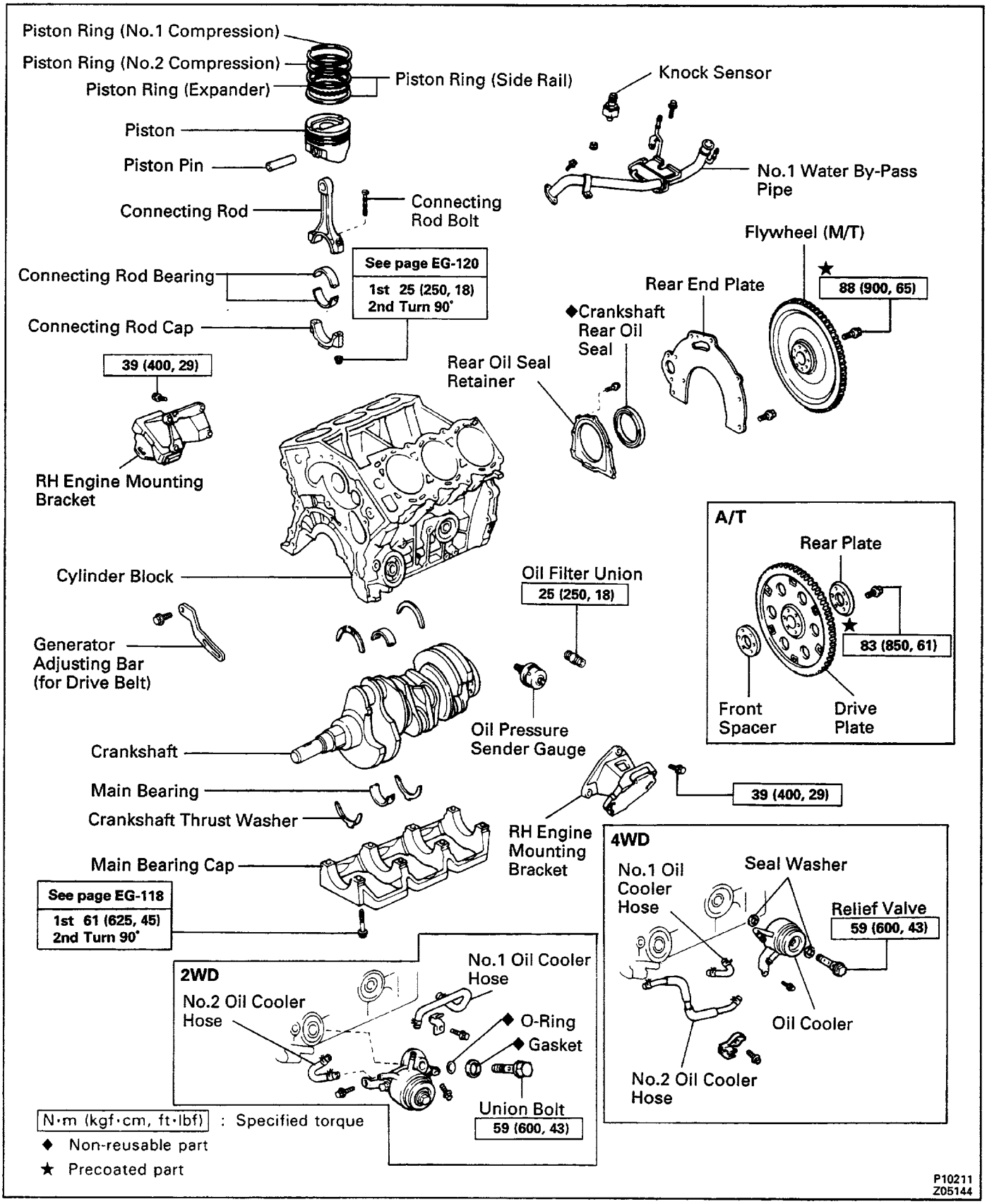
CYLINDER BLOCK

EG1EG–05

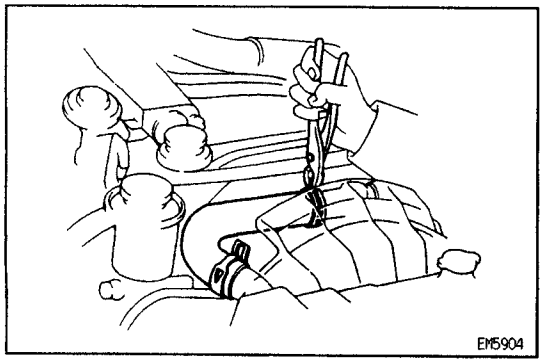
COMPONENTS



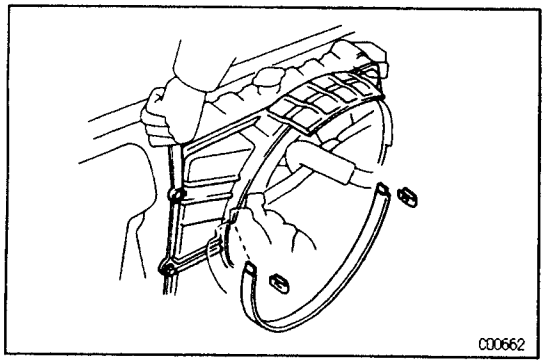
EG30W–01

ENGINE REMOVAL

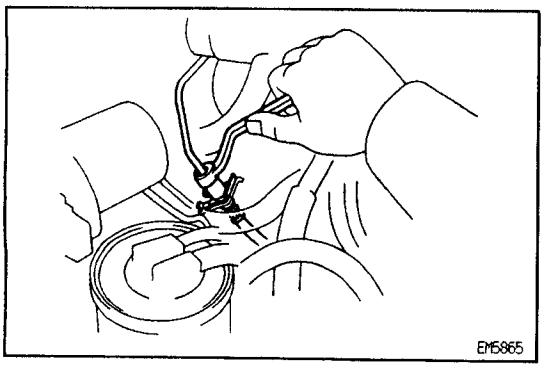
1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY
2. REMOVE HOOD
3. REMOVE BATTERY
4. REMOVE ENGINE UNDER COVER
5. DRAIN ENGINE COOLANT
6. DRAIN ENGINE OIL
7. REMOVE AIR CLEANER AND HOSE
8. REMOVE RADIATOR



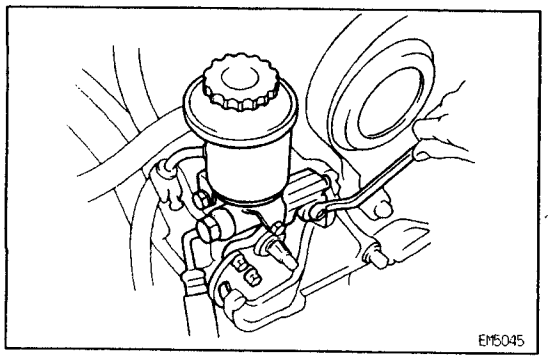
(a) Disconnect the reservoir hose.
(b) (A/T only)
Disconnect the oil cooler hoses.
(c) Remove the radiator hoses.



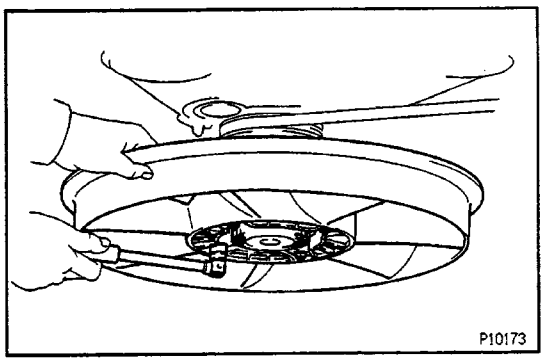
(d) Remove the two clips and No.2 fan shroud.
(e) Remove the four bolts and No.1 fan shroud.
(f) Remove the four bolts and radiator.



9. (M/T only)
DISCONNECT CLUTCH RELEASE CYLINDER HOSE



10. REMOVE PS DRIVE BELT AND PUMP PULLEY
11. DISCONNECT PS PUMP FROM ENGINE
12. REMOVE A/C DRIVE BELT



13. REMOVE COOLING FAN

Remove the four nuts and cooling fan.

14. REMOVE GENERATOR DRIVE BELT

15. DISCONNECT STRAP, WIRES. CONNECTORS, HOSES AND CABLES

(a) Disconnect the following strap, wires and connectors:

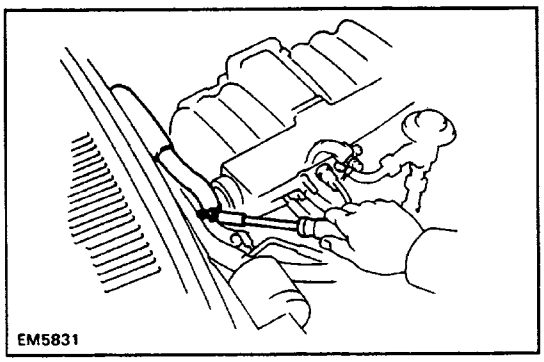
- Ground strap from LH fender apron
- Generator connector and wire
- Igniter connector
- Oil pressure sender gauge connector
- Ground strap from engine rear side
- ECM connectors
- VSV connectors
- A/C compressor connector
- (M/T only)
  Starter relay connector
- Solenoid resister connector
- Data link connector 1
- (w/ ADD)
  ADD switch connector

(b) Disconnect the following hoses:

- PS air hoses from gas filter and air pipe
- Brake booster hose
- (w/ Cruise Control System)
  Cruise control vacuum hose
- Charcoal canister hose from canister
- VSV vacuum hoses

(c) Disconnect the following cables:

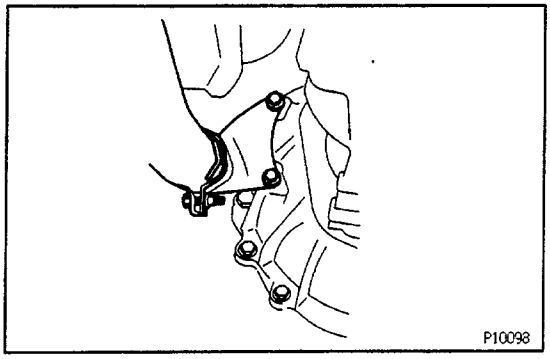
- Accelerator cable
- (A/T only)
  Throttle cable
- (w/ Cruise Control System)
  Cruise control cable



16. DISCONNECT HEATER HOSES

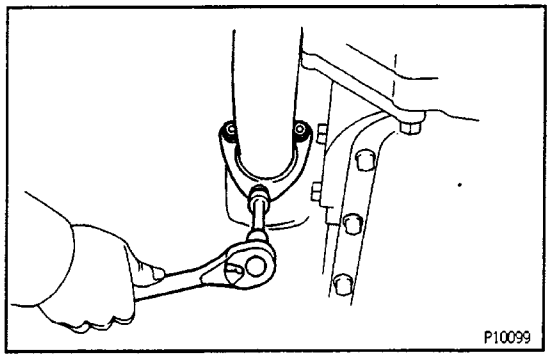
17. DISCONNECT FUEL INLET AND OUTLET HOSES

18. DISCONNECT A/C COMPRESSOR FROM ENGINE



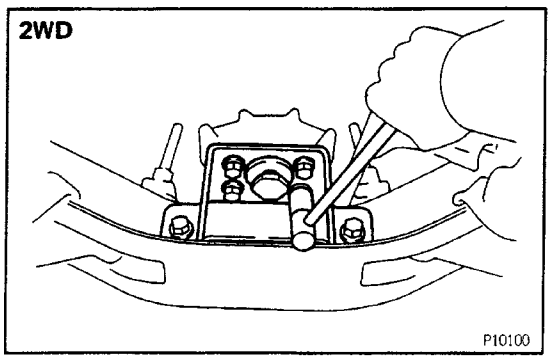
19. REMOVE FRONT EXHAUST PIPE

(a) Disconnect the heated oxygen sensor connector.
(b) Loosen the pipe clamp bolt.
(c) Remove the two bolts and pipe bracket.
(d) Remove the three nuts, and disconnect the exhaust pipe from the exhaust manifold. Remove the gasket.

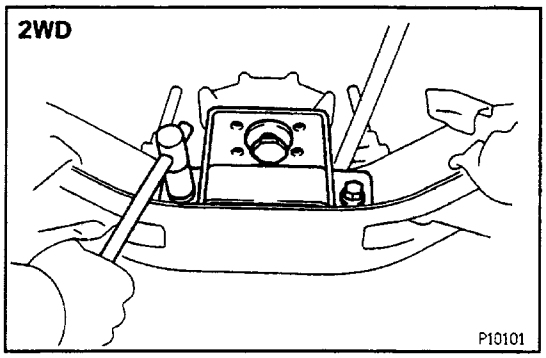


(e) Remove the two bolts, joint retainer, exhaust pipe and gasket from the catalytic converter.

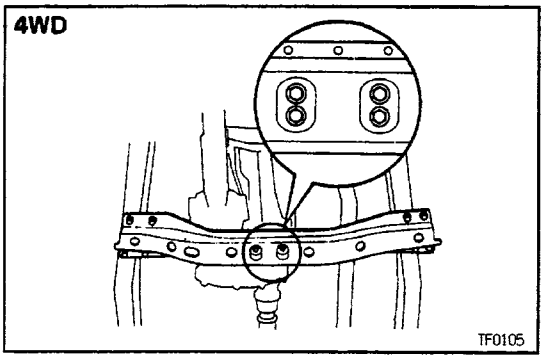
20. (M/T only)
REMOVE SHIFT LEVERS
21. REMOVE REAR PROPELLER SHAFT
(See page PR–5)
22. (4WD only)
REMOVE FRONT PROPELLER SHAFT
(See page PR–5)
23. (4WD A/T only)
DISCONNECT MANUAL SHIFT LINKAGE
24. DISCONNECT SPEEDOMETER CONNECTOR
NOTICE: Do not lose the felt dust protector and washers.
25. (4WD only)
REMOVE TRANSFER UNDER COVER
26. (4WD only)
REMOVE STABILIZER BAR
27. REMOVE NO.1 FRAME CROSSMEMBER
28. REMOVE N0.1 FRONT FLOOR HEAT INSULATOR AND BRAKE TUBE HEAT INSULATOR (4WD)



29. (2WD)
REMOVE ENGINE REAR MOUNTING BRACKET
(a) Remove the four bolts holding the mounting bracket to the mounting insulator.



(b) Raise the transmission slightly by raising the engine with a jack.
(c) Remove the four bolts holding the mounting bracket to the support member, and remove the mounting bracket.



30. (4WD)
REMOVE NO.2 FRAME CROSSMEMBER
(a) Remove the four bolts holding the engine rear mou–nting insulator to the frame crossmember.
(b) Raise the transmission slightly with a jack.
(c) Remove the eight bolts holding the frame crossme–mber to the side frame. Remove the frame crossme–mber.

31. REMOVE ENGINE AND TRANSMISSION ASSEMBLY FROM VEHICLE
(a) Attach the engine chain hoist to the engine hangers.
(b) Remove the four bolts holding the RH and LH engine mounting insulators to the body mountings.
(c) Lift the engine and transmission assembly out of the vehicle slowly and carefully.
HINT: Make sure the engine is clear of all wiring, hoses and cables.
NOTICE: Be careful not hit the PNP switch.
(d) Place the engine and transmission assembly onto the stand.

32. REMOVE TRANSMISSION FROM ENGINE
33. (M/T only)
REMOVE CLUTCH COVER AND DISC

EG20U–01

PREPARATION FOR DISASSEMBLY

(See Components)

1. REMOVE FLYWHEEL OR DRIVE PLATE

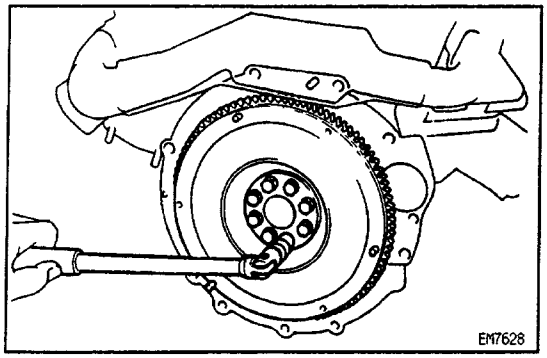
(a) Remove the eight bolts.

(b) (M/T)

Remove the flywheel.

(c) (A/T)

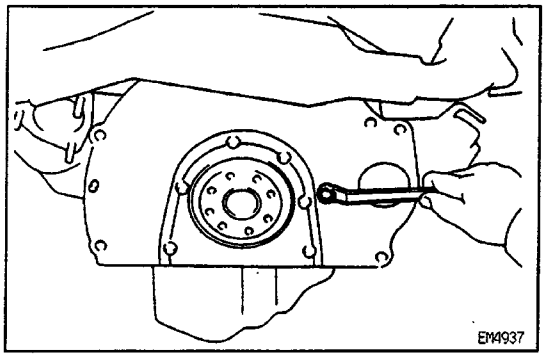
Remove the rear plate, drive plate and front spacer.



2. REMOVE REAR END PLATE

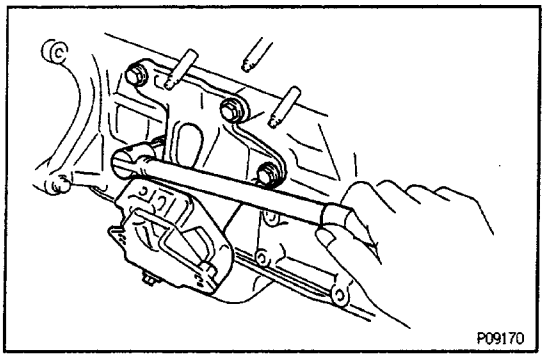
Remove the bolt and rear end plate.

3. INSTALL ENGINE STAND FOR DISASSEMBLY

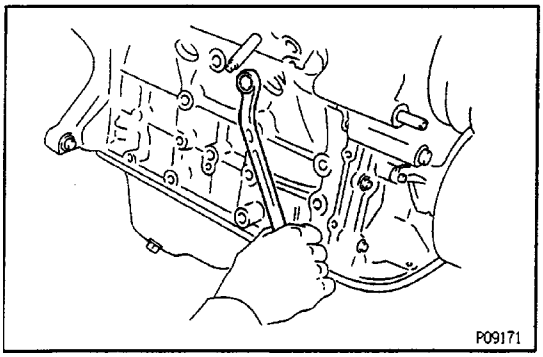


4. REMOVE RH AND LH ENGINE MOUNTING BRACKETS

Remove the four bolts and mounting bracket. Remove the two mounting brackets.



5. REMOVE ENGINE COOLANT DRAIN PLUGS

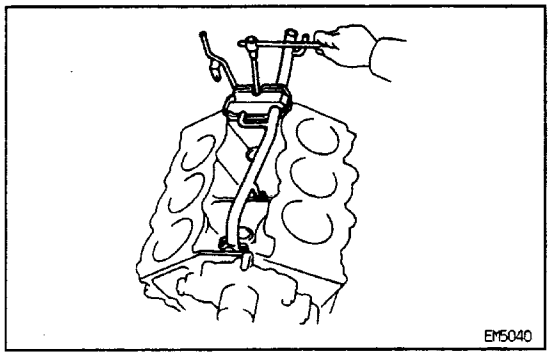


6. REMOVE TIMING BELT

(See pages EG2–33 to 38)

7. REMOVE CYLINDER HEADS

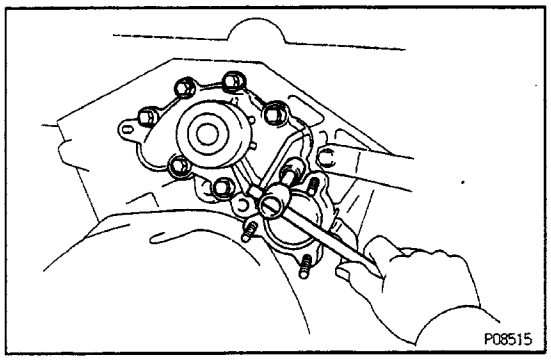
(See pages EG2–53 to60)



8. REMOVE No.1 WATER BY–PASS PIPE

Remove the two nuts, two bolts and water by–pass pipe.

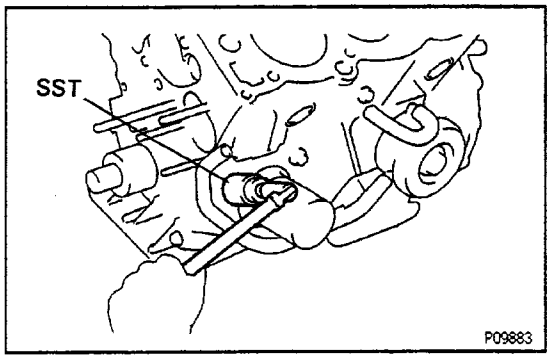
9. REMOVE THERMOSTAT



10. REMOVE WATER PUMP

Remove the seven bolts and water pump.

11. REMOVE GENERATOR ADJUSTING BAR

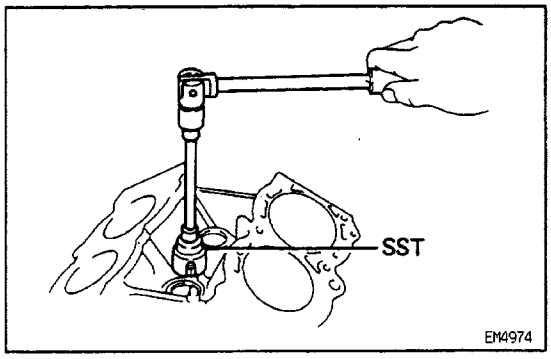


12. REMOVE OIL PRESSURE SENDER GAUGE

Using SST, remove the oil pressure sender gauge.

SST 09816 – 30010

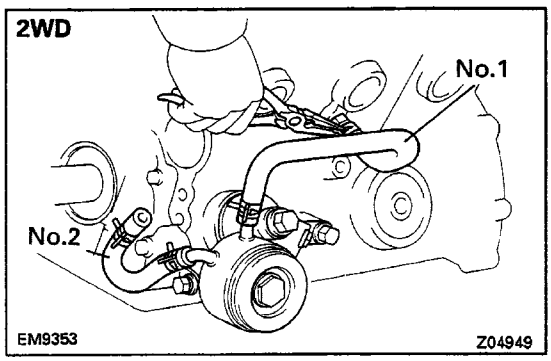
13. REMOVE OIL FILTER



14. REMOVE KNOCK SENSOR

Using SST, remove the knock sensor.

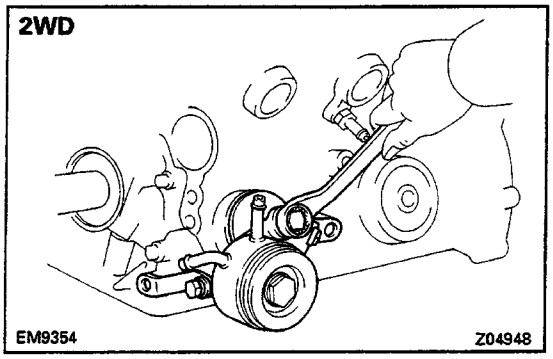
SST 09817–16011



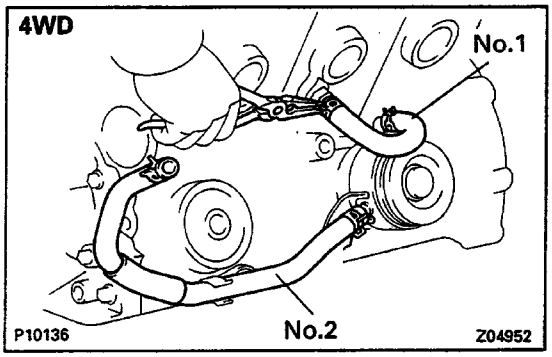
15. (2WD)

REMOVE OIL COOLER AND BRACKET ASSEMBLY

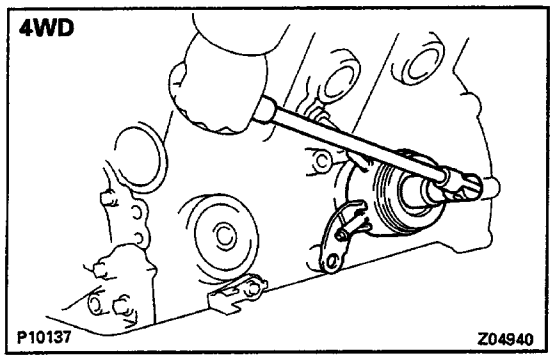
(a) Remove the No.1 and No.2 oil cooler hoses.



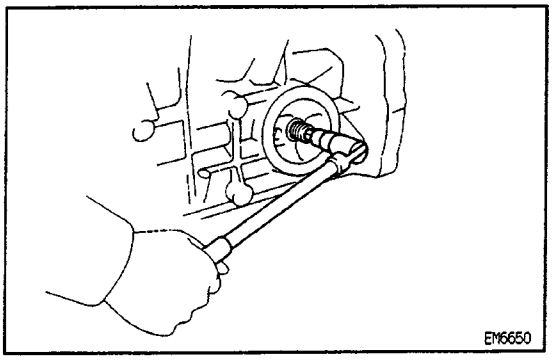
(b) Remove the two bolts holding the bracket to the cylinder block.
(c) Remove the union bolt, gasket, 0–ring, the oil cooler, bracket assembly and 0–ring.



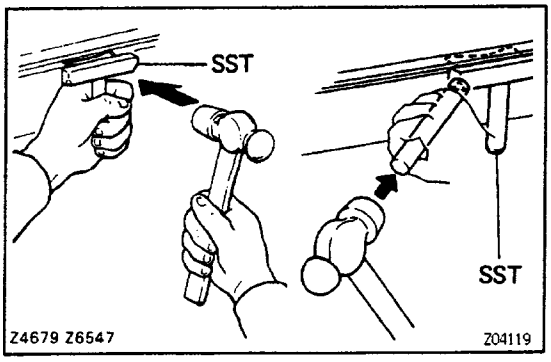
16. (4WD)
REMOVE OIL COOLER
(a) Remove the No.1 and No.2 oil cooler hoses.



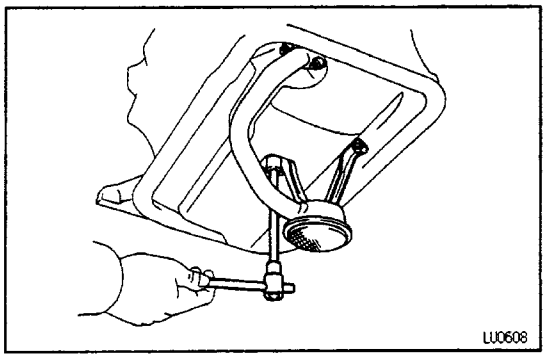
(b) Remove the bolt holding the bracket to the cylinder block.
(c) Remove the relief valve, seal washer, oil cooler and seal washer.
(d) Remove the O–ring and gasket from the oil cooler.



17. REMOVE OIL FILTER UNION
Using a 12 mm hexagon wrench, remove the oil filter union.

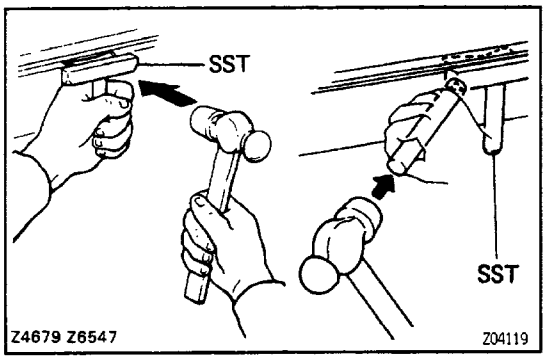


18. REMOVE OIL PAN
(a) Remove the seventeen bolts and two nuts.
(b) Insert the blade of SST between the baffle plate and oil pan, cut off applied sealer and remove the oil pan.
SST 09032–00100
NOTICE: Be careful not to damage the oil pan and baffle plate flanges.



19. REMOVE OIL STRAINER

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



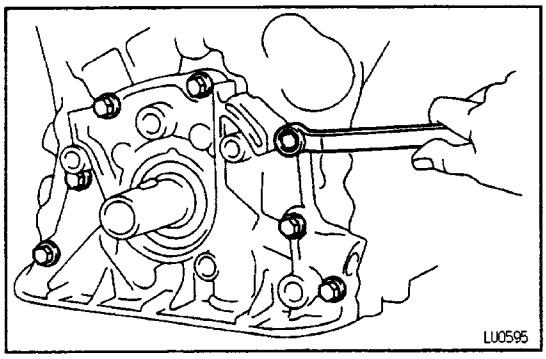
20. REMOVE OIL PAN BAFFLE PLATE

Insert the blade of SST between the cylinder block and baffle plate, cut off applied sealer and remove the baffle plate.

SST 09032 – 00100

NOTICE:

- **Do not use SST for the oil pump and rear oil seal retainer.**
- **Be careful not to damage the baffle plate flange.**

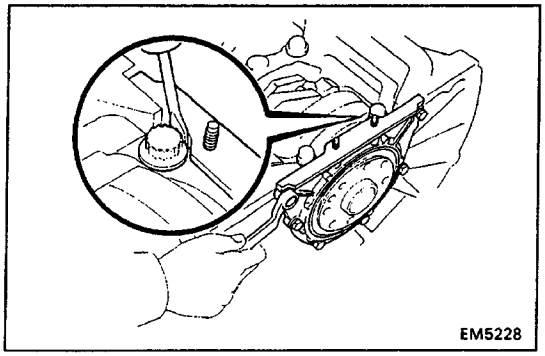


21. REMOVE OIL PUMP

(a) Remove the seven bolts.

(b) Using a plastic–faced hammer, carefully tap oft the oil pump.

(c) Remove the O–ring from the cylinder block.



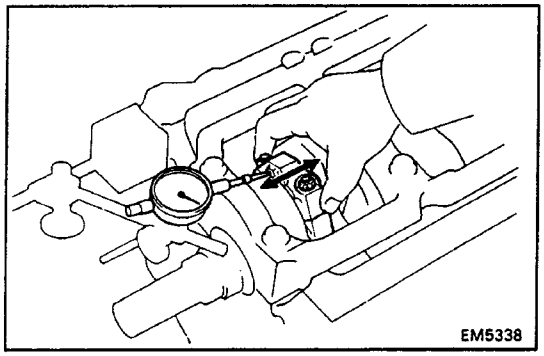
CYLINDER BLOCK DISASSEMBLY

EG1ZP–01

(See Components)

1. REMOVE REAR OIL SEAL RETAINER

Remove the six bolts and retainer.



2. CHECK CONNECTING ROD THRUST CLEARANCE

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

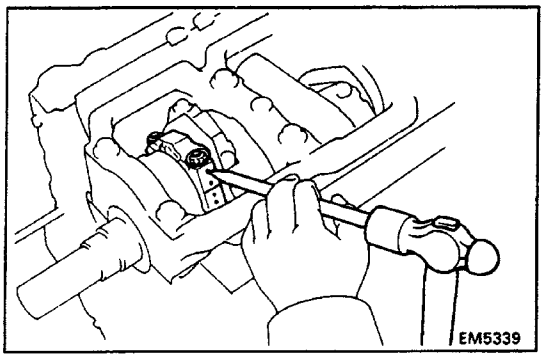
Standard thrust clearance:

0.150 – 0.330 mm (0.0059 – 0.0130 in.)

Maximum thrust clearance:

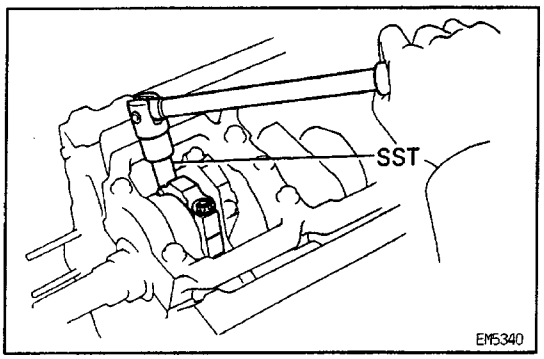
0.38 mm (0.0150 in.)

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

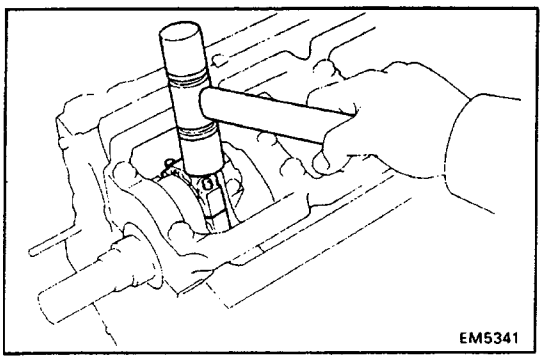


3. REMOVE CONNECTING ROD CAPS AND CHECK OIL CLEARANCE

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

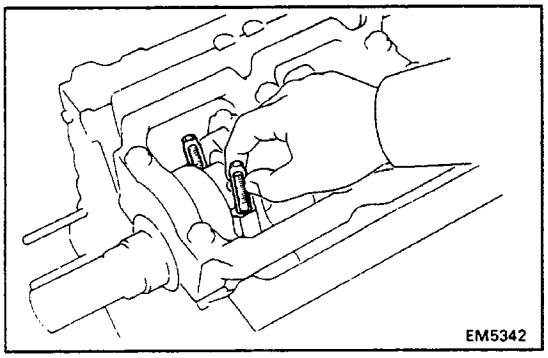


(b) Remove the connecting rod cap nuts.

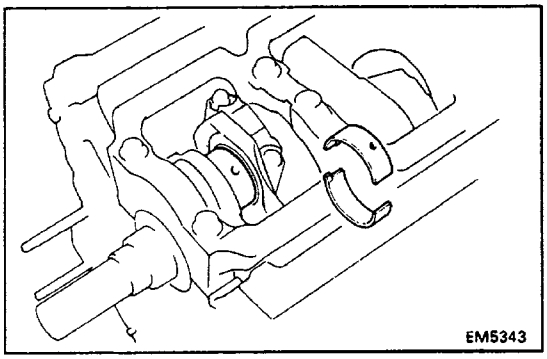


(c) Using a plastic–faced hammer, lightly tap the connecting rod bolts and lift off the connecting rod cap.

HINT: Keep the lower bearing inserted with the connecting rod cap.



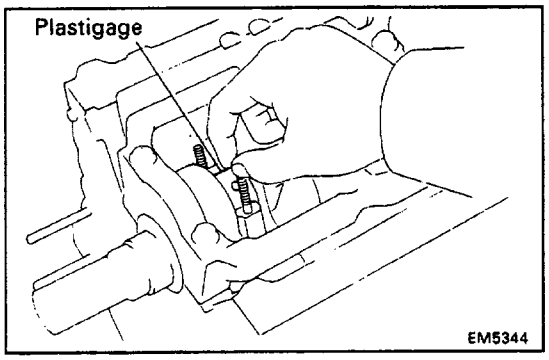
(d) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft from damage.



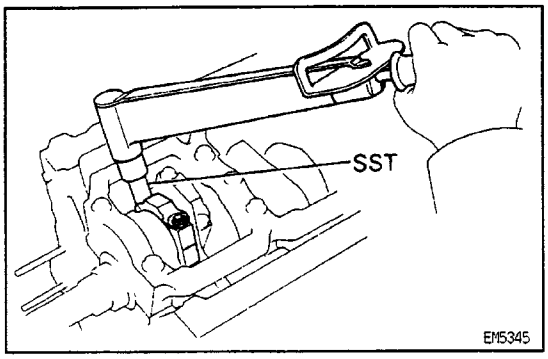
(e) Clean the crank pin and bearing.

(f) Check the crank pin and bearing for pitting and scr–atches.

If the crank pin or bearing is damaged, replace the bearings. If necessary, grind or replace the crankshaft.

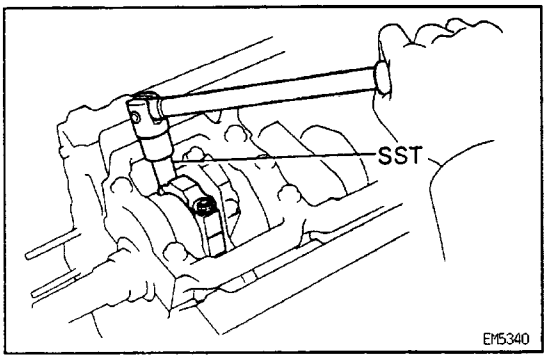


(g) Lay a strip of Plastigage across the crank pin.

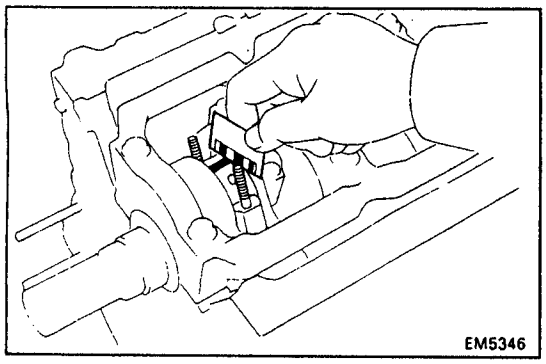


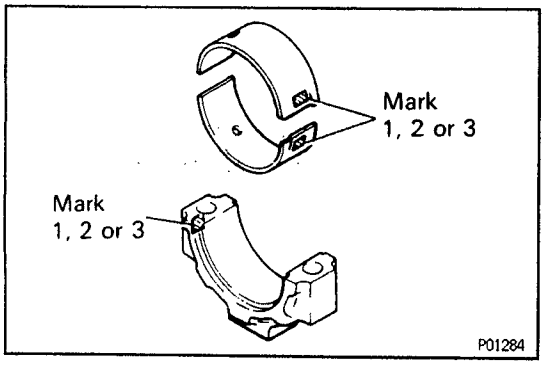
(h) Install the connecting rod cap with the two nuts.
(See step 7 on pages EG2–120)

Torque:
25 N–m (250 kgf–cm, 18 ft–lbf) for 1st
Turn 90° for 2nd
NOTICE: Do not turn the crankshaft.



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





Measure the Plastigage at its widest point.

Standard oil clearance:

STD

0.024 – 0.053 mm (0.0009 – 0.0021 in.)

U/S 0.25 and U/S 0.50

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 cra–nkshaft.

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

(Reference)

Standard sized bearing center wall thickness:

Mark "1"

1.484 – 1.488 mm (0.0584 – 0.0586 in.)

Mark '2"

1.488 – 1.492 mm (0.0586 – 0.0587 in.)

Mark "3"

1.492 – 1.496 mm (0.0587 – 0.0589 in.)

Connecting rod big end inside diameter:

Mark '1'

58.000 – 58.008 mm (2.2835 – 2.2838 in.)

Mark '2"

58.008 – 58.016 mm (2.2838 – 2.2841 in.)

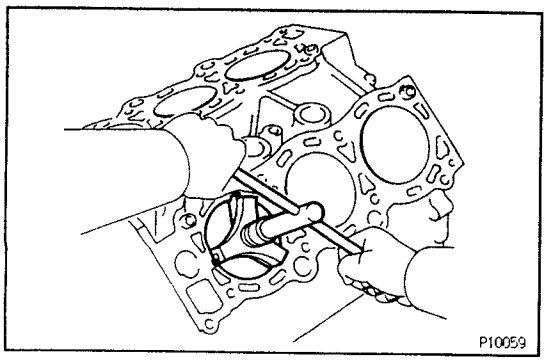
Mark "3"

58.016 – 58.024 mm (2.2841 – 2.2844 in.)

Crank pin diameter:

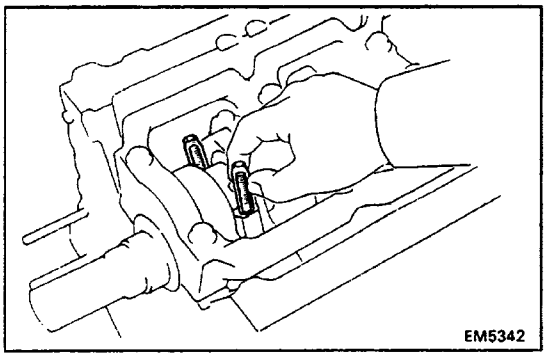
54.987 – 55.000 mm (2.1648 – 2.1654 in.)

(k) Completely remove the Plastigage.

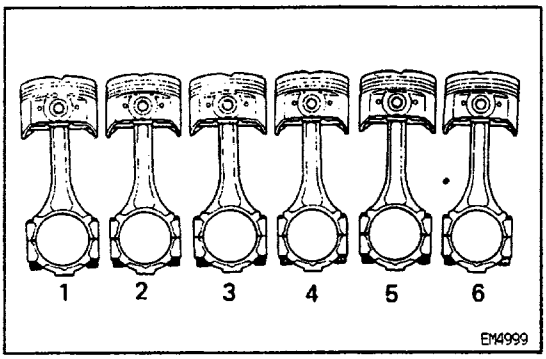


4. REMOVE PISTON AND CONNECTING ROD ASSEMBLIES

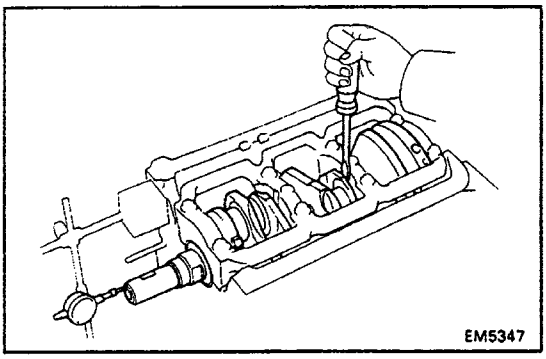
(a) Using a ridge reamer, remove the all carbon from the top of the cylinder.



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

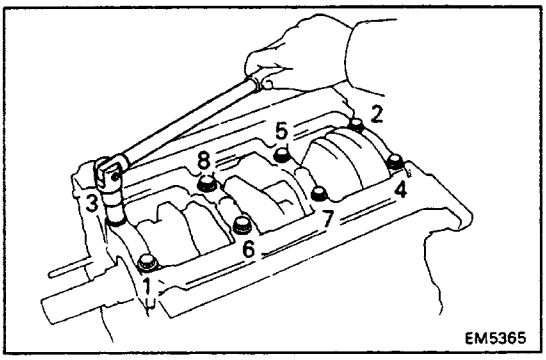
Using a dial indicator, measure the thrust clearance while prying the crankshaft back and forth with a screwdriver.

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

Maximum thrust clearance:
0.30 mm (0.0118 in.)

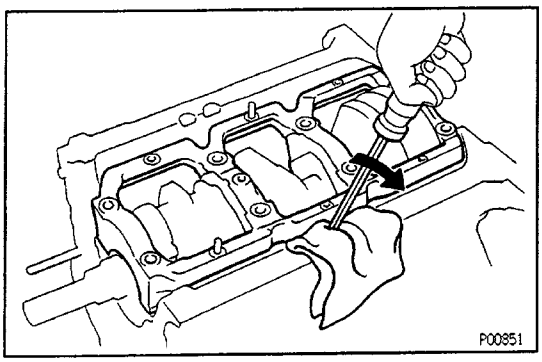
If the thrust clearance is greater than maximum, replace the thrust washers as a set.

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

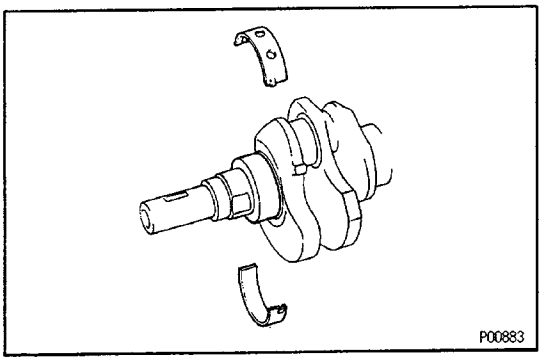


6. REMOVE MAIN BEARING CAP AND CHECK OIL CLEARANCE

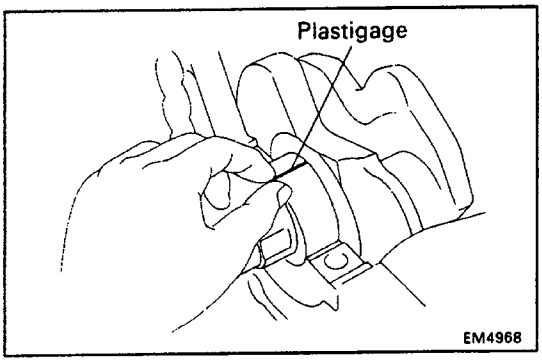
(a) Uniformly loosen and remove the main bearing cap bolts in several passes, in the sequence shown.



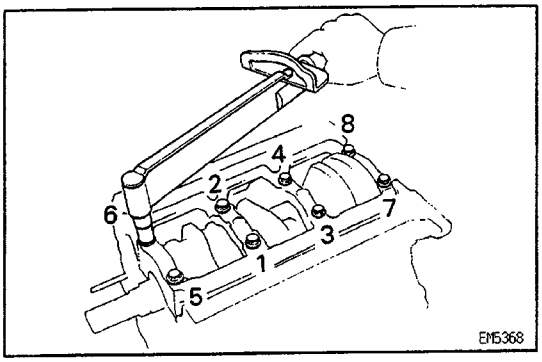
(b) Using a screwdriver, pry up the main bearing cap, and remove the main bearing cap, lower main bearings and lower thrust washers (No.2 journal position of main bearing cap only).
HINT: Keep the lower main bearings and lower thrust washers together with the main bearing cap.
(c) Lift out the crankshaft.
HINT: Keep the upper main bearings and upper thrust washers together with the cylinder block.



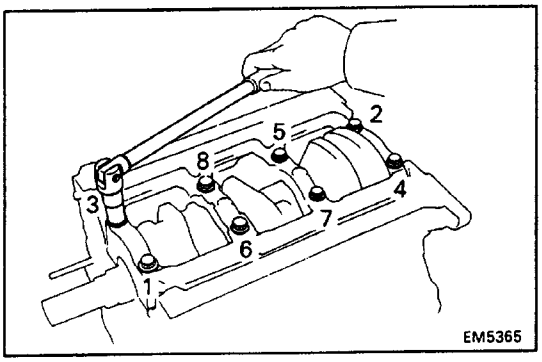
(d) Clean each main journal and bearing.
(e) Check each main journal and bearing for pitting and scratches.
If the journal or bearing is damaged, replace the bearings. If necessary, grind or replace the crankshaft.



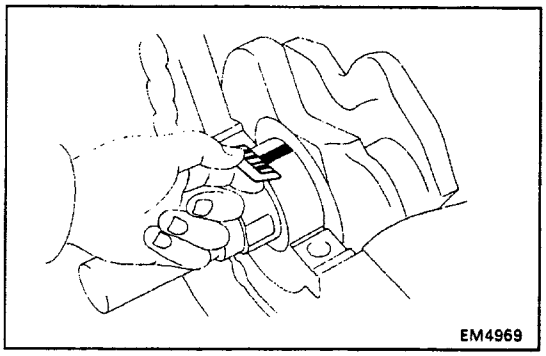
(f) Place the crankshaft on the cylinder block.
(g) Lay a strip of Plastigage across each journal.



(h) Install the main bearing cap with the eight bolts.
(See step 4 on page EG2–118)
Torque:
61 N–m (625 kgf–cm, 45 ft–lbf) for 1 at
Turn 90° for 2nd
NOTICE: Do not turn the crankshaft.



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



(j) Measure the Plastigage at its widest point.

Standard clearance:

N o.1

STD

0.025 – 0.052 mm (0.0010 – 0.0020 in.)

U/S 0.25 and U/S 0.50

0.024 – 0.080 mm (0.0009 – 0.0031 in.)

others

STD

0.029 – 0.056 mm (0.0011 – 0.0022 in.)

U/S 0.25 and U/S 0.50

0.028 – 0.077 mm (0.0011 – 0.0030 in.)

Maximum clearance:

0.08 mm (0.0031 in.)

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

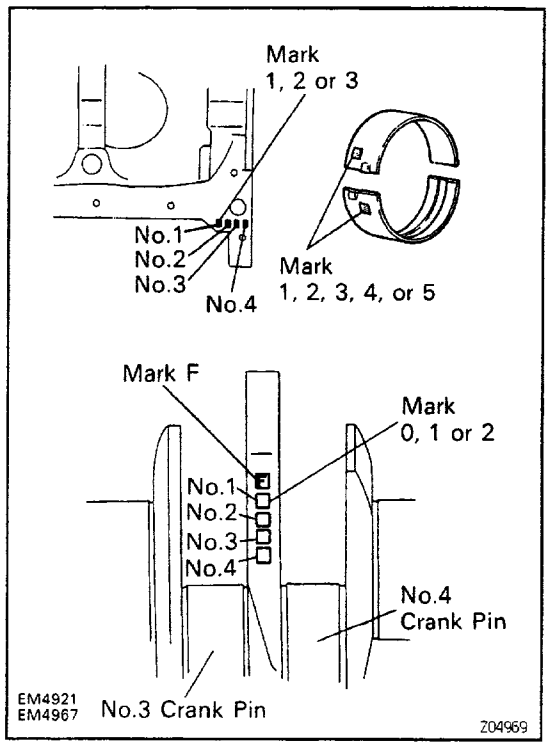
N o.1

0.027 – 0.063 mm (0.0011 – 0.0025 in.)

Others

0.031 – 0.067 mm (0.0012 – 0.0026 in.)

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



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 cylin–der block and crankshaft, then selecting the bearing with the same number as the total. There are five sizes of standard bearings, marked ”i ”, ”2”, ”3”,”4” and ”5” accordingly.

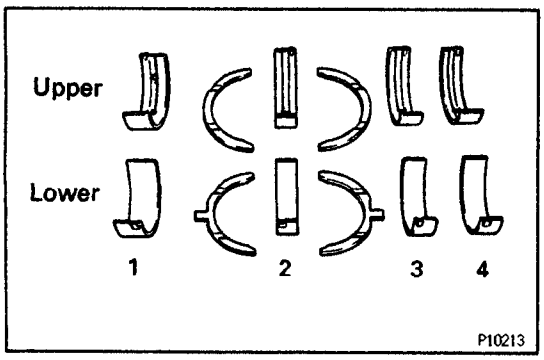
	Number marked								
Cylinder block	1			2			3		
Crankshaft	0	1	2	0	1	2	0	1	2
Use bearing	1	2	3	2	3	4	3	4	5

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

V00240

(Reference)
Standard sized bearing center wall thickness:
N o.1
Mark ”1 ”
1.991 – 1.994 mm (0.0784 – 0.0785 in.)
Mark ’2”
1.994 – 1.997 mm (0.0785 – 0.0786 in.)
Mark ’3’
1.997 – 2.000 mm (0.0786 – 0.0787 in.)
Mark ’4’
2.000 – 2.003 mm (0.0787 – 0.0789 in.)
Mark ’5’
2.003 – 2.006 mm (0.0789 – 0.0790 in.)
others
Mark ’11’
1.989 – 1.992 mm (0.0783 – 0.0784 in.)
Mark ’2’
1.992 – 1.995 mm (0.0784 – 0.0785 in.)
Mark ”3’
1.995 – 1.998 mm (0.0785 – 0.0787 in.)
Mark ’4’
1.998 – 2.001 mm (0.0787 – 0.0788 in.)
Mark ’5’
2.001 – 2.004 mm (0.0788 – 0.0789 in.)
Cylinder block main journal bore diameter:
Mark 1’
68.010 – 68.016 mm (2.6776 – 2.6778 in.)
Mark ’2’
68.016 – .68.022 mm (2.6778 – 2.6780 in.)
Mark ’3’
68.022 – 68.028 mm (2.6780 – 2.6783 in.)
Crankshaft main journal diameter:
Mark ’0’
63.996 – 64.000 mm (2.5195 – 2.5197 in.)
Mark ”1”
63.990 – 63.996 mm (2.5193 – 2.5195 in.)
Mark ’2’
63.985 – 63.990 mm (2.5191 – 2.5193 in.)

(k) Completely remove the Plastigage.



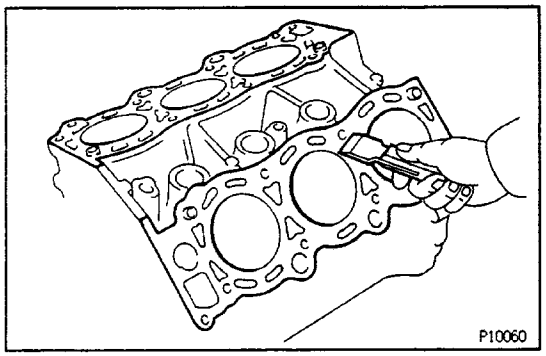
7. REMOVE CRANKSHAFT

(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.

EGOFC–02

CYLINDER BLOCK INSPECTION



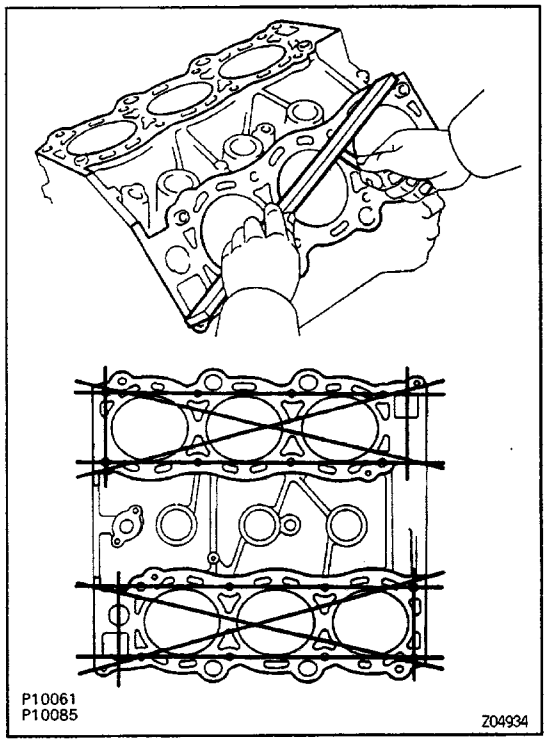
1. CLEAN CYLINDER BLOCK

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.



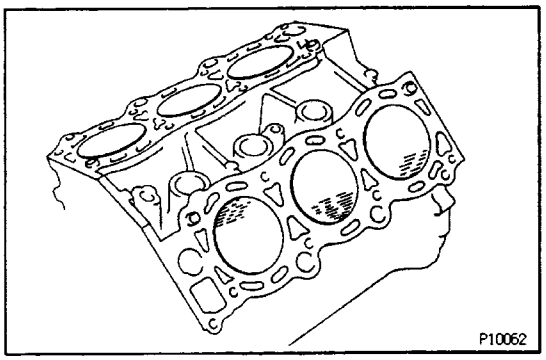
2. INSPECT TOP SURFACE OF CYLINDER BLOCK FOR FLATNESS

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

Maximum warpage:

0.05 mm (0.00020 in.)

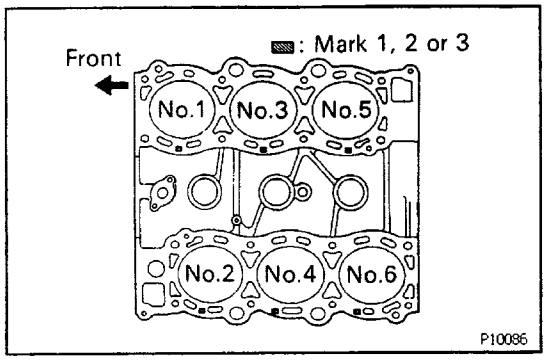
If warpage is greater than maximum, replace the cyl–inder block.



3. INSPECT CYLINDER FOR VERTICAL SCRATCHES

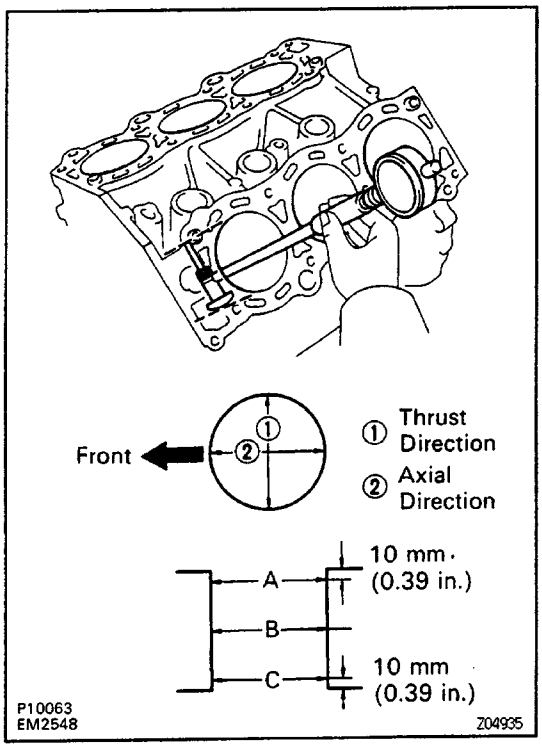
Visually check the cylinder for vertical scratches.

If deep scratches are present, rebore all the six cyl–inders. If necessary, 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:

STD

Mark '1'

87.500 – 87.510 mm (3.4449 – 3.4453 in.)

Mark "2"

87.510–87.520 m m (3.4453–3.4457 in.)

Mark "3"

87.520–87.530 mm (3.4457–3.4461 in.)

Maximum diameter:

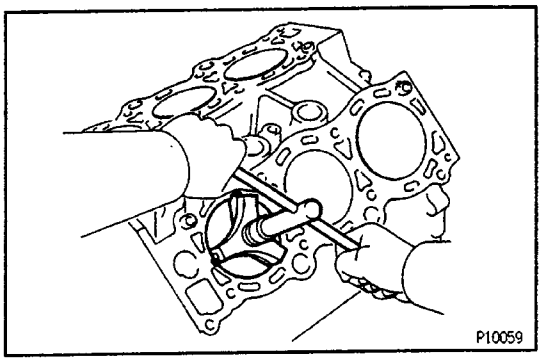
STD

87.73 mm (3.4539 in.)

0/S 0.50

88.23 mm (3.4736 in.)

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

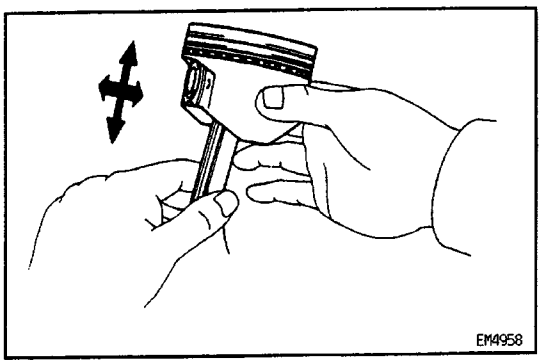


5. REMOVE CYLINDER RIDGE

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

EG1EL–02

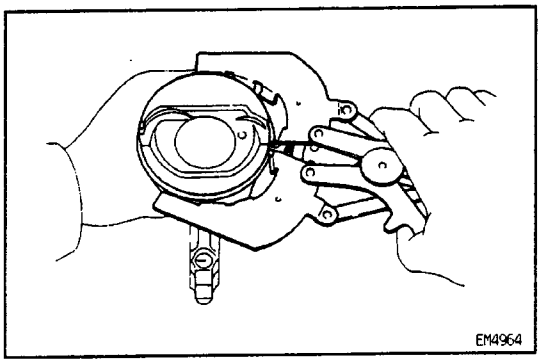
PISTON AND CONNECTING ROD DISASSEMBLY



1. CHECK FIT BETWEEN PISTON AND PISTON PIN

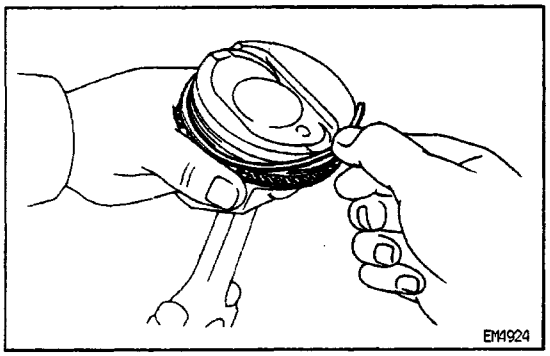
Try to move the piston back and forth on the piston pin.

If any movement is felt, replace the piston and pin as a set.

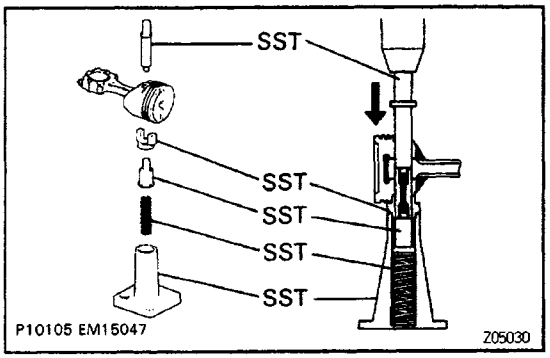


2. REMOVE PISTON RINGS

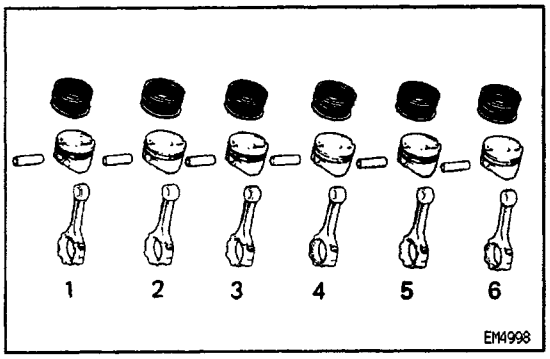
(a) Using a piston ring expander, remove the two compression rings.



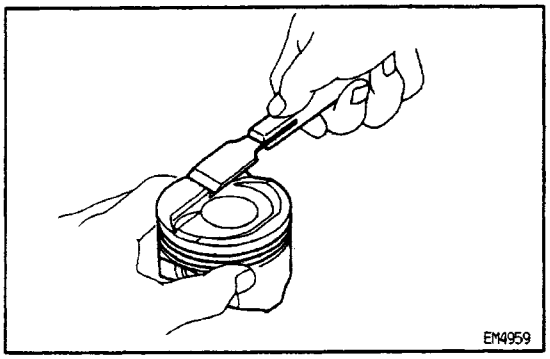
(b) Remove the two side rails and oil ring by hand.
HINT: Arrange the piston rings in correct order only.



3. DISCONNECT CONNECTING ROD FROM PISTON
Using SST and a press, press out the piston pin from the piston. Remove the connecting rod.
SST 09221– 25024 (09221 –00020, 09221– 00030, 09221– 00181, 09221 –00190, 09221– 00200)



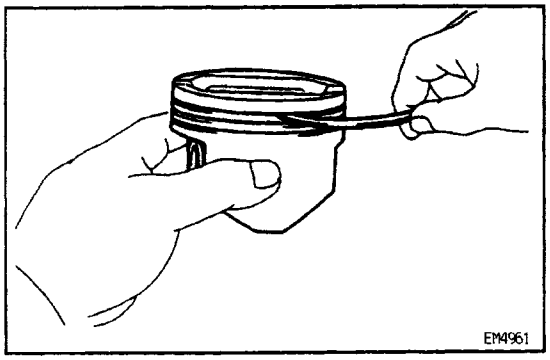
HINT:
The piston and pin are a matched set.
Arrange the pistons, pins, rings, connecting rods and bearings in correct order.



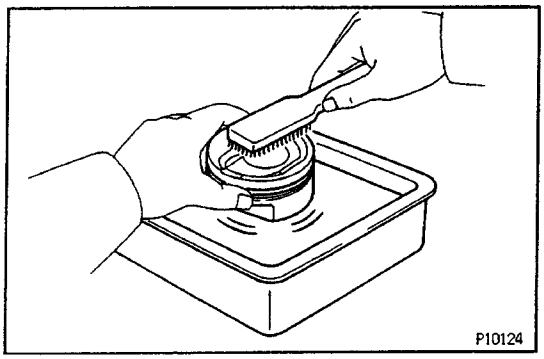
EG1ZQ–01

PISTON AND CONNECTING ROD INSPECTION

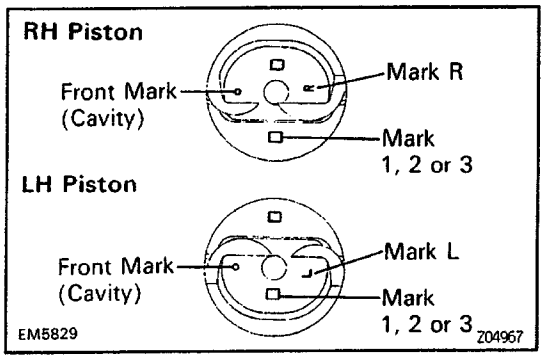
1. CLEAN PISTON
(a) Using a gasket scraper, remove the carbon from the piston top.



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



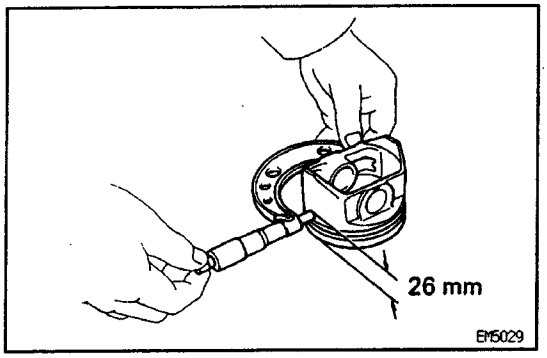
(c) Using solvent and a brush, thoroughly clean the piston.
NOTICE: Do not use a wire brush.



2. INSPECT PISTON

A. Inspect piston oil clearance

HINT: There are three sizes of the standard piston diameter, marked "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, 26 mm (1.02 in.) from the piston head.

Piston diameter:

STD

Mark "1"

87.360 – 87.370 mm (3.4394 – 3.4398 in.)

Mark "2'

87.370 – 87.380 mm (3.4398 – 3.4402 in.)

Mark "3"

87.380 – 87.390 mm (3.4402 – 3.4405 in.)

0/S 0.50

87.860 – 87.890 mm (3.4590 – 3.4602 in.)

(b) Measure the cylinder bore diameter in the thrust di–rections. (See step 4 on page EG2–107)

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

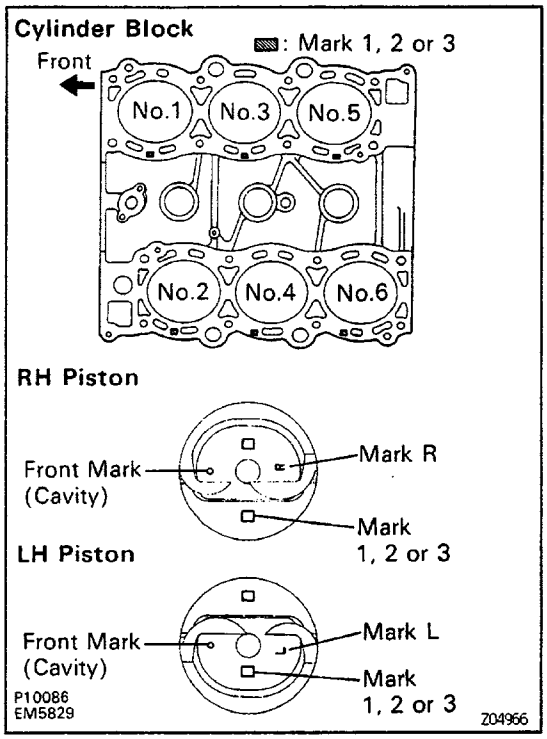
Standard oil clearance:

0.130 – 0.150 mm (0.0051 – 0.0059 in.)

Maximum oil clearance:

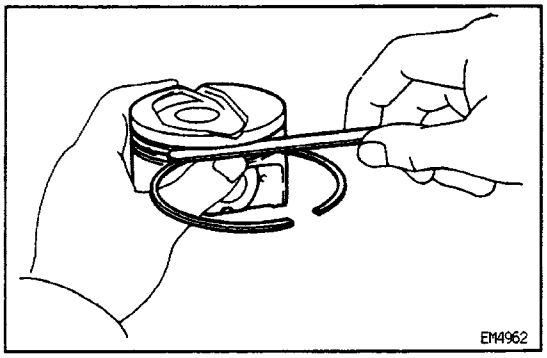
0.17 mm (0.0067 in.)

If the oil clearance is greater than maximum, replace all the six pistons. If necessary, rebore all the six cylinders or replace the cylinder block.



HINT (Use new cylinder block):

- Use a piston with the same number mark as the cylinder diameter marked on the cylinder block.
- The shape of the piston varies for the RH and LH banks. The RH piston is marked with ”R”, the LH piston with ”L”.



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.

Standard ring groove clearance:

No.1

0.020 – 0.060 mm (0.0008 – 0.0024 in.)

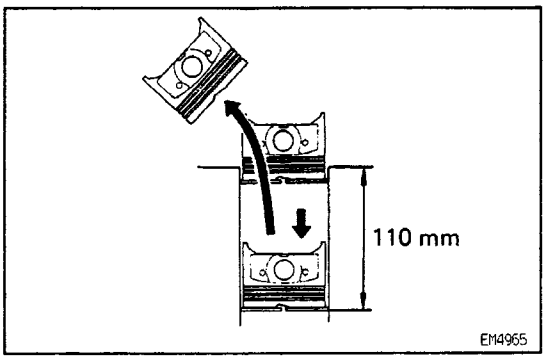
No.2

0.030 – 0.070 mm (0.0012 – 0.0028 in.)

Maximum ring groove clearance:

0.20 mm (0.0079 in.)

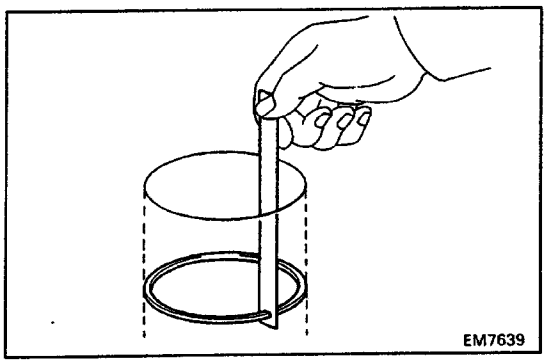
If the clearance is greater than maximum, replace the piston.



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, 110 mm (4.33 in.) from the top of the cylinder block.



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

Standard ring end gap:

N o.1

0.280 – 0.500 mm (0.0110 – 0.0197 in.)

No.2

0.380 – 0.600 mm (0.0150 – 0.0236 in.)

Oil (Side rail)

0.150 – 0.500 mm (0.0059 – 0.0197 in.)

Maximum ring end gap:

N o.1

1.10 mm (0.0433 in.)

N o.2

1.20 mm (0.0472 in.)

Oil (Side rail)

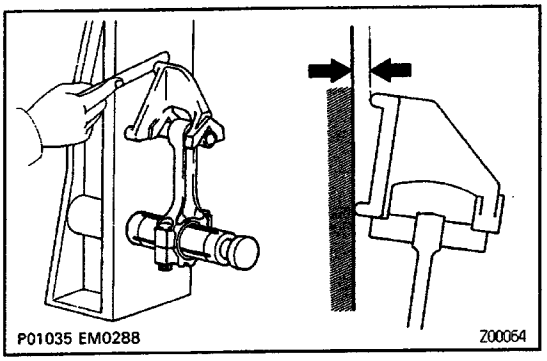
1.10 mm (0.0433 in.)

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 six cylin–ders or replace the cylinder block.

3. INSPECT CONNECTING ROD

A. Inspect connecting rod alignment

Using a rod aligner and feeler gauge, check the con–necting rod alignment.

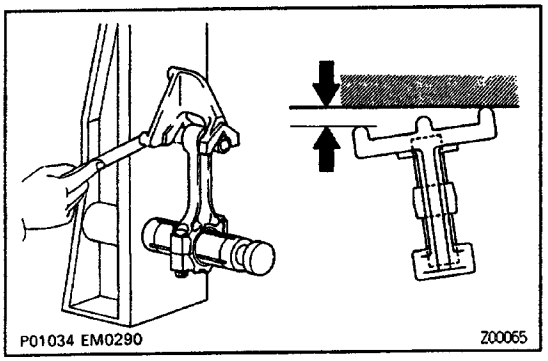


- Check for bend.

Maximum bend:

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

If bend is greater than maximum, replace the conne–cting rod assembly.

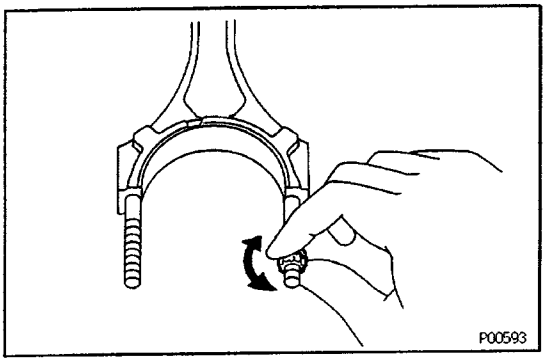


- Check for twist.

Maximum twist:

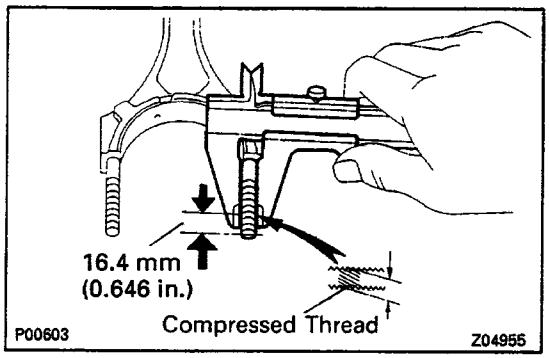
0.15 mm (0.0059 in.) per 100 mm (3.94 in.)

If twist is greater than maximum, replace the conne–cting rod assembly.



B. Inspect connecting rod bolts

(a) Install the cap nut to the connecting rod bolt. Check that the rod 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 outer diameter of the compressed thread with a vernier caliper.

Standard outer diameter:

7.860 – 8.000 mm (0.3034 – 0.3150 in.)

Minimum outer diameter:

7.60 mm (0.2992 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 outer diameter is less than minimum, replace the connecting rod and rod cap nut as a set.

EG1ZR–01

CYLINDER BORING

HINT:

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

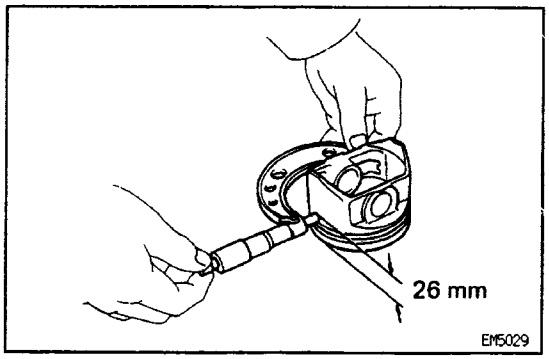
the oversized pistons.

1. KEEP OVERSIZED PISTONS

Oversized piston diameter:

O/S 0.50

87.860 – 87.890 mm (3.4590 – 3.4602 in.)



2. CALCULATE AMOUNT TO BORE CYLINDERS

(a) Using a micrometer, measure the piston diameter at right angles to the piston pin center line, 26 mm (1.02 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 oil clearance

0.130 – 0.150 mm (0.0051 – 0.0059 in.)

H = Allowance for honing

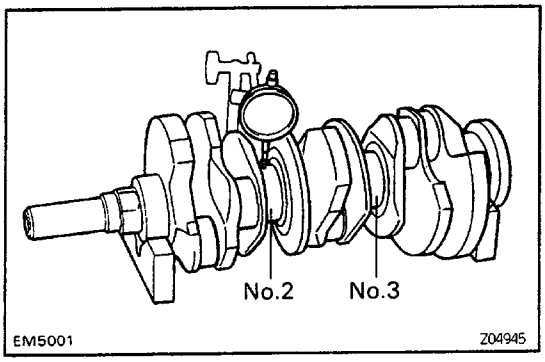
0.02 mm (0.0008 in.) or less

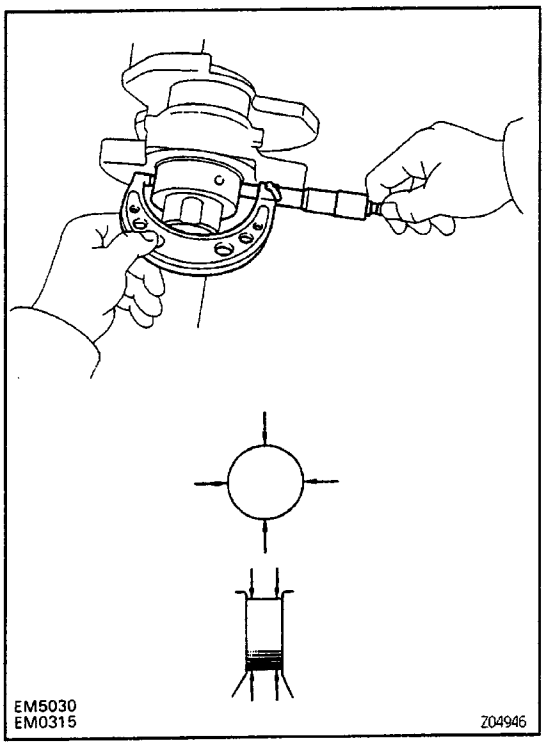
3. BORE AND HONE CYLINDER TO CALCULATED DIMENSIONS

Maximum honing:

0.02 mm (0.0008 in.)

NOTICE: Excess honing will destroy the finished roundness.





eotts–01

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 No.2 and No.3 journals.

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

63.985 – 64.000 mm (2.5191 – 2.5197 in.)

U/S 0.25

63.745 – 63.755 mm (2.5096 – 2.5100 in.)

U/S 0.50

63.495 – 63.505 mm (2.4998 – 2.5002 in.)

Crank pin diameter:

STD

54.987 – 55.000 mm (2.1648 – 2.1654 in.)

U/S 0.25

54.745 – 54.755 mm (2.1553 – 2.1557 in.)

U/S 0.50

54.495 – 54.505 mm (2.1455 – 2.1459 in.)

If the diameter is not as specified, check the oil cle–arance. (See 3 or 6 page EG2–99 or 102)

(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 or out–of–round is greater than maxi–mum, grind or replace the crankshaft.

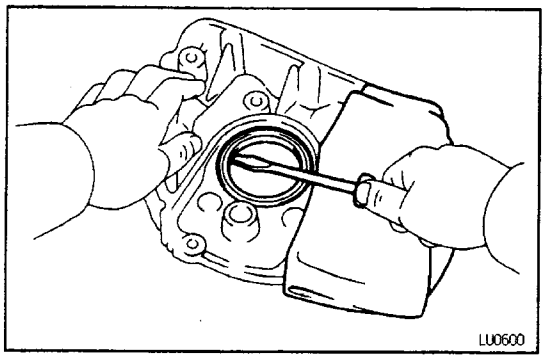
3. IF NECESSARY, GRIND AND HONE MAIN JOURNALS AND/OR CRANK PINS

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.

CRANKSHAFT OIL SEALS REPLACEMENT

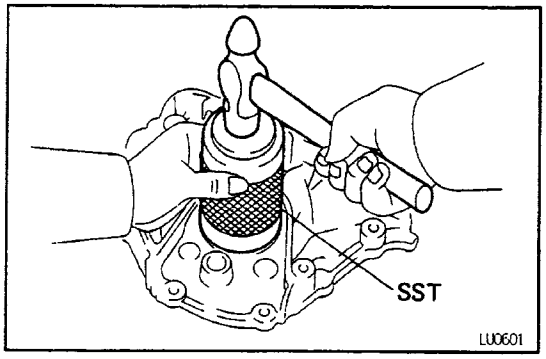
HINT: There are two methods (A and B) to replace the oil seal which are as follows:



1. REPLACE CRANKSHAFT FRONT OIL SEAL

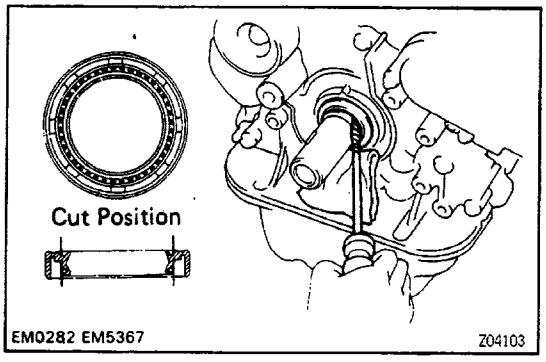
A. If oil pump is removed from cylinder block:

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



(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the oil pump body edge.
SST 09309–37010

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

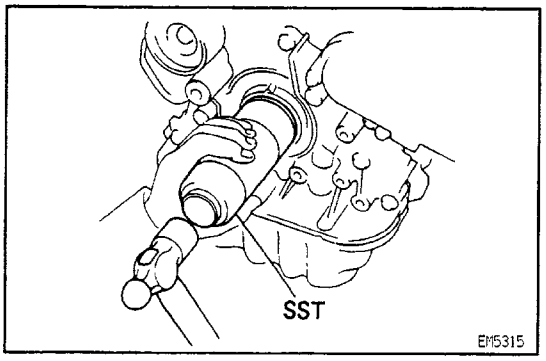


B. If oil pump is installed to the cylinder block:

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

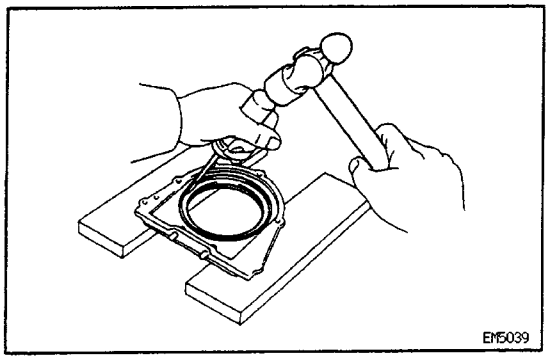
(b) Using a screwdriver, pry out the oil seal.

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



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

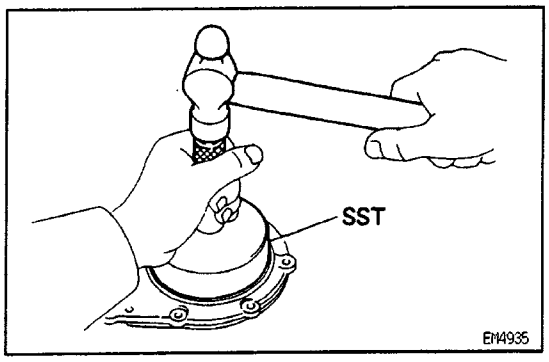
(d) Using SST and a hammer, tap in the oil seal until its surface is flush with the oil pump body edge.
SST 09306–37010



2. REPLACE CRANKSHAFT REAR OIL SEAL

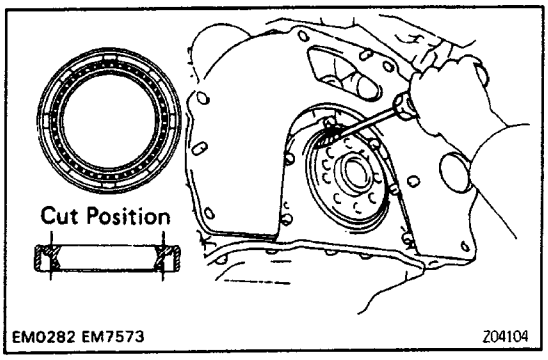
A. If rear oil seal retainer is removed from cylinder block:

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



(b) Using SST and a hammer, tap in a new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223–56010

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

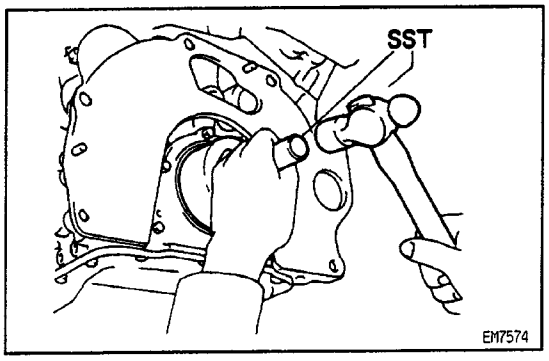


B. If rear oil seal retainer is installed to cylinder block:

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

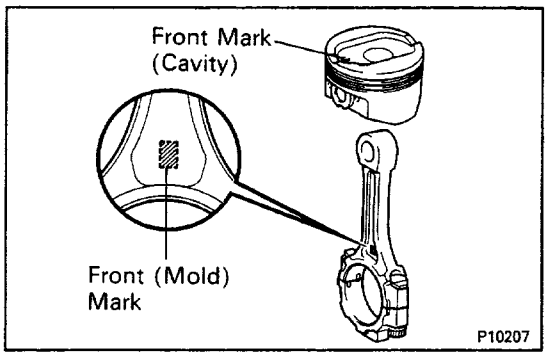
(b) Using a screwdriver, pry out the oil seal.

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



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

(d) Using SST and a hammer, tap in the oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223–56410



PISTONS AND CONNECTING RODS ASSEMBLY EG1ER–02

1. ASSEMBLE PISTON AND CONNECTING ROD

(a) Coat the piston pin and piston pin holes with engine oil.

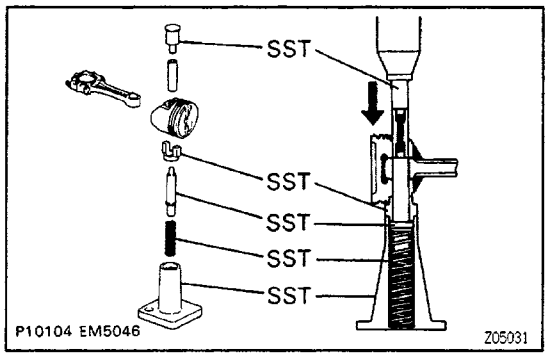
(b) Align the front marks of the piston and connecting rod.

Connecting rod front (mold) mark:

A1, 136, 1B, 8A, C3 or etc.

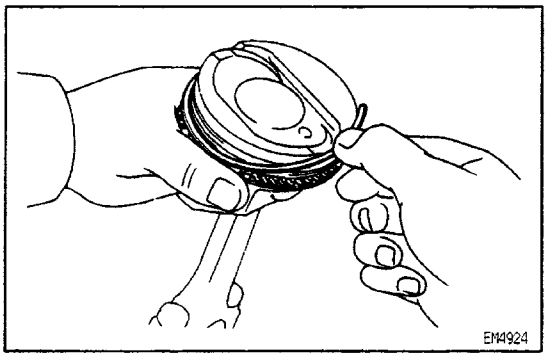
(c) Using SST, press in the piston pin.

SST 09221–25024 (09221–00020, 09221–00030, 09221–00181, 09221 –00190, 09221 –00200)



2. INSTALL PISTON RINGS

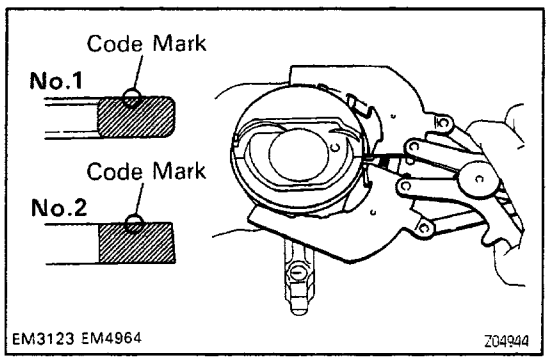
(a) Install the oil expander and two side rails by hand.



(b) Using a piston ring expander, install the two com–pression rings with the code marks facing upward.

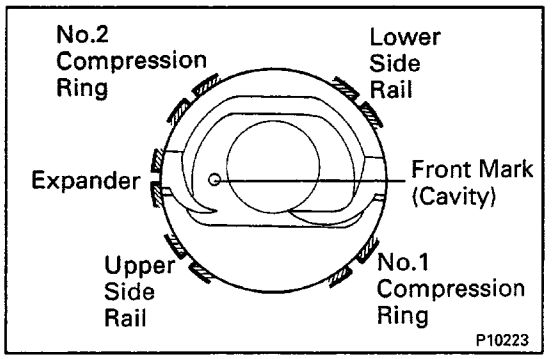
Code mark:

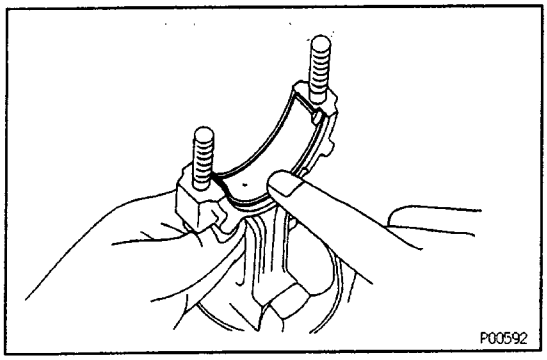
No.1
1 Ror T
No.2
2R or T2



(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 con–necting rod or connecting cap.

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

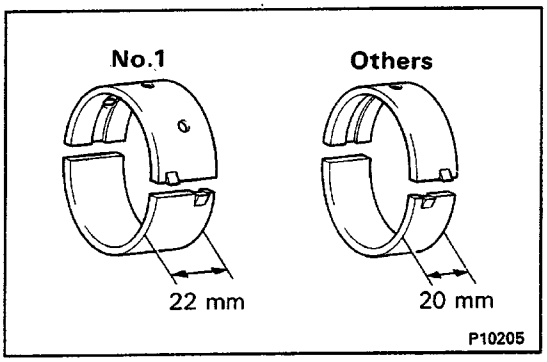
CYLINDER BLOCK ASSEMBLY

EG1ES–03

(See Components)

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, 0–rings and oil seals with new parts.



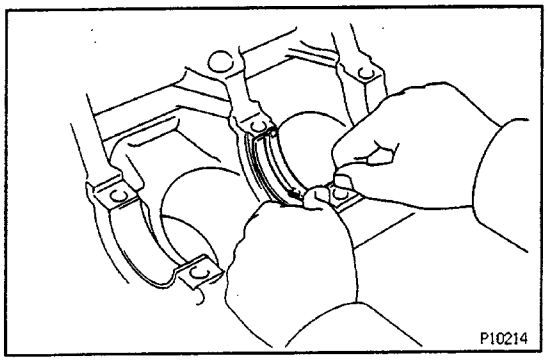
1. INSTALL MAIN BEARINGS

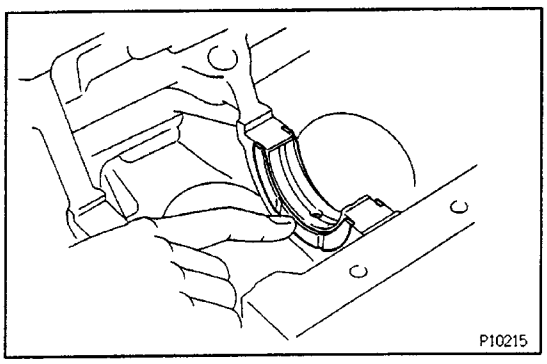
HINT:

- Main bearings come in widths of 20 mm (0.79 in.) and 22 mm (0.87 in.). Install the 22 mm (0.87 in.) bearings in the No.1 cylinder block journal posi–tion with the main bearing caps. Install the 20 mm (0.79 in.) bearings in the other positions.
- Upper bearings have an oil holes lower bearings do not.

(a) Align the bearing claw with the claw groove of the main bearing cap or cylinder block.

(b) Install the bearings in the cylinder block and main bearing cap.

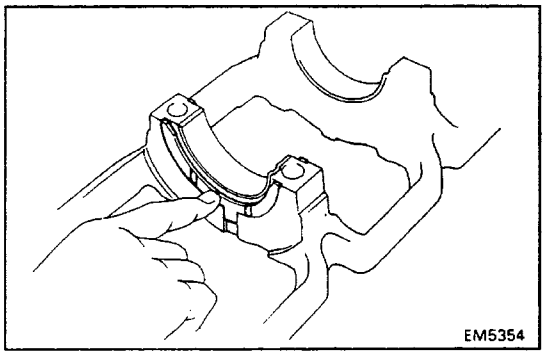




2. INSTALL UPPER THRUST WASHERS

Install the thrust washers under the No.2 journal po–sition of the cylinder block with the oil grooves facing outward.

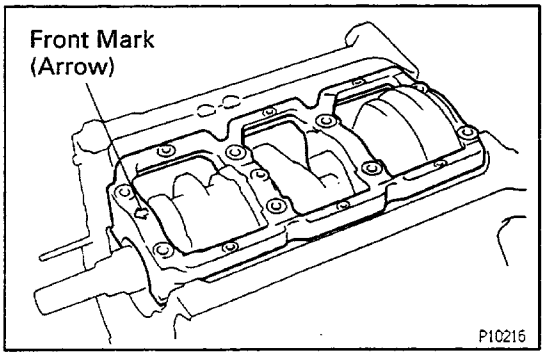
3. PLACE CRANKSHAFT ON CYLINDER BLOCK



4. INSTALL MAIN BEARING CAP AND LOWER THRUST WASHERS

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

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

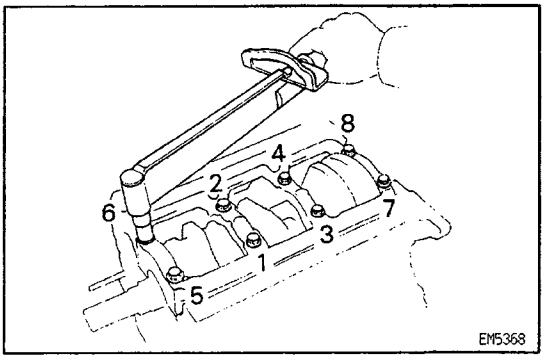


(b) Install the main bearing cap with the front mark facing forward.

B. Install main bearing cap bolts

HINT:

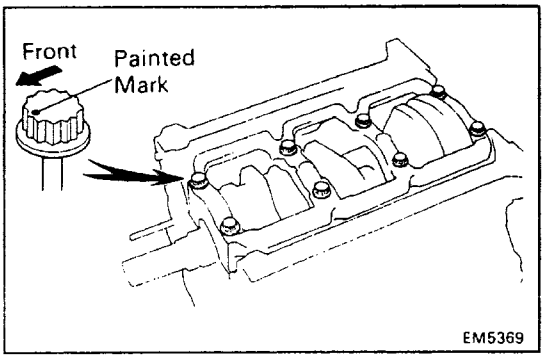
- The main bearing cap bolts are tightened in two progressive steps (steps (b) and (d)).
  If any main bearing cap bolt is broken or de–formed, replace it.



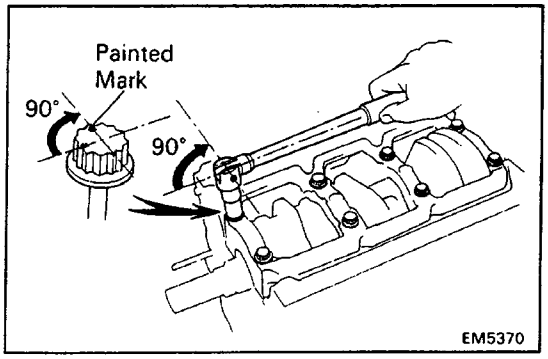
(a) Apply a light coat of engine oil on the threads and under the heads of the main bearing cap bolts.

(b) Install and uniformly tighten the eight main bearing cap bolts in several passes, in the sequence shown.
Torque: 61 N–m (625 kgf–cm, 45 ft–lbf)

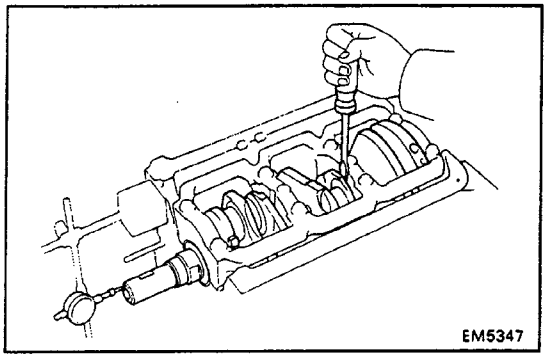
If any one of the main bearing cap bolts does not meet the torque specification, replace the cap bolt.



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



(d) Retighten the main bearing cap bolts 90° in the numerical order shown.
(e) Check that the painted mark is now at a 90° angle to the front.
(f) Check that the crankshaft turns smoothly.



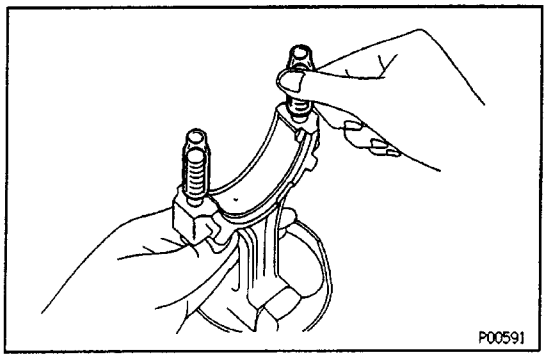
5. CHECK CRANKSHAFT THRUST CLEARANCE

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

Standard thrust clearance:
0.020 – 0Z20 mm (0.0008 – 0.0087 in.)
Maximum thrust clearance:
0.30 mm (0.0118 in.)

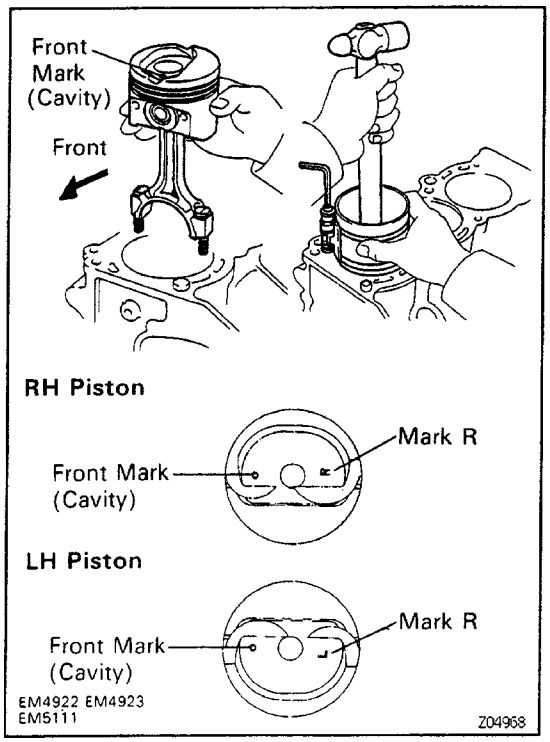
If the thrust clearance is greater than maximum, replace the thrust washers as a set.

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



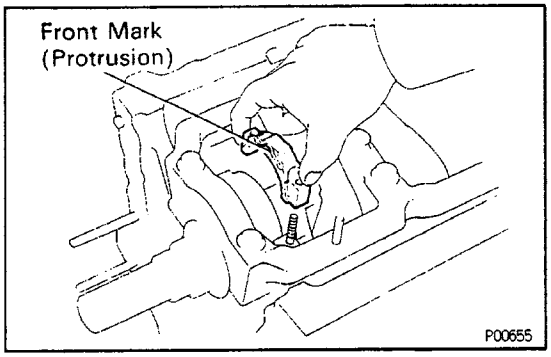
6. INSTALL PISTON AND CONNECTING ROD ASSEMBLIES

(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.

NOTICE: The shape of the piston varies for the RH and LH banks. The RH piston is marked with ”R”, The LH piston with ”L”.



7. 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.

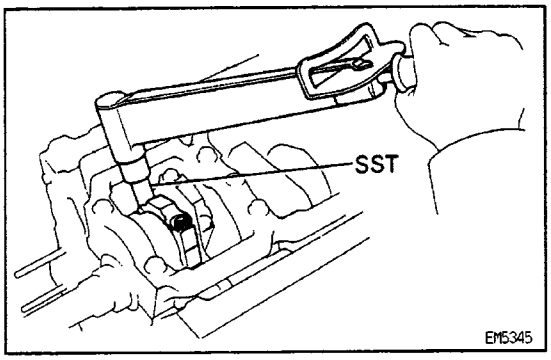
B. Install connecting rod cap nuts

HINT:

- The connecting rod cap nuts are tightened in two progressive steps (steps

(b) and (d)).

- If any connecting rod bolt is broken or deformed, replace it.

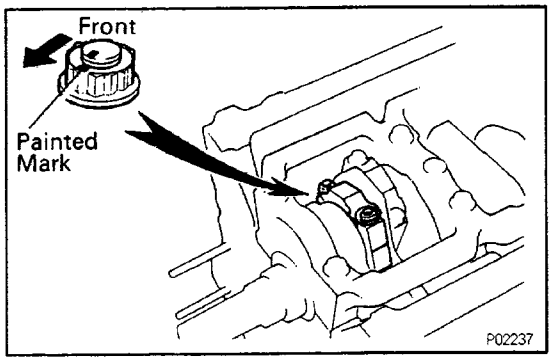


(a) Apply a light of engine oil on the threads and under the nuts of the connecting rod cap.

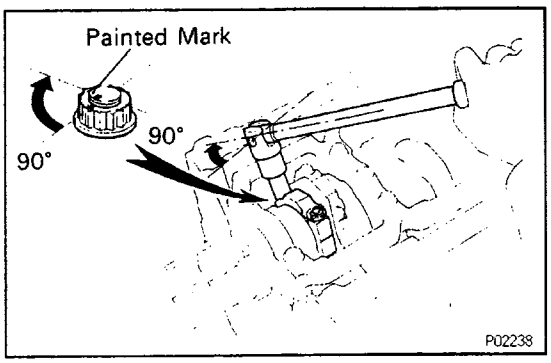
(b) Install and alternately tighten the nuts of the conne–cting rod cap in several passes.

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

If any one of the connecting rod cap nuts does not meet the torque specification, replace the cap nut.



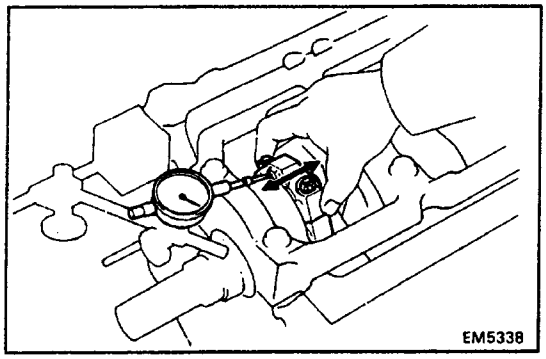
(c) Mark the front of the connecting rod cap nut and bolt with paint.



(d) Retighten the connecting rod cap nuts 90° as shown.

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

(f) Check that the crankshaft turns smoothly.



8. CHECK CONNECTING ROD THRUST CLEARANCE

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

Standard thrust clearance:

0.150 – 0.330 mm (0.0059 – 0.0130 in.)

Maximum thrust clearance:

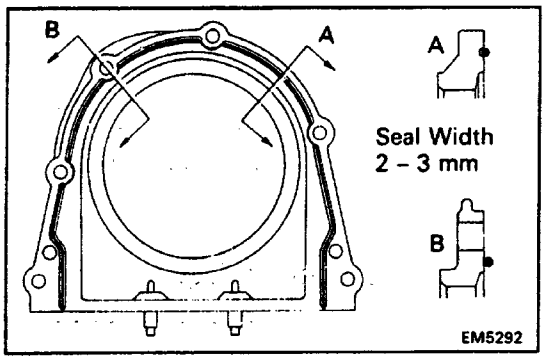
0.38 mm (0.0150 in.)

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

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.

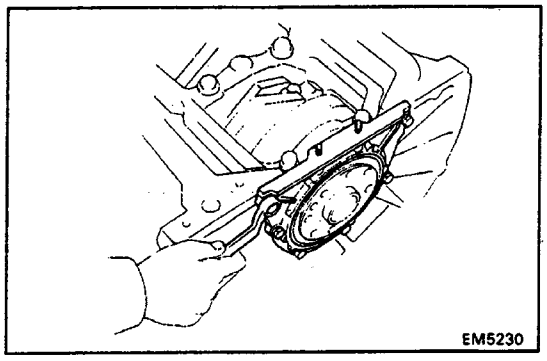


(b) Apply seal packing to the oil seal retainer as shown in the illustration.

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.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(c) Install the oil seal retainer with the six bolts.

Torque: 7.8 N–m (80 kgf–cm, 69 in.–lbf)

EG1ZU–02

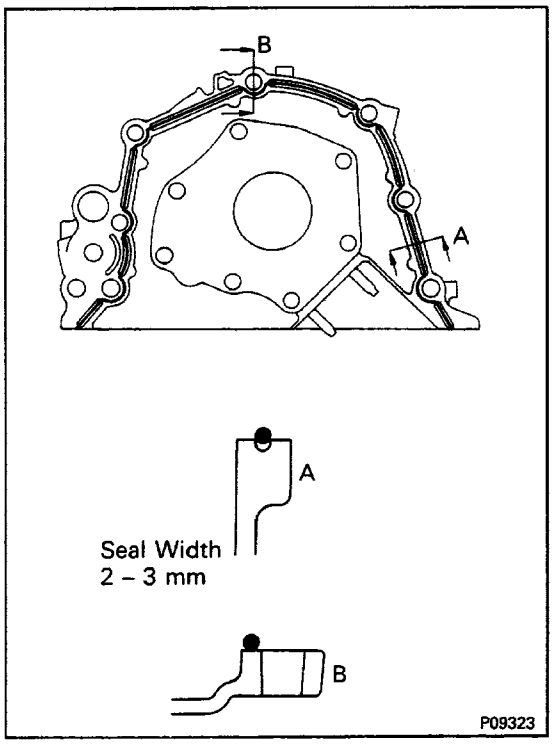
POST ASSEMBLY

(See Components)

1. INSTALL OIL PUMP

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the oil pump 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.



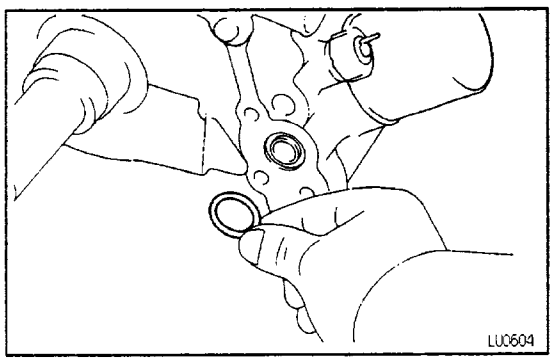
(b) Apply seal packing to the oil pump as shown in the illustration.

Seal packing:

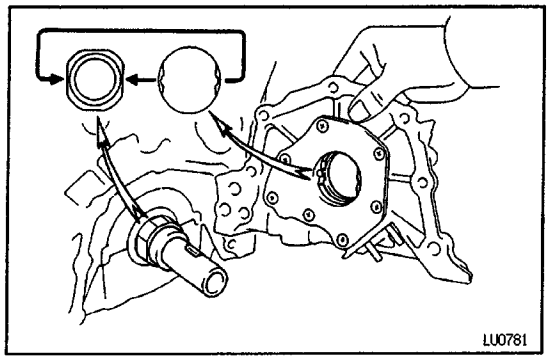
Part No. 08826–00080 or equivalent

NOTICE: Avoid applying en excessive amount to the surface. Be particularly careful near oil passage.

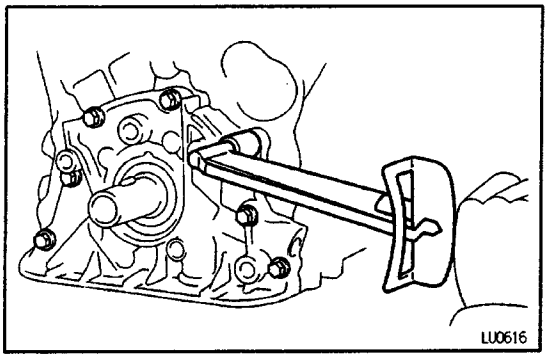
- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 4.12 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(c) Install a new O–ring to the cylinder block.



(d) Engage the spline teeth of the oil pump drive gear with the large teeth of the crankshaft, and slide the oil pump on the crankshaft.

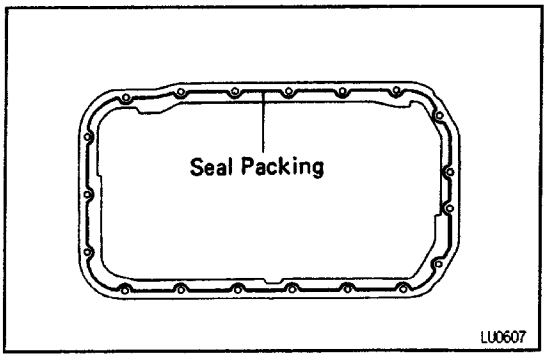


(e) Install the oil pump with the eight bolts. Uniformly tighten the bolts in several passes.
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)

2. INSTALL OIL PAN BAFFLE PLATE

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the baffle plate 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.

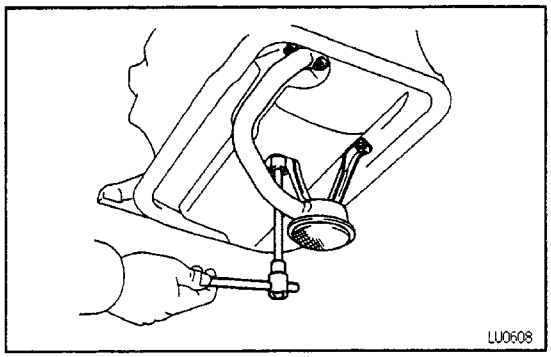


(b) Apply seal packing to the baffle plate as shown in the illustration.

Seal packing:
Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 3 – 4 mm (0.12 – 0.16 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.

(c) Attach the baffle plate to the cylinder block.



3. INSTALL OIL STRAINER

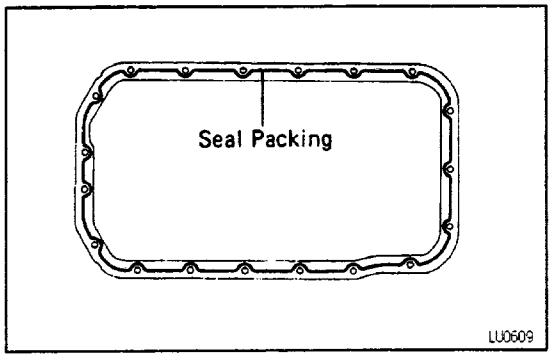
Install a new gasket and the oil strainer with the two nuts and two bolts.

Torque: 6.9 N–m (70 kgf–cm, 61 in. –lbf)

4. INSTALL OIL PAN

(a) Remove any old packing (FIPG) material and be ear–eful not to drop any oil on the contact surfaces of the oil pan and baffle plate.

- 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 oil pan as shown in the illustration.

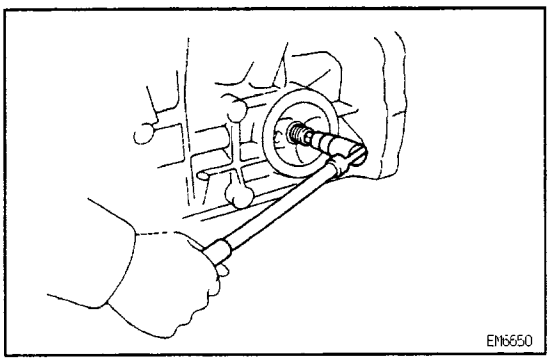
Seal packing:

Part No. 08826–00080 or equivalent

- Install a nozzle that has been cut to a 3 – 4 mm (0.12 – 0.16 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be re–moved and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.

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

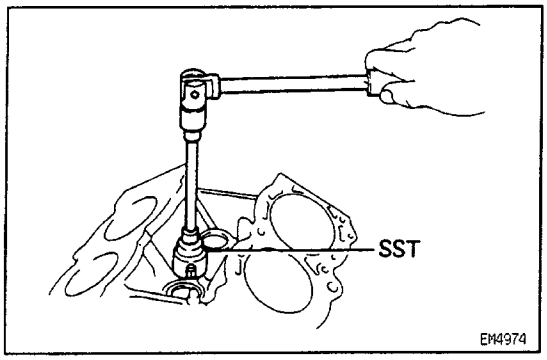
Torque: 5.9 N–m (60 kgf–cm, 52 in.–lbf)



5. INSTALL OIL FILTER UNION

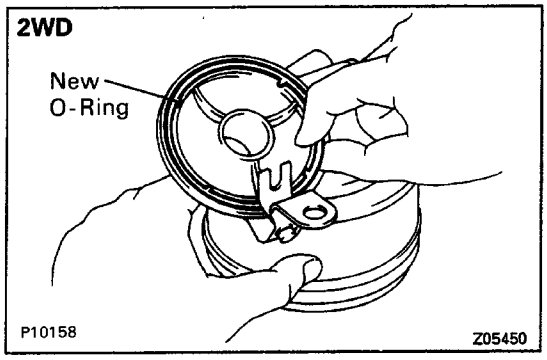
Using a 12 mm hexagon wrench, install and torque the oil filter union.

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



6. INSTALL KNOCK SENSOR

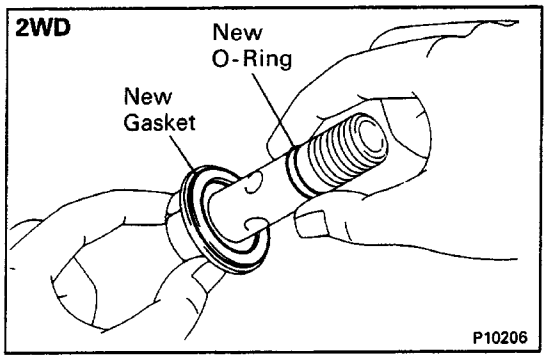
Using SST, install the knock sensor.
SST 09817–16011



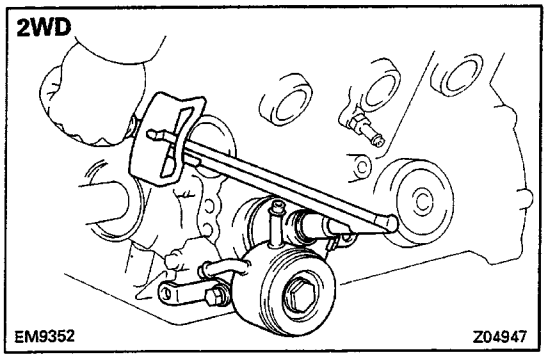
7. (2WD)

INSTALL OIL COOLER AND BRACKET ASSEMBLY

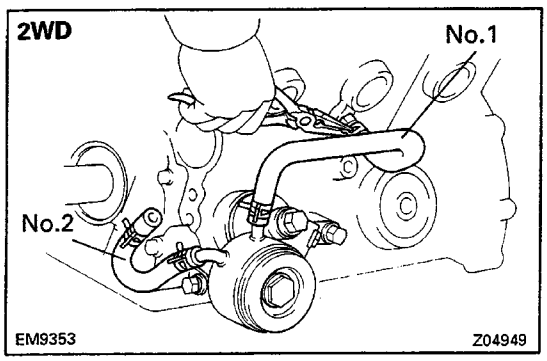
(a) Install a new 0–ring to the oil cooler bracket.



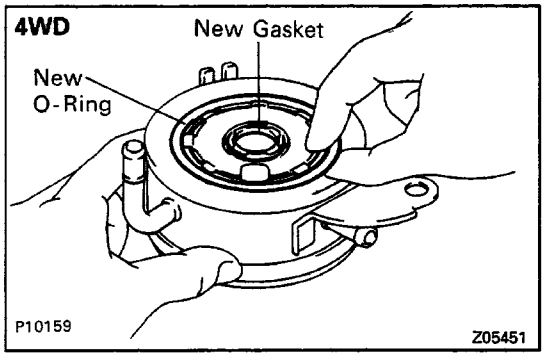
(b) Install new gasket and O–ring to the union bolt.
(c) Apply a light coat of engine oil on the O–ring.
(d) Apply a light coat of engine oil on the threads of the union bolt.



(e) Temporarily install the oil cooler and bracket assembly with the union bolt and two bolts.
(f) Tighten the union bolt.
Torque: 59 N–m (600 kgf–cm. 43 ft –lbf)
(g) Install the two bolts.
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)

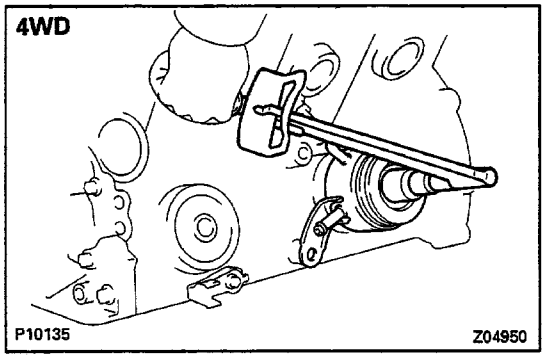


(h) install the No.1 and No.2 oil cooler hoses.

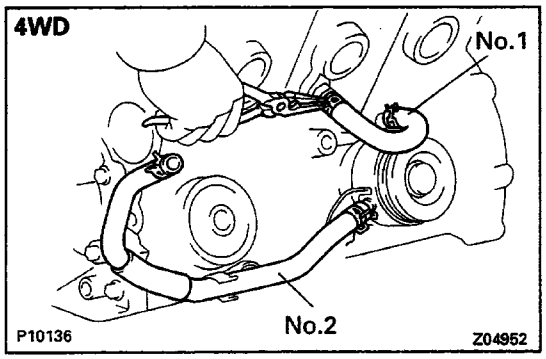


8. (4WD)
INSTALL OIL COOLER

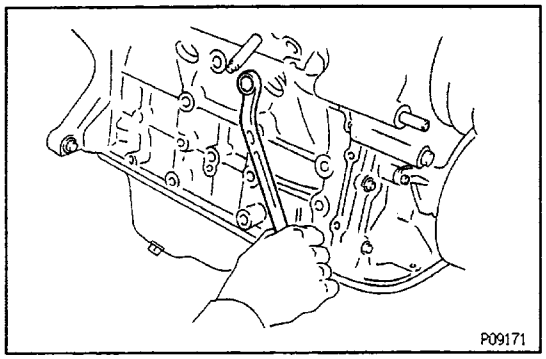
(a) Install new 0–ring and gasket to the oil cooler.
(b) Apply a light coat of engine oil on the threads of the relief valve.



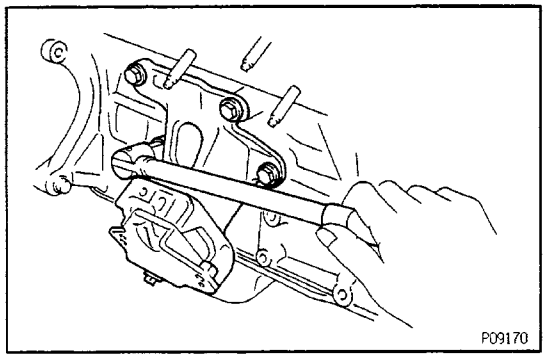
(c) Temporarily install the seal washer, oil cooler and seal washer with the relief valve and bolt.
(d) Tighten the relief valve.
Torque: 59 N–m (600 kgf–cm. 43 ft–lbf)
(e) Install the bolt.
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)



(f) Install the No.1 and No.2 oil cooler hoses.



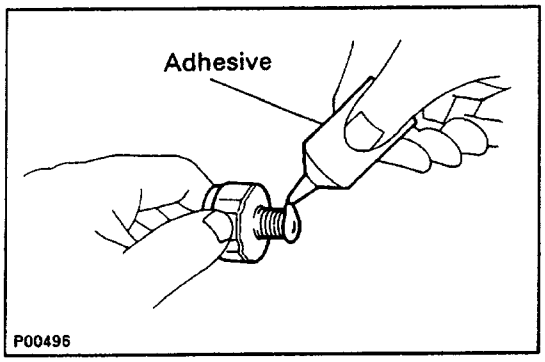
9. INSTALL ENGINE COOLANT DRAIN PLUGS
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



10. INSTALL LH AND RH ENGINE MOUNTING BRACKETS

Install the mounting bracket with the four bolts. Install the two mounting brackets.
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)

11. INSTALL OIL FILTER

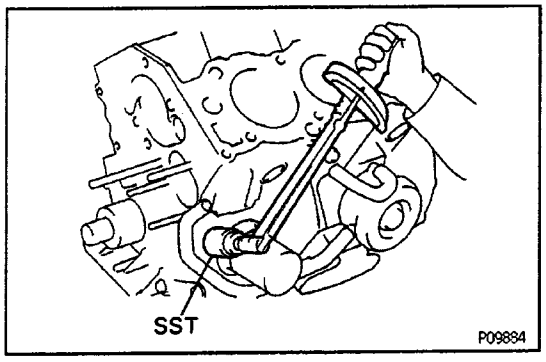


12. INSTALL OIL PRESSURE SENDER GAUGE

(a) Apply adhesive to two or three threads.

Adhesive:

Part No.08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent



(b) Using SST, install the oil pressure sender gauge.

SST 09816–30010

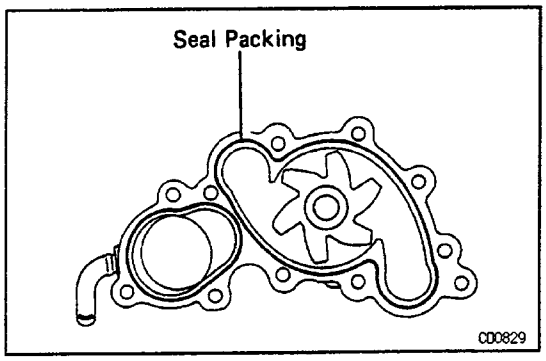
Torque: 15 N–m (150 kgf–cm. 11 ft–lbf)

13. INSTALL GENERATOR ADJUSTING BAR

14. INSTALL WATER PUMP

(a) . Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the water pump 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.

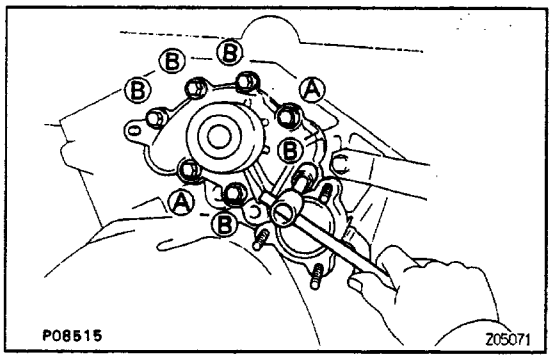


(b) Apply seal packing to the sealing groove of the water pump as shown in the illustration.

Seal packing:

Part No. 08826–00100 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.



(c) Install the water pump with the seven bolts.

Torque:
18 N–m (185 kgf–cm, 13 ft–lbf) for (A)
20 N–m (200 kgf–cm, 14 ft–lbf) for (B)

15. INSTALL THERMOSTAT AND WATER INLET

16. INSTALL NO.1 WATER BY–PASS PIPE

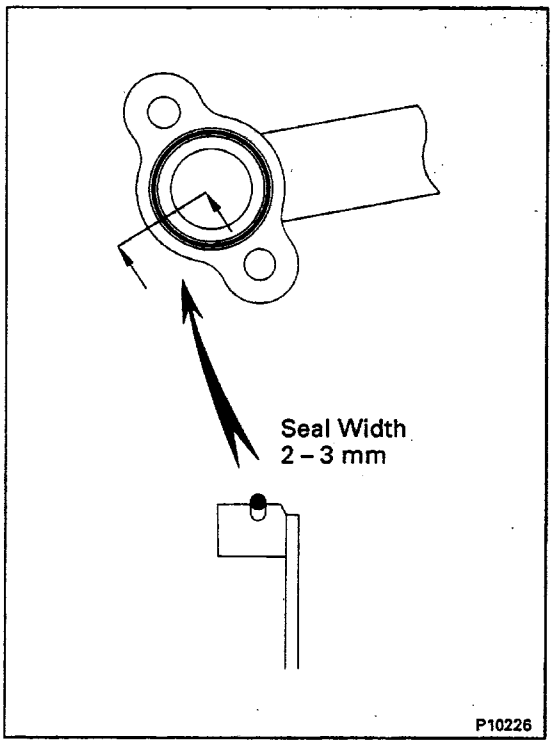
(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the water by–pass pipe and cylinder block.

- 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 sealing groove of the water by–pass pipe as shown in the illustration.

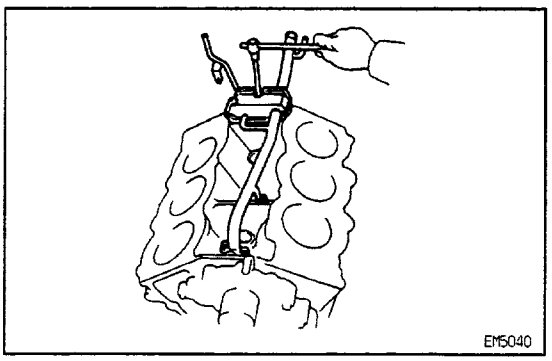
Seal packing:
Part No. 08826–00100 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.

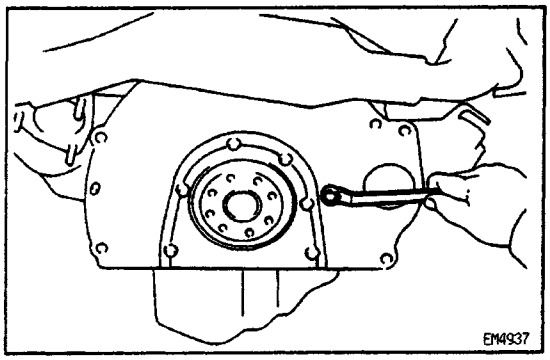


(c) Install the water by–pass pipe with the two bolts and two nuts.

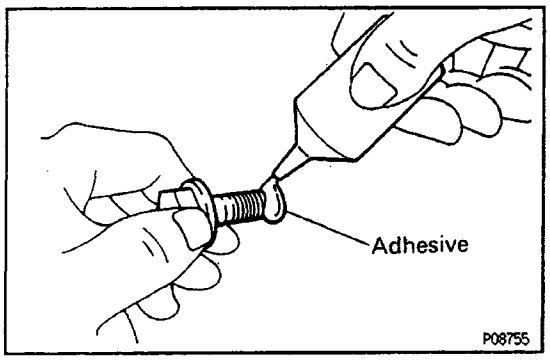
Torque:
4.9 N–m (50 kgf–cm, 43 in. –lbf) for bolt
6.9 N–m (70 kgf–cm, 61 in.–lbf) for nut



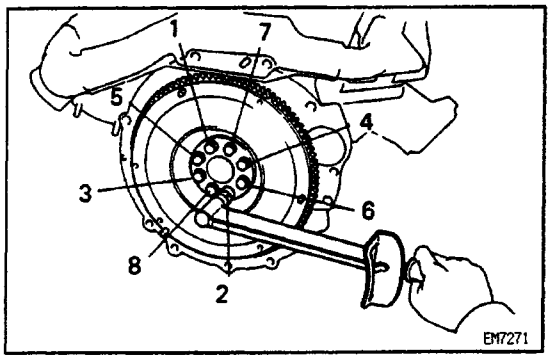
17. INSTALL CYLINDER HEADS
(See pages EG2–76 to 87)
18. INSTALL TIMING BELT
(See pages EG2–41 to 48)
19. REMOVE ENGINE STAND



20. INSTALL REAR END PLATE
Install the rear end plate with the bolt.
Torque: 7.4 N–m (75 kgf–cm, 65 in.–lbf)



21. INSTALL FLYWHEEL OR DRIVE PLATE
(a) Apply adhesive to two or three threads of the mou–nting bolt end.
Adhesive:
Pert No. 08833–00070, THREE BOND 1324 or equivalent



(b) (M /T)
Install the flywheel on the crankshaft.
(c) (A/T)
Install the front spacer, drive plate and rear plate on the crankshaft.
(d) Install and uniformly tighten the eight mounting bolts in several passes, in the sequence shown.
Torque:
88 N–m (900 kgf–cm, 65 ft–lbf) for M/T
83 N–m (850 kgf–cm, 61 ft–lbf) for A/T

EG20V–01

ENGINE INSTALLATION

1. (M/T only)
INSTALL CLUTCH DISC AND COVER

2. INSTALL TRANSMISSION TO ENGINE

3. INSERT ENGINE AND TRANSMISSION ASSEMBLY IN VEHICLE

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

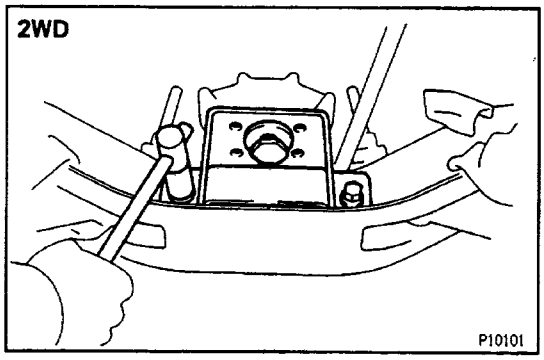
(b) Slowly lower the engine and transmission assembly into the engine compartment.

NOTICE: Be careful not to hit the PNP switch.

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

(d) Attach the RH and LH mounting insulators to the body mountingssand temporarily install the four bolts.

(e) Jack up and put the transmission onto the member.

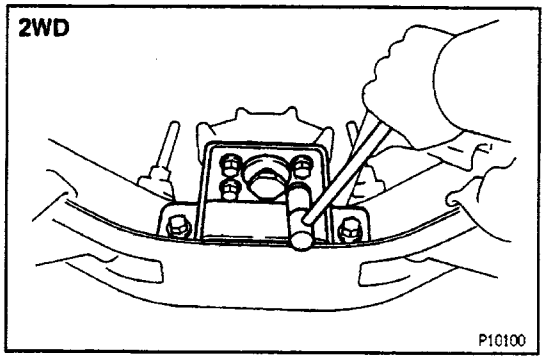


4. (2WD)
INSTALL ENGINE REAR MOUNTING BRACKET

(a) Raise the transmission slightly by raising the engine with a jack and a wooden block under the transmission.

(b) Install the engine rear mounting bracket to the support member.

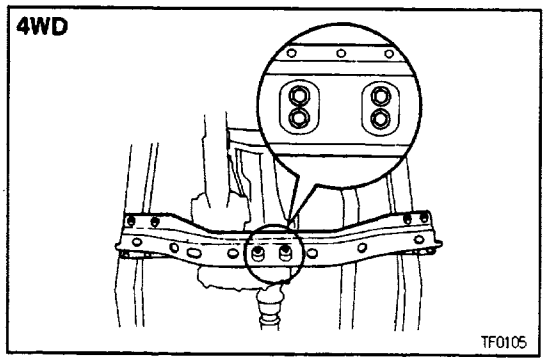
Torque: 25 N–m (260 kgf–cm. 19 ft–lbf)



(c) Lower the transmission and rest it on the extension housing.

(d) Install the mounting bracket to the mounting insulator.

Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)



5. (4WD)
INSTALL NO.2 FRAME CROSSMEMBER

(a) Raise the transmission slightly with a jack.

(b) Install the frame crossmember to the side frame with the eight bolts.

Torque: 95 N–m (970 kgf–cm, 70 ft–lbf)

(c) Lower the transmission and transfer.

(d) Install the frame crossmember to the engine rear mounting insulator.

Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)

6. TIGHTEN RH AND LH ENGINE MOUNTING INSULATOR BOLTS

Tighten the four bolts holding the mounting insulators to the body mountings.

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

7. (4WD only)
INSTALL NO.1 FRONT FLOOR AND BRAKE TUBE HEAT INSULATOR

8. INSTALL NO.1 FRAME CROSSMEMBER

9. (4WD only)
INSTALL STABILIZER BAR

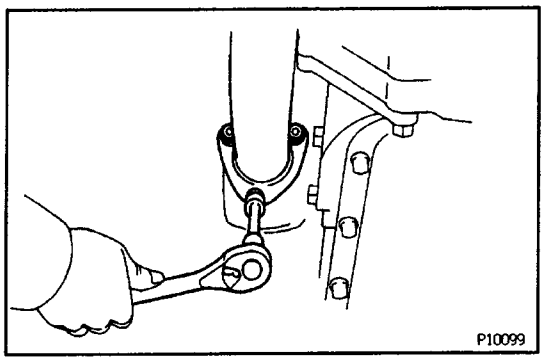
10. (4WD only)
INSTALL TRANSFER UNDER COVER

11. CONNECT SPEEDOMETER CONNECTOR

12. (4WD A/T only)
CONNECT MANUAL SHIFT LINKAGE

13. (4WD only)
INSTALL FRONT PROPELLER SHAFT
(See page PR–16)

14. INSTALL REAR PROPELLER SHAFT
(See page PR–15)



15. (M/T only)
INSTALL SHIFT LEVERS

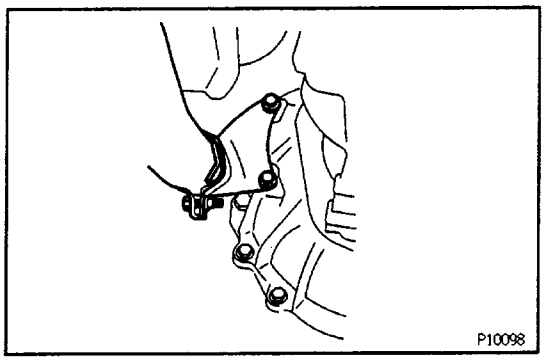
16. INSTALL FRONT EXHAUST PIPE

(a) Connect the exhaust pipe to the LH exhaust manifold with new gasket and three new nuts.

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

(b) Connect the exhaust pipe to the catalytic converter with new gasket and the two bolts.

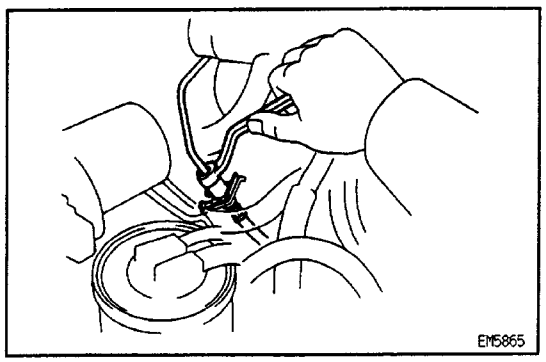
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)



(c) Install the pipe bracket to the transmission with the two bolts.

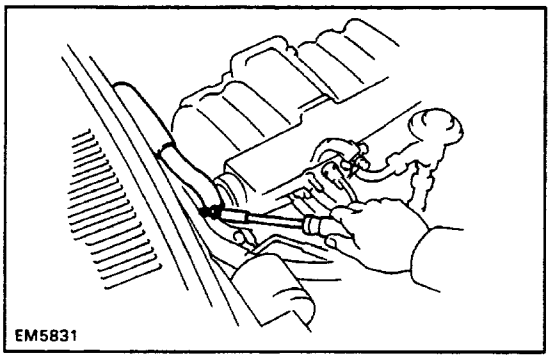
(d) Install the pipe bracket to the exhaust pipe with the pipe clamp.

(e) Connect the oxygen sensor connector.



17. (M/T only)
CONNECT CLUTCH RELEASE CYLINDER HOSE

18. INSTALL A/C COMPRESSOR



19. CONNECT HEATER HOSES

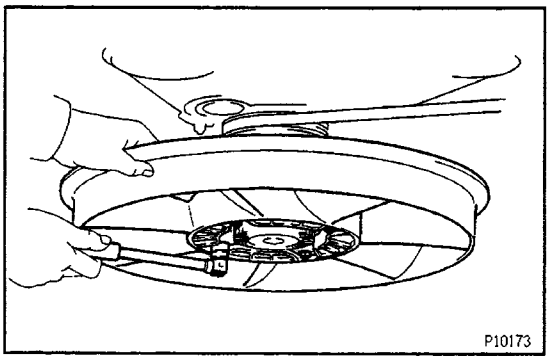
20. CONNECT FUEL INLET AND OUTLET HOSES

21. CONNECT STRAP, WIRES, CONNECTORS, HOSES AND CABLES

(a) Connect the following cables:
- Accelerator cable
- (A/T only)
  Throttle cable
- (w/ Cruise Control System)
  Cruise control cable

(b) Connect the following hoses:
- PS air hoses to gas filter and air pipe
- Brake booster hose
- (w/ Cruise Control System)
  Cruise control vacuum hose
- Charcoal canister hose to canister
- VSV vacuum hoses

(c) Connect the following strap, wires and connectors:
- Ground strap to LH fender apron
- Generator connector and wire
- Igniter connector
- Oil pressure sender gauge connector
- Ground strap to engine rear side
- ECM connectors
- VSV connectors
- A/C compressor connector
- (M/T only)
  Starter relay connector
- Solenoid resister connector
- Data link connector 1
- (w/ ADD)
  ADD switch connector



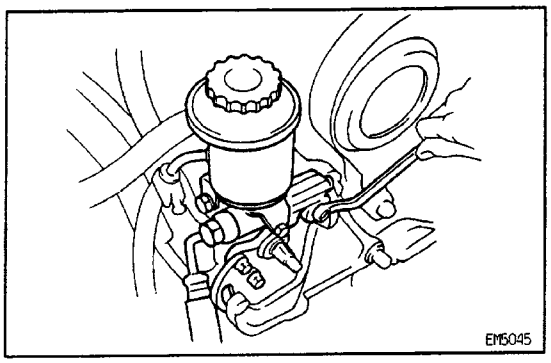
22. INSTALL GENERATOR DRIVE BELT

23. INSTALL COOLING FAN

Install the cooling fan with the four nuts.

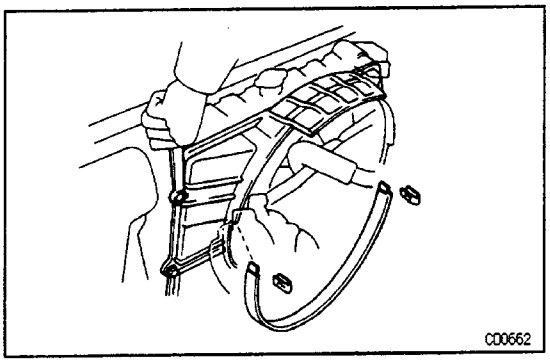
Torque: 5.4 N–m (55 kgf–cm, 48 in.–lbf)

24. INSTALL A/C DRIVE BELT



25. INSTALL PS PUMP

26. INSTALL PS PUMP PULLEY AND DRIVE BELT

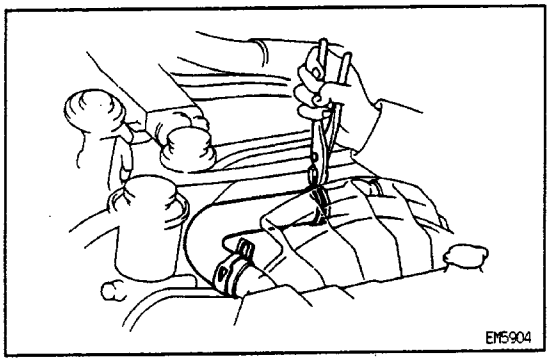


27. INSTALL RADIATOR

(a) Install the radiator with the four bolts.

(b) Install the No.1 fan shroud with the four bolts.

(c) Install the No.2 fan shroud with the two clips.



(d) Install the radiator hoses.

(e) (A/T)

Connect the oil cooler hoses.

(f) Connect the reservoir tank hose.

28. INSTALL AIR CLEANER AND HOSE

29. INSTALL BATTERY

30. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

31. FILL WITH ENGINE COOLANT

32. FILL WITH ENGINE OIL

33. START ENGINE AND CHECK FOR LEAKS

34. PERFORM ENGINE ADJUSTMENT

(See Tune – Up on pages EG2–12 to 27)

35. INSTALL ENGINE UNDER COVER

36. INSTALL HOOD

37. PERFORM ROAD TEST

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

38. RECHECK ENGINE COOLANT AND OIL LEVELS