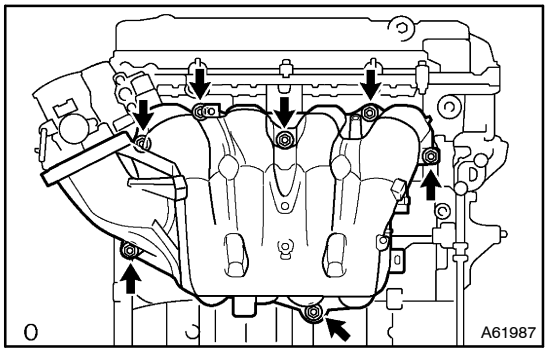
CYLINDER HEAD GASKET (1AZ–FE)

140IT–01

REPLACEMENT

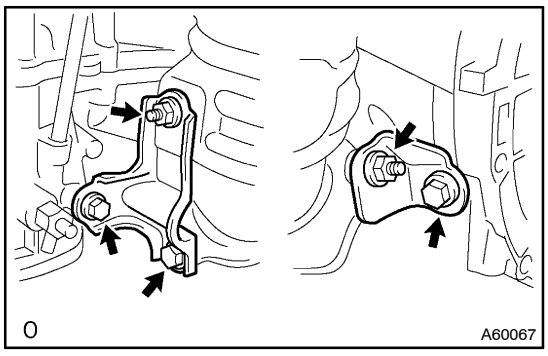
1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See pege 11–1)
2. REMOVE CHAIN SUB–ASSY (See pege 14–36)
3. DRAIN COOLANT (See pege 16–6)
4. DISCONNECT RADIATOR HOSE OUTLET
5. DISCONNECT UNION TO CONNECTOR TUBE HOSE
6. DISCONNECT HEATER INLET WATER HOSE
7. DISCONNECT FUEL TUBE SUB–ASSY (See pege 11–1)



8. REMOVE INTAKE MANIFOLD

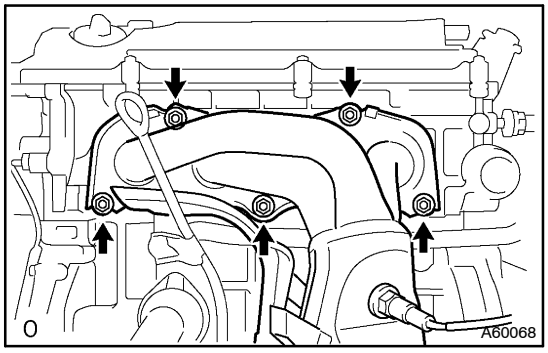
(a) Disconnect the 2 water by–pass hoses of the throttle body.
(b) Remove the 5 bolts, 2 nuts, intake manifold and gasket.

9. DISCONNECT ENGINE WIRE
10. REMOVE INTAKE MANIFOLD INSULATOR NO.1
11. REMOVE EXHAUST MANIFOLD HEAT INSULATOR NO.1

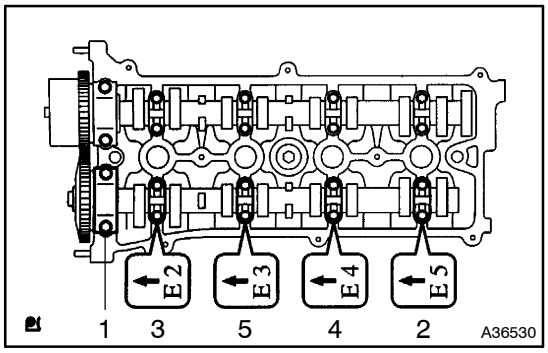


12. REMOVE EXHAUST MANIFOLD CONVERTER SUB–ASSY

(a) Remove the 3 bolts, 2 nuts No.1 and No.2 exhaust manifold stay.

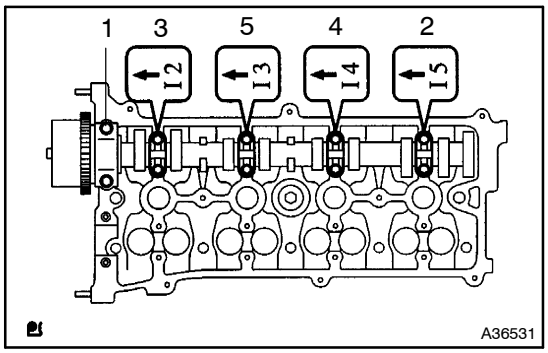


(b) Remove the 5 nuts, exhaust manifold and gasket.



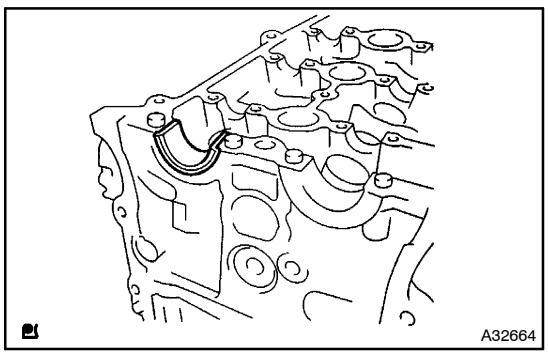
13. REMOVE NO.2 CAMSHAFT

(a) Remove the No.2 and No.3 camshaft bearing cap in the sequence shown in the illustration.
(b) Remove the No.2 camshaft.



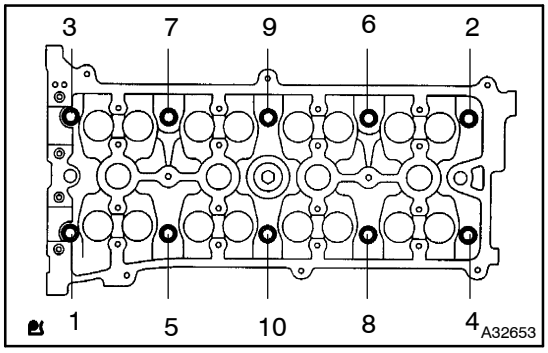
14. REMOVE CAMSHAFT

(a) Remove the No.1 and No.3 camshaft bearing cap in the sequence shown in the illustration.
(b) Remove the No.1 camshaft.



15. REMOVE CAMSHAFT BEARING NO.2

16. REMOVE CAMSHAFT TIMING OIL CONTROL VALVE ASSY



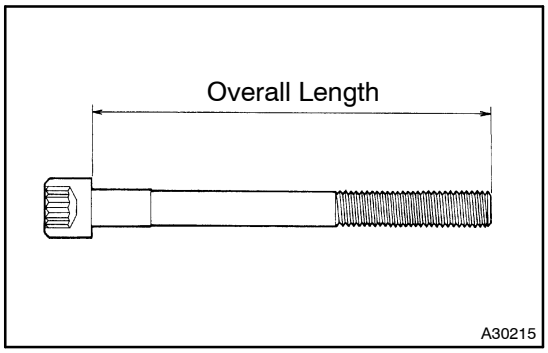
17. REMOVE CYLINDER HEAD SUB–ASSY

(a) Using a 10 mm bi–hexagon wrench, uniformly loosen and remove the 10 cylinder head bolts, in several passes, in the sequence shown. Remove the 10 cylinder head bolts and plate washers.

NOTICE:

- **Be careful not to drop washers into the cylinder head.**
- **Head warpage or cracking could result from removing bolts and installing incorrect order.**

18. REMOVE CYLINDER HEAD GASKET

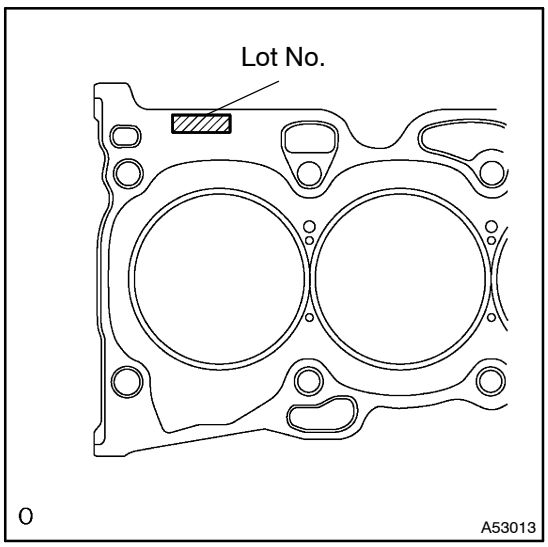


19. INSPECT CYLINDER HEAD SET BOLT

(a) Using vernier calipers, measure the length of head bolts from the seat to the end.

Standard bolt length:
161.3–162.3 mm (6.350–6.390 in.)
Maximum bolt length: 164.2 mm (6.465 in)

If the length is greater than maximum, replace the bolt.



20. INSTALL CYLINDER HEAD GASKET

(a) Place a new cylinder head gasket on the cylinder block surface with the Lot No. stamp upward.

NOTICE:

- **Remove any oil from contact surface.**
- **Be careful of the installation direction.**
- **Place the cylinder head quietly in order not to damage the gasket with the bottom part of the head.**

21. INSTALL CYLINDER HEAD SUB–ASSY

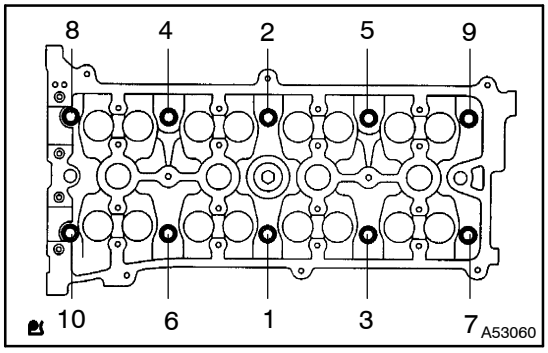
HINT:
The cylinder head bolts are tightened in 2 progressive steps.

(a) Apply a light coat of engine oil on the threads and under the heads of the cylinder head bolts.

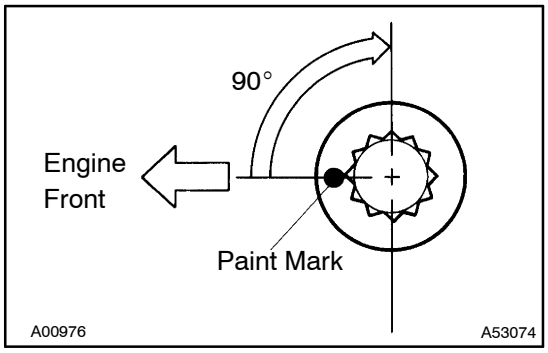
(b) Install bolts and plate washers to the cylinder head.

NOTICE:

Do not drop the washers into the cylinder head.



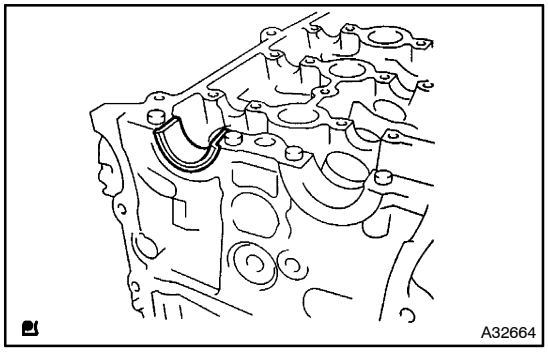
(c) Using a 10 mm bi–hexagon wrench, install and uniformly tighten the 10 cylinder head bolts and plate washers, in several passes, in the sequence shown.
Torque: 79 N·m (806 kgf·cm, 58 ft·lbf)



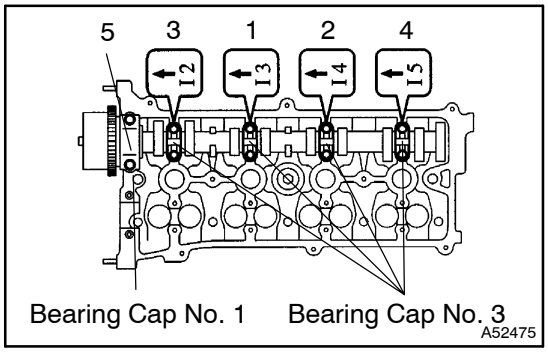
(d) Mark the front side of the cylinder head bolt with paint.
(e) Retighten the cylinder head bolts by 90° in the sequence shown.
(f) Check that the paint mark is now at a 90° angle to the front.

22. INSTALL CAMSHAFT TIMING OIL CONTROL VALVE ASSY

Torque: 9.0 N·m (92 kgf·cm, 80 in.·lbf)

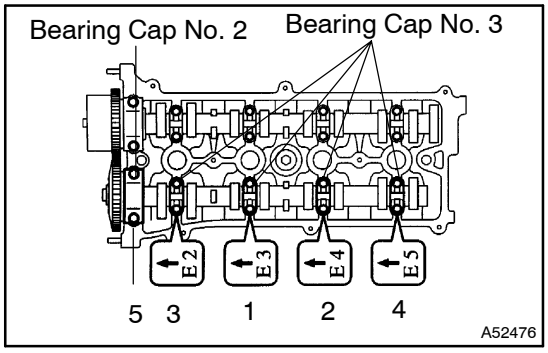


23. INSTALL CAMSHAFT BEARING NO.2



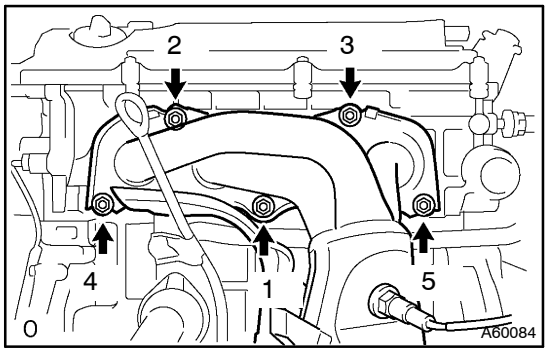
24. INSTALL CAMSHAFT

(a) Tighten the camshaft bearing cap No.1 and No.3 as the sequence shown in the illustration.
Torque:
Bearing cap No.1 30 N·m (301 kgf·cm, 22 ft·lbf)
Bearing cap No.3 9.0 N·m (92 kgf·cm, 80 in.·lbf)



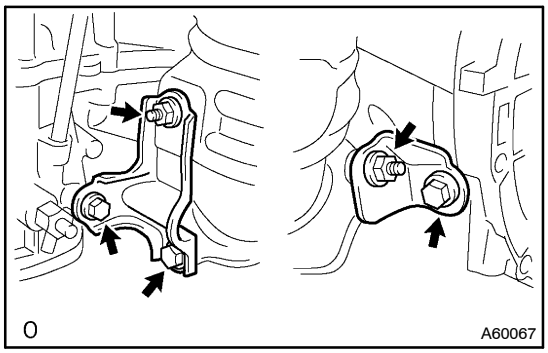
25. INSTALL NO.2 CAMSHAFT

(a) Tighten the camshaft bearing cap No.2 and No.3 as the sequence shown in the illustration.
Torque:
Bearing cap No.2 30 N·m (301 kgf·cm, 22 ft·lbf)
Bearing cap No.3 9.0 N·m (92 kgf·cm, 80 in.·lbf)



26. INSTALL EXHAUST MANIFOLD CONVERTER SUB–ASSY

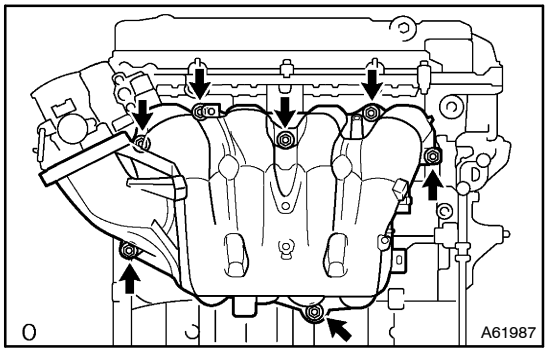
(a) Install a new gasket and the exhaust manifold with the 5 nuts.
Torque: 37 N·m (378 kgf·cm, 27 ft·lbf)



(b) Install the No.1 and No.2 exhaust manifold stay with the 3 bolts and 2 nuts.
Torque: 44 N·m (449 kgf·cm, 32 ft·lbf)

27. INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.1

Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)



28. INSTALL INTAKE MANIFOLD

(a) Install a new gasket and the intake manifold with the 5 bolts and 2 nuts.
Torque: 30 N·m (306 kgf·cm, 22 ft·lbf)

29. CONNECT FUEL TUBE SUB–ASSY
(See pege 11–1)

30. INSTALL CHAIN SUB–ASSY
(See pege 14–36)
SST 09309–37010

31. ADD ENGINE OIL
32. ADD COOLANT (See pege 16–6)
33. INSPECT OIL LEAK
34. CHECK ENGINE COOLANT LEAK (See pege 16–1)
35. INSPECT FUEL LEAK (See pege 11–5)
36. INSPECT CHECK IDLE SPEED AND IGNITION TIMING (See pege 14–1)
37. INSPECT CO/HC (See pege 14–1)