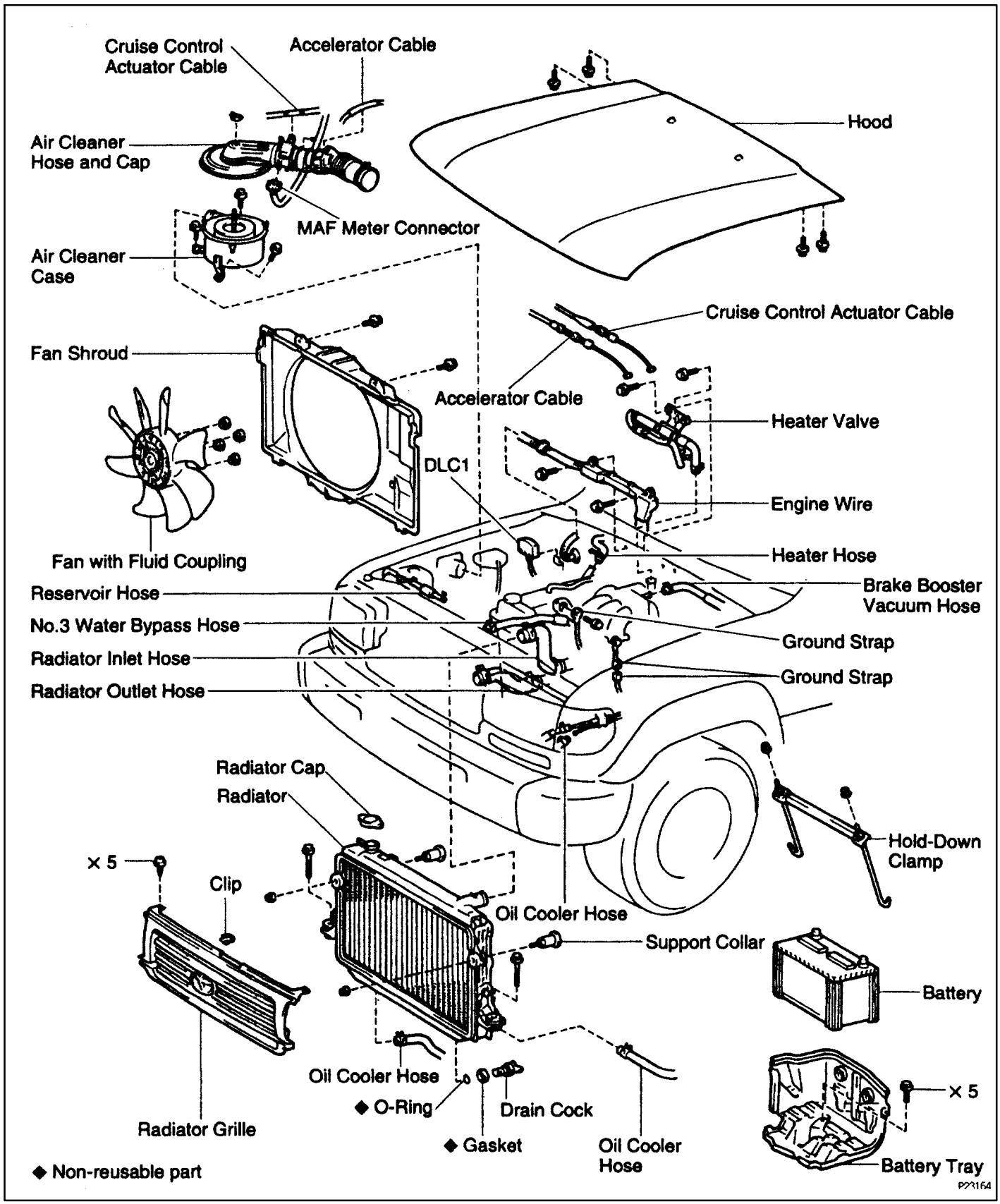
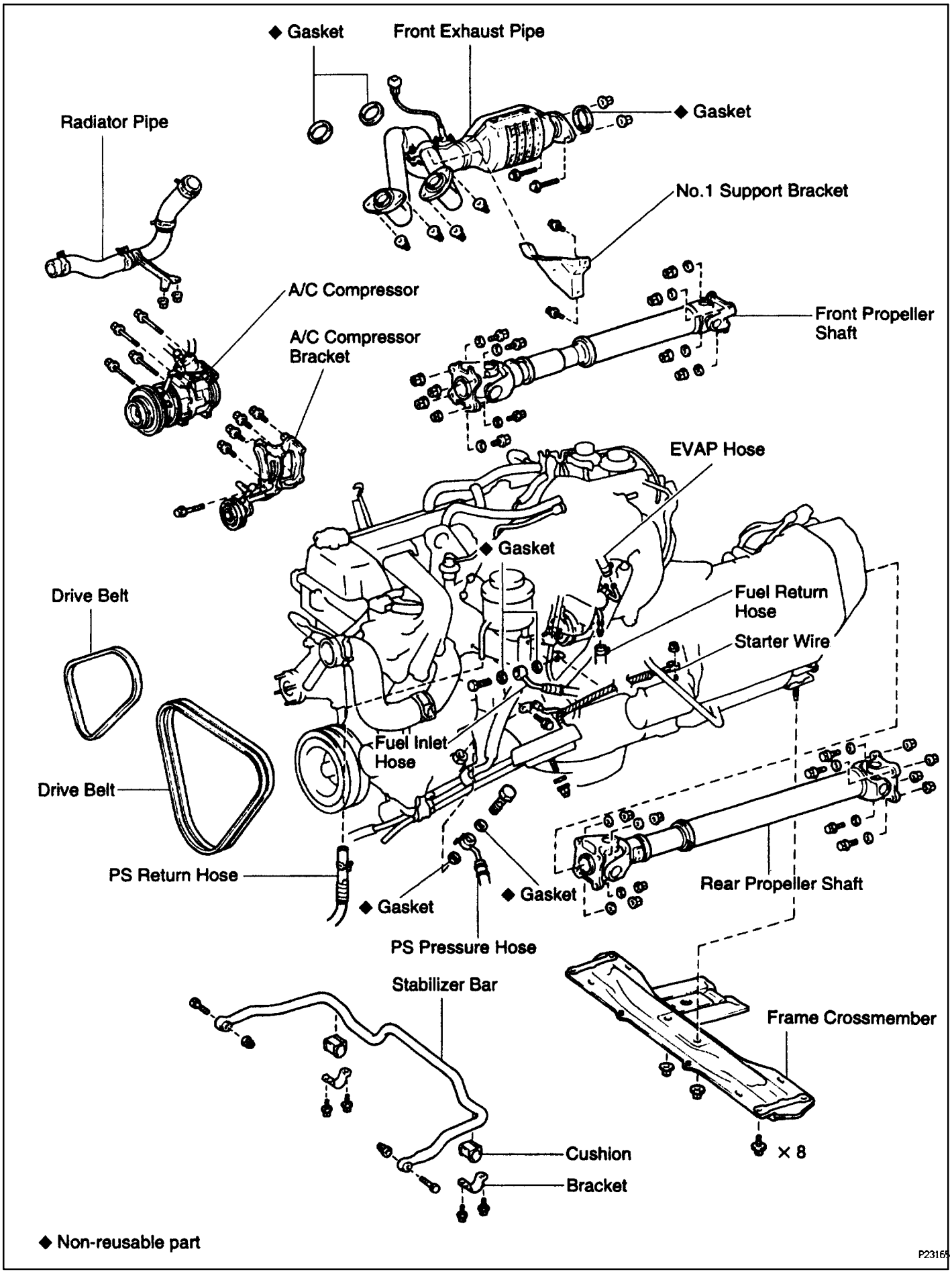
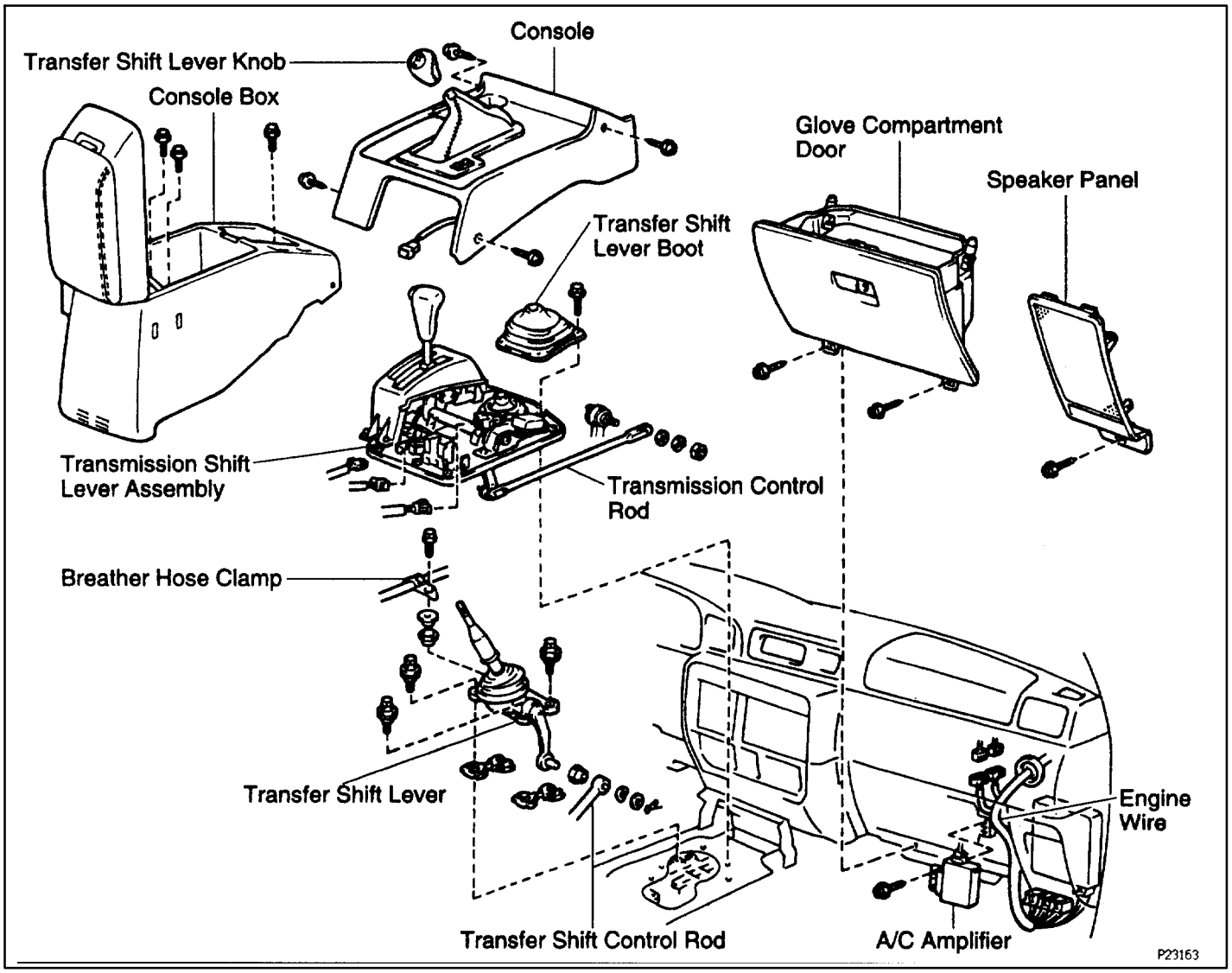
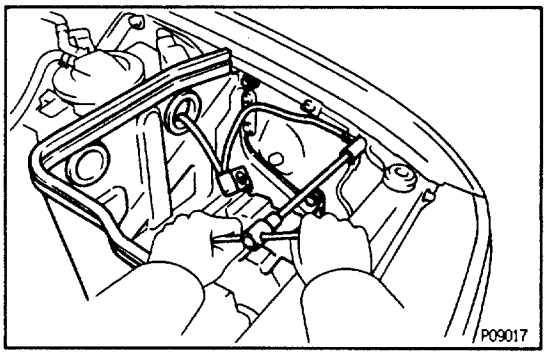
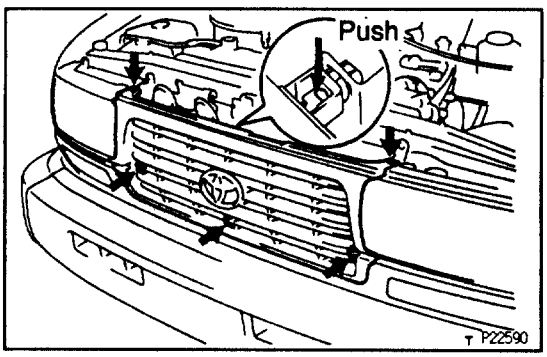
CYLINDER BLOCK
COMPONENTS FOR REMOVAL AND INSTALLATION




◆ Gasket
Front Exhaust Pipe
Radiator Pipe
◆ Gasket
No.1 Support Bracket
A/C Compressor
A/C Compressor Bracket
Front Propeller Shaft
EVAP Hose
◆ Gasket
Drive Belt
Fuel Return Hose
Starter Wire
Fuel Inlet Hose
Drive Belt
PS Return Hose
◆ Gasket
◆ Gasket
Rear Propeller Shaft
PS Pressure Hose
Stabilizer Bar
Frame Crossmember
Cushion
× 8
Bracket
◆ Non-reusable part
P23165

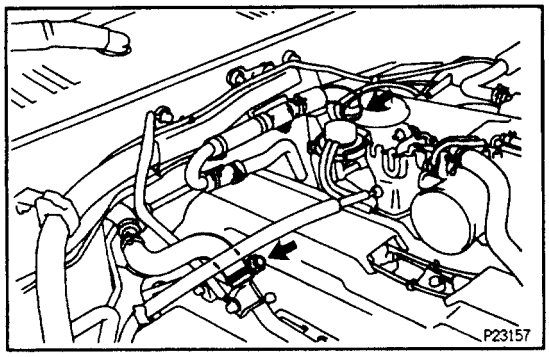






ENGINE WITH TRANSMISSION REMOVAL

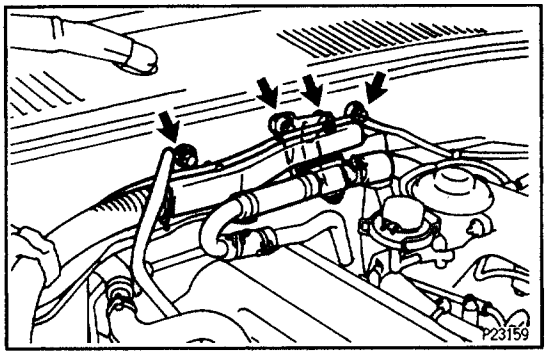
1. **DRAIN ENGINE COOLANT**
2. **DRAIN ENGINE OIL**
3. **REMOVE HOOD**
4. **REMOVE BATTERY AND BATTERY TRAY**
   (a) Disconnect the battery cables.
   (b) Remove the nuts, hold–down clamp and battery.
   (c) Remove the bolt and disconnect the ground strap.
   (d) Remove the 5 bolts and battery tray.
5. **REMOVE RADIATOR GRILLE**
   Remove the 5 screws, clip and radiator grille.
6. **REMOVE RADIATOR**
   (See radiator removal in Cooling System)
7. **DISCONNECT OIL COOLER HOSE FROM OIL COOLER PIPE**
8. **REMOVE AIR CLEANER HOSE AND CAP**
9. **REMOVE AIR CLEANER CASE**



10. DISCONNECT CRUISE CONTROL ACTUATOR CABLE FROM THROTTLE BODY

11. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

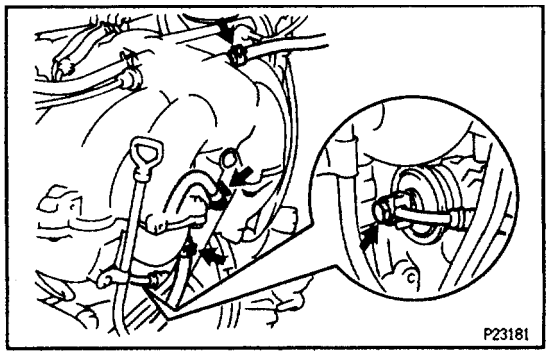
12. DISCONNECT HEATER HOSES



13. DISCONNECT ENGINE WIRE AND HEATER VALVE FROM COWL PANEL

(a) Remove the 2 bolts and disconnect the engine wire and ground strap.

(b) Remove the 2 bolts and disconnect the heater valve.



14. DISCONNECT BRAKE BOOSTER VACUUM HOSE

15. DISCONNECT EVAP HOSE

16. DISCONNECT FUEL HOSES

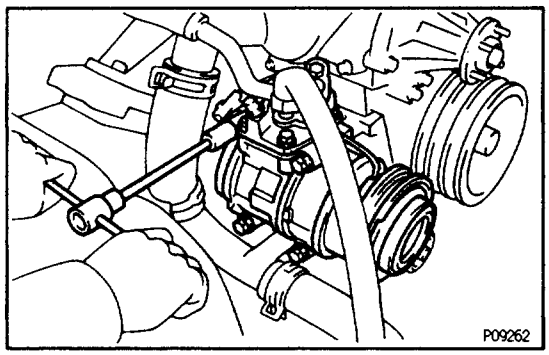
(a) Disconnect the fuel return hose.

(b) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter.

17. DISCONNECT WIRES AND CONNECTORS

Disconnect these wires and connectors:

- 2 heated oxygen sensor connectors
- DLC1 clamp
- 2 oil pressure gauge connectors
- Generator wire and connector
- Connector on intake manifold from fender apron
- High tension cord from ignition coil
- Ground strap from No.1 engine hanger
- Ground strap from air intake chamber
- Starter wire
- Ground cable from cylinder block

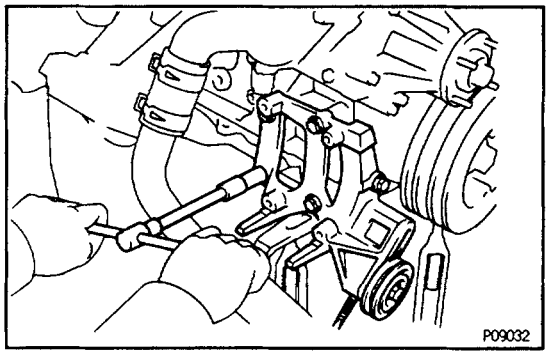


18. DISCONNECT A/C COMPRESSOR AND BRACKET

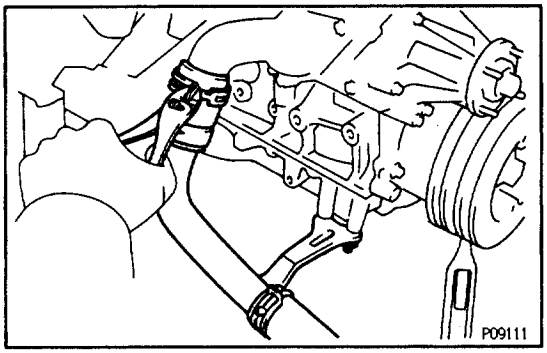
(a) Loosen the idler pulley nut and adjusting bolt, and remove the drive belt.

(b) Remove the 4 mounting bolts, and disconnect the compressor from the bracket.

HINT: Put aside the compressor, and suspend it.



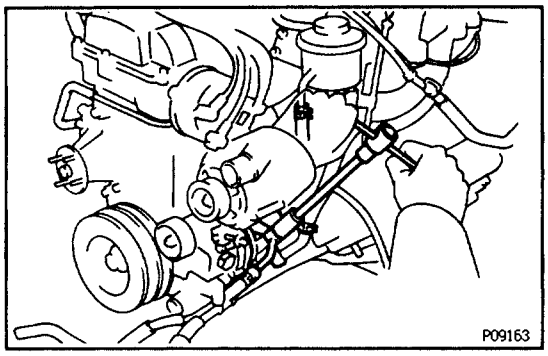
(c) Remove the 5 bolts and A/C compressor bracket.



19. REMOVE RADIATOR PIPE

(a) Remove the 2 nuts holding the radiator pipe to the No. 1 oil pan.

(b) Disconnect the No.2 radiator hose from the water inlet and remove the radiator pipe.

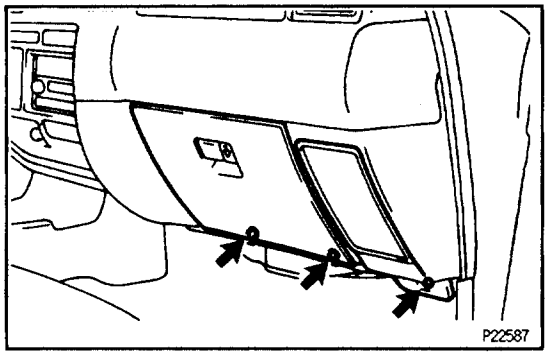


20. DISCONNECT PS PRESSURE HOSE

Remove the union bolt and 2 gaskets, and disconnect the pressure hose from the PS pump.

21. DISCONNECT PS RETURN HOSE

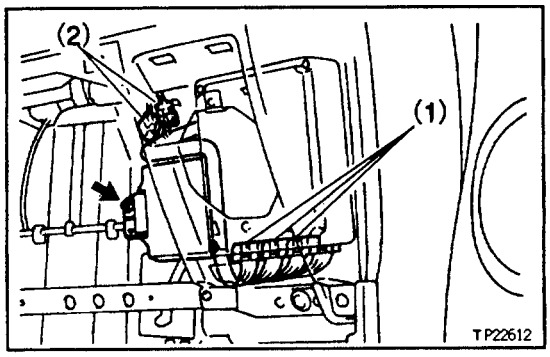
Disconnect the return hose from the PS reservoir tank.



22. DISCONNECT ENGINE WIRE FROM CABIN

(a) Remove the 2 screws and glove compartment door.

(b) Remove the screw and speaker panel.



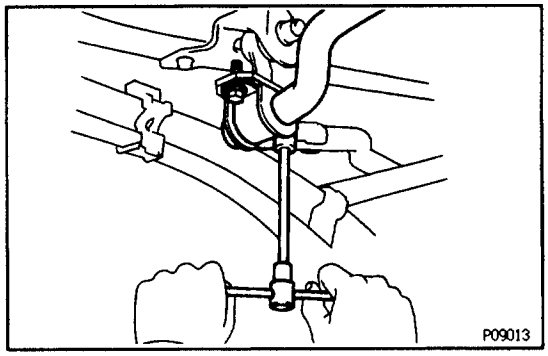
(c) Remove the screw, and disconnect the A/C amplifier.

(d) Disconnect these connectors:

(1) 3 connectors from ECM

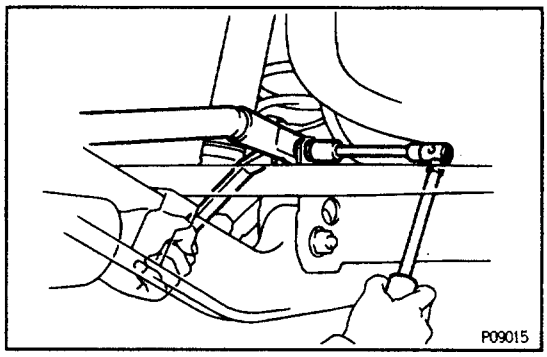
(2) 2 connectors from cowl wire

(e) Pull out the engine wire from the cabin.

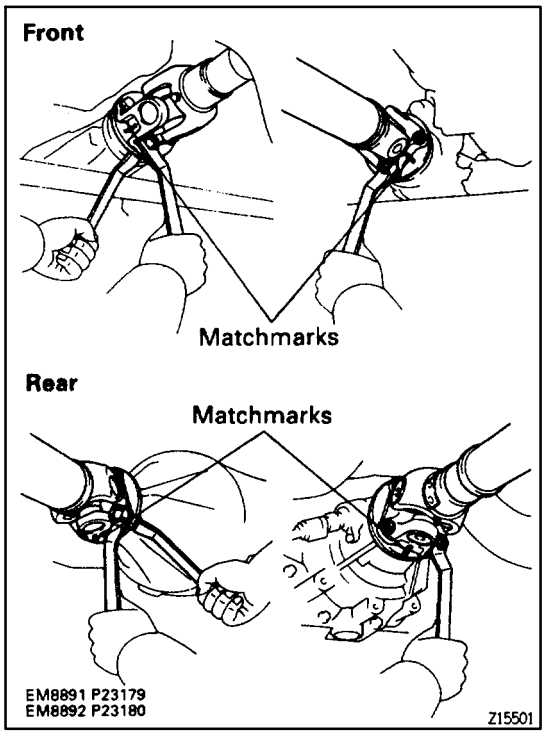


23. REMOVE STABILIZER BAR

(a) Remove the 2 bolts and disconnect stabilizer bar from the bracket.

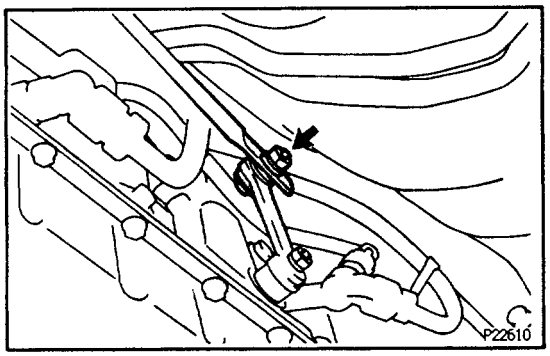


(b) Remove the bolt and nut, and remove the stabilizer bar from the axle housing.



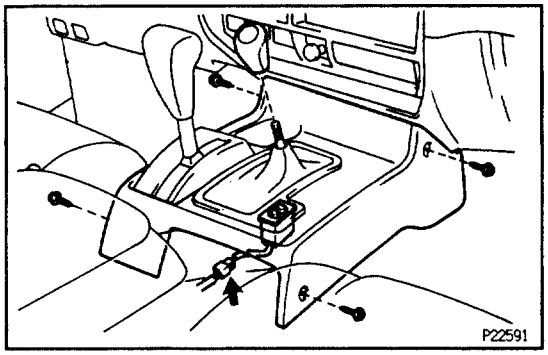
24. REMOVE FRONT AND REAR PROPELLER SHAFTS

(a) Put matchmarks on the flanges.
(b) Remove the 4 bolts and nuts.
(c) Remove the 4 nuts.
(d) Remove the propeller shaft.

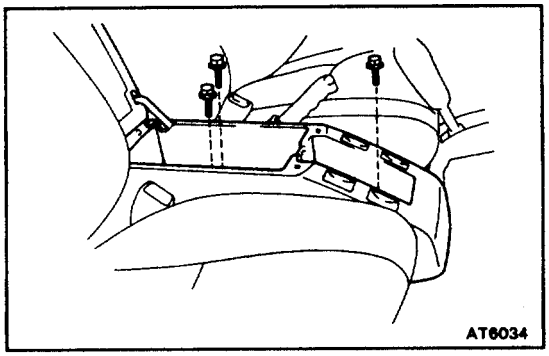


25. REMOVE TRANSFER SHIFT LEVER

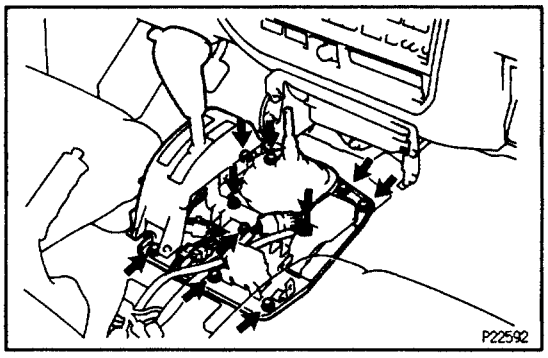
(a) Remove the nut and transmission control rod.



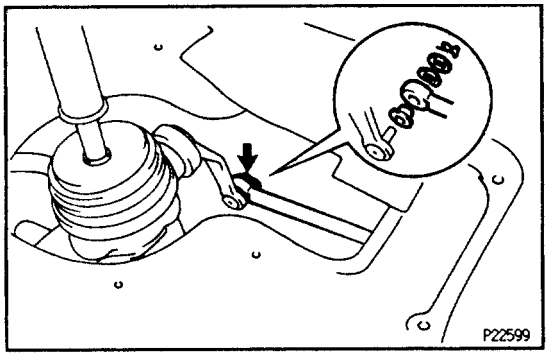
(b) Remove the transfer shift lever knob.
(c) Remove 4 screws.
(d) Lift up the console slightly in order to disconnect the connector.
(e) Remove the console.



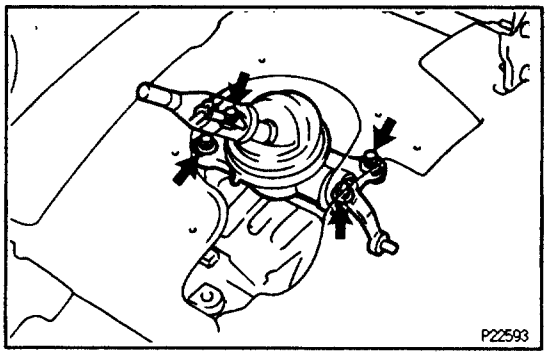
(f) Remove the 3 bolts and console box.



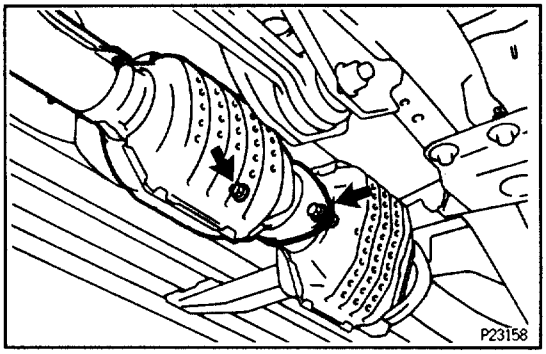
(g) Disconnect the 3 connectors.
(h) Remove the 10 bolts and the transfer shift lever boot and transmission shift lever assembly.



(i) Pull out the pin and disconnect the shift rod.

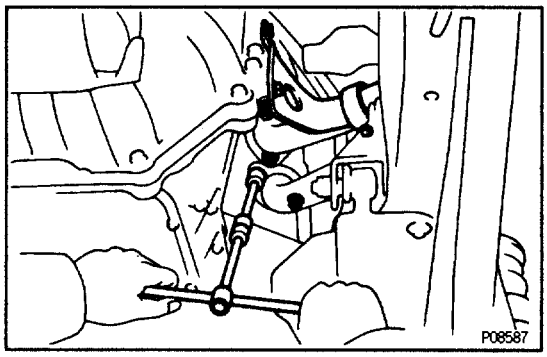


(j) Remove the 4 bolts, hose clamp and the transfer shift lever.



26. REMOVE FRONT EXHAUST PIPE

(a) Disconnect the heated oxygen sensor connector.
(b) Remove the 2 nuts and 2 bolts holding the front exhaust pipe to the rear TWC.
(c) Disconnect the front exhaust pipe, and remove the gasket.

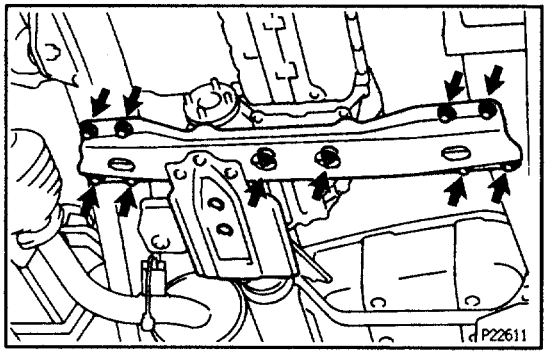


(d) Loosen the clamp bolt and disconnect the clamp from the No.1 support bracket.
(e) Remove the 2 bolts and No.1 support bracket.
(f) Remove the 4 nuts, front exhaust pipe and 2 gaskets.

27. DISCONNECT GROUND STRAP FROM HEAT INSULATOR

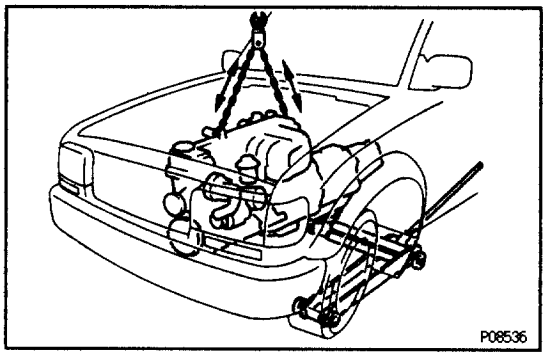
28. PLACE JACK UNDER TRANSMISSION

Be sure to put a wooden block between the jack and the transmission oil pan to prevent damage.



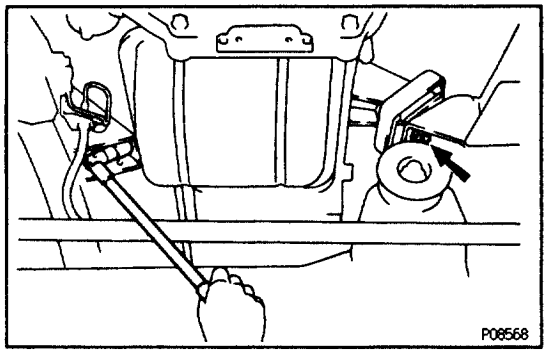
29. REMOVE FRAME CROSSMEMBER

(a) Remove the 2 nuts holding the crossmember to the engine rear mounting insulator.
(b) Remove the 8 bolts and crossmember.

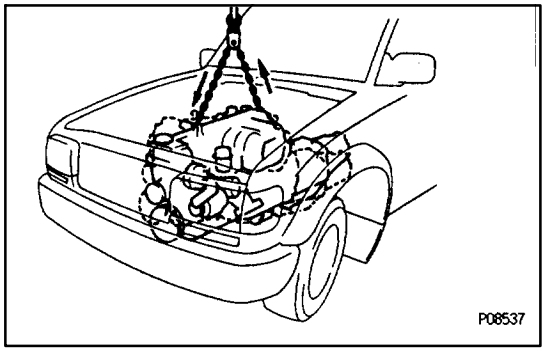


30. REMOVE ENGINE WITH TRANSMISSION

(a) Attach the engine hoist chain to the 2 engine hangers.



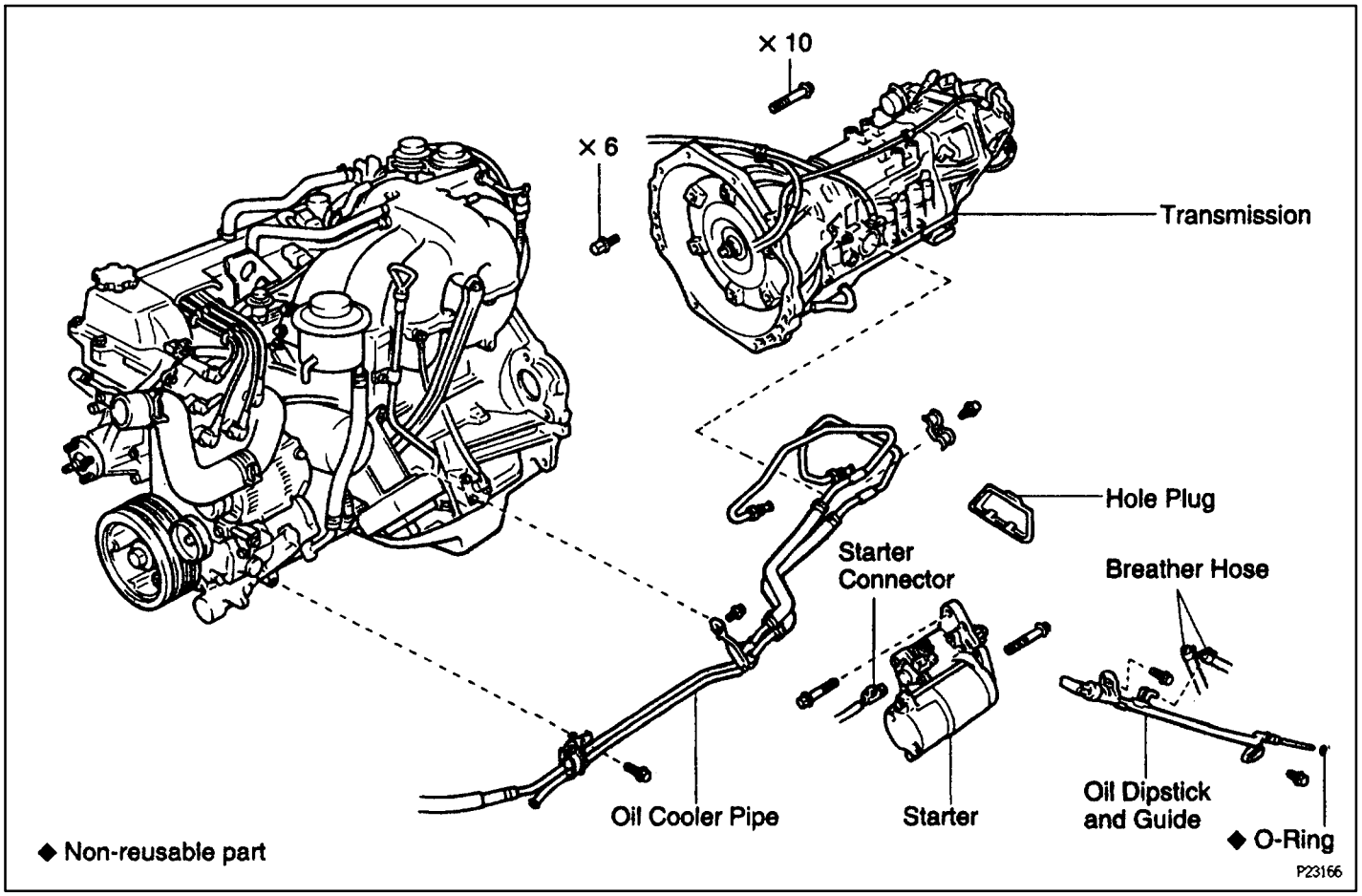
(b) Remove the 2 nuts holding the engine front mounting insulators to the frame.

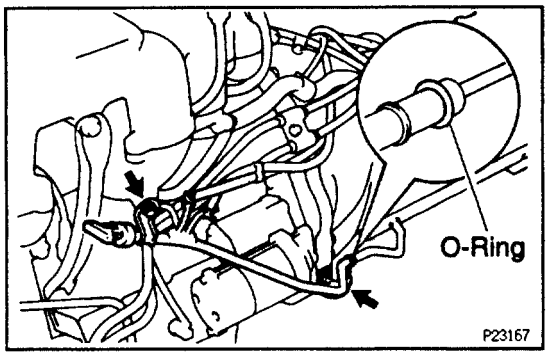


(c) Lift the engine with transmission out of the vehicle slowly and carefully.
NOTICE: Make sure that the engine is clear of all wiring and hoses.

(d) Place the engine and transmission assembly onto the stand.

COMPONENTS FOR SEPARATION AND ASSEMBLY OF ENGINE AND TRANSMISSION





ENGINE AND TRANSMISSION SEPARATION

1. REMOVE OIL DIPSTICK GUIDE FOR TRANSMISSION

(a) Disconnect the 2 breather hoses.
(b) Remove the 2 mounting bolts.
(c) Pull out the dipstick guide and dipstick from the transmission.
(d) Remove the O–ring from the dipstick guide.

2. DISCONNECT ENGINE WIRE FROM TRANSMISSION

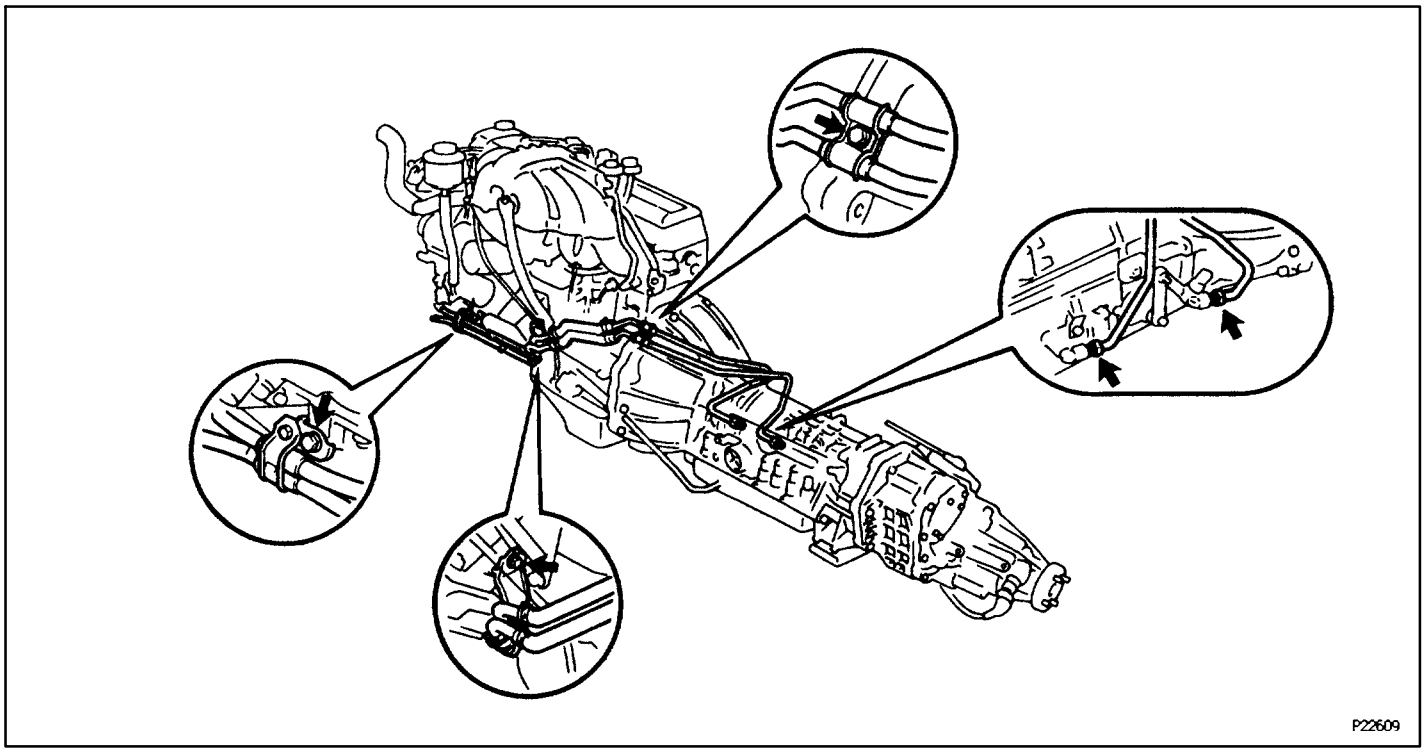
(a) Disconnect the PNP switch connector.
(b) Disconnect the 2 connectors from the transmission.

3. REMOVE STARTER

(a) Disconnect the starter connector.
(b) Remove the 2 bolts and starter.

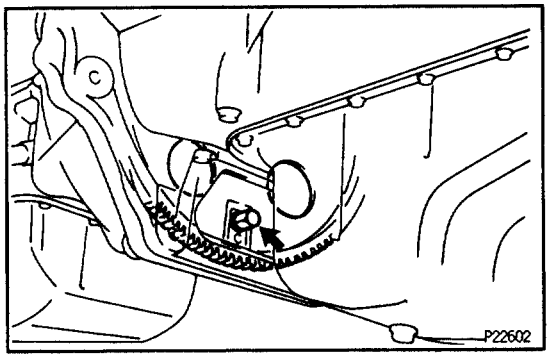
4. REMOVE A/T OIL COOLER PIPES FOR TRANSMISSION

(a) Remove the 3 clamp mounting bolts.
(b) Loosen the 2 union nuts, and remove the oil cooler pipes.



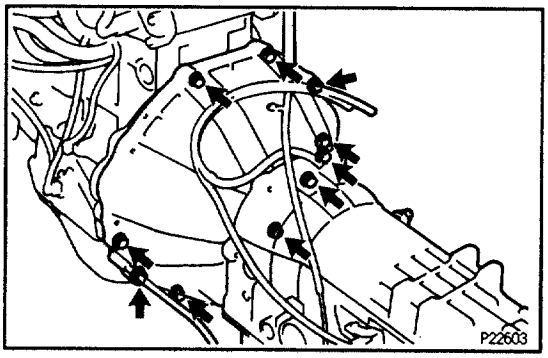
5. DISCONNECT THROTTLE CABLE FROM THROTTLE BODY

6. REMOVE HOLE PLUG



7. REMOVE 6 TORQUE CONVERTER CLUTCH MOUNTING BOLT

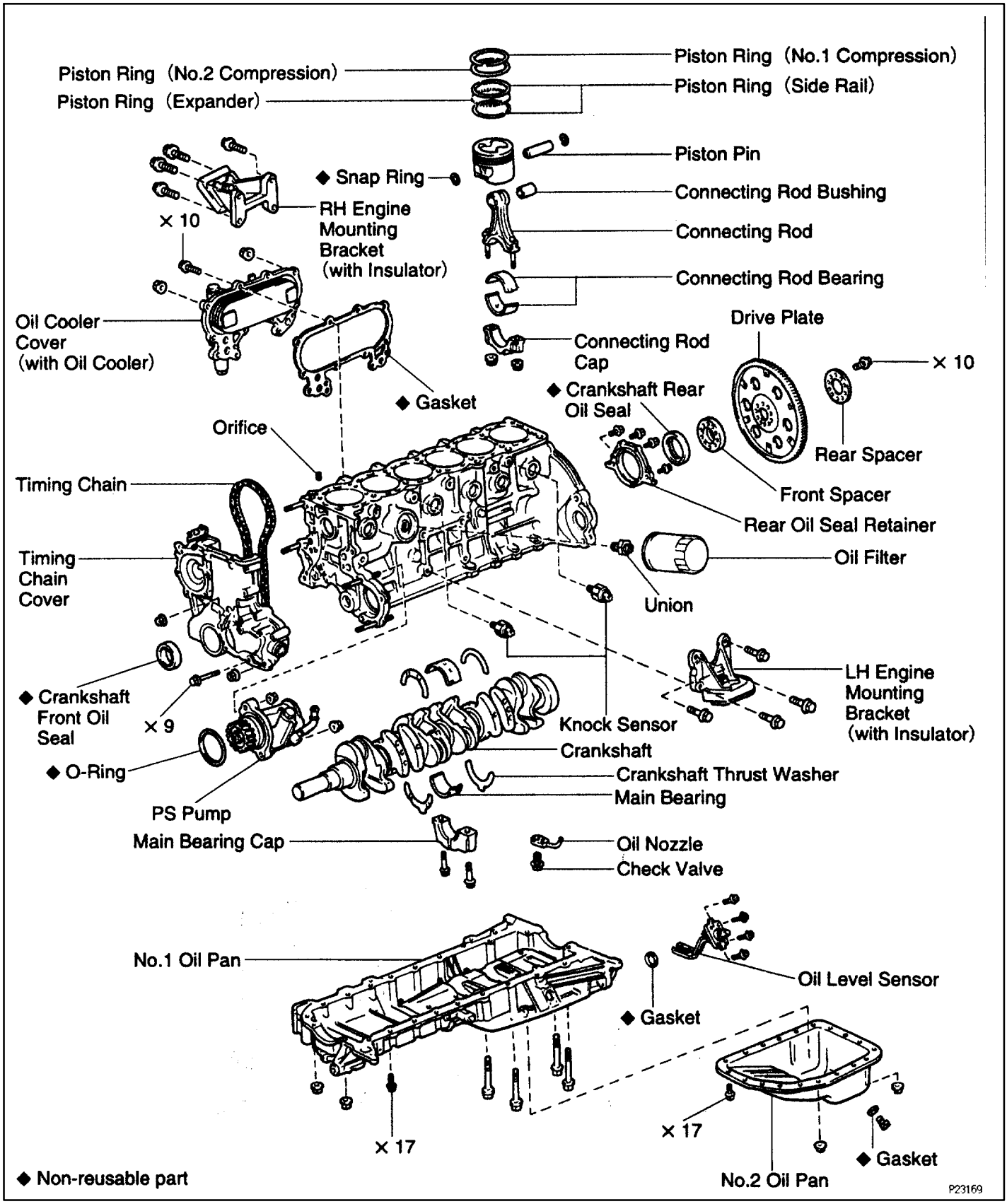
Turn the crankshaft to gain access to each bolt. Remove the 6 bolts.

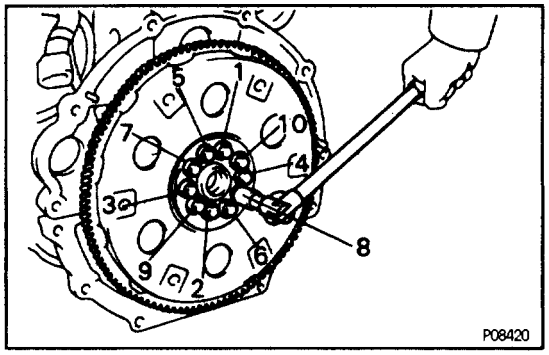


8. SEPARATE ENGINE AND TRANSMISSION

Remove the 10 bolts and transmission.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY





PREPARATION FOR DISASSEMBLY

1. REMOVE DRIVE PLATE

Uniformly loosen and remove the drive plate bolts, in several passes, in the sequence shown.

2. INSTALL ENGINE TO ENGINE STAND FOR DISASSEMBLY

3. REMOVE CYLINDER HEAD

(See cylinder head removal)

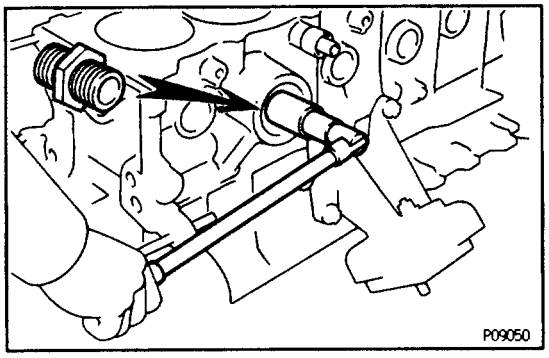
4. REMOVE TIMING CHAIN AND GEARS

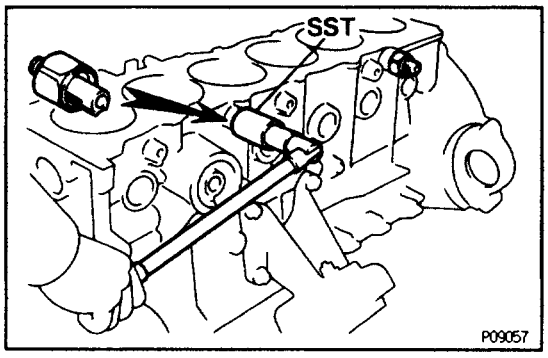
(See timing chain removal)

5. REMOVE OIL FILTER

(See oil and filter replacement in Lubrication System)

6. REMOVE OIL FILTER UNION

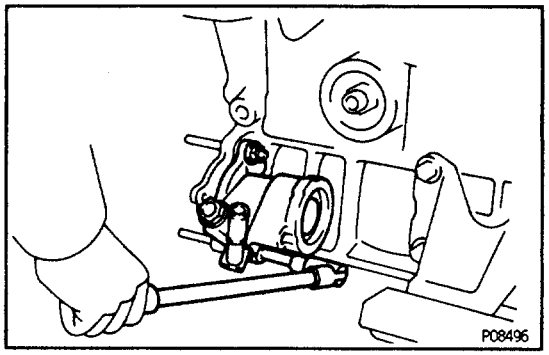




7. REMOVE KNOCK SENSORS

Using SST, remove the 2 knock sensors.

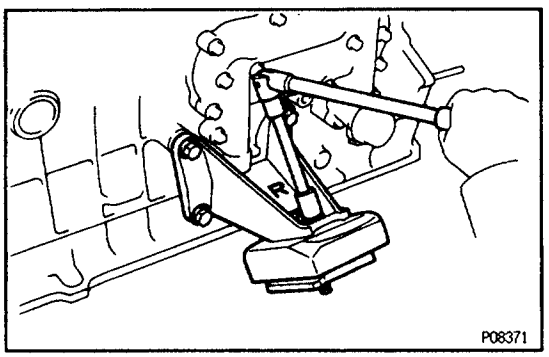
SST 09816–30010



8. REMOVE PS PUMP

(a) Remove the 2 nuts and pump.

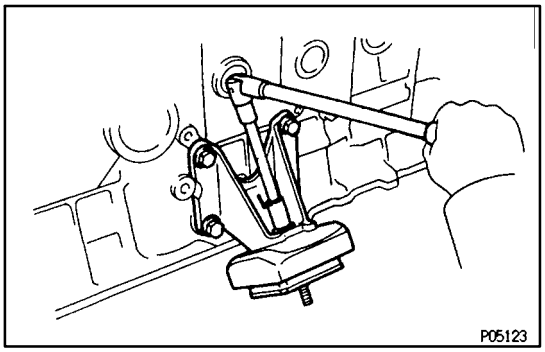
(b) Remove the O–ring from the pump.



9. REMOVE RH ENGINE MOUNTING BRACKET

(a) Remove the nut and insulator.

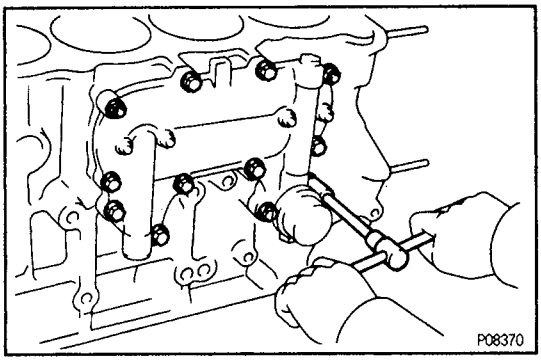
(b) Remove the 4 bolts and bracket.



10. REMOVE LH ENGINE MOUNTING BRACKET

(a) Remove the nut and insulator.

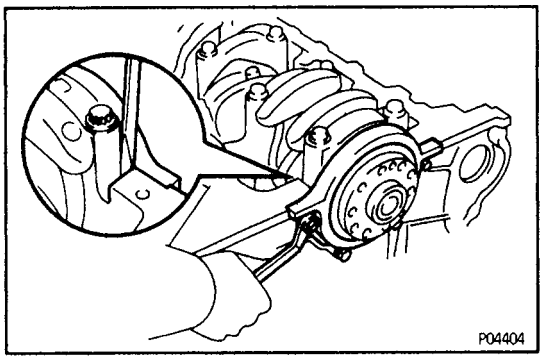
(b) Remove the 4 bolts and bracket.



11. REMOVE OIL COOLER COVER AND OIL COOLER

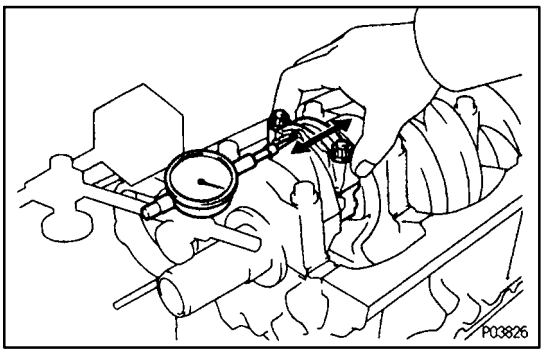
Remove the 10 bolts, 2 nuts, oil cooler cover with the oil cooler and gasket.

CYLINDER BLOCK DISASSEMBLY



1. REMOVE REAR OIL SEAL RETAINER

Remove the 4 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.

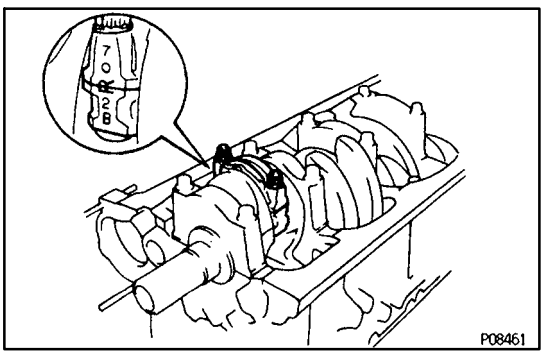
Standard thrust clearance:

0.160 – 0.262 mm (0.0063 – 0.0103 in.)

Maximum thrust clearance:

0.362 mm (0.0143 in.)

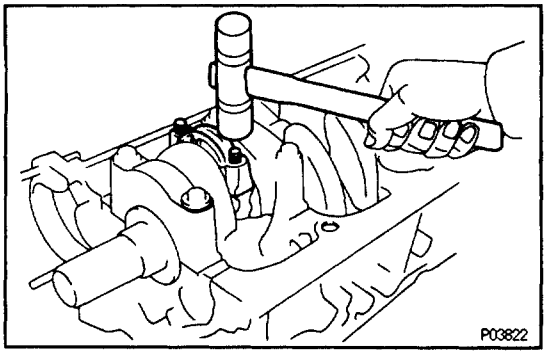
If the thrust clearance is greater than maximum, replace the connecting rod assembly. If necessary, replace the crankshaft.



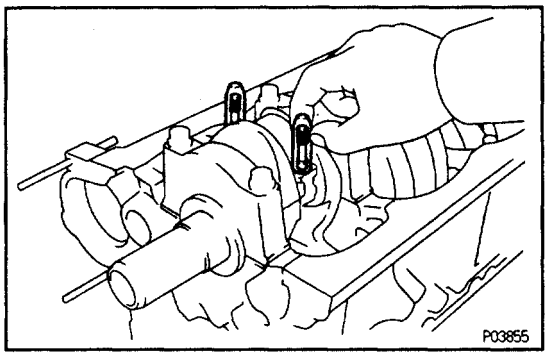
3. REMOVE CONNECTING ROD CAPS AND CHECK OIL CLEARANCE

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

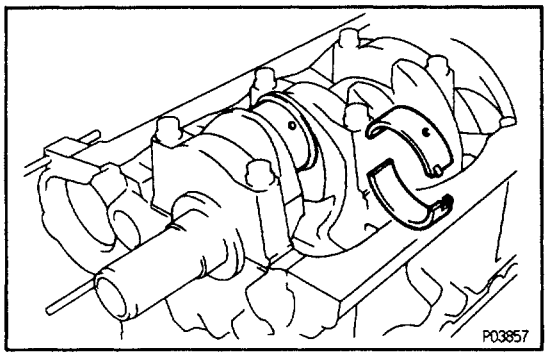
(b) Remove the connecting rod cap nuts.



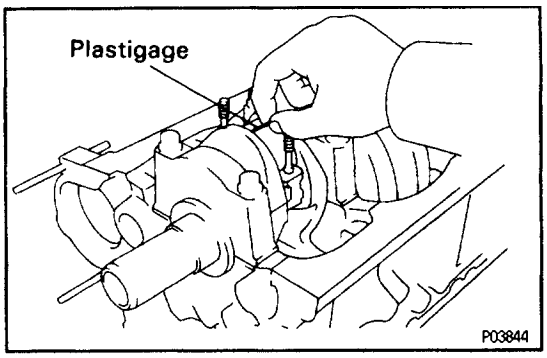
(c) Using a plastic–faced hammer, lightly tap the connecting rod bolts and lift off the connecting rod cap.
HINT: Keep the lower bearing inserted with the connecting rod cap.



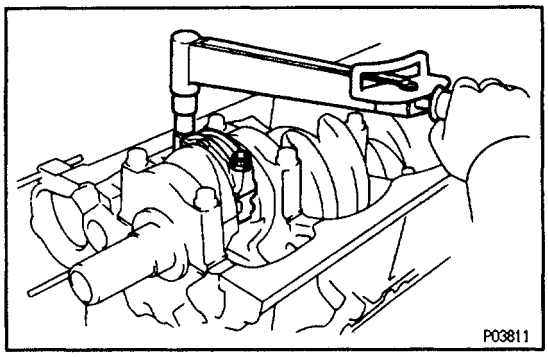
(d) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft from damage.



(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.

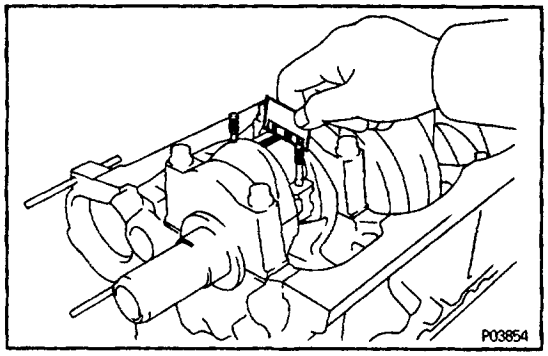


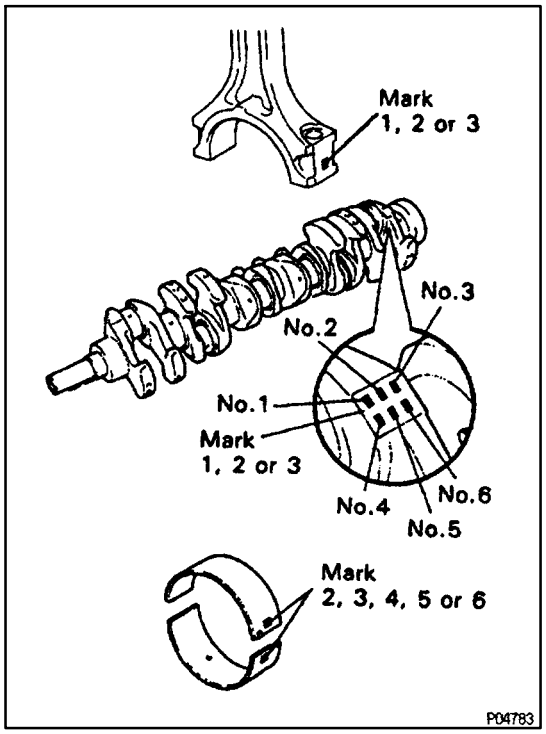
(h) Install the connecting rod cap with the 2 nuts.
(See step 8 on page EG–101)
Torque:

1st	**48 N·m (490 kgf·cm, 35 ft·lbf)**
2nd	**Turn extra 90°**

NOTICE: Do not turn the crankshaft.

(i) Remove the 2 nuts and connecting rod cap.
(See procedure (b) and (c) on the previous page)





(j) Measure the Plastigage at its widest point.

Standard oil clearance:

STD

0.032 – 0.050 mm (0.0013 – 0.0020 in.)

U/S 0.25

0.033 – 0.073 mm (0.0013 – 0.0029 in.)

Maximum oil clearance:

0.10 mm (0.0039 in.)

If the oil clearance is greater than maximum, replace the bearings. If necessary, grind or replace the crank–shaft.

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 connecting rod and crankshaft, then selecting the bearing with the same number as the total. There are 5 sizes of standard bearings, marked ”2”, ”3”, ”4”, ”5” and ”6” accordingly.

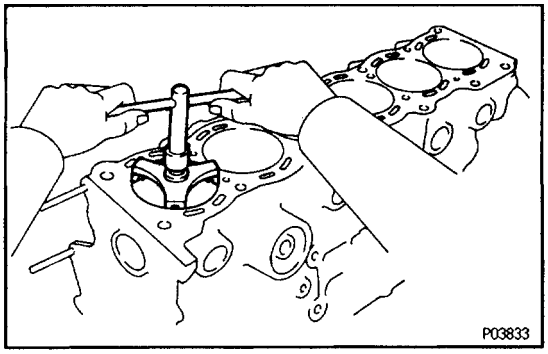
	Number marked								
Connecting rod	1			2			3		
Crankshaft	1	2	3	1	2	3	1	2	3
Use bearing	2	3	4	3	4	5	4	5	6

EXAMPLE: Connecting rod ”3” + Crankshaft ”1”
= Total number 4 (Use bearing ”4”)

– Reference –

–	Mark	mm (in.)
Connecting rod big end inside diameter	”1”	60.526 – 60.532 (2.3829 – 2.3831)
	”2”	60.532 – 60.538 (2.3851 – 2.3834)
	”3”	60.538 – 60.544 (2.3834 – 2.3836)
Crankshaft crank pin diameter	”1”	56.994 – 57.000 (2.2439 – 2.2441)
	”2”	56.988 – 56.994 (2.2436 – 2.2439)
	”3”	56.982 – 56.988 (2.2434 – 2.2436)
Standard sized bearing center wall thickness	”2”	1.744 – 1.747 (0.0687 – 0.0688)
	”3”	1.747 – 1.750 (0.0688 – 0.0689)
	”4”	1.750 – 1.753 (0.0689 – 0.0690)
	”5”	1.753 – 1.756 (0.0690 – 0.0691)
	”6”	1.756 – 1.759 (0.0691 – 0.0693)

(k) Completely remove the Plastigage.



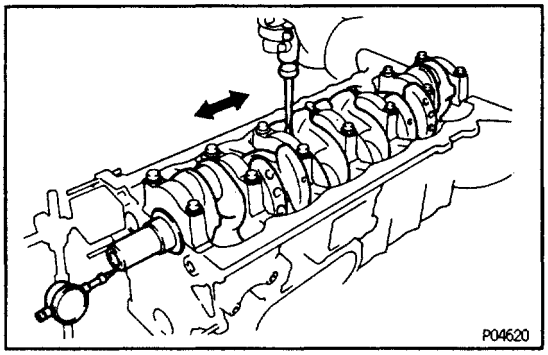
4. REMOVE PISTON AND CONNECTING ROD ASSEMBLIES

(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:

STD

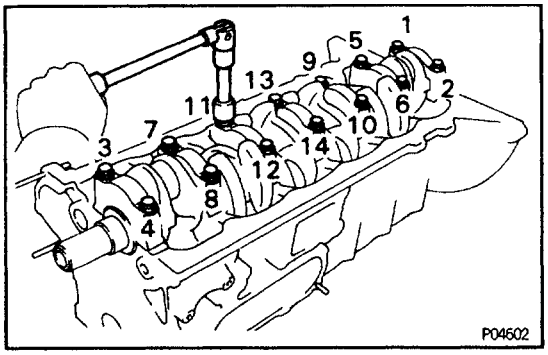
2.440 – 2.490 mm (0.0961 – 0.0980 in.)

O/S 0.125

2.503 – 2.553 mm (0.0985 – 0.1005 in.)

O/S 0.250

2.565 – 2.615 mm (0.1010 – 0.1030 in.)



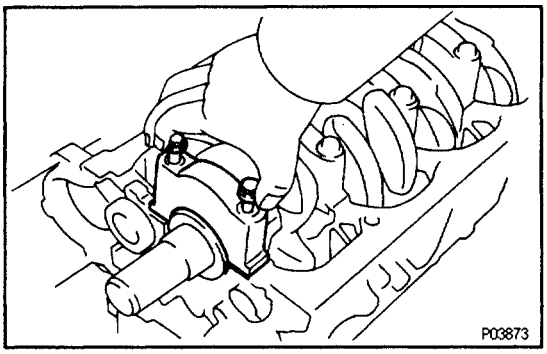
6. REMOVE MAIN BEARING CAPS AND CHECK OIL CLEARANCE

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

(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 (No.4 main bearing cap only) lower thrust washers.

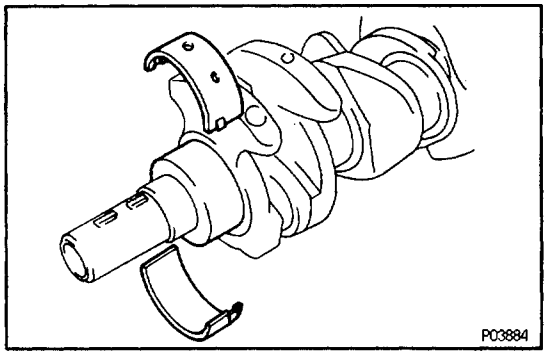
HINT:

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

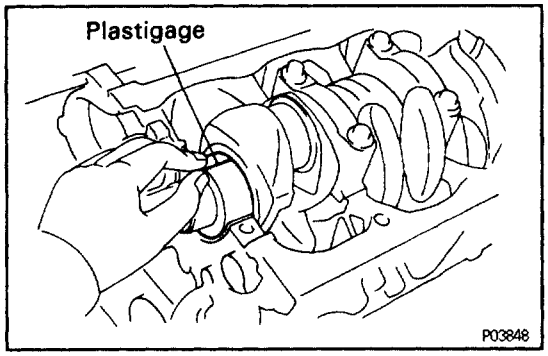


(c) Lift out the crankshaft.

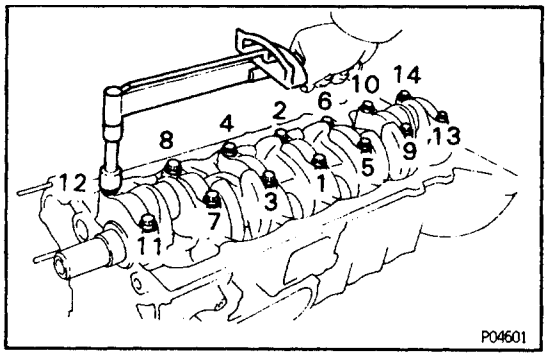
HINT: Keep the upper bearing and upper thrust washers together with the cylinder block.



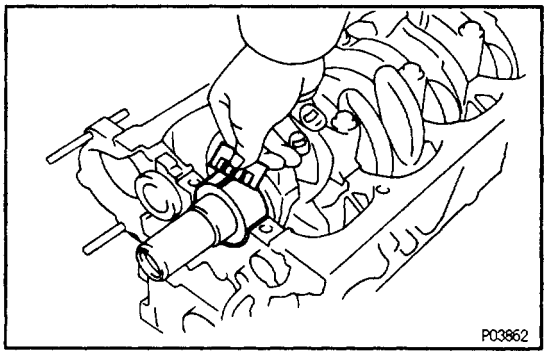
(d) Clean each main journal and bearing.
(e) Check each main journal and bearing for pitting and scratches.
If the journal or bearing is damaged, replace the bearings. If necessary, grind or replace the crankshaft.



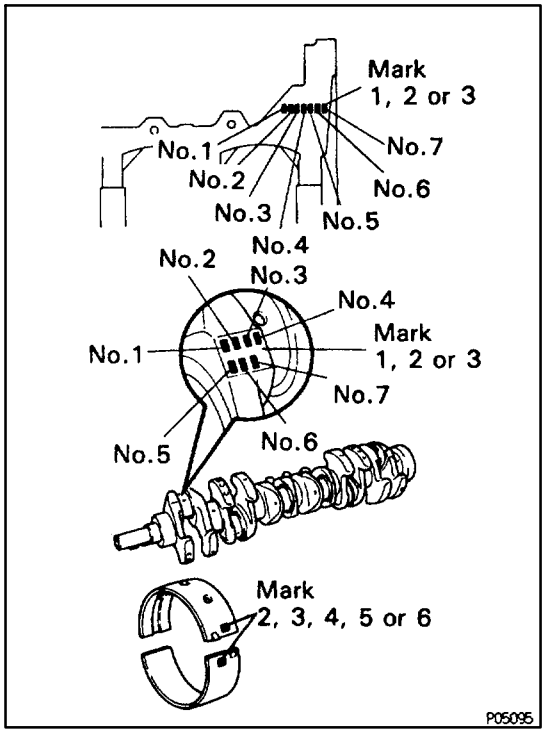
(f) Place the crankshaft on the cylinder block.
(g) Lay a strip of Plastigage across each journal.



(h) Install the main bearing caps.
(See step 6 on page EG–100)
Torque:
1st 74 N·m (750 kgf·cm, 54 ft·lbf)
2nd Turn extra 90°
NOTICE: Do not turn the crankshaft.
(i) Remove the main bearing caps.
(See procedure (a) and (b) on the previous page)



(j) Measure the Plastigage at its widest point.
Standard clearance:
STD
0.042 – 0.060 mm (0.0017–0.0024 in.)
U/S 0.25
0.041 – 0.081 mm (0.0016–0.0032 in.)
Maximum clearance:
0.10 mm (0.0039 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 5 sizes of standard bearings, marked ”2”, ”3”, ”4”, ”5” and ”6” accordingly.

	Number marked								
Cylinder block	1			2			3		
Crankshaft	1	2	3	1	2	3	1	2	3
Use bearing	2	3	4	3	4	5	4	5	6

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

– Reference –

–	Mark	mm (in.)
Cylinder block main journal bore diameter	”1”	74.026 – 74.032 (2.9144 – 2.9146)
	”2”	74.032 – 74.038 (2.9146 – 2.9149)
	”3”	74.038 – 74.044 (2.9149 – 2.9151)
Crankshaft journal diameter	”1”	68.994 – 69.000 (2.7163 – 2.7165)
	”2”	68.988 – 68.994 (2.7161 – 2.7163)
	”3”	68.982 – 68.988 (2.7158 – 2.7161)
Standard sized bearing center wall thickness	”2”	2.489 – 2.492 (0.0980 – 0.0981)
	”3”	2.492 – 2.495 (0.0981 – 0.0982)
	”4”	2.495 – 2.498 (0.0982 – 0.0983)
	”5”	2.498 – 2.501 (0.0983 – 0.0985)
	”6”	2.501 – 2.504 (0.0985 – 0.0986)

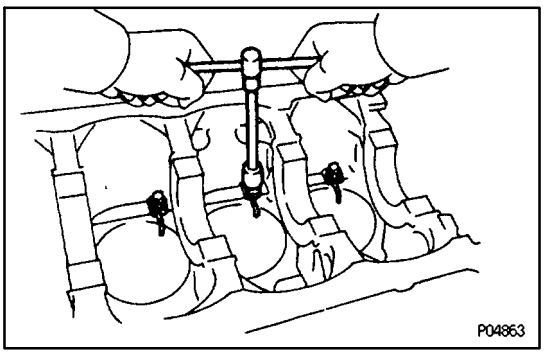
(k) Completely remove the Plastigage.

7. REMOVE CRANKSHAFT

(a) Lift out the crankshaft.

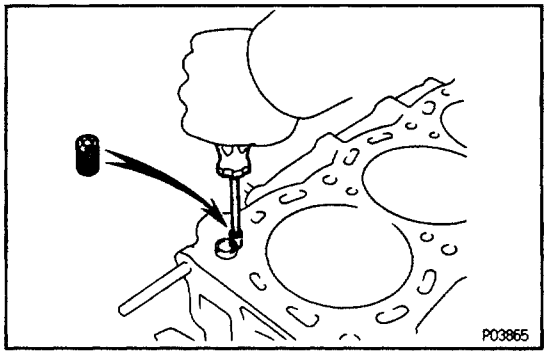
(b) Remove the upper main bearings and upper thrust washers from the cylinder block.

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

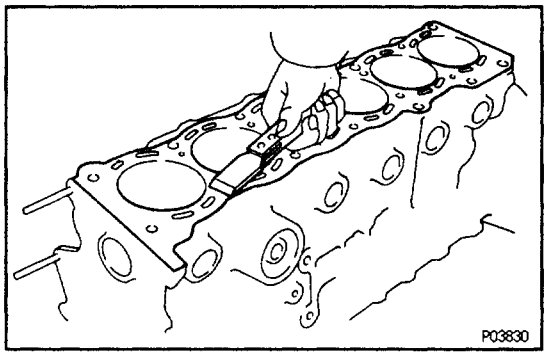


8. REMOVE CHECK VALVES AND OIL NOZZLES

Remove the 6 check valves and oil nozzles.



9. REMOVE CYLINDER BLOCK ORIFICE



CYLINDER BLOCK INSPECTION

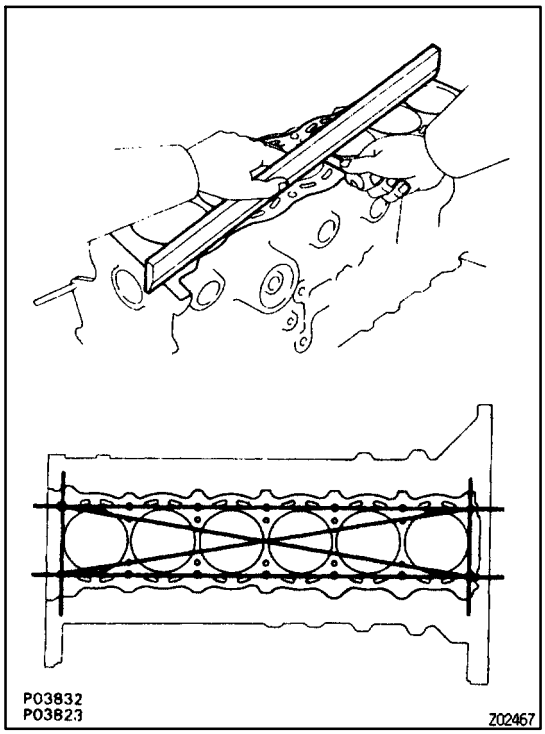
1. CLEAN CYLINDER BLOCK

A. Remove gasket material

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

B. Clean cylinder block

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



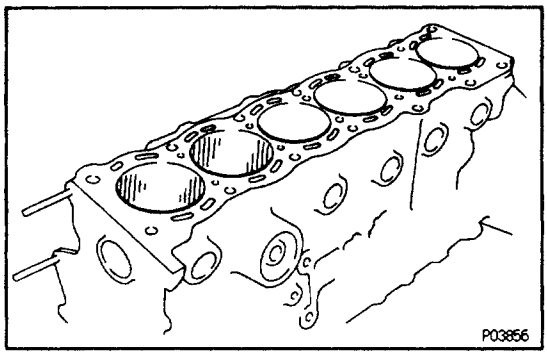
2. INSPECT TOP SURFACE OF CYLINDER BLOCK FOR FLATNESS

Using a precision straight edge and thickness gauge, measure the surfaces contacting the cylinder head gasket for warpage.

Maximum warpage:

0.05 mm (0.0020 in.)

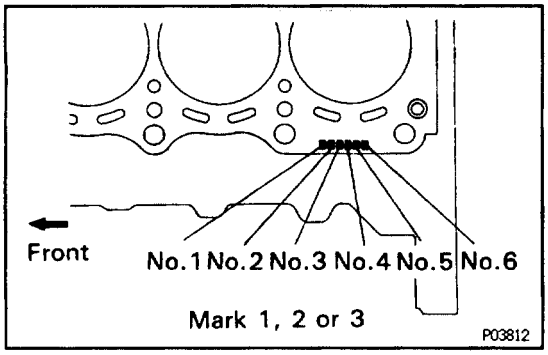
If warpage is greater than maximum, replace the cylinder block.

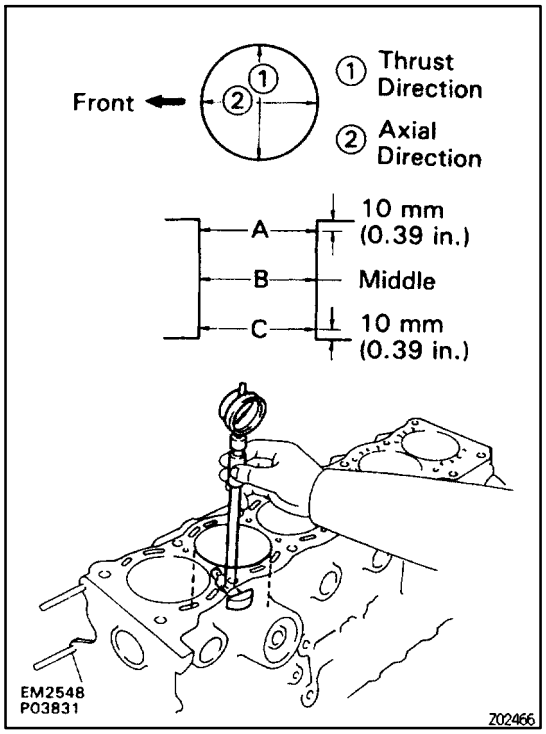


3. INSPECT CYLINDER FOR VERTICAL SCRATCHES

Visually check the cylinder for vertical scratches.

If deep scratches are present, rebore all the 6 cylinders. If necessary, replace the cylinder block.





4. INSPECT CYLINDER BORE DIAMETER

HINT: There are 3 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"

100.000 – 100.010 mm

(3.9370 – 3.9374 in.)

Mark "2"

100.010 – 100.020 mm

(3.9374 – 3.9378 in.)

Mark "3"

100.020 – 100.030 mm

(3.9378 – 3.9382 in.)

Maximum diameter:

STD

100.23 mm (3.9461 in.)

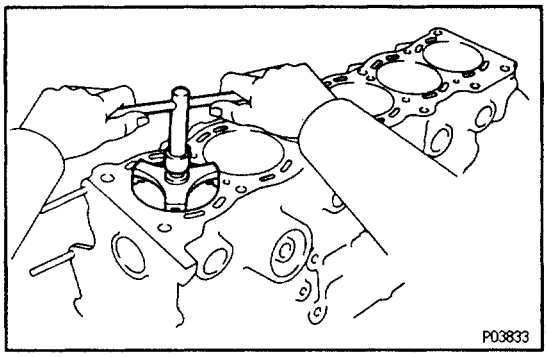
O/S 0.50

100.73 mm (3.9658 in.)

O/S 1.00

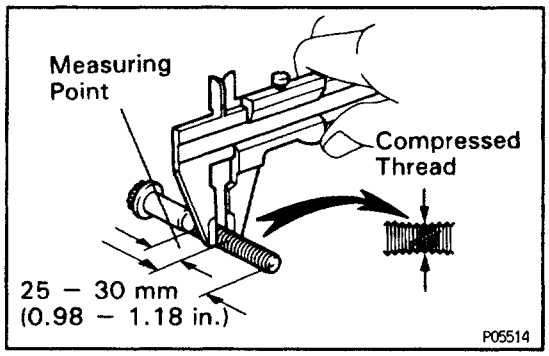
101.23 mm (3.9854 in.)

If the diameter is greater than maximum, rebore all the 6 cylinders. If necessary, 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.



6. INSPECT MAIN BEARING CAP BOLTS

Using vernier calipers, measure the thread outside diameter of the bolt.

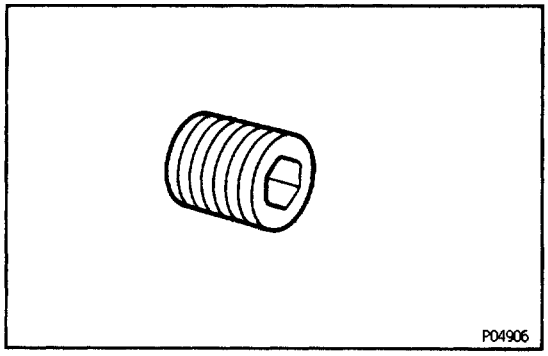
Standard outside diameter:

10.85 – 11.00 mm (0.4271 – 0.4331 in.)

Minimum outside diameter:

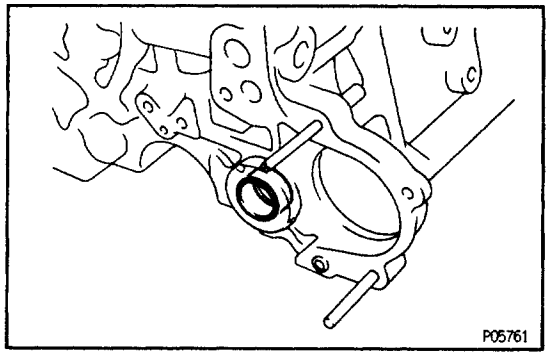
10.6 mm (0.417 in.)

If the diameter is less than minimum, replace the bolt.



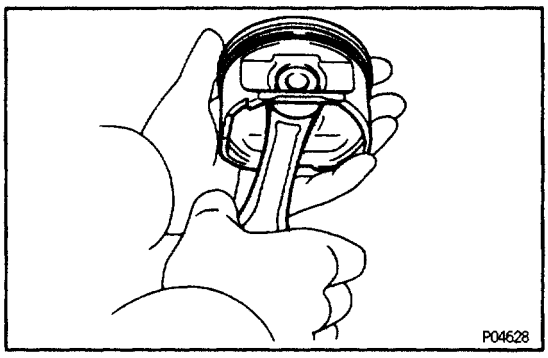
7. INSPECT CYLINDER BLOCK ORIFICE

Check the orifice for clogging.
If necessary, replace the orifice.



8. INSPECT BEARING OF OIL PUMP DRIVE SHAFT GEAR

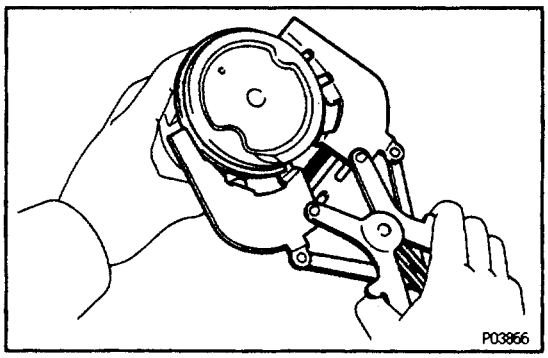
Check the bearing for pitting and scratches.
If the bearing is damaged, replace the bearing.



PISTON AND CONNECTING ROD ASSY DISASSEMBLY

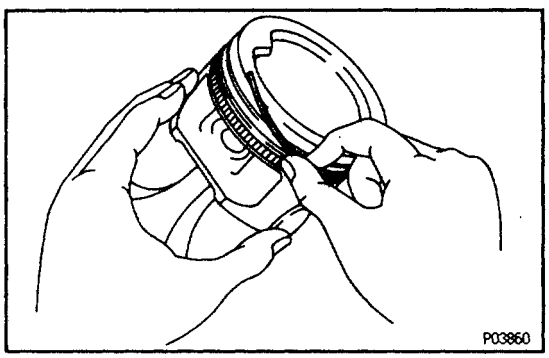
1. CHECK FIT BETWEEN PISTON AND PISTON PIN

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.

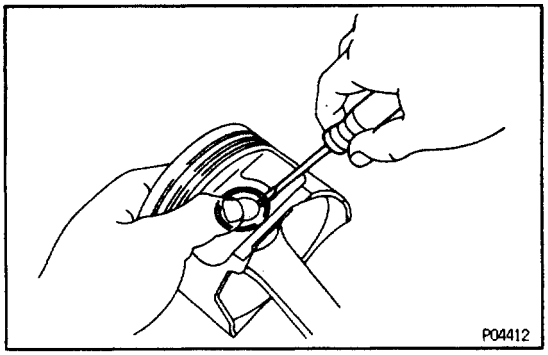


2. REMOVE PISTON RINGS

(a) Using a piston ring expander, remove the 2 compression rings.



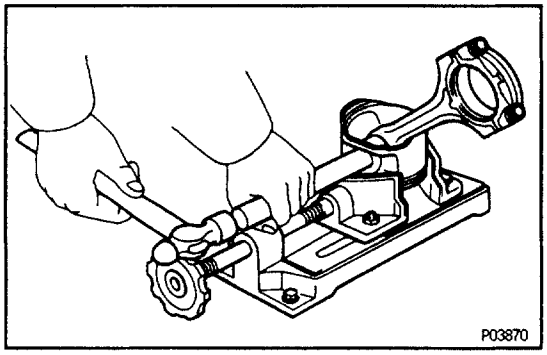
(b) Remove the 2 side rails and oil ring by hand.
HINT: Arrange the rings in correct order only.



3. DISCONNECT CONNECTING ROD FROM PISTON

(a) Using a small screwdriver, pry out the 2 snap rings.

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

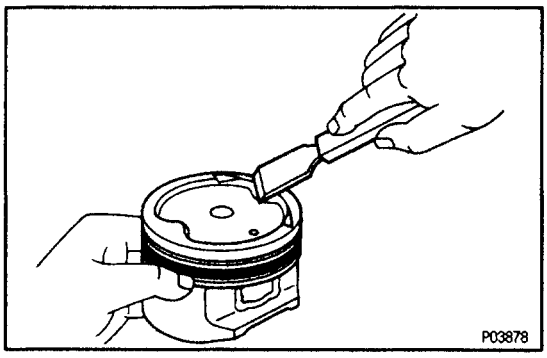


(c) Using plastic–faced hammer and brass bar, lightly tap out the piston pin and remove the connecting rod.
HINT:
- The piston and pin are a matched set.
- Arrange the pistons, pins, rings, connecting rods and bearings in correct order.

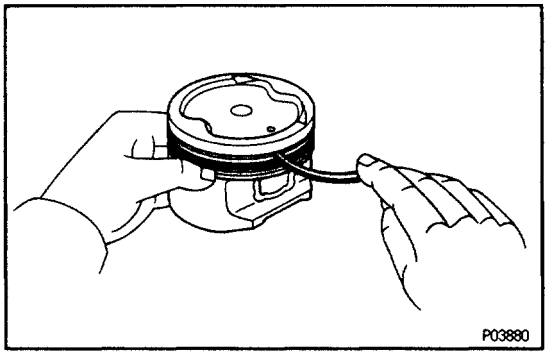
PISTON AND CONNECTING ROD INSPECTION

1. CLEAN PISTON

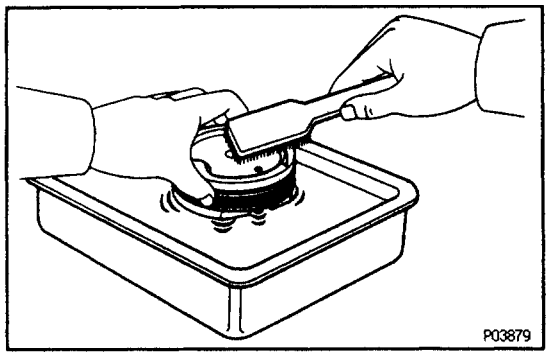
(a) Using a gasket scraper, remove the carbon from the piston top.

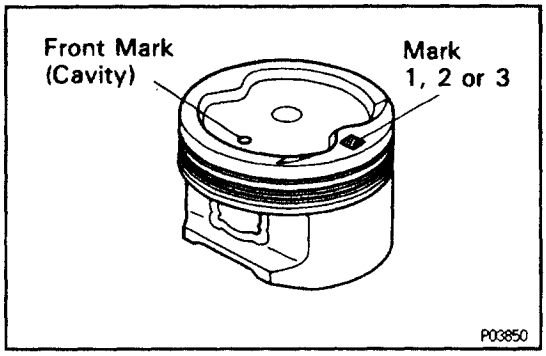


(b) Using a groove cleaning tool or broken ring, clean the piston ring grooves.



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

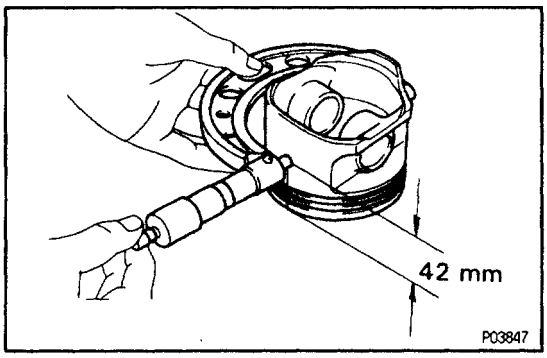




2. INSPECT PISTON AND PISTON RING

A. Inspect piston oil clearance

HINT: There are 3 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, 42 mm (1.65 in.) from the piston head.

Piston diameter:

STD

Mark "1"

99.950 – 99.960 mm (3.9350 – 3.9354 in.)

Mark "2"

99.960 – 99.970 mm (3.9354 – 3.9358 in.)

Mark "3"

99.970 – 99.980 mm (3.9358 – 3.9362 in.)

O/S 0.50

100.450 – 100.480 mm (3.9547 – 3.9559 in.)

O/S 1.00

100.950 – 100.980 mm (3.9744 – 3.9756 in.)

(b) Measure the cylinder bore diameter in the thrust directions. (See step 4 on page EG–87)

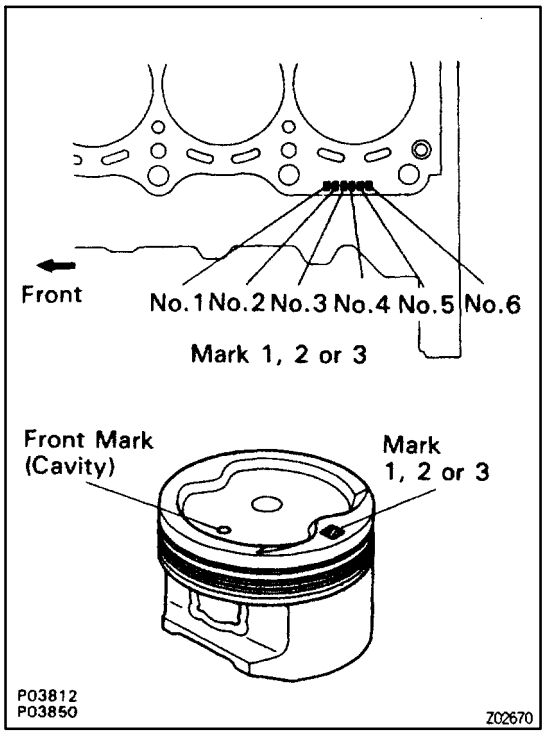
(c) Subtract the piston diameter measurement from the cylinder bore diameter measurement.

Standard oil clearance:

0.040 – 0.060 mm (0.0016 – 0.0024 in.)

If the oil clearance is greater than maximum, replace all the 6 pistons and rebore all the 6 cylinders. 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 thickness gauge, measure the clearance between new piston ring and the wall of the piston ring groove.

Ring groove clearance:

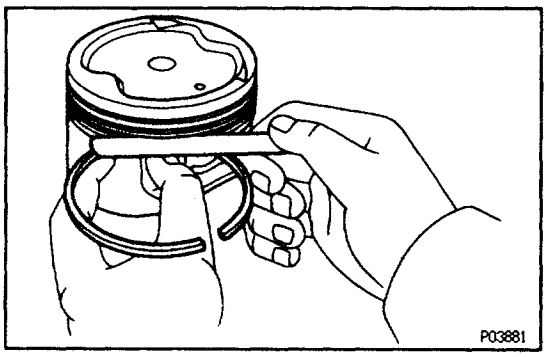
No.1

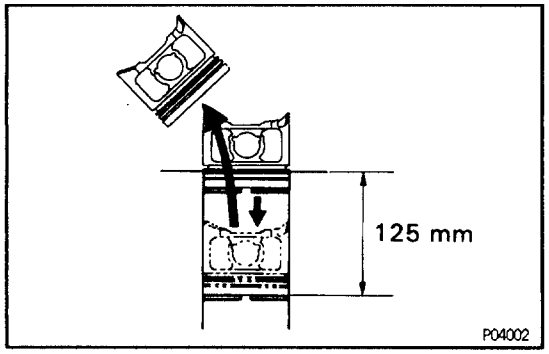
0.040 – 0.080 (0.0016 – 0.0031 in.)

No.2

0.030 – 0.070 (0.0012 – 0.0028 in.)

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

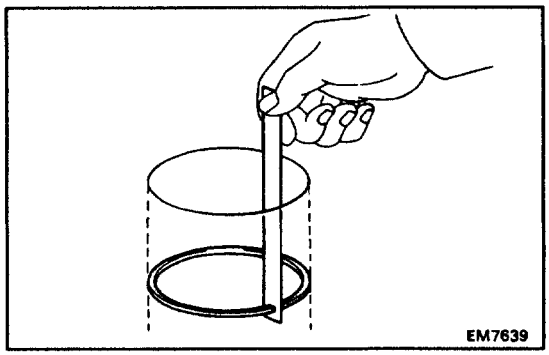




C. Inspect piston ring end gap

(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, 125 mm (4.92 in.) from the top of the cylinder block.



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

Standard end gap:

No.1

0.300 – 0.520 mm (0.0118 – 0.0205 in.)

No.2

0.450 – 0.670 mm (0.0177 – 0.0264 in.)

Oil (Side rail)

0.150 – 0.520 mm (0.0059 – 0.0205 in.)

Maximum end gap:

No.1

1.12 mm (0.0441 in.)

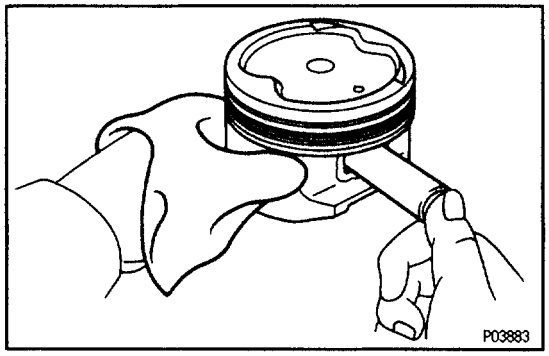
No.2

1.17 mm (0.0461 in.)

Oil (Side rail)

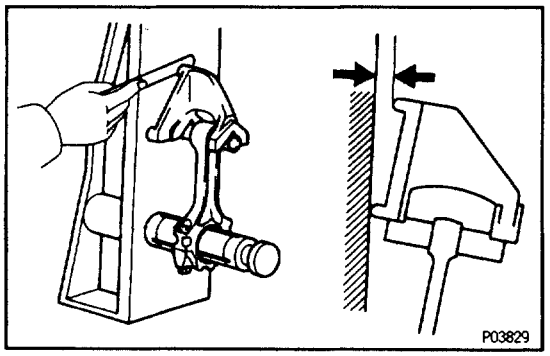
1.12 mm (0.0441 in.)

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, rebore all the 6 cylinders or replace the cylinder block.



D. Inspect piston pin fit

At 80–90°C (176–194°F), you should be able to push the piston pin into the piston pin hole with your thumb.



3. INSPECT CONNECTING ROD

A. Inspect connecting rod alignment

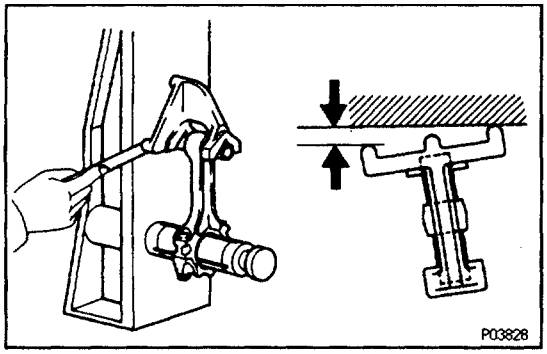
Using a rod aligner and thickness gauge, check the connecting rod alignment.

- Check for out–of–alignment.

Maximum out–of–alignment:

0.05 mm (0.0020 in.) per 100 mm (3.94 in.)

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

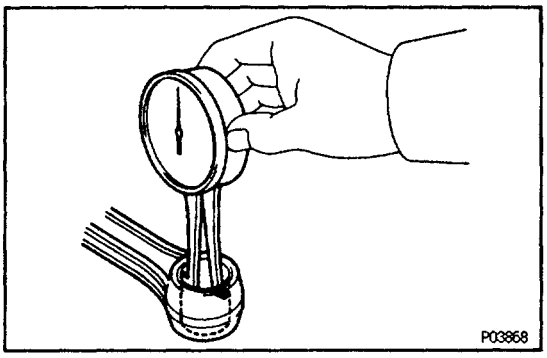


- Check for twist

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.



B. Inspect piston pin oil clearance

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

Bushing inside diameter:

26.008 – 26.020 mm (1.0239 – 1.0244 in.)

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

Piston pin diameter:

26.000 – 26.012 mm (1.0236 – 1.0241 in.)

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

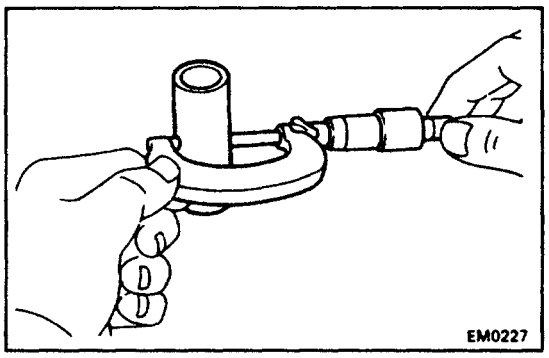
Standard oil clearance:

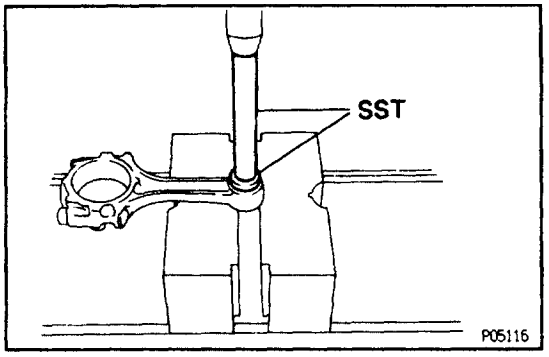
0.004 – 0.012 mm (0.0002 – 0.0005 in.)

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.

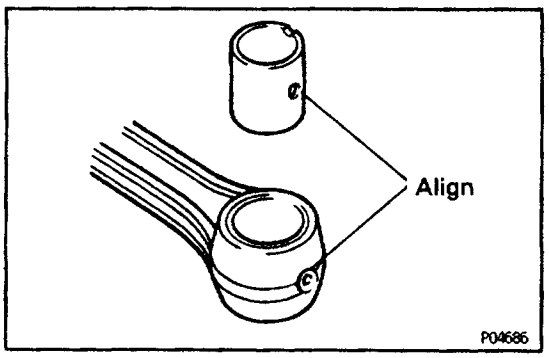




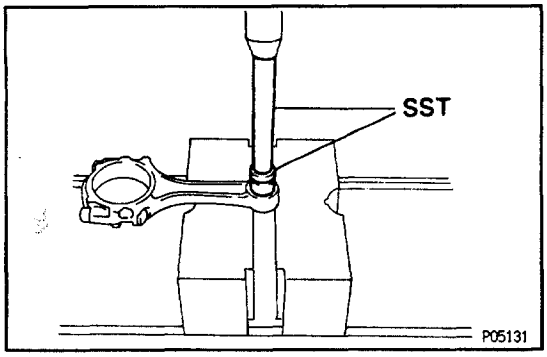
C. If necessary, replace connecting rod bushing

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

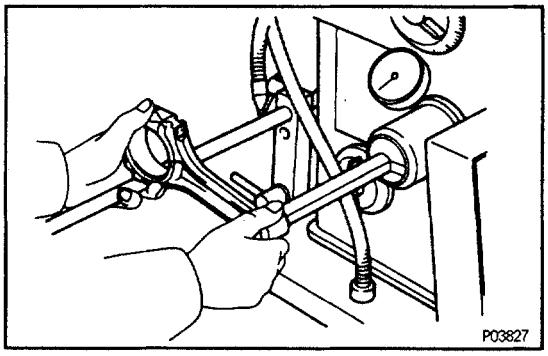
SST 09950–60010 (09951–00280),
09950–70010 (09951–07100)



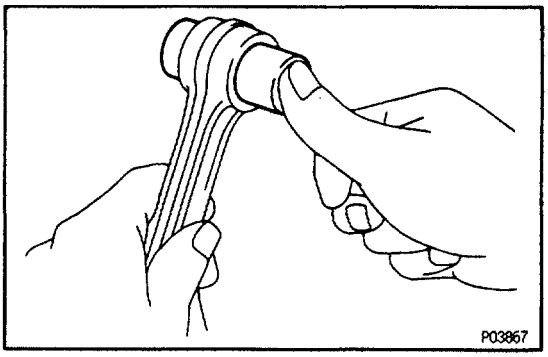
(b) Align the oil holes of a new bushing and the connecting rod.



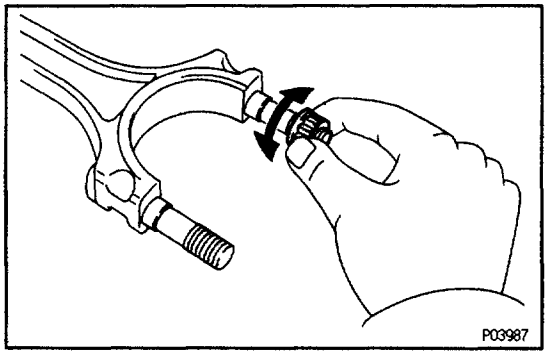
(c) Using SST and a press, press in the bushing.
SST 09950–60010 (09951–00280),
09950–70010 (09951–07100)



(d) Using a pin hole grinder, hone the bushing to obtain the standard specified clearance (see step B on the previous page) 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.



D. Inspect connecting rod bolts

(a) Install the cap nut to the connecting rod bolt. Check that the cap nut can be turned easily by hand to the end of the thread.

(b) If the cap nut cannot be turned easily, measure the outside diameter of the connecting rod bolt with vernier calipers.

Standard outside diameter:

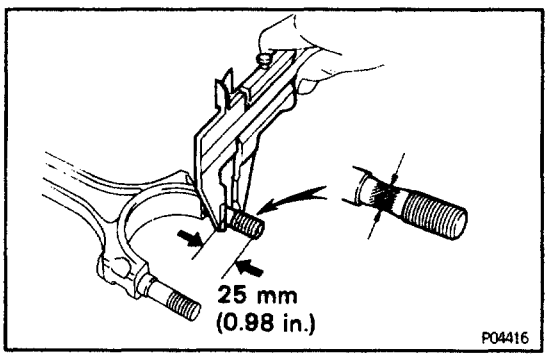
8.40 – 8.60 mm (0.3307 – 0.3386 in.)

Minimum outside diameter:

8.00 mm (0.3150 in.)

HINT: If the location of this area cannot be judged by visual inspection, measure the outer diameter at the location shown in the illustration.

If the outside diameter is less than minimum, replace the connecting rod bolt and nut as a set.



CYLINDER BORING

HINT:

- Bore all the 6 cylinders for the oversized piston outside diameter.
- Replace all the piston rings with ones to match the oversized pistons.

1. SELECT OVERSIZED PISTONS

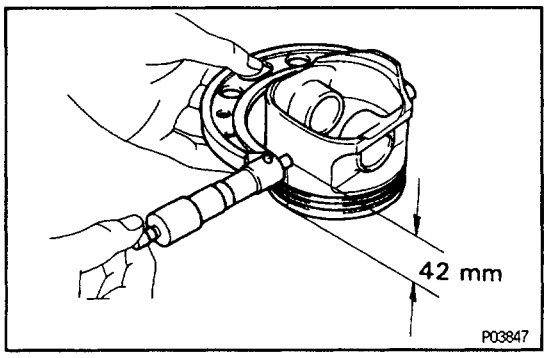
Oversized piston diameter:

O/S 0.50

100.450 – 100.480 mm (3.9547 – 3.9559 in.)

O/S 1.00

100.950 – 100.980 mm (3.9744 – 3.9756 in.)



2. CALCULATE AMOUNT TO BORE CYLINDERS

(a) Using a micrometer, measure the piston diameter at right angles to the piston pin center line, 42 mm (1.65 in.) from the piston head.

(b) Calculate the amount of each cylinder is to be rebored as follows:

Size to be rebored = P + C – H

P = Piston diameter

C = Piston clearance

0.040 – 0.060 mm (0.0016 – 0.0024 in.)

H = Allowance for honing

0.02 mm (0.0008 in.) or less

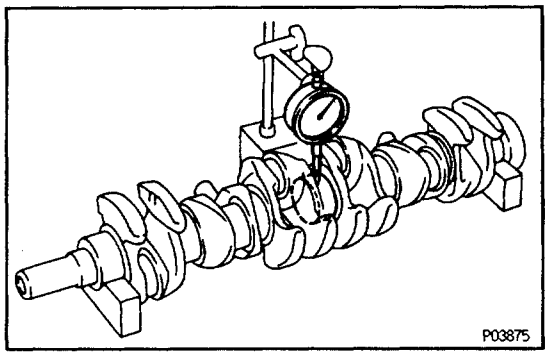
3. BORE AND HONE CYLINDER TO CALCULATED DIMENSIONS

Maximum honing:

0.02 mm (0.0008 in.)

NOTICE: Excess honing will destroy the finished roundness.

CRANKSHAFT INSPECTION AND REPAIR



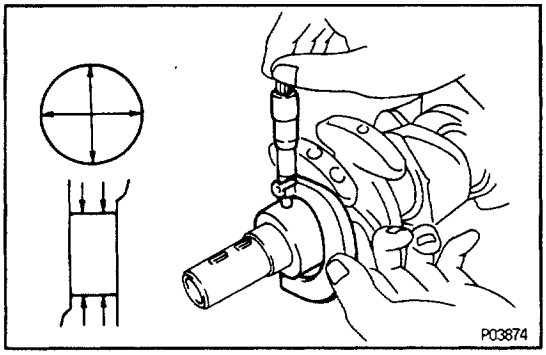
1. INSPECT CRANKSHAFT FOR RUNOUT

(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 size

68.982 – 69.000 mm (2.7158 – 2.7165 in.)

U/S 0.25

68.745 – 68.755 mm (2.7065 – 2.7069 in.)

Crank pin diameter:

STD size

56.982 – 57.000 mm (2.2434 – 2.2441 in.)

U/S 0.25

56.745 – 56.755 mm (2.2341 – 2.2344 in.)

If the diameter is not as specified, check the oil clearance (See steps 3 and 6 on pages EG–80 to 85).

If necessary, grind or replace the crankshaft.

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

Maximum taper and out–of–round:

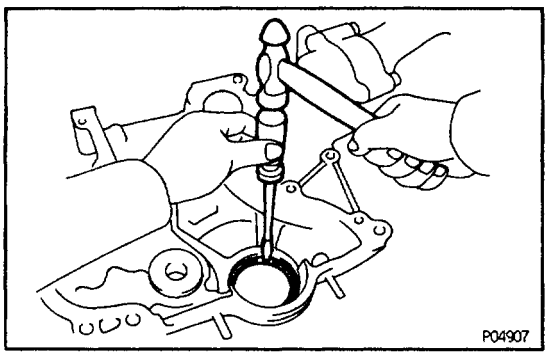
0.02 mm (0.0008 in.)

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 in step 2).

Install new main journal and/or crankshaft pin undersized bearings.



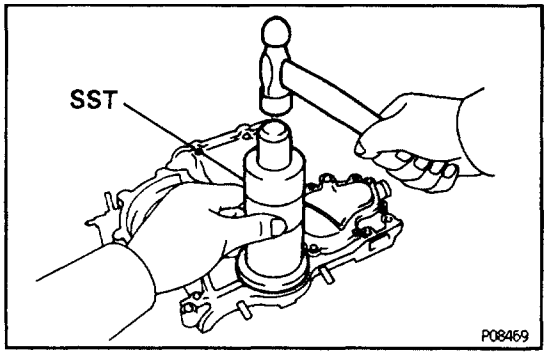
CRANKSHAFT OIL SEALS REPLACEMENT

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

1. REPLACE CRANKSHAFT FRONT OIL SEAL

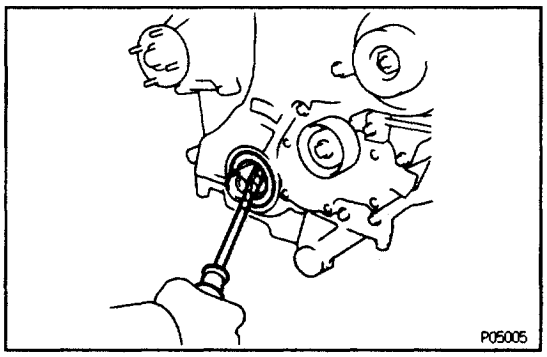
A. If timing chain cover is removed from cylinder block:

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



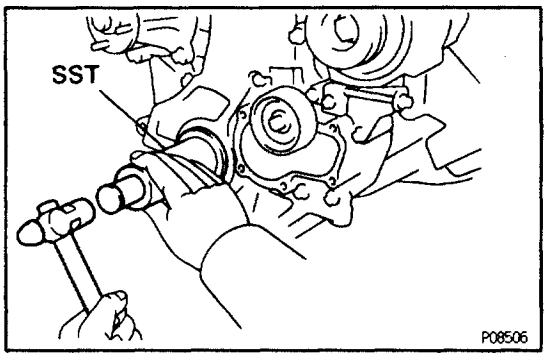
(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing chain cover edge.
SST 09316–60010 (09316–00010, 09316–00050)

(c) Apply MP grease to the oil seal lip.
NOTICE: Do not let foreign matter get onto the lip of the oil seal.



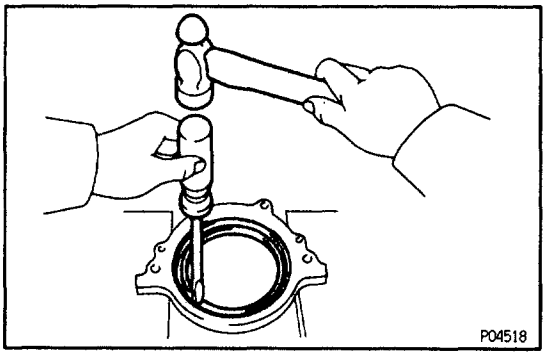
B. If timing chain cover is installed to cylinder block:

(a) Using a screwdriver, pry out the oil seal.
NOTICE: Be careful not to damage the crankshaft. Tape the screwdriver tip.



(b) Apply MP grease to a new oil seal lip.
NOTICE: Do not let foreign matter get onto the lip of the oil seal.

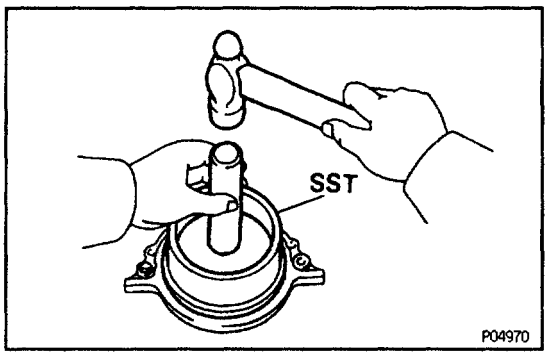
(c) Using SST and a hammer, tap in the oil seal until its surface is flush with the timing chain cover edge.
SST 09316–60010 (09316–00010, 09316–00050)



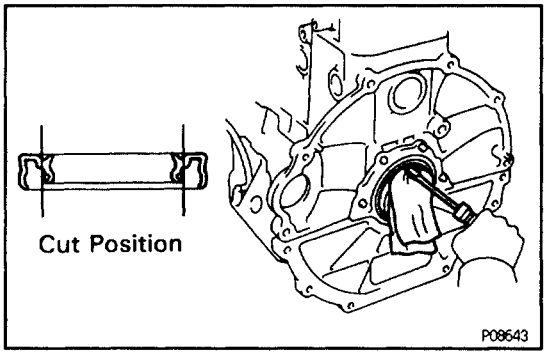
2. REPLACE CRANKSHAFT REAR OIL SEAL

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

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



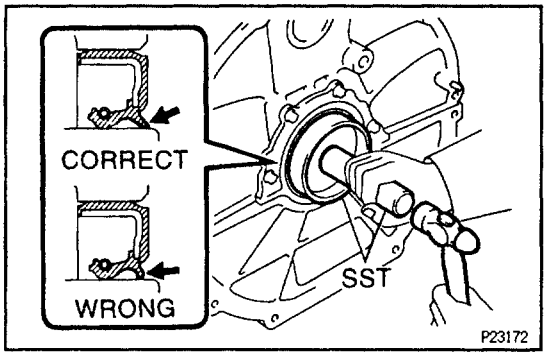
(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the rear oil seal edge.
SST 09223–15030, 09950–70010 (09951–07150)
NOTICE: Do not let foreign matter get onto the lip of the oil seal.



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

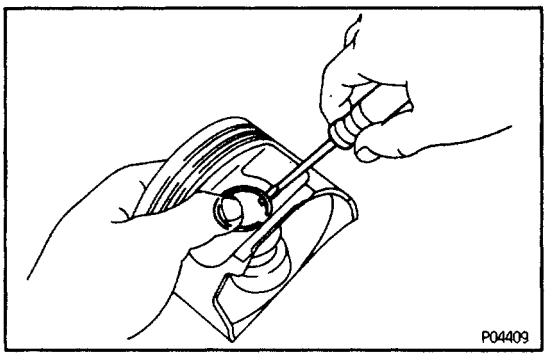
(a) Using a knife, cut off the oil seal lip.

(b) Using a screwdriver, pry out the oil seal.
NOTICE: Be careful not to damage the crankshaft. Tape the screwdriver tip.



(c) Using SST and a hammer, tap in a new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223–15030, 09950–70010 (09951–07150)
NOTICE: Do not let foreign matter get onto the lip of the oil seal.

(d) Check that the lip of the oil seal is not bent inward.

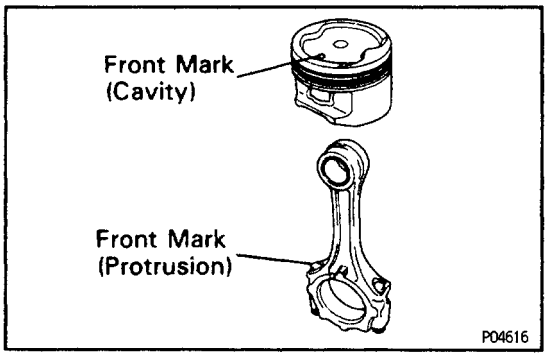


PISTON AND CONNECTING ROD ASSEMBLY

1. ASSEMBLE PISTON AND CONNECTING ROD

(a) Install a new snap ring on one side of the piston pin hole.

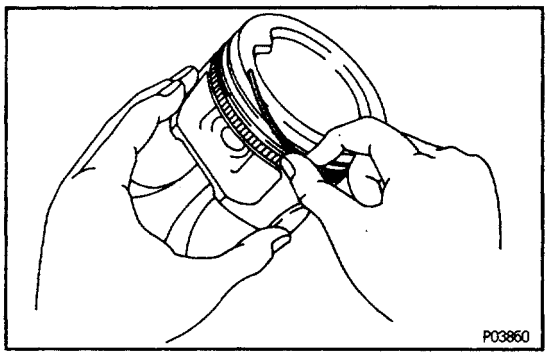
(b) Gradually heat the piston to 80–90°C (176–194°F).



(c) Coat the piston pin with engine oil.

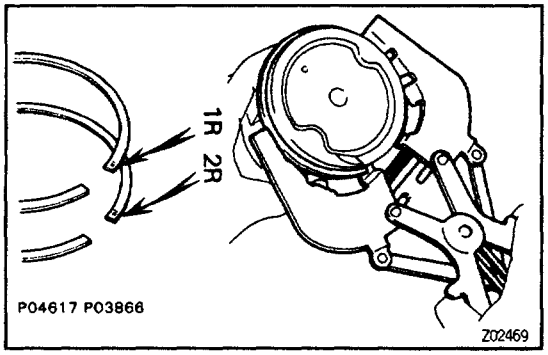
(d) Align the front marks of the piston and connecting rod, and push in the piston pin with your thumb.

(e) Install a new snap ring on the other side of the piston pin hole.

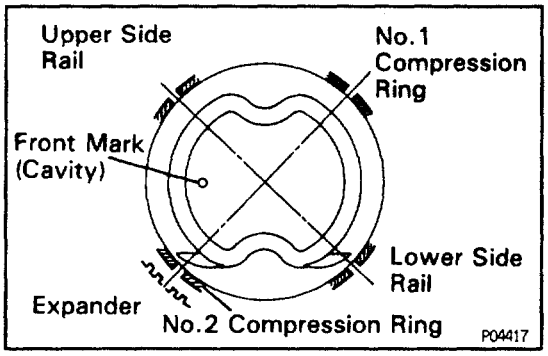


2. INSTALL PISTON RINGS

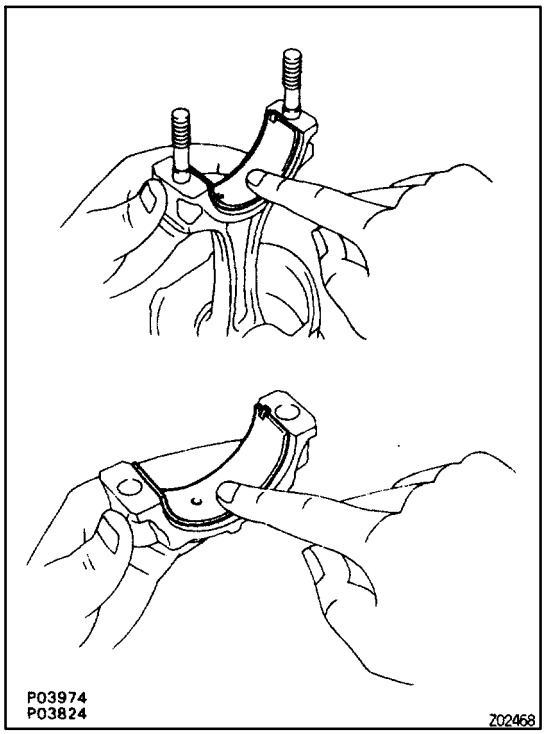
(a) Install the oil ring expander and 2 side rails by hand.



(b) Using a piston ring expander, install the 2 compression rings with the code mark facing upward.
Code mark:
1R for No.1
2R for No.2

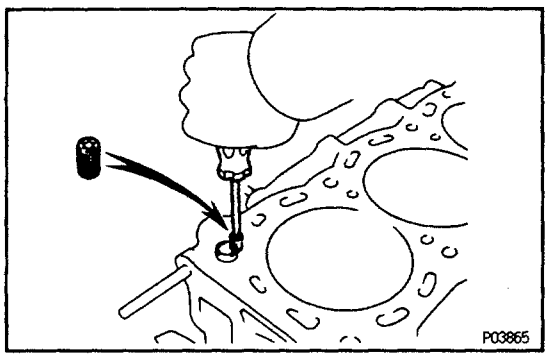


(c) Position the piston rings so that the ring ends are as shown.
NOTICE: Do not align the ring ends.



3. INSTALL BEARINGS

(a) Align the bearing claw with the groove of the connecting rod or connecting rod cap.
(b) Install the bearings in the connecting rod and connecting rod cap.

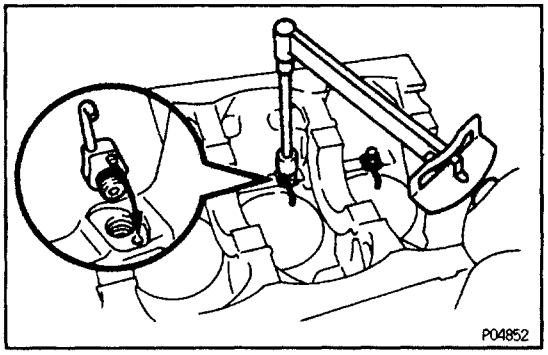


CYLINDER BLOCK ASSEMBLY

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.

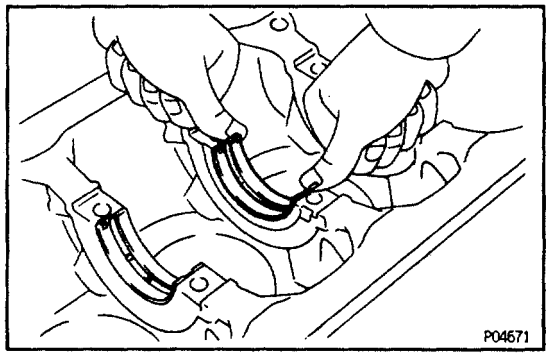
1. INSTALL CYLINDER BLOCK ORIFICE



2. INSTALL OIL NOZZLES AND CHECK VALVES

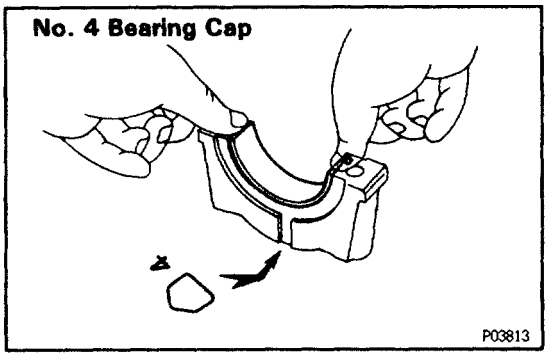
(a) Align the pin of the oil nozzle with the pin hole of the cylinder block.

(b) Install the oil nozzle with the check valve. Install the 6 oil nozzles and check valves.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

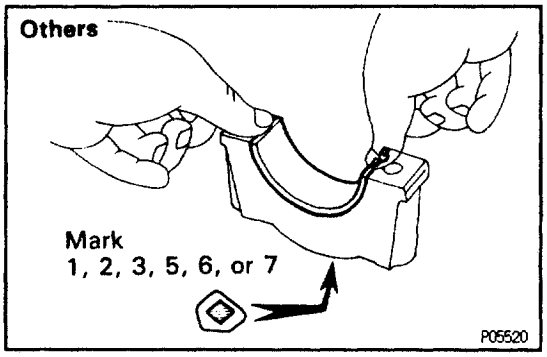


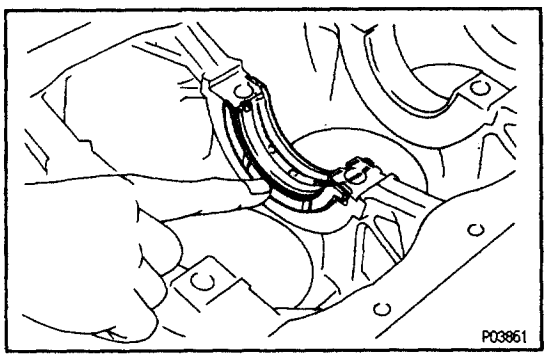
3. INSTALL MAIN BEARINGS

(a) Align the bearing claw with the claw groove of the cylinder block, and push in the 7 upper bearings.



(b) Align the bearing claw with the claw groove of the main bearing cap, and push in the 7 lower bearings.
HINT: A number is marked on each main bearing cap to indicate the installation position.

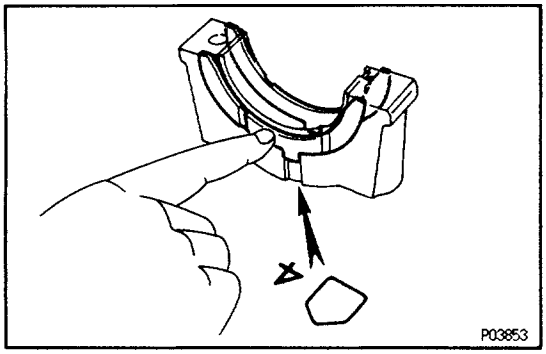




4. INSTALL UPPER THRUST WASHERS

Install the 2 thrust washers under the No.4 journal position of the cylinder block with the oil grooves facing outward.

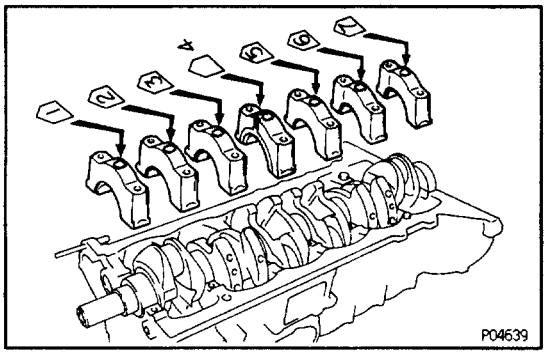
5. PLACE CRANKSHAFT ON CYLINDER BLOCK



6. INSTALL MAIN BEARING CAPS AND LOWER THRUST WASHERS

A. Place main bearing cap and lower thrust washers on cylinder block

(a) Install the 2 thrust washers on the No. 4 bearing cap with the grooves facing outward.

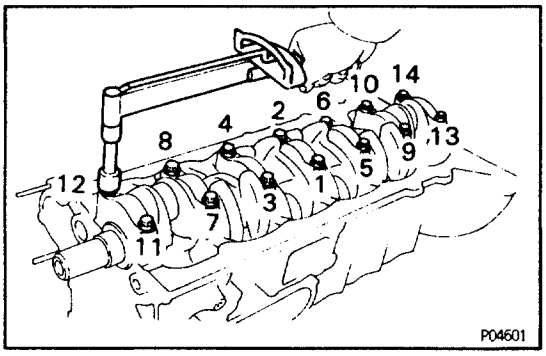


(b) Install the 7 main bearing caps in their proper locations.
HINT: Each bearing cap has a number and front mark.

B. Install main bearing cap bolts

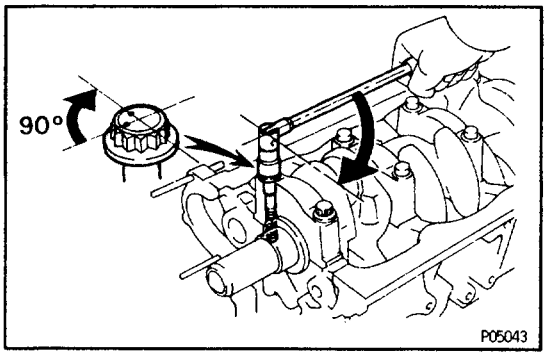
HINT:

- The main bearing cap bolts are tightened in 2 progressive steps (steps (b) and (d)).
- If any of the main bearing cap bolts is broken or deformed, replace it.



(a) Apply a light coat of engine oil on the threads and under the heads of the main bearing cap bolts.

(b) Install and uniformly tighten the 14 bolts of the main bearing caps, in several passes, in the sequence shown.
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)
If any one of the main bearing cap bolts does not meet the torque specification, replace the main bearing cap bolt.



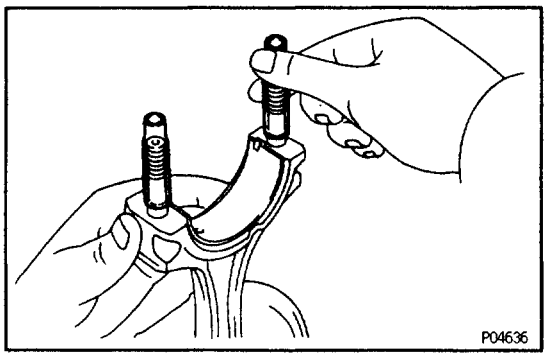
(c) Mark the front of the main bearing cap bolt with paint.

(d) Retighten the main bearing cap bolts by 90° in the numerical order shown above.

(e) Check that the painted mark is now at a 90° angle to the front.

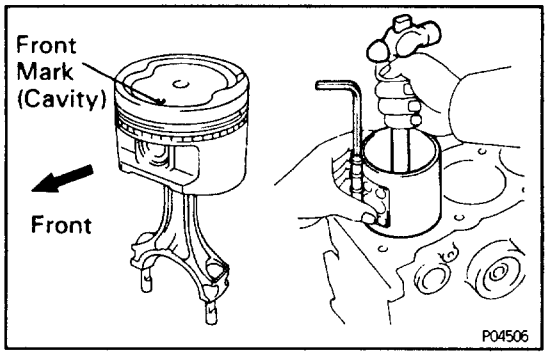
(f) Check that the crankshaft turns smoothly.

(g) Check the crankshaft thrust clearance.
(See step 5 on page EG–83)

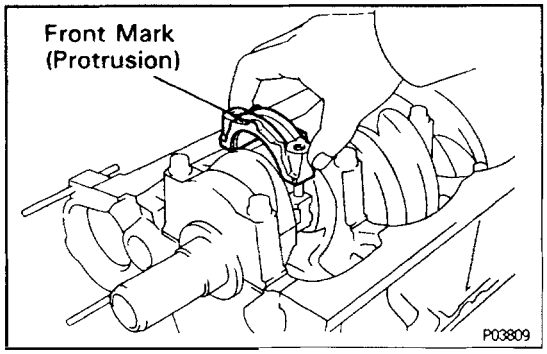


7. INSTALL PISTON AND CONNECTING ROD ASSEMBLIES

(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.



8. INSTALL CONNECTING ROD CAPS

A. Place connecting rod cap on connecting rod

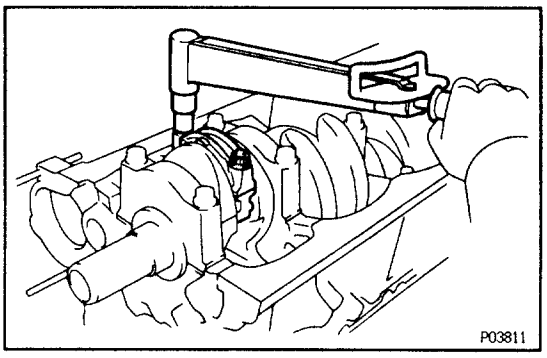
(a) Match the numbered connecting rod cap with the connecting rod.

(b) Install the connecting rod cap with the front mark facing forward.

B. Install connecting rod cap nuts

HINT:

- The connecting rod cap nuts are tightened in 2 progressive steps (steps (b) and (d)).
- If any connecting rod bolt is broken or deformed, replace it.

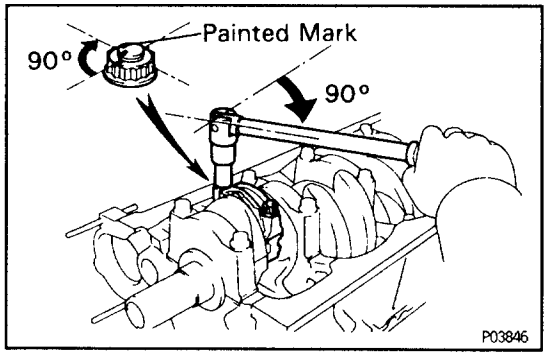


(a) Apply a light coat of engine oil on the threads and under the nuts of the connecting rod cap.

(b) Install and alternately tighten the nuts of the connecting rod cap in several passes.

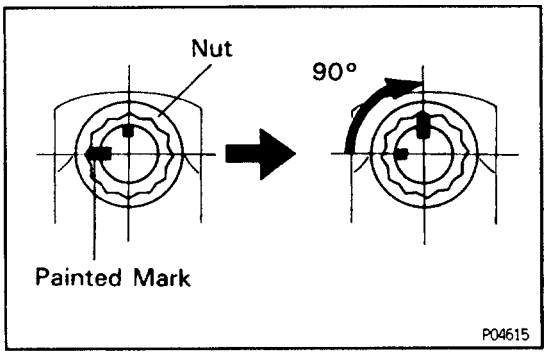
Torque: 48 N·m (490 kgf·cm, 35 ft·lbf)

If any one of the connecting rod cap nuts does not meet the torque specification, replace the connecting rod bolt and cap nut as a set.



(c) Mark the front of the connecting rod cap nut and bolt with paint.

(d) Retighten the connecting rod cap nuts 905 as shown.



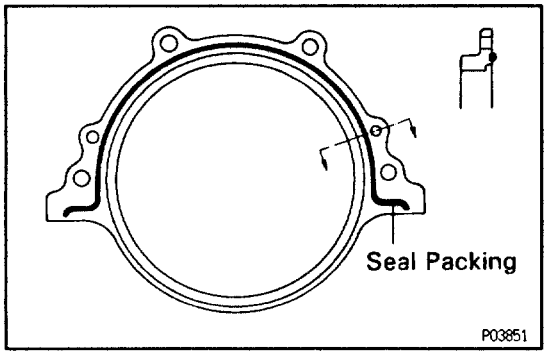
(e) Check that the painted mark on the nut is at 90° angle in relation to the mark on the bolt.

(f) Check that the crankshaft turns smoothly.

(g) Check the connecting rod thrust clearance.
(See step 2 on page EG–80)

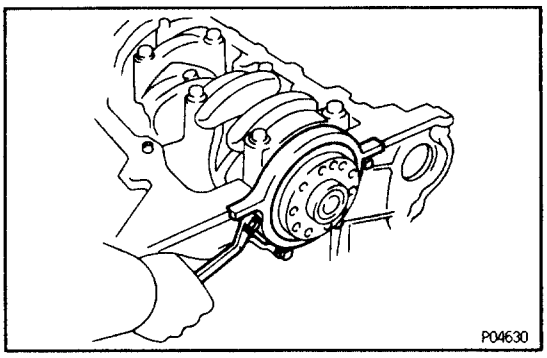
9. INSTALL REAR OIL SEAL RETAINER

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the retainer and cylinder block.
- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
- Thoroughly clean all components to remove all the loose material.
- Using a non–residue solvent, clean both sealing surfaces.



(b) Apply seal packing to the retainer as shown in the illustration.
Seal packing:
Part No. 08826–00080 or equivalent
- Install a nozzle that has been cut to a 2–3 mm (0.08–0.12 in.) opening.

HINT: Avoid applying an excessive amount to the surface.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(c) Install the retainer with the 4 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

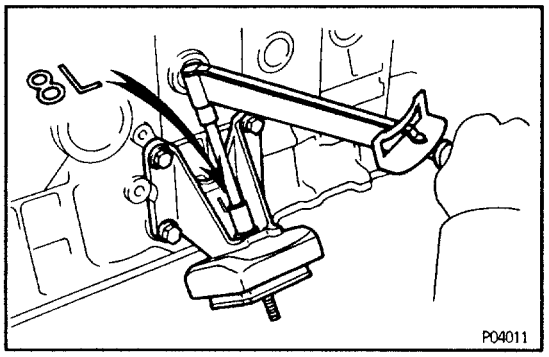
AFTER ASSEMBLY

1. INSTALL OIL COOLER COVER AND OIL COOLER

Install a new gasket, the oil cooler cover and oil cooler with the 10 bolts and 2 nuts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

2. INSTALL LH ENGINE MOUNTING BRACKET

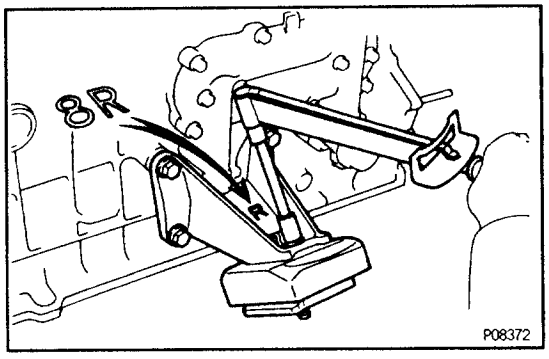
(a) Install the bracket with the 4 bolts.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)



(b) Install the insulator with the nut.
Torque: 72 N·m (730 kgf·cm, 43 ft·lbf)

3. INSTALL RH ENGINE MOUNTING BRACKET

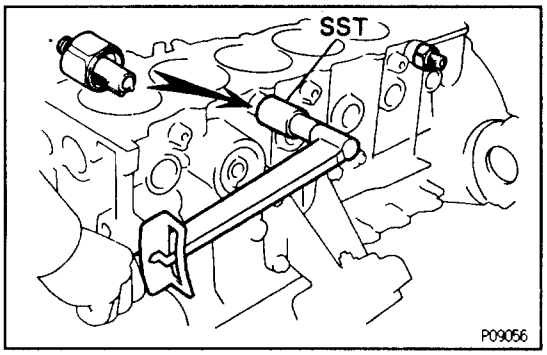
(a) Install the bracket with the 4 bolts.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)



(b) Install the insulator with the nut.
Torque: 72 N·m (730 kgf·cm, 43 ft·lbf)

4. INSTALL PS PUMP

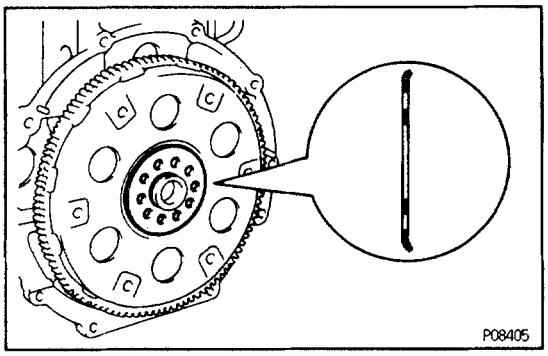
(a) Place a new O–ring to the pump.
(b) Install the pump with the 2 nuts.

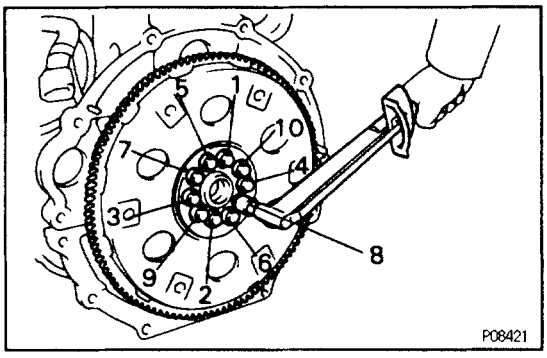


Torque: 36 N·m (370 kgf·cm, 27 ft·lbf)

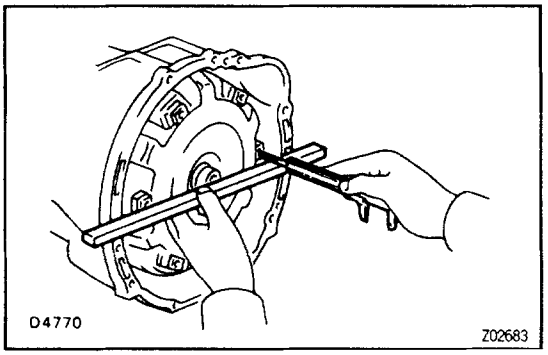
5. **INSTALL KNOCK SENSORS**
   Using SST, install the 2 knock sensors.
   SST 09816–30010
   Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)
6. **INSTALL OIL FILTER UNION**
   Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)
7. **INSTALL OIL FILTER**
   (See oil and filter replacement in Lubrication System)
8. **INSTALL TIMING CHAIN**
   (See timing chain installation)
9. **INSTALL CYLINDER HEAD**
   (See cylinder head installation)
10. **REMOVE ENGINE STAND**
11. **INSTALL DRIVE PLATE**

(a) Install the front spacer, drive plate and rear plate on the crankshaft.



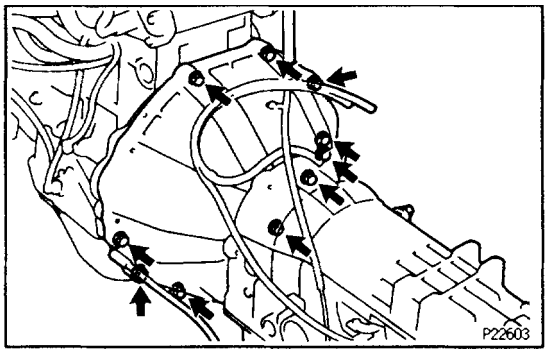


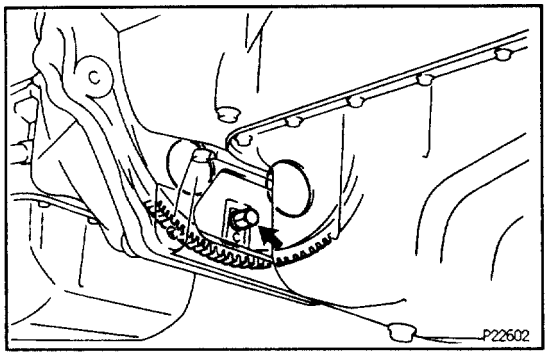
(b) Install and uniformly tighten the 10 drive plate bolts, in several passes, in the sequence shown.
Torque: 100 N·m (1,000 kgf·cm, 74 ft·lbf)



ENGINE AND TRANSMISSION ASSEMBLY

1. **CHECK TORQUE CONVERTER CLUTCH INSTALLATION**
   Using calipers and straight edge, measure from the installed surface of the torque converter clutch to the front surface of the transmission.
   Correct distance:
   15.7 mm (0.618 in.) or more
   If the distance is less than the specifications, check for an improper installation.
2. **ASSEMBLE ENGINE AND TRANSMISSION**
   Install the transmission with the 7 bolts.
   Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)





3. INSTALL TORQUE CONVERTER CLUTCH MOUNTING BOLTS

Install the 6 bolts by turning the crankshaft.

Torque: 55 N·m (550 kgf·cm, 41 ft·lbf)

HINT: First install the green colored bolt and then the remaining 5 bolts.

4. INSTALL HOLE PLUG

5. CONNECT THROTTLE CABLE TO THROTTLE BODY

6. INSTALL A/T OIL COOLER PIPES FOR TRANSMISSION

(a) Temporarily install the 3 mounting bolts.

(b) Connect the 2 oil cooler pipes to the unions on the transmission. Tighten the union nuts.

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

(c) Tighten the 3 clamp mounting bolts.

7. INSTALL STARTER

(a) Install the starter with the 2 bolts.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

(b) Connect the starter connector.

8. CONNECT ENGINE WIRE TO TRANSMISSION

(a) Connect the 2 connectors from the transmission.

(b) Connect the PNP switch connector.

9. INSTALL OIL DIPSTICK GUIDE FOR TRANSMISSION

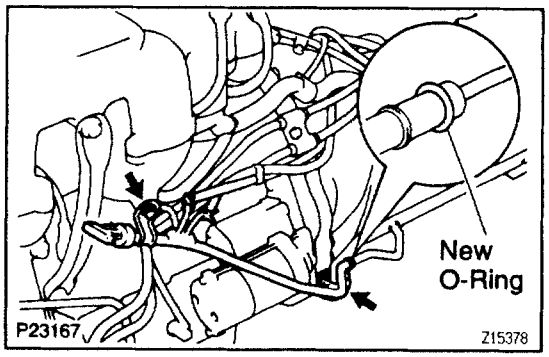
(a) Install a new O–ring to the dipstick guide.

(b) Apply a light coat of ATF to the O–ring.

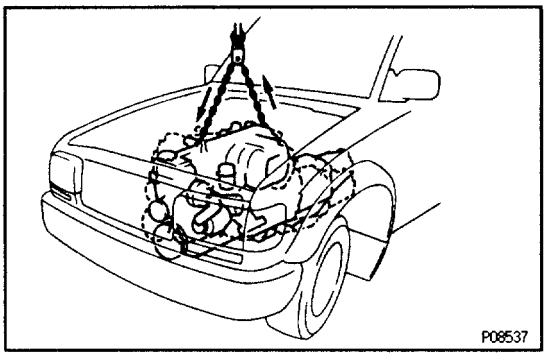
(c) Connect the dipstick guide end to the tube of the oil pan, and install the dipstick guide with the 2 bolts.

(d) Install the dipstick.

(e) Connect the 2 breather hoses.



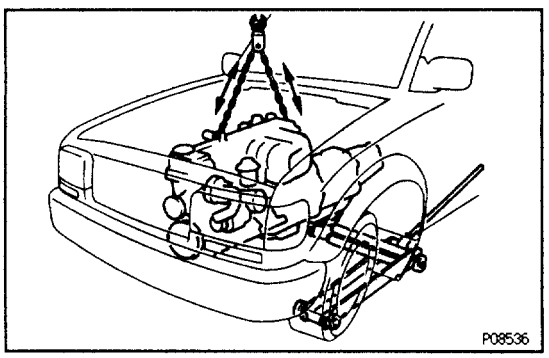
ENGINE INSTALLATION



1. INSTALL ENGINE AND TRANSMISSION ASSEMBLY IN VEHICLE

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

(b) Lower the engine and transmission assembly into the engine compartment.



(c) Insert the stud bolts of the front engine mounting insulators into the stud bolt holes of the frame.

(d) Temporarily install the 2 nuts holding the engine front mounting insulators to the frame crossmember.

(e) Keep the engine level with a jack.

(f) Remove the hoist chain.

2. INSTALL FRAME CROSSMEMBER

(a) Temporarily install the crossmember to the engine rear mounting insulator with the 2 nuts.

(b) Install the 8 bolts holding the crossmember to the frame.
Torque: 61 N·m (620 kgf·cm, 45 ft·lbf)

(c) Tighten the 2 nuts holding the crossmember to the engine rear mounting insulator.
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

3. TIGHTEN NUTS HOLDING ENGINE FRONT MOUNTING INSULATORS TO FRAME
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

4. CONNECT GROUND STRAP TO HEAT INSULATOR

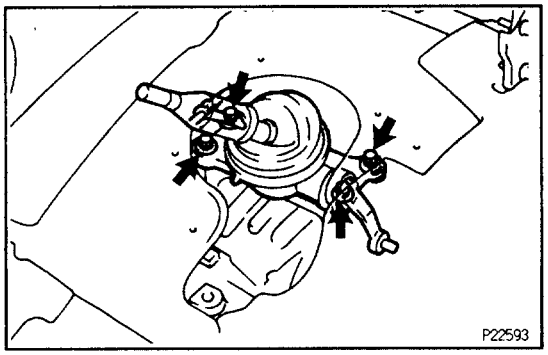
5. INSTALL FRONT EXHAUST PIPE

(a) Install 2 new gaskets and the front exhaust pipe with the 4 nuts.
Torque: 63 N·m (630 kgf·cm, 46 ft·lbf)

(b) Install the No.1 support bracket with the 2 bolts.
Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)

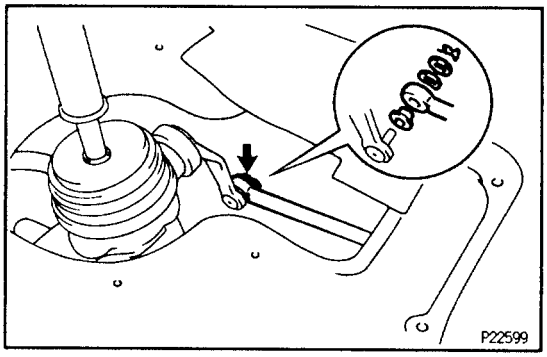
(c) Connect the clamp and tighten the clamp bolt.
Torque: 19.5 N·m (195 kgf·cm, 14 ft·lbf)

(d) Connect the front exhaust pipe to the rear TWC with a new gasket, 2 bolts and 2 nuts.
Torque: 46 N·m (470 kgf·cm, 34 ft·lbf)



6. INSTALL TRANSFER SHIFT LEVER

(a) Install the shift lever and hose clamp with the 4 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

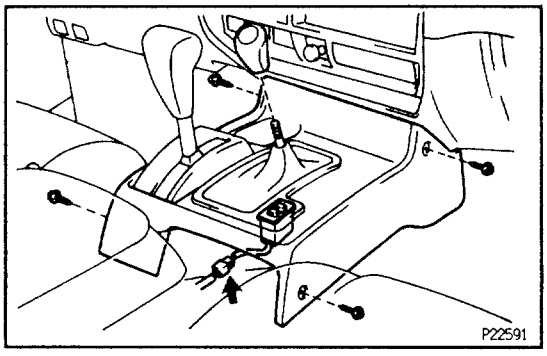


(b) Connect the shift rod and install the pin.

(c) Install the transfer shift lever boot and transmission shift lever assembly with the 10 bolts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

(d) Connect the 3 connectors to the transmission shift lever assembly.

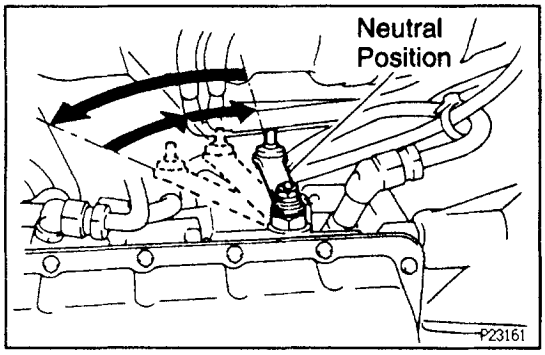
(e) Install the console box with the 3 bolts.



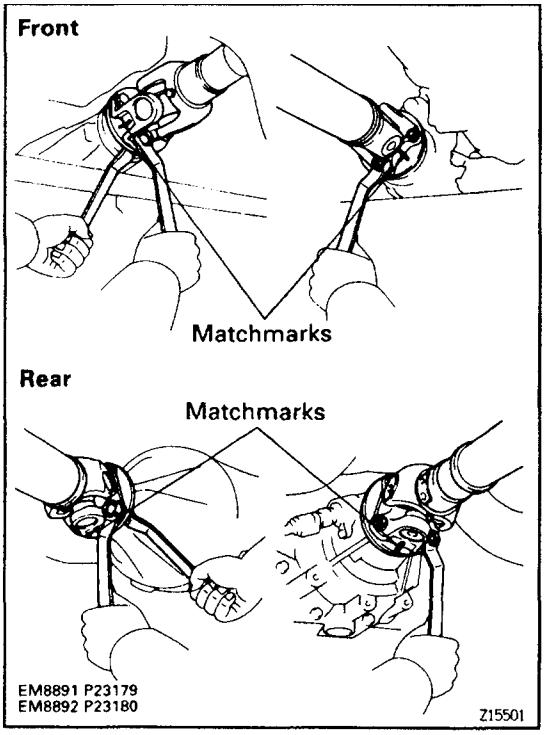
(f) Connect the pattern select switch connector.

(g) Install the console with the 4 screws.

(h) Install the transfer shift lever knob.



(i) Shift the shift lever to N position.
(j) Fully turn the control shaft lever back and return 2 notches. It is now in neutral position.
(k) Connect the transmission control rod with the nut.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



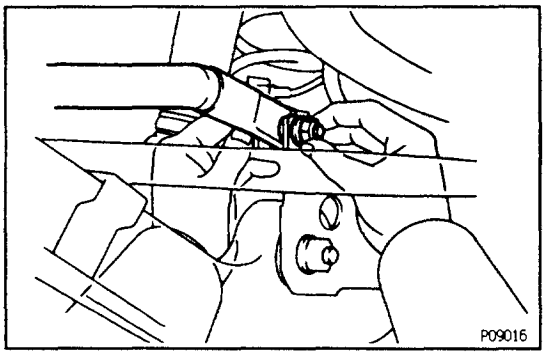
7. INSTALL FRONT AND REAR PROPELLER SHAFTS

Differential Side:

(a) Align the matchmarks on the flanges and connect the flanges with the 4 bolts and nuts.
(b) Torque the bolts and nuts.
Torque:
Front shaft: 74 N·m (750 kgf·cm, 54 ft·lbf)
Rear shaft: 88 N·m (900 kgf·cm, 65 ft·lbf)

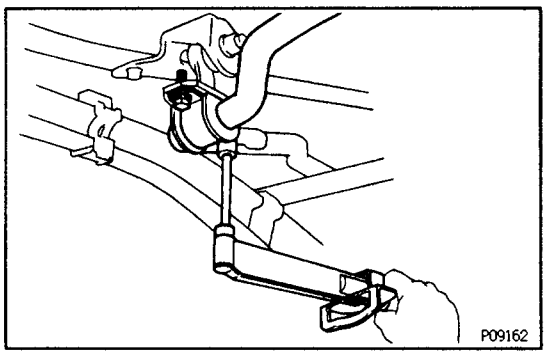
Transfer Side:

(a) Align the matchmarks on the flanges and connect the flanges with the 4 nuts.
(b) Torque the nuts.
Torque:
Front shaft: 74 N·m (750 kgf·cm, 54 ft·lbf)
Rear shaft: 88 N·m (900 kgf·cm, 65 ft·lbf)

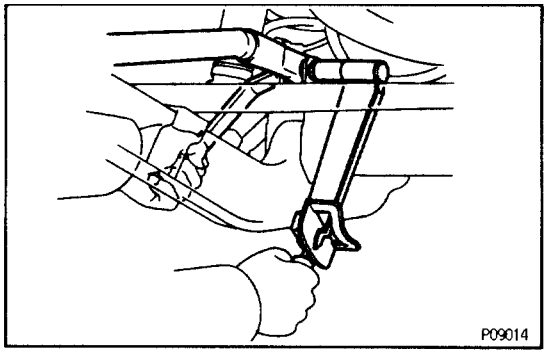


8. INSTALL STABILIZER BAR

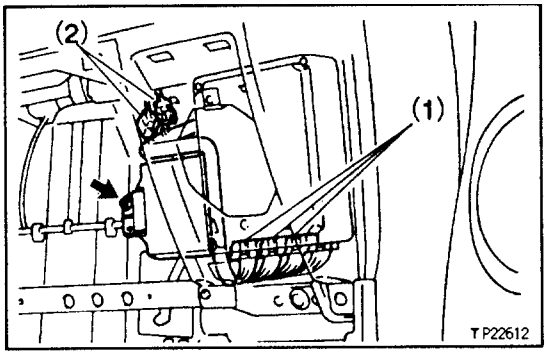
(a) Temporarily install the stabilizer bar to the axle housing with the bolt and nut.



(b) Connect the stabilizer bar with the 2 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)
(c) Bounce the vehicle up and down to stabilize the suspension.



(d) Torque the bolt and nut holding the stabilizer bar to the axle housing.
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)



9. CONNECT ENGINE WIRE TO CABIN
(a) Push in the engine wire through the cowl panel.
(b) Connect these connectors:
(1) 3 connectors to ECM
(2) 2 connectors to cowl wire
(c) Connect the A/C amplifier with the screw.
(d) Install the speaker panel with the screw.
(e) Install the glove compartment door with the 2 screws.

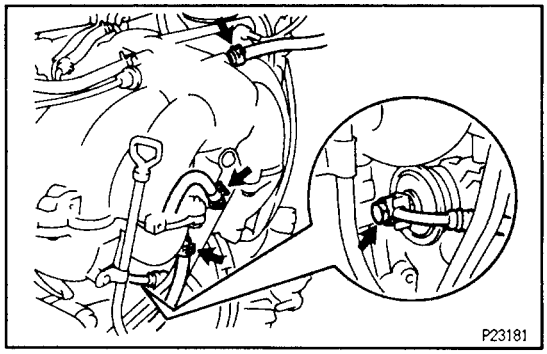
10. CONNECT PS RETURN HOSE
Connect the return hose to the PS reservoir tank.

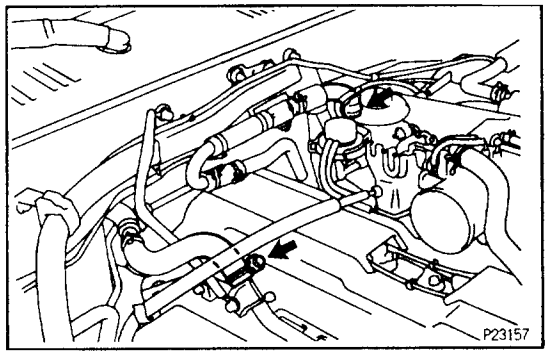
11. CONNECT PS PRESSURE HOSE
Connect the PS pressure hose with 2 new gaskets and the union bolt.
Torque: 56 N·m (575 kgf·cm, 42 ft·lbf)

12. INSTALL RADIATOR PIPE
(a) Connect the No.2 radiator hose to the water inlet.
(b) Install the 2 nuts holding the radiator pipe to the No.1 oil pan.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

13. INSTALL A/C COMPRESSOR AND BRACKET
(a) Install the A/C compressor bracket with the 5 bolts.
Torque: 37 N·m (375 kgf·cm, 27 ft·lbf)
(b) Install the A/C compressor with the 4 bolts.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)
(c) Install and adjust the drive belt.
(See AC section)

14. CONNECT WIRES AND CONNECTORS
Connect these wires and connectors:
- 2 heated oxygen sensor connectors
- DLC1 clamp
- 2 oil pressure gauge connectors
- Generator wire and connector
- Connector on intake manifold to fender apron
- High tension cord to ignition coil
- Ground strap to No.1 engine hanger
- Ground strap to air intake chamber
- Starter wire
- Ground cable to cylinder block.





15. CONNECT FUEL HOSES

(a) Connect the fuel inlet hose to the fuel filter with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

(b) Connect the fuel return hose.

16. CONNECT EVAP HOSE

17. CONNECT BRAKE BOOSTER VACUUM HOSE

18. CONNECT HEATER VALVE AND ENGINE WIRE TO COWL PANEL

(a) Connect the heater valve with the 2 bolts.

(b) Connect the engine wire and ground strap with the 2 bolts.

19. CONNECT HEATER HOSES

20. CONNECT ACCELERATOR CABLE TO THROTTLE BODY

21. CONNECT CRUISE CONTROL ACTUATOR CABLE TO THROTTLE BODY

22. INSTALL AIR CLEANER CASE

23. INSTALL AIR CLEANER HOSE AND CAP

24. CONNECT OIL COOLER HOSE TO OIL COOLER PIPE

25. INSTALL RADIATOR
(See radiator installation in Cooling System)

26. INSTALL RADIATOR GRILLE
Install the radiator grille with the 5 screws and clip.

27. INSTALL BATTERY TRAY AND BATTERY

(a) Install the battery tray with the 5 bolts.

(b) Connect the ground strap with the bolt.

(c) Install the battery and hold–down clamp with the nuts.

(d) Connect the battery cables.

28. FILL WITH ENGINE OIL

29. FILL RADIATOR WITH ENGINE COOLANT

30. START ENGINE AND CHECK FOR LEAKS

31. CHECK AUTOMATIC TRANSMISSION FLUID LEVEL

32. CHECK IGNITION TIMING
(See ignition timing inspection and adjustment)

33. INSTALL HOOD

34. PERFORM ROAD TEST
Check for abnormal noise, shock, slippage, correct shift points and smooth operation.

35. RECHECK ENGINE COOLANT AND ENGINE OIL LEVELS