

2006 Honda Insight

2000-06 ENGINE Cooling System - Insight

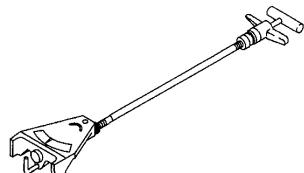
2000-06 ENGINE

Cooling System - Insight

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①*	07JGG-001010A	Belt Tension Gauge	1

* :Included in the Belt Tension Gauge Set, T/N 07TGG-001000A



G03680565

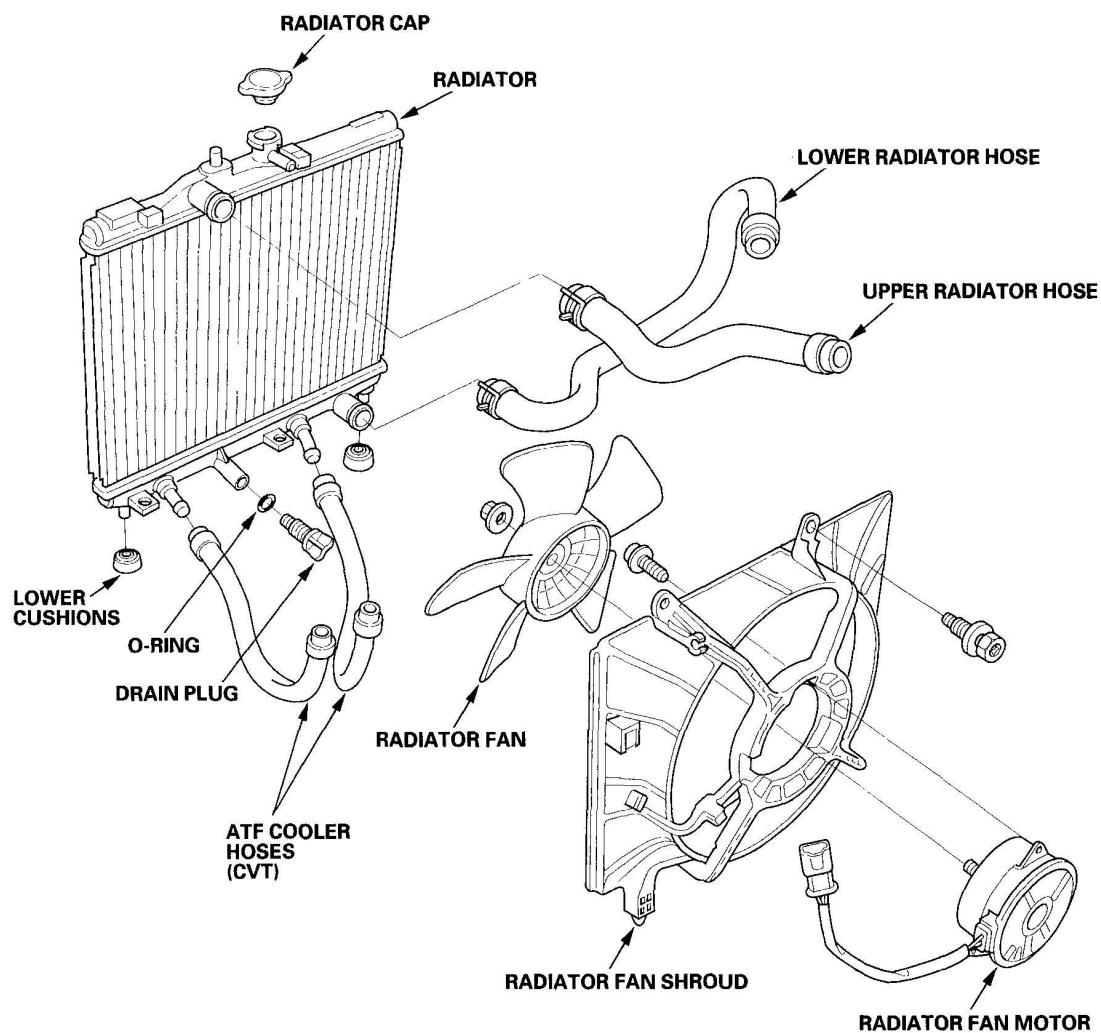
Fig. 1: Identifying Special Tools

Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

2006 Honda Insight

2000-06 ENGINE Cooling System - Insight



G03680566

Fig. 2: Identifying Components Location (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006 Honda Insight

2000-06 ENGINE Cooling System - Insight

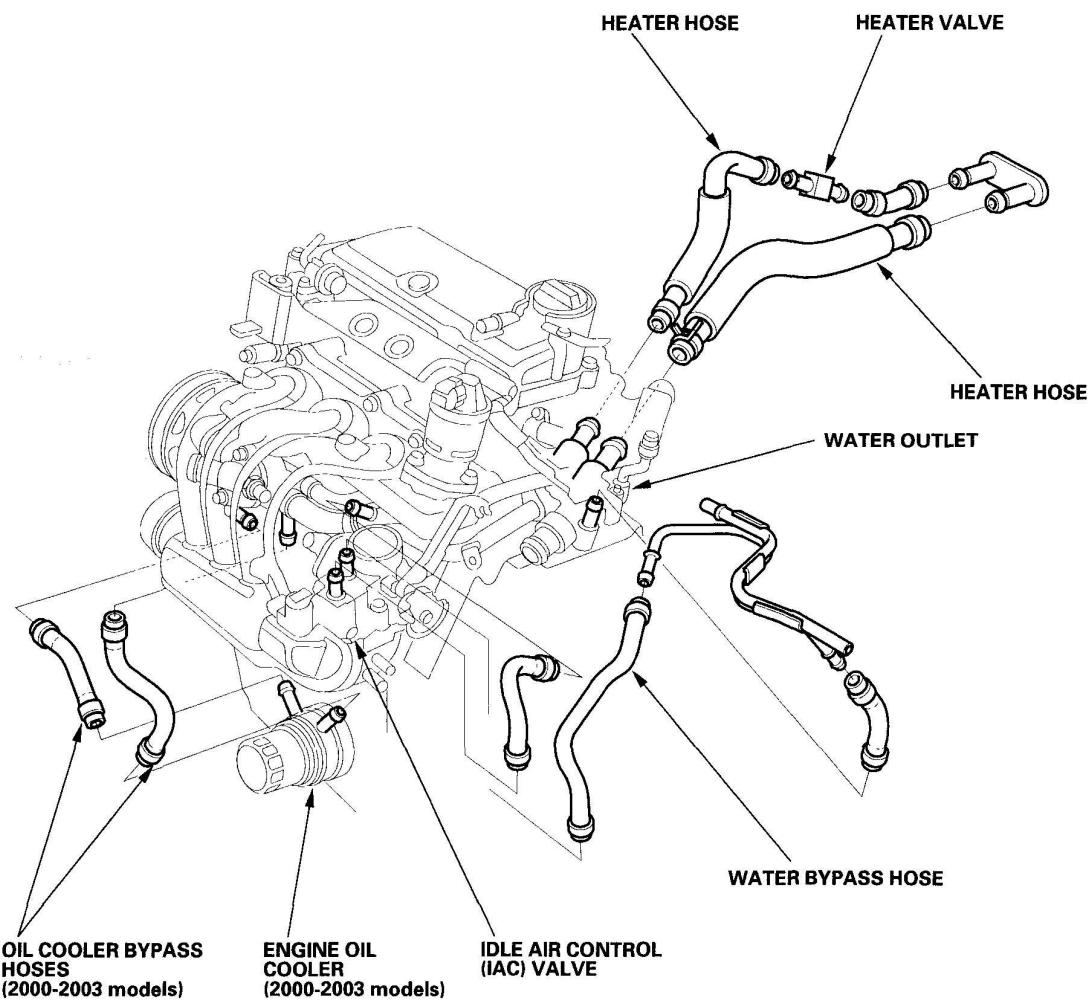
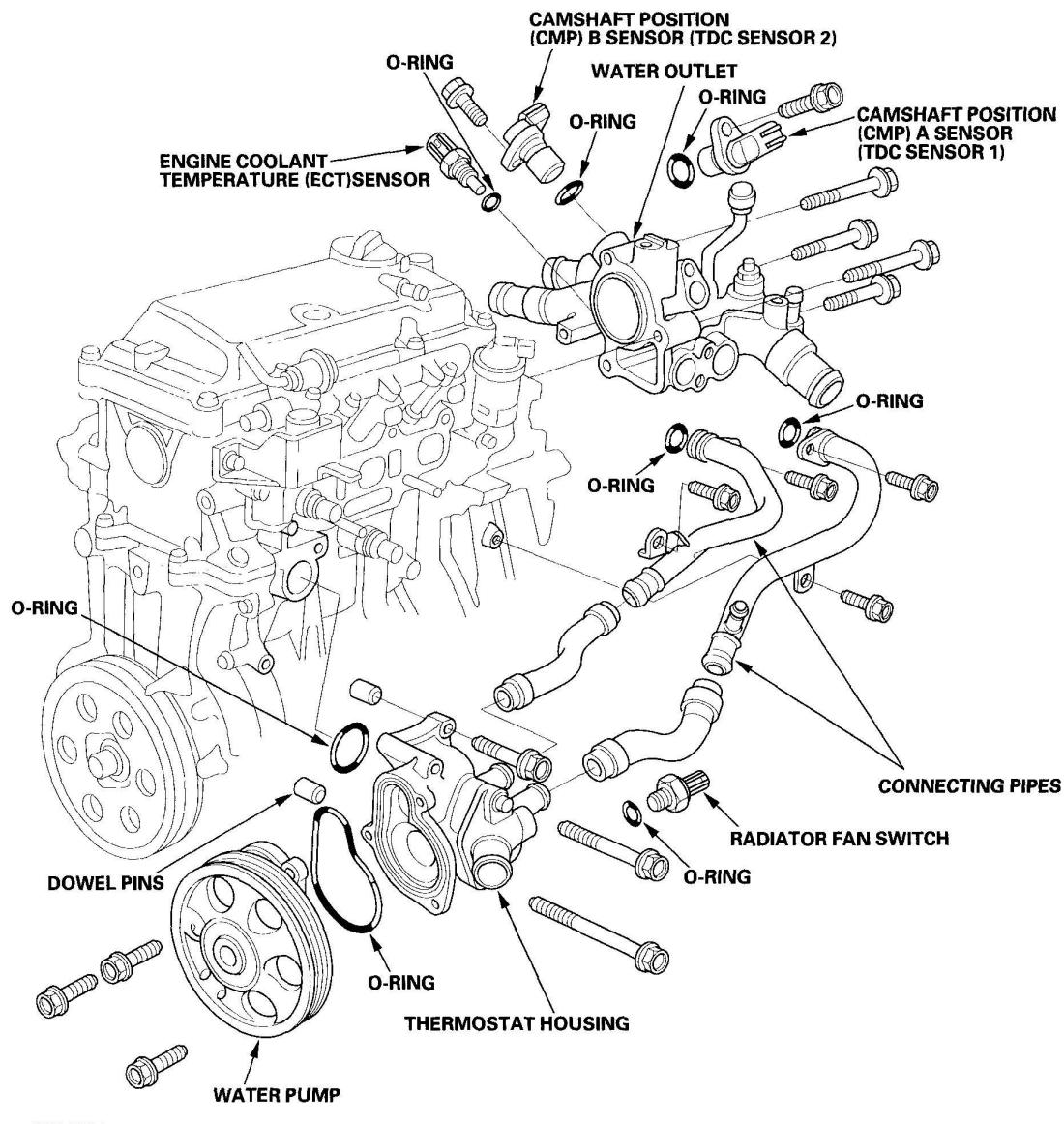


Fig. 3: Identifying Components Location (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

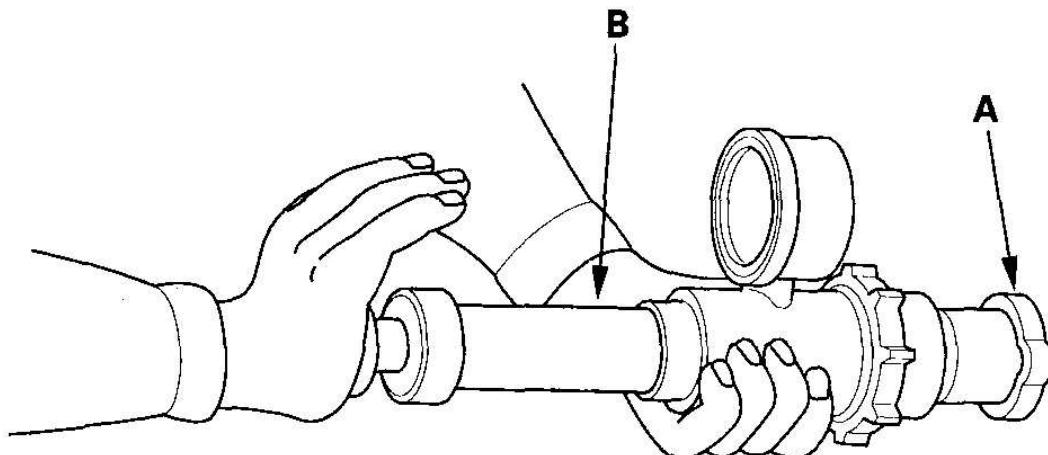


G03680568

Fig. 4: Identifying Components Location (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR CAP TEST

1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on the pressure tester (B) (commercially available).



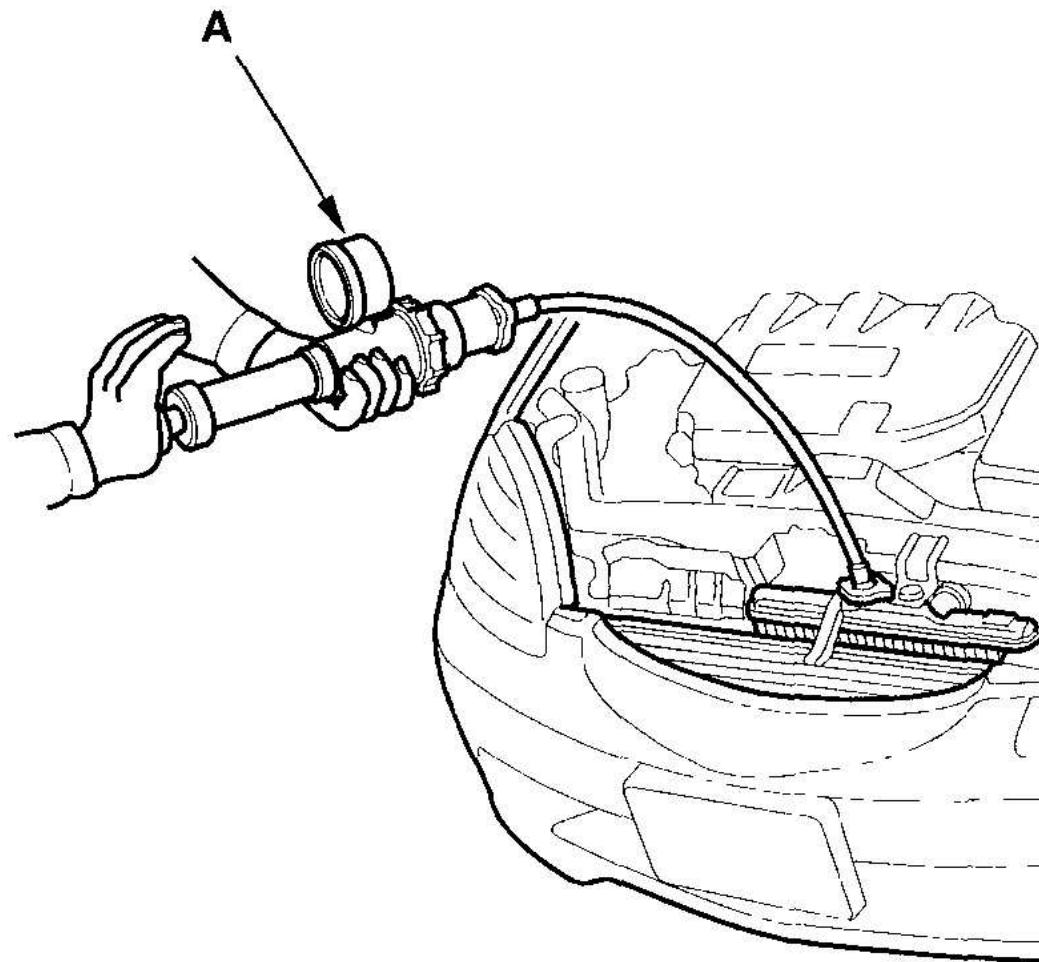
G03680569

Fig. 5: Testing Radiator Cap**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm², 14-18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

RADIATOR TEST

1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. Attach the pressure tester (A) (commercially available) to the radiator.



G03680570

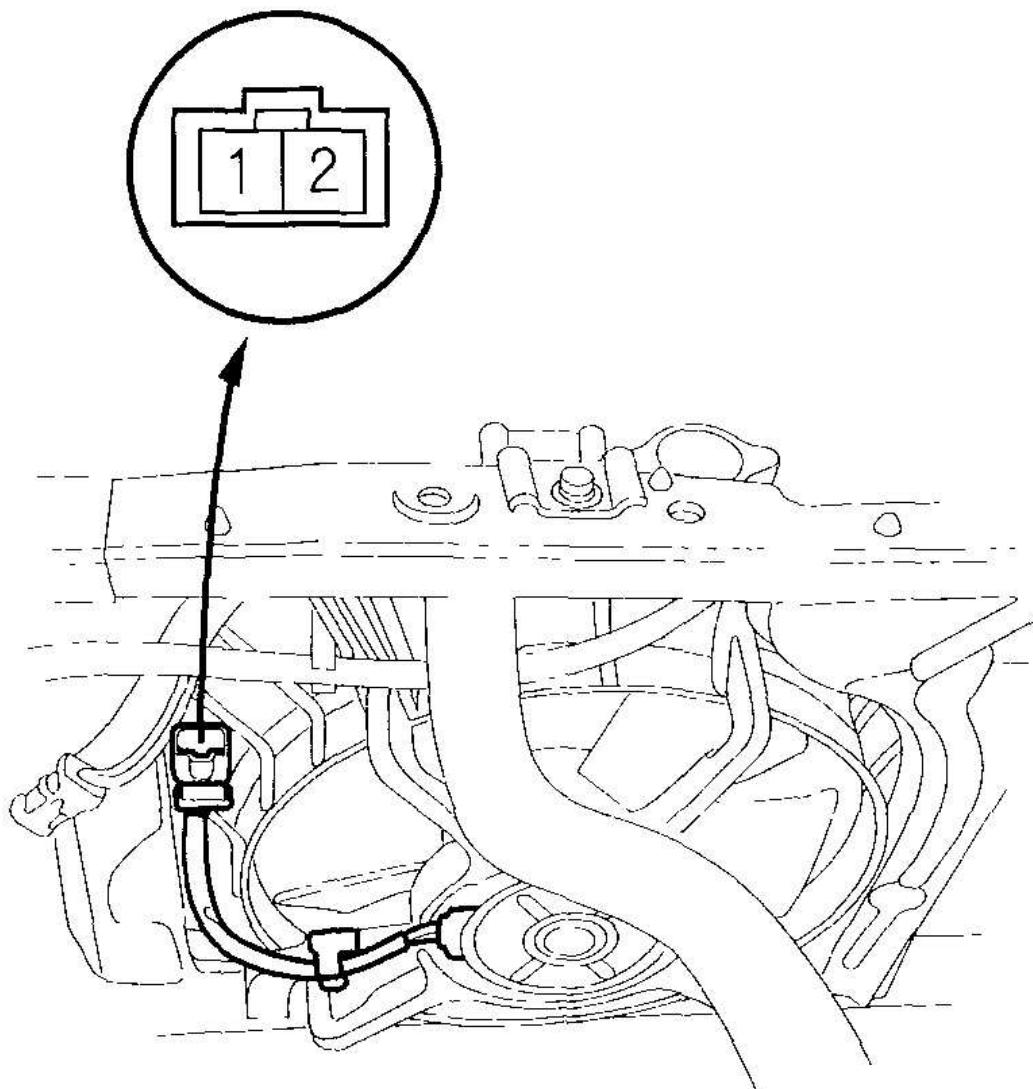
Fig. 6: Testing Radiator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm², 14-18 psi).
4. Inspect for engine coolant leaks and a drop in pressure.
5. Remove the tester and reinstall the radiator cap.
6. Check for engine oil in the coolant and/or coolant in the engine oil.

FAN MOTOR TEST

1. Disconnect the 2P connector from the radiator fan motor.



G03680571

Fig. 7: Disconnecting 2P Connector From Radiator Fan Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Test the motor by connecting battery power to the No. 2 terminal and ground to the No. 1 terminal.

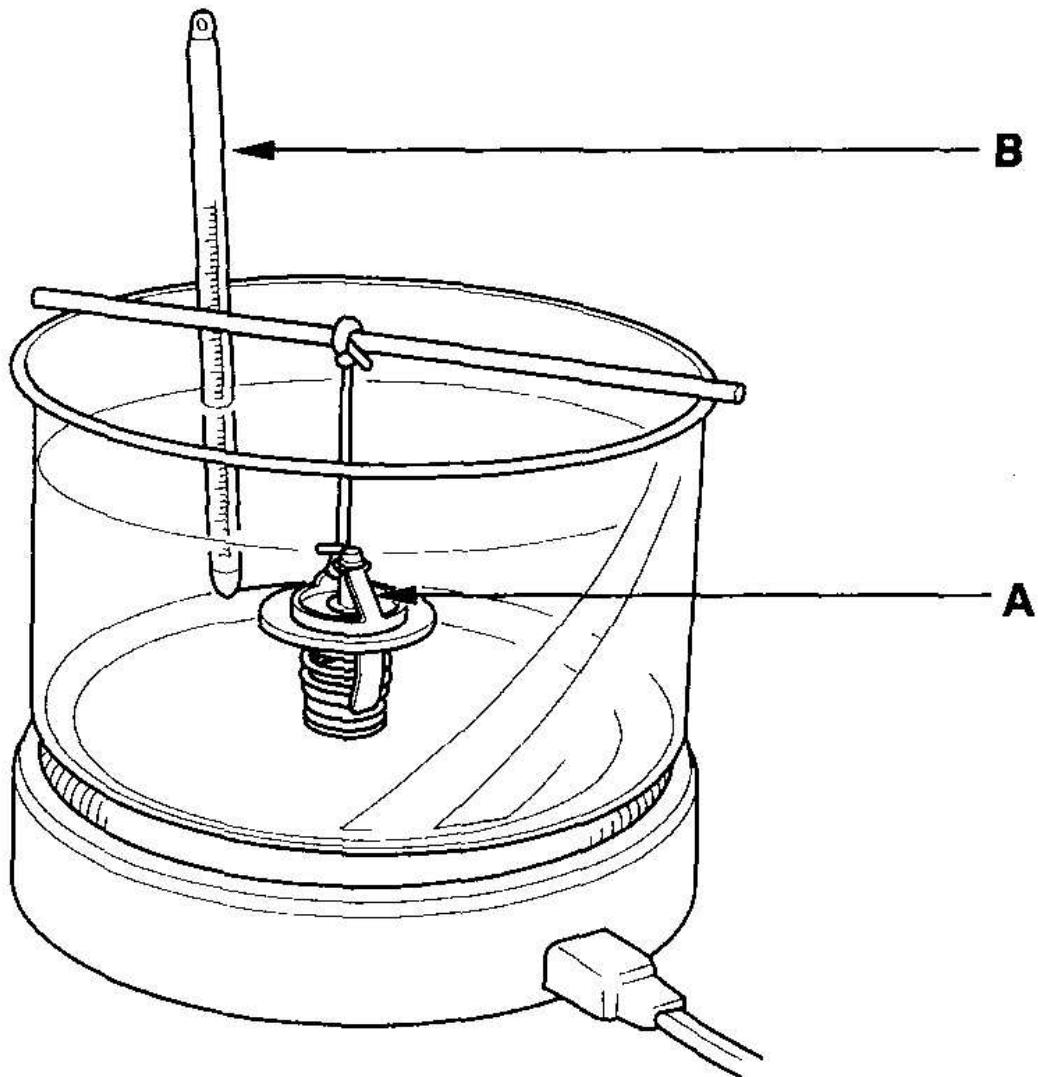
3. If the motor fails to run or does not run smoothly, replace it (see **RADIATOR AND FAN REPLACEMENT**).

THERMOSTAT TEST

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



G03680572

Fig. 8: Testing Thermostat

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Heat the water, and check the temperature with the thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.
3. Measure the lift height of the thermostat when it is fully open.

Standard Thermostat

Lift Height: Above 8.0 mm (0.31 in.)

Starts Opening: 187-194°F (86-90°C)

Fully Open: 212°F (100°C)

WATER PUMP-A/C COMPRESSOR BELT INSPECTION AND ADJUSTMENT

Special Tools Required

Belt tension gauge 07JGG-001010A

BELT TENSION GAUGE METHOD-WITH A/C

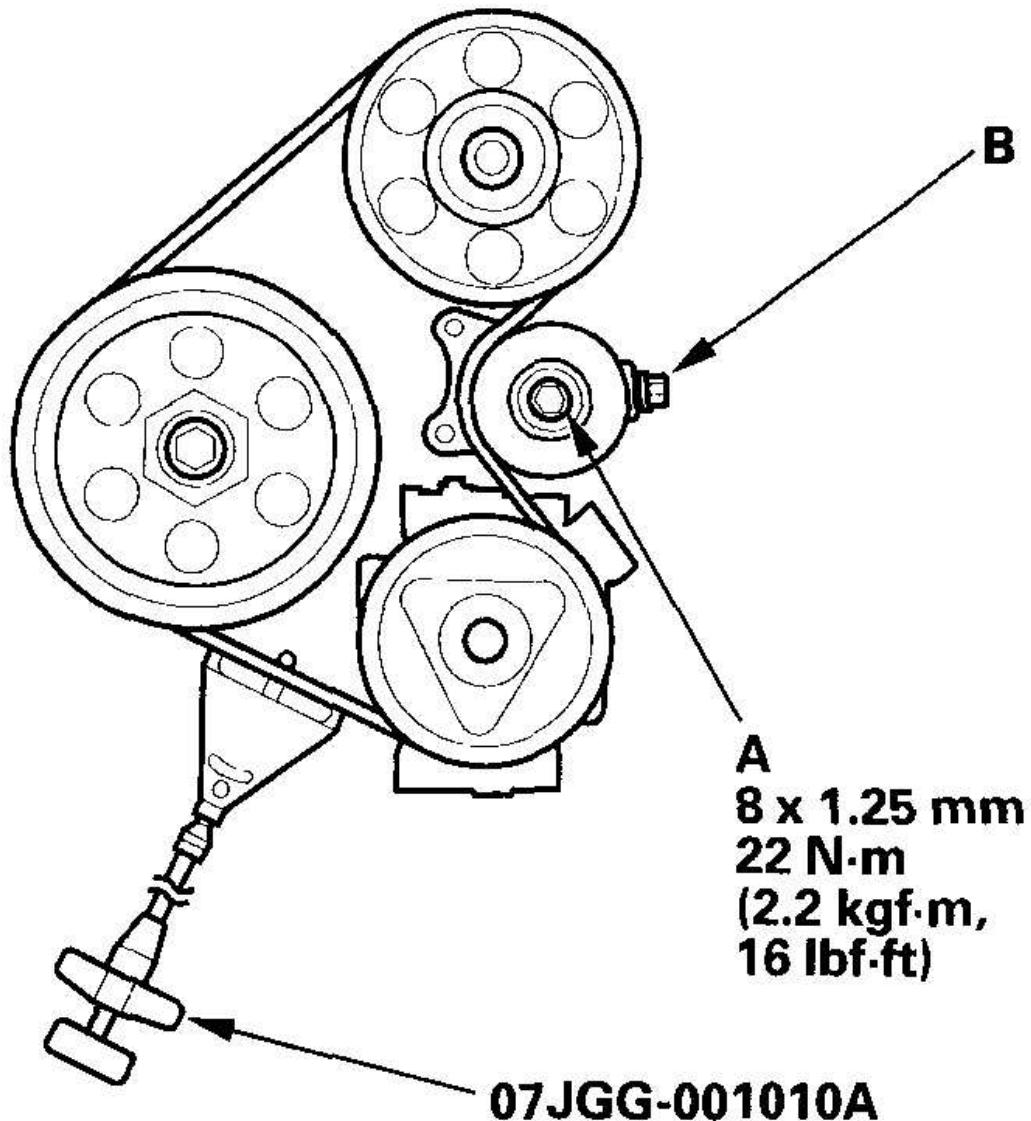
Inspection

1. Remove the right rear splash shield.
2. Attach the belt tension gauge to the belt, and measure the tension. Follow the gauge manufacturer's instructions. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 3.

Tension

Used Belt: 390-540 N (40-55 kgf, 88-121 lbf)

New Belt: 930-1,080 N (95-110 kgf, 209-243 lbf)



G03680573

Fig. 9: Measuring Belt Tension And Torque Specifications (Method-With A/C)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Loosen the idler pulley center nut (A).
4. Turn the adjusting bolt (B) to obtain the proper belt tension, then retighten the idler pulley center nut.
5. Recheck the belt tension.
6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.

DEFLECTION METHOD-WITH A/C

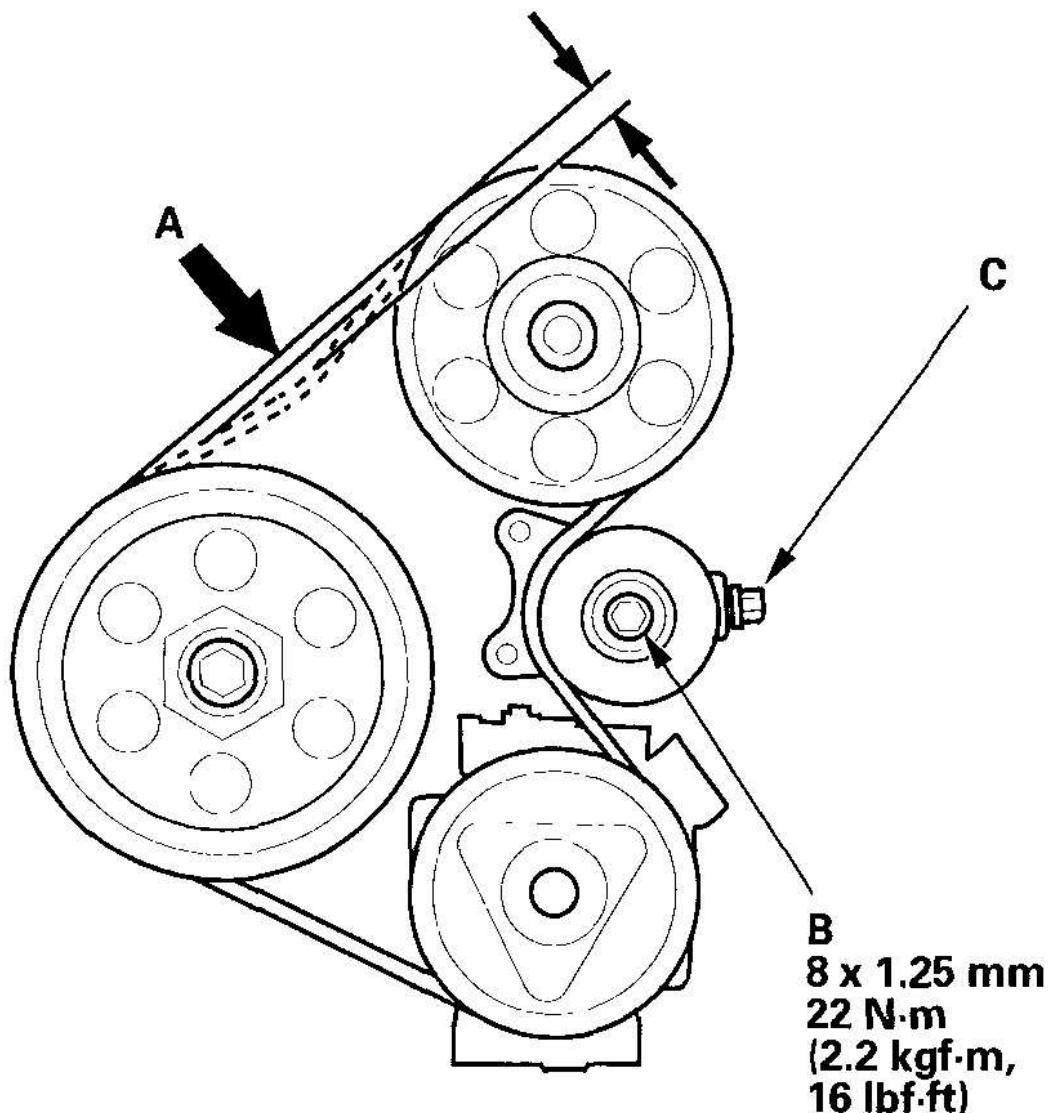
Inspection

1. Apply a force of 98 N.m (10 kgf, 22 lbf), and measure the deflection at the midpoint (A) between the water pump and crankshaft pulleys. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Deflection

Used Belt: 7.5-10.5 mm (0.30-0.41 in.)

New Belt: 4.0-6.0 mm (0.16-0.24 in.)



G03680574

**Fig. 10: Measuring Belt Deflection And Torque Specifications (Method-
With A/C)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Adjustment

2. Loosen the idler pulley center nut (B).

3. Turn the adjusting bolt (C) to obtain the proper belt deflection, then retighten the idler pulley center nut.
4. Recheck the belt deflection.
5. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.

WATER PUMP BELT INSPECTION AND ADJUSTMENT

Special Tools Required

Belt tension gauge 07JGG-001010A

BELT TENSION GAUGE METHOD-WITHOUT A/C

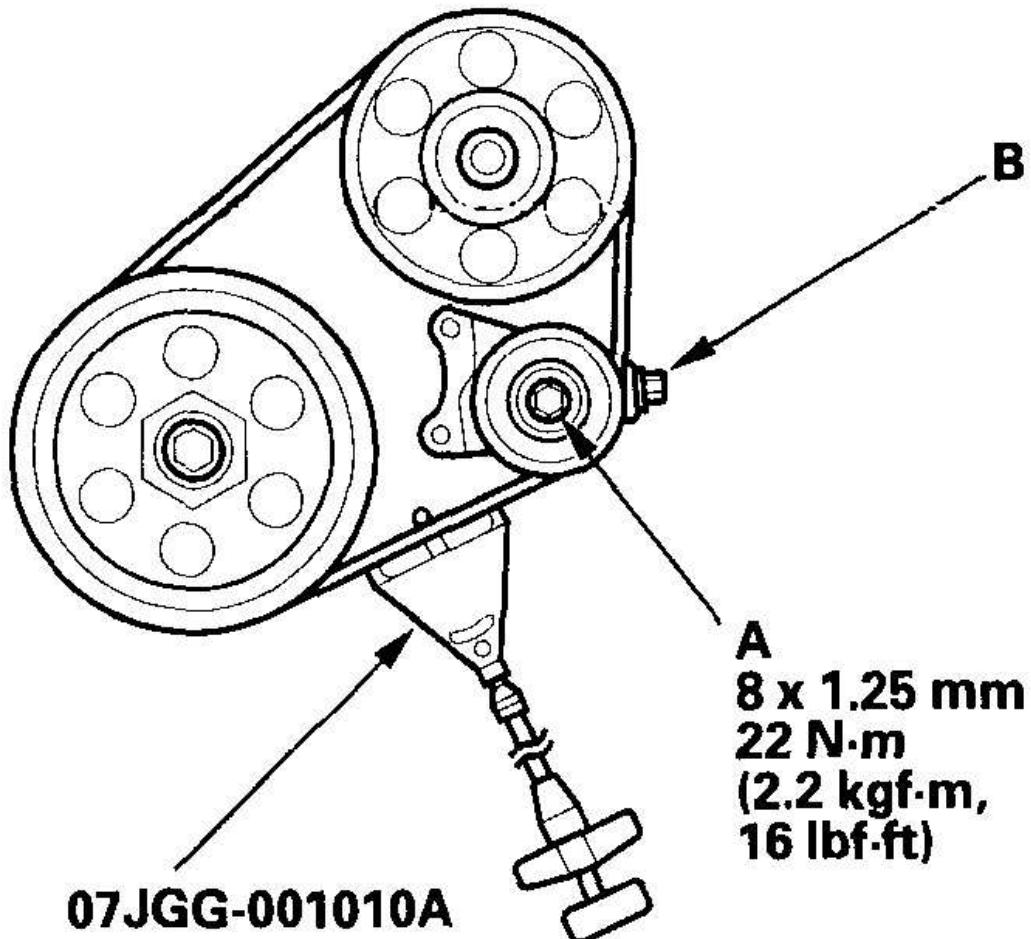
Inspection

1. Remove the right rear splash shield.
2. Attach the belt tension gauge to the belt, and measure the tension. Follow the gauge manufacturer's instructions. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 3.

Tension

Used Belt: 340-490 N (35-50 kgf, 77-110 lbf)

New Belt: 440-640 N (45-65 kgf, 99-143 lbf)



07JGG-001010A

G03680575

Fig. 11: Measuring Belt Tension And Torque Specifications (Method-Without A/C)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Adjustment

3. Loosen the idler pulley center nut (A).
4. Turn the adjusting bolt (B) to obtain the proper belt tension, then retighten the idler pulley center nut.
5. Recheck the belt tension.

6. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.

DEFLECTION METHOD-WITHOUT A/C

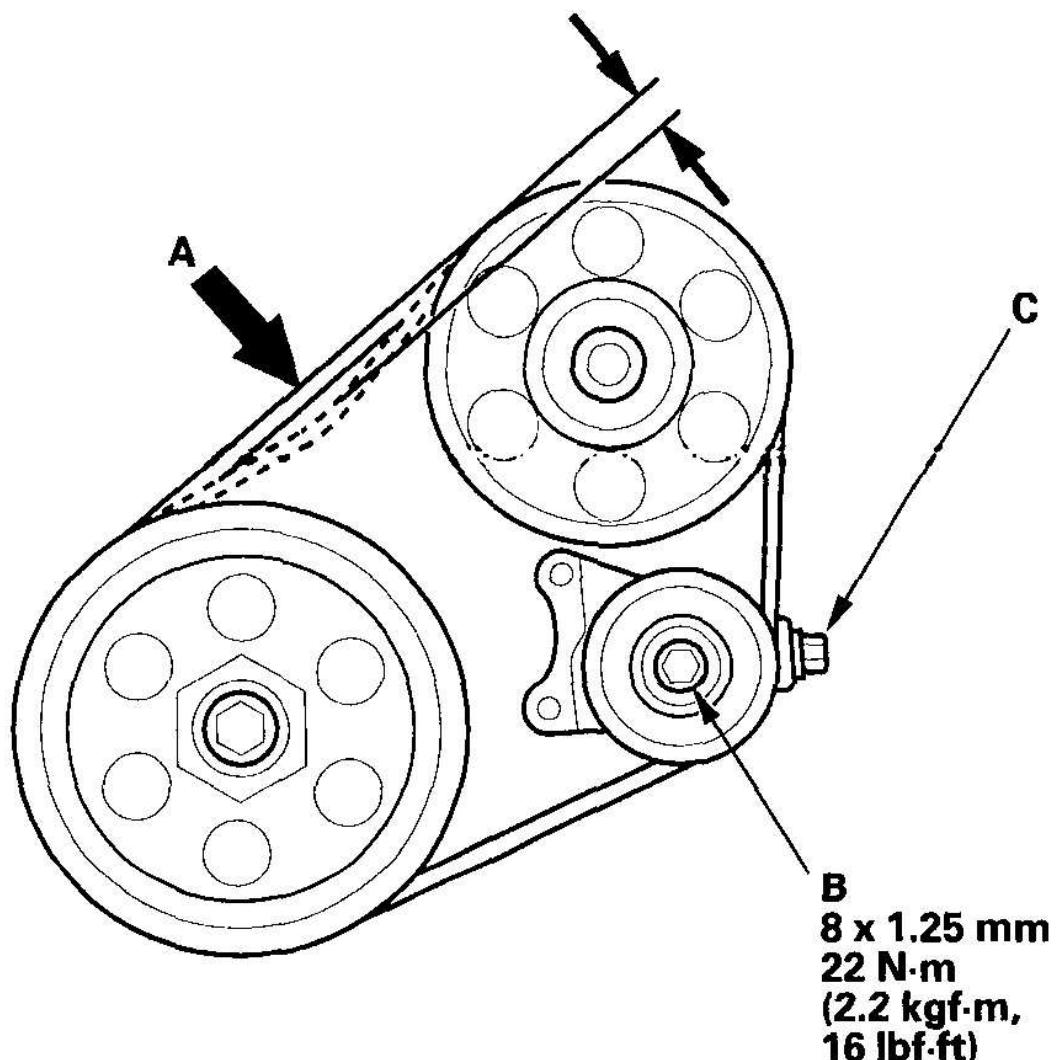
Inspection

1. Apply a force of 98 N (10 kgf, 22 lbf), and measure the deflection at the midpoint (A) between the water pump and crankshaft pulleys. If the belt is worn or damaged, replace it. If the belt needs adjustment, go to step 2.

Deflection

Used Belt: 8.5-11.0 mm (0.33-0.43 in.)

New Belt: 7.0-10.0 mm (0.28-0.39 in.)



G03680576

Fig. 12: Measuring Belt Deflection And Torque Specifications (Method-Without A/C)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

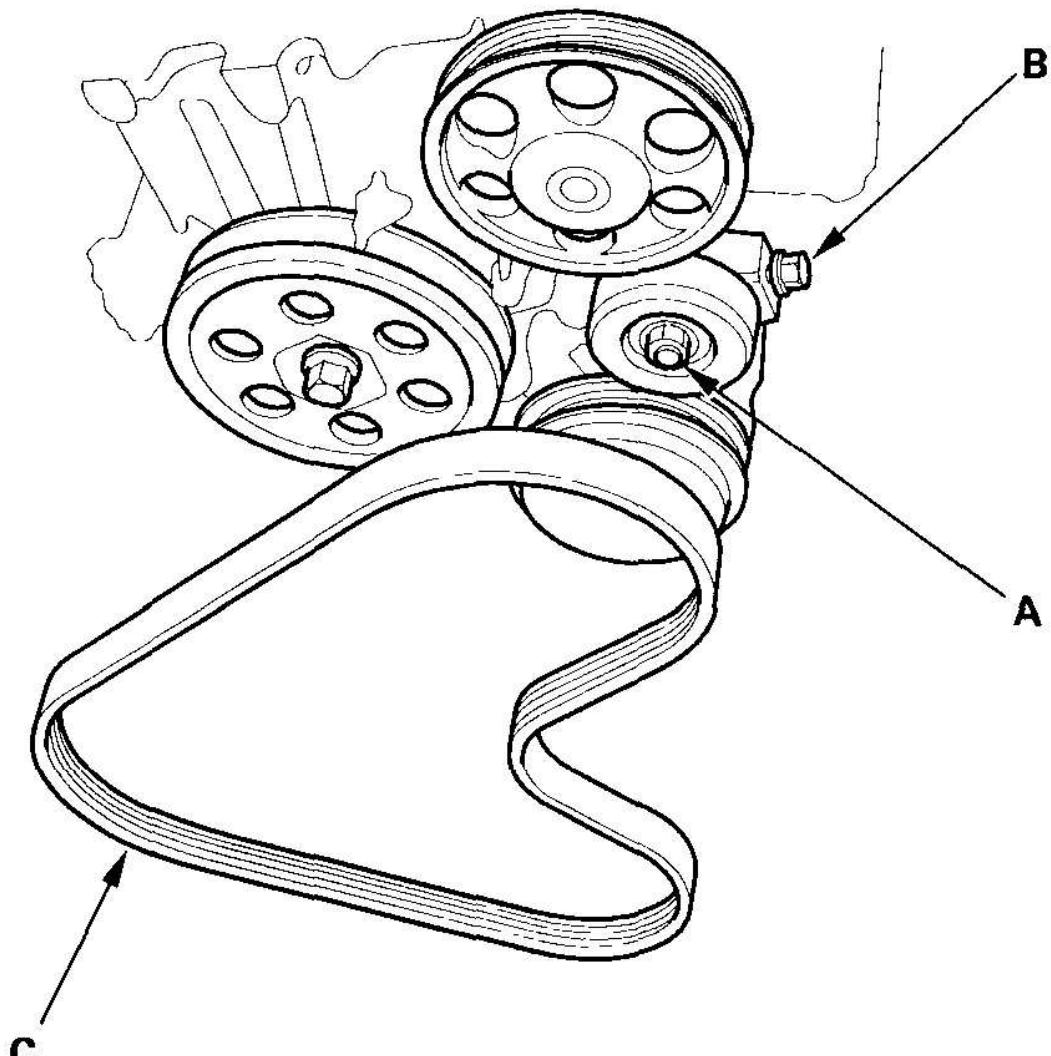
Adjustment

2. Loosen the idler pulley center nut (B).
3. Turn the adjusting bolt (C) to obtain the proper belt deflection, then retighten the idler pulley center nut.

4. Recheck the belt deflection.
5. If you installed a new belt, run the engine for 5 minutes, then readjust the belt to the used belt specification.

WATER PUMP INSPECTION

1. Loosen the idler pulley center nut (A). Turn the adjusting bolt (B) clockwise (counterclockwise for models without A/C compressor), then remove the water pump-A/C compressor belt or water pump belt (C).



G03680577

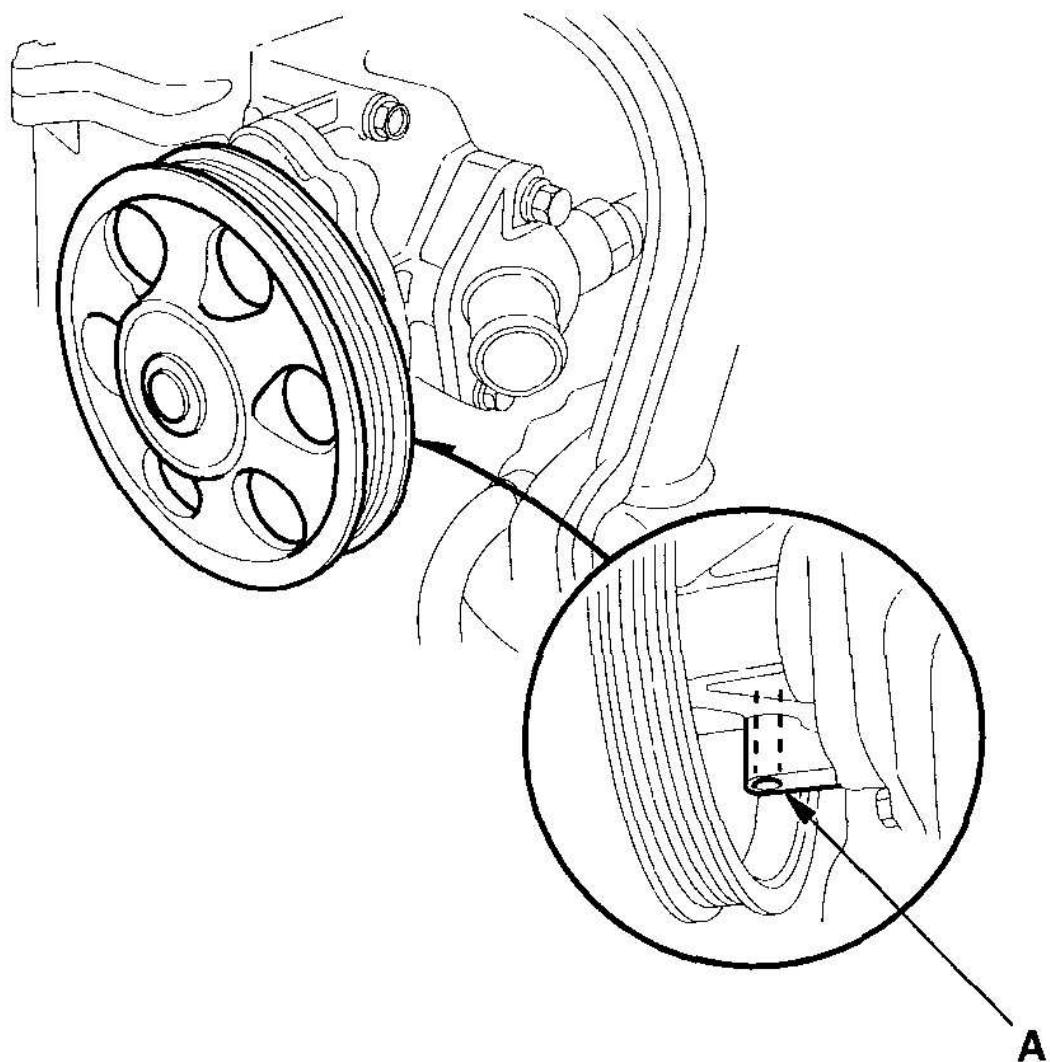
Fig. 13: Removing Water Pump-A/C Compressor Belt Or Water Pump Belt

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the water pump pulley clockwise. Check that it turns freely. If it doesn't turn smoothly, replace the water pump (see **WATER PUMP INSPECTION**).

NOTE: When you check the water pump pulley, you may see a

small amount of "weeping" from the bleed hole (A). This is normal.



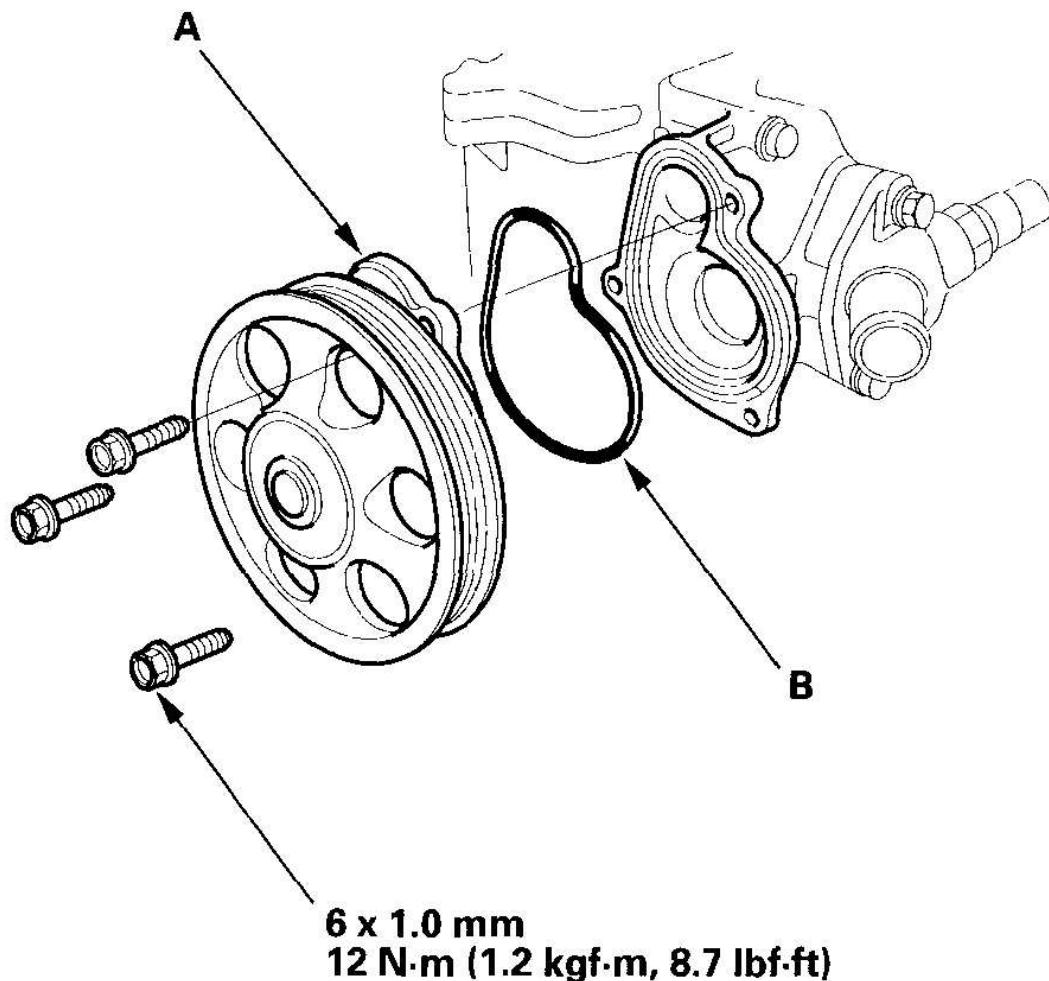
G03680578

Fig. 14: Identifying Weeping From Bleed Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the water pump-A/C compressor belt or water pump belt.

WATER PUMP REPLACEMENT

1. Loosen the idler pulley center nut. Turn the adjusting bolt clockwise (counterclockwise for models without A/C compressor), then remove the water pump-A/C compressor belt or water pump belt.
2. Remove the water pump (A) by removing three bolts.



G03680579

Fig. 15: Removing Water Pump And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

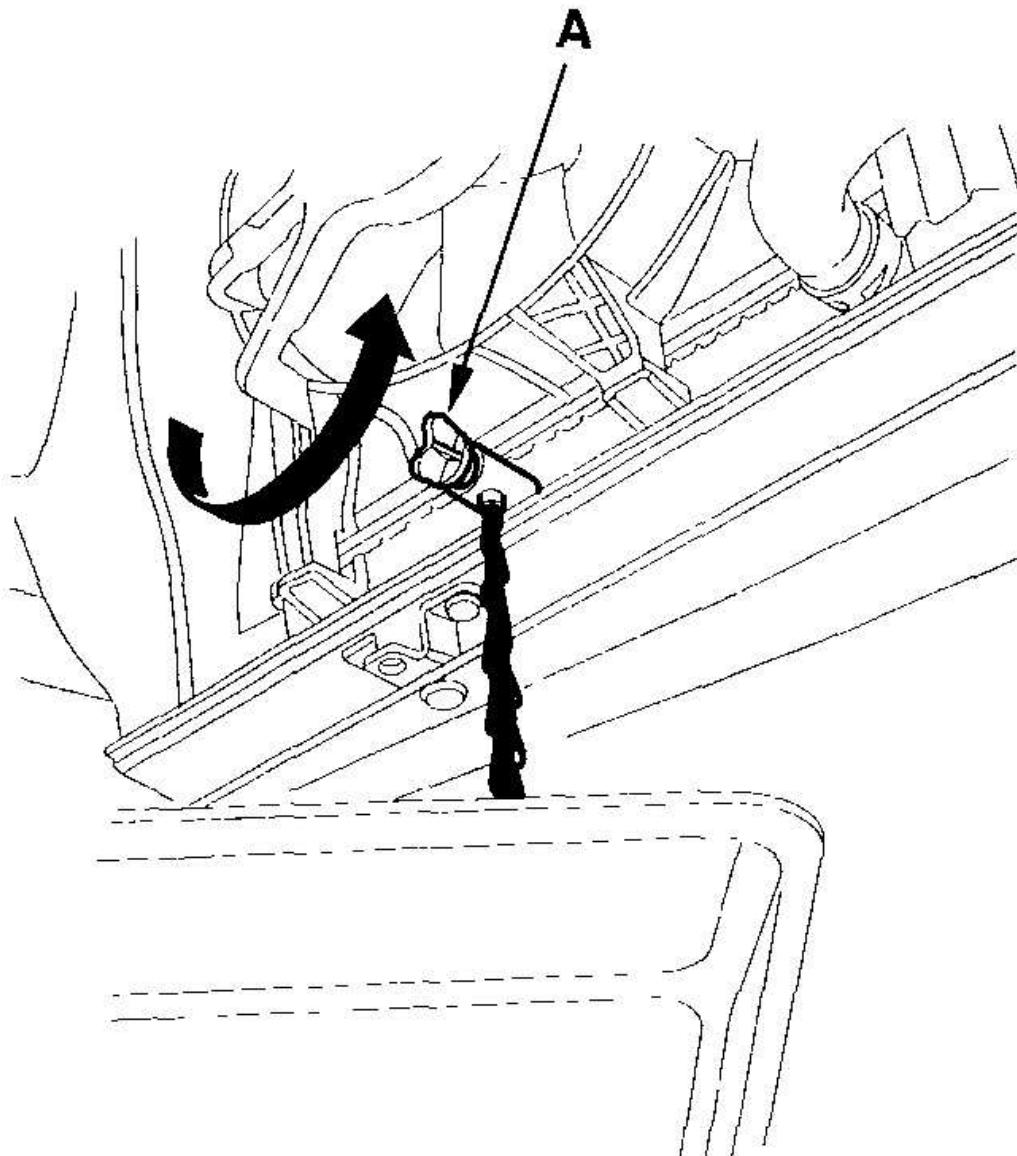
3. Inspect, repair, and clean the O-ring groove and the mating surface on the

thermostat housing.

4. Install the water pump, with a new O-ring (B), in the reverse order of removal.
5. Clean up any spilled engine coolant.

COOLANT REPLACEMENT

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the engine. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Remove the splash shields (see step 24 on **ENGINE ASSEMBLY**).
4. Loosen the drain plug (A), and drain the coolant.

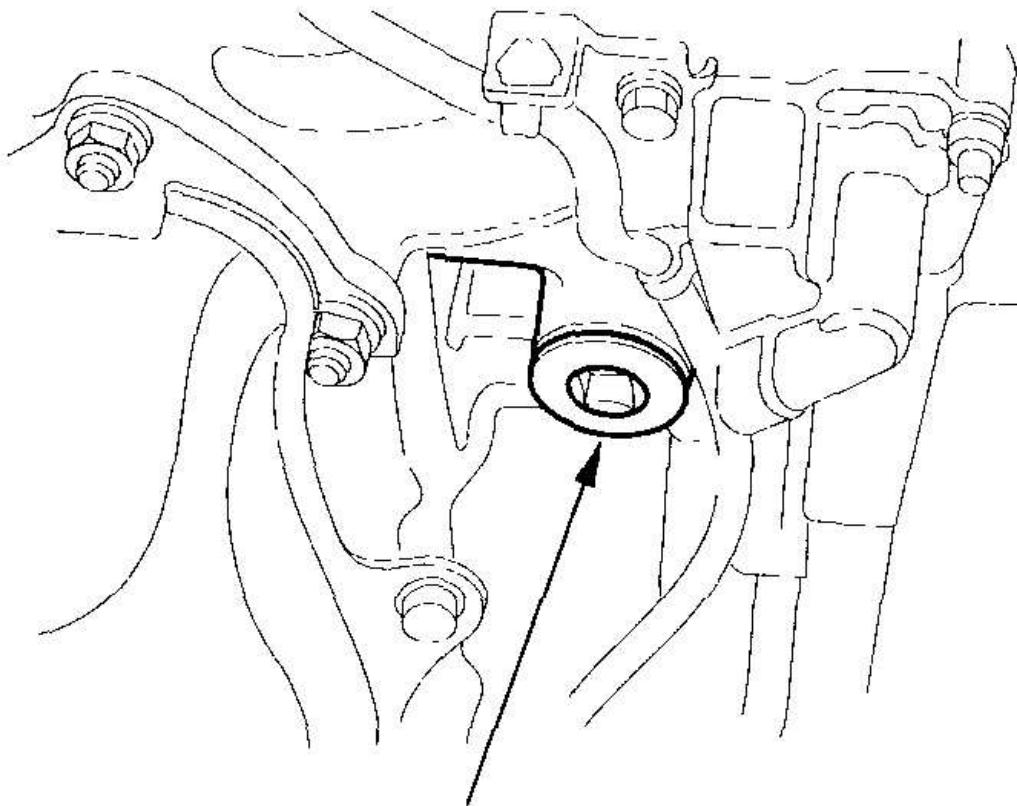


G03680580

Fig. 16: Draining Coolant

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the drain bolt (A) from the rear side of the engine block.



A
83 N·m
(8.5 kgf·m, 61 lbf·ft)

G03680581

Fig. 17: Identifying Drain Bolt On Rear Side Of Engine Block And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. After the coolant has drained, apply liquid gasket to the drain bolt threads, then reinstall the bolt with a new washer and tighten it securely.
7. Tighten the radiator drain plug securely.
8. Remove, drain and reinstall the coolant reservoir. Fill the tank to the MAX mark with Honda Long Life Antifreeze/Coolant Type 2 (P/N OL 999-9001).

9. Loosen the air bleed bolt (A) in the water outlet, then pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator to the bottom of the filler neck. Do not let coolant spill on any electrical parts or the paint. If any coolant spills, rinse it off immediately.

NOTE:

- **Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL 999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.**
- **Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50% antifreeze and 50% water. Pre-mixing is not required.**

Engine Coolant Capacities [Including the reservoir capacity of 0.36 L (0.10 US gal)]

At Coolant Change:

2000-2003 models: 2.5 L (0.66 US gal)

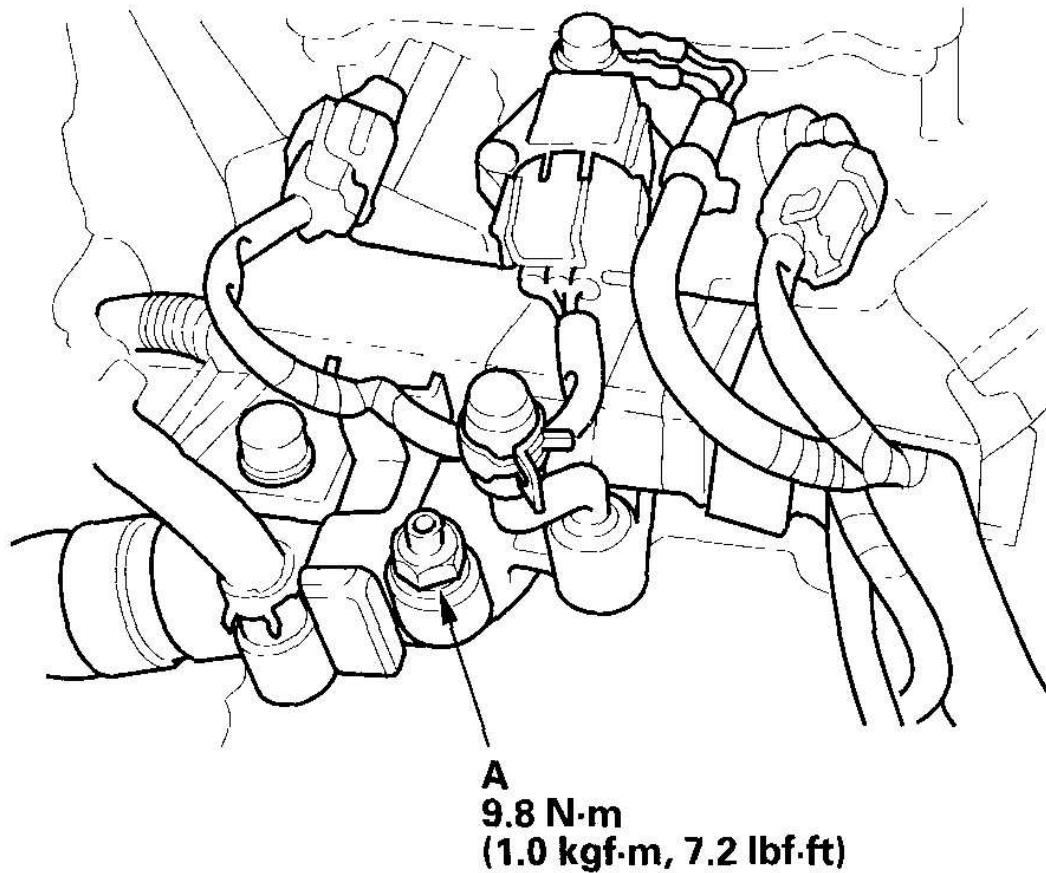
2004-2006 models: 2.3 L (0.61 US gal)

After Engine Overhaul:

2000-2003 models: 4.0 L (1.06 US gal)

2004-2006 M/T models: 3.9 L (1.03 US gal)

2004-2006 CVT models: 4.0 L (1.06 US gal)



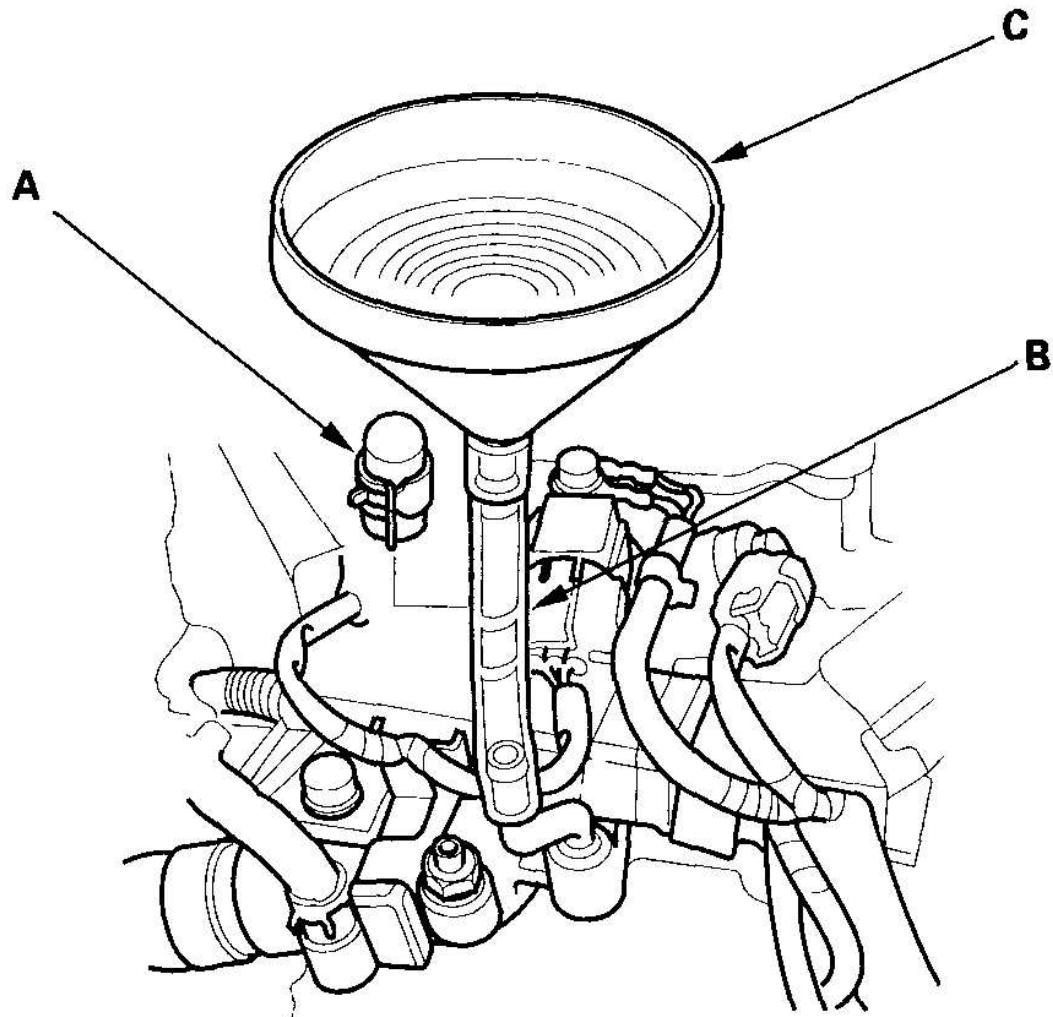
A
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

G03680582

Fig. 18: Identifying Air Bleed Bolt In Water Outlet And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Tighten the bleed bolt as soon as coolant starts to run out in a steady stream.
11. Pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator to the bottom of the filler neck, and install the radiator cap.
12. Remove the cap (A) from the water outlet, then install an 8 mm hose (B) and a funnel (C).



G03680583

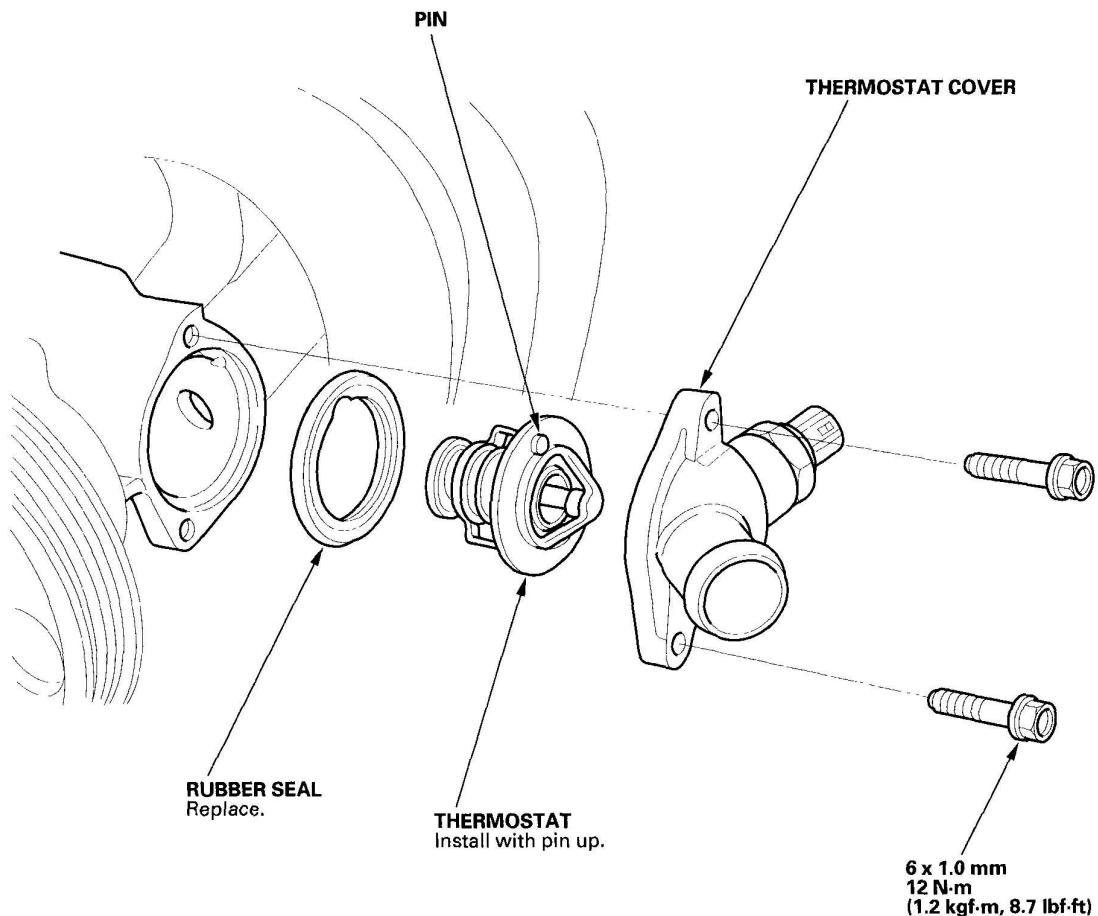
Fig. 19: Installing Hose And Funnel On Water Outlet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Pour Honda Long Life Antifreeze/Coolant Type 2 into the funnel until the coolant level reaches the base of the funnel, then start the engine and let it idle.
14. Add Honda Long Life Antifreeze/Coolant Type 2 into the funnel as the level goes down.
15. Stop the engine, then remove the funnel and the 8 mm hose from the water outlet. Install the cap.

16. Start the engine, and let it run until warmed up (radiator fan comes on at least twice). Then, turn off the engine, and let it cool down.
17. If necessary, add more Honda Long Life Antifreeze Coolant Type 2 into the radiator up to the base of the filler neck and into the reservoir up to the MAX mark.
18. Clean up any spilled engine coolant.

THERMOSTAT REPLACEMENT

NOTE: Use new O-rings when reassembling.



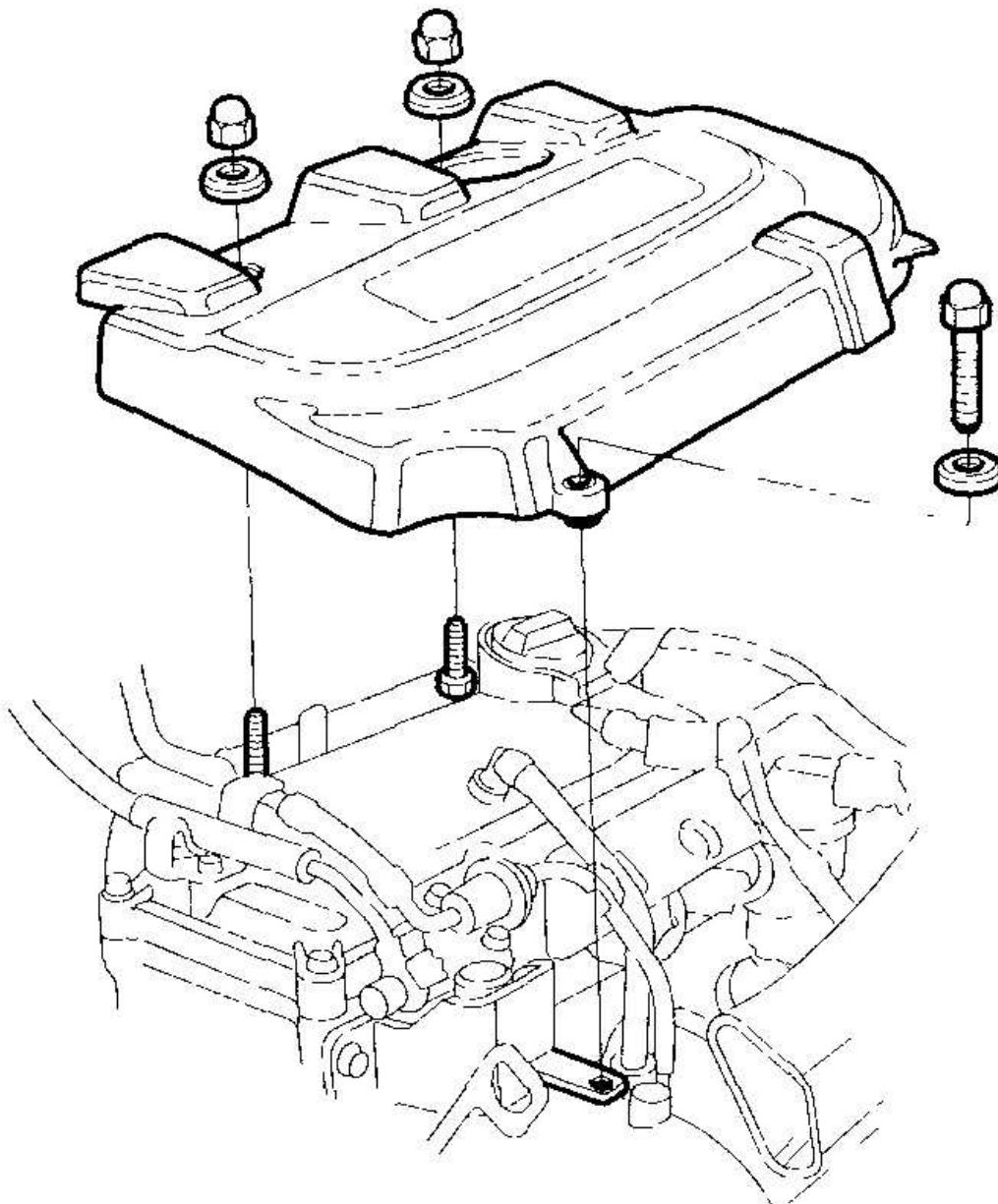
G03680584

Fig. 20: Removing Thermostat And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WATER OUTLET REPLACEMENT

REMOVAL

1. Make sure you have the anti-theft code for the radio, then write down the audio preset.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Drain the engine coolant (see **COOLANT REPLACEMENT**).
4. Remove the engine cover.

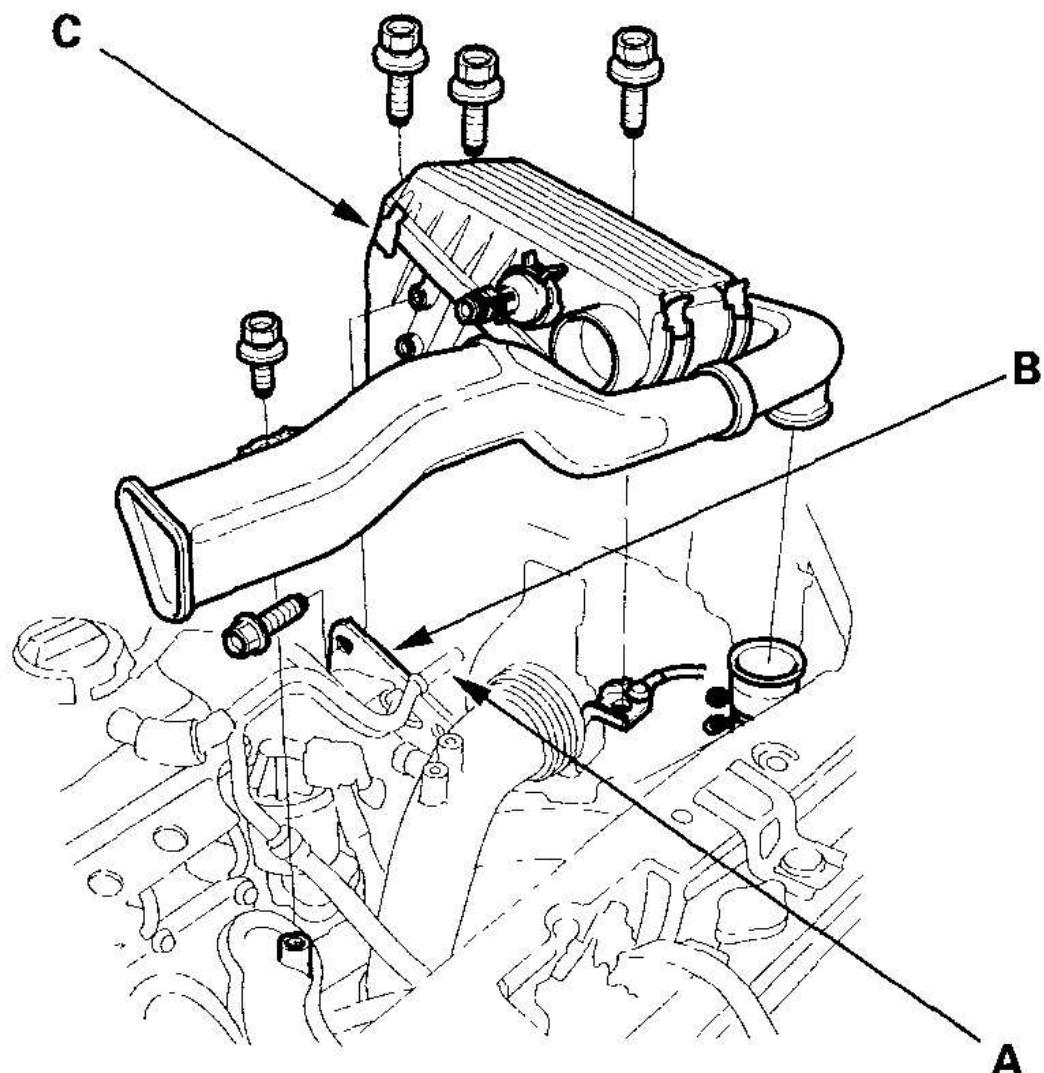


G03680585

Fig. 21: Removing Engine Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the breather pipe (A) and brake booster vacuum hose bracket (B) from

the air cleaner housing, then remove the air cleaner housing intake air duct assembly (C).

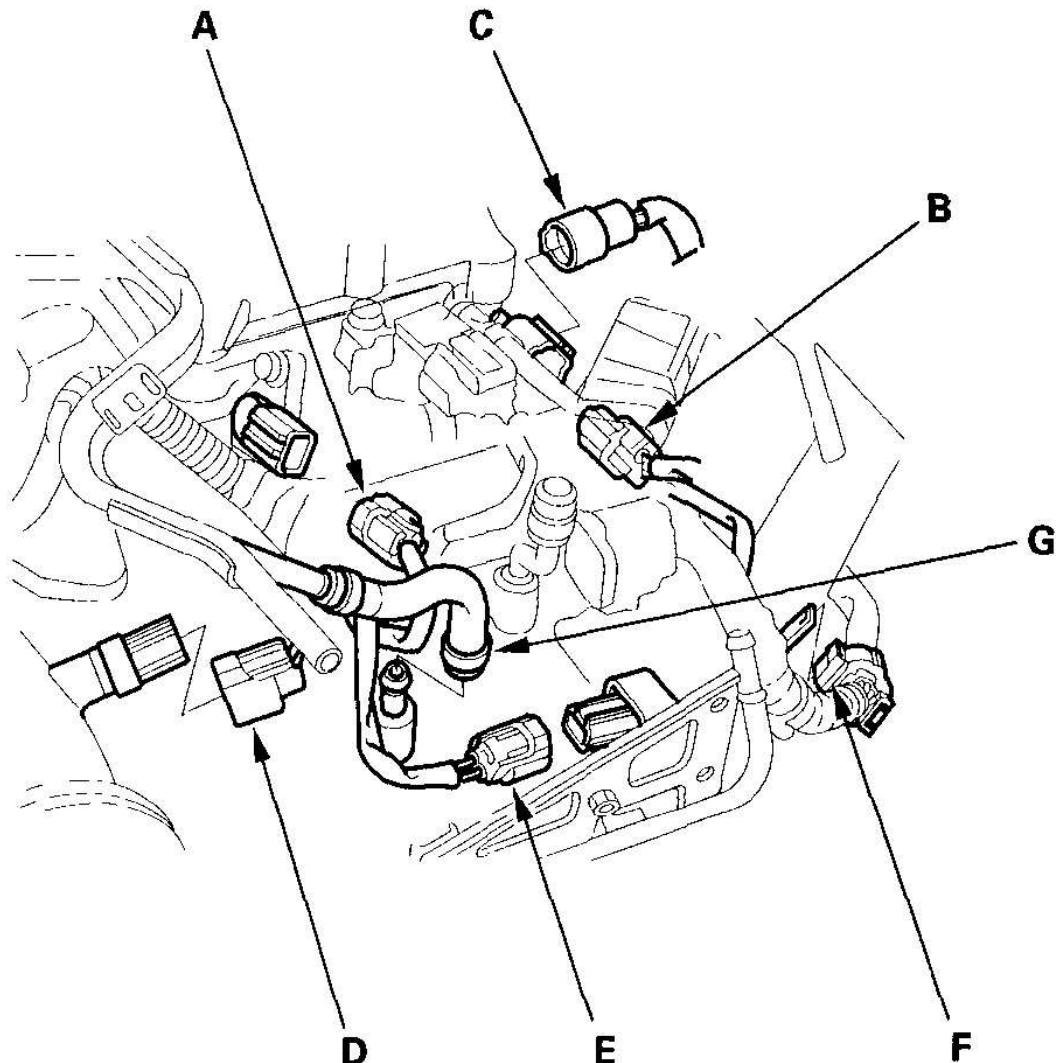


G03680586

Fig. 22: Removing Air Cleaner Housing/Intake Air Duct Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the camshaft position (CMP) sensor A (on the intake side) connector (A), CMP sensor B (on the exhaust side) connector (B), engine

coolant temperature (ECT) sensor connector (C), intake air temperature (IAT) sensor connector (D), and evaporative emission (EVAP) purge control solenoid valve connector (E). Remove the harness clamp (F) and water bypass hose (G).



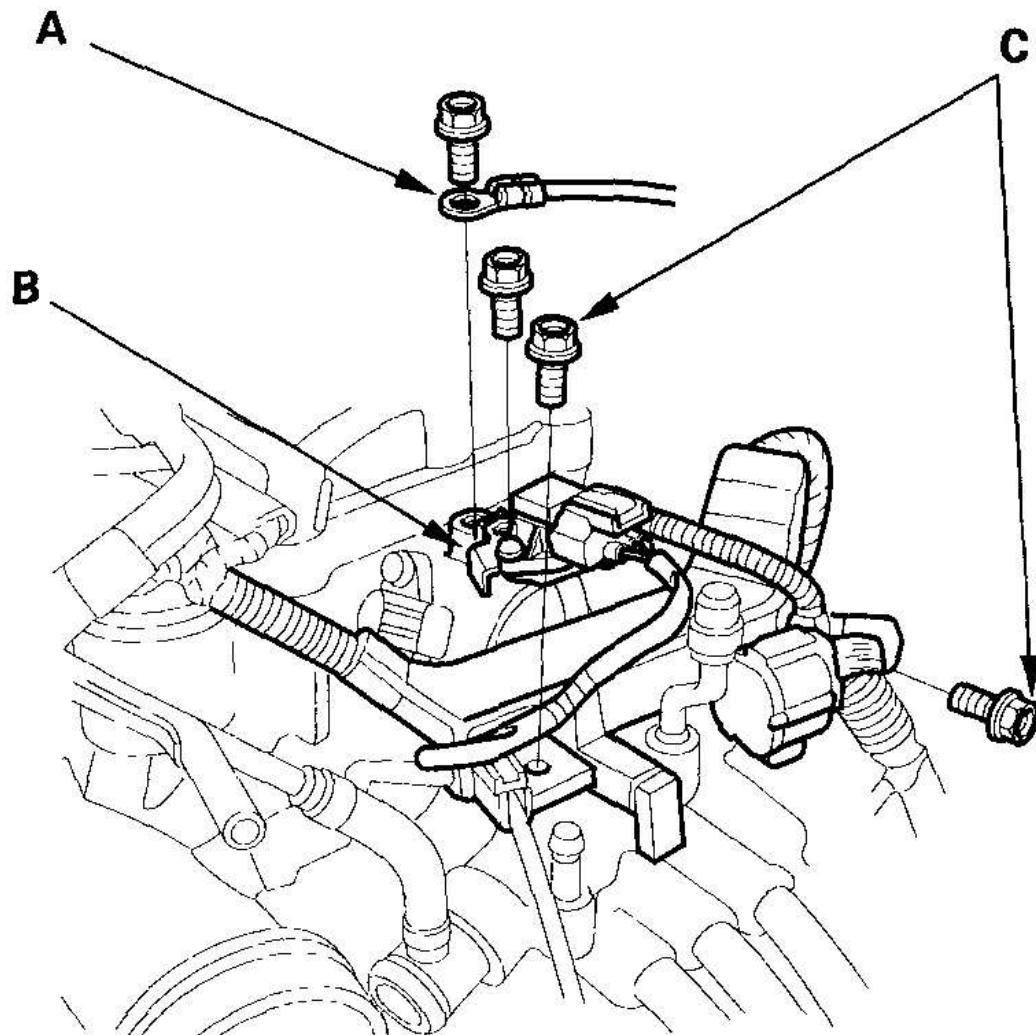
G03680587

Fig. 23: Disconnecting Camshaft Position Sensor A (On Intake Side) Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the ground cable (A), manifold absolute pressure (MAP) sensor

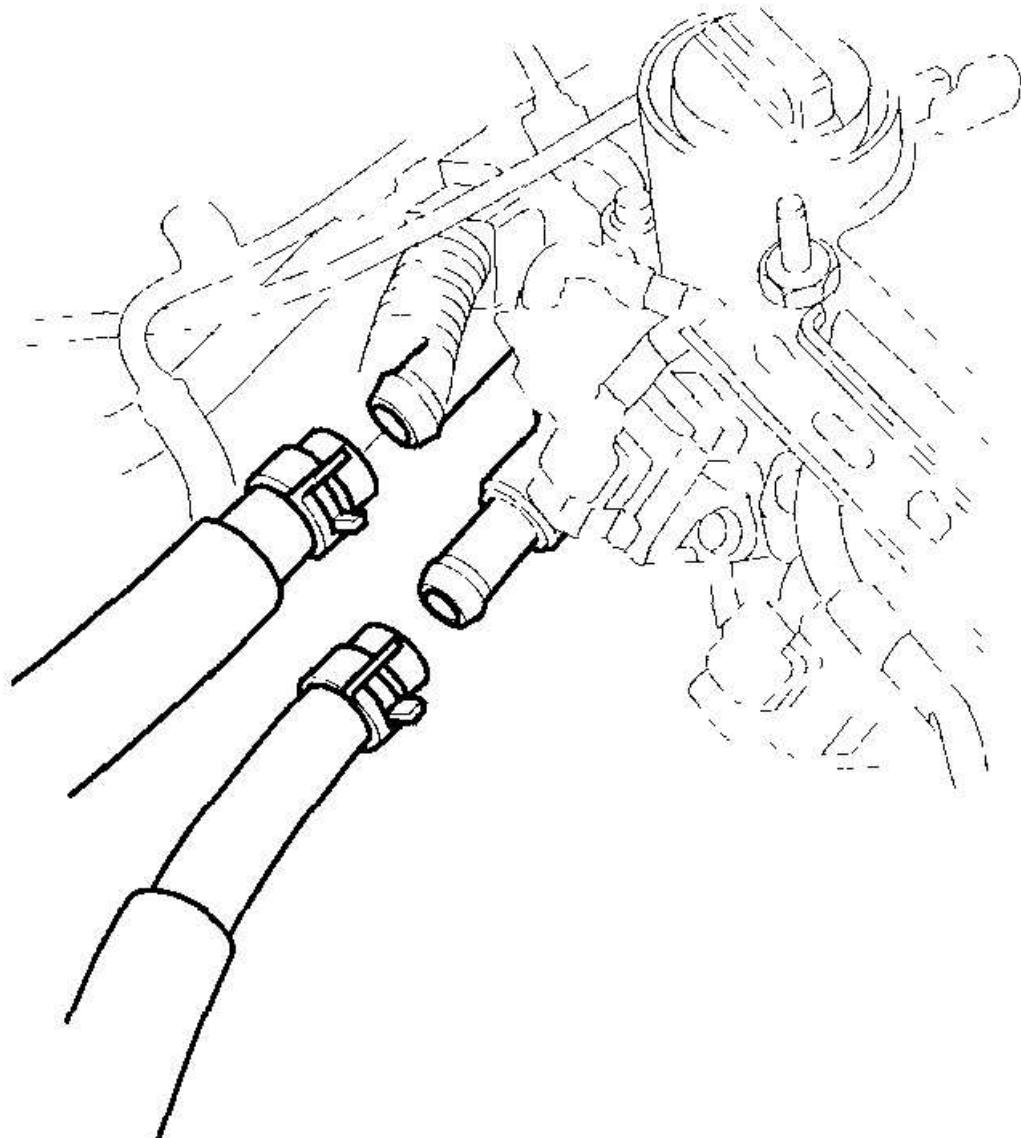
bracket (B), and harness holder mounting bolts (C).



G03680588

Fig. 24: Removing Ground Cable, Manifold Absolute Pressure Sensor Bracket And Harness Holder Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the heater hoses.



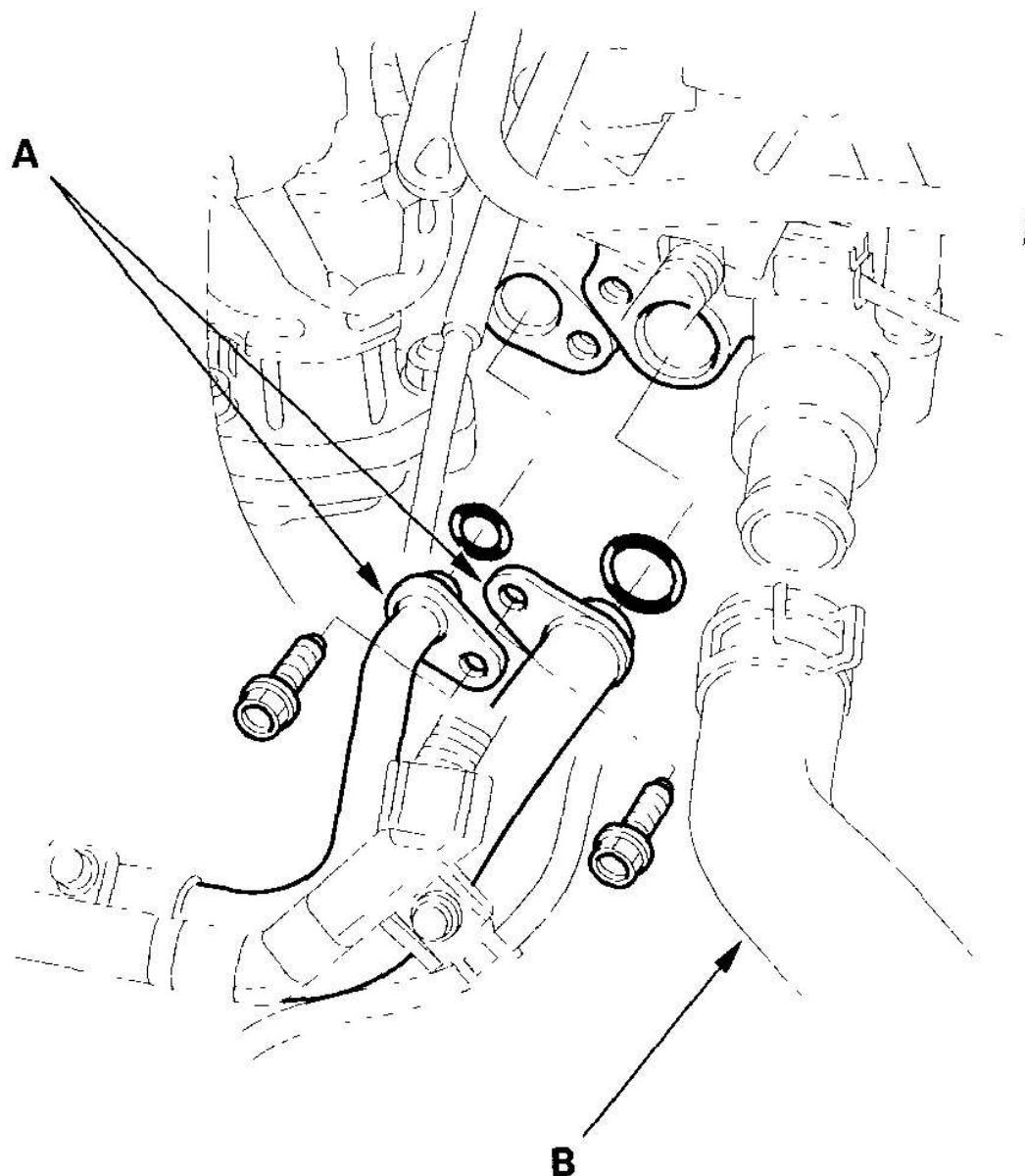
G03680589

Fig. 25: Removing Heater Hoses

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

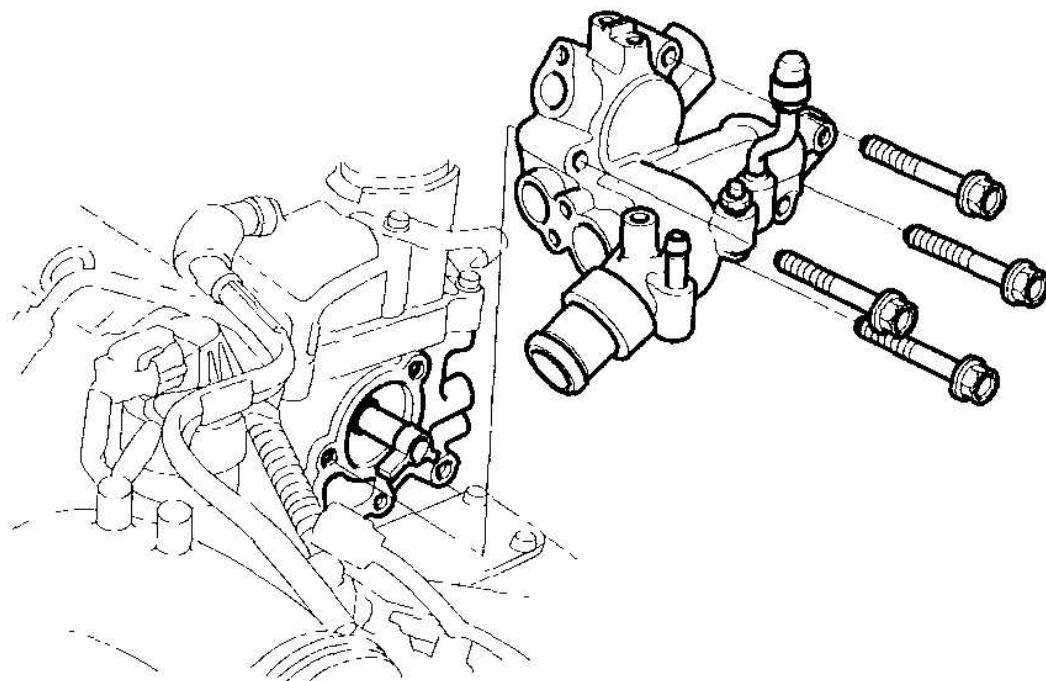
10. Remove the connecting pipes (A) and upper radiator hose (B).



G03680590

Fig. 26: Removing Connecting Pipes And Upper Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the CMP sensor A and the CMP sensor B (see **CMP SENSOR A/B (TDC SENSOR 1/2) REPLACEMENT**).
12. Remove the water outlet.



G03680591

Fig. 27: Removing Water Outlet

Courtesy of AMERICAN HONDA MOTOR CO., INC.

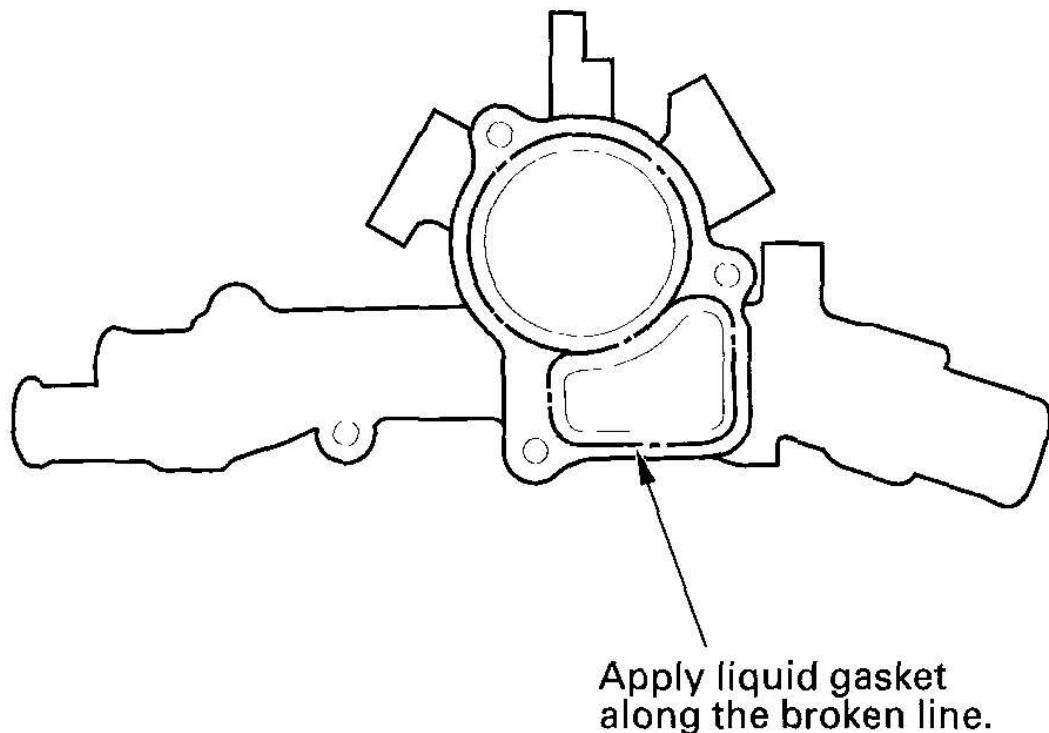
INSTALLATION

13. Clean and dry the cylinder head mating surfaces.
14. Apply liquid gasket, P/N 08717-0004 or 08718-0001, to the cylinder head mating surface of the water outlet.

NOTE:

- **Apply a 1 mm-2.5 mm (0.04-0.10 in.) wide bead of liquid gasket.**
- **Do not install the parts if 5 minutes or more have**

elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing the old residue.

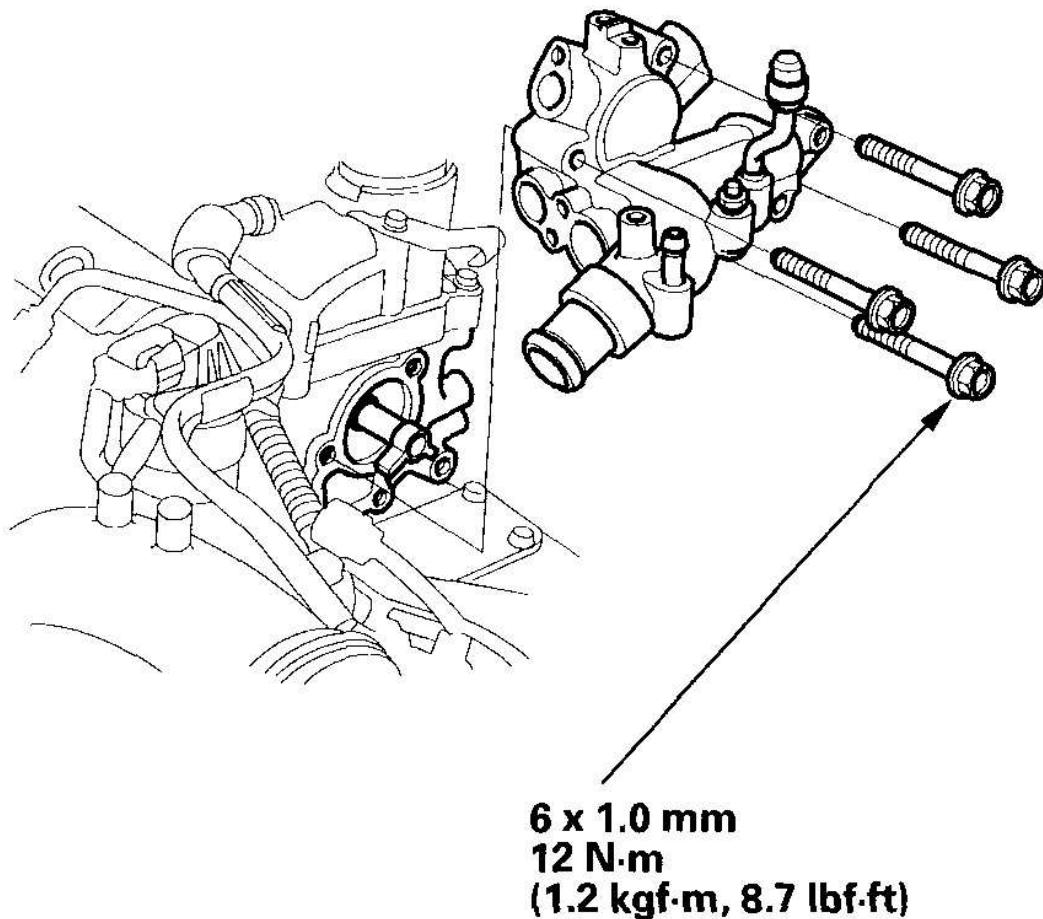


G03680592

Fig. 28: Applying Liquid Gasket To Cylinder Head Mating Surface Of Water Outlet

Courtesy of AMERICAN HONDA MOTOR CO., INC.

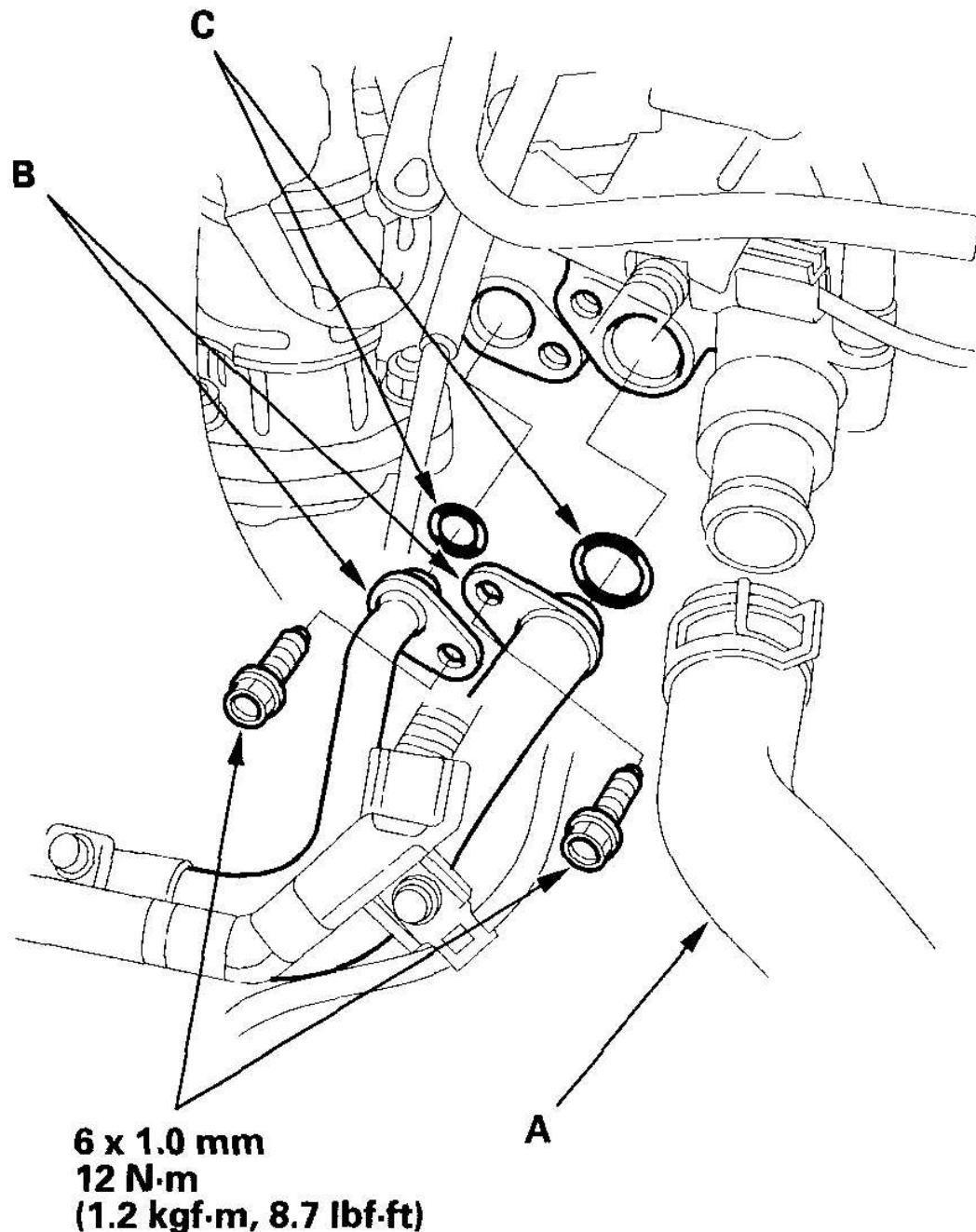
15. Install the water outlet.



G03680593

Fig. 29: Installing Water Outlet**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Install the CMP sensor A and the CMP sensor B (see **CMP SENSOR A/B (TDC SENSOR 1/2) REPLACEMENT**).
17. Install the upper radiator hose (A) and connecting pipes (B) with new O-rings (C).



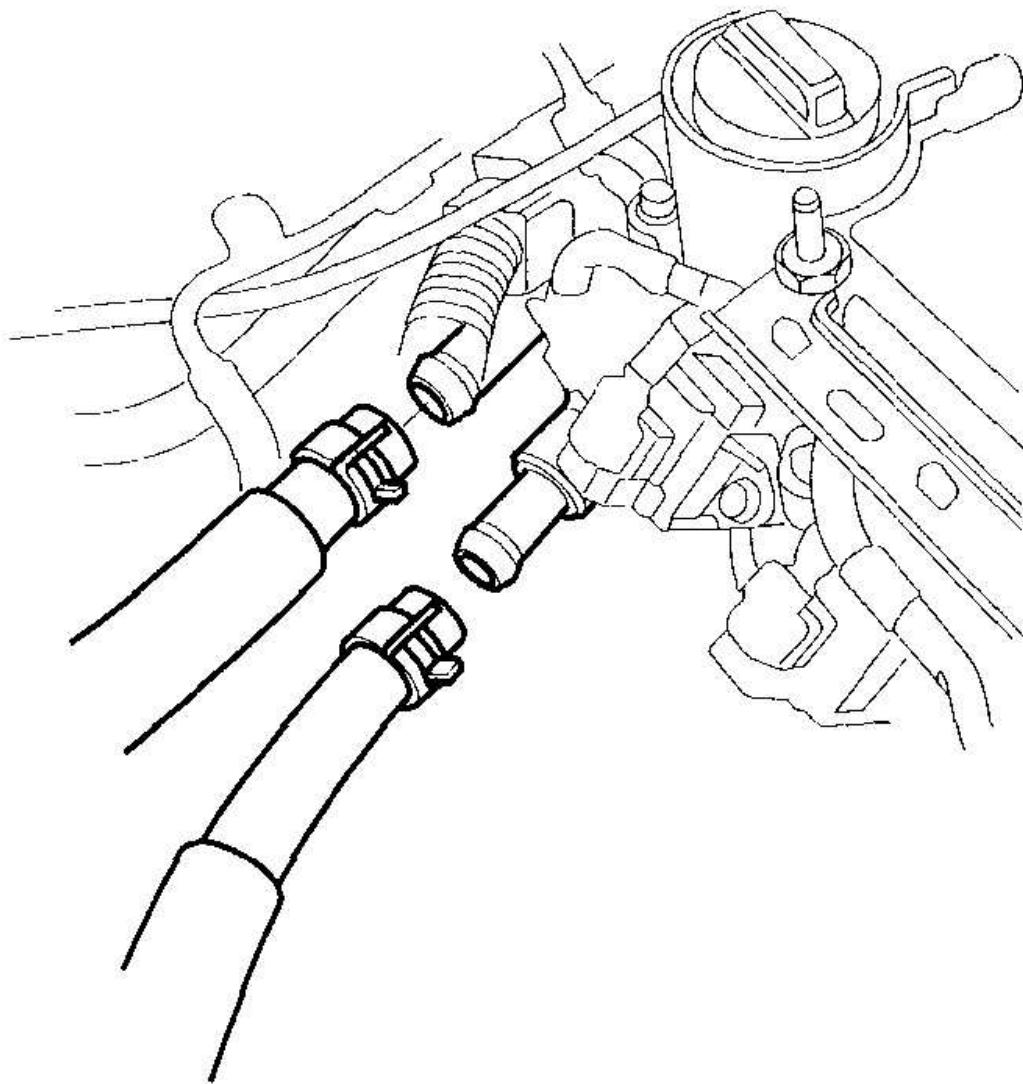
G03680594

Fig. 30: Installing Upper Radiator Hose And Connecting Pipes With O-Rings With Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

19. Install the heater hoses.

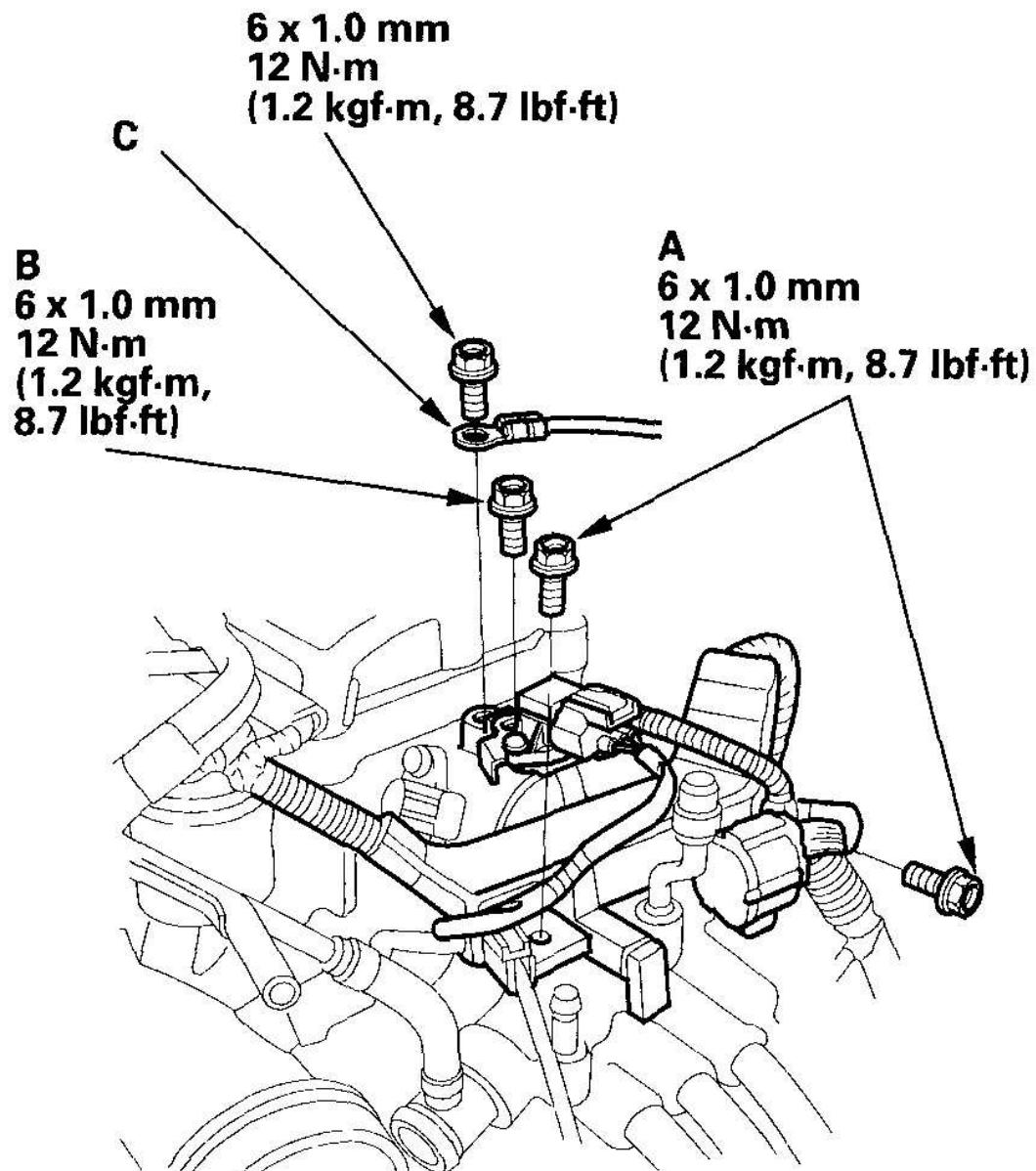


G03680595

Fig. 31: Installing Heater Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the harness holder mounting bolts (A), MAP sensor bracket mounting bolt (B), and ground cable (C).

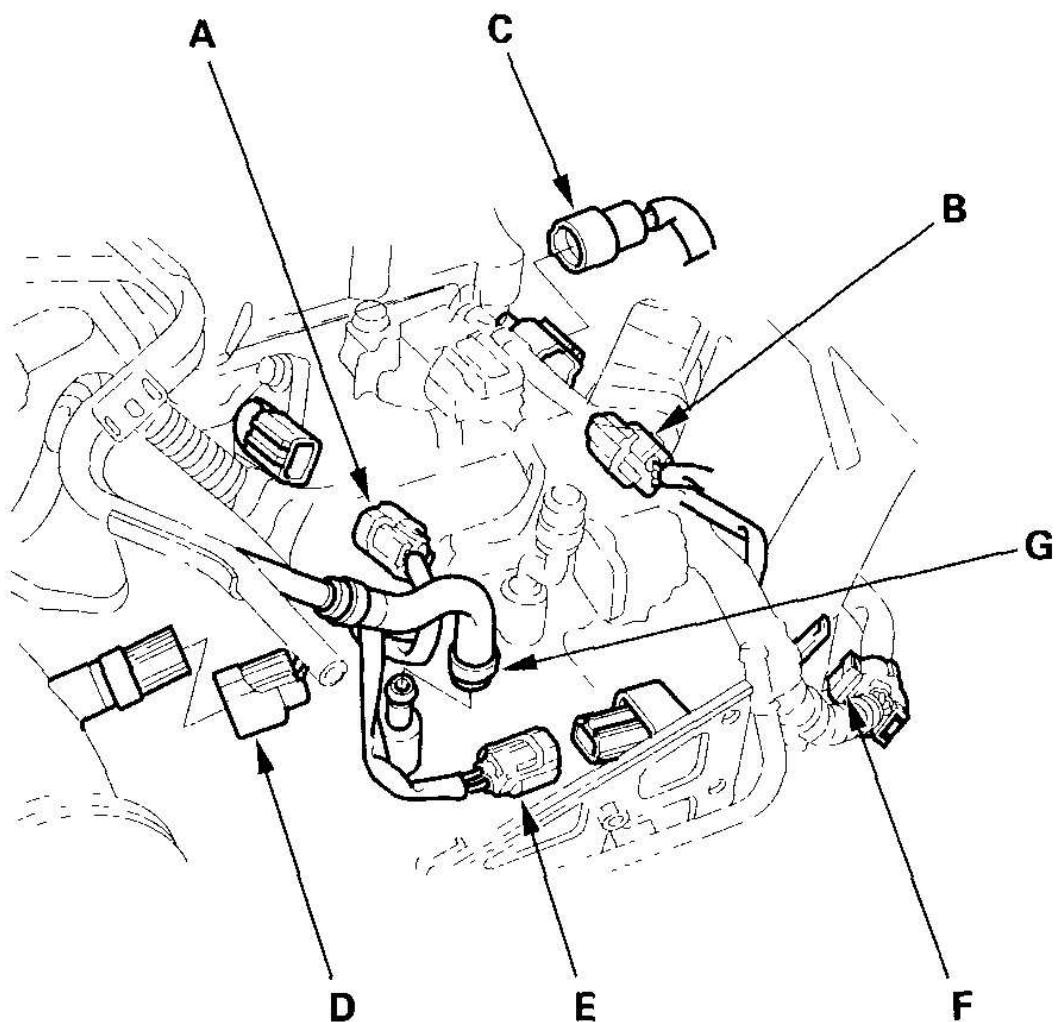


G03680596

Fig. 32: Installing Harness Holder Mounting Bolts, MAP Sensor Bracket Mounting Bolt And Ground Cable With Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Connect the CMP sensor A connector (A), CMP sensor B connector (B), ECT sensor connector (C), IAT sensor connector (D), and EVAP purge control solenoid valve connector (E). Install the harness clamp (F) and water bypass hose (G).

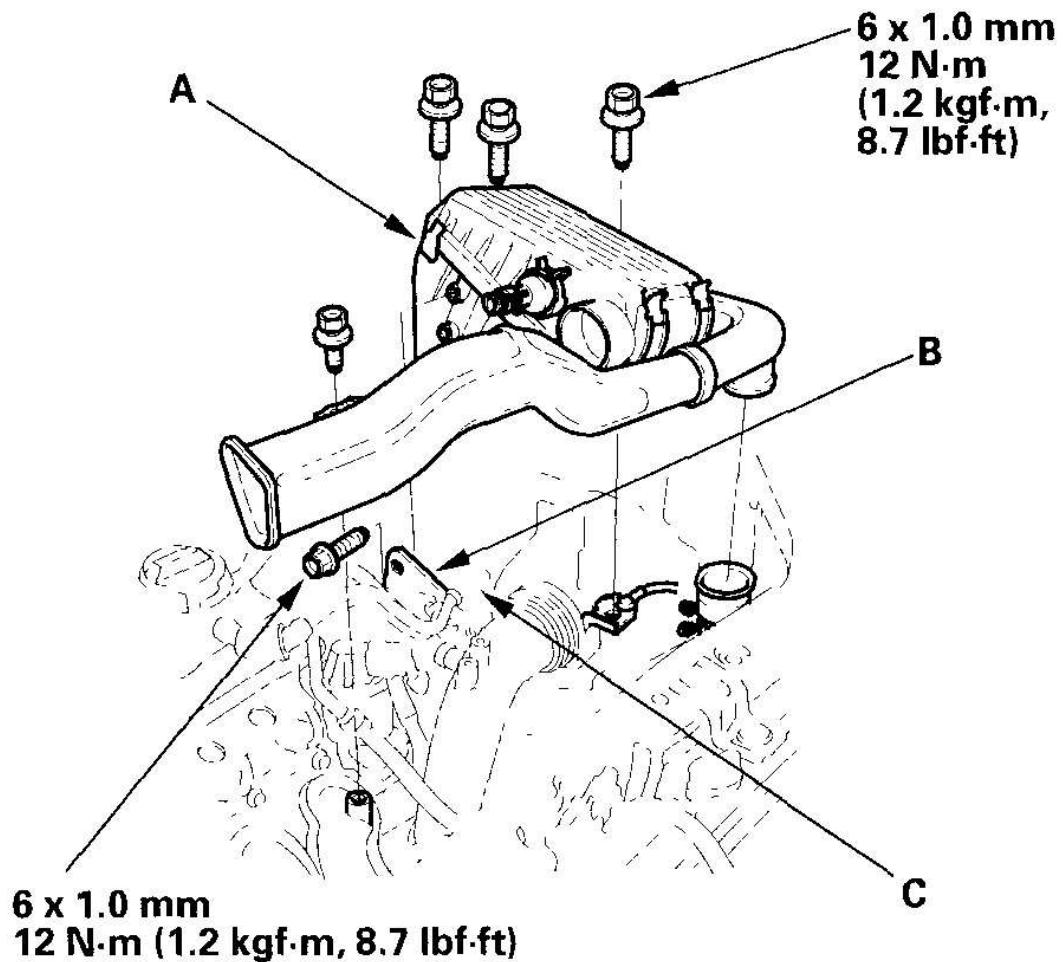


G03680597

Fig. 33: Connecting CMP Sensor A/B Connector, ECT Sensor Connector, IAT Sensor Connector And EVAP Purge Control Solenoid Valve Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the air cleaner housing/intake air duct assembly (A), then install the brake booster vacuum hose bracket (B) and breather pipe (C).

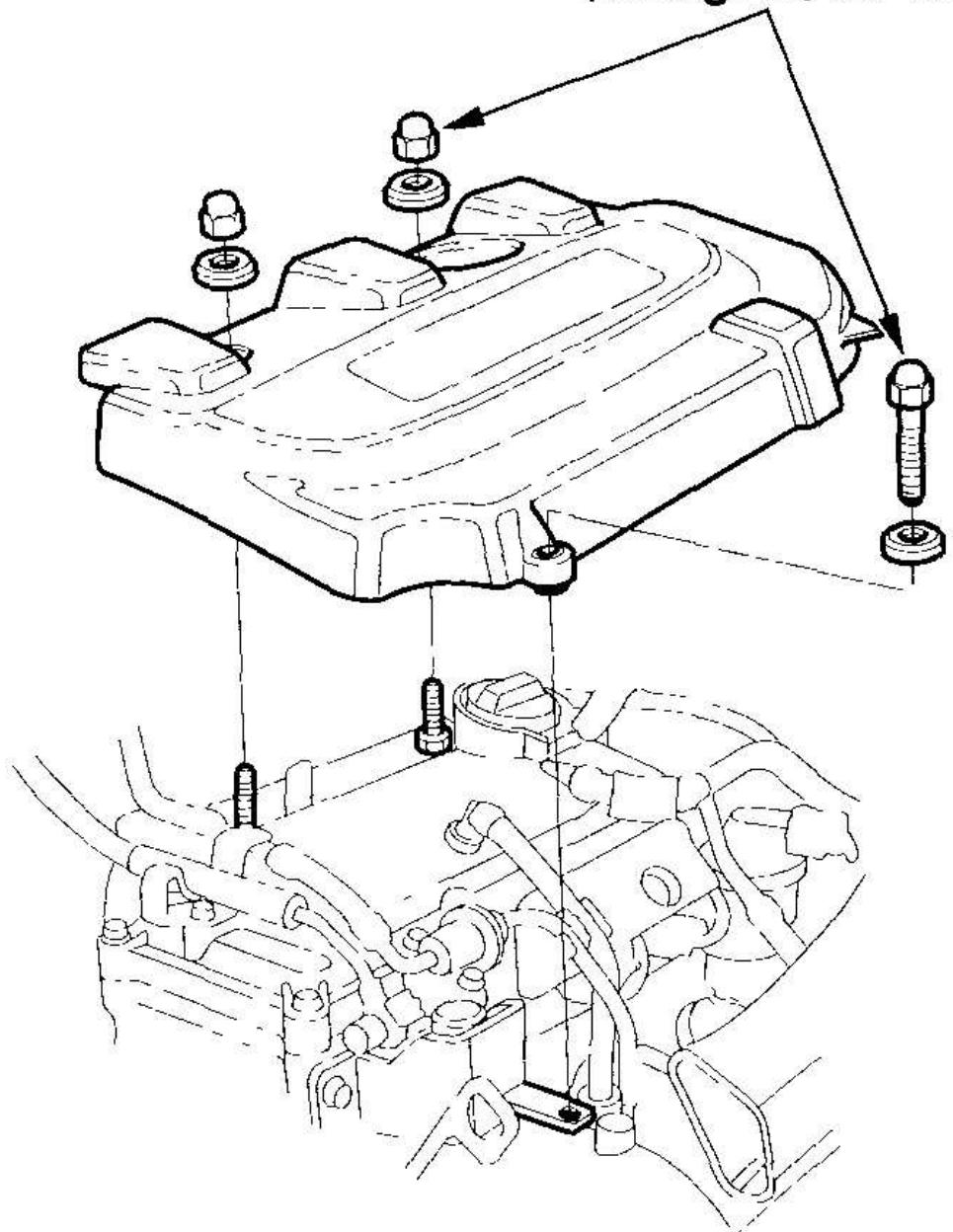


**Fig. 34: Installing Air Cleaner Housing/Intake Air Duct Assembly And
Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the engine cover.

**6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)**



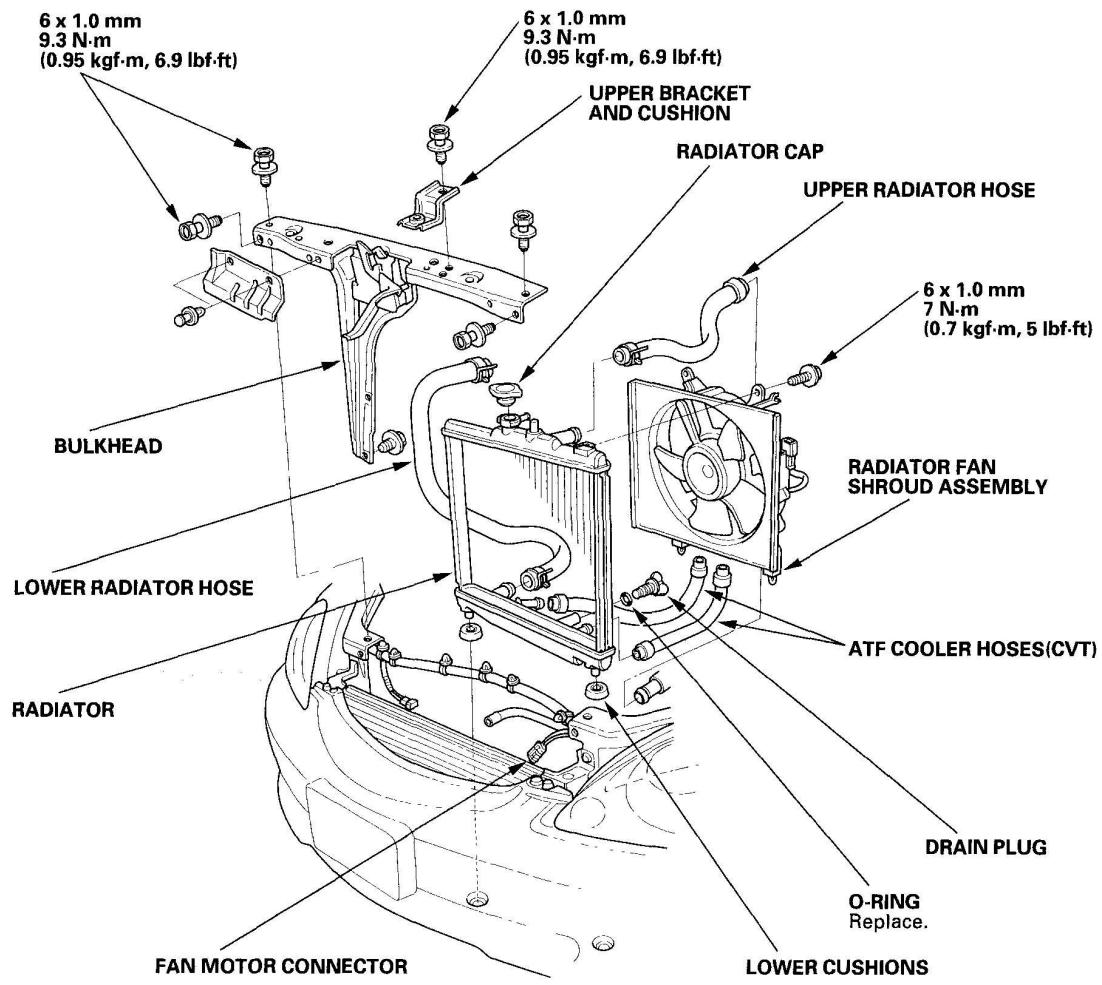
G03680599

Fig. 35: Installing Engine Cover And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Connect the positive cable to the battery first, then connect the negative cable.
25. Remove the No. 15 (40 A) fuse from the under-hood fuse/relay box.
26. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 9).
27. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 RPM and 4,000 RPM without load (in Park or neutral) until the BAT displays at least three segments.
28. Reinstall the No. 15 (40 A) fuse to the under-hood fuse/relay box.
29. Reset the ECM with the HDS (see **HDS CLEAR COMMAND**).
30. Do the engine control module (ECM) idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
31. Enter the anti-theft code for the radio, then enter the audio presets.
32. Set the clock.

RADIATOR AND FAN REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the upper and lower radiator hoses.



G03680600

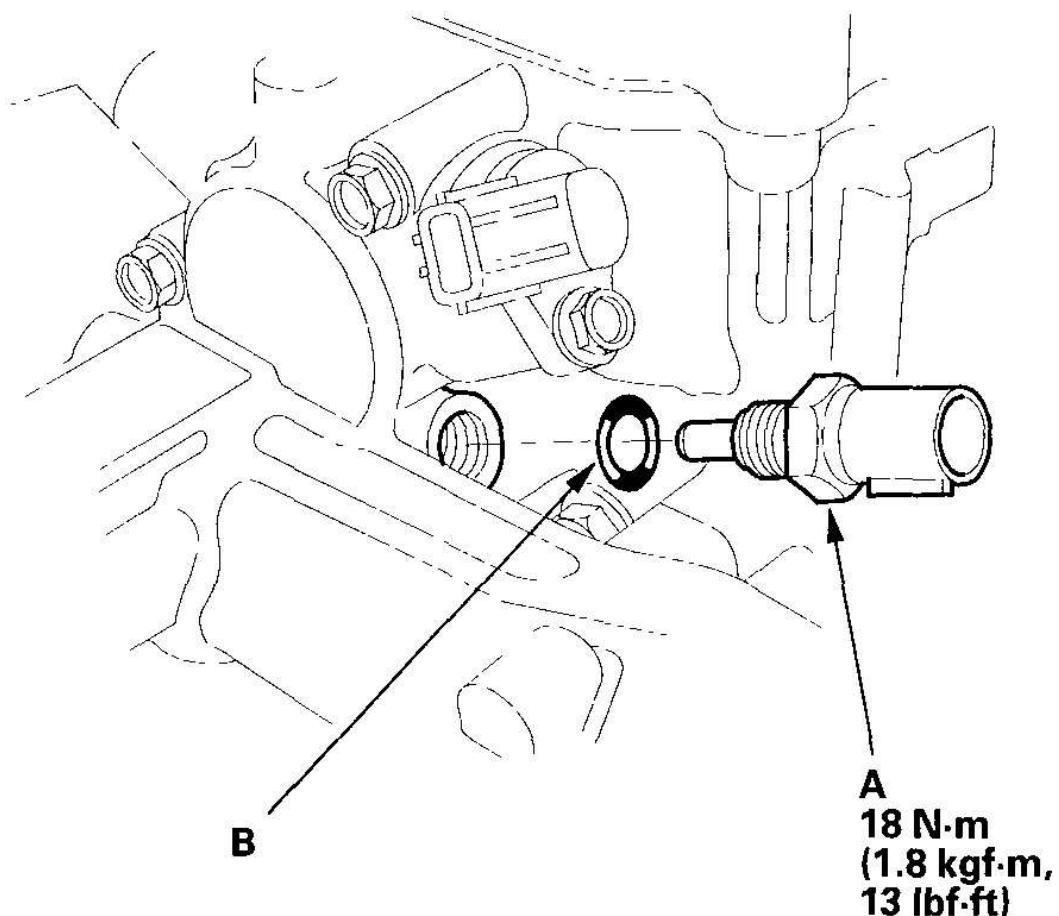
Fig. 36: Removing Upper And Lower Radiator Hoses With Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the fan motor connector.
4. Remove the harness clamps, and remove the bulkhead, then pull up the radiator.
5. Remove the fan shroud assembly and disconnect all of the hoses.
6. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
7. Fill the radiator with engine coolant and bleed the air (see step 9).

ECT SENSOR REPLACEMENT

1. Disconnect the engine coolant temperature (ECT) sensor connector, then remove the ECT sensor (A).



G03680601

Fig. 37: Disconnecting Engine Coolant Temperature Sensor Connector, And Removing ECT Sensor With Specified Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new ECT sensor in the reverse order of removal with a new O-ring (B).