

INSTALLATION

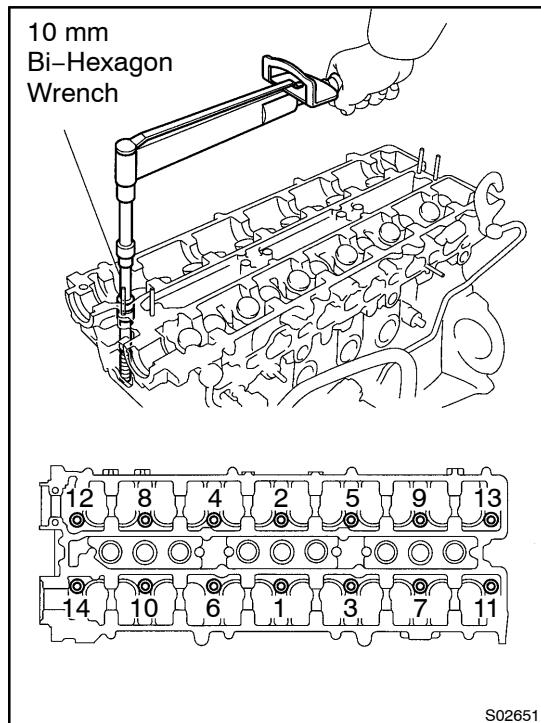
1. PLACE CYLINDER HEAD ON CYLINDER BLOCK

- Place a new cylinder head gasket in position on the cylinder block.

NOTICE:

Be sure to install it correctly.

- Place the cylinder head in position on the cylinder head gasket.



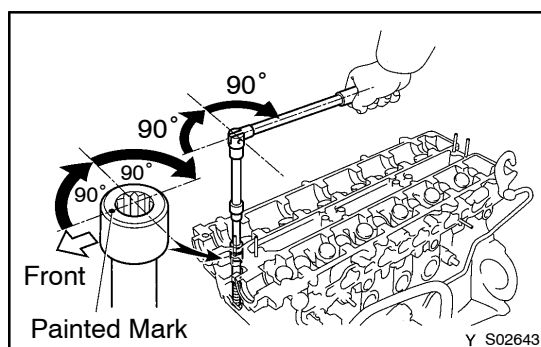
2. INSTALL CYLINDER HEAD BOLTS

HINT:

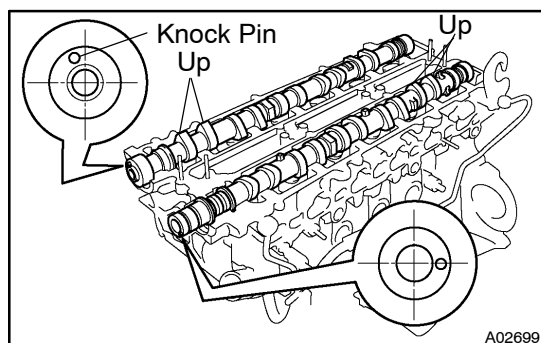
- The cylinder head bolts are tightened in 2 progressive steps (steps (c) and (f)).
 - If any of bolts break or deform, replace them.
- Apply a light coat of engine oil on the threads and under the heads of the cylinder head bolts.
 - Install the 14 plate washers to each cylinder head bolt.
 - Using a 10 mm bi-hexagon wrench, uniformly tighten the cylinder head bolts, in several passes, in the sequence shown.

Torque: 35 N·m (350 kgf·cm, 26 ft·lbf)

If any of the bolts do not meet the torque specification, replace the bolt.

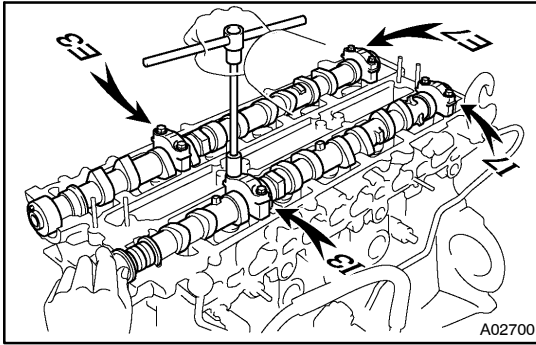


- Mark the front of the cylinder head bolt head with paint.
- Retighten the cylinder head bolts 90° in the numerical order shown.
- Retighten cylinder head bolts by an additional 90° shown.
- Check that the painted mark is now turned to the rear.

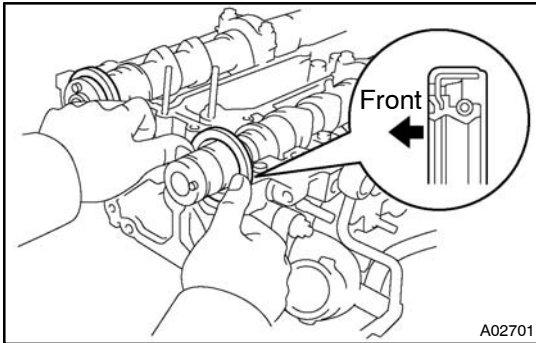


3. INSTALL CAMSHAFTS

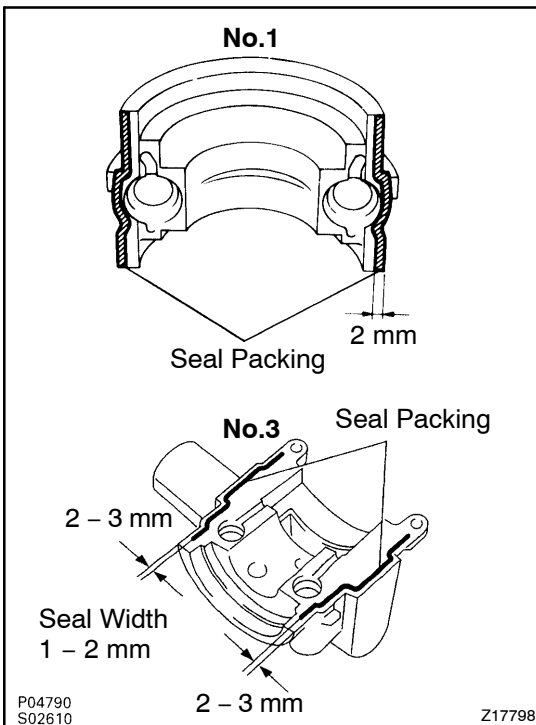
- Apply engine oil to the thrust portion of the camshaft.
- Place the camshaft on the cylinder head with the cam lobe facing up as shown.



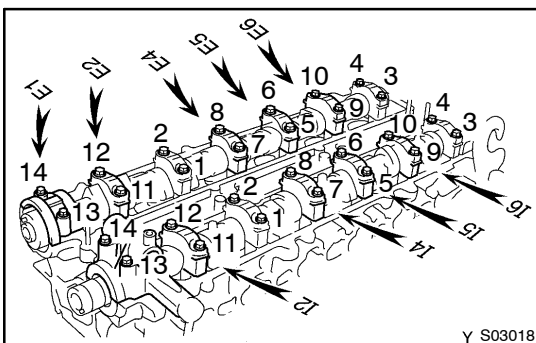
- (c) Place the (Nos. 3, 7 journal) camshaft bearing caps in their proper location.
- (d) Apply a light coat of engine oil on the threads and under the heads of the bearing cap bolts.
- (e) Temporarily tighten these bearing cap bolts uniformly and alternately, in several passes, until the bearing caps are snug with the cylinder head.



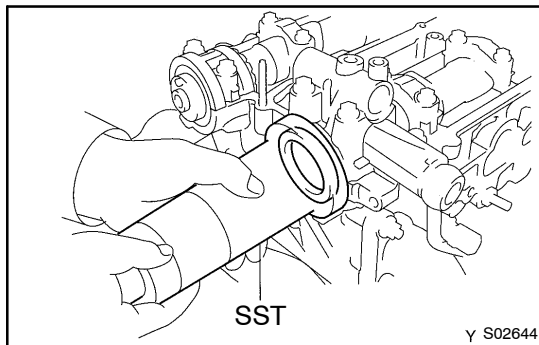
- (f) Apply MP grease to a new camshaft oil seal lip.
- (g) Install the 2 oil seals to the camshafts.



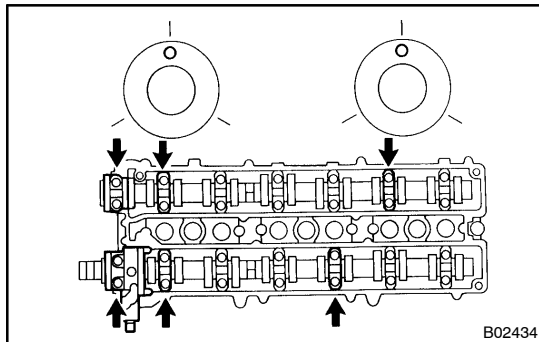
- (h) Clean the installed surfaces of the Nos.1, 3 camshaft bearing cap and cylinder head with cleaner.
- (i) Apply seal packing to the bearing caps as shown.
Seal packing: Part No. 08826-00080 or equivalent



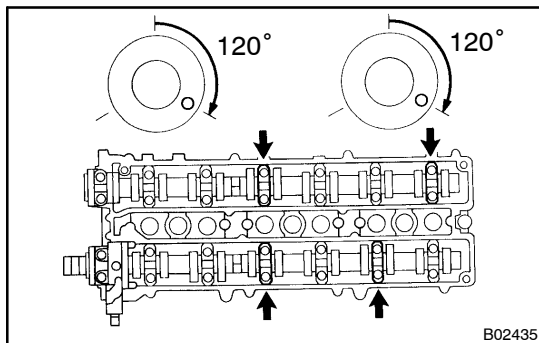
- (j) Install the other bearing caps in their proper locations.
- (k) Apply a light coat of engine oil on the threads and under the heads of the bearing cap bolts.
- (l) Install and uniformly tighten the 14 bearing cap bolts on one side, in several passes, in the sequence shown.
Torque: 20 N·m (200 kgf·cm, 15 ft·lbf)
- (m) Using a 5 mm hexagon wrench, the 2 No.3 camshaft bearing cap bolts.
Torque: 5.0 N·m (50 kgf·cm, 44 in·lbf)



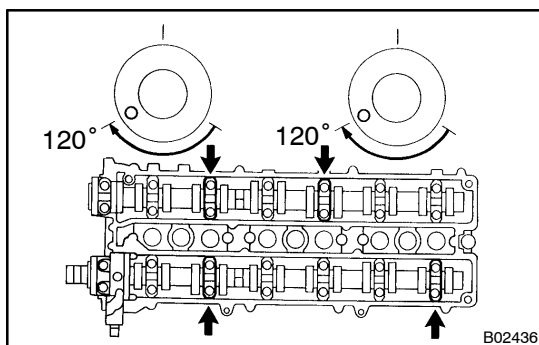
- (n) Using SST, push the 2 oil seals in as far as they can go.
SST 09316-60011 (09316-00011, 09316-00051)



- (o) Rotate the camshaft with a wrench at the hexagon position, bring the forward straight pin up.
(p) Loosen the 12 bearing cap bolts as shown, until they can be turned by hand; retighten in several passes.
Torque: 20 N·m (200 kgf·cm, 15 ft·lbf)



- (q) Turn the camshaft 1/3 of a revolution.
(r) Loosen the 8 bearing cap bolts as shown, until they can be turned by hand; retighten in several passes.
Torque: 20 N·m (200 kgf·cm, 15 ft·lbf)



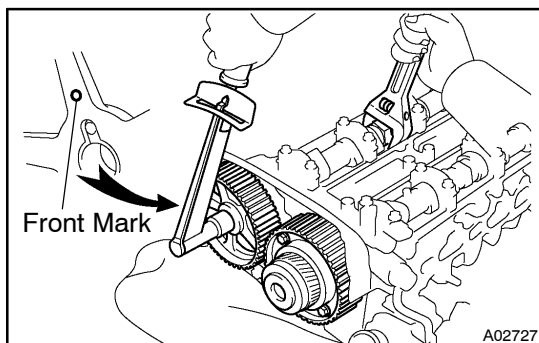
- (s) Turn the camshaft a further 1/3 of a revolution.
(t) Loosen the 8 bearing cap bolts as shown, until they can be turned by hand; retighten in several passes.
Torque: 20 N·m (200 kgf·cm, 15 ft·lbf)

4. CHECK AND ADJUST VALVE CLEARANCE (See page [EM-5](#))

5. INSTALL NO.4 TIMING BELT COVER

Install the timing belt cover with 4 bolts.

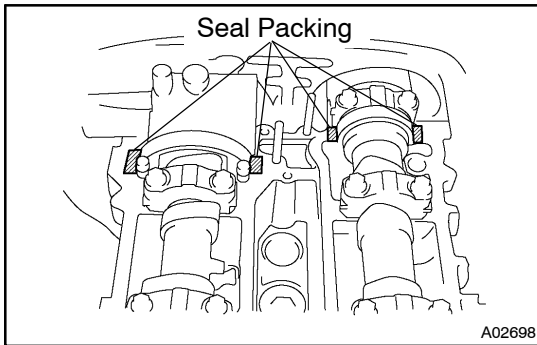
Torque: 8.0 N·m (80 kgf·cm, 71 in·lbf)



6. INSTALL CAMSHAFT TIMING PULLEYS

- (a) Install the exhaust camshaft timing pulley.
- (1) Align the camshaft knock pin with the groove in the pulley, and slide on the pulley.
 - (2) Slide the timing pulley on the camshaft, facing the front mark forward.
 - (3) Hold the hexagon portion of the camshaft with a wrench, and tighten the timing pulley bolt.
- Torque: 81 N·m (810 kgf·cm, 60 ft·lbf)**

- (b) Install the VV-i (intake camshaft timing) pulley (See page [EM-23](#)).
- 7. **CONNECT TIMING BELT TO CAMSHAFT TIMING PULLEYS** (See page [EM-23](#))

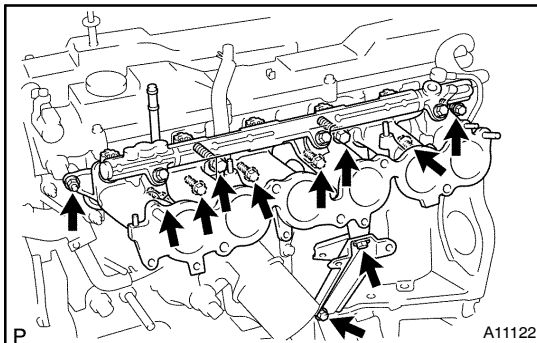


- 8. **INSTALL NO.1 AND NO.2 CYLINDER HEAD COVERS**
 - (a) Remove the any old packing (FIPG) material.
 - (b) Apply seal packing to the cylinder head as shown in the illustration.

Seal packing: Part No. 08826-00080 or equivalent

- (c) Install the gaskets to the cylinder head covers.
- (d) Install the cylinder head covers with the 12 bolts and 4 nuts.

Torque: 8.5 N·m (85 kgf·cm, 75 in·lbf)



9. **INSTALL INTAKE MANIFOLD ASSEMBLY**

- (a) Install a new gasket and the intake manifold and delivery pipe assembly with the 7 bolts and 2 nuts.

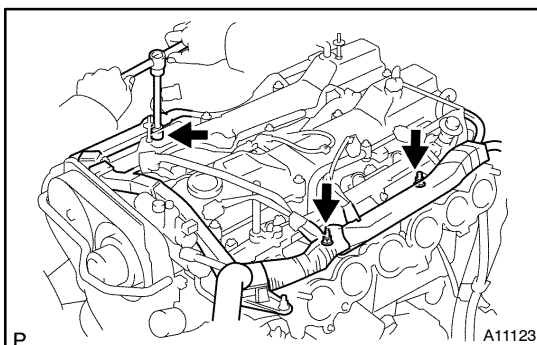
Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)

- (b) Pass the water bypass hose between the No.2, No.3 intake ports of the manifold and delivery pipe.
- (c) Install the manifold stay with the 2 bolts.

Torque: 40 N·m (400 kgf·cm, 30 ft·lbf)

- (d) Install the starter wire to the manifold stay.

- 10. **INSTALL FUEL PRESSURE PULSATION DAMPER** (See page [SF-27](#))



11. **CONNECT ENGINE WIRE TO CYLINDER HEAD**

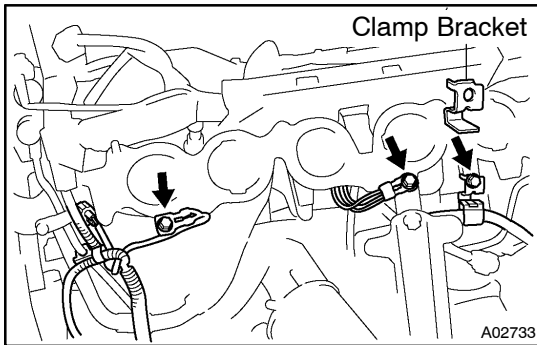
- (a) Install the engine wire protector with the 3 nuts.
- (b) Using a 5 mm hexagon wrench, install the bolt holding the engine wire protector to the No.2 cylinder head cover.
- (c) Connect the 6 injector connectors.

HINT:

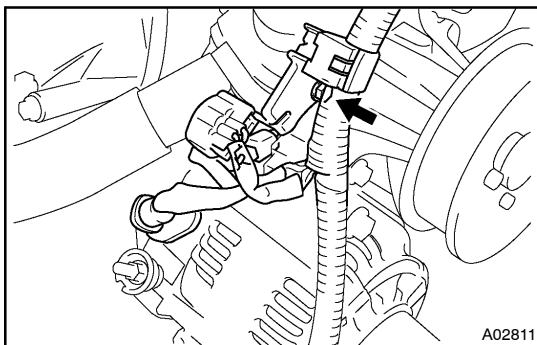
The Nos.1, 3, 5 injector connectors and dark gray, and the Nos.2, 4, 6 injector connectors are brown.

- (d) Connect the camshaft timing oil control valve connector.
- (e) Connect the camshaft position sensor connector.

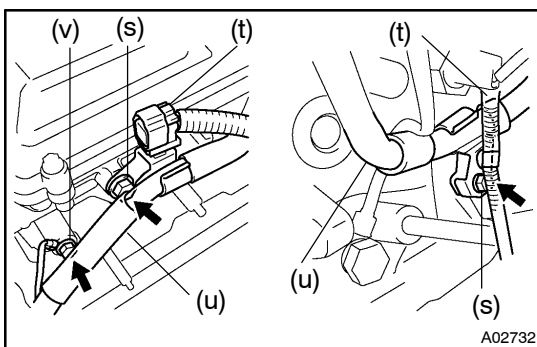
- (f) Connect the ECT sensor connector.
- (g) Connect the 2 knock sensor connector.
- (h) Connect the starter connector.
- (i) Connect the oil pressure switch connector.
- (j) Connect the oil level sensor connector.



- (k) Install the clamp bracket to the intake manifold.
- (l) Connect the 2 wire clamps to the No.1 oil pipe and clamp bracket on the intake manifold.
- (m) Install the 2 ground terminals to the intake manifold. Tighten so that each calking part should face inside.



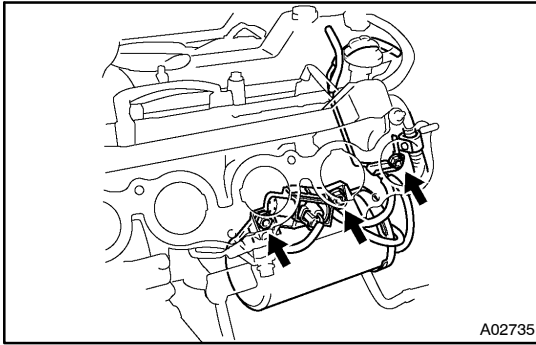
- (n) Install the clamp bracket to the water pump.
- (o) Connect the generator connector.
- (p) Connect the crankshaft position sensor connector.
- (q) Connect the heated oxygen sensor (bank 1 sensor 1) connector.
- (r) Secure the engine wire with the clamp.



- (s) Install the 2 hose clamps to the cylinder head and oil filter bracket.
- (t) Install the heated oxygen sensor (bank 2 sensor 1) connector and engine wire clamp to the hose clamps.
- (u) Install the 2 water bypass hoses to the hose clamps on the cylinder head and oil filter bracket.
- (v) Install the ground strap to the cylinder head.

- 12. INSTALL SPARK PLUGS**
- 13. INSTALL IGNITION COILS AND HIGH-TENSION CORD SET ASSEMBLY (See page IG-9)**

- 14. INSTALL NO.3 TIMING BELT COVER**
Torque: 8.0 N·m (80 kgf·cm, 71 in·lbf)



15. INSTALL VACUUM CONTROL VALVE SET AND NO.2 VACUUM PIPE

- (a) Install the vacuum control valve set and No.2 vacuum pipe with the 3 nuts.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

- (b) Install the engine wire clamp to the clamp bracket of the No.2 vacuum pipe.
 (c) Connect the VSV connector for the ACIS.

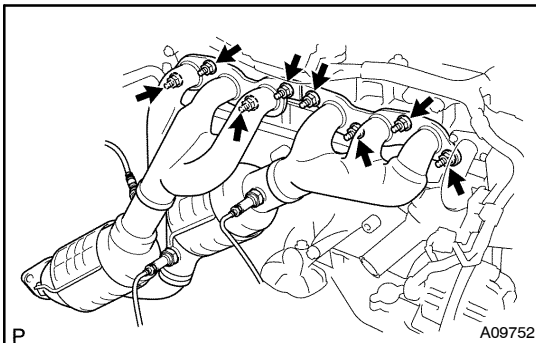
16. INSTALL AIR INTAKE CHAMBER (See page SF-49)

17. INSTALL OIL DIPSTICK AND GUIDE FOR A/T (See page EM-68)

18. INSTALL OIL DIPSTICK AND GUIDE FOR ENGINE (See page LU-12)

19. INSTALL THROTTLE BODY AND INTAKE AIR CONNECTOR ASSEMBLY (See page EM-5)

20. INSTALL WATER BYPASS OUTLET AND NO.1 WATER BYPASS PIPE (See page CO-13)

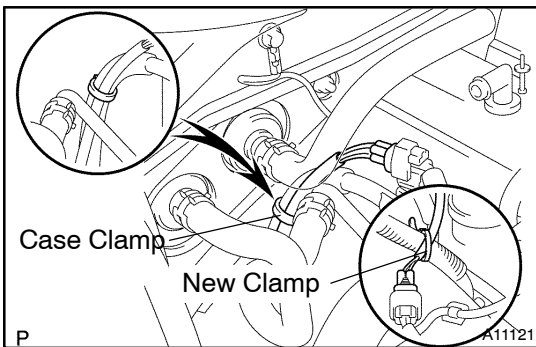


21. INSTALL EXHAUST MANIFOLD

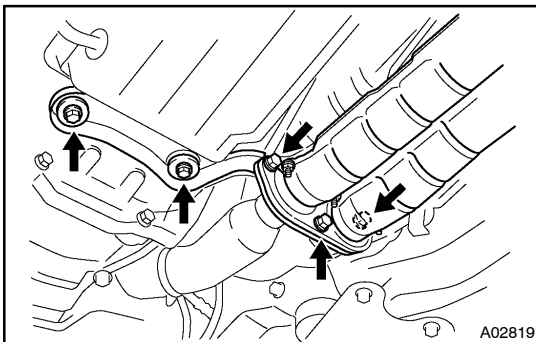
- (a) Install 2 new gaskets to the cylinder head.
 (b) Using a 14 mm deep socket wrench, install the exhaust manifold with the 8 nuts. Uniformly tighten the nuts in several passes.

Torque: 40 N·m (408 kgf·cm, 30 ft·lbf)

- (c) Connect the 3 heated oxygen sensor connectors and clamp.



- (d) Install a new clamp and the case clamp as shown in the illustration.



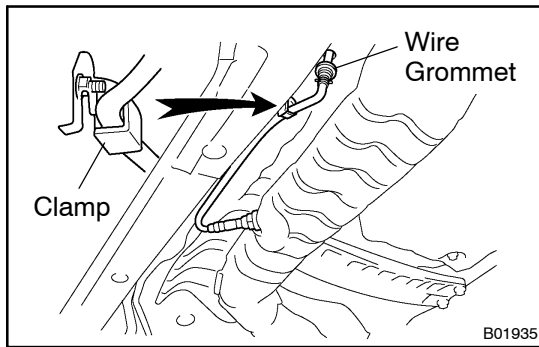
22. CONNECT FRONT EXHAUST PIPE TO EXHAUST MANIFOLD

- (a) Temporarily install the pipe support bracket to the transmission with the 2 bolts.

- (b) Install 2 new gaskets to front end of the front exhaust pipe, and connect the front exhaust pipe to the exhaust manifold with the 3 bolts and nuts.

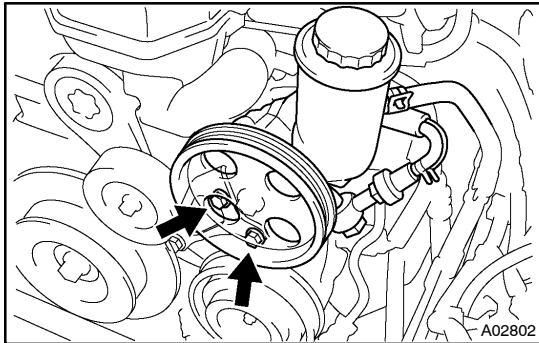
Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

- (c) Tighten the 2 bolts holding the pipe support bracket to the transmission.



Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

- (d) Connect the wire grommet and sensor wire of the the heated oxygen sensor (bank 2 sensor 2) to the hole and clamp on the floor.



23. INSTALL PS PUMP

- (a) Install the vane pump with the 2 bolts.
Torque: 58 N·m (590 kgf·cm, 43 ft·lbf)
 (b) Install the pump rear stay with the 2 bolts.
Torque: 39.2 N·m (400 kgf·cm, 29 ft·lbf)

24. INSTALL DRIVE BELT (See page [CH-1](#))

25. INSTALL AIR CLEANER, MAF METER AND INTAKE AIR RESONATOR ASSEMBLY (See page [EM-68](#))

26. INSTALL AIR CLEANER INLET

27. CONNECT UPPER RADIATOR HOSE TO WATER OUT-LET

28. INSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

29. FILL WITH ENGINE COOLANT

30. START ENGINE AND CHECK FOR LEAKS

31. INSTALL ENGINE UNDER COVER

32. ROAD TEST

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

33. RECHECK ENGINE COOLANT LEVEL