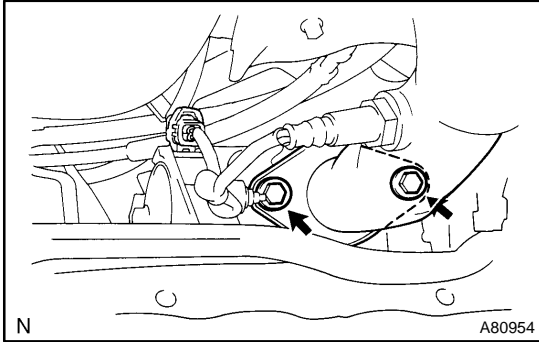


REPLACEMENT

1. DISCHARGE FUEL SYSTEM PRESSURE (See page 11-1)
2. REMOVE CHAIN SUB-ASSY (See page 14-68)

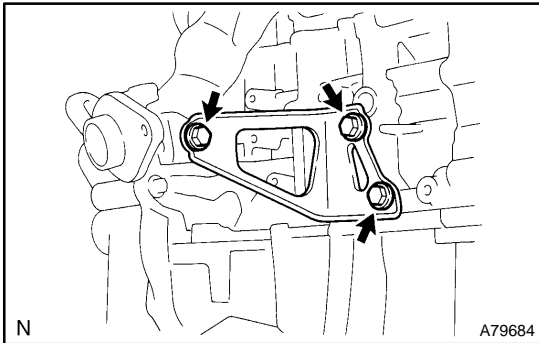


3. SEPARATE EXHAUST PIPE ASSY FRONT

- (a) Remove the 2 bolts and 2 compression spring which are installed on the front side of the exhaust pipe.

4. REMOVE EXHAUST MANIFOLD HEAT INSULATOR NO.1

- (a) Remove the 4 bolts and exhaust manifold heat insulator.



5. REMOVE MANIFOLD SUPPORT BRACKET

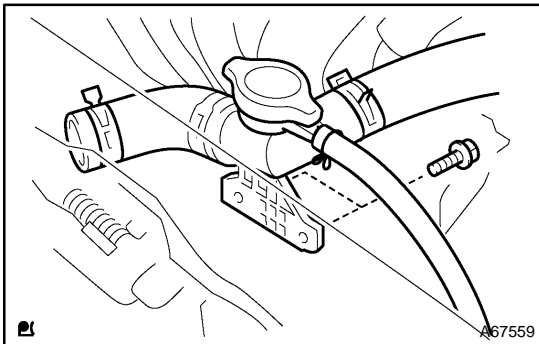
- (a) Remove the 3 bolts and manifold support bracket.

6. REMOVE AIR CLEANER ASSY (See page 10-8)

7. SEPARATE ACCELERATOR CONTROL CABLE ASSY (See page 10-8)

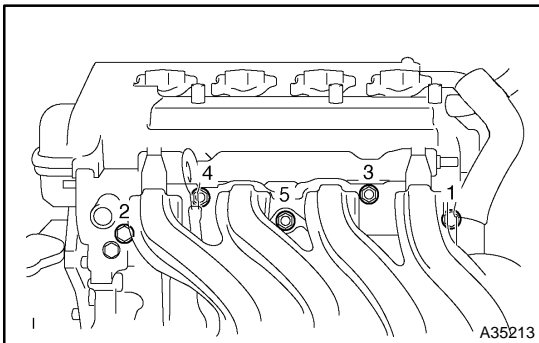
8. REMOVE THROTTLE BODY ASSY (See page 10-8)

9. SEPARATE ENGINE WIRE



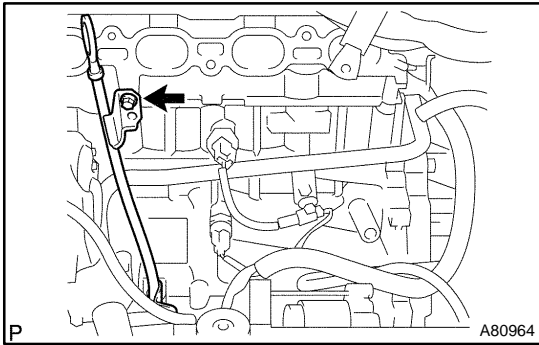
10. REMOVE WATER FILLER SUB-ASSY

- (a) Disconnect the radiator inlet hose.
- (b) Disconnect the radiator hose No. 3.
- (c) Disconnect the radiator reservoir tank hose.
- (d) Remove the 2 bolts and water filler.



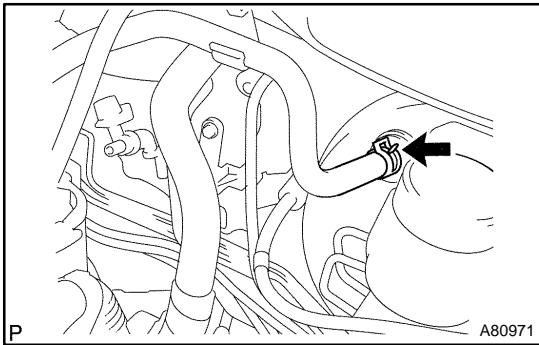
11. REMOVE INTAKE MANIFOLD

- (a) Using several steps, remove the 3 bolts and 2 nuts in the sequence shown in the illustration, then remove the intake manifold.
- (b) Remove the gasket from the intake manifold.



12. REMOVE OIL LEVEL GAGE GUIDE

- (a) Remove the oil level gage from the oil level gage guide.
- (b) Remove the bolt and oil level gage guide.



13. DISCONNECT UNION TO CHECK VALVE HOSE

- (a) Disconnect the union to check valve hose from the brake booster.

14. DISCONNECT RADIATOR HOSE INLET

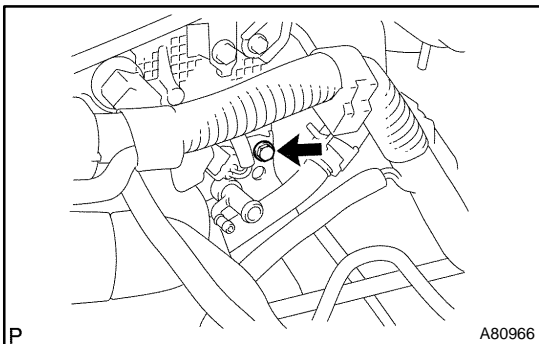
- (a) Disconnect the radiator hose inlet from the union.

15. DISCONNECT FUEL TUBE SUB-ASSY

SST 09268-21010

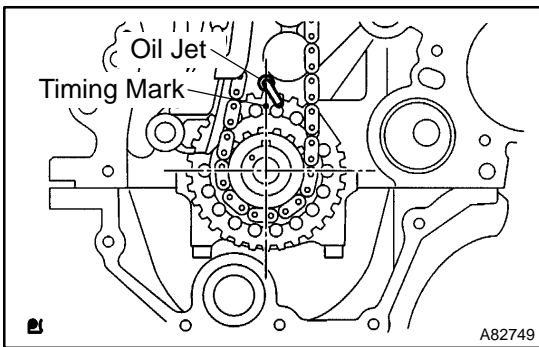
16. DISCONNECT HEATER WATER INLET HOSE A

- (a) Disconnect the heater water inlet hose from the water by-pass pipe No. 2.



17. SEPARATE WATER BY-PASS PIPE NO.1

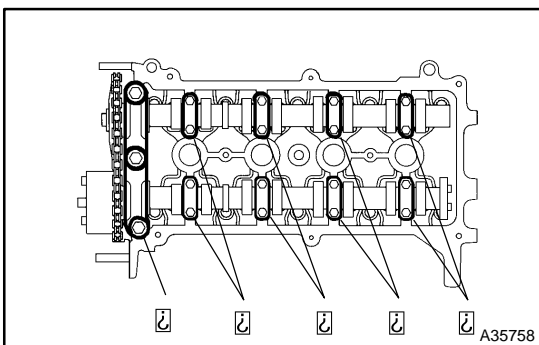
- (a) Remove the set bolt of the water by-pass pipe No. 1.



18. REMOVE CAMSHAFT

NOTICE:

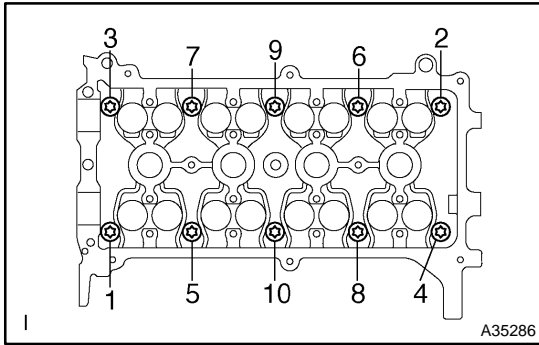
When rotating the camshaft with the timing chain removed, rotate the crankshaft counterclockwise 40 ° from the TDC and align the oil jet hole with the timing mark to prevent contact of the pistons with the valves.



- (a) Using several steps, loosen and remove the 19 bearing cap bolts uniformly in the sequence shown in the illustration, and then remove the 9 bearing caps, the No. 1 and No. 2 camshafts.

NOTICE:

Loosen each bolt uniformly keeping the camshaft level.



19. REMOVE CYLINDER HEAD SUB-ASSY

- (a) Using several steps, loosen and remove the 10 cylinder head bolts uniformly with an 8 mm bi-hexagon wrench in the sequence shown in the illustration. 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 in an incorrect order.

20. REMOVE CYLINDER HEAD GASKET

21. INSPECT CYLINDER HEAD SET BOLT

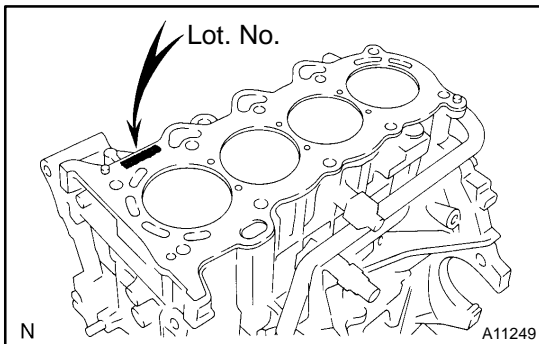
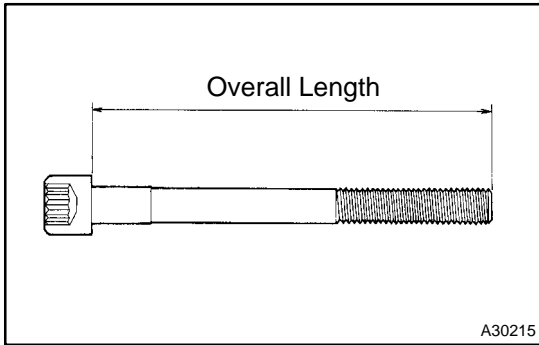
- (a) Using vernier calipers, measure the length of the cylinder head bolts from the seat to the end.

Standard bolt length:

142.8 to 144.2 mm (5.622 to 5.677 in.)

Maximum bolt length: 147.1 mm (5.791 in.)

If the length exceeds the maximum, replace the bolt.

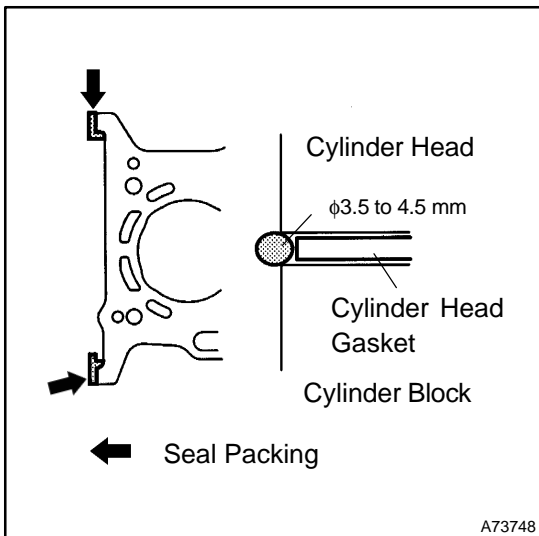


22. INSTALL CYLINDER HEAD GASKET

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

NOTICE:

- Remove any oil from the contact surface.
- Be careful of the mounting orientation.
- Place the cylinder head on the gasket gently to prevent damage to the gasket at the bottom part of the head.



23. INSTALL CYLINDER HEAD SUB-ASSY

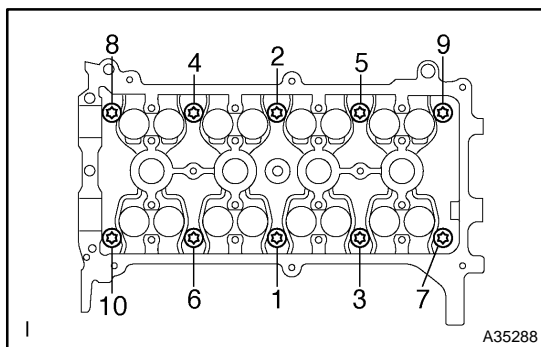
HINT:

The cylinder head bolts are tightened in 2 successive steps.

- (a) Apply a continuous bead of the seal packing (Diameter 3.5 to 4.5 mm (0.1378 to 0.1772 in.)) as shown in the illustration.

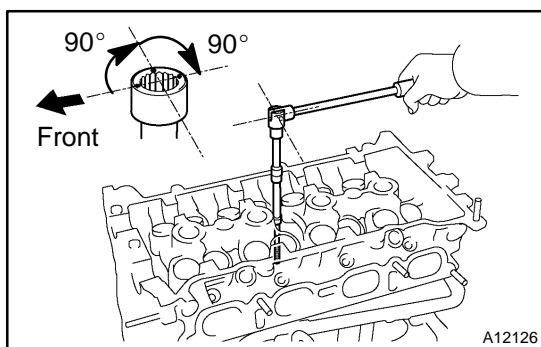
NOTICE:

- Remove any oil from the contact surface.
 - Install the oil pan within 3 minutes after applying the seal packing.
- (b) Apply a light coat of engine oil on the threads of the cylinder head bolts.



- (c) Using several steps, install and tighten the 10 cylinder head bolts and plate washers uniformly with an 8 mm bi-hexagon wrench in the sequence shown in the illustration.

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



- (d) Mark the front of the cylinder head bolts with paint.
 (e) Using the same sequence as step (c), retighten the cylinder head bolts by additional 90° and one more additional 90° as shown in the illustration.
 (f) Check that each paint mark is now at 180° opposite to the front.

24. INSTALL CAMSHAFT

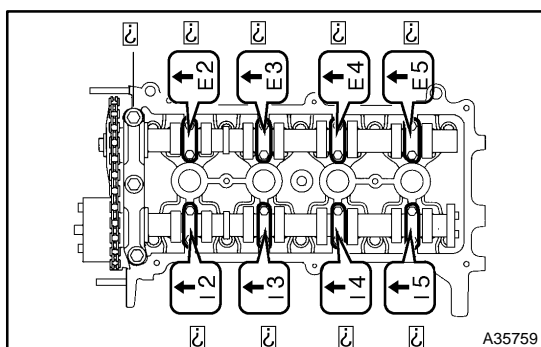
- (a) Apply a light coat of engine oil on the camshaft journals.
 (b) Place the camshaft on the cylinder head with the timing mark on the camshaft timing gear facing upward.
 (c) Examine the front marks and numbers and tighten the bolts in the sequence shown in the illustration.

Torque: 13 N·m (129 kgf·cm, 9.4 ft·lbf)

NOTICE:

Tighten each bolt uniformly keeping the camshaft level.

- (d) Install the bearing cap No. 1.
Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)



25. INSTALL WATER BY-PASS PIPE NO.1

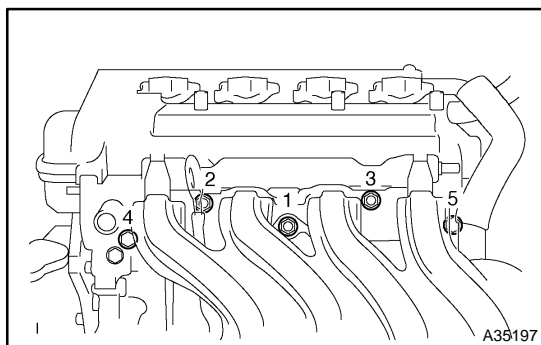
- (a) Install the water by-pass pipe No. 1 with the bolt.
Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)

26. CONNECT FUEL TUBE SUB-ASSY (See page 11-1)

27. INSTALL OIL LEVEL GAGE GUIDE

- (a) Apply engine oil to a new O-ring.
 (b) Install the oil level gauge guide with the bolt.

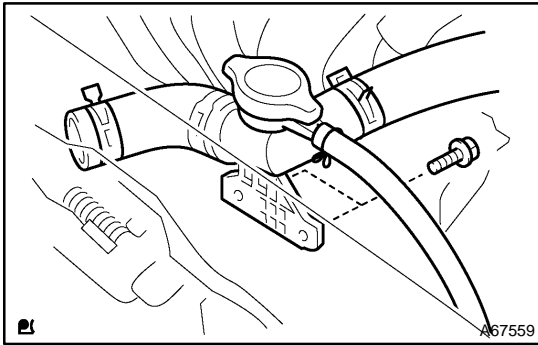
Torque: 9.0 N·m (92 kgf·cm, 80 in·lbf)



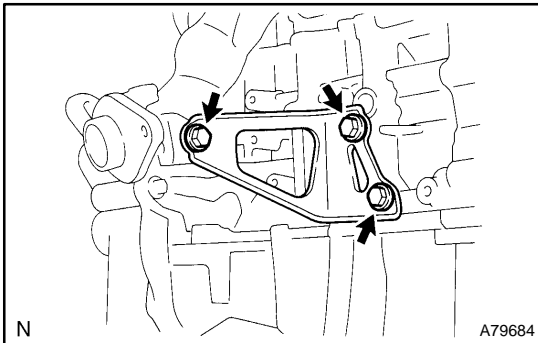
28. INSTALL INTAKE MANIFOLD

- (a) Install a new gasket to the intake manifold.
 (b) Install the intake manifold with the 3 bolts and 2 nuts. Using several steps, tighten the bolts and nuts uniformly in the sequence shown in the illustration.

Torque: 30 N·m (306 kgf·cm, 22 ft·lbf)

**29. INSTALL WATER FILLER SUB-ASSY**

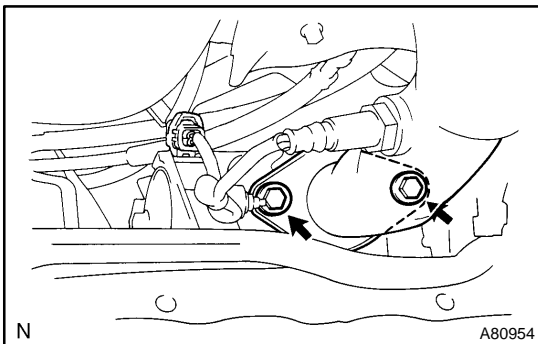
- (a) Install the water filler with the 2 bolts.
Torque: 7.5 N·m (76 kgf·cm, 66 in·lbf)
- (b) Connect the radiator reservoir tank hose.
- (c) Connect the radiator hose No. 3.
- (d) Connect the radiator inlet hose.

30. INSTALL THROTTLE BODY ASSY (See page 10-8)**31. INSTALL AIR CLEANER ASSY (See page 10-8)****32. INSTALL MANIFOLD SUPPORT BRACKET**

- (a) Install the manifold support bracket with the 3 bolts.
Torque: 37 N·m (377 kgf·cm, 27 ft·lbf)

33. INSTALL EXHAUST MANIFOLD HEAT INSULATOR NO.1

- (a) Install the exhaust manifold heat insulator No. 1 with the 4 bolts.

Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)**34. CONNECT EXHAUST PIPE ASSY FRONT**

- (a) Place a new gasket to the exhaust manifold.
- (b) Install the 2 compression springs and 2 bolts.

Torque: 43 N·m (438 kgf·cm, 32 ft·lbf)**35. INSTALL CHAIN SUB-ASSY (See page 14-68)****36. ADD ENGINE OIL****37. CHECK FOR ENGINE OIL LEAKS****38. ADD ENGINE COOLANT (See page 16-7)****39. CHECK FOR ENGINE COOLANT LEAKS (See page 16-7)****40. CHECK FOR FUEL LEAKS**