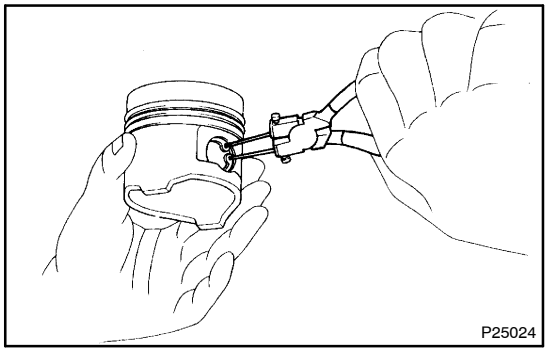
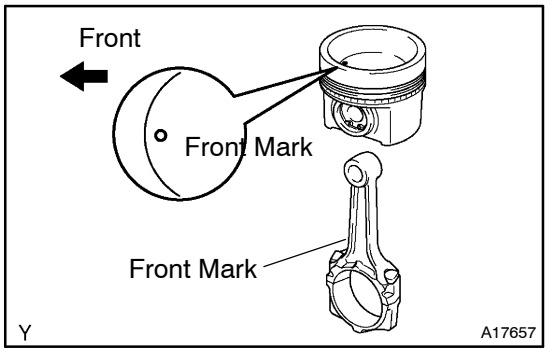
EM1UG–01

REASSEMBLY

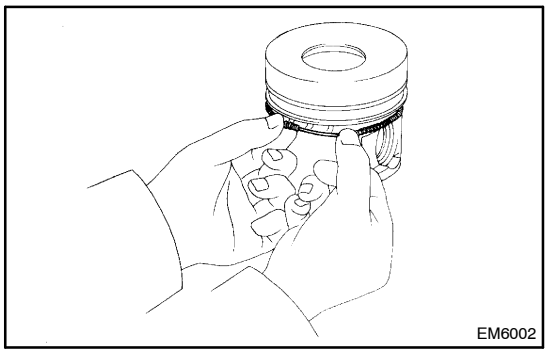


1. ASSEMBLE PITON AND CONNECTING ROD

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

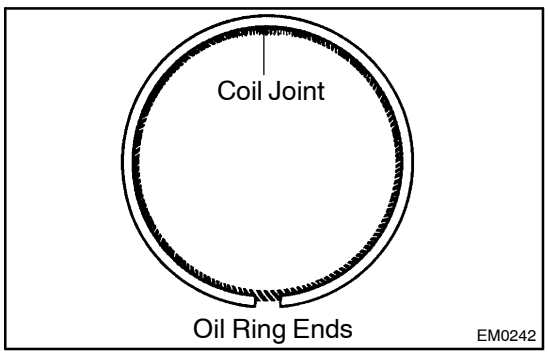


(b) Gradually heat the piston to 60 ˚C (140 ˚F).
(c) Coat the piston pin with engine oil.
(d) Align the front marks of the piston and connecting rod, and push in the piston pin with your thumb.
(e) Install a new snap ring on the other side of the piston pi hole.

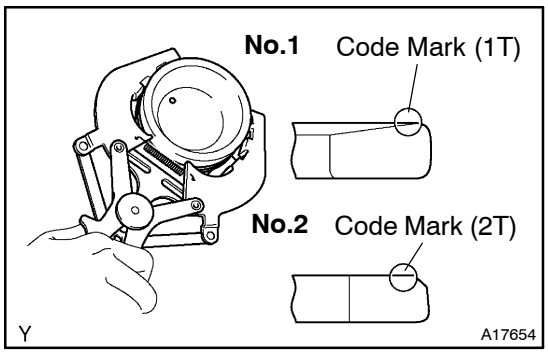


2. INSTALL PISTON RINGS

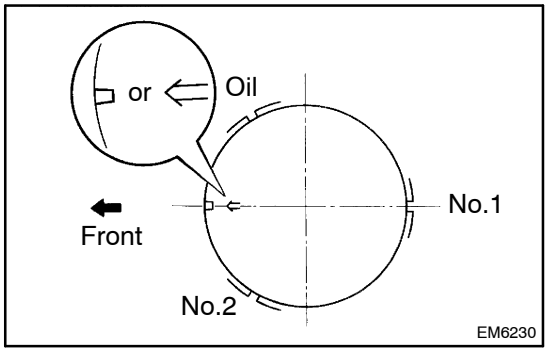
(a) Install the coil by hand.
(b) Install a piston ring expander, install the oil ring.



HINT:
Face the end gap of the oil ring in the opposite direction of coil joint.

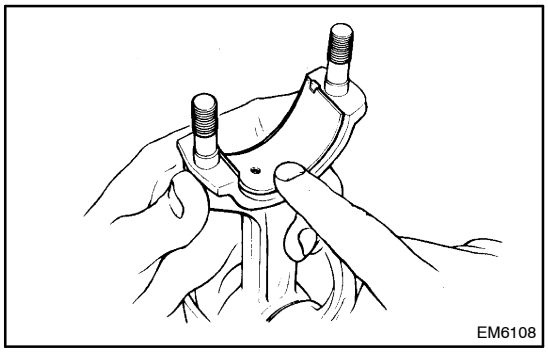


(c) Using a piston ring expander, install the No.1 and No.2 piston rings with the code mark facing upward.
Code mark:
No.1: 1T
No.2: 2T



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

NOTICE:
Do not align the ring ends.



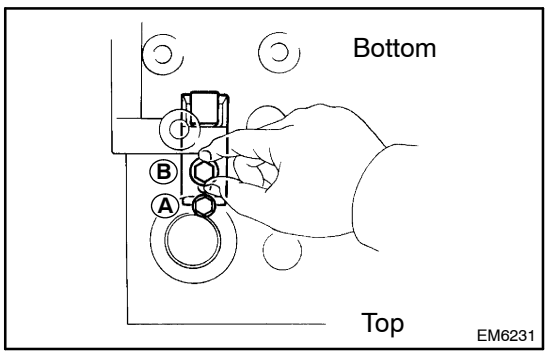
3. INSTALL CONNECTING ROD BEARINGS

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

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

HINT:

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

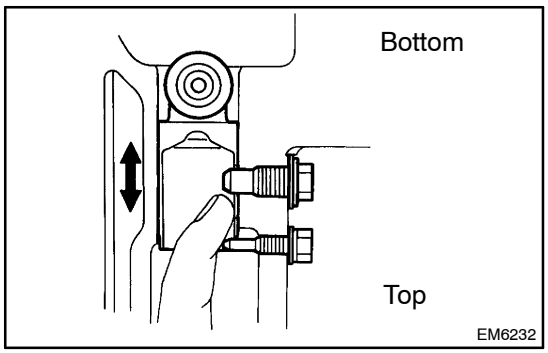


4. INSTALL VALVE LIFTERS

(a) Install bolt (A) to the cylinder block with a new gasket.
Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)

(b) Install the valve lifter so that the tip of bolt (A) fits in the groove.

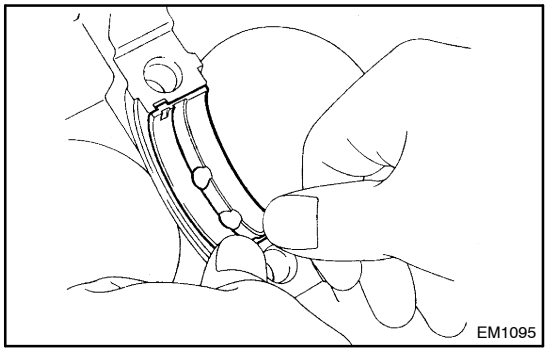
(c) Install bolt (B) with a new gasket by hand, check that its tip is inside the long hole.



(d) Torque bolt (B).
Torque: 37 N·m (375 kgf·cm, 28 ft·lbf)

HINT:
Check that the valve lifter moves smoothly up and down.

5. INSTALL OIL NOZZLES AND CHECK VALVES
(See page LU–24)



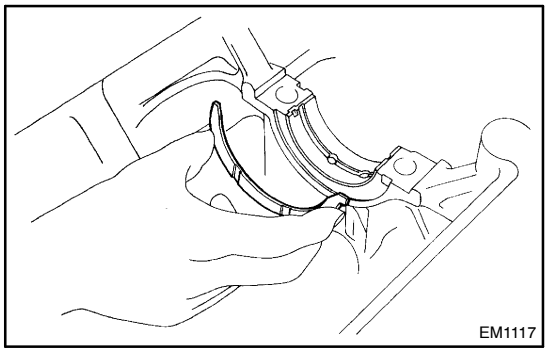
6. INSTALL MAIN BEARINGS

HINT:

Upper bearings have an oil groove and oil hole, lower bearings do not.

(a) Align the bearing claw with the claw groove of the cylinder block, and push in the 5 upper bearings.

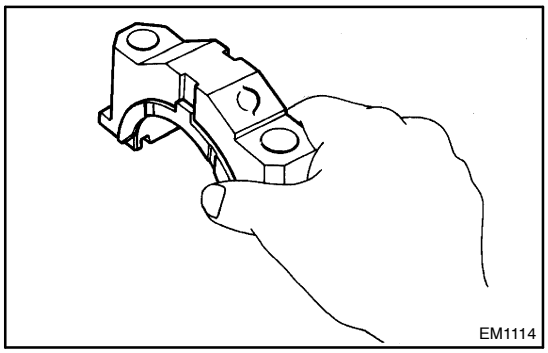
(b) Align the bearing claw with the claw groove of the main bearing cap, and push in the 5 lower bearings.



7. INSTALL UPPER THRUST WASHERS

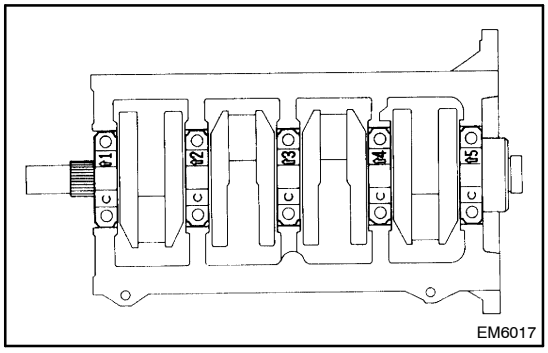
Install the 2 thrust washers under the No.3 journal position of the cylinder block with the oil grooves facing outward.

8. PLACE CRANKSHAFT ON CYLINDER BLOCK

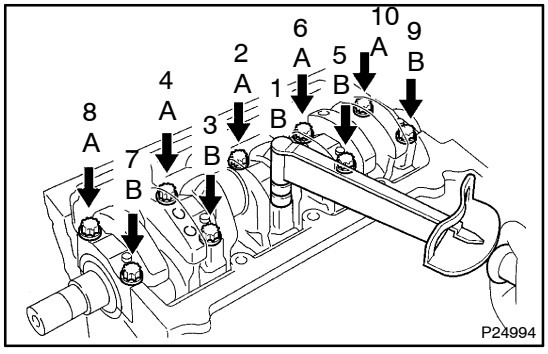


9. INSTALL MAIN BEARING CAPS AND LOWER THRUST WASHERS

(a) Install the 2 lower thrust washers on the No.3 main bearing cap with the grooves facing outward.



(b) Install the 5 main bearing caps in their proper locations.



(c) Apply a light coat of the engine oil on the threads and under the bolt heads of the main bearing caps.

(d) Install and uniformly tighten the 10 bolts of the main bearing caps, in several passes, in the sequence shown.

Torque: 200 N·m (2,039 kgf·cm, 148 ft·lbf)

HINT:

Each bolt length is indication in the illustration.

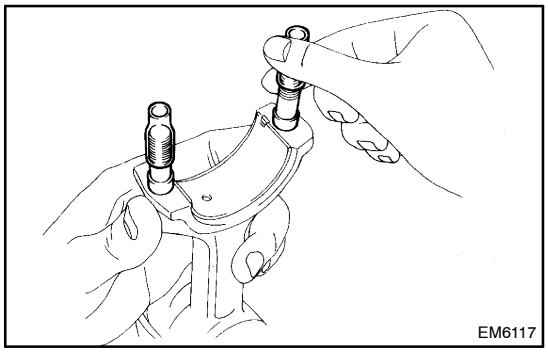
Bolt length:

A: 129.5 mm (5.098 in.)

B: 93.5 mm (3.681 in.)

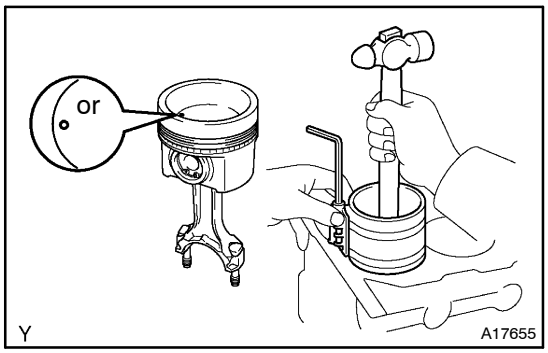
(e) Check that the crankshaft turns smoothly.

10. CHECK CRANKSHAFT THRUST CLEARANCE
(See page EM–52)

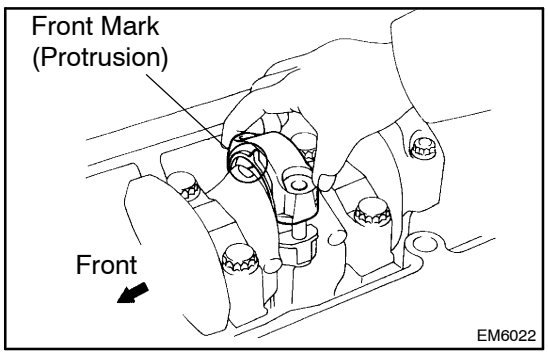


11. INSTALLATION PISTON AND CONNECTING ROD ASSEMBLIES

(a) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft and cylinder bore form damage.

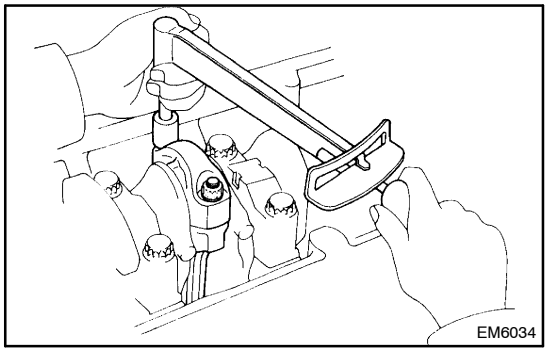


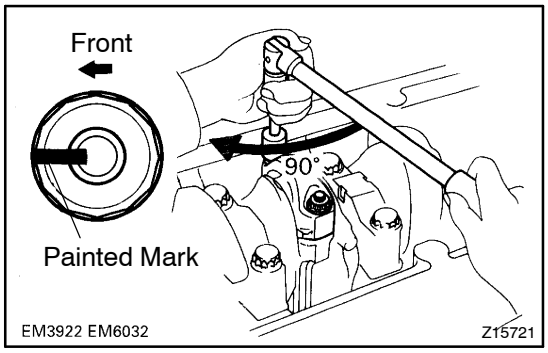
(b) Using a piston ring compressor, push the correctly numbered piston and connecting rod assembly into the cylinder with the front mark of the piston facing forward.

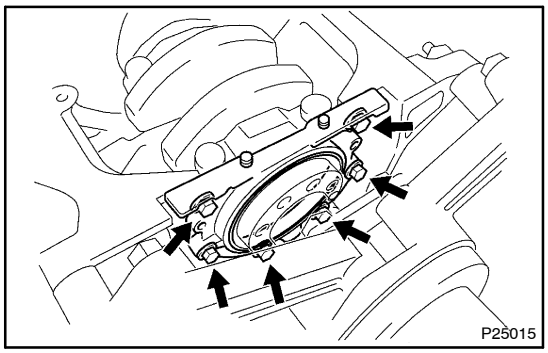


12. INSTALL CONNECTING ROD CAPS

(a) Place connecting rod cap on connecting rod
  (1) Match the numbered connecting rod cap with the connecting rod.
  (2) 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.

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

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

Torque: 68.6 N·m (700 kgf·cm, 51 ft·lbf)

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

(3) Mark the front of the connecting rod cap nuts with paint.

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

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

(6) Check that the crankshaft turns smoothly.

13. CHECK CONNECTING ROD THRUST CLEARANCE
(See page EM–46)

14. INSTALL REAR OIL SEAL RETAINER

Install a new gasket and the retainer with the 6 bolts.

Torque: 18.5 N·m (189 kgf·cm, 14 ft·lbf)

15. INSTALL ENGINE MOUNTING BRACKETS
Torque: 44 N·m (449 kgf·cm, 32 ft·lbf)

16. INSTALL OIL NOZZLE FOR TIMING GEARS
(See page EM–19)
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

17. INSTALL OIL PRESSURE SWITCH
(See page LU–1)

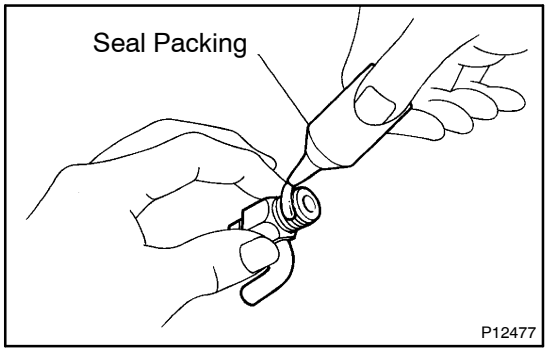
18. INSTALL OIL COOLER AND OIL FILTER ASSEMBLIES
(See page LU–20 and LU–2)

19. INSTALL TIMING GEAR CASE (OIL PUMP), OIL STRAINER AND OIL PAN
(See page LU–14)

20. INSTALL TIMING GEARS AND CAMSHAFT
(See page EM–19)

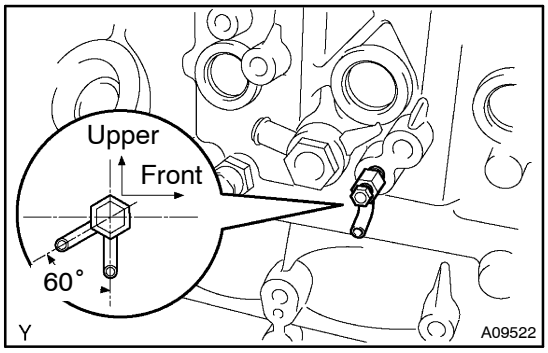
21. INSTALL CYLINDER HEAD
(See page EM–40)

22. INSTALL OIL DIPSTICK GUIDE AND OIL DIPSTICK



23. INSTALL WATER DRAIN UNION

(a) Apply seal packing to 2 or 3 threads.
Seal packing: part No. 08826–00100 or equivalent



(b) Install the drain union.
Torque: 70 N·m (714 kgf·cm, 52 ft·lbf)

HINT:
After applying the specified torque, rotate the drain union clockwise until its drain hole is facing downward.

24. INSTALL WATER PUMP
(See page CO–6)

25. INSTALL ALTERNATOR BRACKET AND ALTERNATOR

(a) apply a light of engine oil on the threads and under the heads of the alternator bracket bolts and pivot bolt.

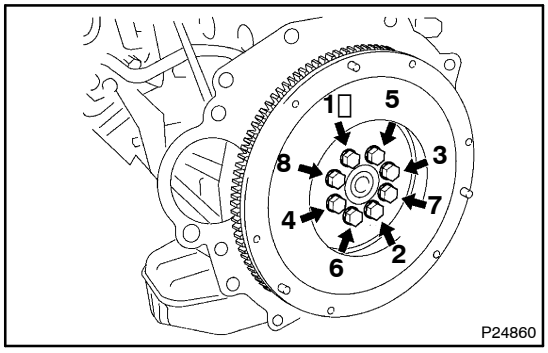
(b) Install the alternator bracket with the 3 bolts.
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf)

(c) Install the alternator with the pivot bolt.

26. DISCONNECT ENGINE FROM ENGINE STAND

27. INSTALL REAR END PLATE

Install the rear end plate with the bolt.
Torque: 18.5 N·m (189 kgf·cm, 14 ft·lbf)



28. INSTALL FLYWHEEL HOUSING

29. INSTALL FLYWHEEL

(a) Install the flywheel on the crankshaft.

(b) Apply a light of engine oil on the threads and under the heads of the flywheel bolts.

(c) Install and uniformly tighten the bolts, in several passes, in the sequence shown.
Torque: 160 N·m (1,630 kgf·cm, 118 ft·lbf)