

2000-06 ENGINE

Engine Assembly - Insight

ENGINE REMOVAL

NOTE:

- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

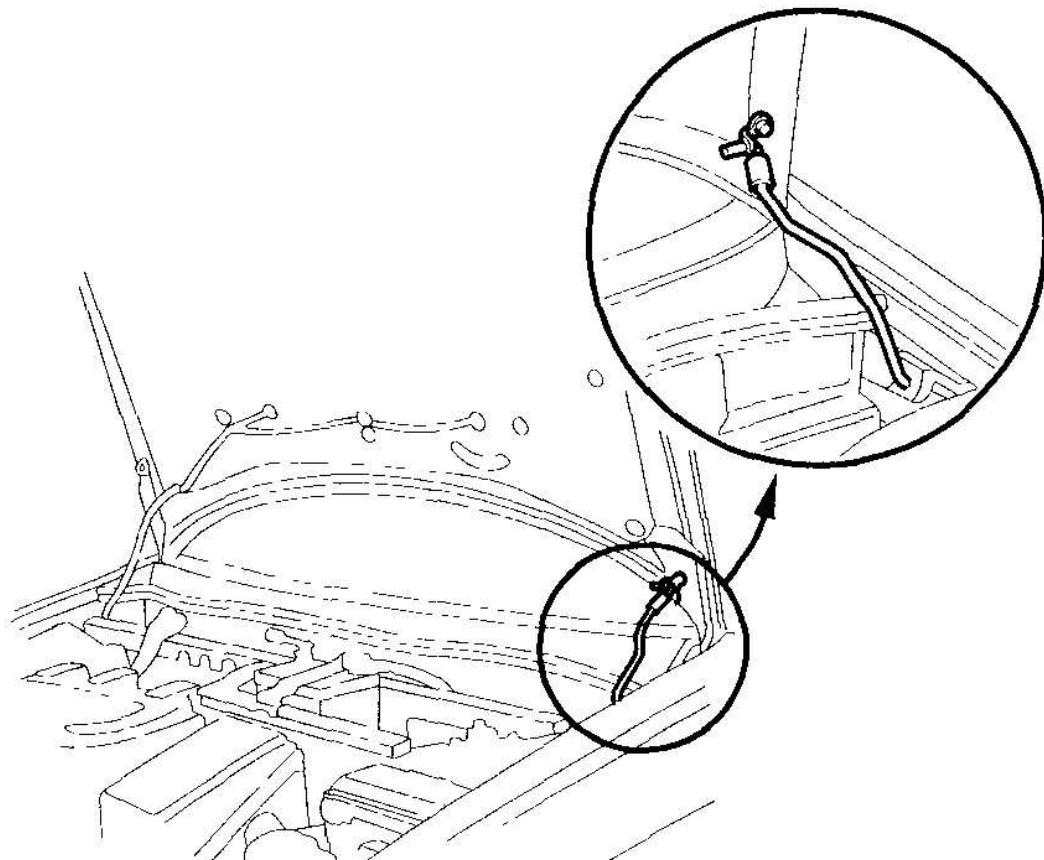
1. Turn the battery module switch OFF, and measure the voltage (see **TURNING OFF POWER TO THE HIGH VOLTAGE CIRCUIT**).
2. Secure the hood using the support rod.

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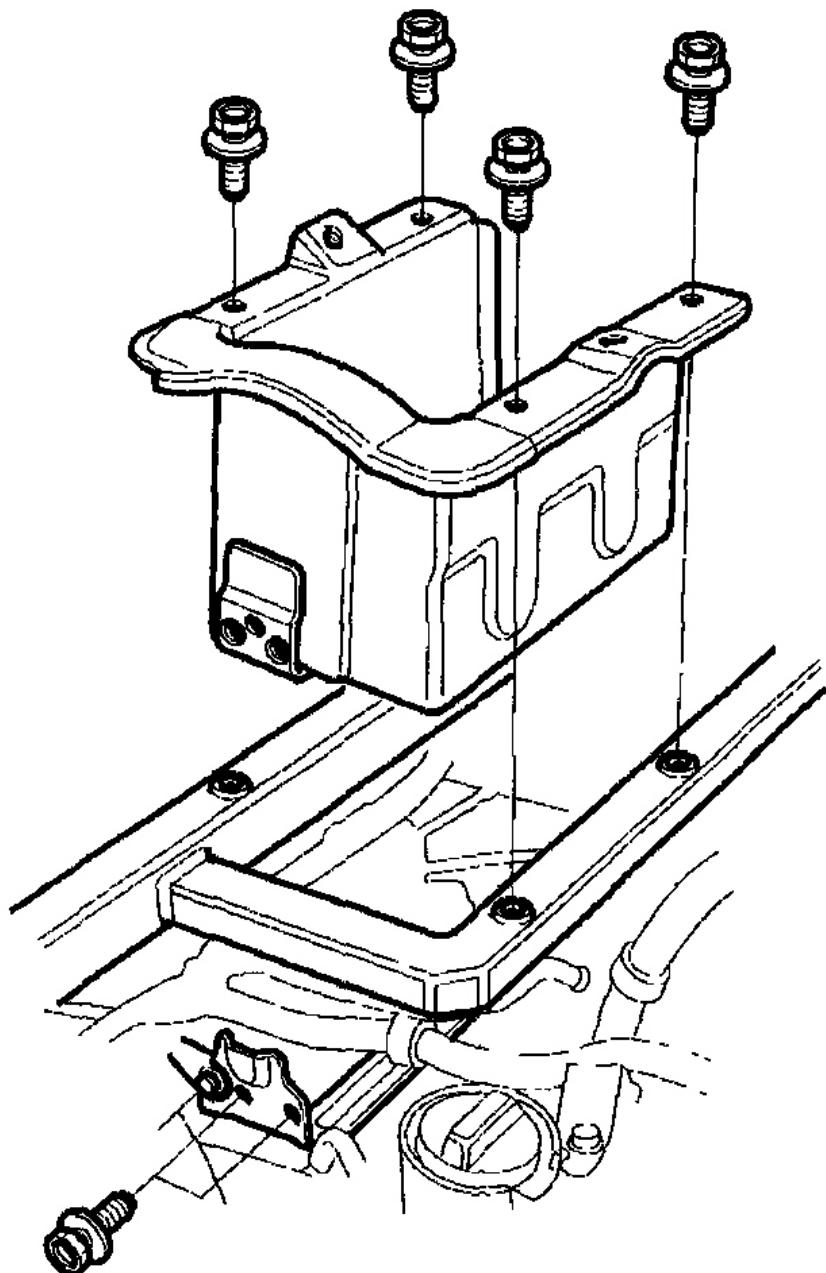


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Fig. 1: Securing Hood With Support Rod

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure you have the anti-theft codes for the radio, then write down the audio presets.
4. Disconnect the negative cable from the battery first, then disconnect the positive cable.
5. Remove the battery.
6. Remove the battery box.

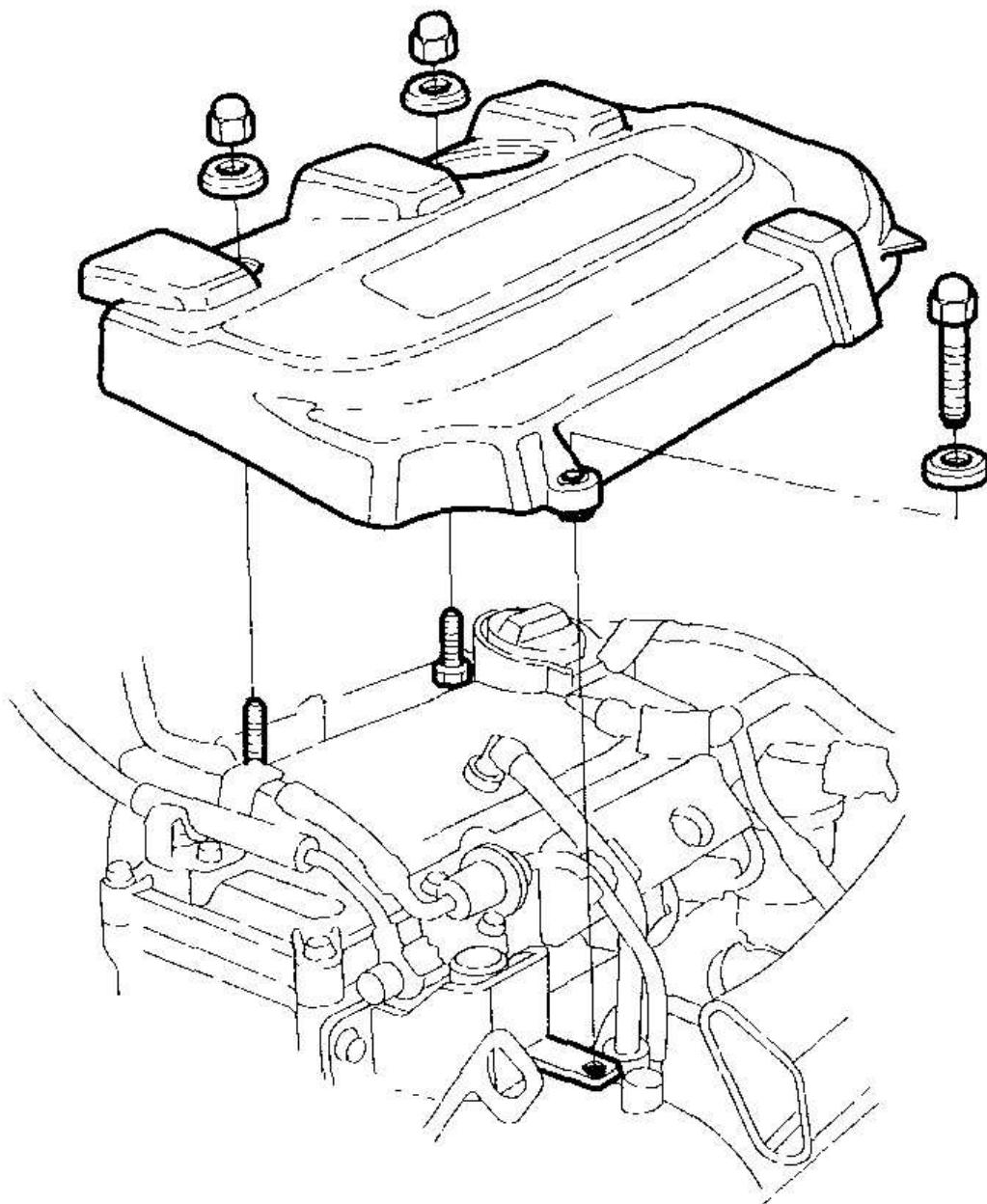


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Fig. 2: Removing Battery Box

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the engine cover.

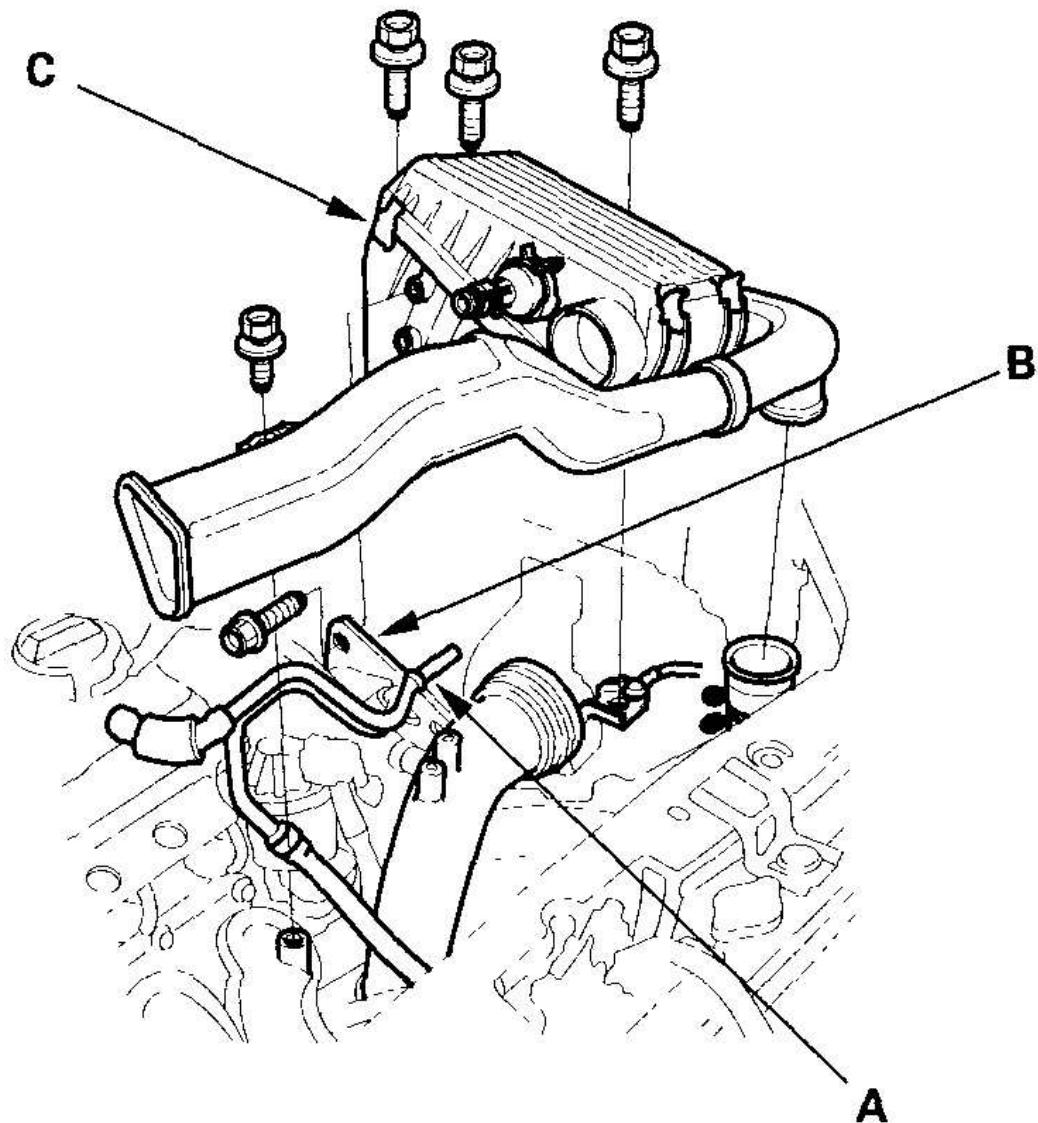


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Fig. 3: Removing Engine Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. 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).



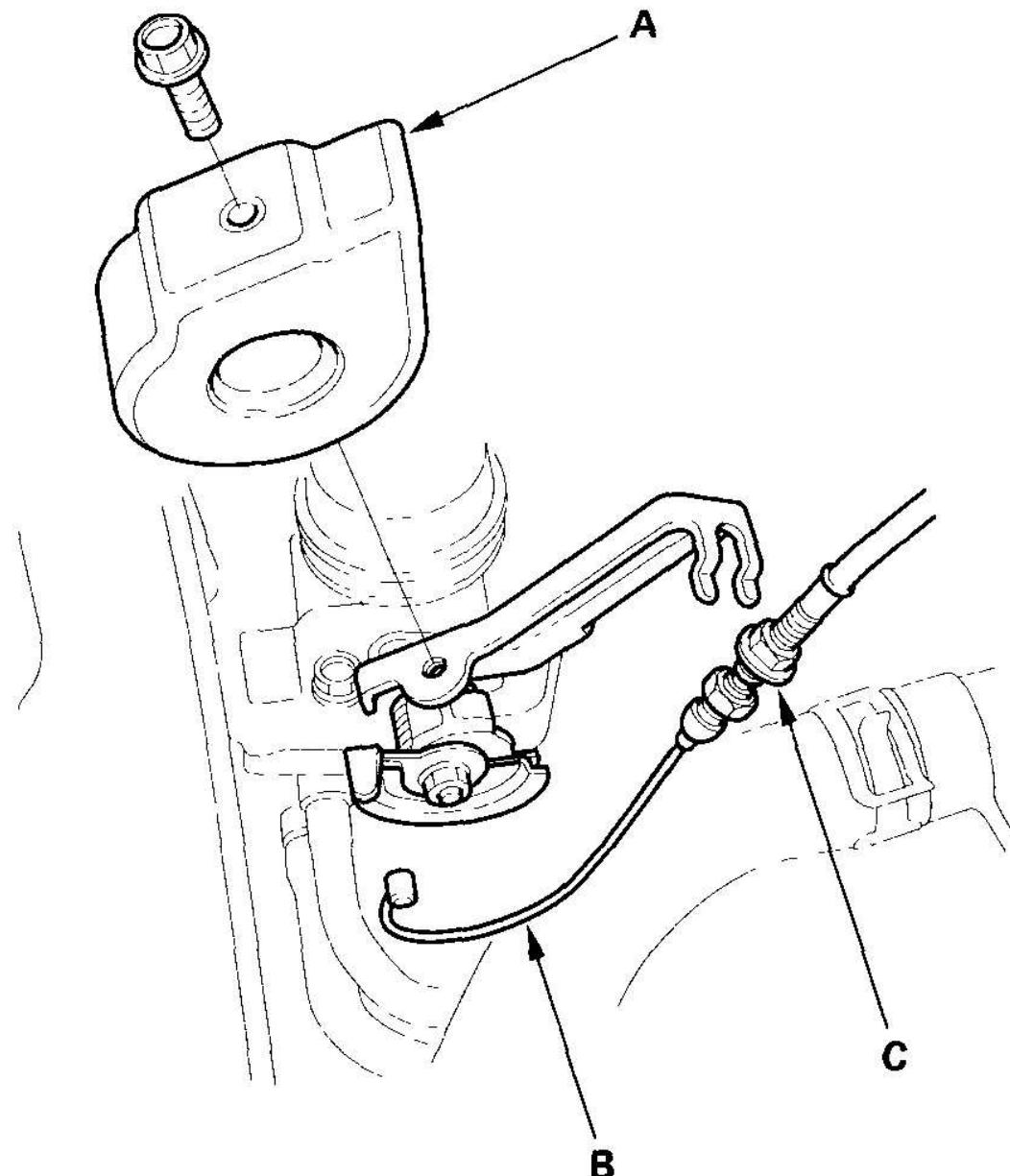
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Fig. 4: Removing Breather Pipe And Brake Booster Vacuum Hose Bracket

From Air Cleaner Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

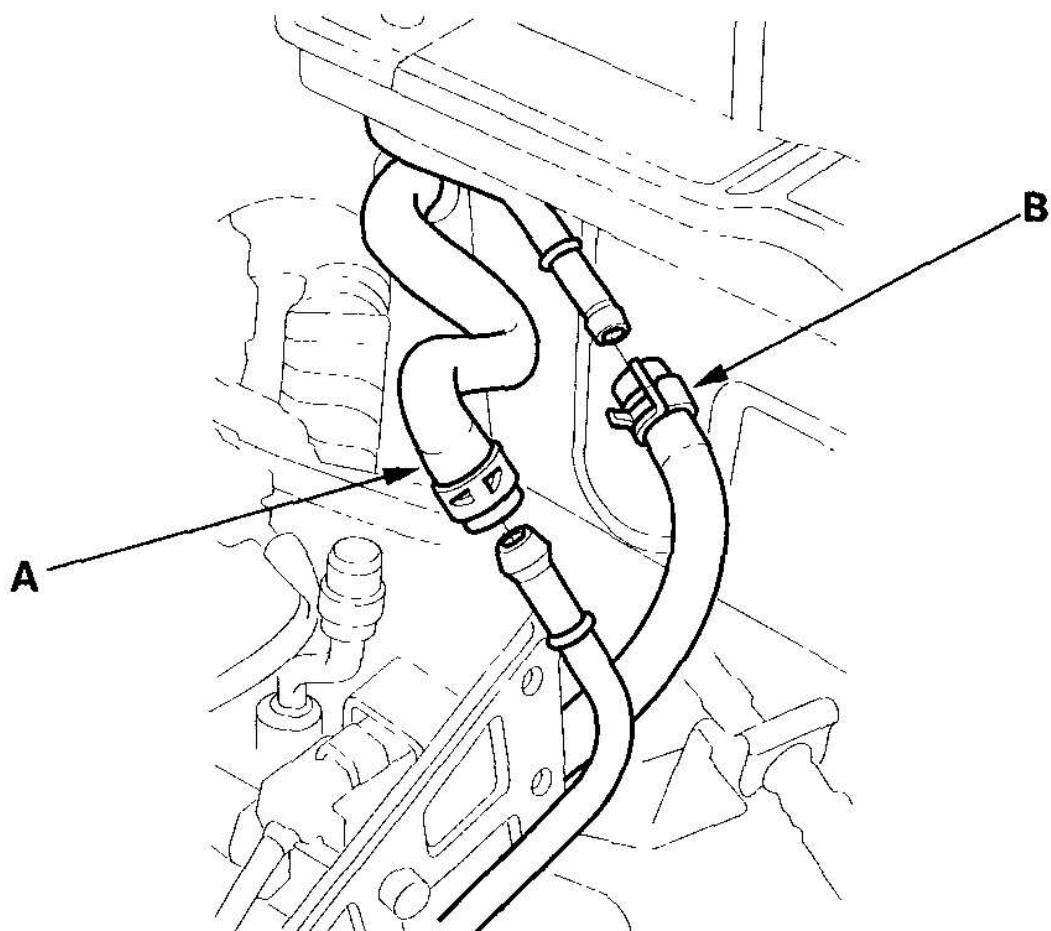
9. Remove the throttle cover (A), then remove the throttle cable (B) by loosening the locknut (C), then slipping the cable end out of the accelerator linkage. Take care not to bend the cable when removing it. Always replace any kinked cable with a new one.



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Fig. 5: Removing Throttle Cable By Loosening Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the brake booster vacuum hose (A) and the evaporative emission (EVAP) canister hose (B).

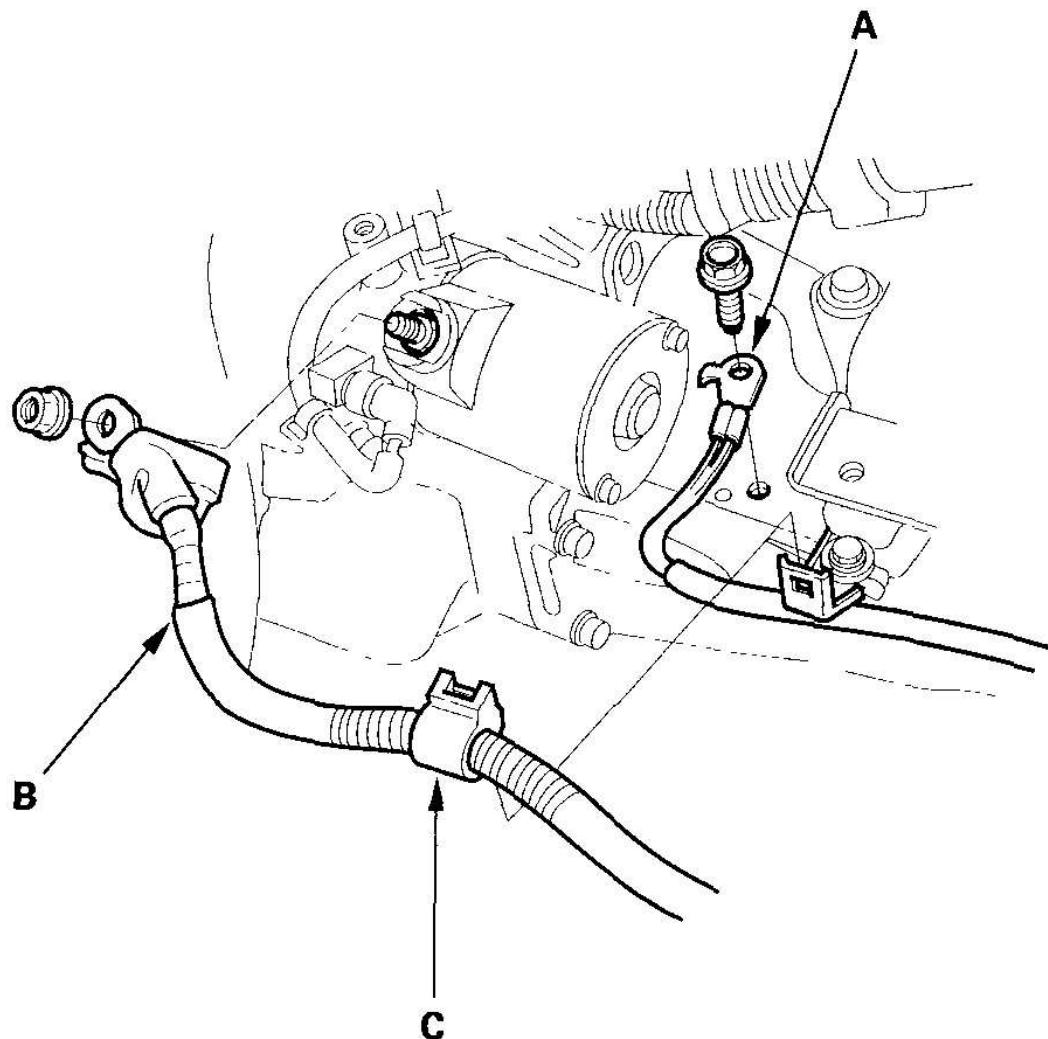


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Fig. 6: Removing Brake Booster Vacuum Hose And Evaporative Emission (EVAP) Canister Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

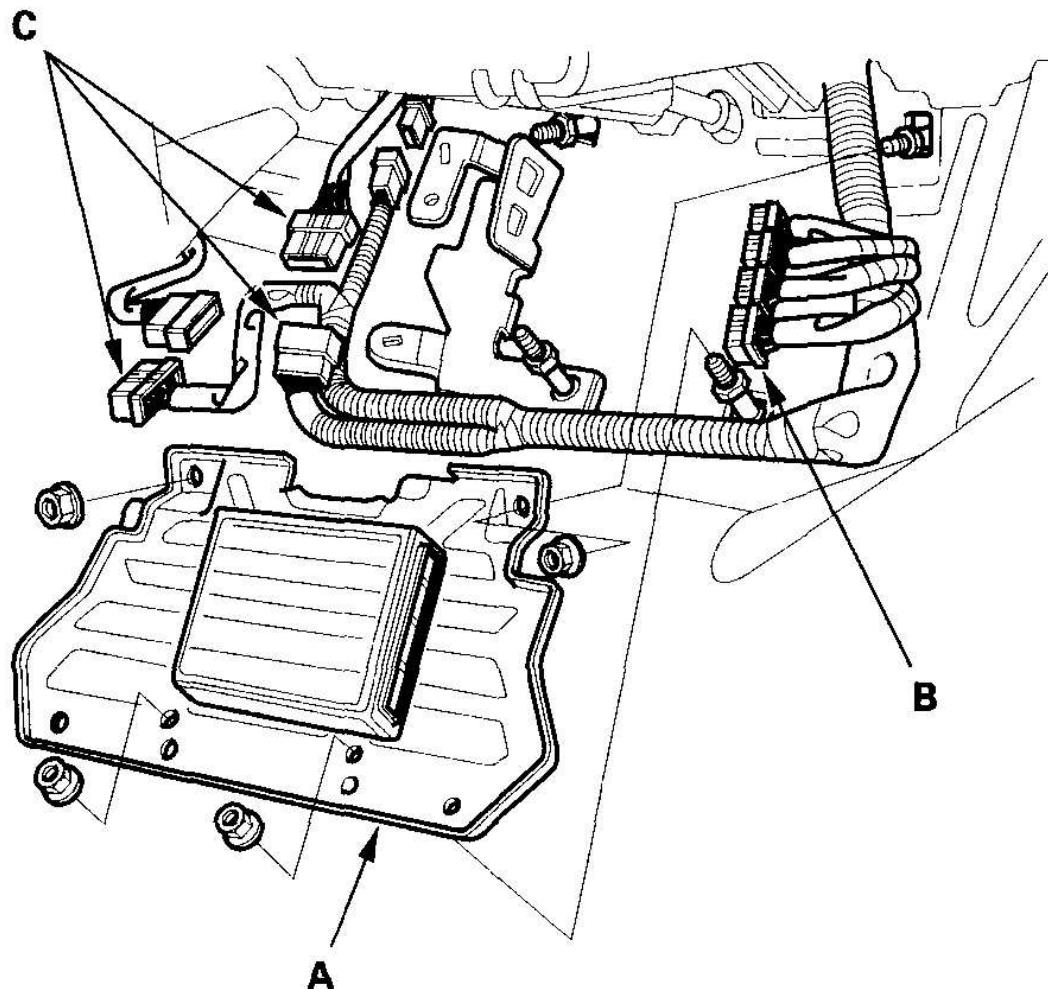
11. Remove the ground cable (A), starter cable (B), and harness clamp (C).



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Fig. 7: Removing Ground Cable, Starter Cable, And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

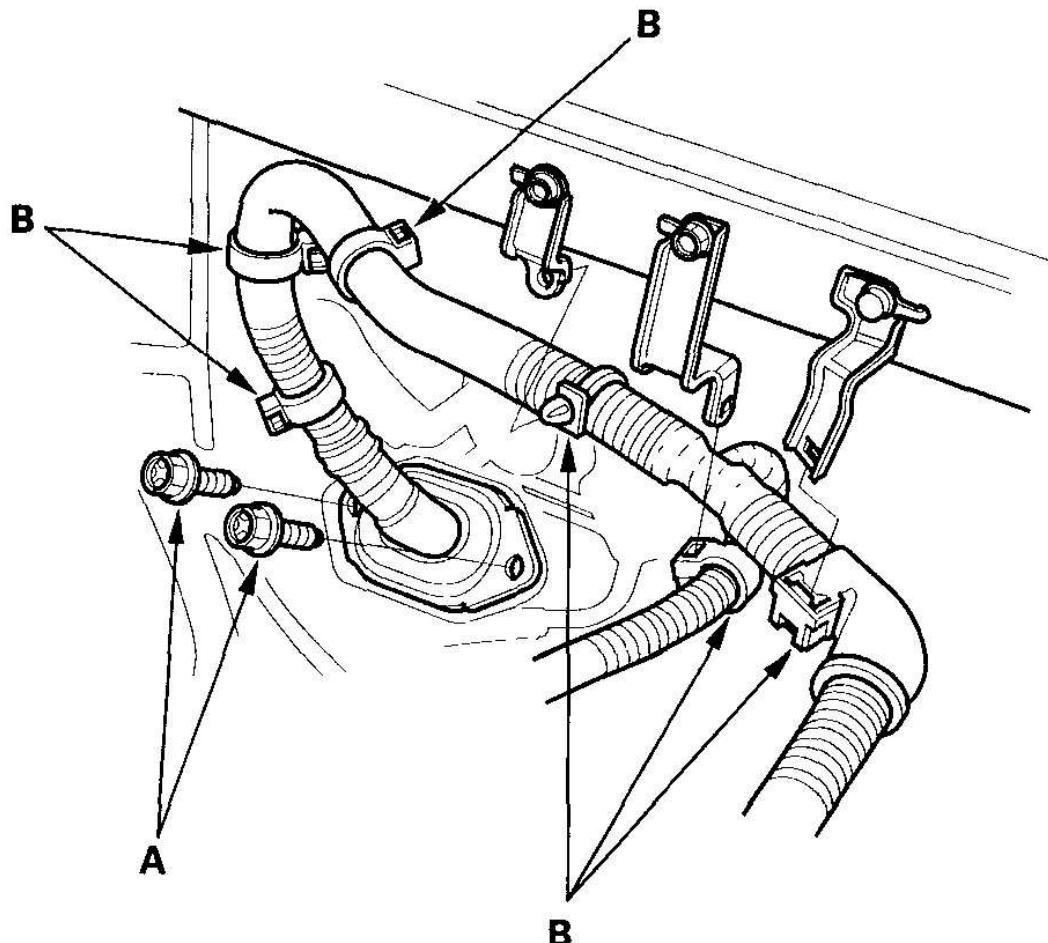
12. Remove the motor power cables (see step 9 on **IMA SYSTEM**).
13. Remove the engine control module (ECM) cover (A), then disconnect the ECM connectors (B) and the main wire harness connectors (C).



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Fig. 8: Removing ECM Connectors And Main Wire Harness Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the grommet mounting bolts (A) and harness clamps (B), then pull out the ECM connectors.

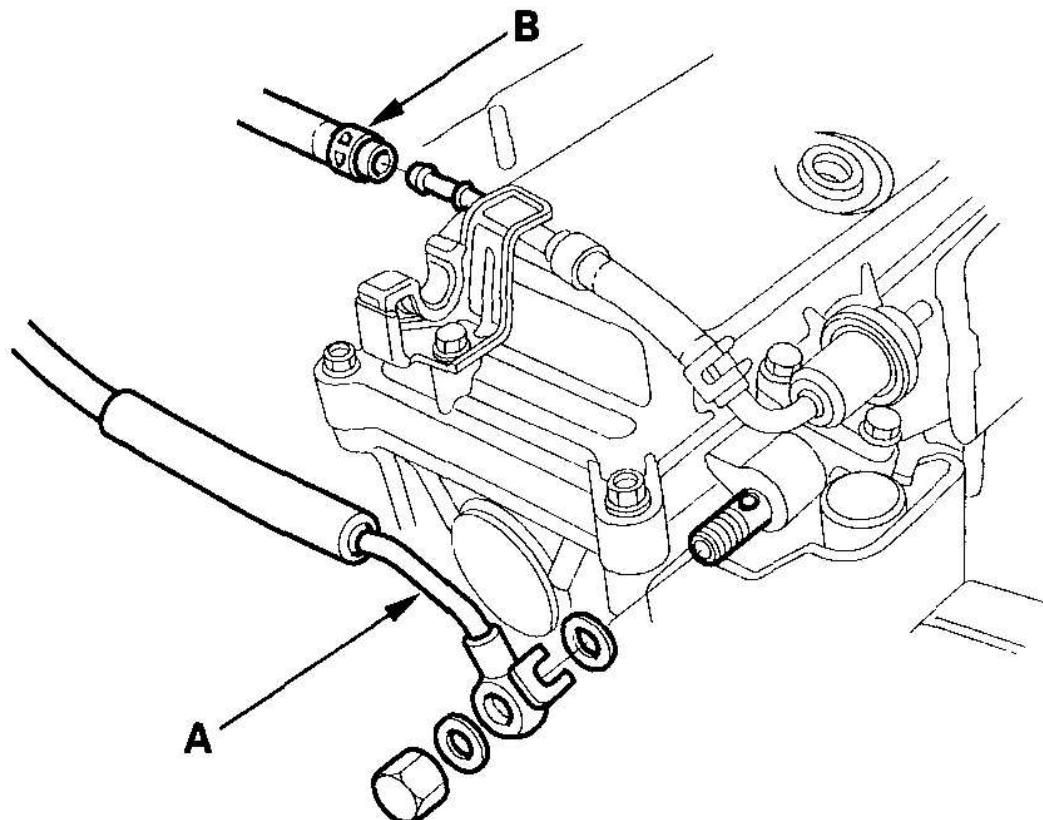


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Fig. 9: Removing Grommet Mounting Bolts And Harness Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Relieve fuel pressure:
 - 2000-2003 models (see [2000-2003 MODELS](#))
 - 2004-2005 models (see [2004-2005 MODELS](#))
 - 2006 model (see [2006 MODEL](#))
16. 2000-2005 models: Remove the fuel feed hose (A) and the fuel return hose (B).
2006 model: Remove the fuel feed hose (A).

2000-2003 models:



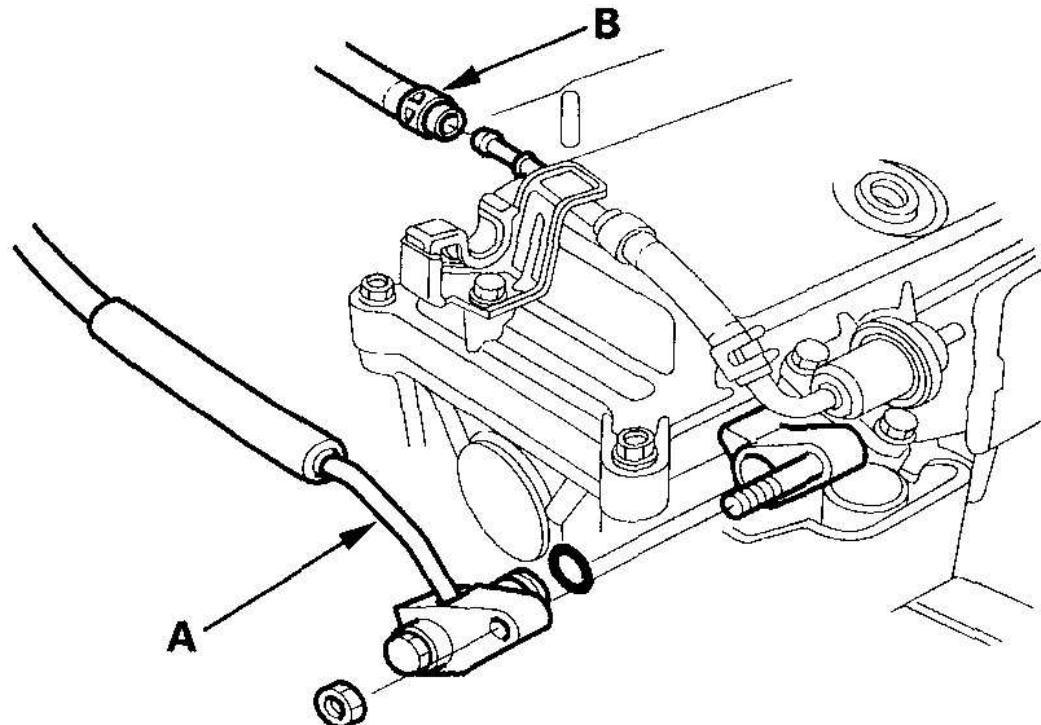
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Fig. 10: Removing Fuel Feed Hose And Fuel Return Hose (2000-2003 Models)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

This illustration shows the M/T model.

2004-2005 models:



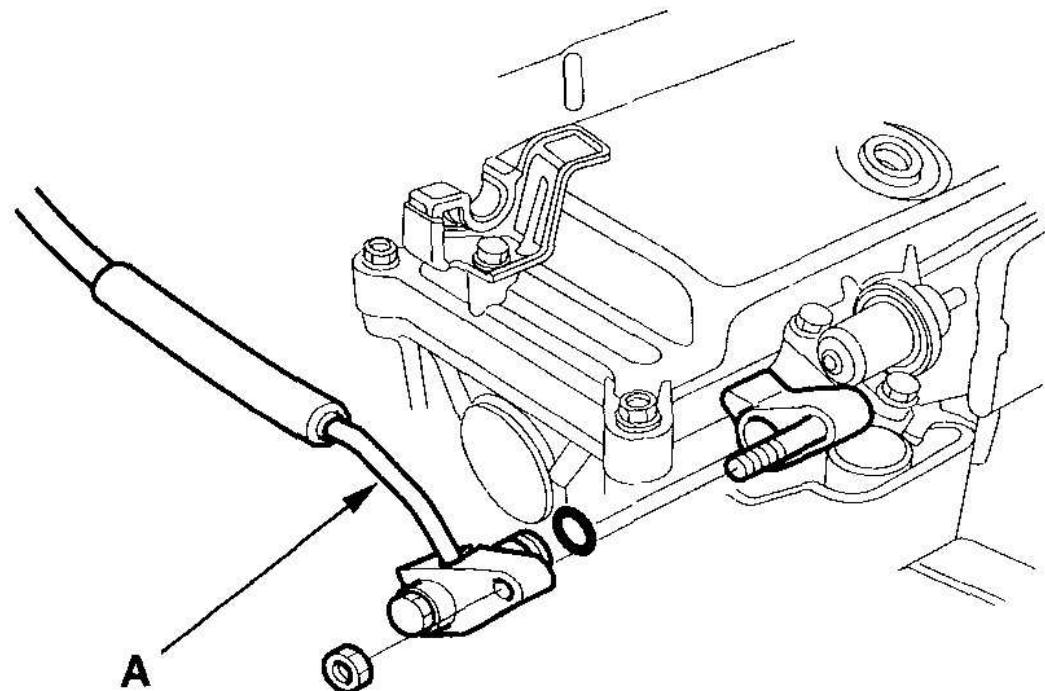
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Fig. 11: Removing Fuel Feed Hose And Fuel Return Hose (2004-2005 Models)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

This illustration shows the M/T model.

2006 model:



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Fig. 12: Removing Fuel Feed Hose And Fuel Return Hose (2006 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. With A/C model: Loosen the idler pulley center nut (A), then turn the adjusting bolt clockwise (B). Remove the water pump-A/C compressor belt (C).

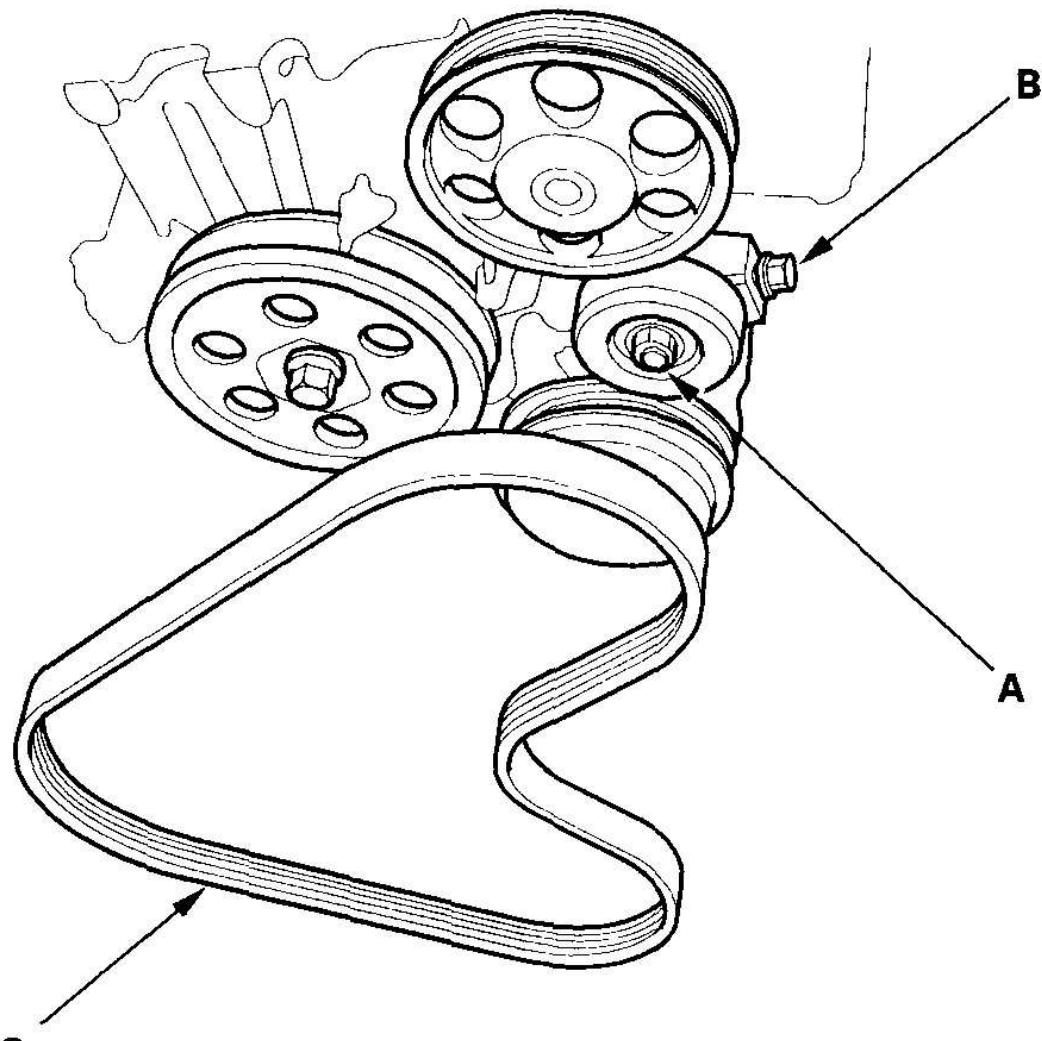
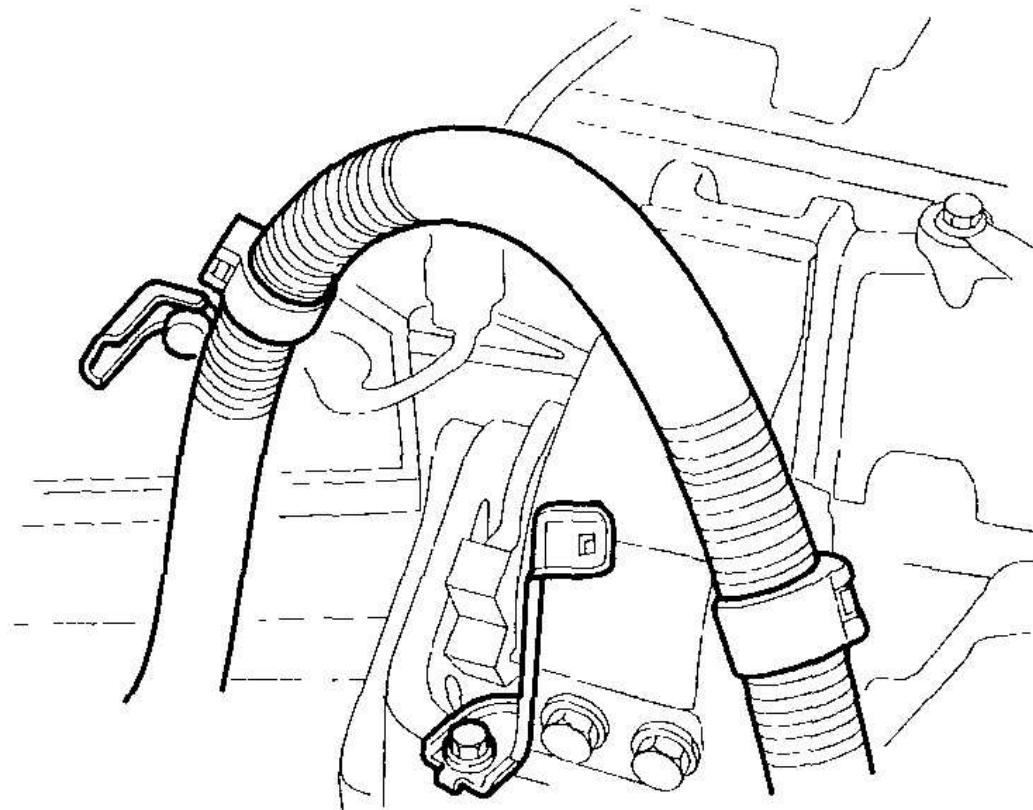


Fig. 13: Removing Water Pump-A/C Compressor Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. M/T model: Remove the clutch slave cylinder and line assembly (see step 12 on **MANUAL TRANSMISSION**).
19. Remove the shift cables, manual transmission (M/T) (see step 10 on **MANUAL TRANSMISSION**), continuously variable transmission (CVT) (see **SHIFT CABLE REPLACEMENT**).

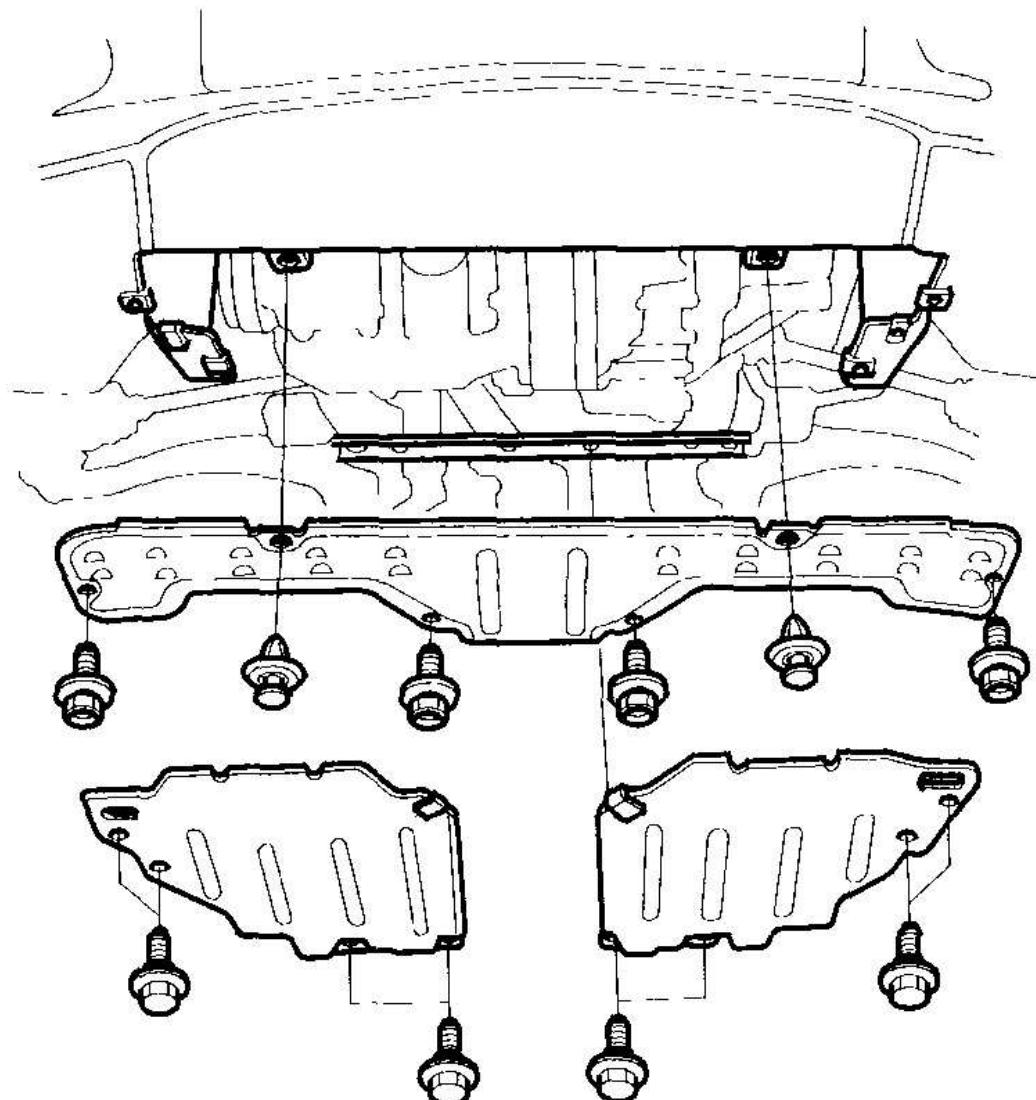
20. Remove the motor power cable clamps.



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Fig. 14: Removing Motor Power Cable Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

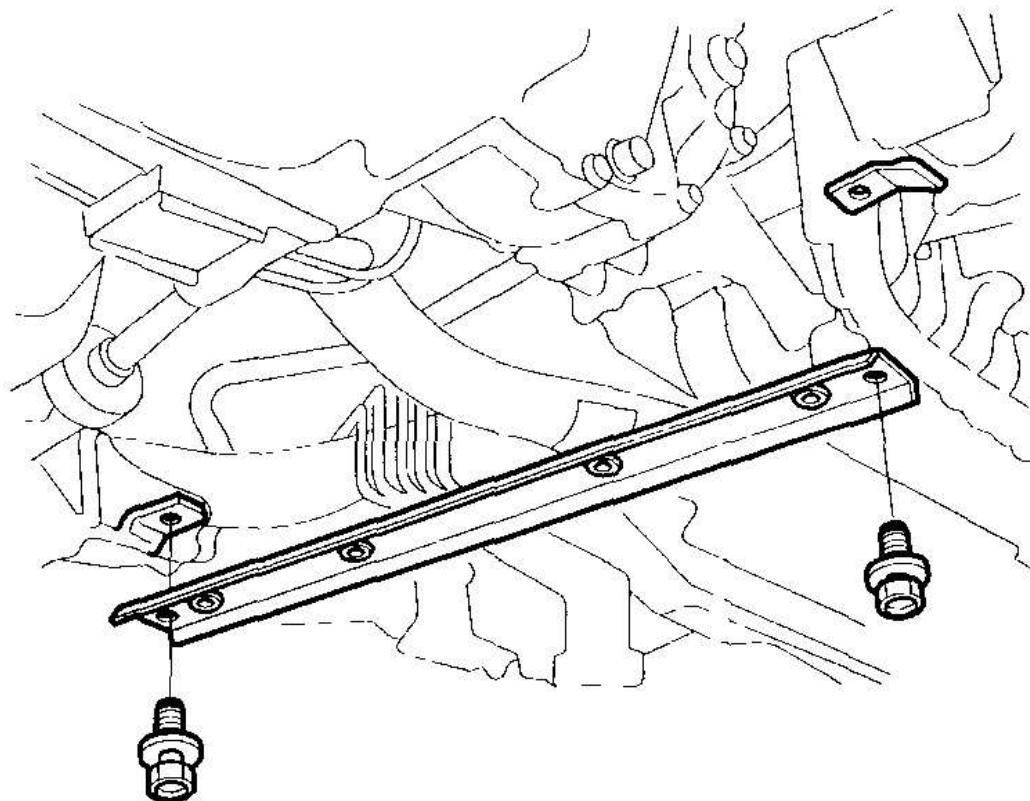
21. Remove the radiator cap.
22. Raise the vehicle on the hoist to full height.
23. Remove the front wheels.
24. Remove the splash shields.



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Fig. 15: Removing Splash Shields
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Remove the splash shield bracket.



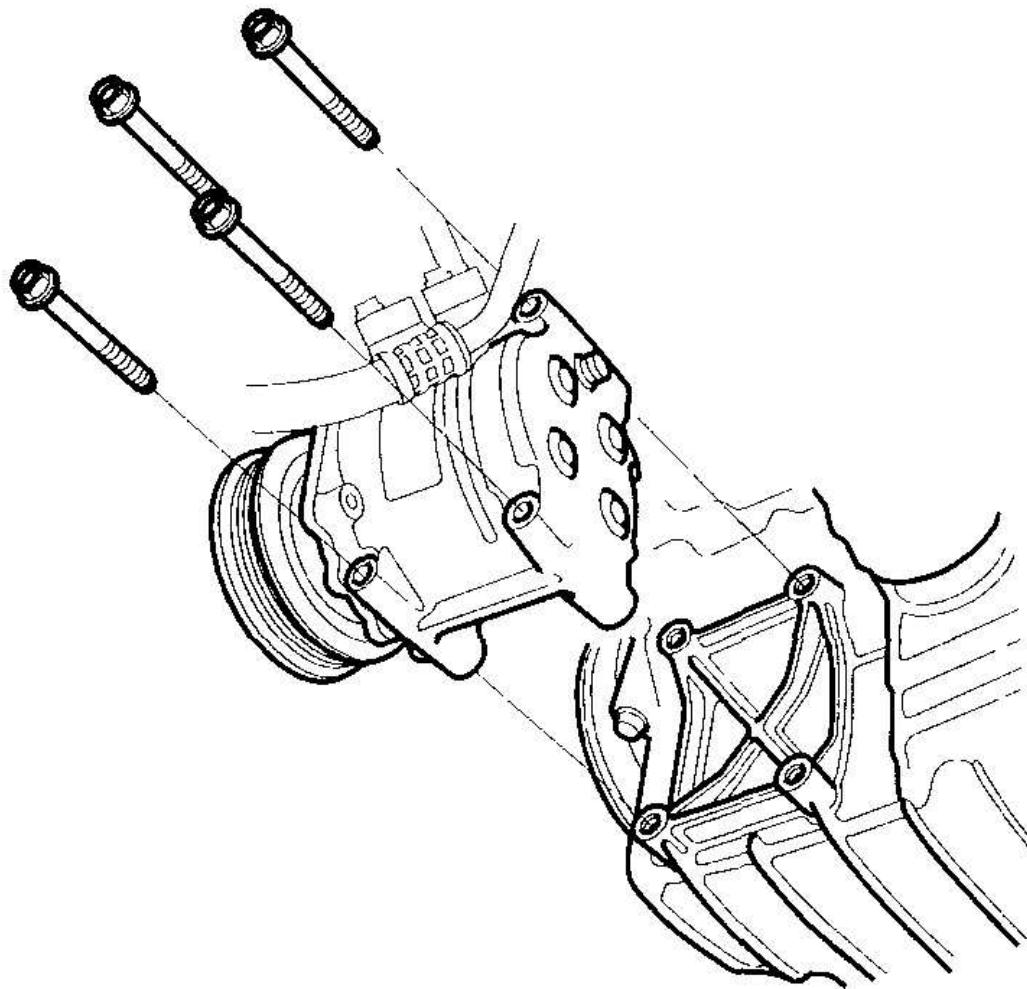
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Fig. 16: Removing Splash Shield Bracket

Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Loosen the drain plug in the radiator, and drain the engine coolant (see **COOLANT REPLACEMENT**).
27. Drain the transmission fluid, M/T (see **GEARSHIFT MECHANISM REPLACEMENT**), or CVT (see **CVT FLUID REPLACEMENT**). Reinstall the drain plug with a new washer.
28. Drain the engine oil. Reinstall the drain bolt with a new washer (see **ENGINE OIL REPLACEMENT**).
29. Disconnect the suspension lower arm ball joints (see step 10 on **FRONT SUSPENSION**).

30. Remove the driveshafts (see **DRIVESHAFT INSPECTION**). Coat all precision finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.
31. With A/C model: Remove the A/C compressor without disconnecting the A/C hoses.

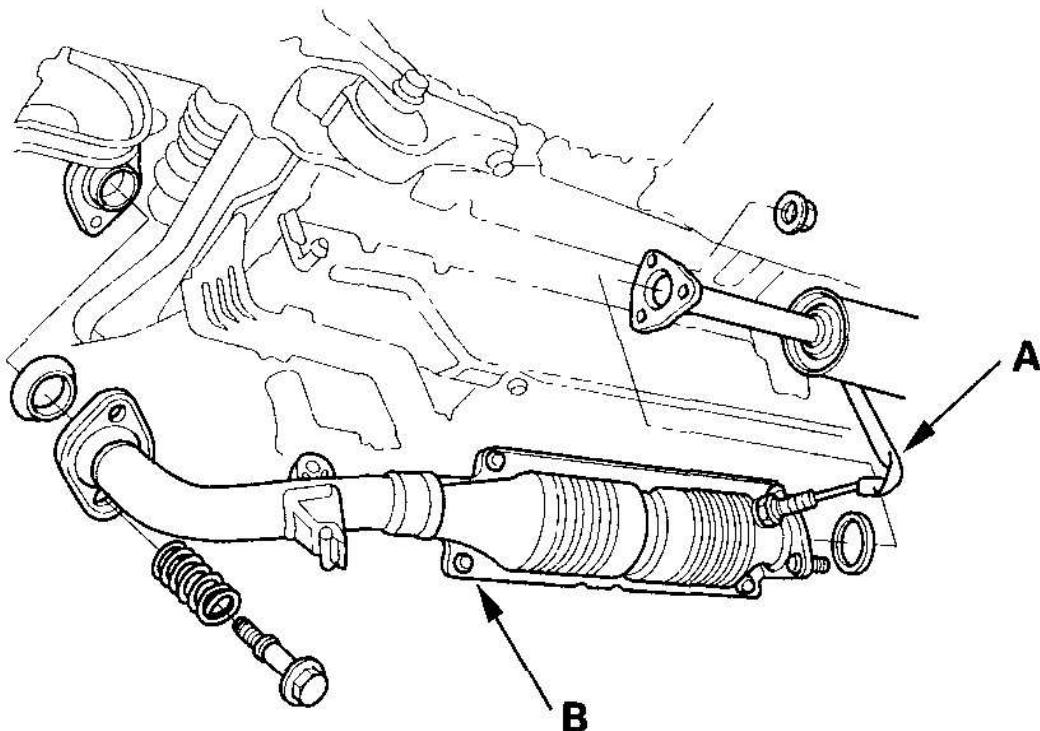


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Fig. 17: Removing A/C Compressor

Courtesy of AMERICAN HONDA MOTOR CO., INC.

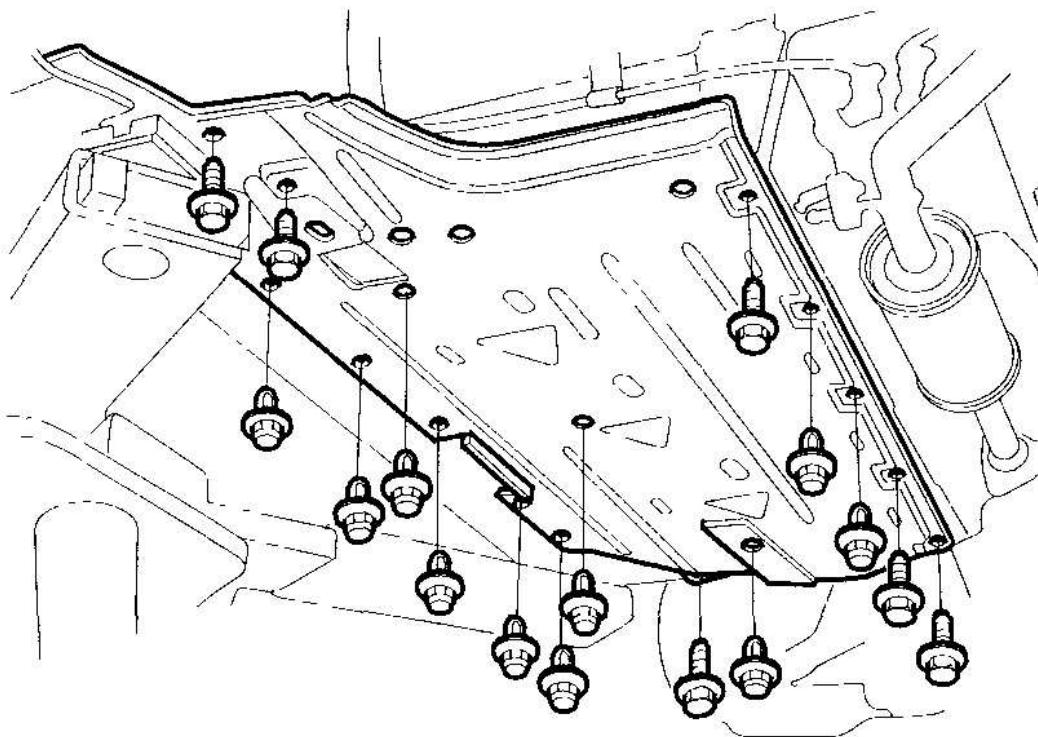
32. Disconnect the third heated oxygen sensor (third HO2S) connector (A) (2002-2006 M/T models), then remove the NOx adsorptive three way catalyst (NOx adsorptive TWO (B).



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Fig. 18: Removing Nox Adsorptive Three Way Catalyst
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Remove the left under-cover.

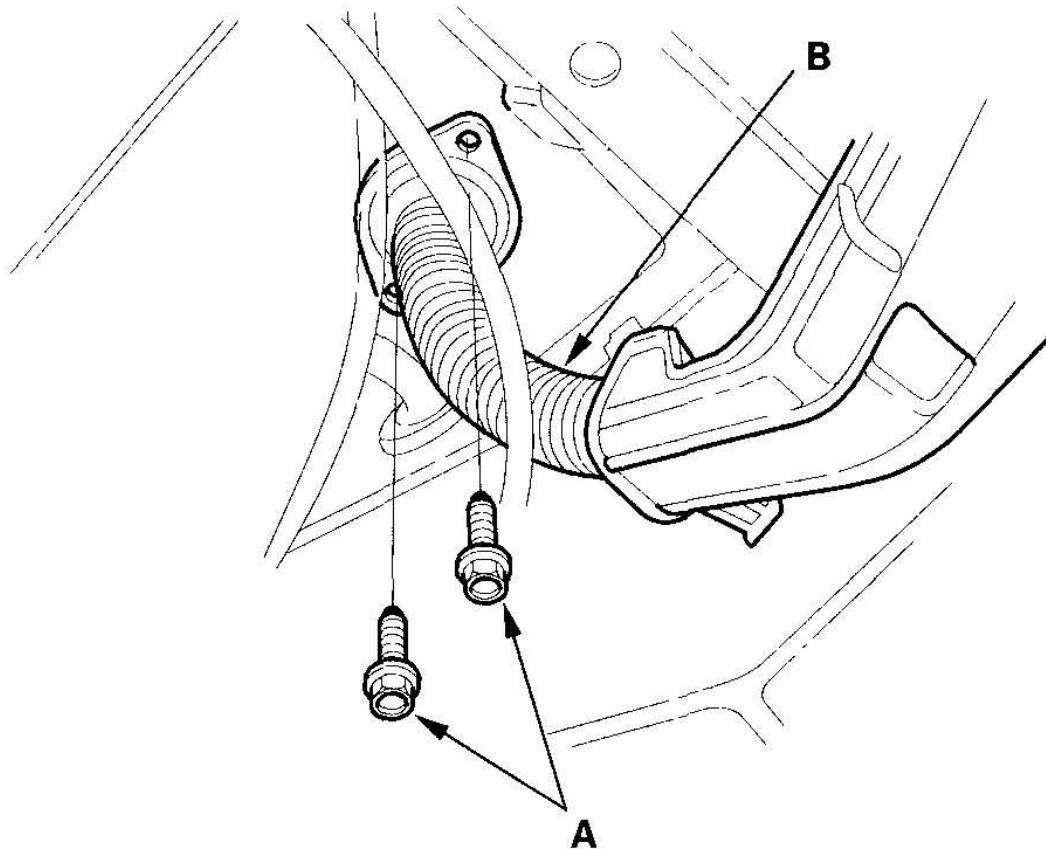


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Fig. 19: Removing Left Under-Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

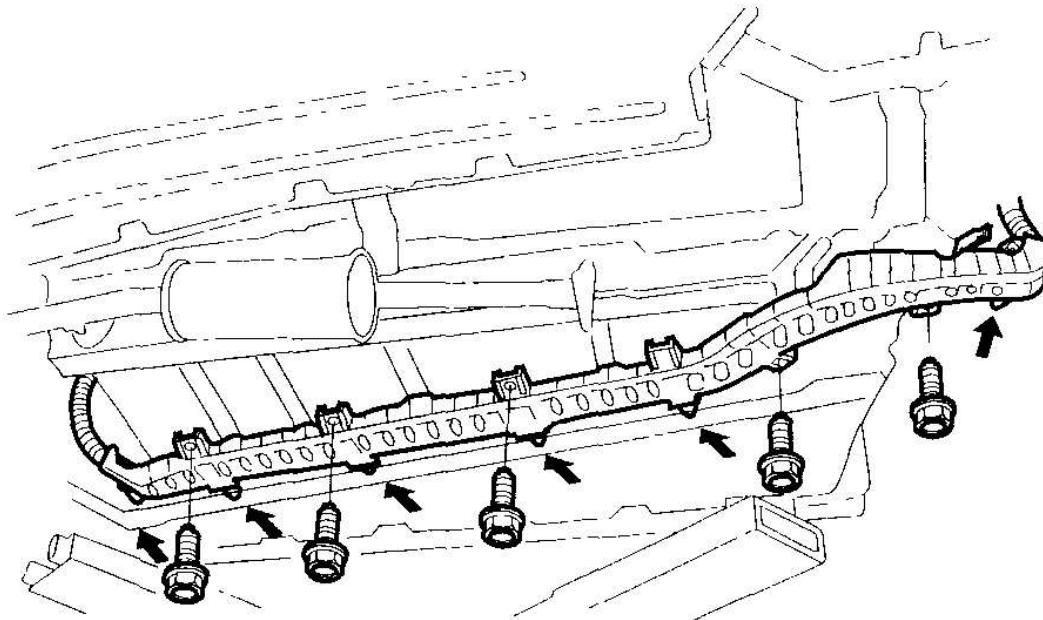
34. Remove the grommet mounting bolts (A), then pull out the motor power cable (B).



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Fig. 20: Removing Grommet Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

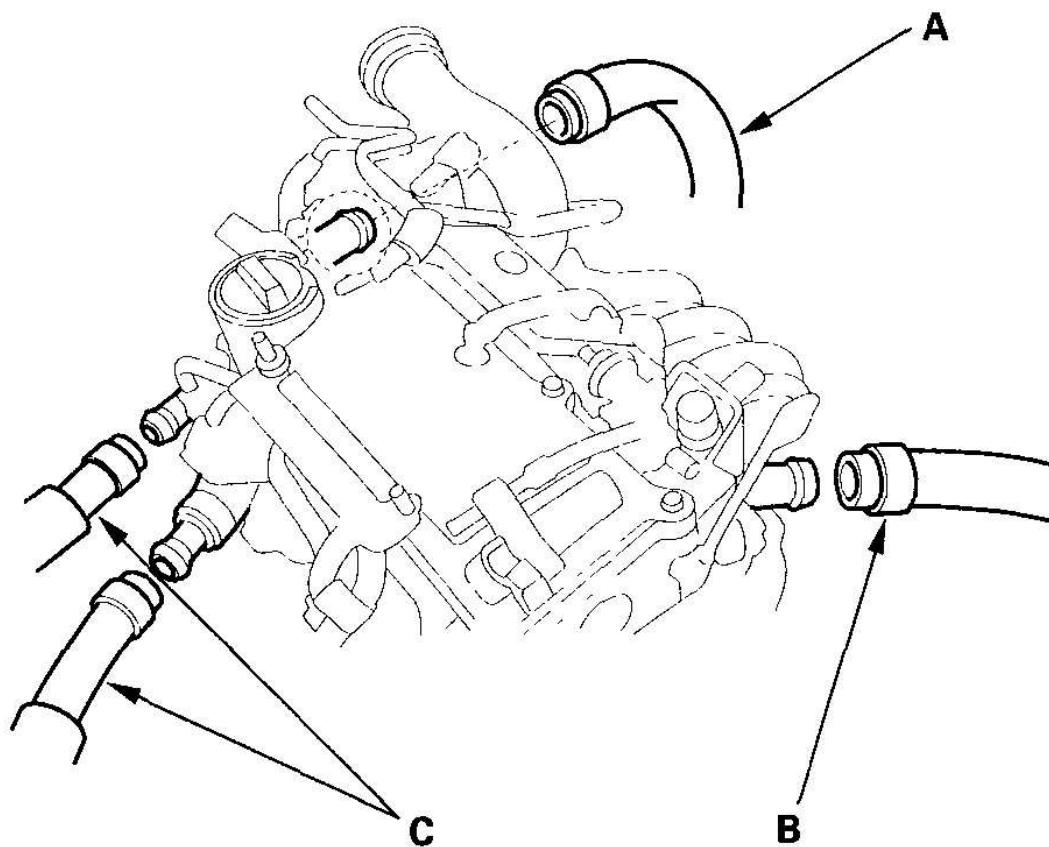
35. Remove the motor power cable holder from the underbody.



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Fig. 21: Removing Motor Power Cable Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Lower the vehicle on the hoist.
37. Remove the upper radiator hose (A), lower radiator hose (B), and heater hoses (C).

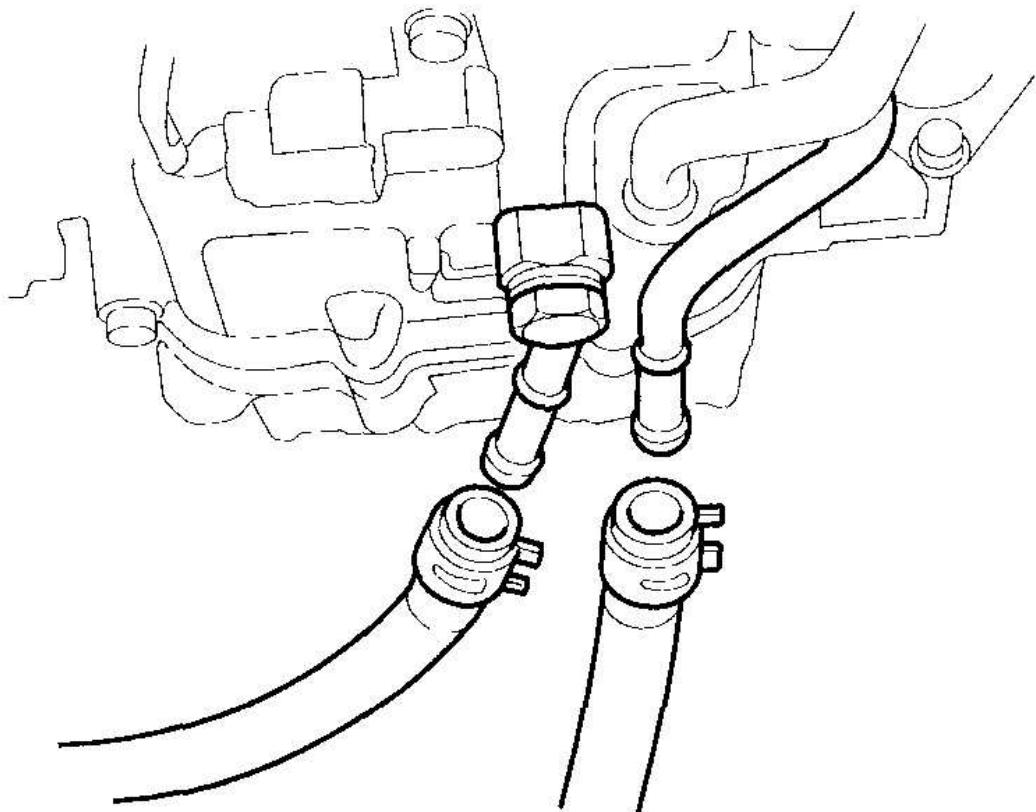


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Fig. 22: Removing Upper Radiator Hose, Lower Radiator Hose, And Heater Hoses

Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. CVT model: Remove the ATF cooler hoses, then plug the ATF cooler hoses and lines.

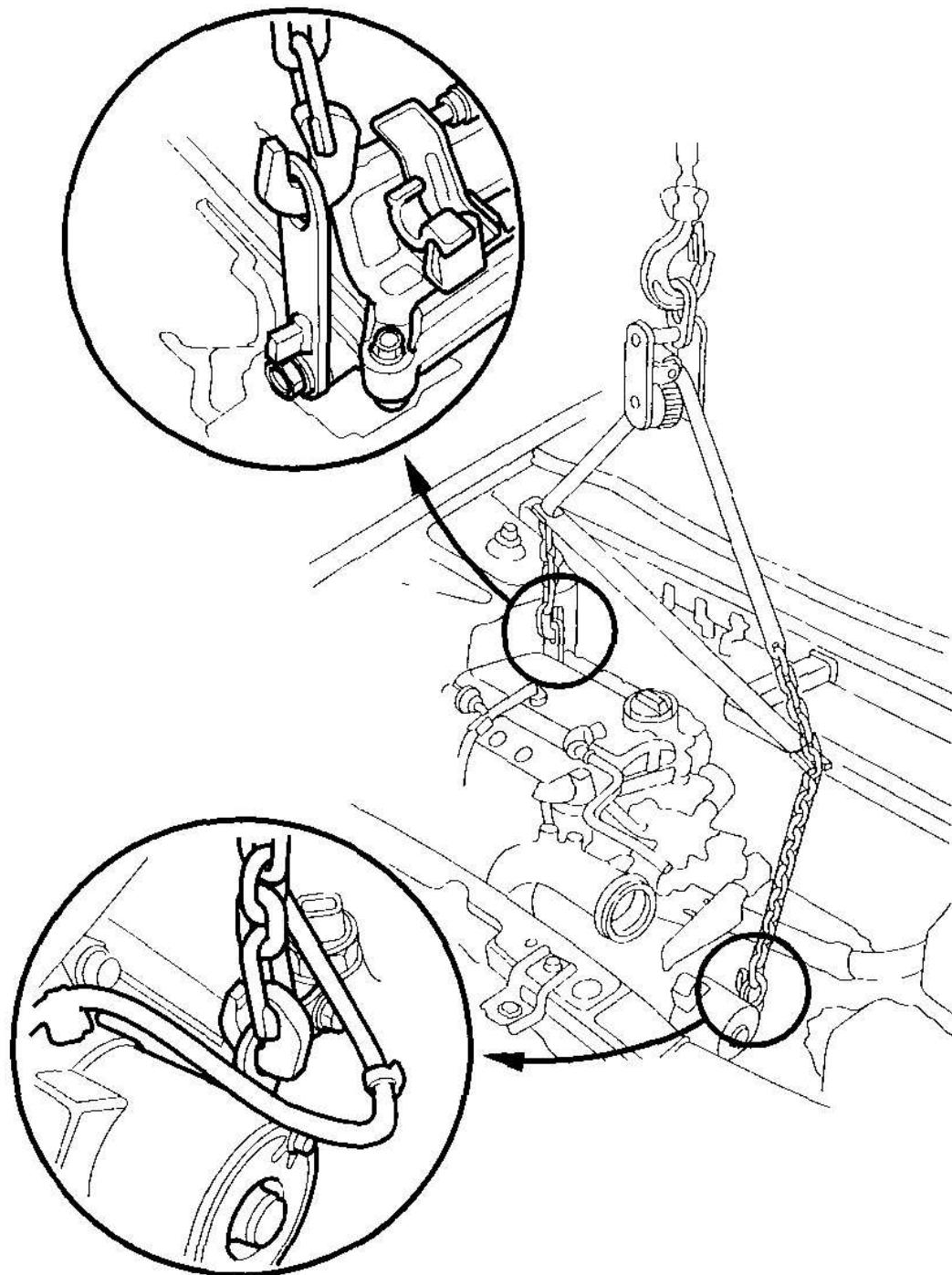


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Fig. 23: Removing ATF Cooler Hoses

Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Attach the chain hoist to the engine as shown.

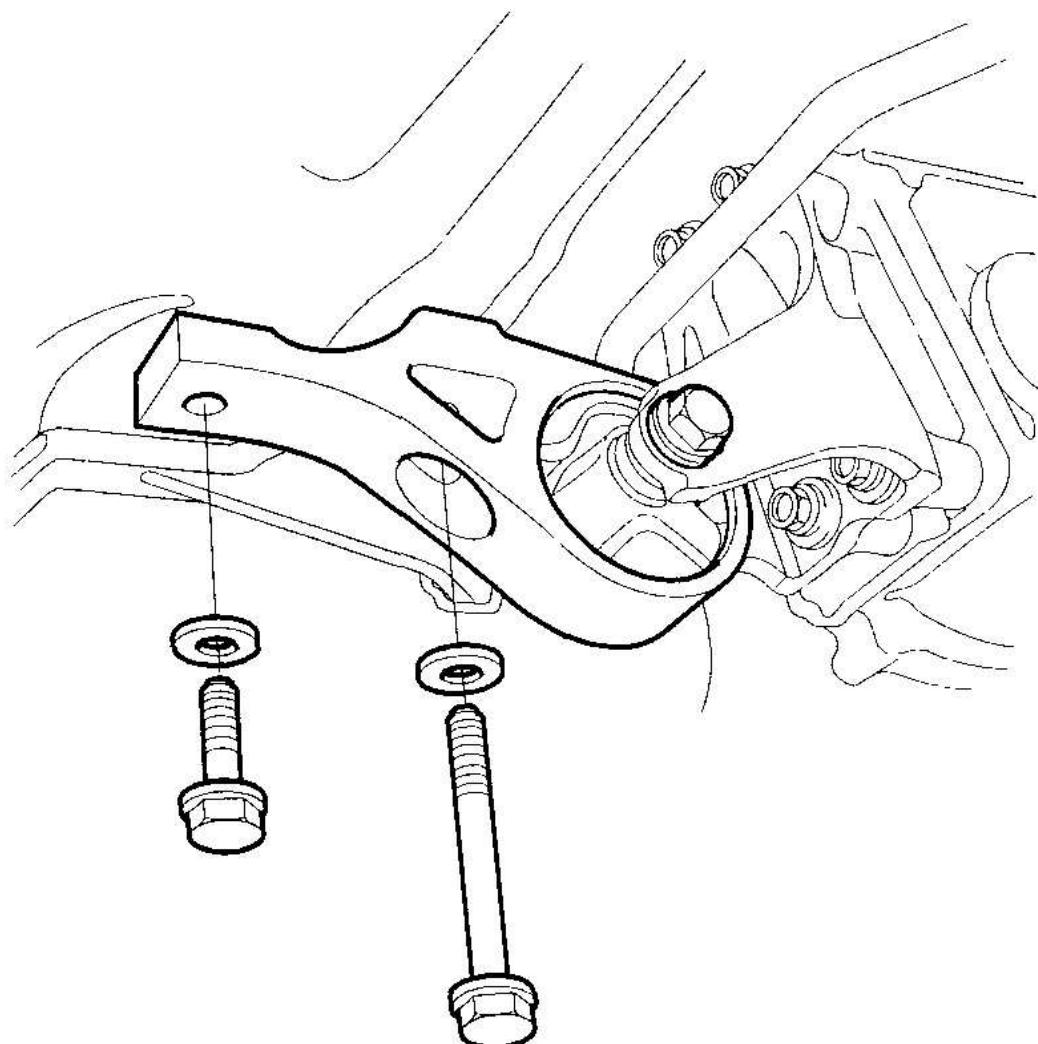


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Fig. 24: Attaching Chain Hoist To Engine

Courtesy of AMERICAN HONDA MOTOR CO., INC.

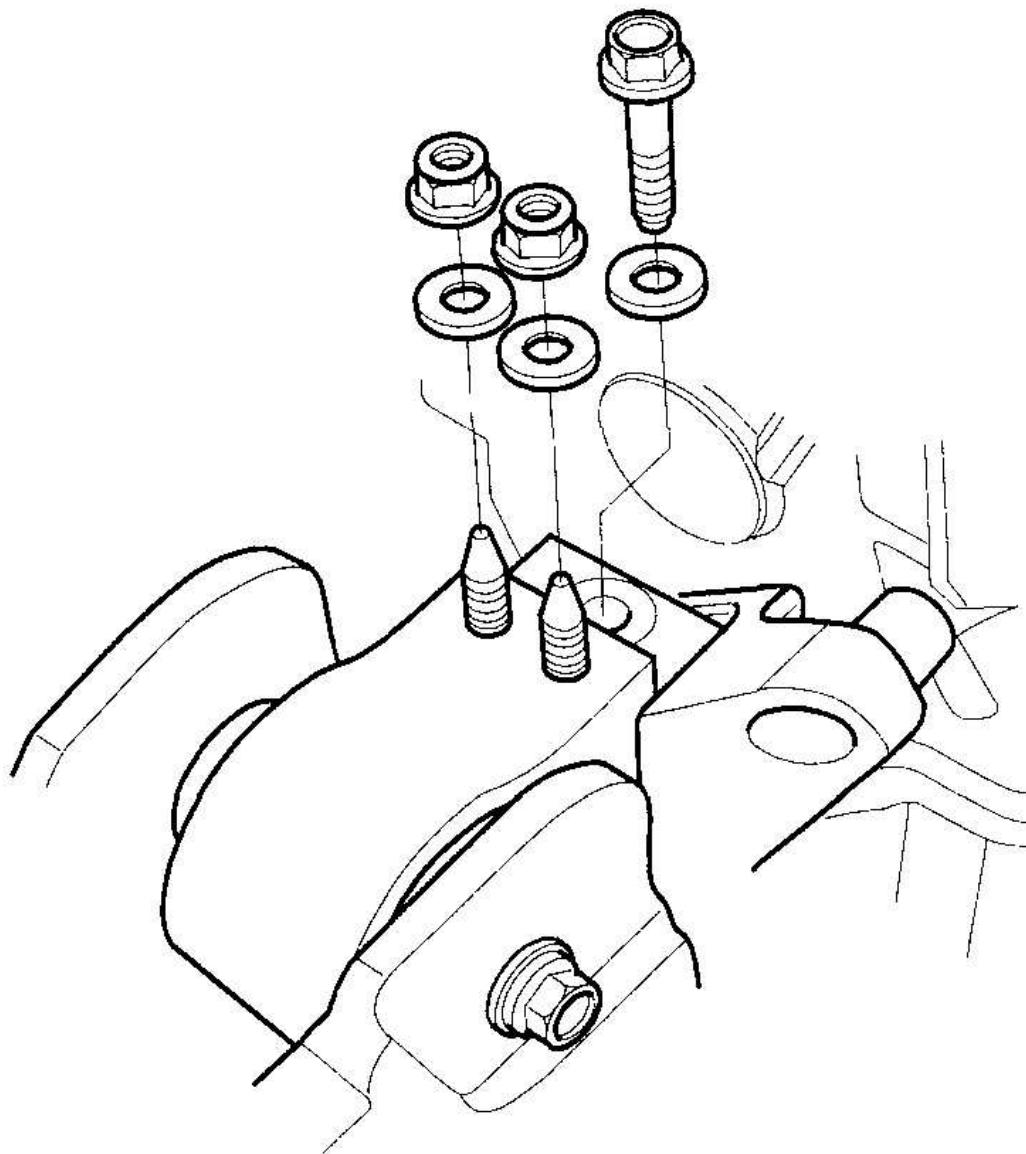
40. Remove the rear mount mounting bolts.



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Fig. 25: Removing Rear Mount Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Remove the side engine mount mounting nuts and mounting bolt.

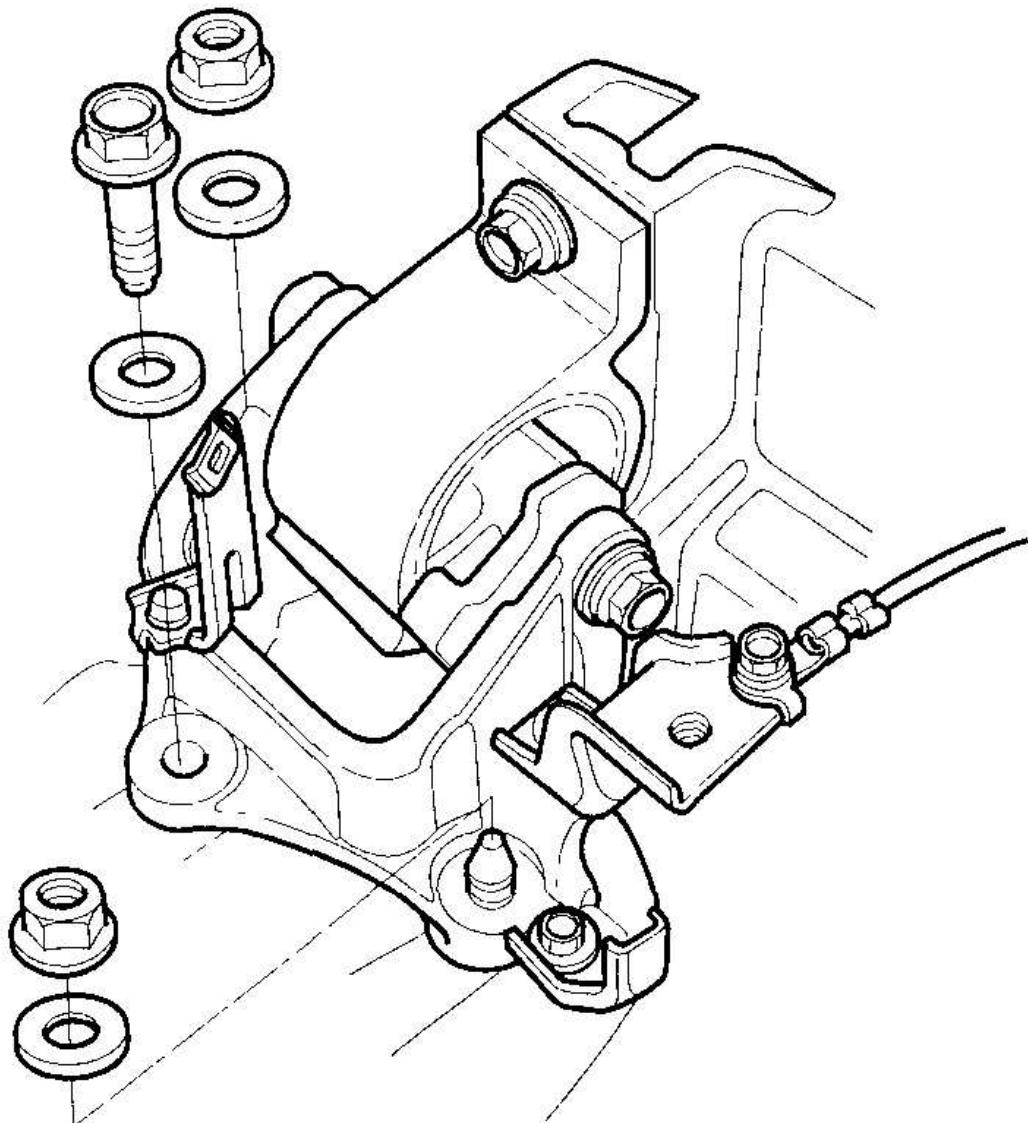


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Fig. 26: Removing Side Engine Mount Mounting Nuts And Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Remove the transmission mount bracket mounting nuts and mounting bolt.

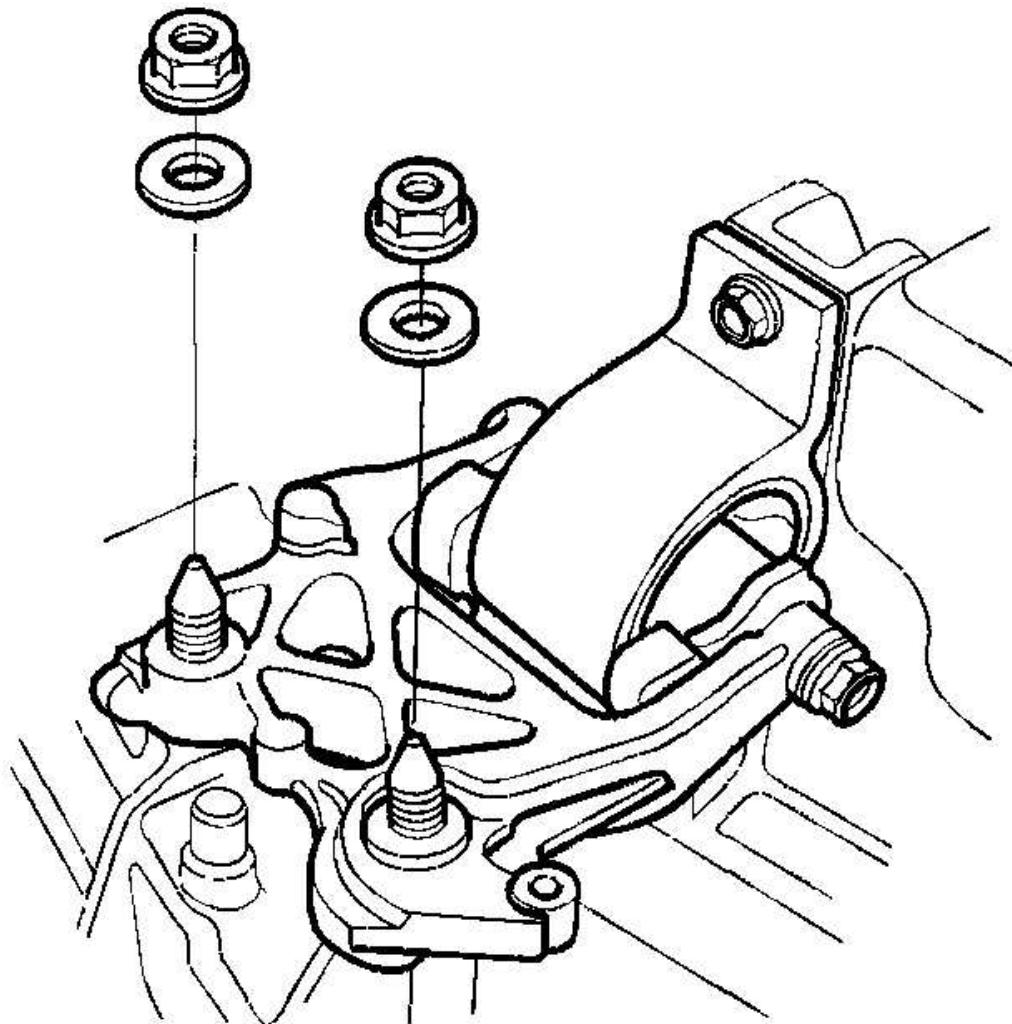
M/T:



G03680322

**Fig. 27: Removing Transmission Mount Bracket Mounting Nuts And
Mounting Bolt (M/T)**
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CVT:



G03680323

**Fig. 28: Removing Transmission Mount Bracket Mounting Nuts And
Mounting Bolt (CVT)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Check that the engine/motor/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.
44. Slowly lower the engine about 150 mm (6 in.). Check once again that all hoses

and wires are disconnected from the engine/motor/transmission.

45. Lower the engine/motor/transmission assembly all the way. Remove the chain hoist from the engine.
46. Remove the engine/motor/transmission assembly from under the vehicle.

ENGINE INSTALLATION

1. Install the engine mount and the idler pulley, and tighten their bolts to the specified torques.

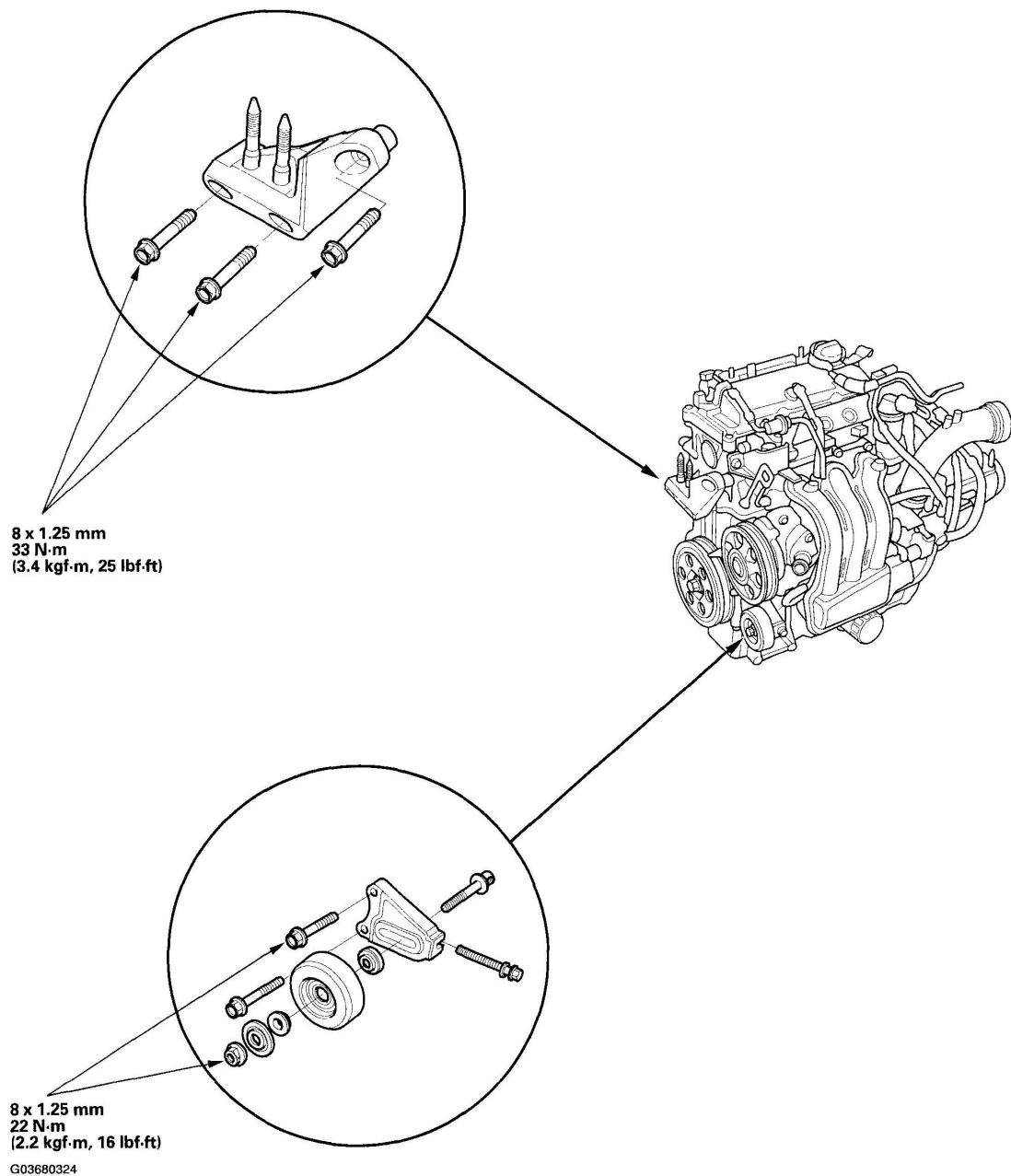


Fig. 29: Installing Engine Mount And Idler Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

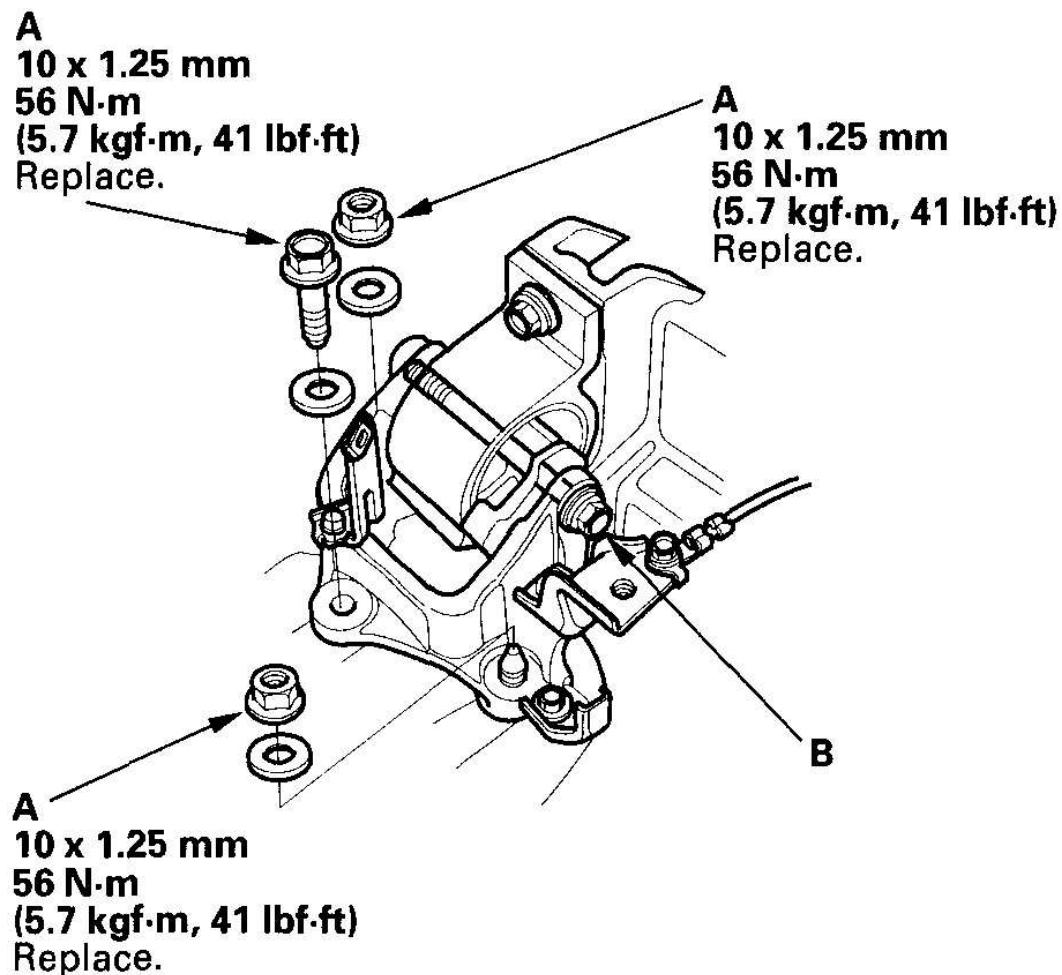
2. Install the engine/motor/transmission assembly into position in the vehicle.

NOTE: Reinstall the mounting bolts/support nuts in the sequence given in the following steps. Failure to follow

this sequence may cause excessive noise and vibration, and reduce engine mount life.

3. Tighten the transmission mount bracket mounting bolt/nuts (A), then loosen the transmission mount bolt (B).

M/T:

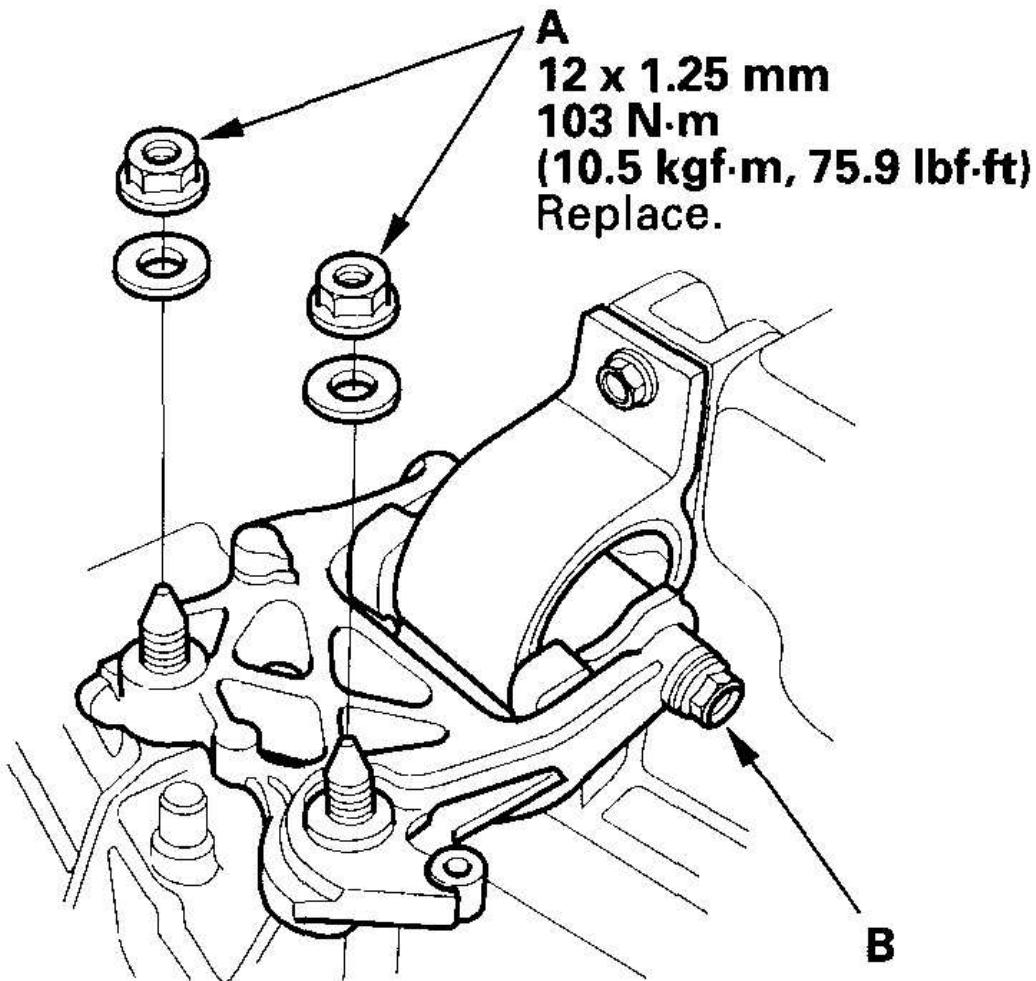


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Fig. 30: Tightening Transmission Mount Bracket Mounting Bolt/Nuts And Torque Specifications(M/T)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

CVT:

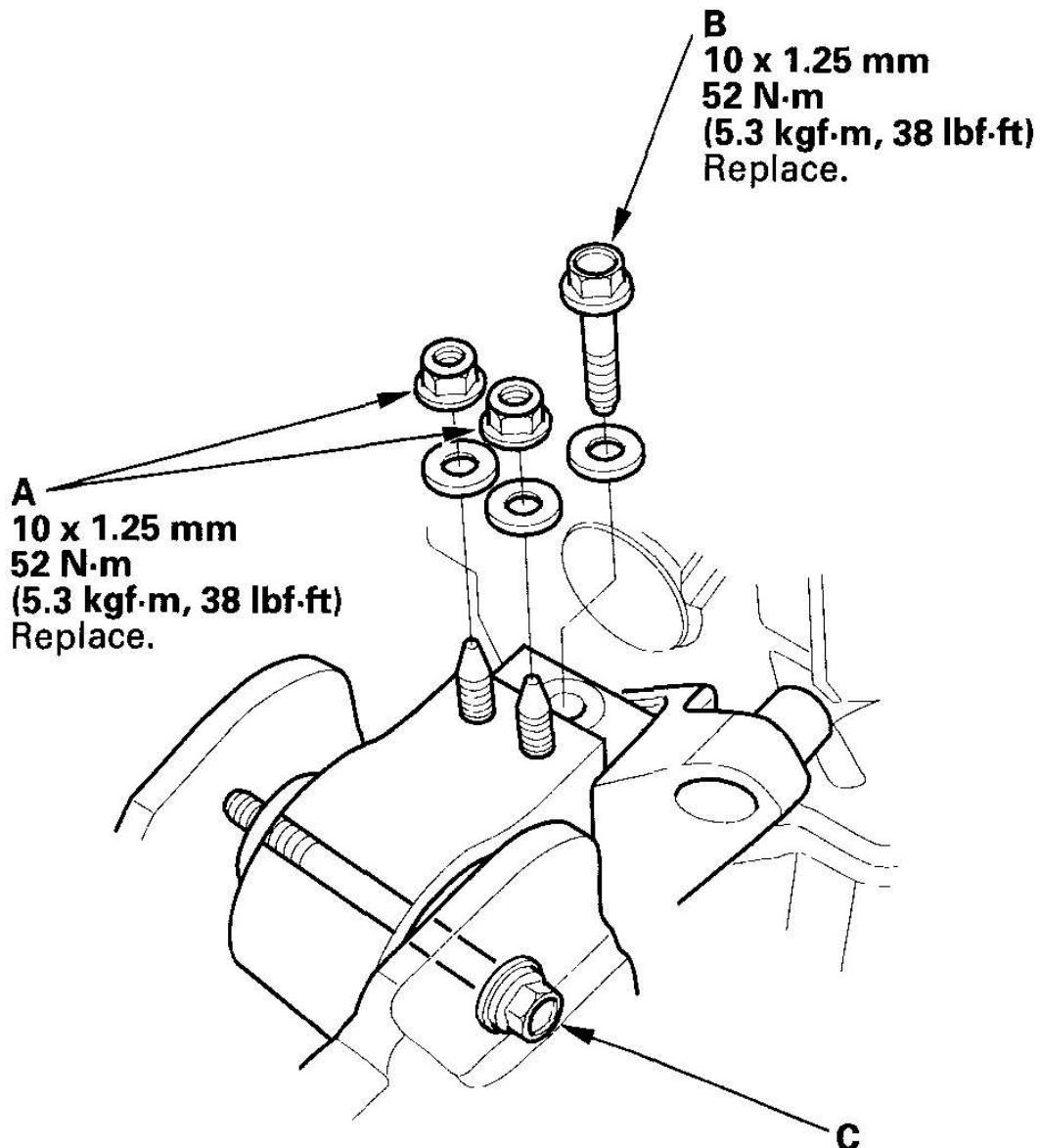


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Fig. 31: Tightening Transmission Mount Bracket Mounting Bolt/Nuts (CVT)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the side engine mount mounting nuts (A) and mounting bolt (B), then loosen the side engine mount bolt (C).



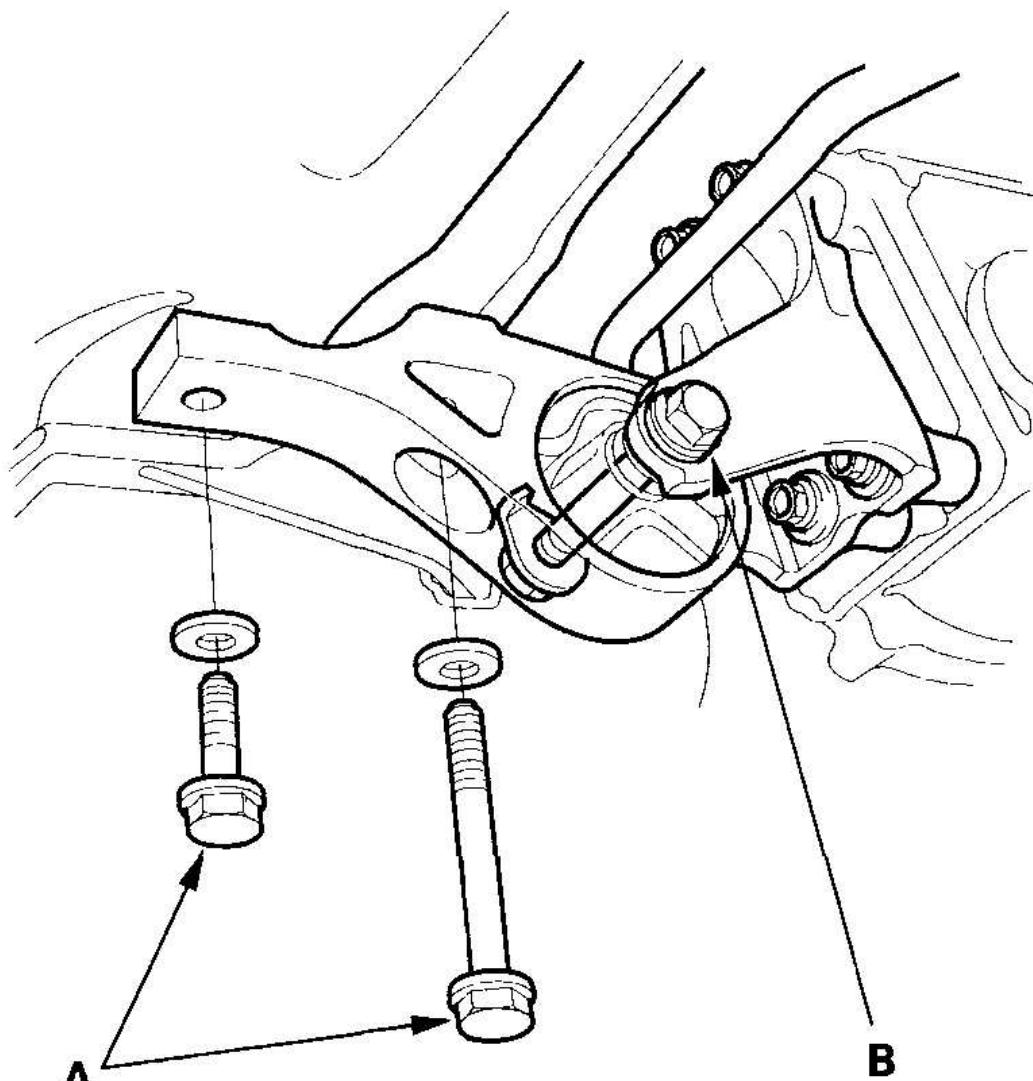
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Fig. 32: Tightening Side Engine Mount Mounting Nuts And Mounting Bolt With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Raise the vehicle on the hoist to full height.
6. Tighten the rear mount mounting bolts (A), then loosen the rear mount bolt

(B).



**12 x 1.25 mm
74 N·m (7.5 kgf·m, 54 lbf·ft)
Replace.**

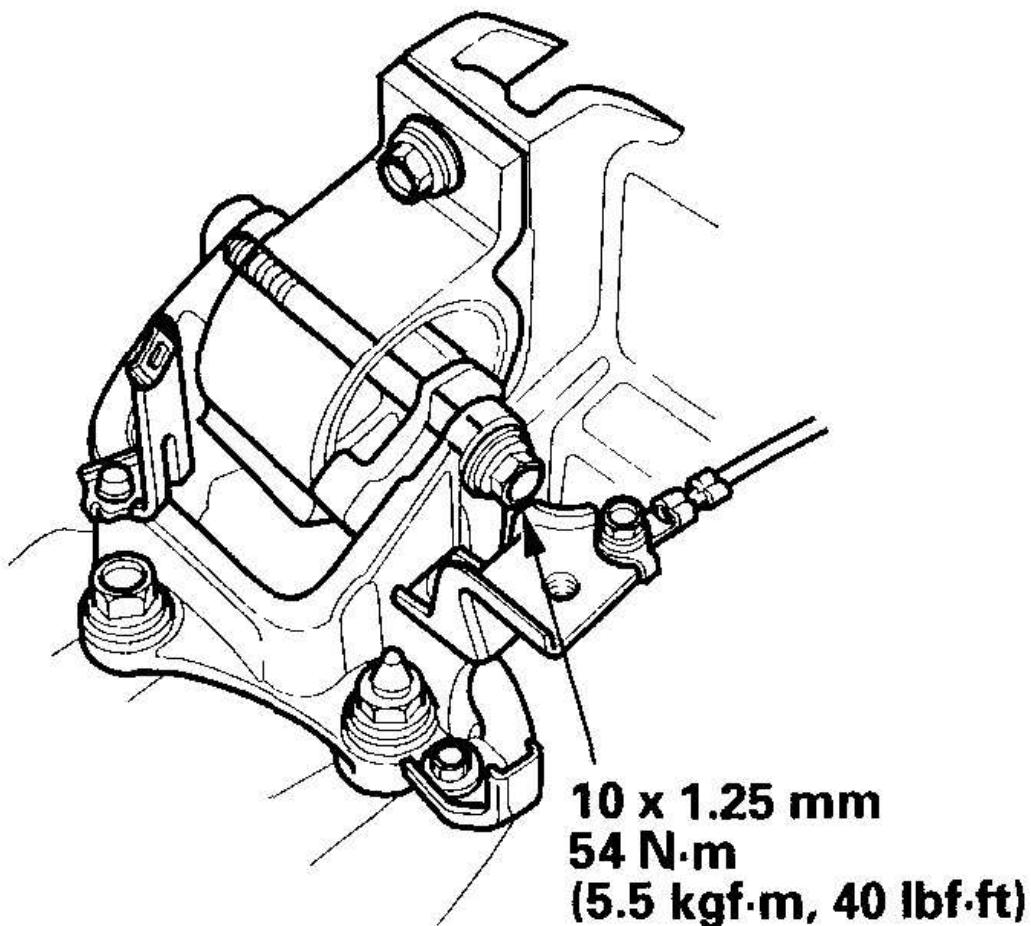
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Fig. 33: Tightening Rear Mount Mounting Bolts And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Lower the vehicle on the hoist.
8. Remove the chain hoist from the engine.
9. Tighten the transmission mount bolt.

M/T:

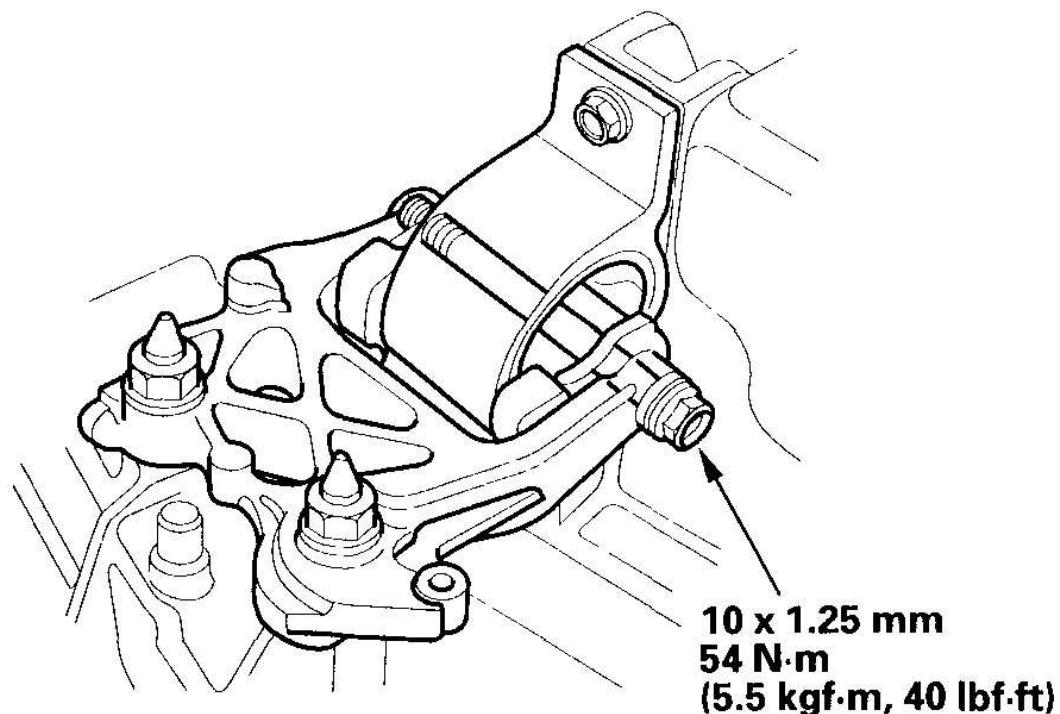


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Fig. 34: Tightening Transmission Mount Bolt And Torque Specifications (M/T)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

CVT:

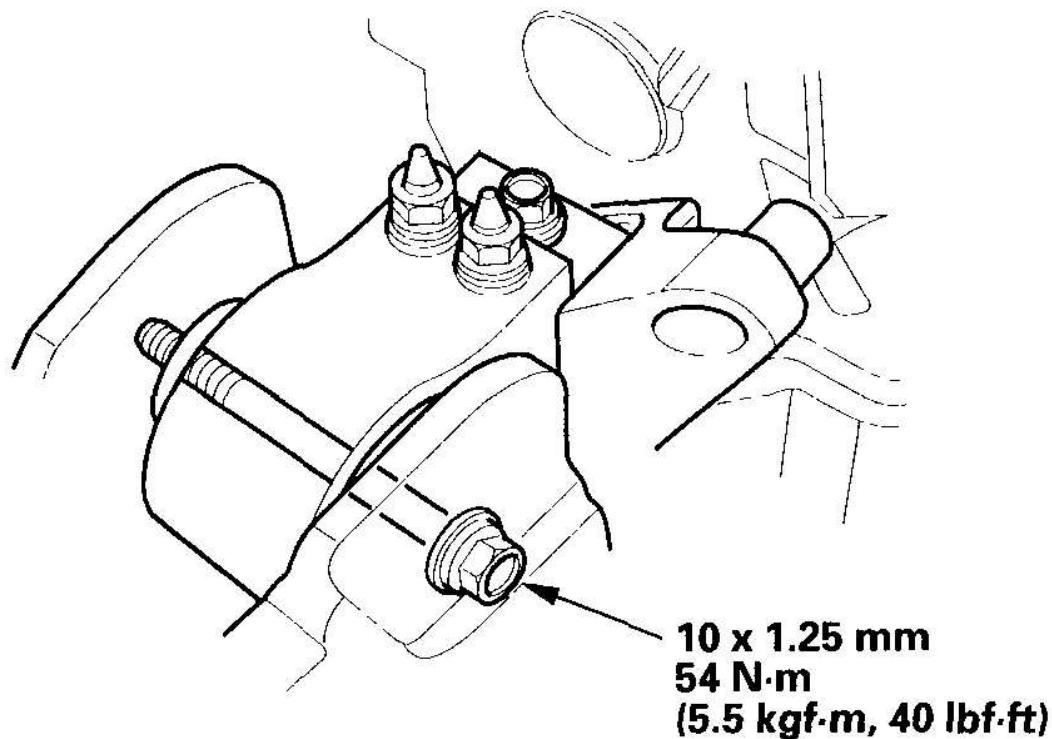


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Fig. 35: Tightening Transmission Mount Bolt And Torque Specifications (CVT)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

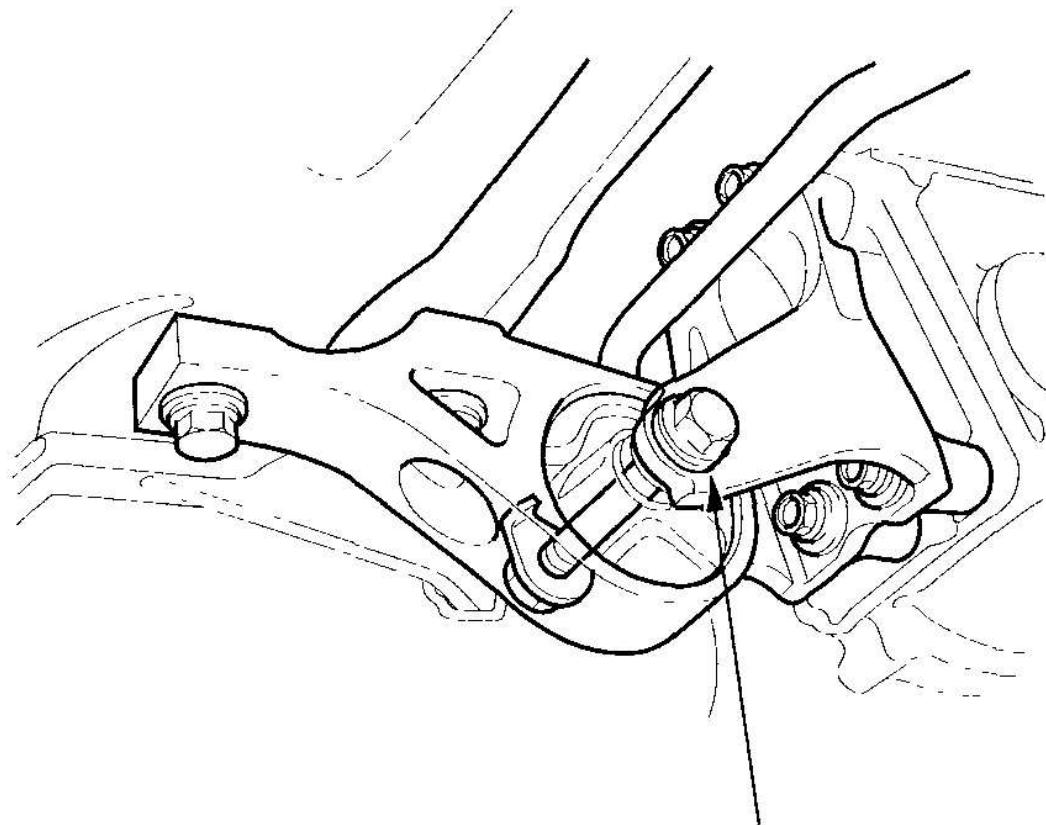
10. Tighten the side engine mount bolt.



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Fig. 36: Tightening Side Engine Mount Bolt And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Raise the vehicle on the hoist to full height.
12. Tighten the rear mount bolt.

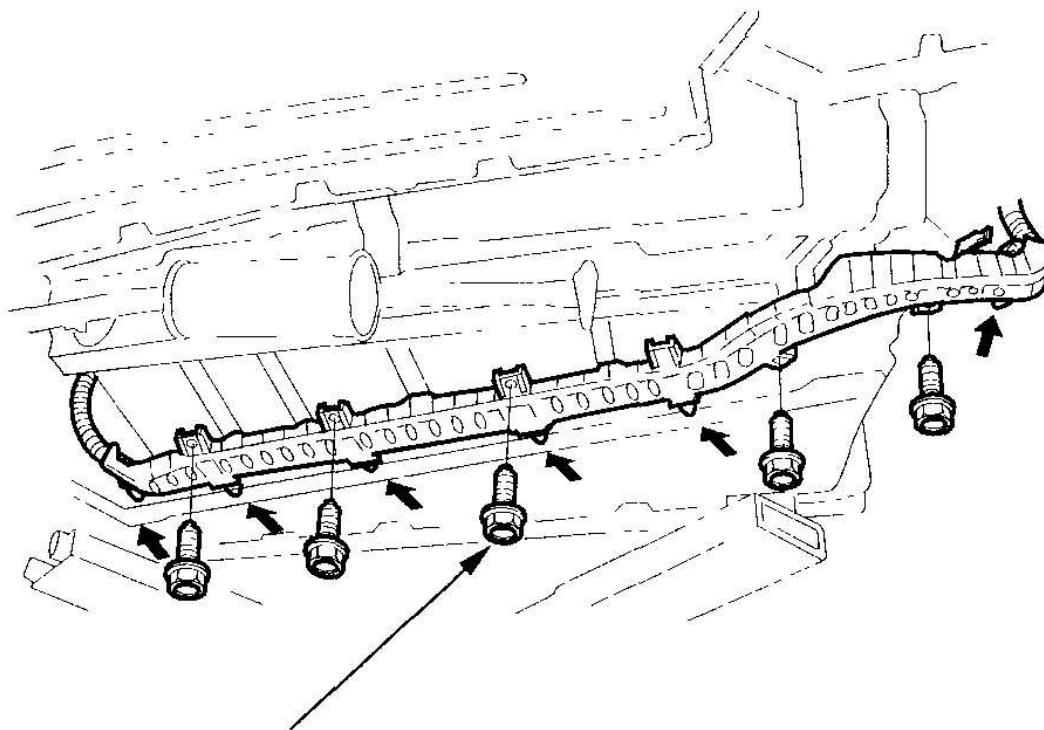


**12 x 1.25 mm
89 N·m
(9.1 kgf·m, 66 lbf·ft)**

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Fig. 37: Tightening Rear Mount Bolt And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the motor power cable holder.

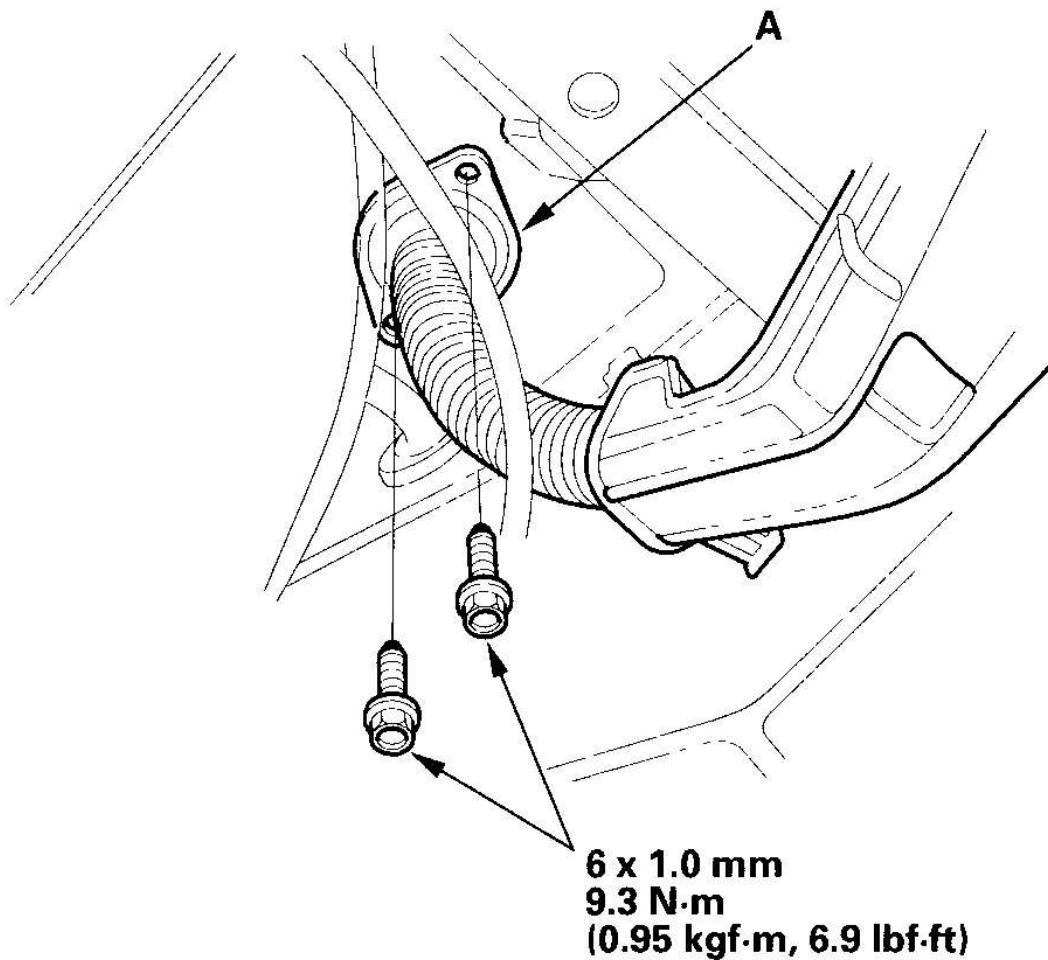


**6 x 1.0 mm
9.3 N·m
(0.95 kgf·m, 6.9 lbf·ft)**

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Fig. 38: Installing Motor Power Cable Holder And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

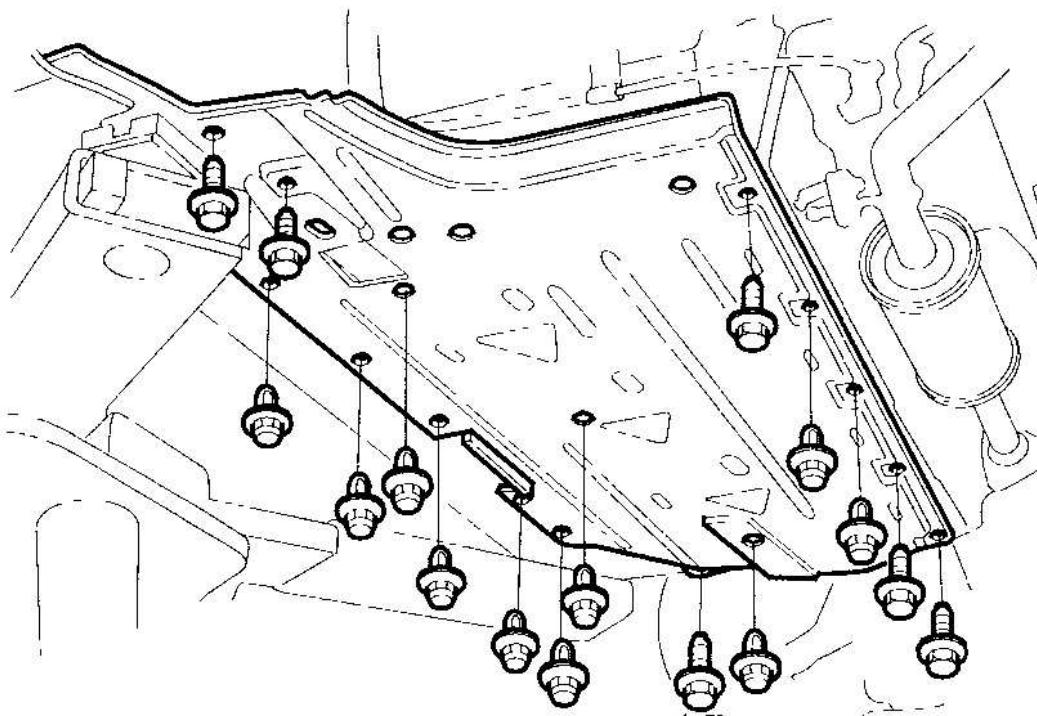
14. Push the motor power cable through the hole, then install the grommet (A).



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Fig. 39: Installing Grommet Bolts And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the left under-cover.

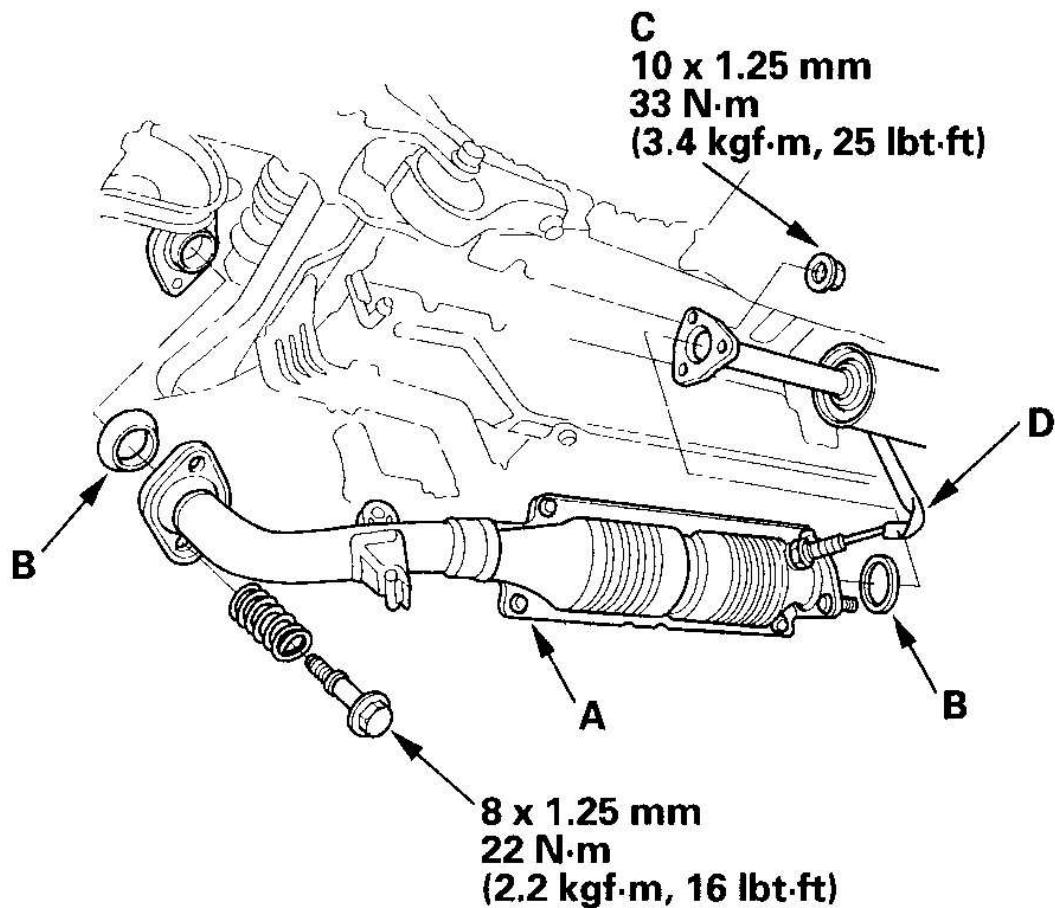


**6 x 1.0 mm
9.3 N·m
(0.95 kgf·m, 6.9 lbf·ft)**

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Fig. 40: Installing Left Under-Cover And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the NOx adsorptive three way catalyst (NOx adsorptive TWC) (A); use new gaskets (B) and new self-locking nuts (C), then connect the third heated oxygen sensor (third HO2S) connector (D) (2002-2006 M/T models).



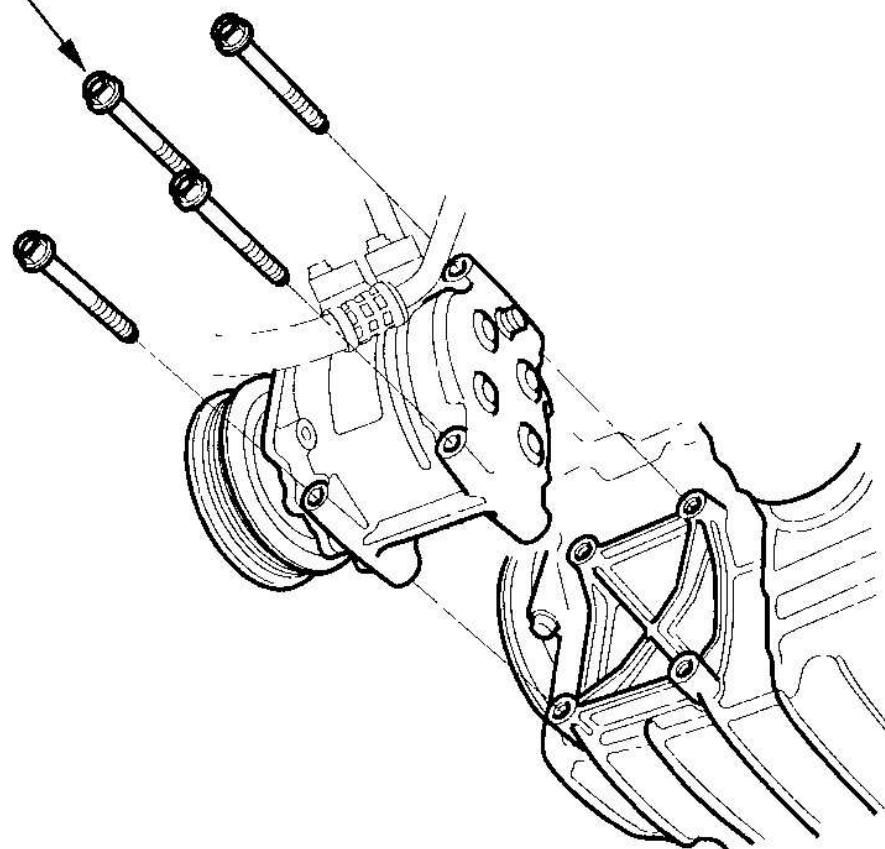
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Fig. 41: Installing Nox Adsorptive Three Way Catalyst And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. With A/C model: Install the A/C compressor.

**8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)**

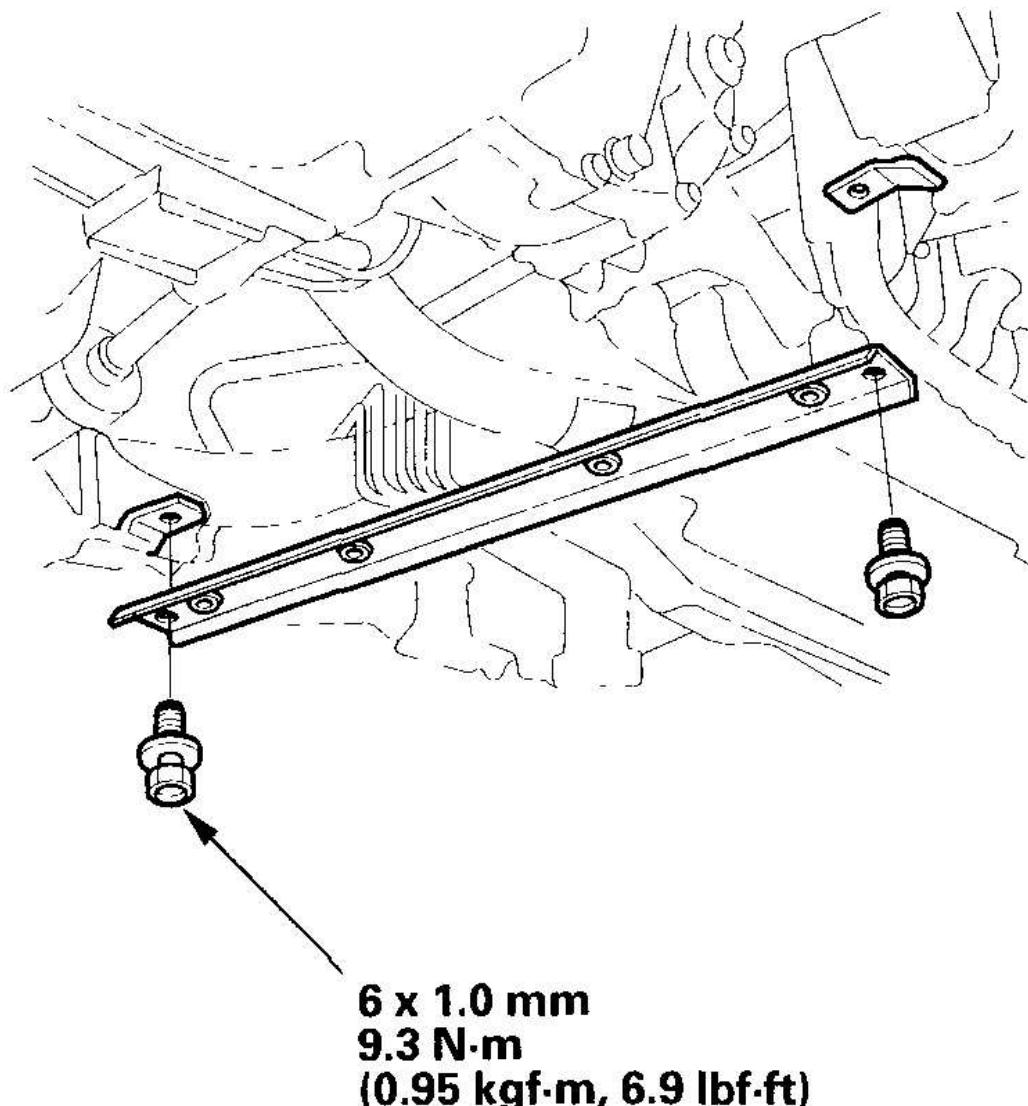


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Fig. 42: Installing A/C Compressor And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install a new spring clip on the end of each driveshaft, then install the driveshafts. Make sure each clip "clicks" into place in the differential.
19. Connect the suspension lower arm ball joints. Use new lock pins (see step 10 on **FRONT SUSPENSION**).

20. Install the splash shield bracket.



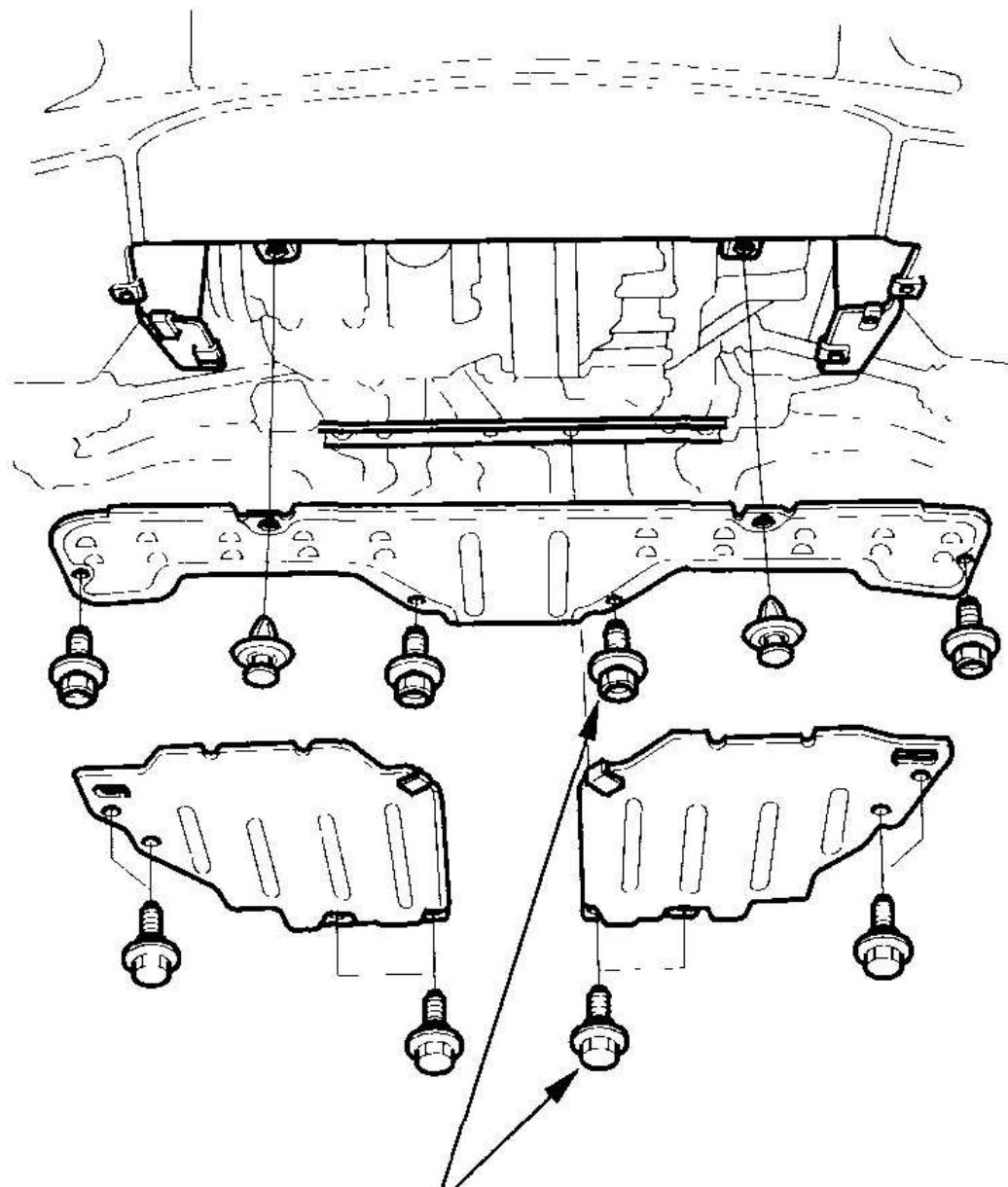
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Fig. 43: Installing Splash Shield Bracket And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the splash shields.

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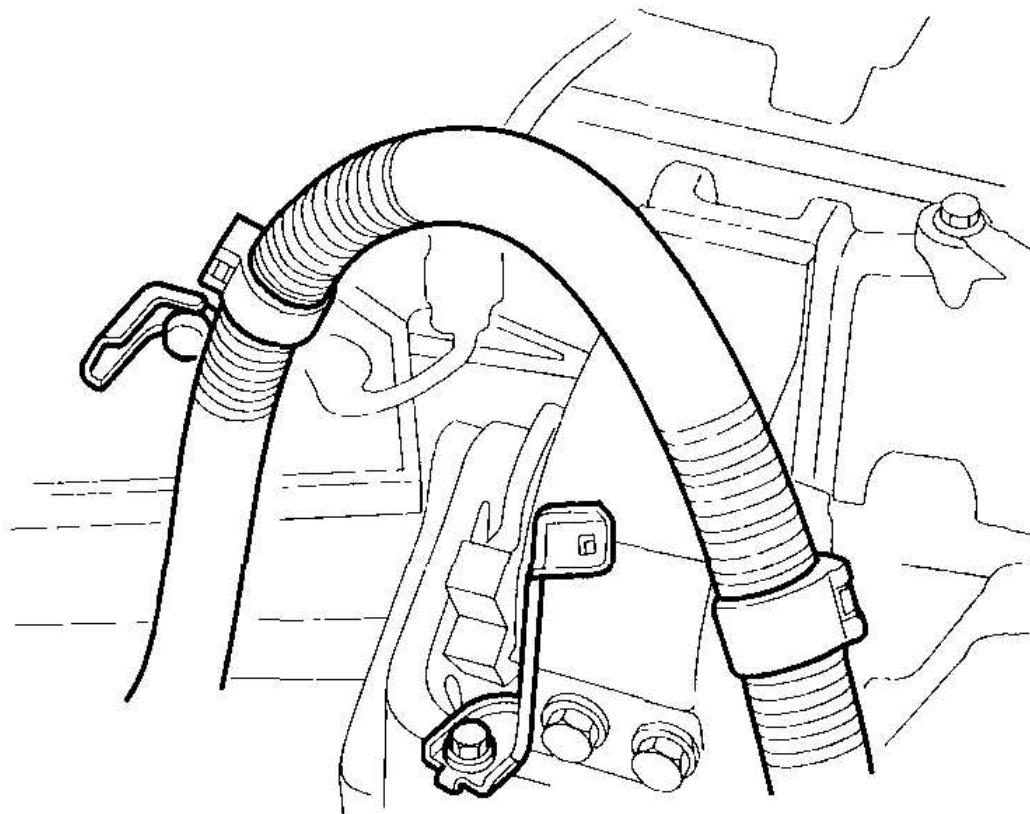
**6 x 1.0 mm
9.3 N·m
(0.95 kgf·m, 6.9 lbf·ft)**

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Fig. 44: Installing Splash Shields And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Lower the vehicle on the hoist.
23. Install the motor power cable clamps.



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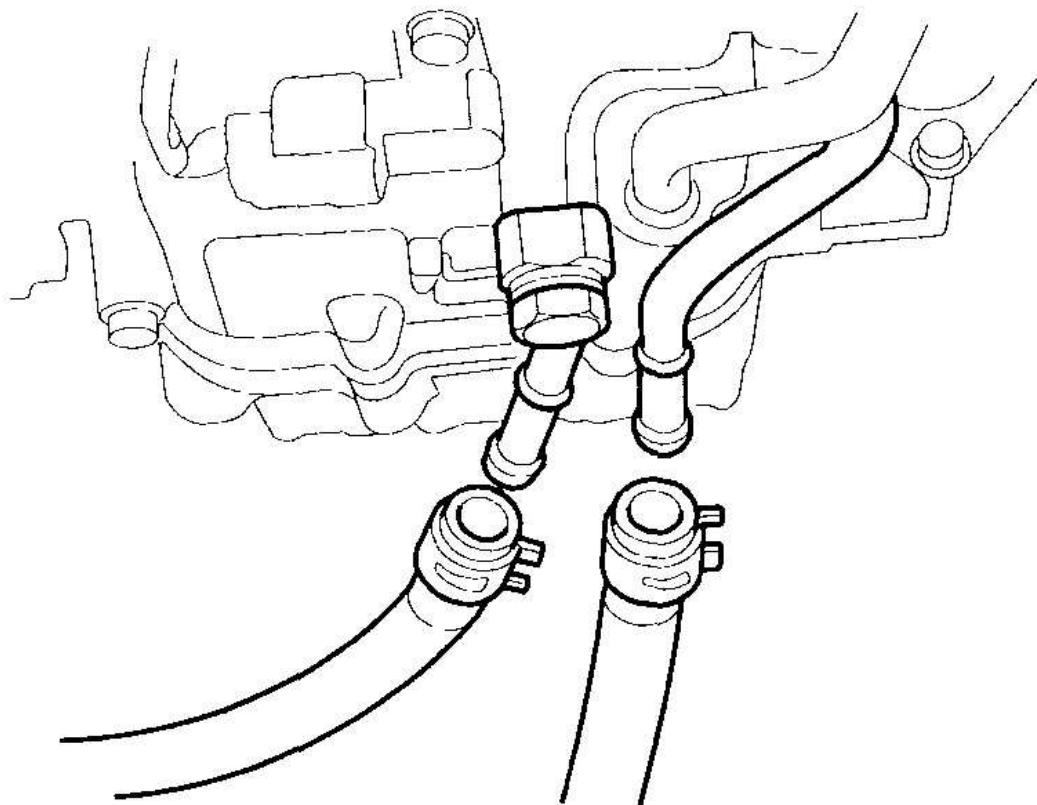
Fig. 45: Installing Motor Power Cable Clamps

Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the shift cables, manual transmission (M/T) (see step 14 on **MANUAL TRANSMISSION**), continuously variable transmission (CVT) (see **SHIFT CABLE REPLACEMENT**).
25. With A/C model: Install and adjust the water pump-A/C compressor belt (see **WATER PUMP-A/C COMPRESSOR BELT INSPECTION AND**

ADJUSTMENT).

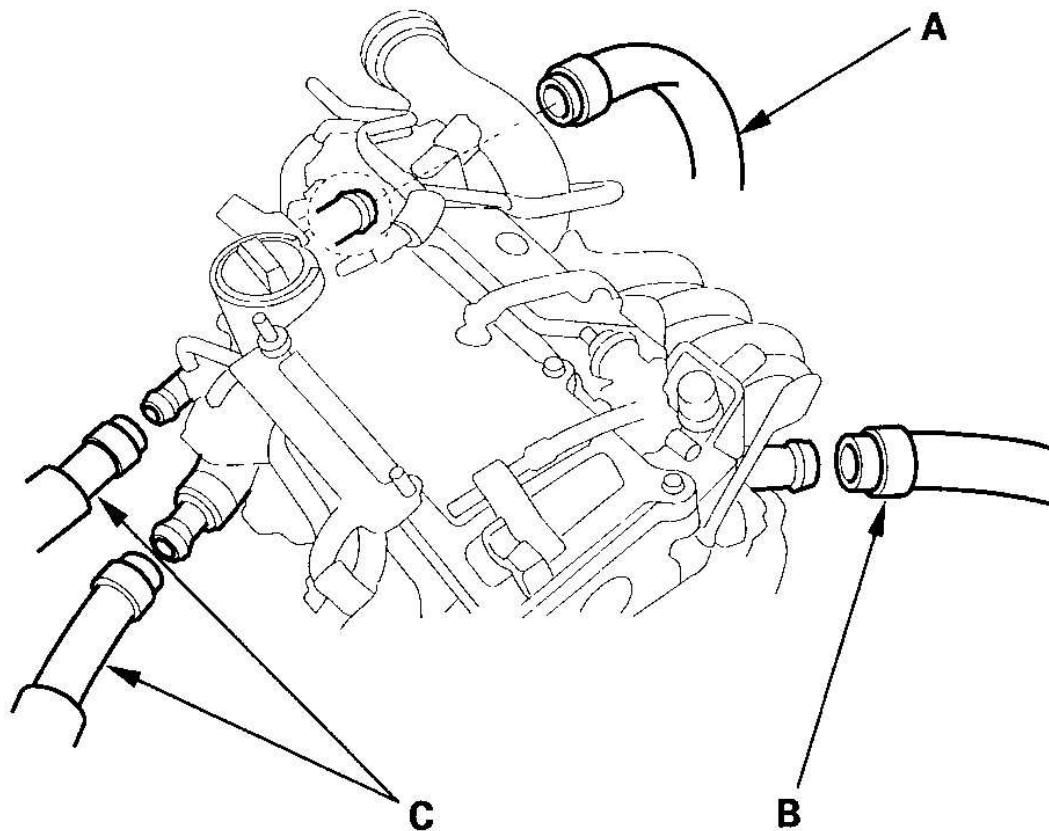
26. CVT model: Install the automatic transmission fluid (ATF) cooler hoses.



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Fig. 46: Installing Automatic Transmission Fluid (ATF) Cooler Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the upper radiator hose (A), lower radiator hose (B), and heater hoses (C).

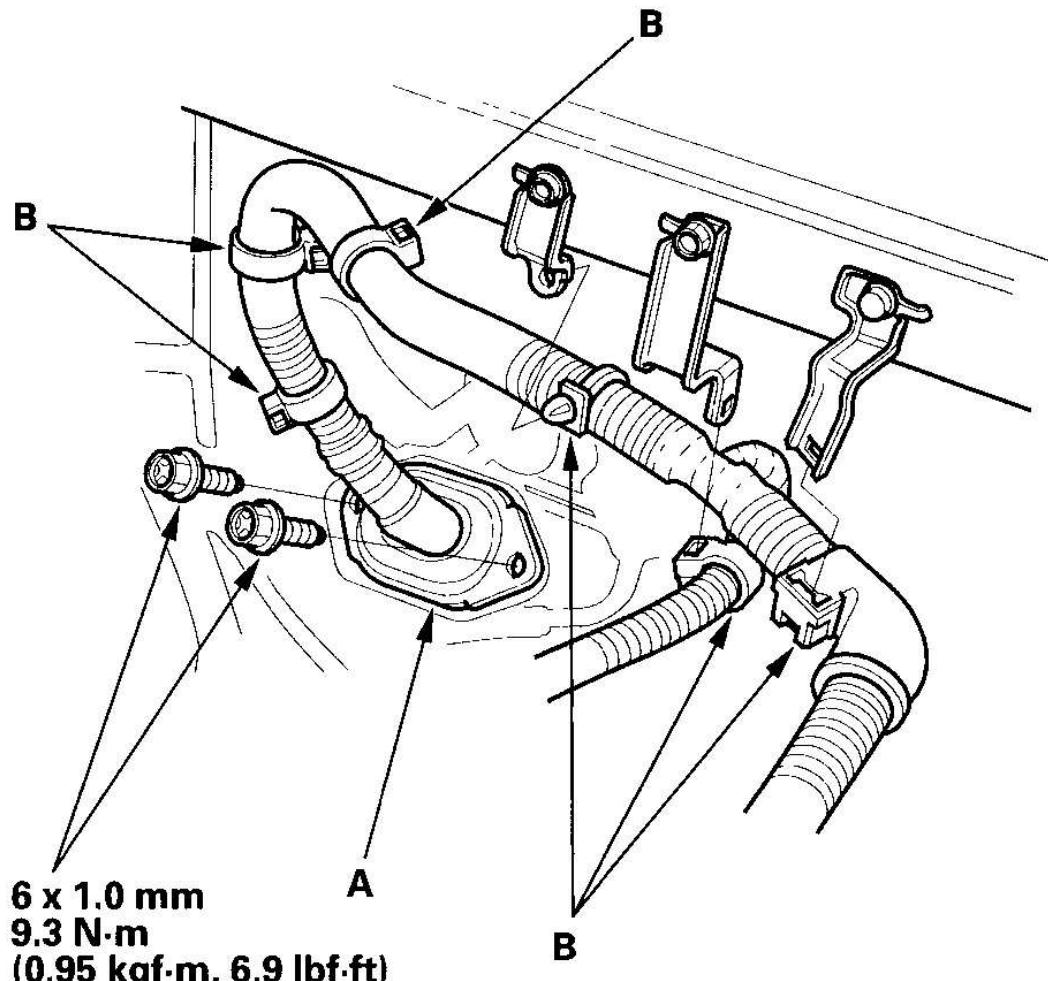


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Fig. 47: Installing Upper Radiator Hose, Lower Radiator Hose, And Heater Hoses

Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Push the engine control module (ECM) connectors through the bulkhead, then install the grommet (A) and harness clamps (B).

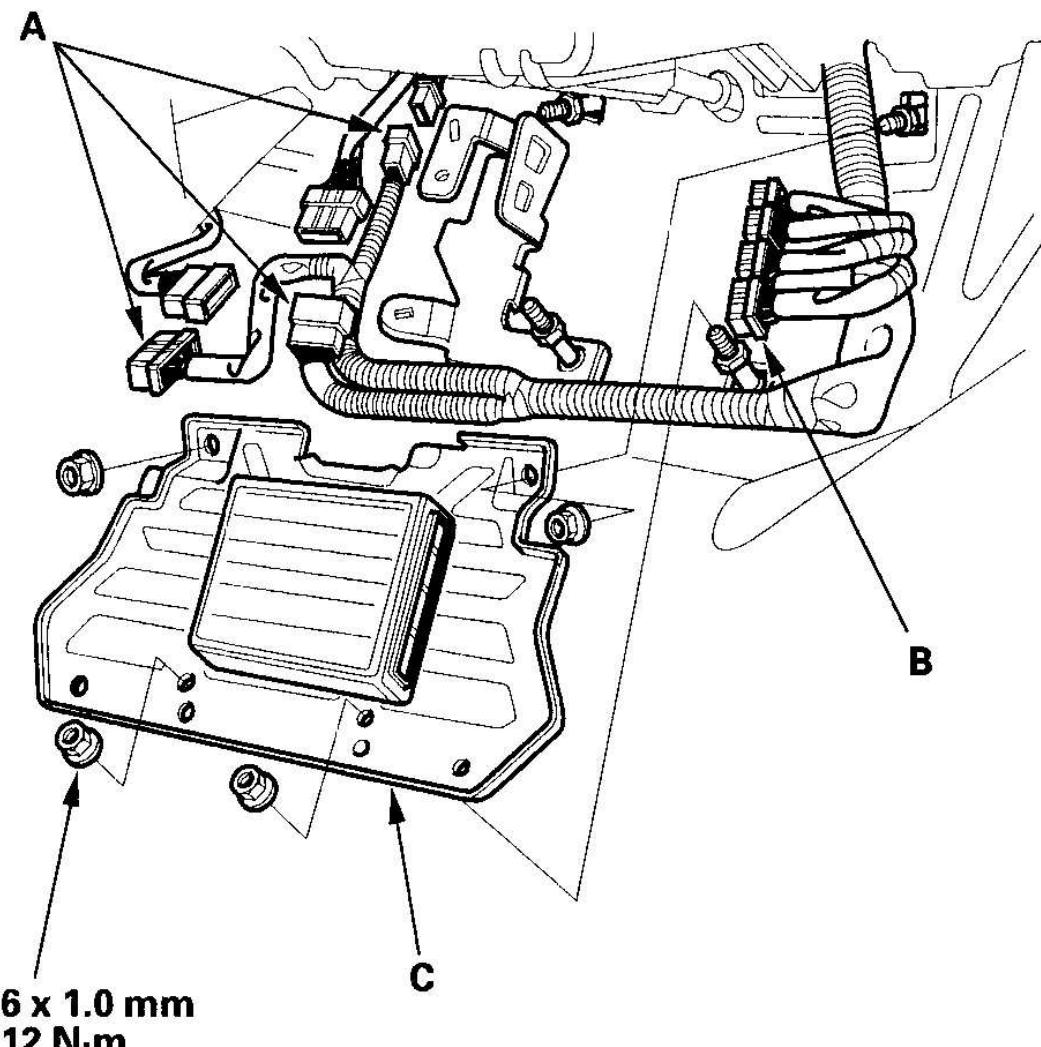


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Fig. 48: Installing Grommet And Harness Clamps And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Connect the main wire harness connectors (A) and ECM connectors (B), then install the ECM cover (C).

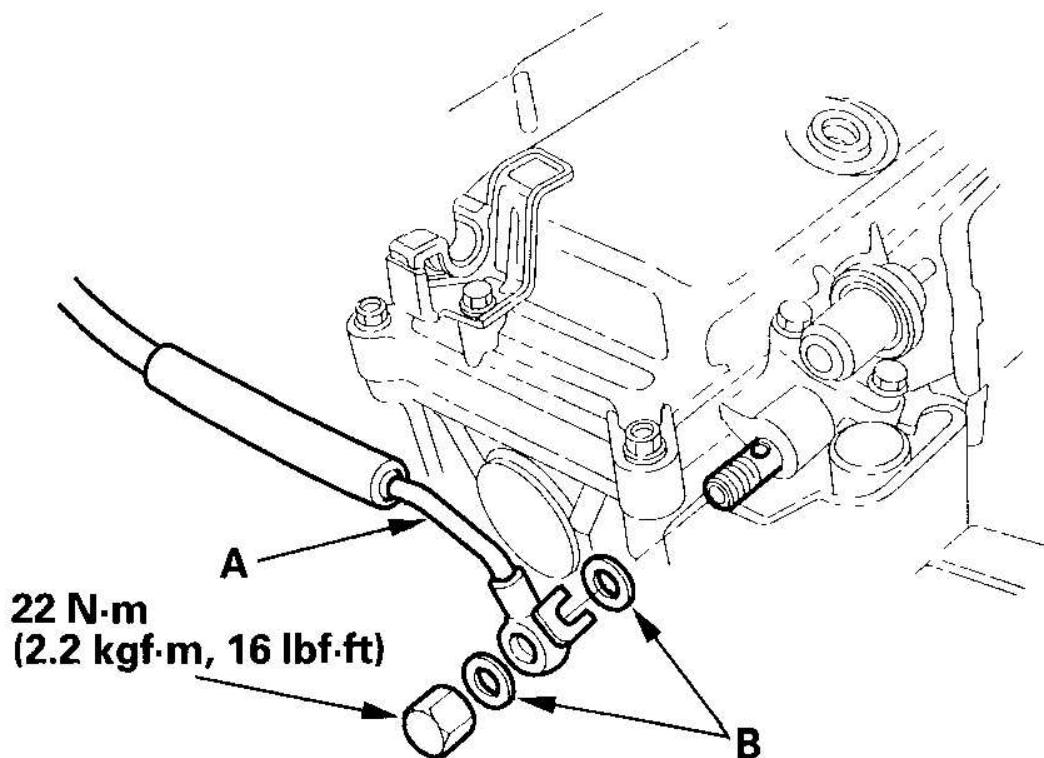


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Fig. 49: Connecting Main Wire Harness Connectors And ECM Connectors With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Install the fuel feed hose (A) with new washers (B) (2000-2003 models) or with a new O-ring (C) (2004-2006 models).

2000-2003 models:

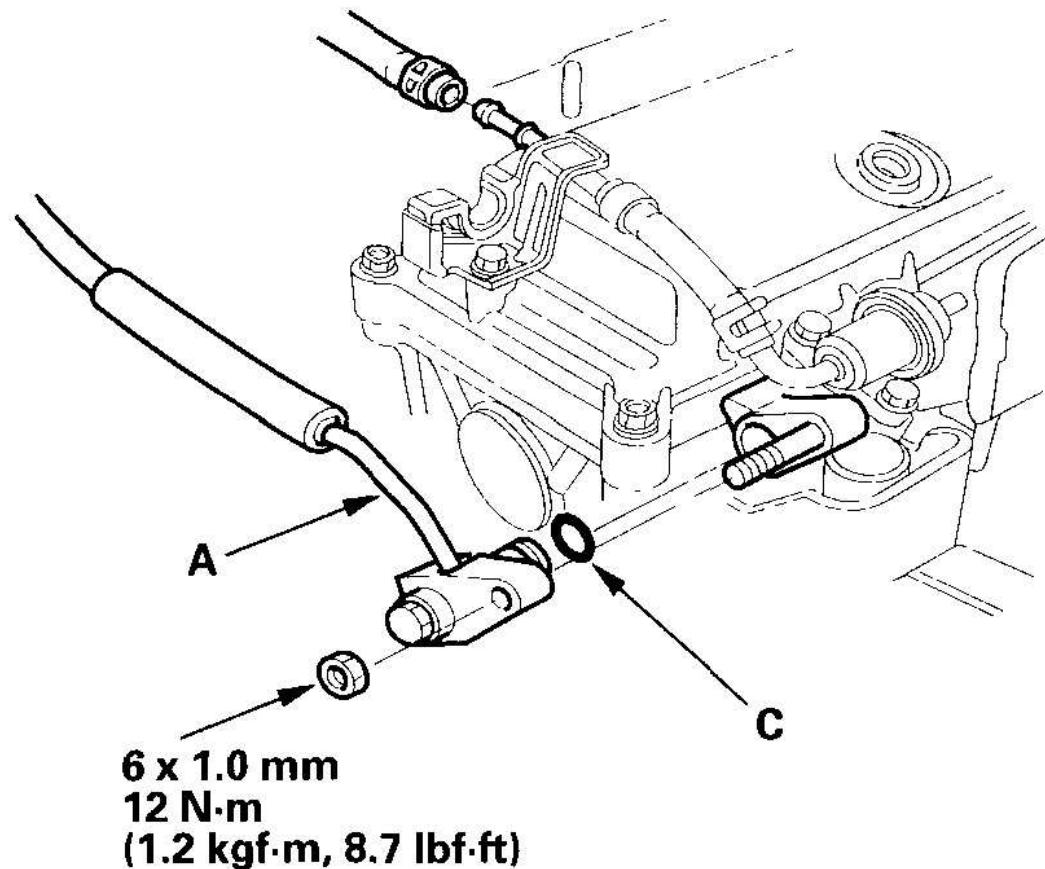


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Fig. 50: Installing Fuel Feed Hose With Washers And Torque Specifications (2000-2003 Models)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

This illustration shows the M/T model.



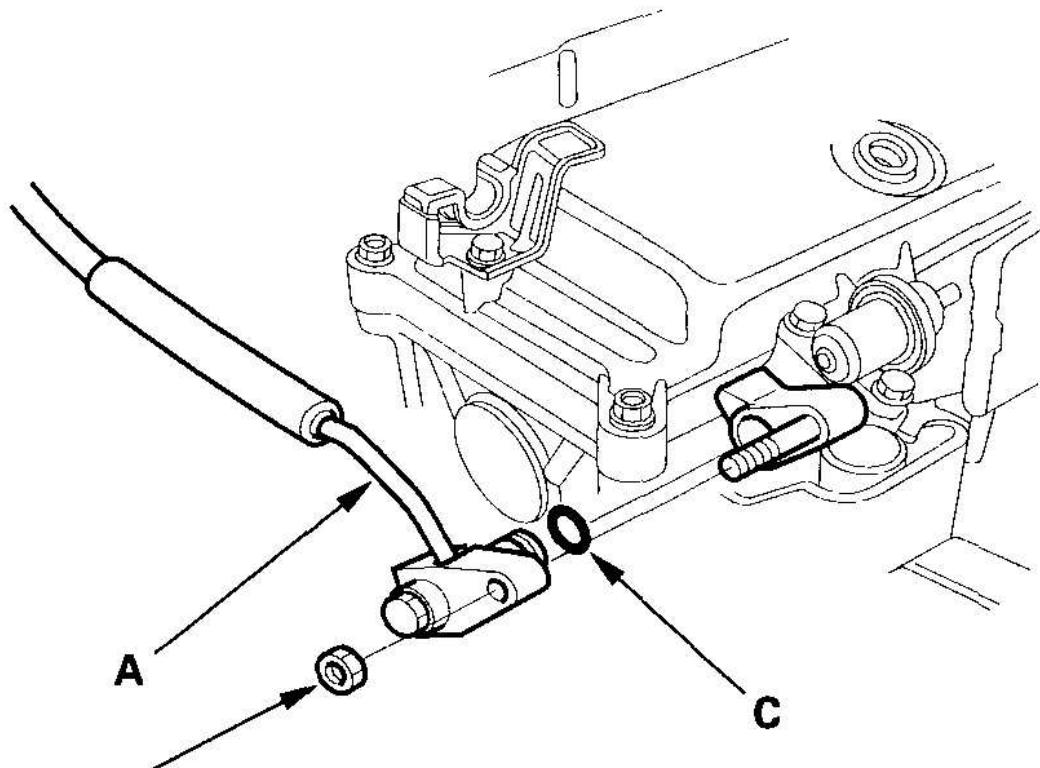
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Fig. 51: Installing Fuel Feed Hose With Washers And Torque Specifications (2004-2005 Models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2004-2005 models:

This illustration shows the M/T model.

2006 model:



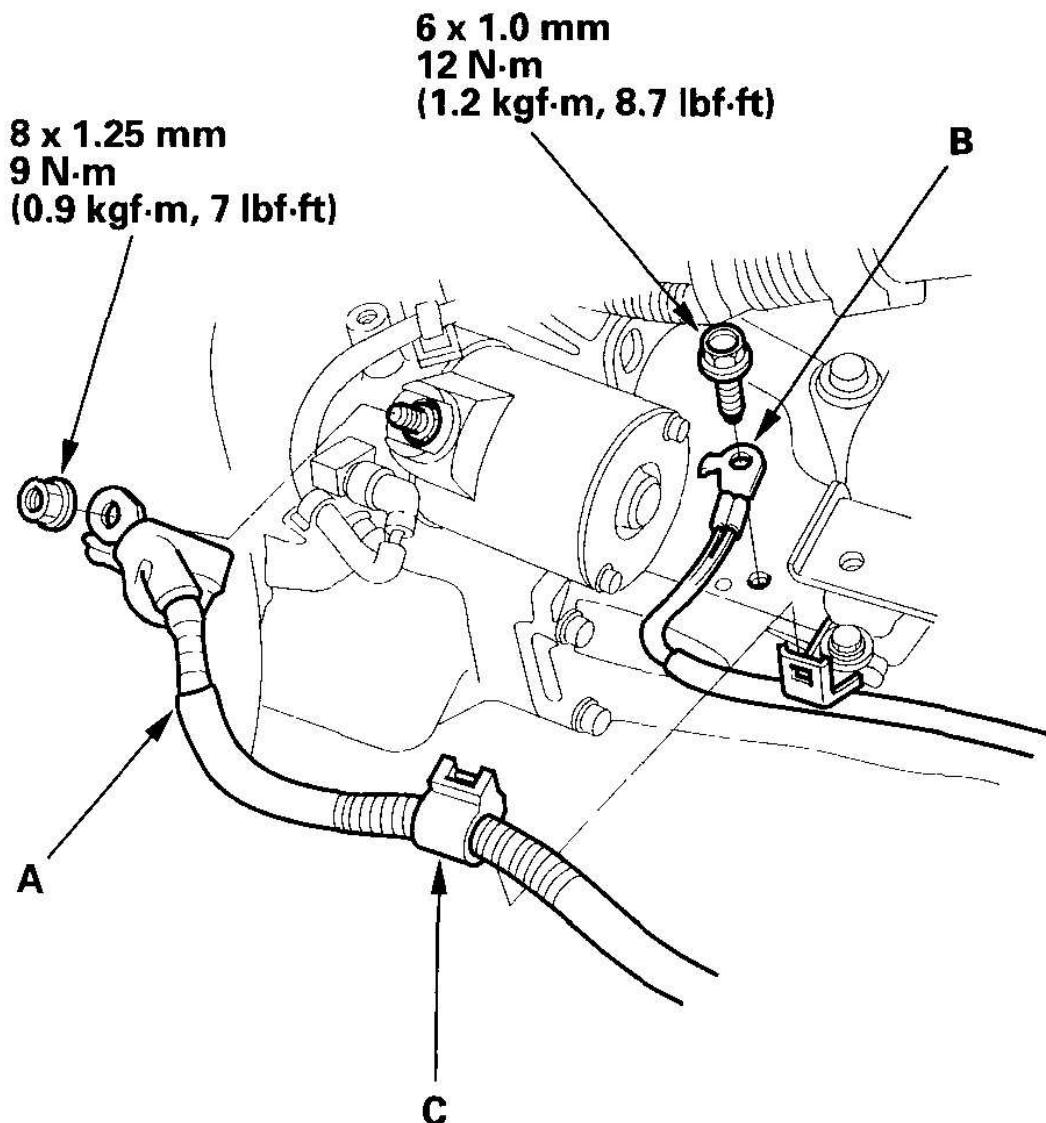
**6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)**

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Fig. 52: Installing Fuel Feed Hose With Washers And Torque Specifications (2006 Model)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Install the motor power cables (see step 9 on IMA SYSTEM).
32. Install the starter cable (A), ground cable (B), and harness clamp (C).

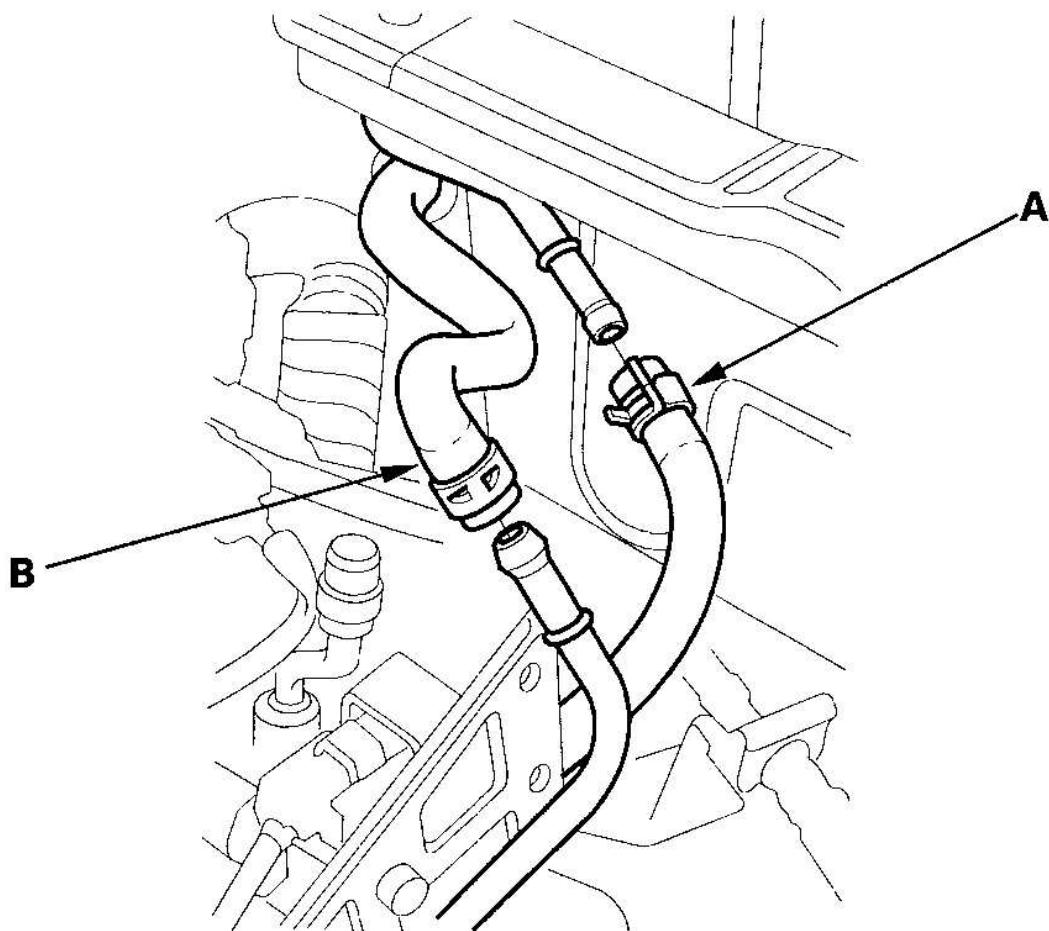


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Fig. 53: Installing Starter Cable, Ground Cable, And Harness Clamp With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Install the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

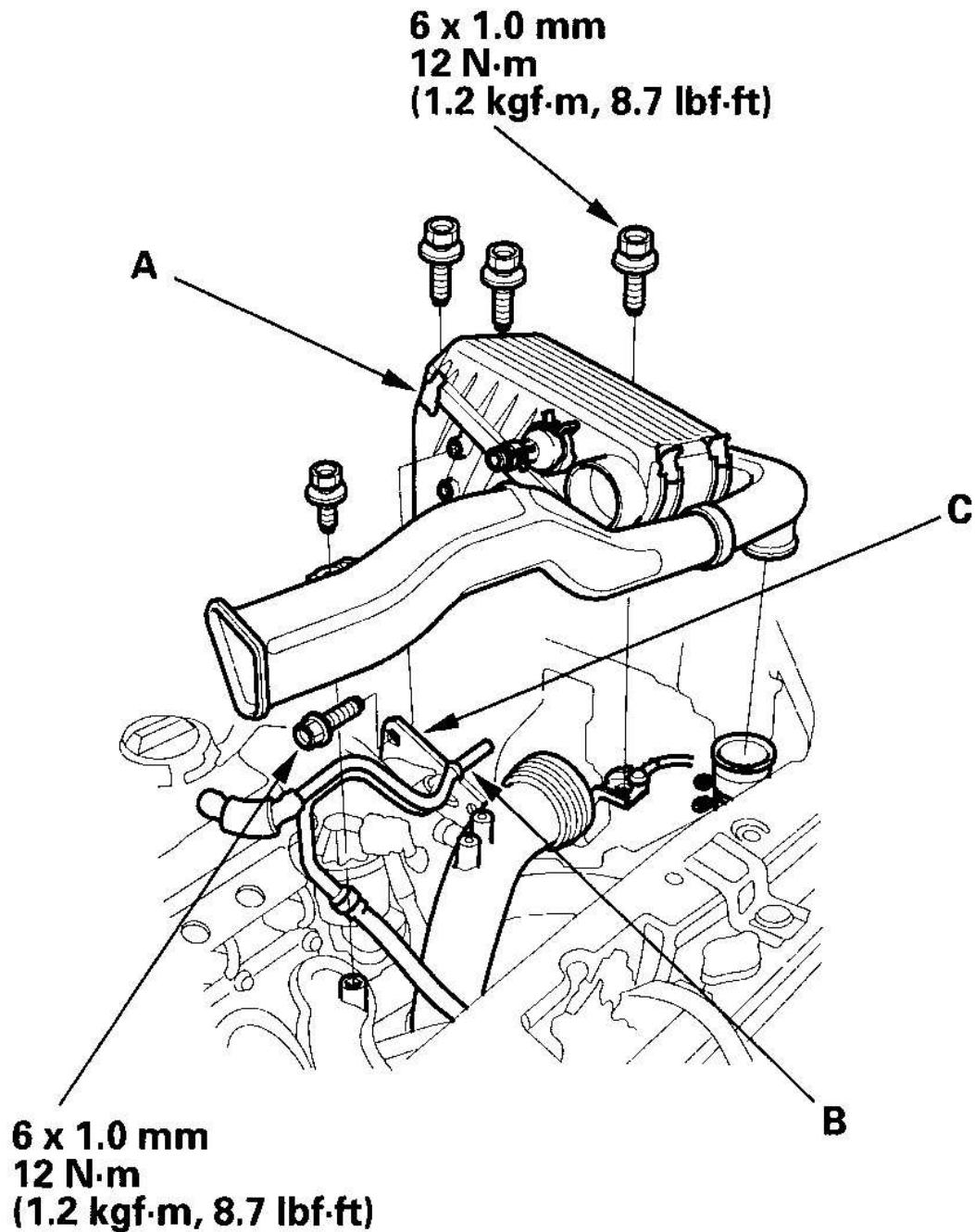


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**Fig. 54: Installing Evaporative Emission (EVAP) Canister Hose And
Brake Booster Vacuum Hose**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Install the throttle cable (see **THROTTLE CABLE REMOVAL/INSTALLATION**), then adjust the cable (see **THROTTLE CABLE ADJUSTMENT**).
35. Install the air cleaner housing/intake air duct assembly (A), then install the breather pipe (B) and brake booster vacuum hose bracket (C) on the air cleaner housing.



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Fig. 55: Installing Air Cleaner Housing/Intake Air Duct Assembly, Breather Pipe, And Brake Booster Vacuum Hose Bracket With Specified

2006 Honda Insight

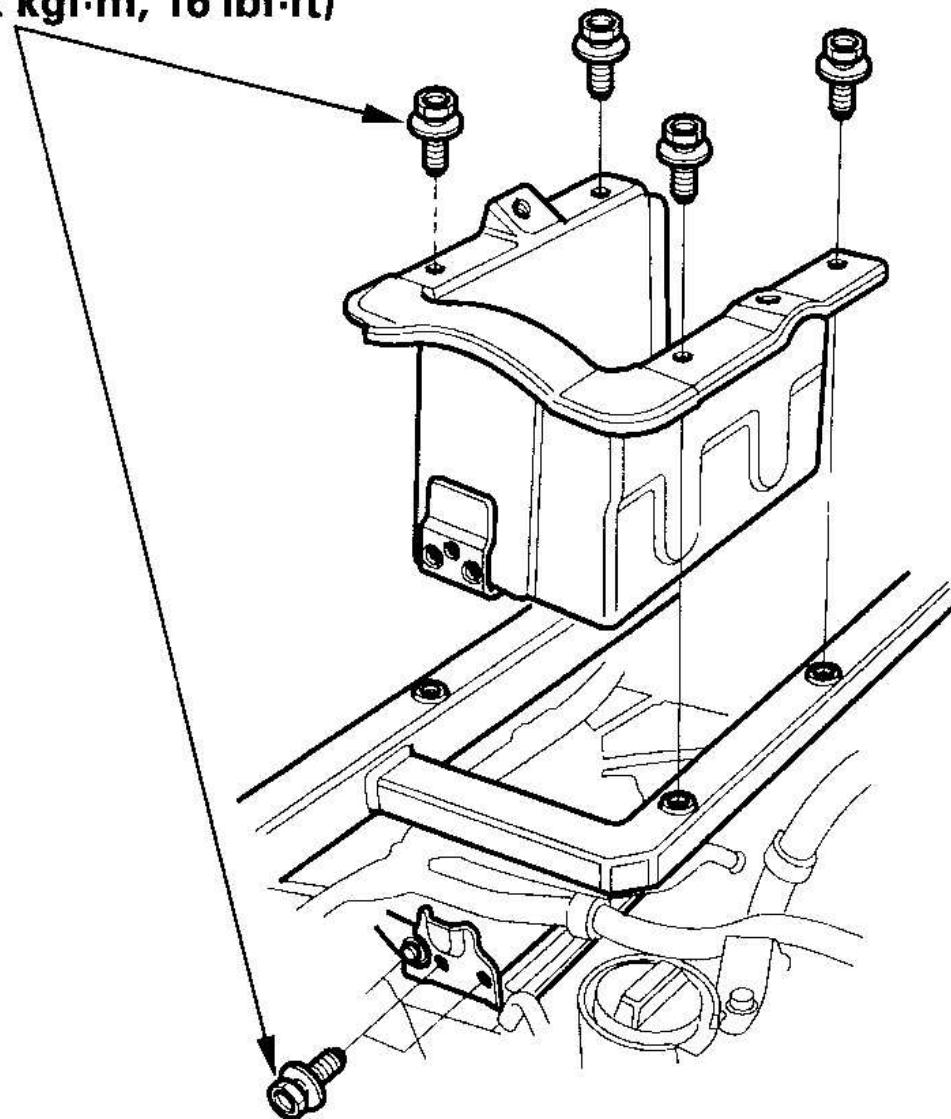
2000-06 ENGINE Engine Assembly - Insight

Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Install the battery box.

**8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)**



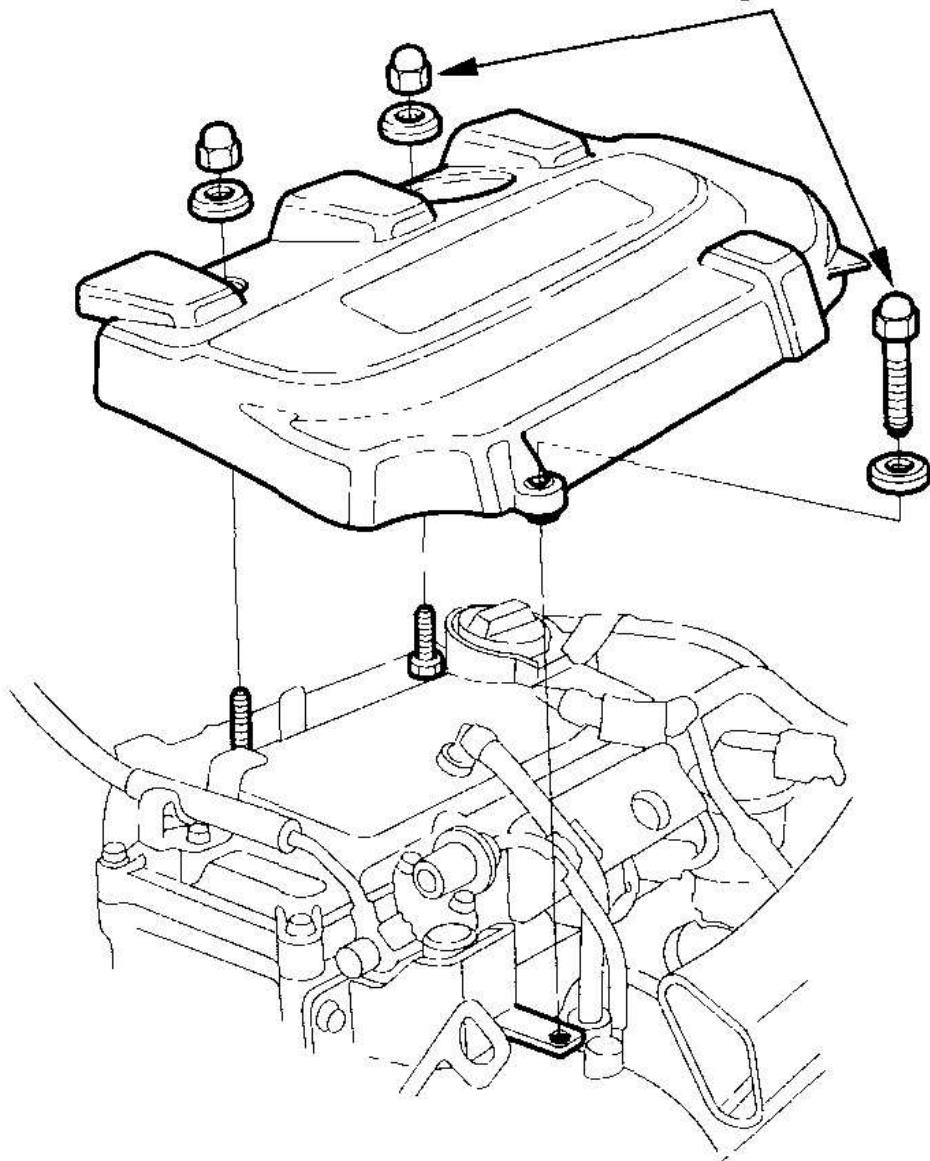
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Fig. 56: Installing Battery Box And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Clean the battery posts and cable terminals with sandpaper, then assemble

- them and apply grease to prevent corrosion.
38. Refill the engine with engine oil (see **ENGINE OIL REPLACEMENT**).
 39. Refill the transmission, with manual transmission fluid (MTF) (M/T) (see **GEARSHIFT MECHANISM REPLACEMENT**), or with ATF (CVT) (see **CVT FLUID REPLACEMENT**).
 40. Install the engine cover.

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



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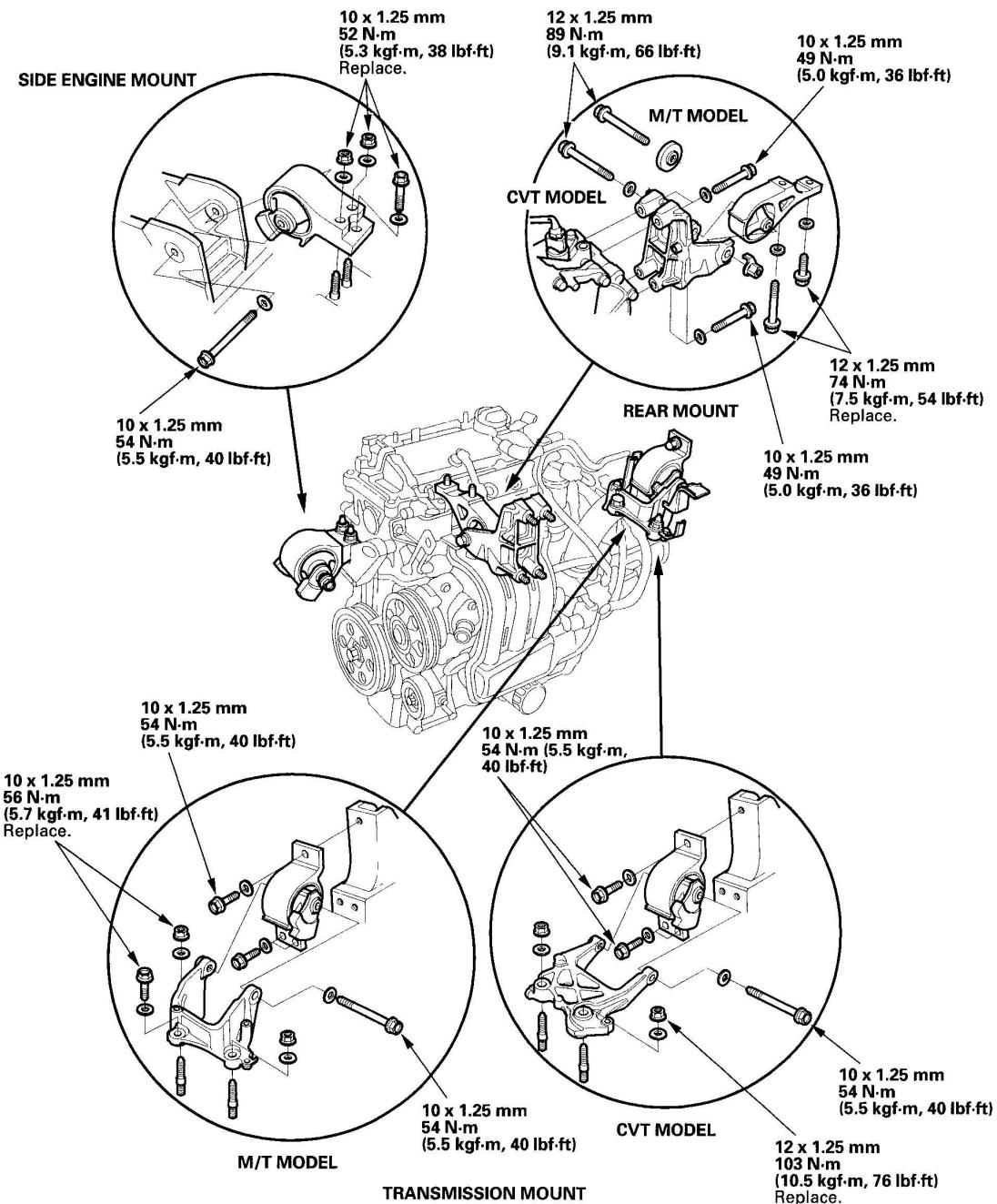
Fig. 57: Installing Engine Cover And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Check that the transmission shifts into gear smoothly.
42. Remove the No. 15 (40 A) fuse from the under-hood fuse/relay box.
43. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so that the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
44. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 9 on **COOLANT REPLACEMENT**).
45. 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.
46. Reinstall the No. 15 (40 A) fuse to the under-hood fuse/relay box.
47. Reset the ECM with the HDS (see **HDS CLEAR COMMAND**).
48. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
49. Enter the anti-theft code for the radio, then enter the audio presets.
50. Set the clock.

ENGINE MOUNT REPLACEMENT

2006 Honda Insight

2000-06 ENGINE Engine Assembly - Insight



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Fig. 58: Exploded View Of Engine Mount And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.