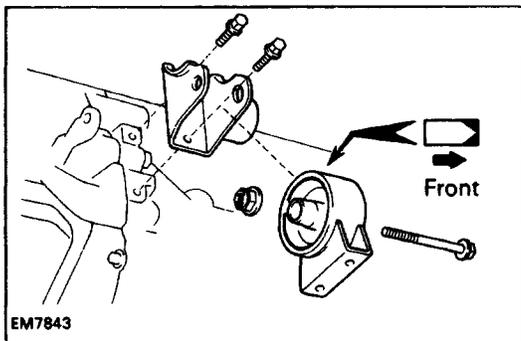
- (c) Install the RH converter stay with the four bolts.

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



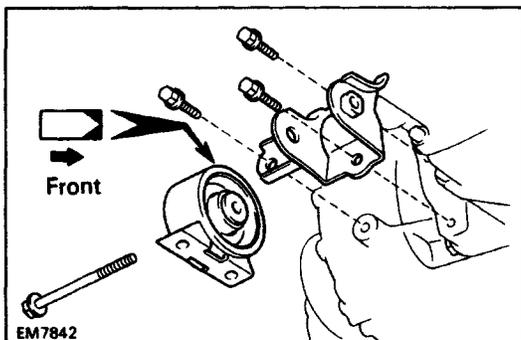
- (d) Install the LH converter stay with the three bolts.

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



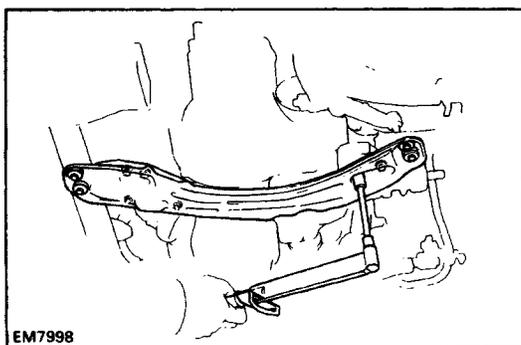
### 7. INSTALL FRONT ENGINE MOUNTING BRACKET AND INSULATOR

- (a) Install the mounting bracket with the two bolts.  
**Torque: 77 N-m (790 kgf-cm, 57 ft-lbf)**
- (b) Temporarily install the mounting insulator with the through bolt and nut.



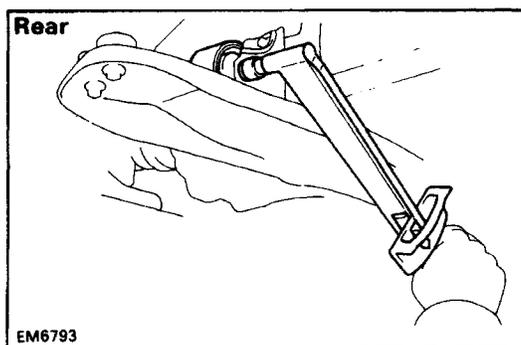
### 8. INSTALL REAR ENGINE MOUNTING BRACKET AND INSULATOR

- (a) Install the mounting bracket with the three bolts.  
**Torque: 77 N-m (790 kgf-cm, 57 ft-lbf)**
- (b) Temporarily install the mounting insulator with the through bolt.



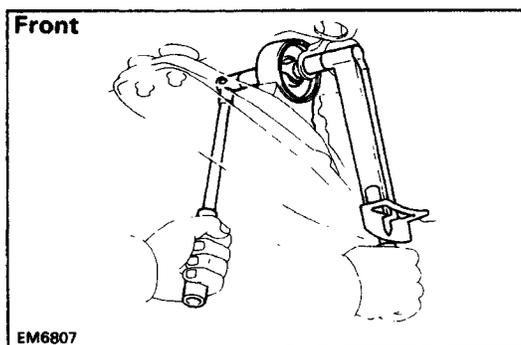
### 9. INSTALL ENGINE MOUNTING CENTER MEMBER

- (a) Install the engine mounting center member with the four bolts.  
**Torque: 52 N-m (530 kgf-cm, 38 ft-lbf)**
- (b) Install and torque the four bolts holding the insulators to the center member.  
**Torque: 73 N-m (740 kgf-cm, 54 ft-lbf)**



### 10. TIGHTEN FRONT AND REAR ENGINE MOUNTING THROUGH BOLTS

- (a) Tighten the rear through bolt.  
**Torque: 87 N-m (890 kgf-cm, 64 ft-lbf)**



- (b) Tighten the front through bolt.  
**Torque: 87 N-m (890 kgf-cm, 64 ft-lbf)**



### 11. INSTALL PS PUMP

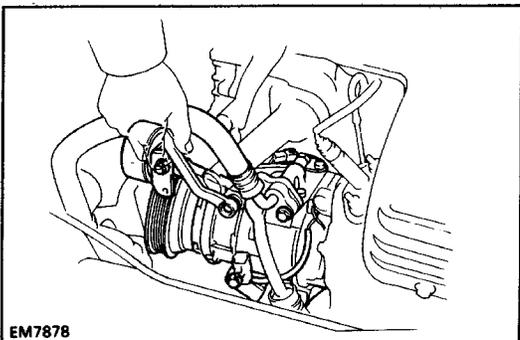
- (a) Install the PS pump with the four bolts.

**Torque:**

**Adjusting bolt 39 N-m (400 kgf-cm, 29 ft-lbf)**

**Others 43 N-m (440 kgf-cm, 32 ft-lbf)**

- (b) Install the drive belt.  
 (c) Connect the two air hoses to the air pipe.



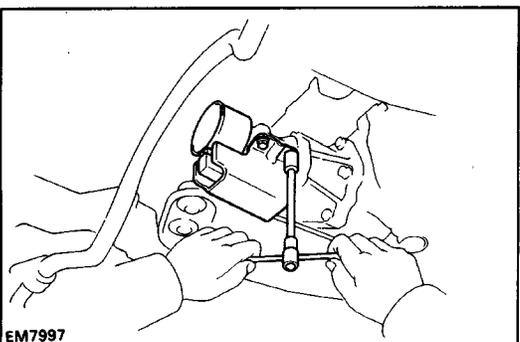
### 12. INSTALL A/C COMPRESSOR AND IDLER PULLEY BRACKET

- (a) Install the compressor and idler pulley bracket with the four bolts.

**Torque: 27 N-m (280 kgf-cm, 20 ft-lbf)**

- (b) Connect the two connectors.  
 (c) Connect the A/C compressor connector.

### 13. INSTALL GENERATOR (See page CH-23)



### 14. INSTALL DEFLECTOR TO TRANSFER EXTENSION HOUSING

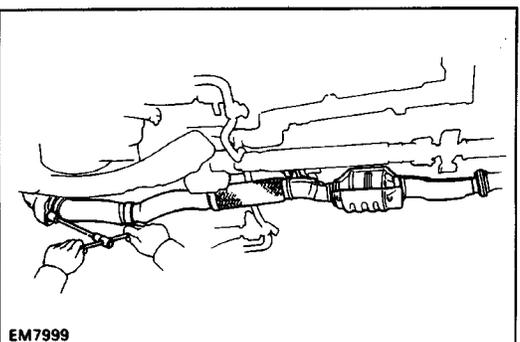
### 15. INSTALL DYNAMIC DAMPER TO TRANSFER EXTENSION HOUSING

### 16. INSTALL FRONT PROPELLER SHAFT

(See PR section)

### 17. INSTALL DRIVE SHAFTS

(See SA section)



### 18. INSTALL FRONT EXHAUST PIPE

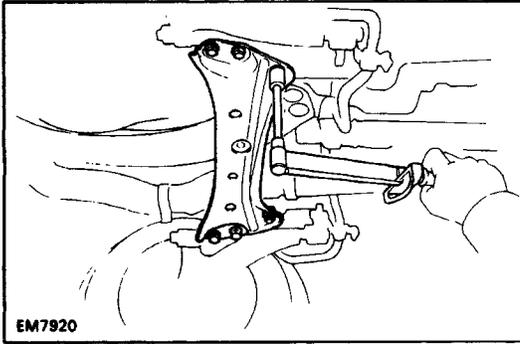
- (a) Install the support hook on the front exhaust pipe to the support bracket.  
 (b) Place two new gaskets on the front and rear of the front exhaust pipe.  
 (c) Temporarily install the two bolts and new nuts holding the exhaust pipe to the center exhaust pipe.  
 (d) Using a 14 mm deep socket wrench, install the three new nuts holding the exhaust pipe to the three-way catalytic converter.

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

- (e) Tighten the two bolts and nuts holding the exhaust pipe to the center exhaust pipe.

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

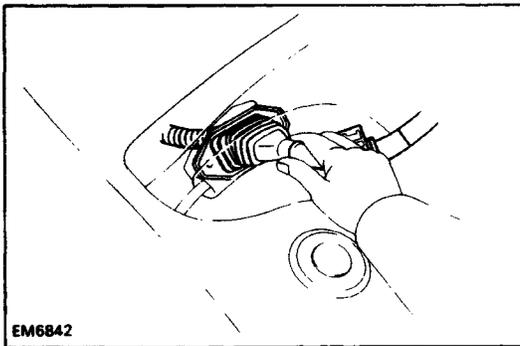
- (f) Install the clamp with the bolt.



### 19. INSTALL SUSPENSION LOWER CROSSMEMBER

Install the lower crossmember with the four bolts and two nuts.

**Torque: 152 N-m (1,550 kgf-cm, 112 ft-lbf)**

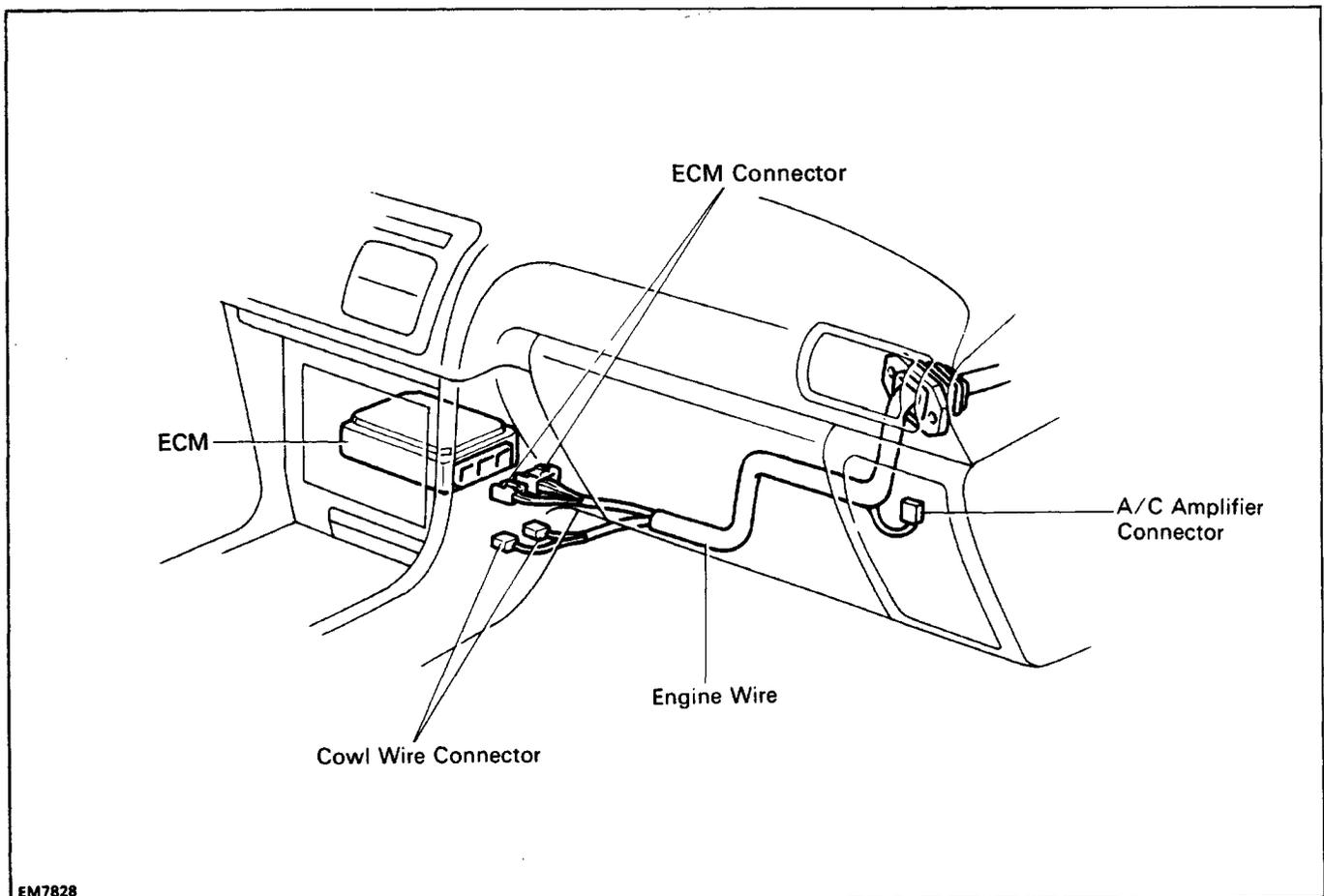


### 20. CONNECT ENGINE WIRE TO CABIN

(a) Push in the engine wire through the cowl panel.  
Install the two nuts.

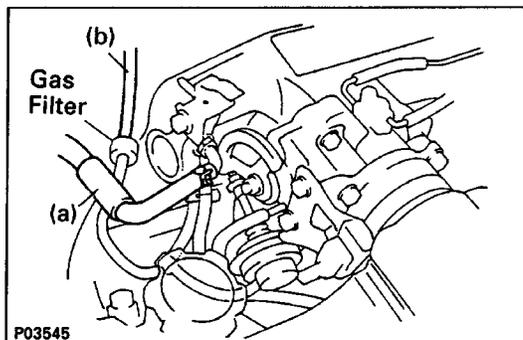
(b) Connect the following connectors.

- (1) Two ECM connectors
- (2) Two cowl wire connectors
- (3) A/C amplifier connector

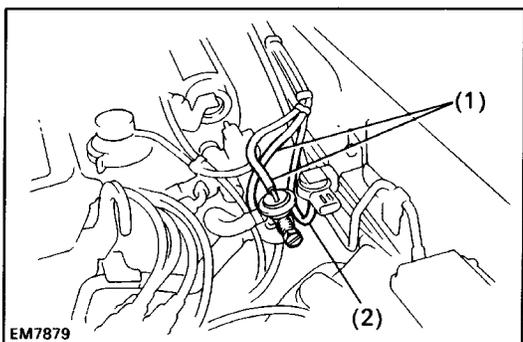


**21. CONNECT ENGINE WIRE**

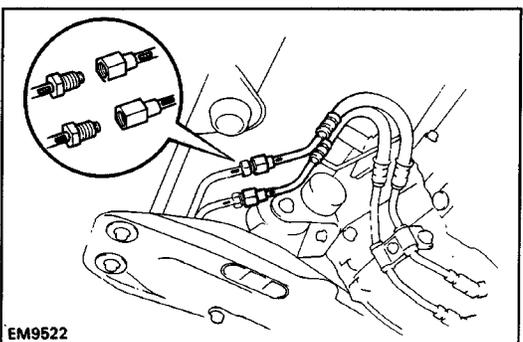
- (a) Engine wire clamp to wire bracket on RH fender apron
- (b) Two cowl wire connectors

**22. CONNECT HOSES**

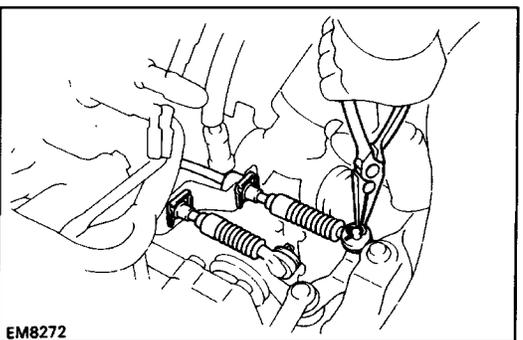
- (a) Brake booster vacuum hose from intake manifold
- (b) Turbocharging pressure sensor hose from gas filter

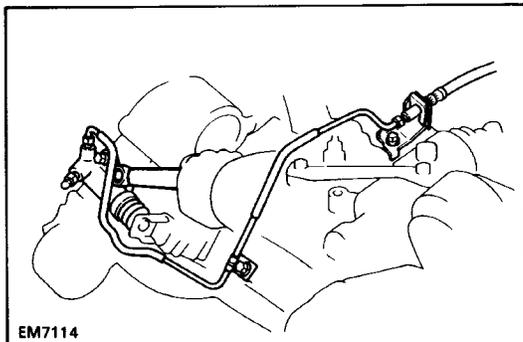
**23. INSTALL TURBOCHARGING PRESSURE SENSOR AND A/C ASV**

- (a) Install the turbocharging pressure sensor and A/C ASV with the bolt.
- (b) Connect the following hoses:
  - (1) Two vacuum hoses to ASV (from A/C ASV)
  - (2) Vacuum hose to ASV (from turbocharging pressure sensor)
- (c) Connect turbocharging pressure sensor connector.

**24. CONNECT TRANSAXLE OIL COOLER TUBE**

- (a) Align the matchmarks on the oil cooler hoses and tubes.
- (b) Connect the two oil cooler hoses.  
Torque: 34 N-m (350 kgf-cm, 25 ft-lbf)

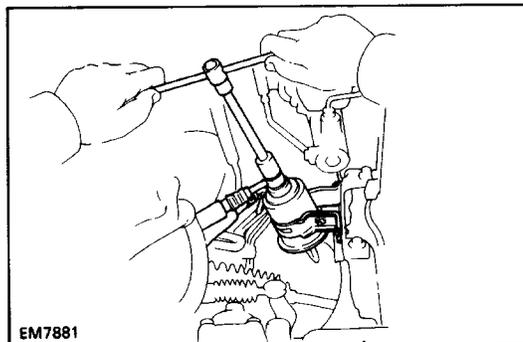
**25. CONNECT TRANSAXLE CONTROL CABLES TO TRANSAXLE**

**26. INSTALL CLUTCH RELEASE CYLINDER**

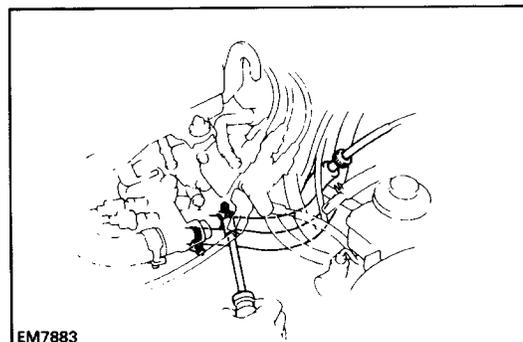
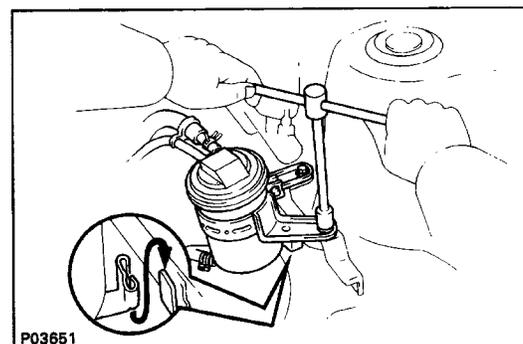
Install the release cylinder and tube with the four bolts.

**27. INSTALL STARTER (See page ST-22)****28. CONNECT CONNECTORS**

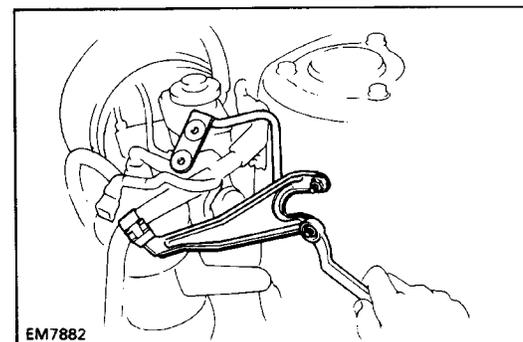
- (1) Engine room wire connector
- (2) Noise filter connector

**29. CONNECT FUEL HOSES**

Torque (Union bolt): 29 N·m (300 kgf·cm, 22 ft·lbf)

**30. CONNECT SPEEDOMETER CABLE****31. CONNECT HEATER HOSES****32. INSTALL CHARCOAL CANISTER**

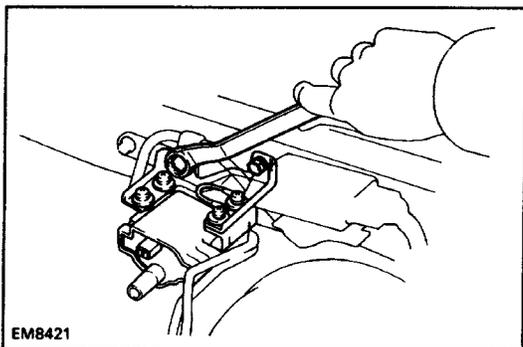
- (a) Install the charcoal canister with the two bolts.
- (b) Connect the three hoses.

**33. INSTALL ENGINE WIRE BRACKET**

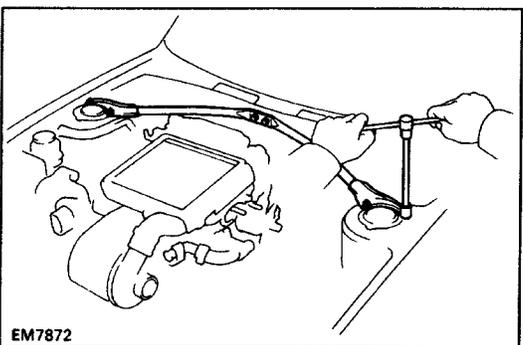
- (a) Install the wire bracket with the two bolts. Install the noise filter.
- (b) Install the wire clamp to the wire bracket.

**34. CONNECT WIRES AND CONNECTORS**

- (a) Data link connector 1
- (b) Igniter connector
- (c) Ground strap from LH fender apron

**35. INSTALL IGNITION COIL**

- (a) Install the ignition coil with the two bolts.
- (b) Connect the high-tension cord.
- (c) Connect the ignition coil connector.

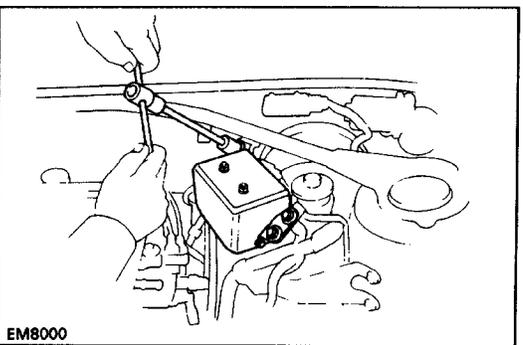
**36. INSTALL SUSPENSION UPPER BRACE**

- (a) Install the suspension upper brace with the two bolts and four bolts.

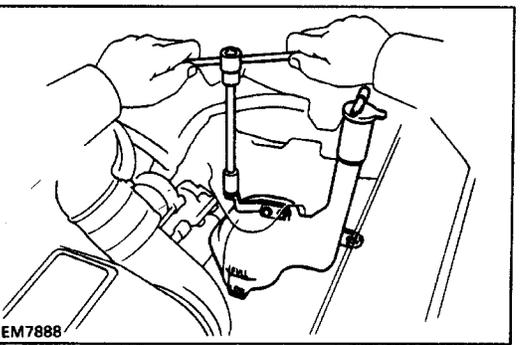
**Torque: Bolt 21 N-m (210 kgf-cm, 15 hYbf)**

**Nut 64 N-m (650 kgf-cm, 47 ft-lbf)**

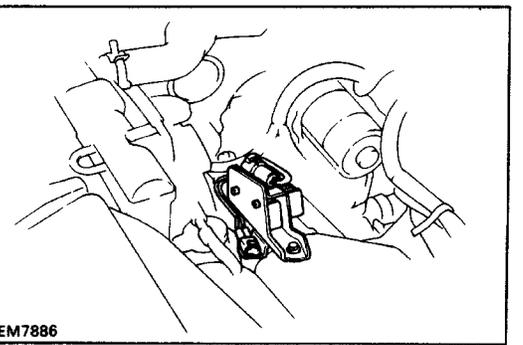
- (b) Install the outside lower windshield moulding.
- (c) Install the two wiper arms.

**37. (w/ CRUISE CONTROL SYSTEM)****INSTALL CRUISE CONTROL ACTUATOR**

- (a) Connect the cable to the actuator.
- (b) Connect the actuator connector
- (c) Install the actuator with the three bolts.
- (d) Install the actuator cover with the two nuts.

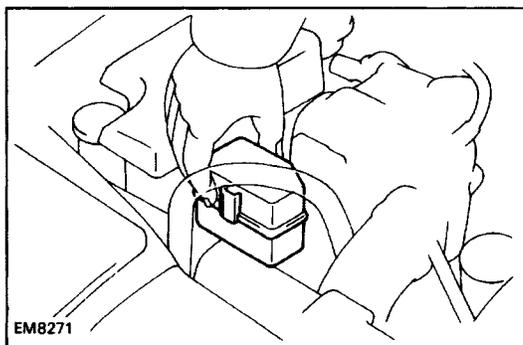
**38. INSTALL RADIATOR RESERVOIR TANK**

Install the reservoir tank with the two nuts.

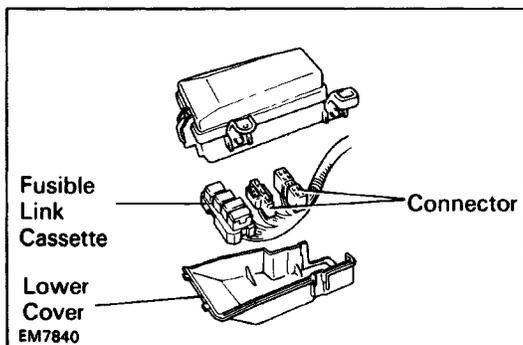
**39. INSTALL RADIATOR (See pages CO-24 and 25)****40. INSTALL INJECTOR SOLENOID RESISTOR AND FUEL PUMP RESISTOR**

- (a) Install the solenoid resistor and fuel pump resistor with the bolt.
- (b) Connect the two connectors.

**41. INSTALL BATTERY**

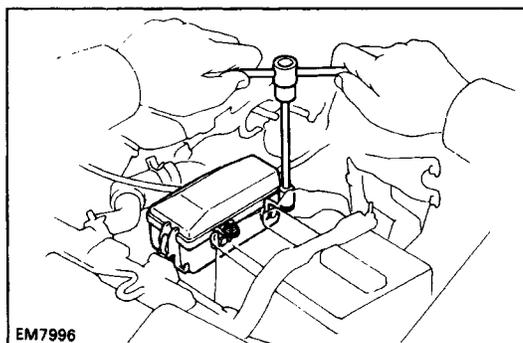


#### 42. INSTALL A/C RELAY BOX



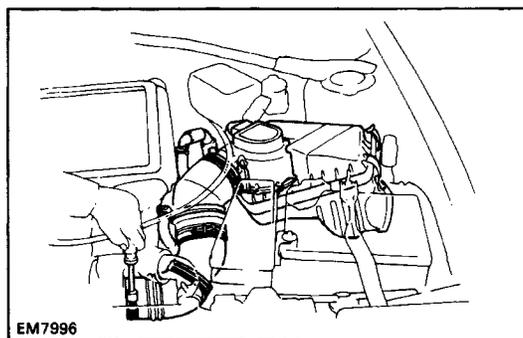
#### 43. CONNECT ENGINE WIRE, AND INSTALL ENGINE RELAY BOX

- (a) Connect the fusible link cassette and two connectors of the engine wire to the relay box.
- (b) Install the lower cover to the relay box.



- (c) Install the relay box with the two nuts.

#### 44. INSTALL ACCELERATOR CABLE, AND ADJUST IT



#### 45. INSTALL AIR CLEANER

- (a) Install the air cleaner case with the three bolts.
- (b) Install the air cleaner filter.
- (c) Connect the following hoses;
  - (1) Air cleaner hose to turbocharger
  - (2) PCV hose to cylinder head cover
  - (3) Air hose to air pipe
- (d) Install the air cleaner cap and air flow meter.
- (e) Connect the volume air flow meter connector.

#### 46. FILL WITH TRANSAXLE OIL (See. page [MA-14](#))

Capacity: 5.2 liters (5.1 US qts, 4.6 Imp. qts)

#### 47. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

#### 48. FILL WITH ENGINE COOLANT (See page [CO-6](#))

Capacity (w/ Heater):

6.5 liters (6.9 US qts, 5.7 Imp. qts)

**49. FILL WITH ENGINE OIL (See page LU–8)****Capacity:****Drain and refill****w/ Oil filter change****3.9 liters (4.1 US qts, 3.4 Imp. qts)****w/o Oil filter change****3.6 liters (3.8 US qts, 3.2 Imp. qts)****Dry fill 4.3 liters (4.5 US qts, 3.8 Imp. qts)****50. START ENGINE AND CHECK FOR LEAKS****51. PERFORM ENGINE ADJUSTMENT**

(a) Adjust the generator drive belt.

**Drive belt tension:****w/ A/C****New belt 165 ± 10 lbf****Used belt 84 ± 15 lbf****w/o A/C****New belt 150 ± 25 lbf****Used belt 130 ± 20 lbf**

(b) Adjust the PS drive belt.

**Drive belt tension: New belt 125 ± 25 lbf****Used belt 80 ± 20 lbf**

(c) Adjust the ignition timing. (See page IG–29)

**Ignition timing:****10° BTDC (g idle****(w/ Terminals TE1 and E1 connected)****52. INSTALL ENGINE UNDER COVERS****53. INSTALL HOOD****54. PERFORM ROAD TEST**

Check for abnormal noise, shock, slippage, correct shift points and smooth operation.

**55. RECHECK ENGINE COOLANT AND OIL LEVELS**