

2003-06 ENGINE

Engine Assembly - Element

ENGINE REMOVAL

Special Tools Required

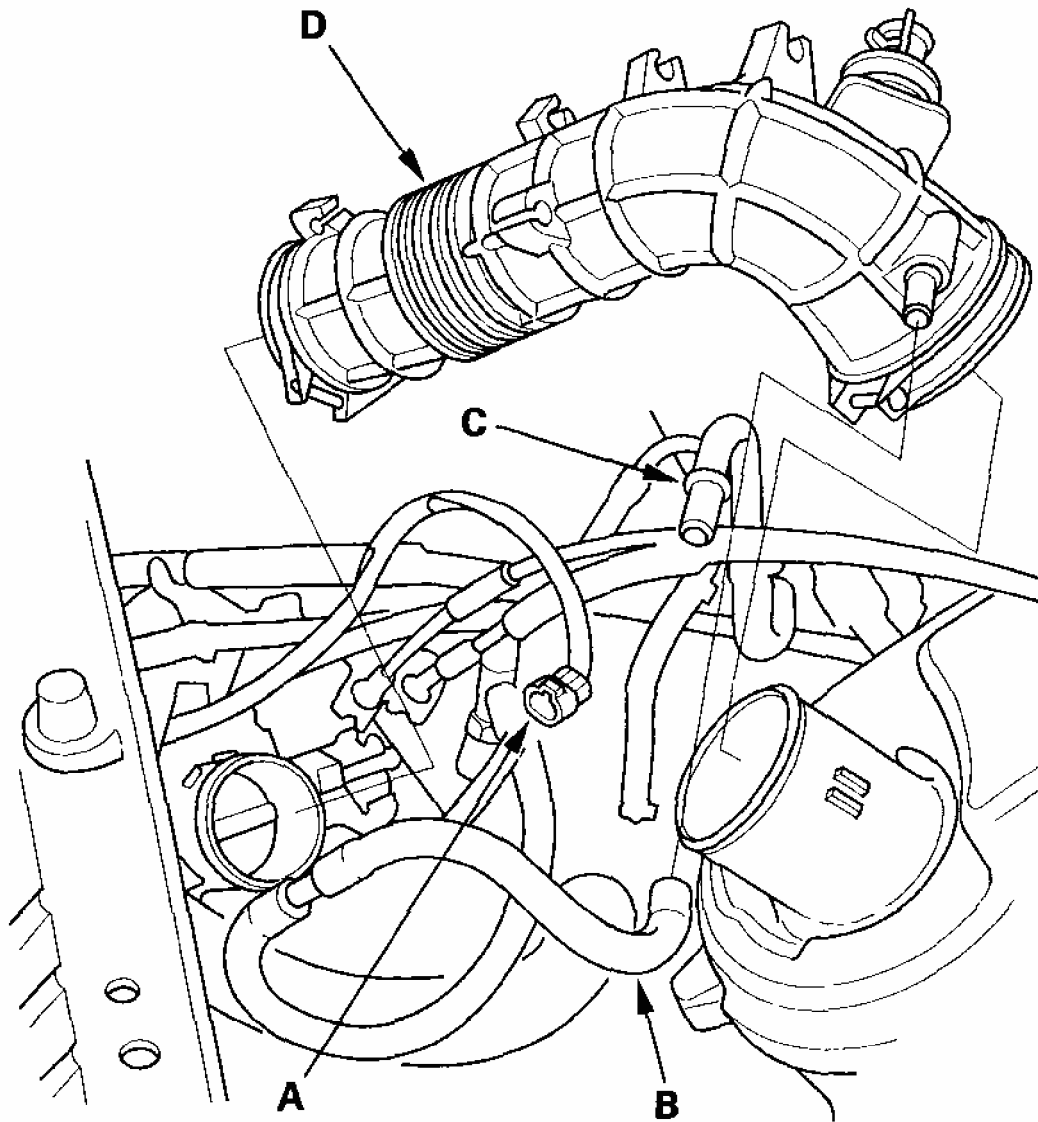
- Engine hanger/adaptor VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566
- Subframe adapter VSB02C000016

These special tools are available through the Honda Tool and Equipment Program, 1-888-424-6857.

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.**

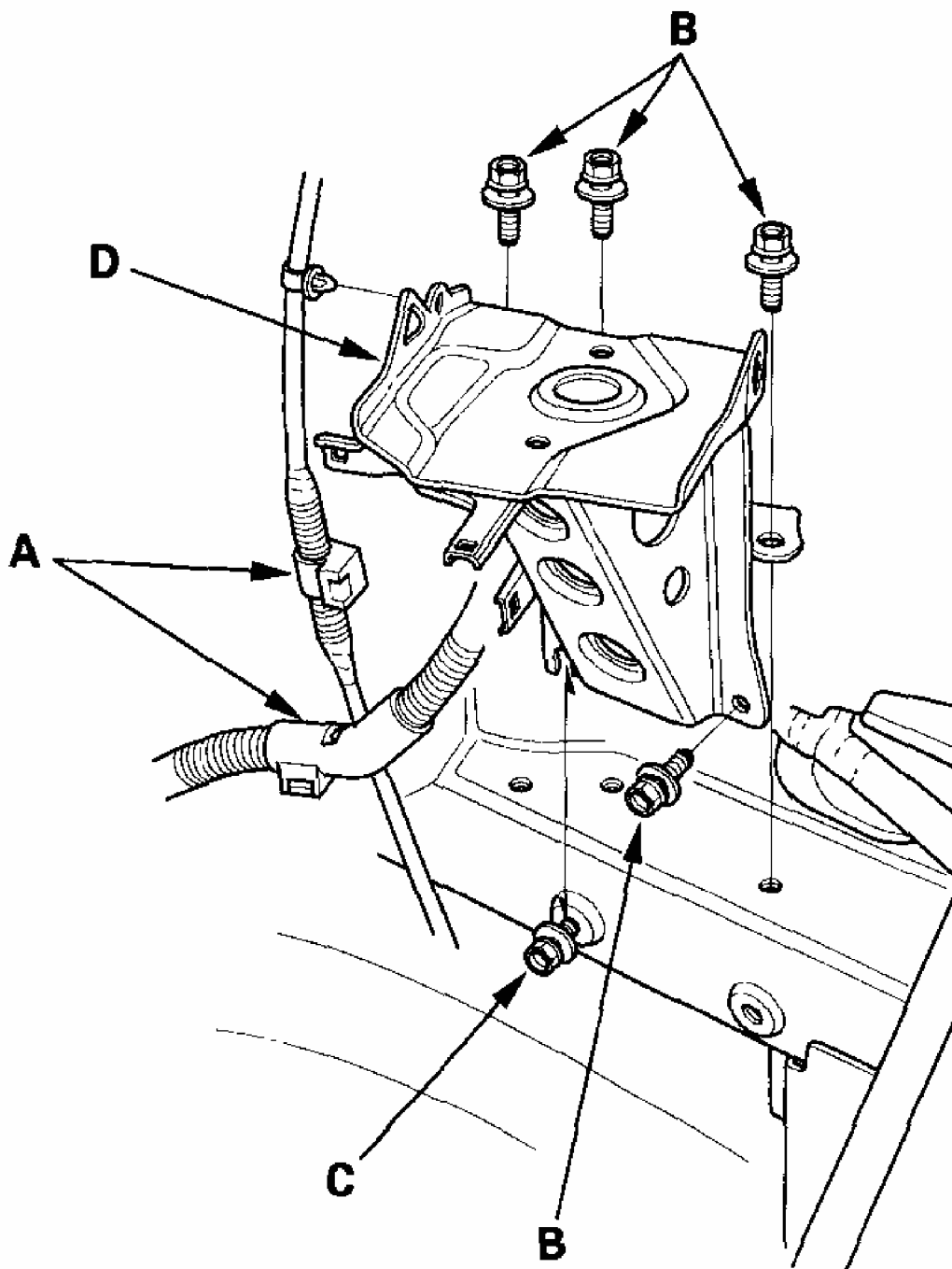
1. Secure the hood in the vertical position by using a rope.
2. Make sure you have the anti-theft code for the radio, then write down the audio presets.
3. Relieve fuel pressure (see **FUEL PRESSURE RELIEVING**).
4. Disconnect the negative cable from the battery first, then disconnect the positive cable.
5. Disconnect the intake air temperature (IAT) sensor connector (A).



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Fig. 1: Disconnecting Intake Air Temperature Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the vacuum hose (B) and breather pipe (C), then remove the air intake duct (D).
7. Remove the battery.
8. Remove the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
9. Remove the harness clamps (A).



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Fig. 2: Removing Harness Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the four bolts (B), and loosen the bolt (C) securing the battery base, then

remove the battery base (D).

11. Remove the battery cables (A) and harness clamp (B) from the under-hood fuse/relay box.

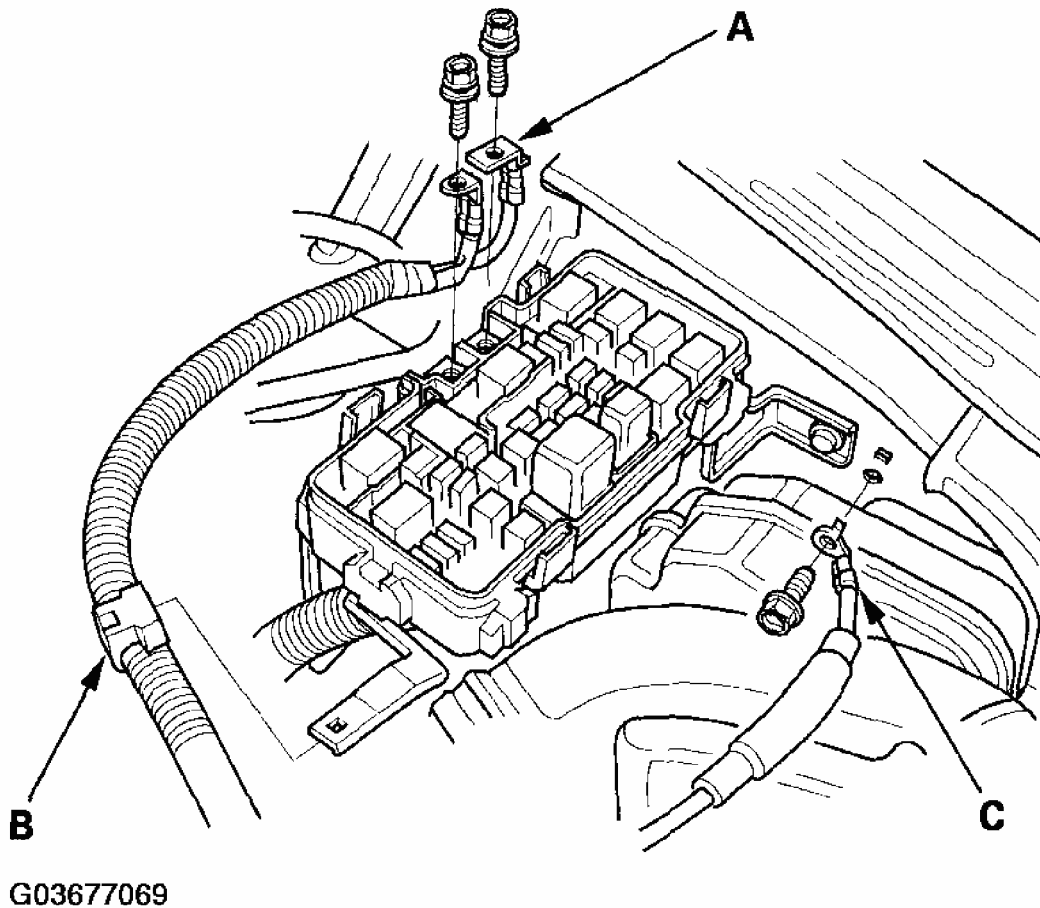
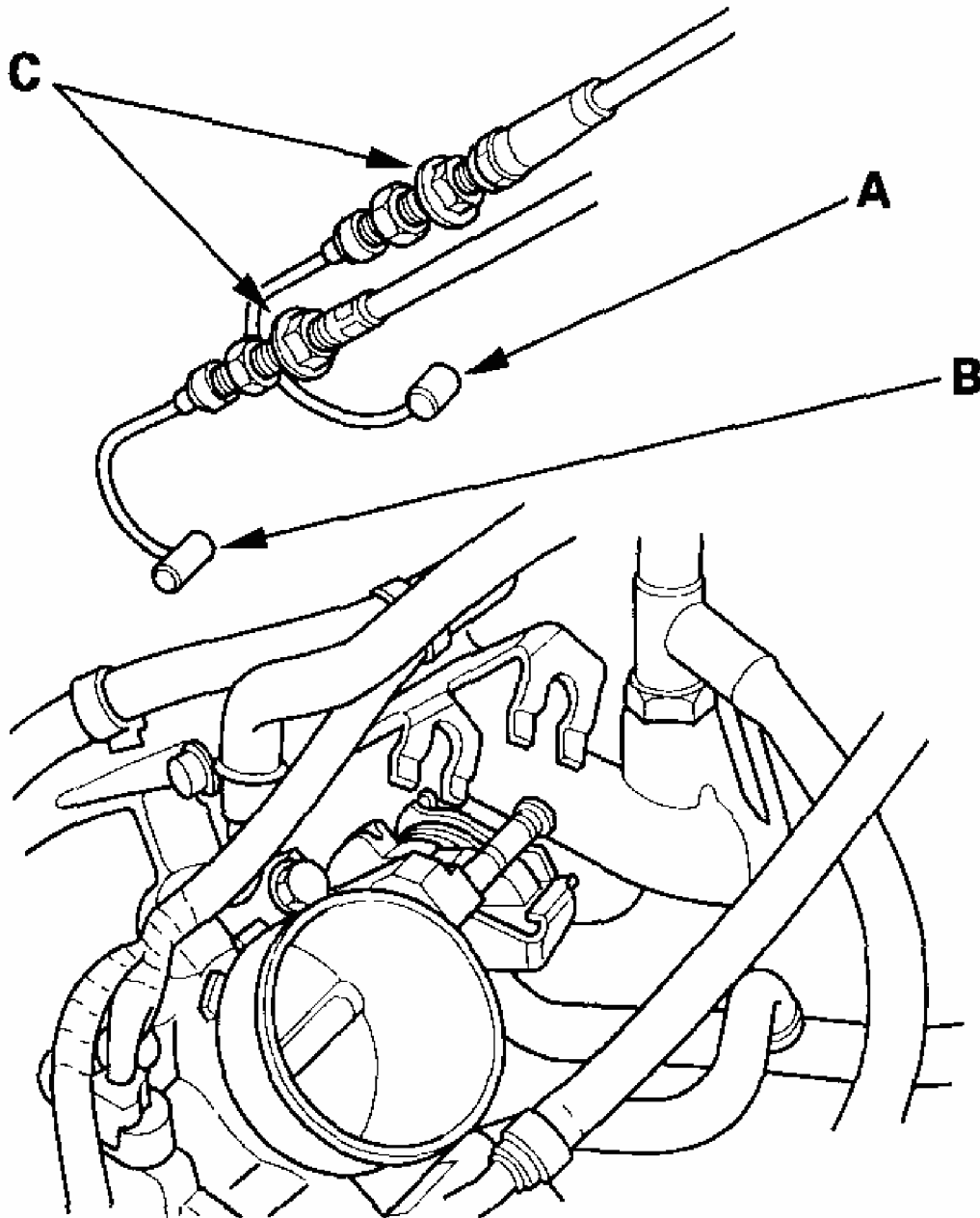


Fig. 3: Removing Battery Cables And Harness Clamp From Under-Hood Fuse/Relay Box

Courtesy of AMERICAN HONDA MOTOR CO., INC.

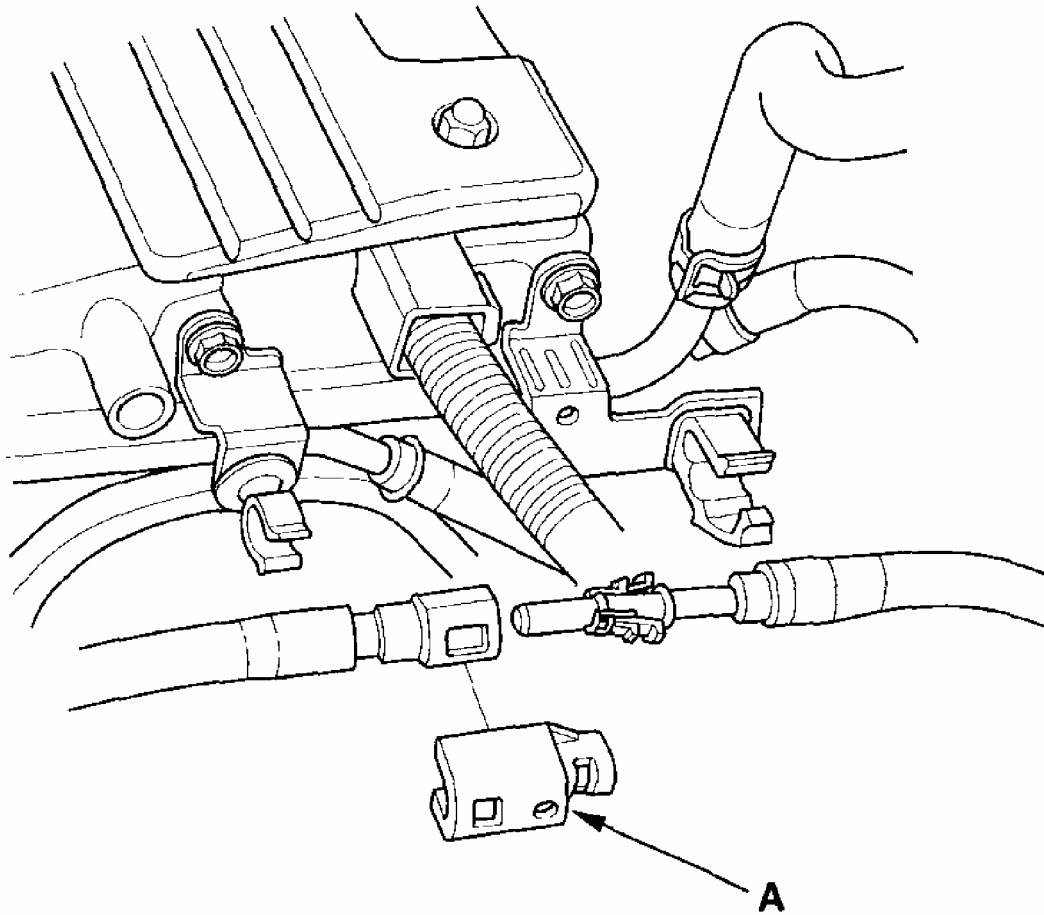
12. Remove the ground cable (C).
13. Remove the throttle cable (A) and cruise control actuator cable (B) by loosening the locknuts (C), then slipping the cable ends out of the accelerator linkage. Take care not to bend the cables when removing them. Always replace any kinked cable with a new one.



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Fig. 4: Removing Throttle Cable And Cruise Control Actuator Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

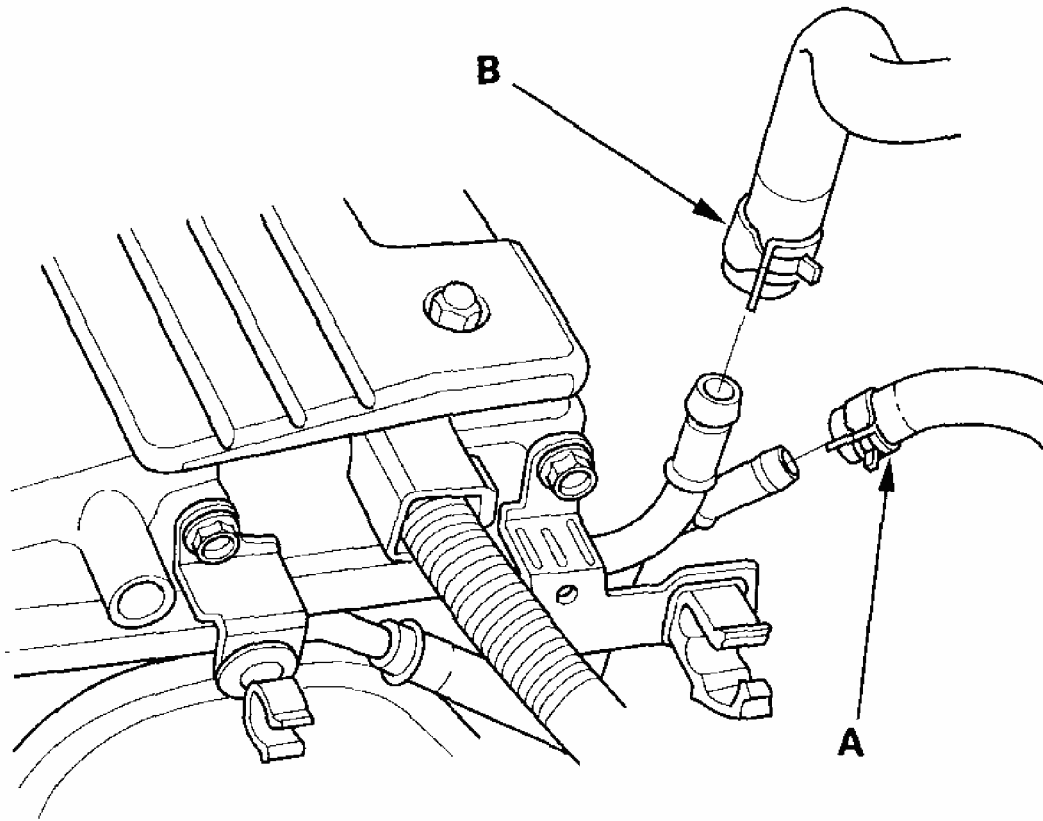


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Fig. 5: Removing Quick-Connect Fitting Cover And Disconnecting Fuel Feed Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

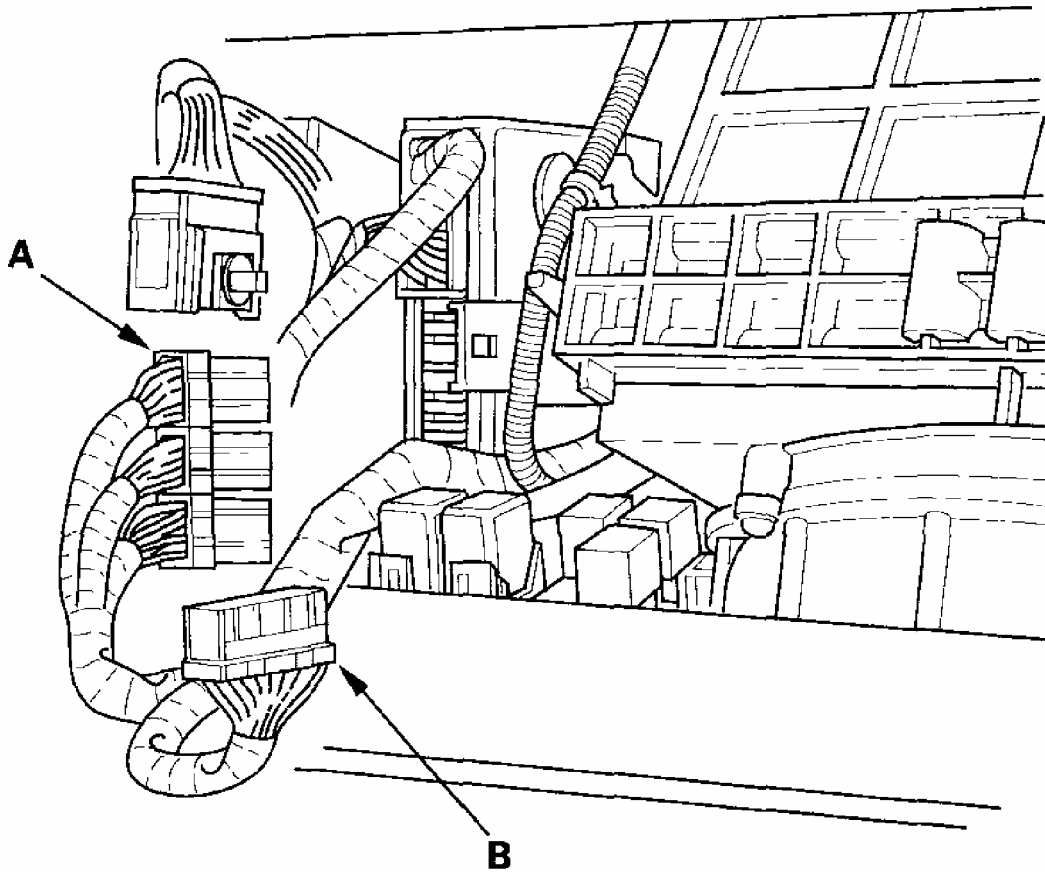


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Fig. 6: Removing Evaporative Emission Canister Hose And Brake Booster Vacuum Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

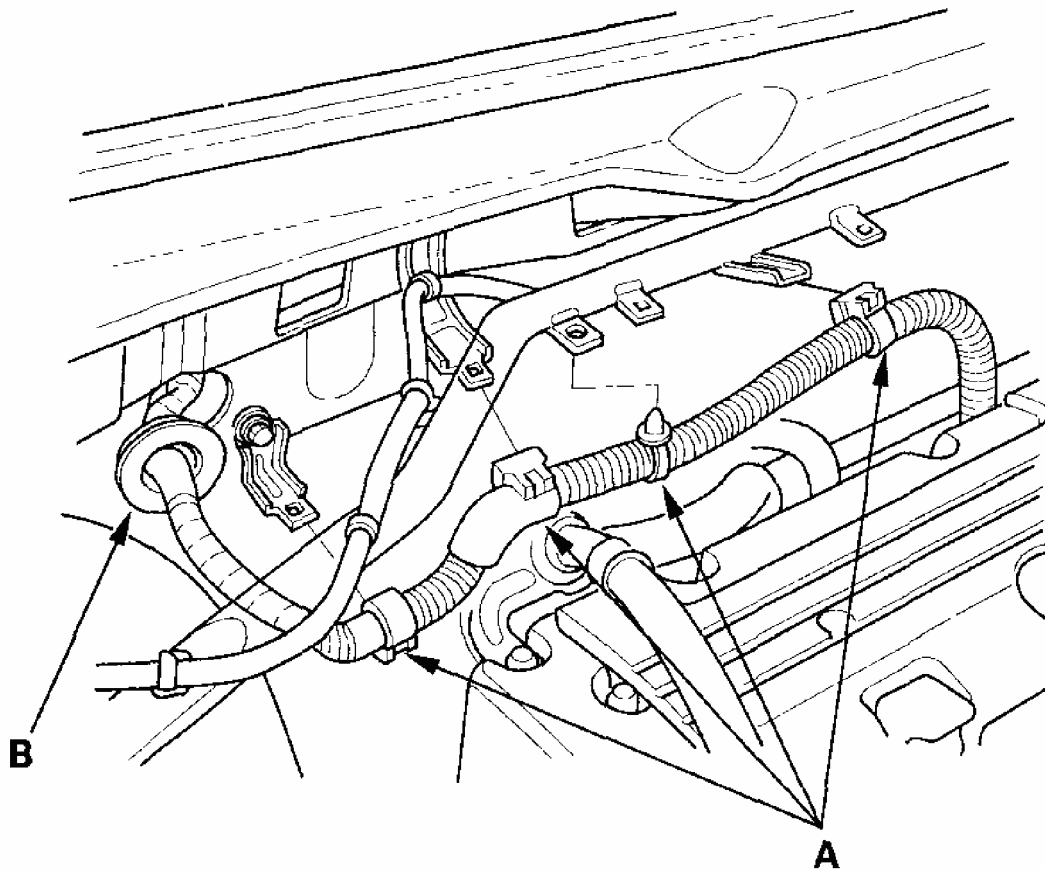
16. Disconnect the engine control module (ECM)/powertrain control module (PCM) connectors (A) and the ECM/PCM wire harness connector (B).



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Fig. 7: Disconnecting ECM/PCM Connectors And Wire Harness Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

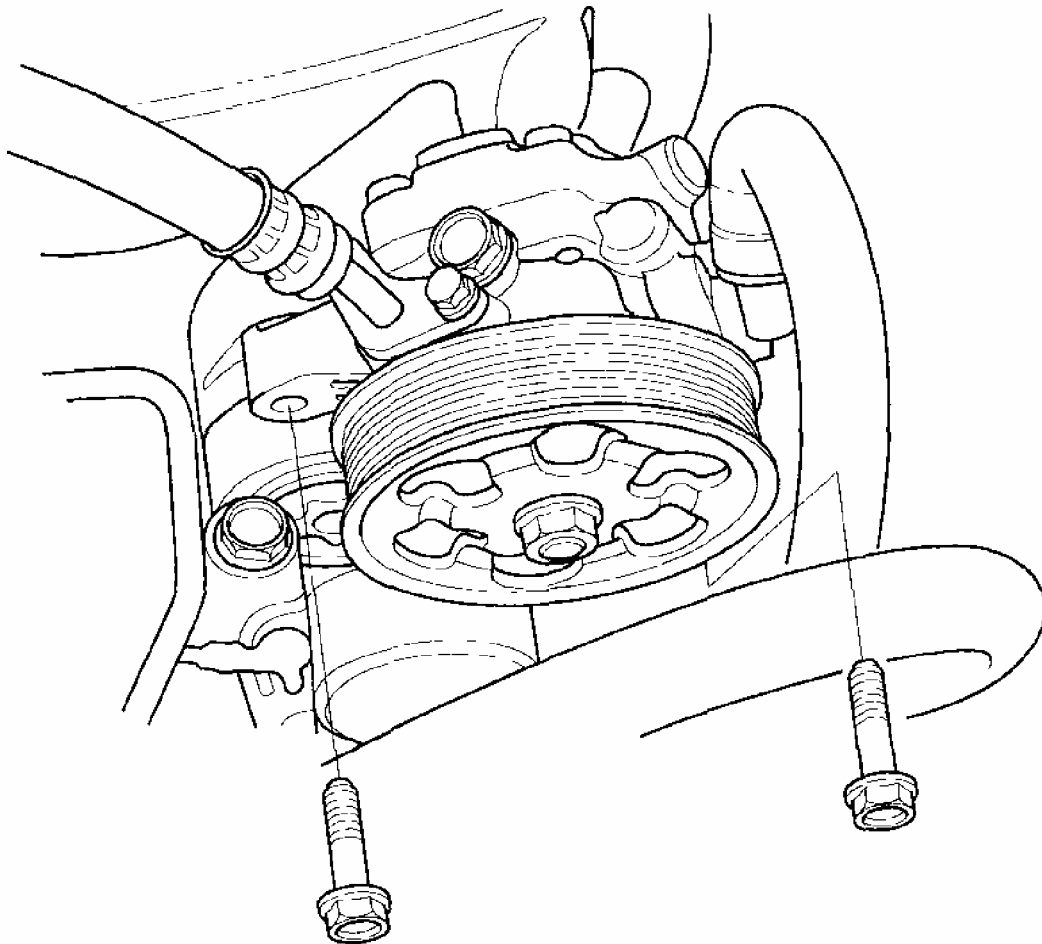
17. Remove the harness clamps (A) and grommet (B), then pull the engine wire harness through the bulkhead.



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Fig. 8: Removing Harness Clamps And Grommet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

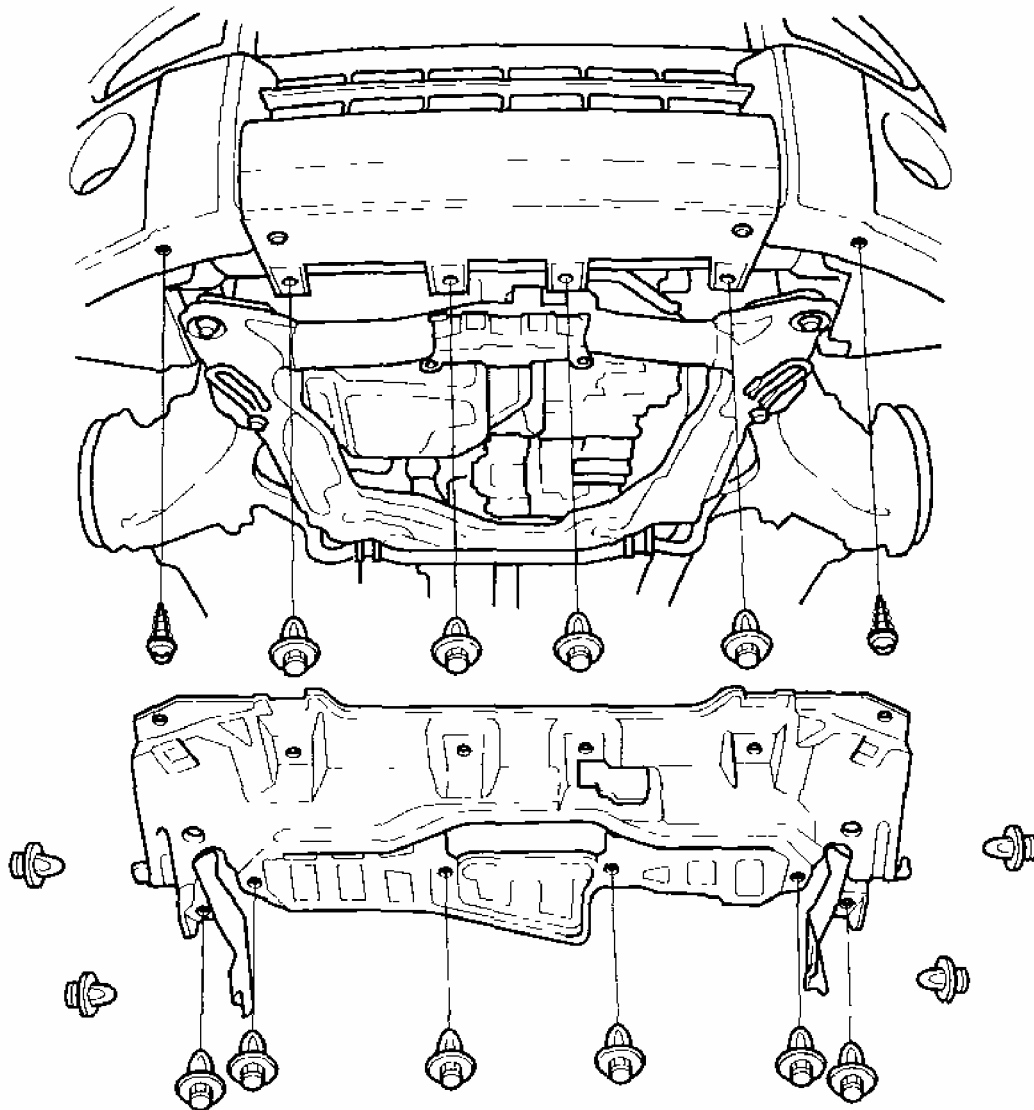
18. M/T model: Remove the clutch slave cylinder and clutch line bracket mounting bolt (see step 9 on **TRANSMISSION INSTALLATION**).
19. M/T model: Remove the shift cables (see step 8 on **TRANSMISSION INSTALLATION**).
20. Remove the drive belt (see **DRIVE BELT REPLACEMENT**).
21. Remove the power steering (P/S) pump without disconnecting the P/S hoses from the pump.



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Fig. 9: Removing Power Steering Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the P/S hose from the bracket on the cylinder head cover.
23. Remove the radiator cap.
24. Raise the vehicle on the hoist to full height.
25. Remove the front wheels.
26. Remove the splash shield.



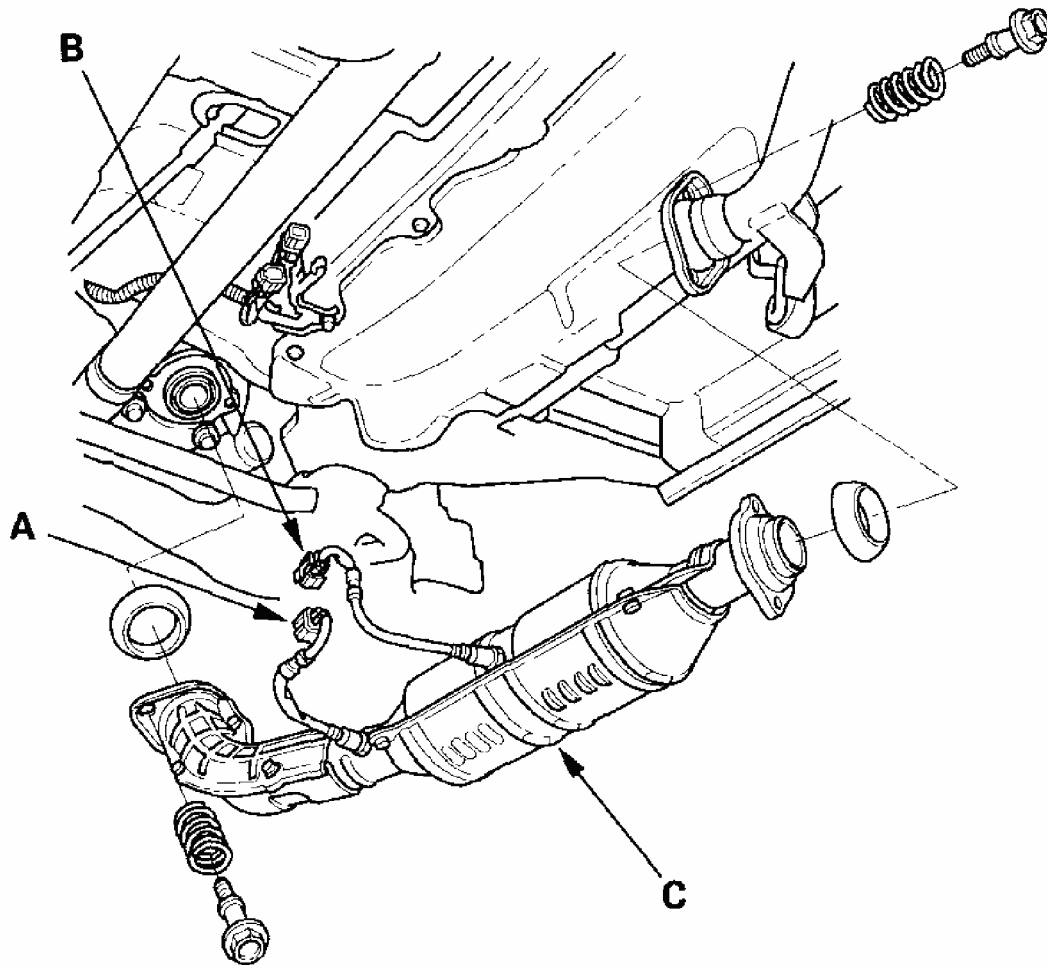
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Fig. 10: Removing Splash Shield

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Loosen the drain plug in the radiator, and drain the engine coolant (see **COOLANT CHECK**).
28. Drain the transmission fluid:
 - Manual transmission (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**)
 - Automatic transmission (see **ATF REPLACEMENT**)
29. Drain the engine oil (see **ENGINE OIL REPLACEMENT**).

30. Disconnect the air fuel ratio (A/F) sensor connector (A) and the secondary heated oxygen sensor (secondary HO2S) connector (B), then remove the three way catalytic converter (TWC) assembly (C).



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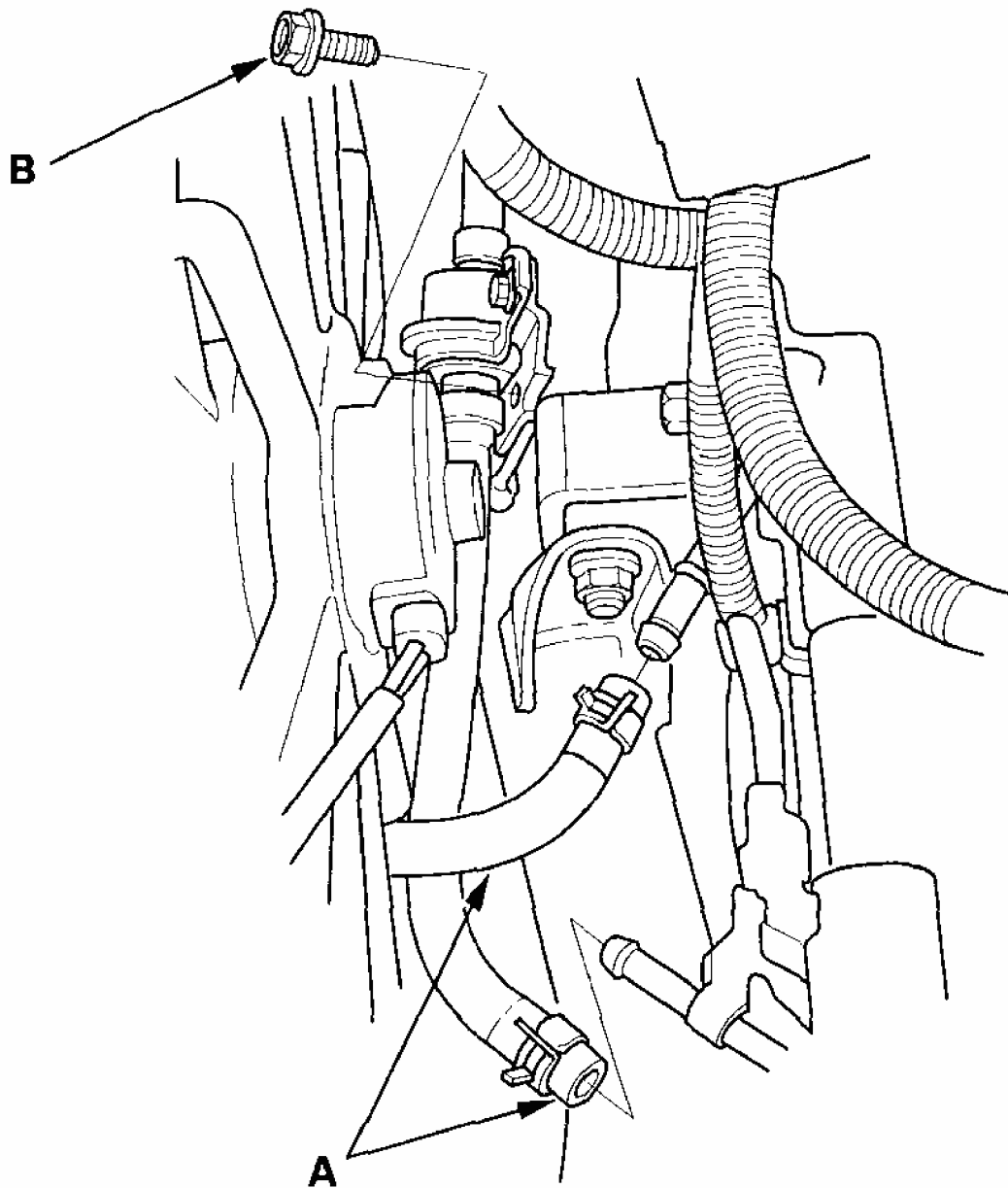
Fig. 11: Disconnecting Air Fuel Ratio Sensor Connector And Secondary Heated Oxygen Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Disconnect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
32. Disconnect the suspension lower arm ball joints (see **LOWER ARM REPLACEMENT**).
33. Remove the driveshaft (see step 8 on **FRONT DRIVESHAFT REMOVAL**). Coat all precision-finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

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34. A/T model: Remove the shift cable:
 - 2WD (see step 25 on **TRANSMISSION REMOVAL**)
 - 4WD (see step 24 on **TRANSMISSION REMOVAL**)
35. 4WD model: Remove the propeller shaft from the transfer assembly:
 - Manual transmission (see step 4 on **TRANSFER ASSEMBLY INSTALLATION**)
 - Automatic transmission (see step 33 on **TRANSMISSION REMOVAL**)
36. Lower the vehicle on the hoist.
37. A/T model: Remove the automatic transmission fluid (ATF) cooler hoses (A) and ATF filter mounting bolt (B).

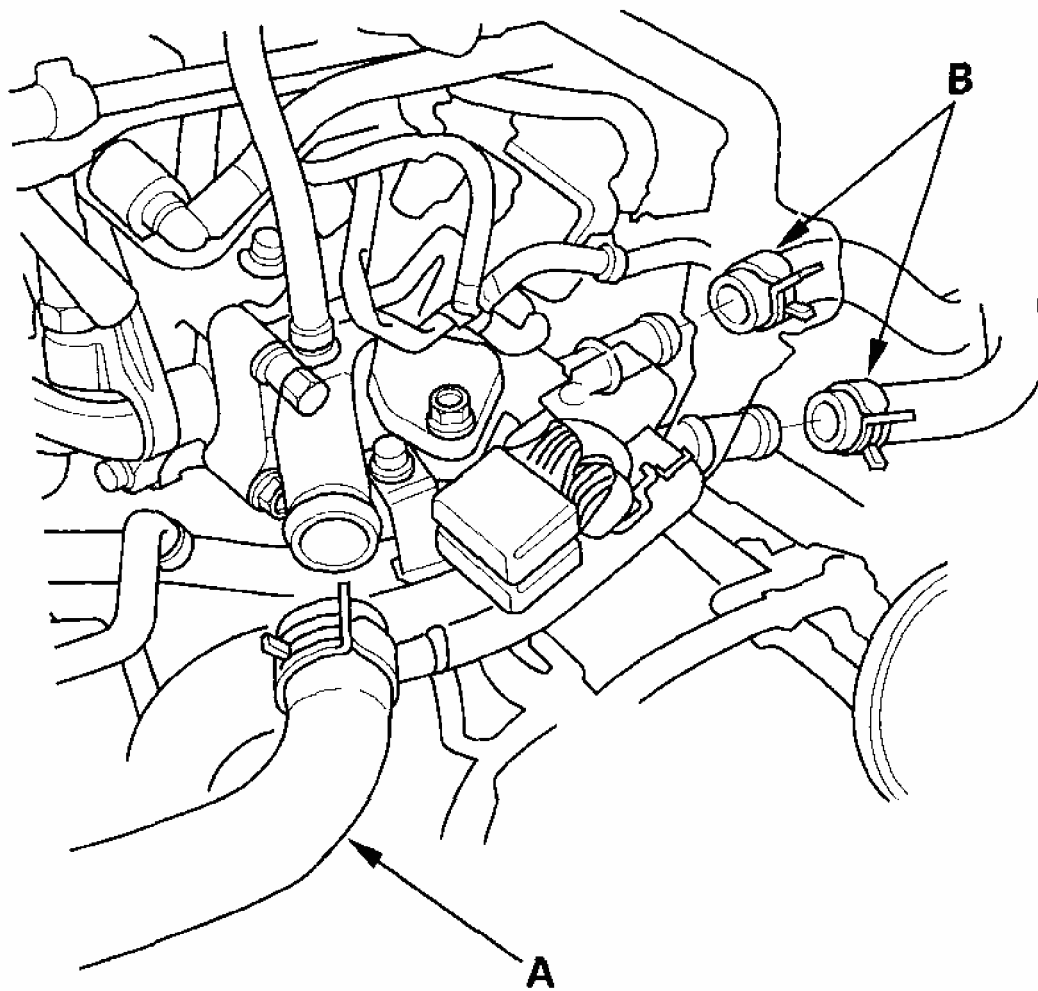


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Fig. 12: Removing Automatic Transmission Fluid Cooler Hoses And ATF Filter Mounting Bolt (A/T Model)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

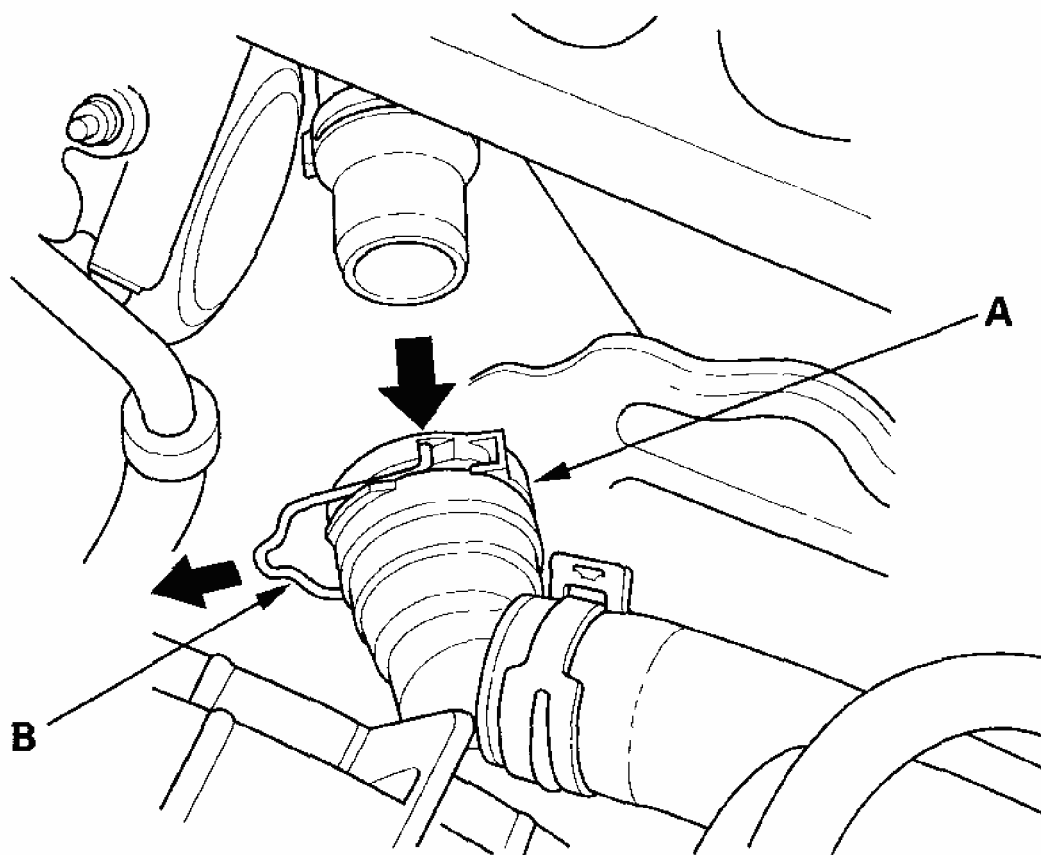
38. Remove the upper radiator hose (A) and heater hoses (B).



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Fig. 13: Removing Upper Radiator Hose And Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

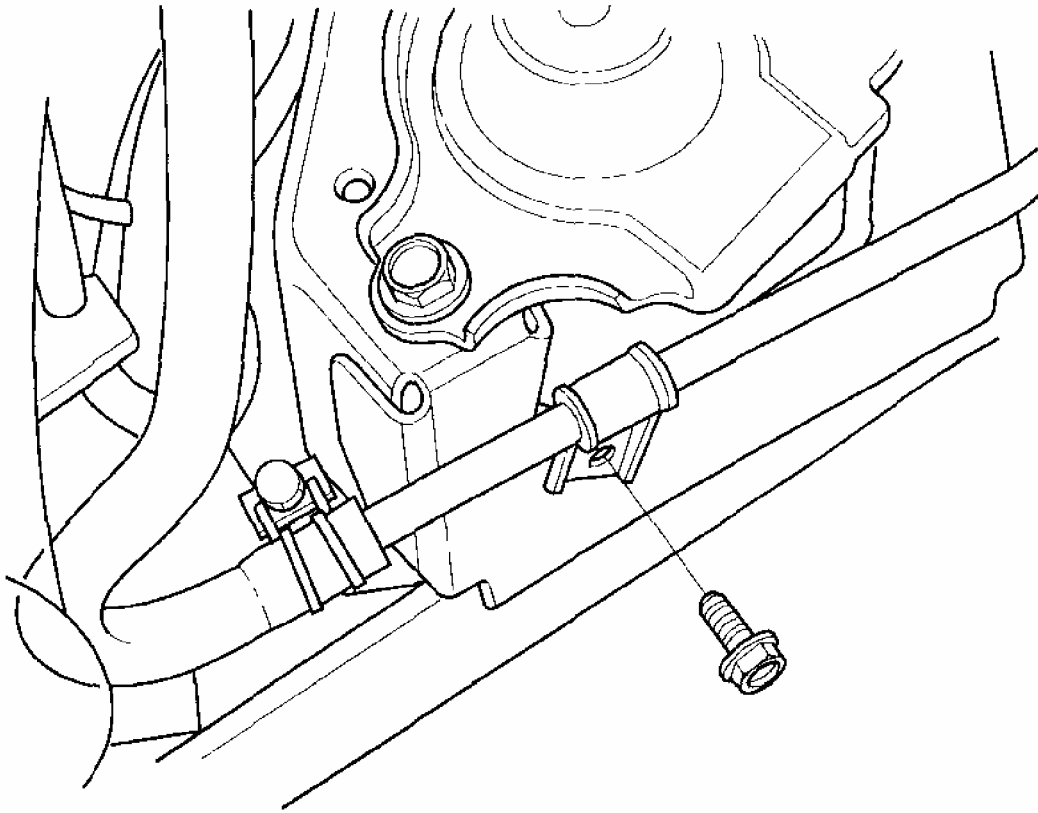
39. Clean any dirt off the quick connector (A), thermostat cover, and lower radiator hose.



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Fig. 14: Cleaning Quick Connector, Thermostat Cover And Lower Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Pull out the lock (B) by hand, then wiggle the quick connector loose, and remove it from the thermostat cover. Do not use any tools to remove the quick connector.
41. A/T model: Remove the bolt securing the P/S line.



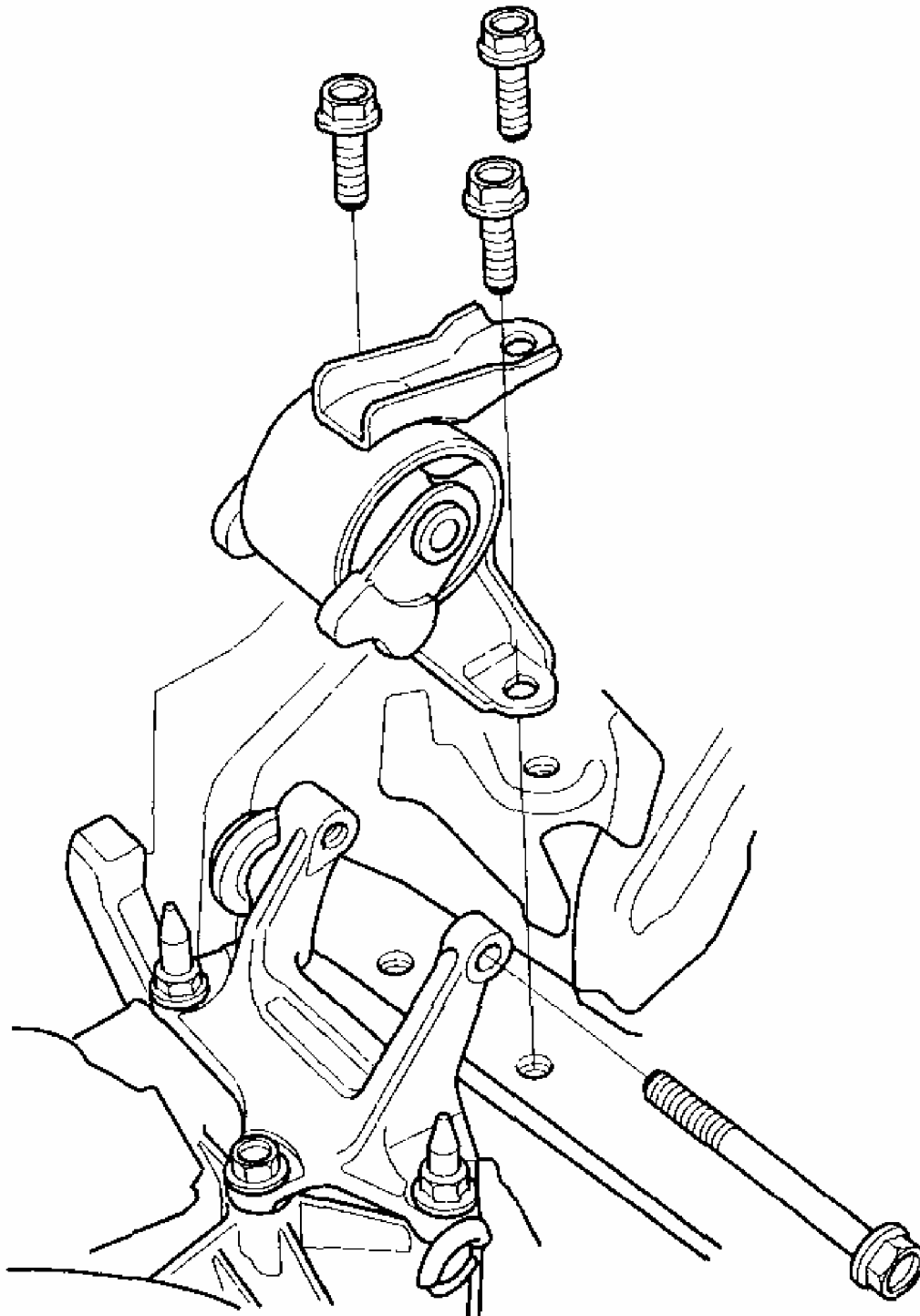
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Fig. 15: Removing Bolt Securing P/S Line (A/T Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. A/T model: Support the transmission with a jack and wood block.
43. A/T model: Remove the transmission mount.

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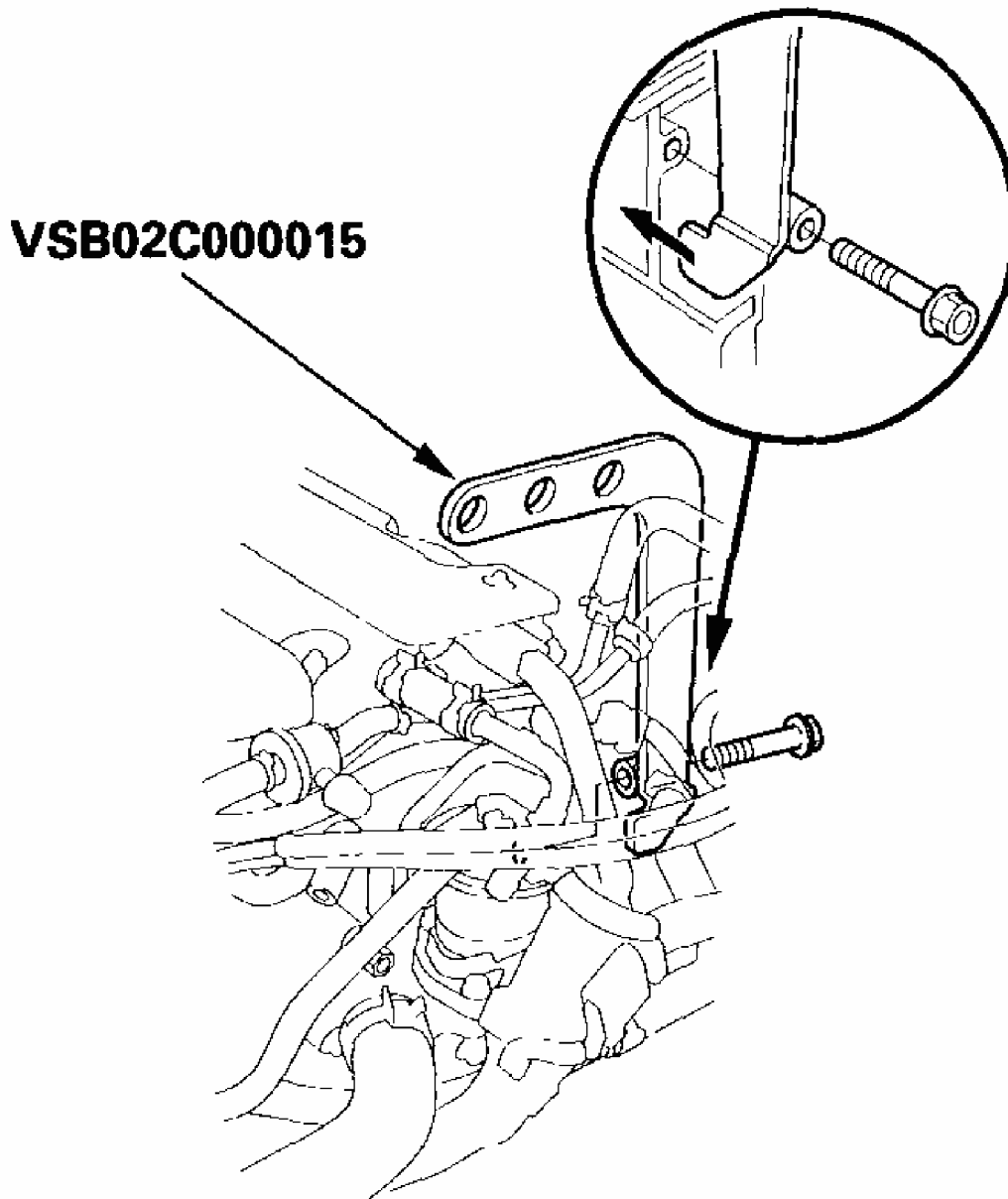
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Fig. 16: Removing Transmission Mount (A/T Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

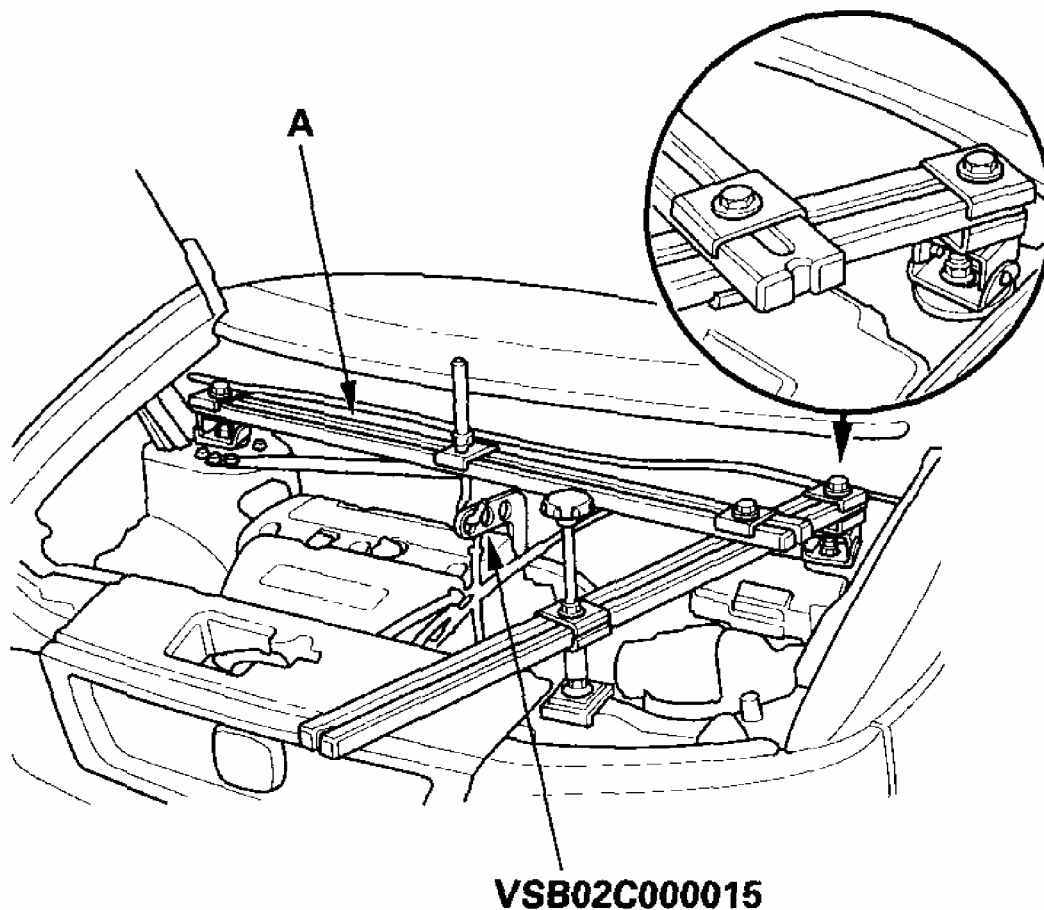
44. Attach the special tool to the threaded holes in the cylinder head.



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Fig. 17: Attaching Special Tool To Threaded Holes In Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

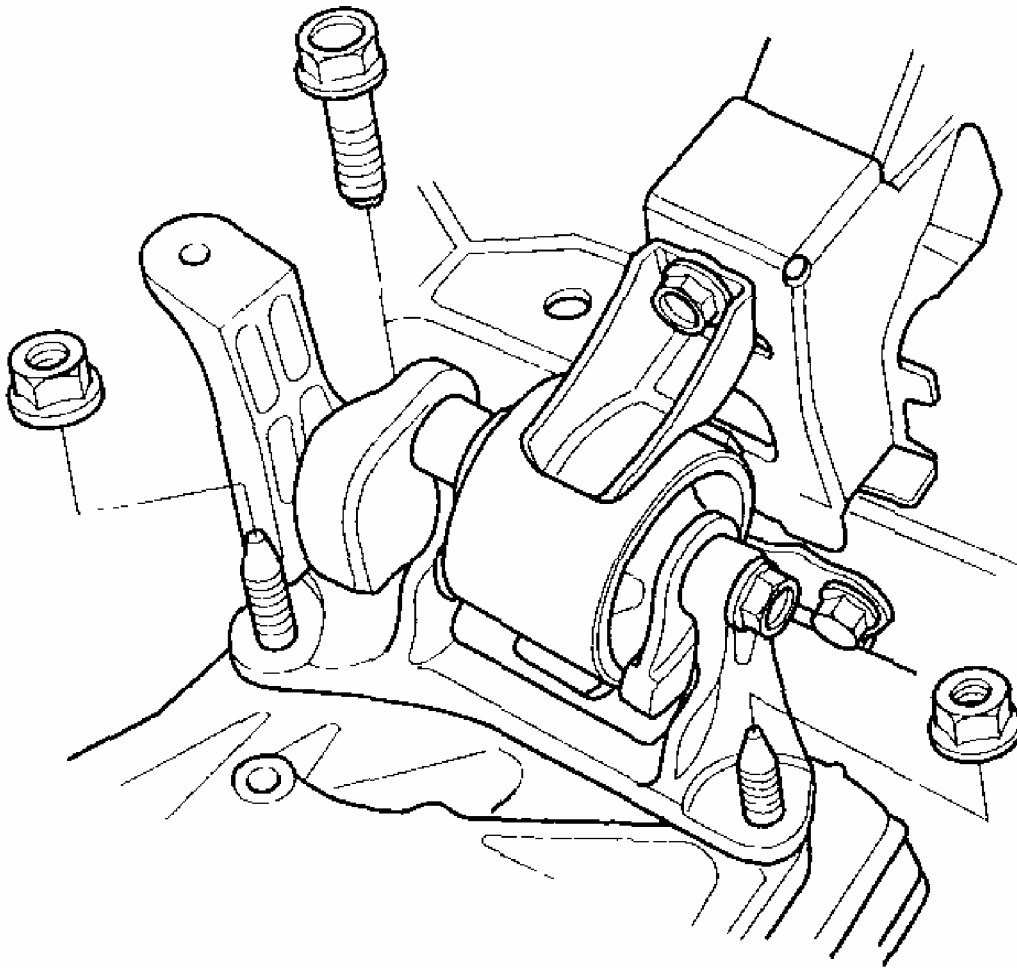
45. Install the engine support hanger (A) to the vehicle, then attach the hook to the special tool.



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Fig. 18: Installing Engine Support Hanger To Vehicle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. A/T model: Remove the jack and wood block.
47. M/T model: Remove the transmission mount bracket support bolt and nuts.

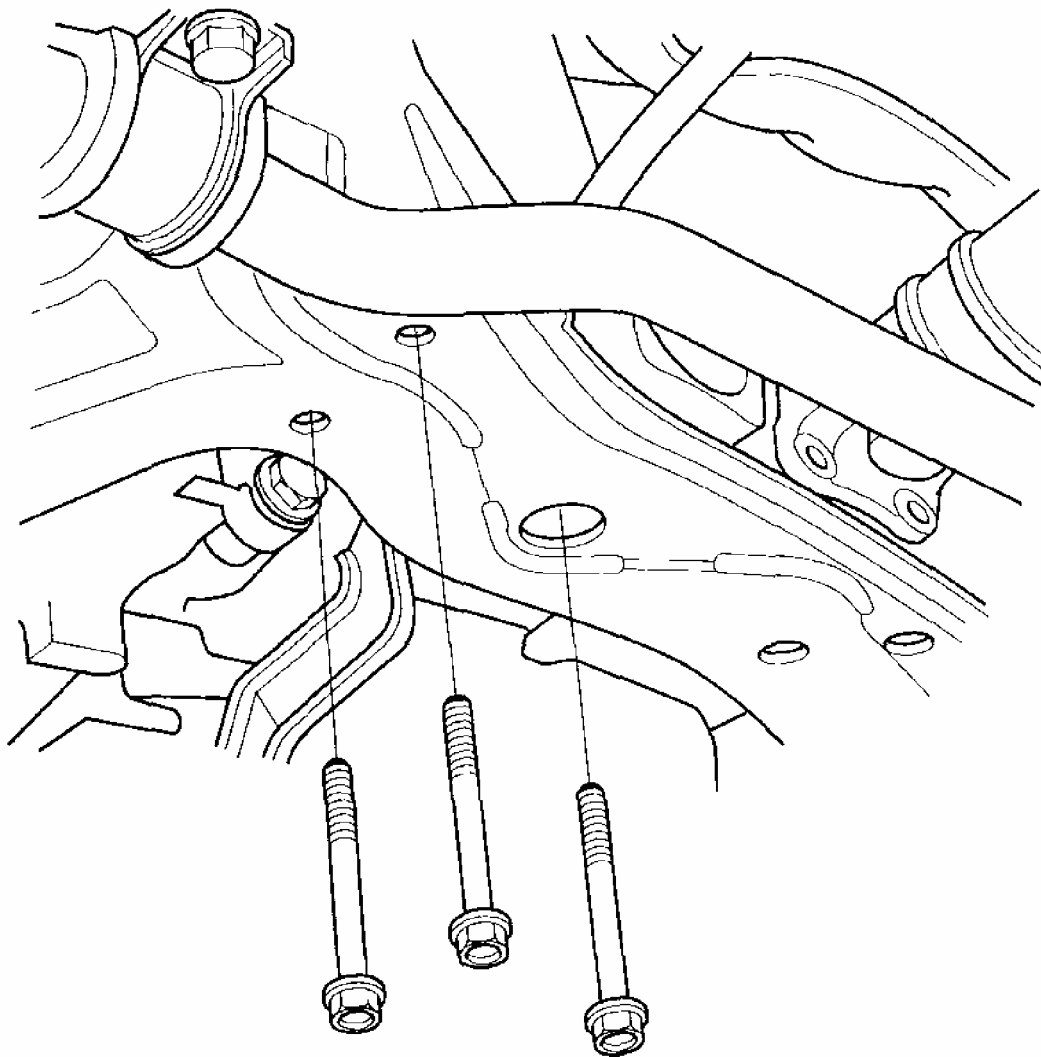


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Fig. 19: Removing Transmission Mount Bracket Support Bolt And Nuts (M/T Models)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

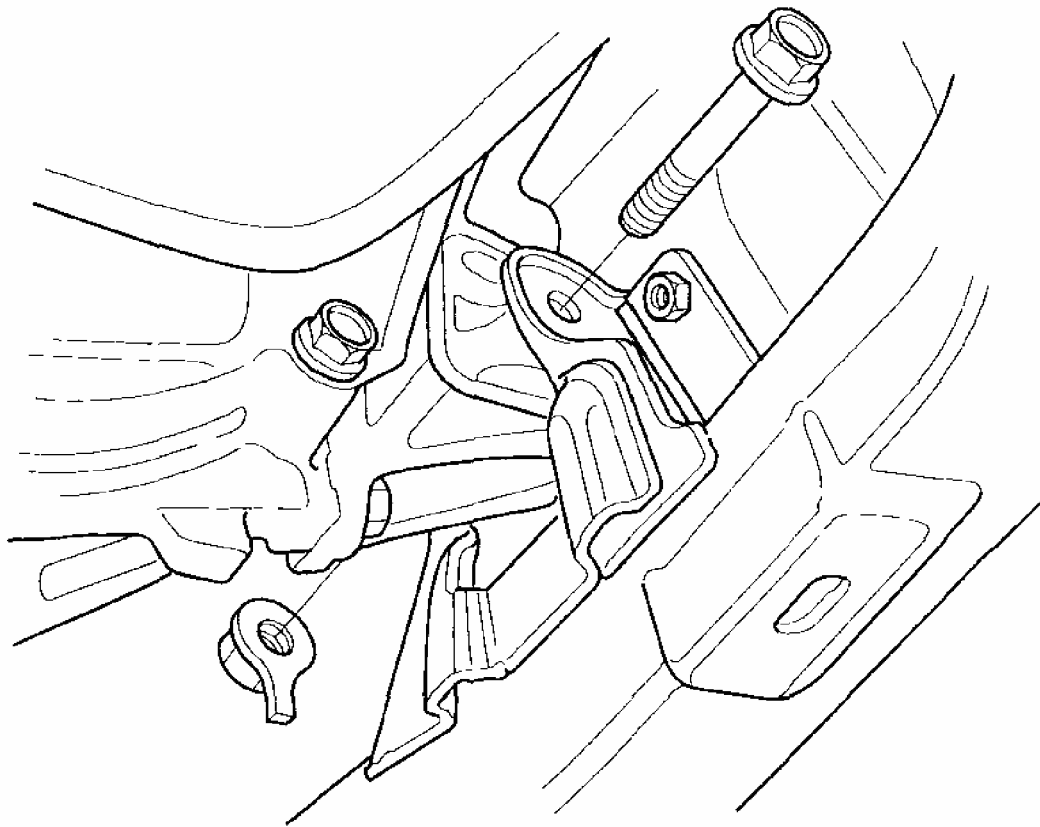
48. Make sure the hoist brackets are positioned properly. Raise the hoist to full height.
49. Remove the rear mount mounting bolts.



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

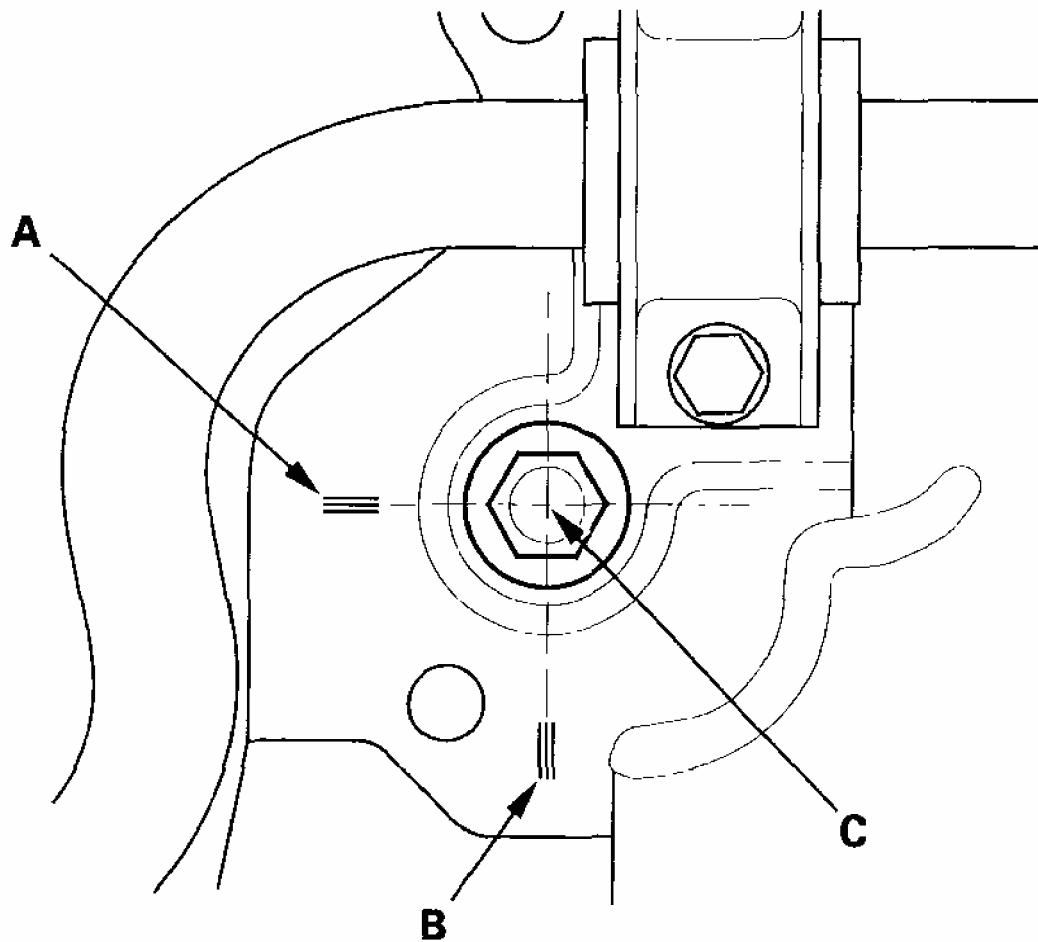
50. Remove the front mount mounting bolt.



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Fig. 21: Removing Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

51. Make the appropriate reference lines at positions (A) and (B) that line up with the center of each subframe mounting bolt (C).

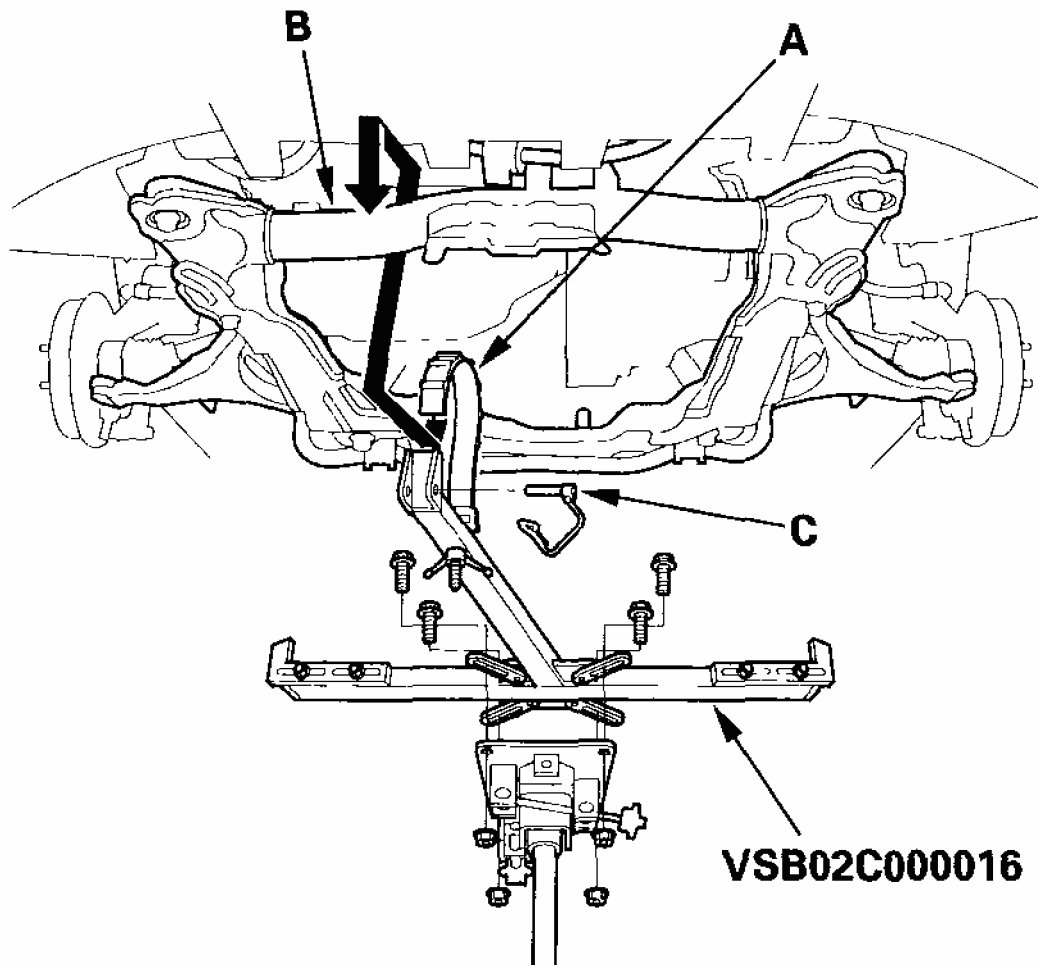


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Fig. 22: Placing Reference Lines

Courtesy of AMERICAN HONDA MOTOR CO., INC.

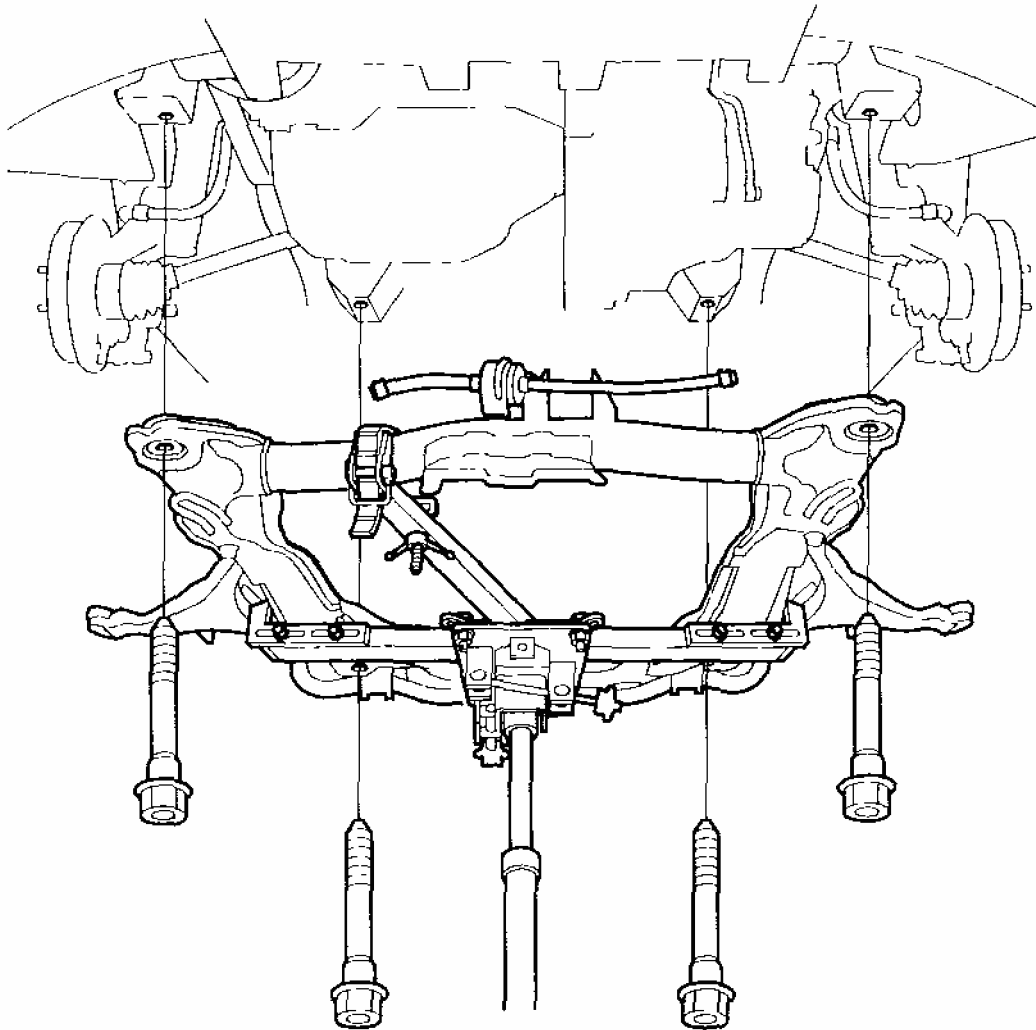
52. Attach the special tool to the subframe by hanging the belt (A) over the front of the subframe (B), then secure the belt with its stop (C).



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Fig. 23: Attaching Special Tool To Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

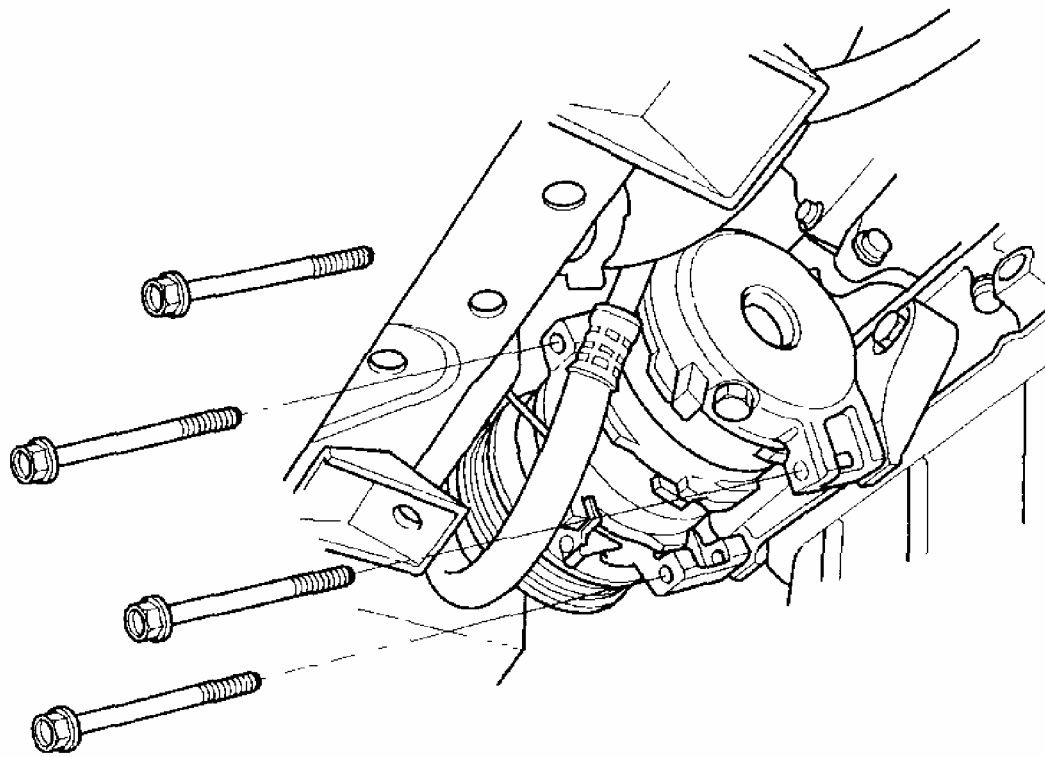
53. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with the bolts securely.
54. Remove the four subframe mounting bolts, then lower the subframe.



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Fig. 24: Removing Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

55. Remove the A/C compressor without disconnecting the A/C hoses.

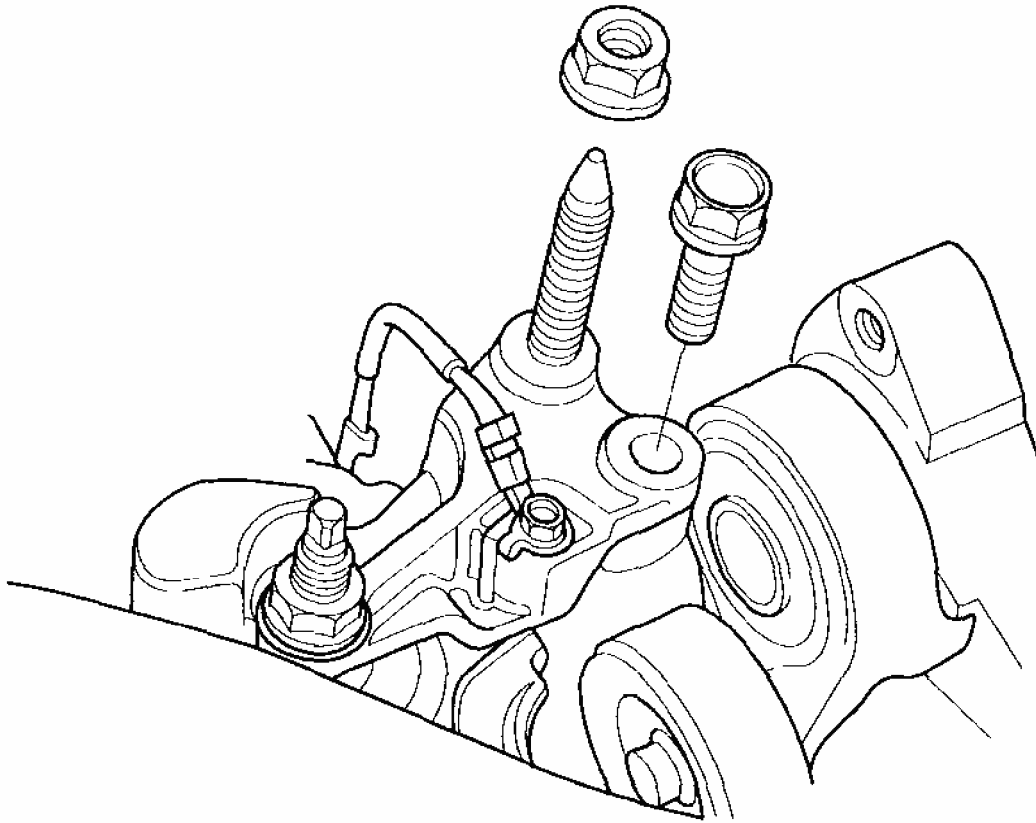


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Fig. 25: Removing A/C Compressor

Courtesy of AMERICAN HONDA MOTOR CO., INC.

56. Attach a chain hoist to the engine/transmission assembly.
57. Remove the upper engine mount bracket bolt and nut.



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Fig. 26: Removing Upper Engine Mount Bracket Bolt And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

58. Remove the engine support hanger.
59. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.
60. Slowly lower the engine about 150 mm (6 in.). Check once again that all hoses and wires are disconnected from the engine/transmission.
61. Lower the engine/transmission all the way. Remove the special tools.
62. Remove the engine/transmission from under the vehicle.

ENGINE INSTALLATION

Special Tools Required

- Engine hanger/adaptor VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566

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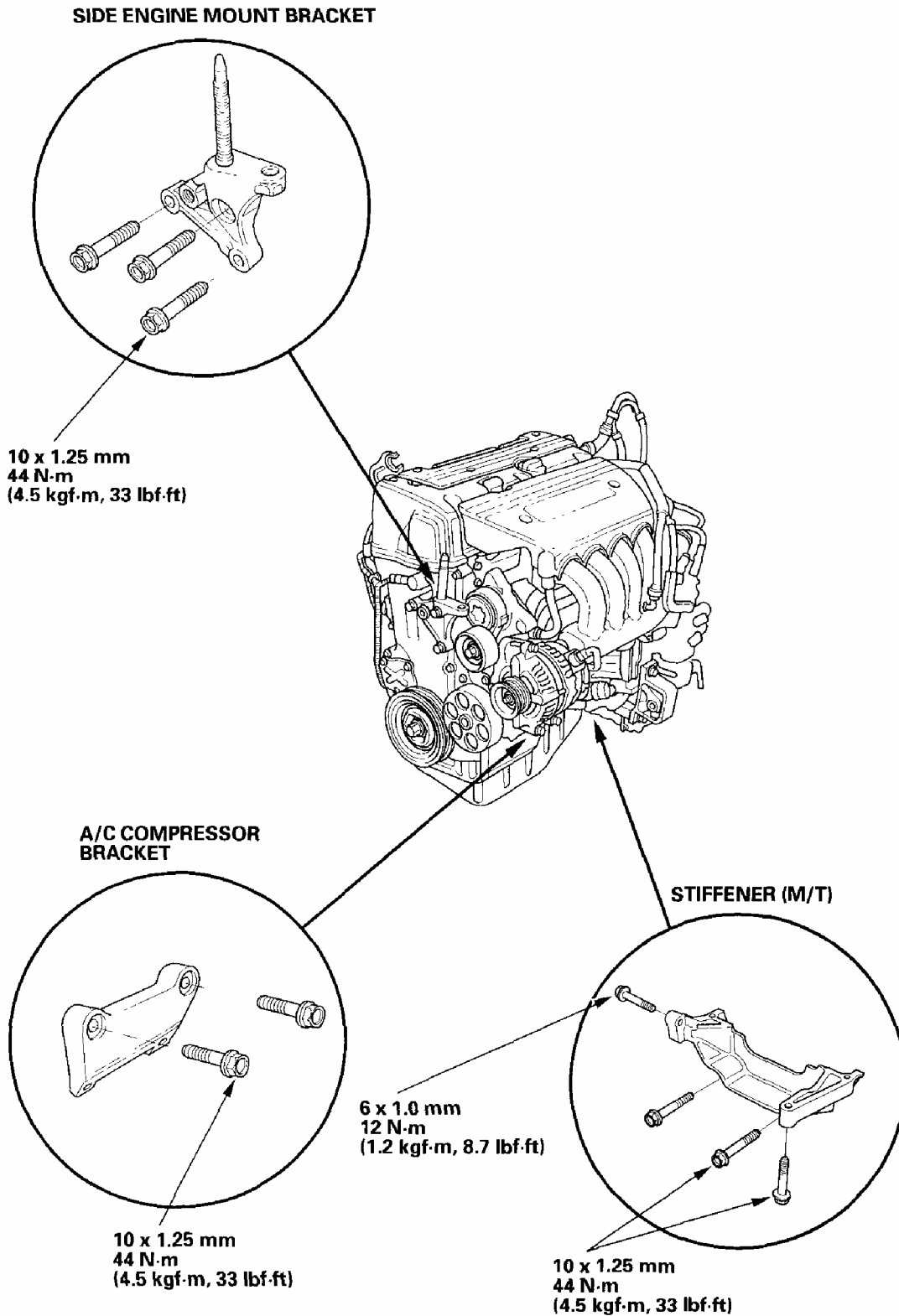
- Subframe adapter VSB02C000016

These special tools are available through the Honda Tool and Equipment Program, 1-888-424-6857.

1. Install the accessory brackets, and tighten their bolts to the specified torques.

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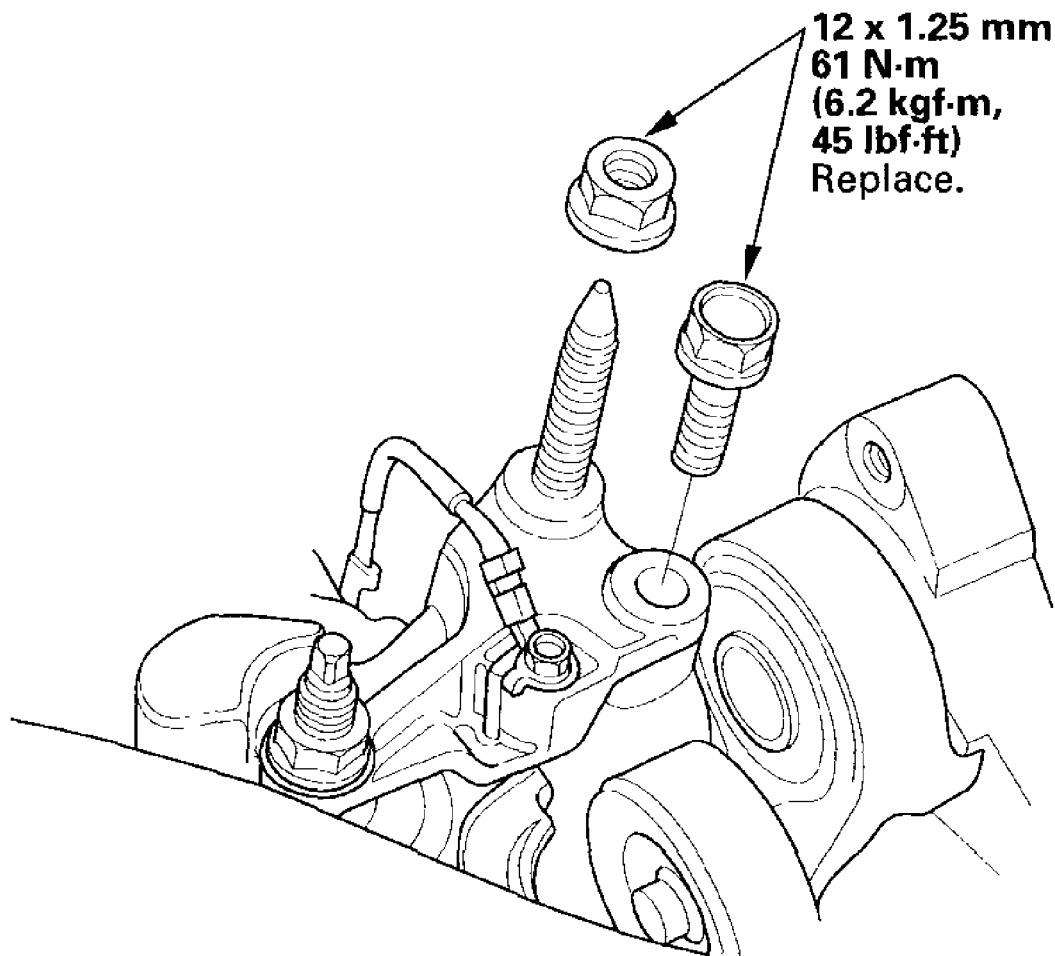
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Fig. 27: Installing Accessory Brackets And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Position the engine/transmission under the vehicle. Attach the engine support hanger to the engine, then lift the engine into position in the vehicle.

NOTE: Reinstall the mounting bolts/support nuts in the sequence given. Failure to follow this sequence may cause excessive noise and vibration, and reduce bushing life.

3. Tighten the upper engine mount bracket bolt and nut.

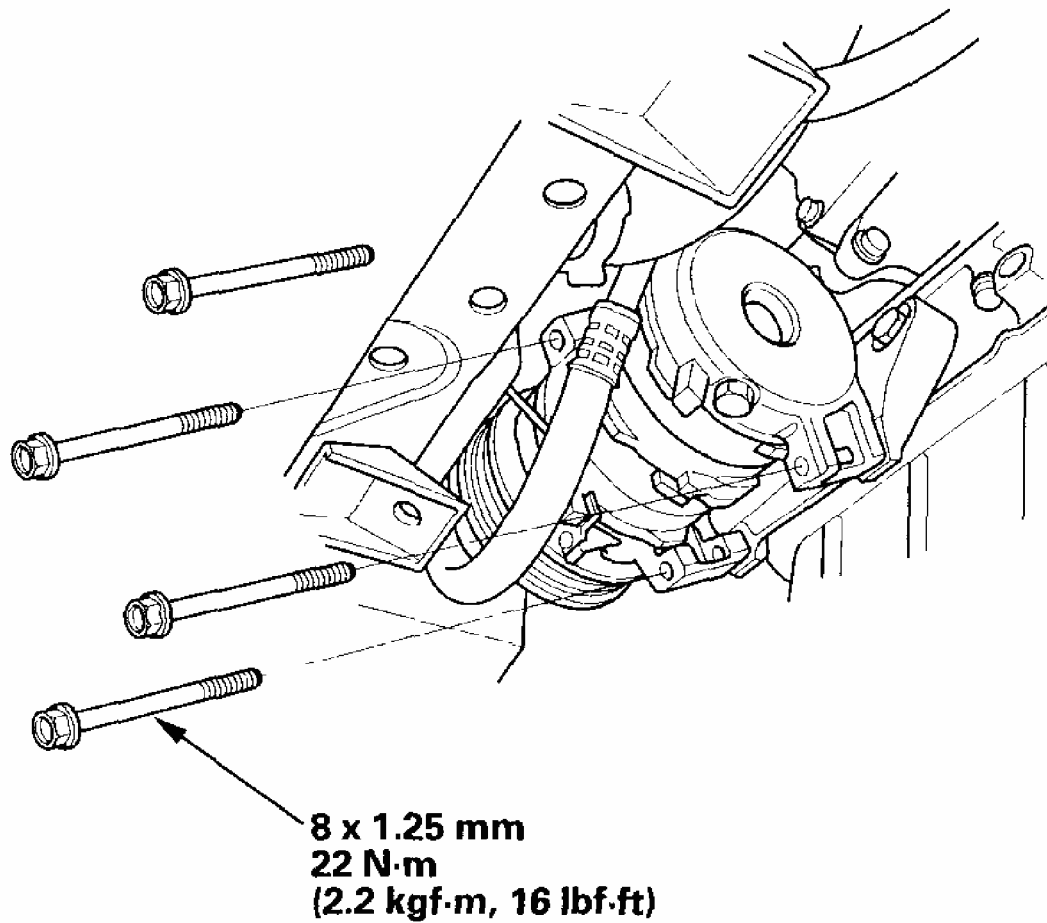


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Fig. 28: Tightening Upper Engine Mount Bracket Bolt And Nut With Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

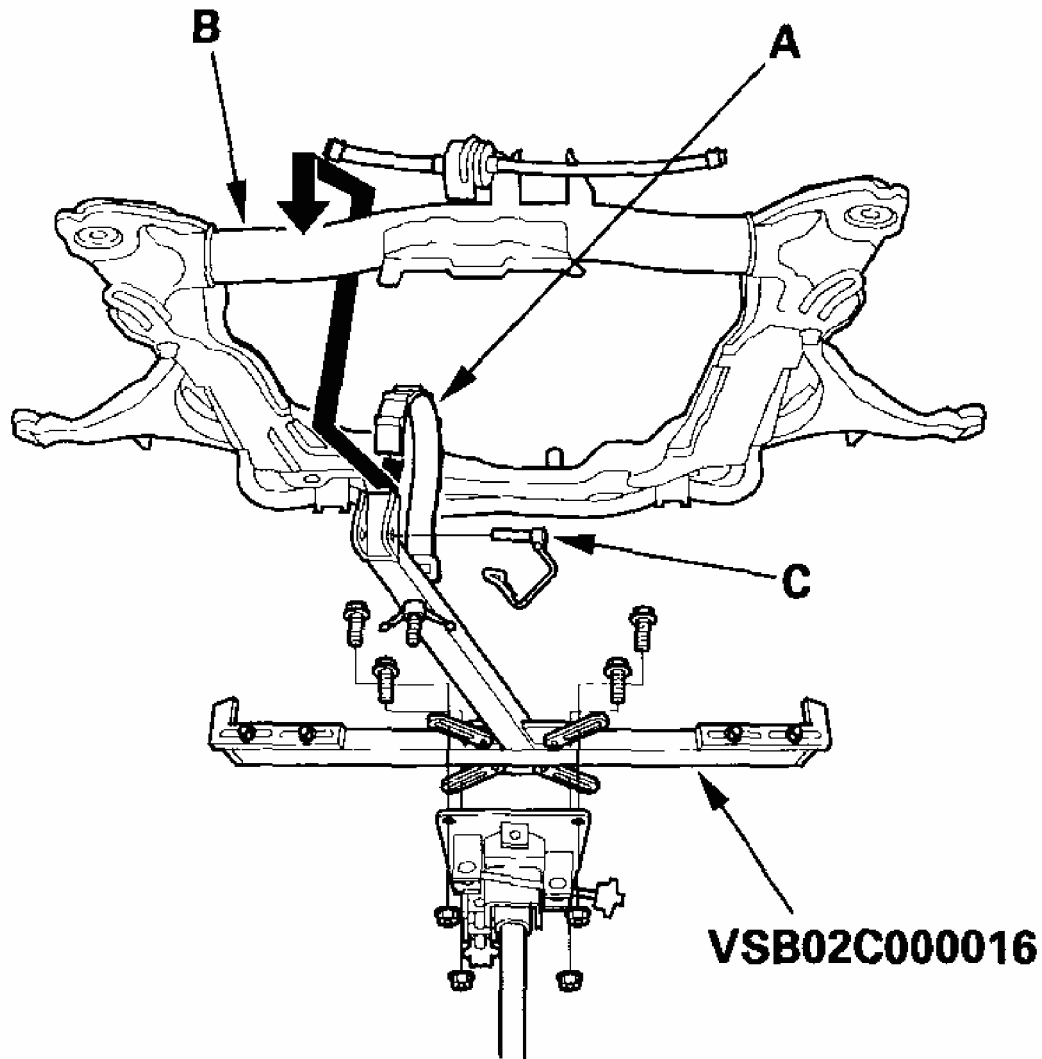
4. Install the A/C compressor.



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Fig. 29: Installing A/C Compressor And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

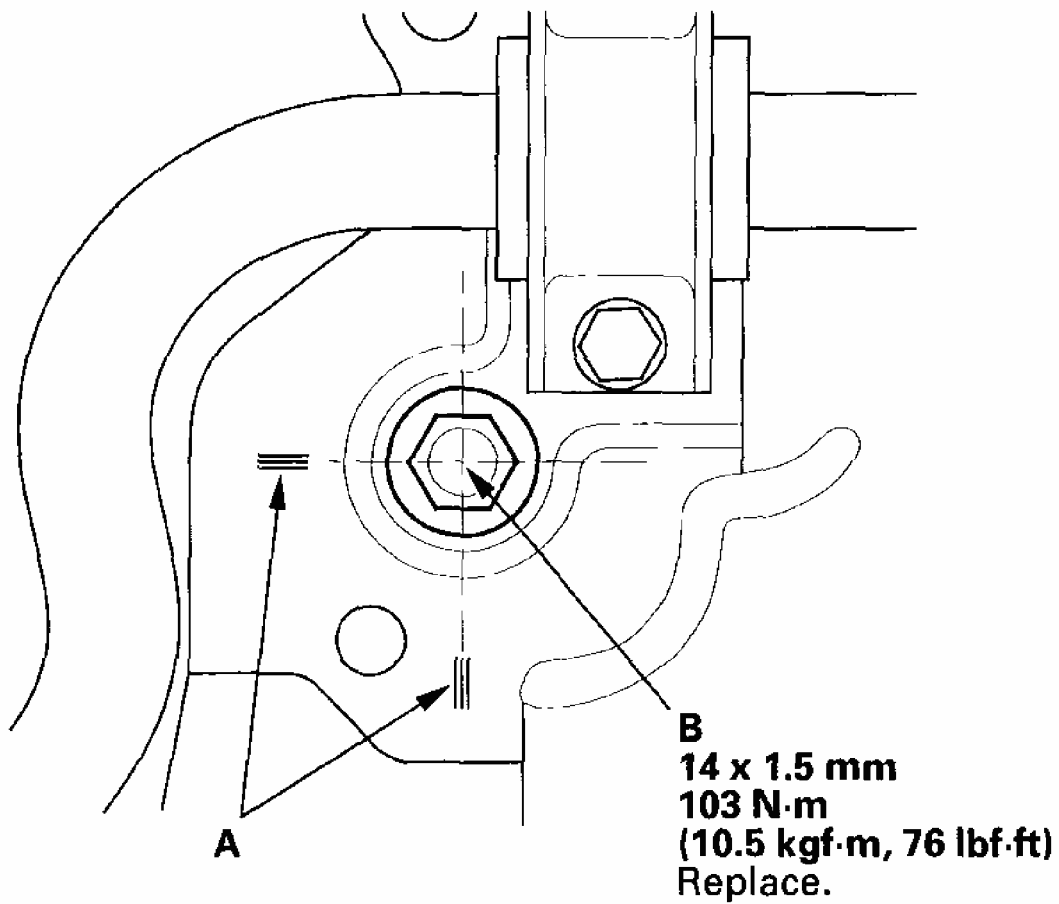
5. Attach the special tool to the subframe by hanging the belt (A) over the front of the subframe (B), then secure the belt with its stop (C). Raise the subframe up to the body with a jack.



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Fig. 30: Attaching Special Tool To Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

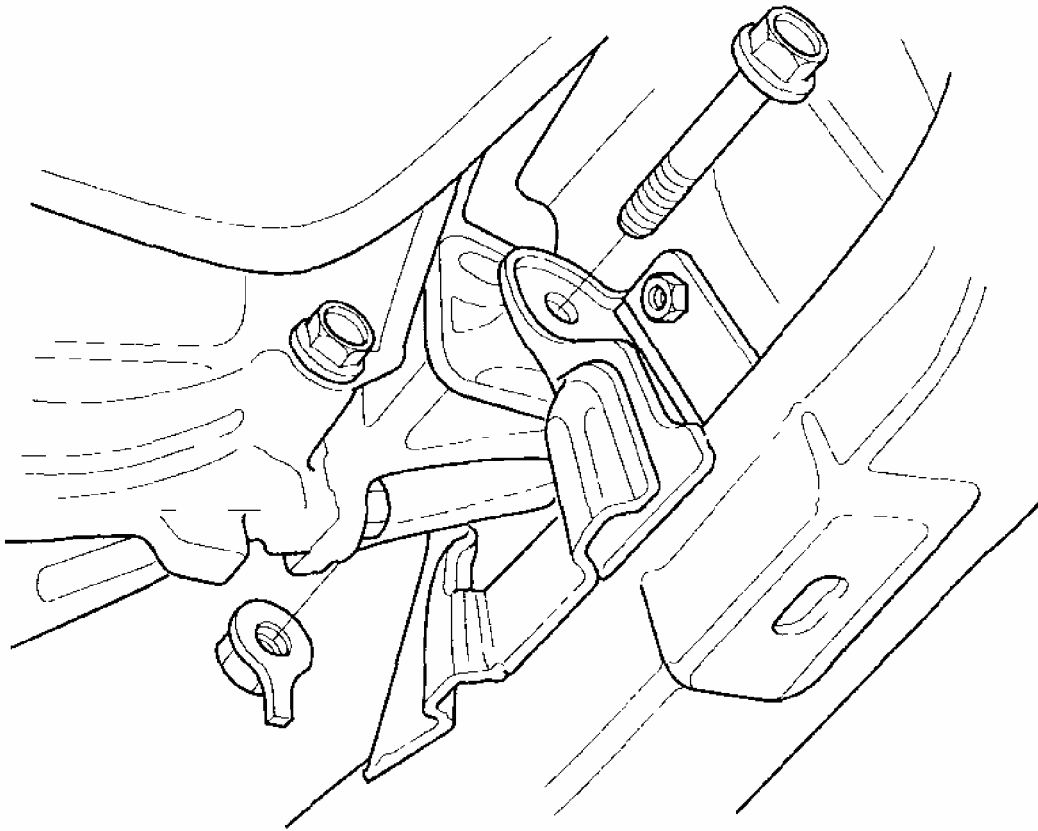
6. Loosely install the new subframe mounting bolts. Remove the special tool.
7. Align the reference marks (A) with the center of the subframe mounting bolts (B), then tighten the bolts to the specified torque.



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Fig. 31: Aligning Reference Marks And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

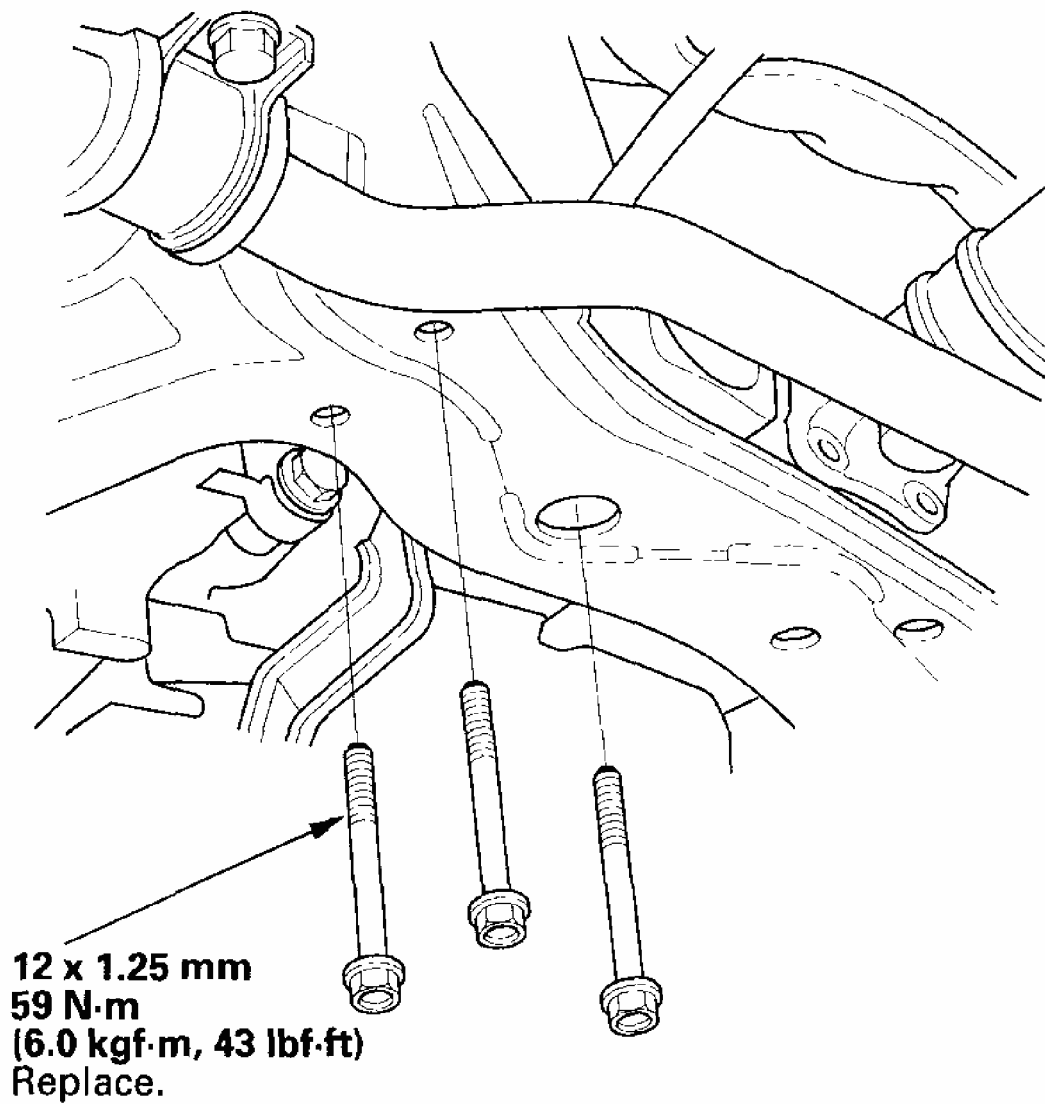
8. Loosely install the new front mount mounting bolt.



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Fig. 32: Installing Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Tighten the rear mount mounting bolts.

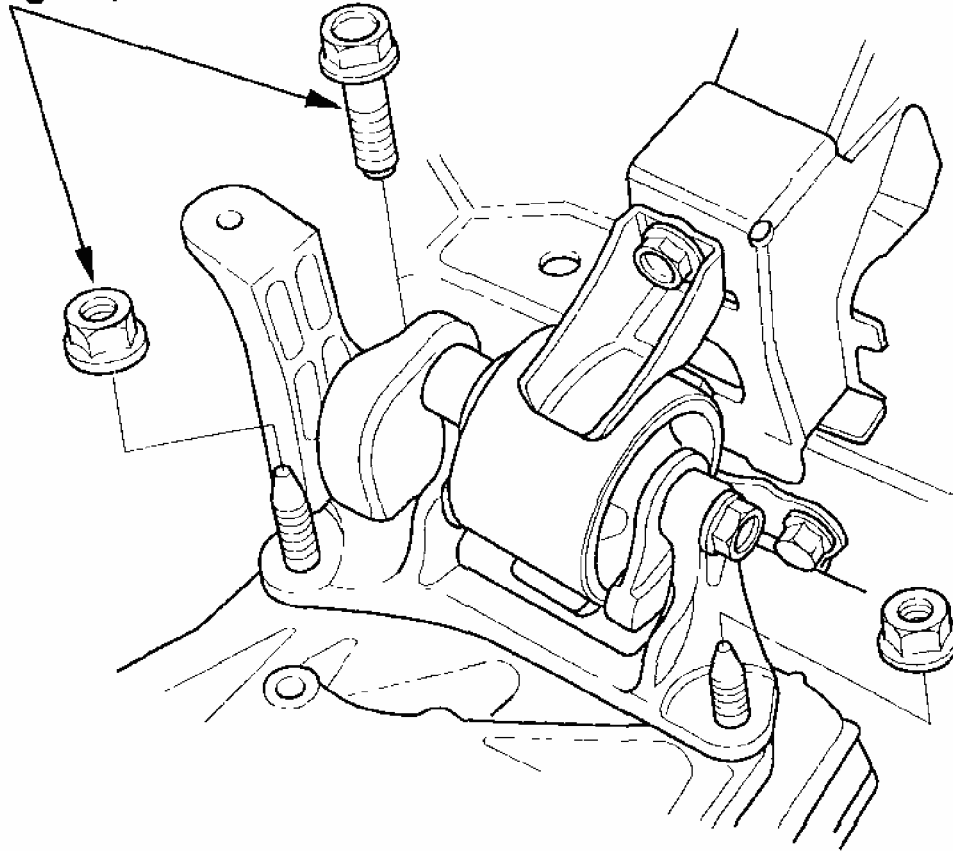


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Fig. 33: Tightening Rear Mount Mounting Bolts And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Lower the vehicle on the hoist.
11. M/T model: Tighten the transmission mount bracket support bolt and nuts.

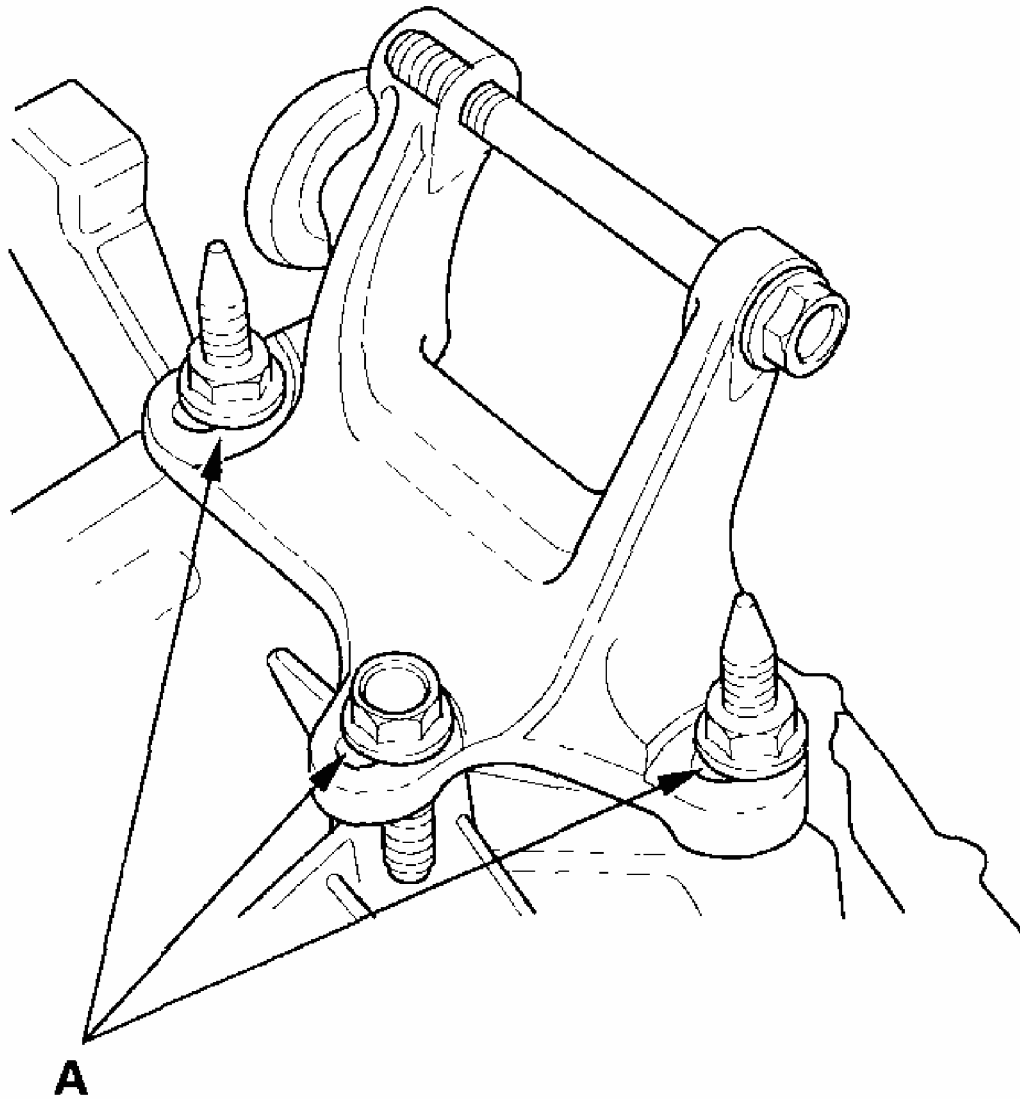
**12 x 1.25 mm
54 N·m
(5.5 kgf·m, 40 lbf·ft)**



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Fig. 34: Tightening Transmission Mount Bracket Support Bolt And Nuts (M/T Model) With Specified Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. A/T model: Support the transmission with a jack and wood block.
13. Remove the engine support hanger.
14. A/T model: Loosen the transmission mount bracket support bolt and nuts (A).



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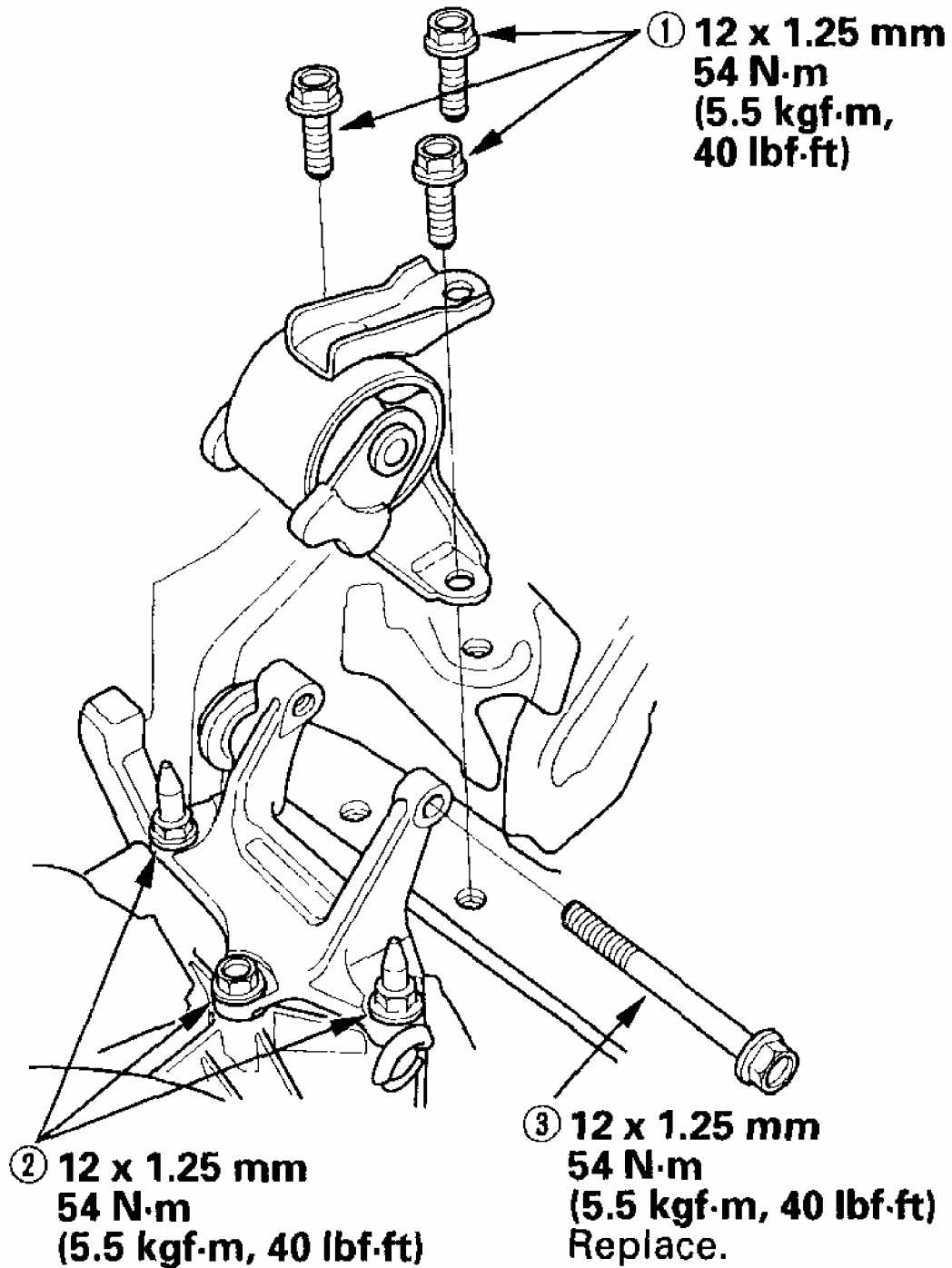
Fig. 35: Loosening Transmission Mount Bracket Support Bolt And Nuts (A/T Model)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. A/T model: Install the transmission mount and all bolts and nuts, then tighten the bolts and nuts in the numbered sequence shown.

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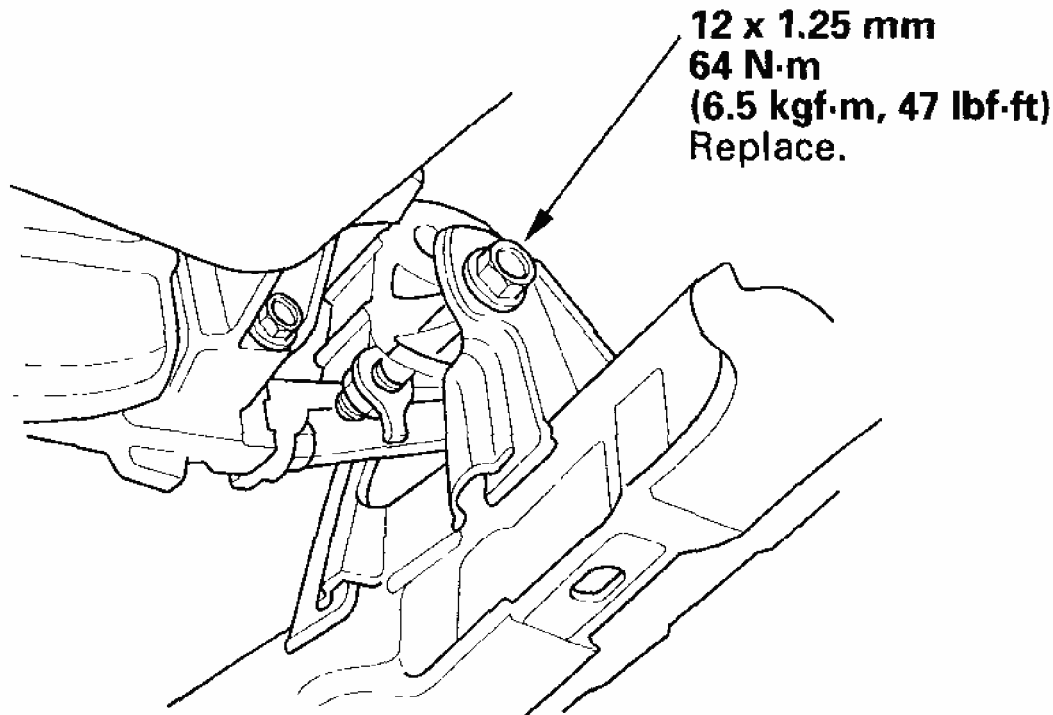
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Fig. 36: Installing Transmission Mount And Bolts And Nuts (A/T Model) With Specified Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. A/T model: Remove the jack and wood block.
17. Raise the vehicle on the hoist to full height.
18. Tighten the front mount mounting bolt.



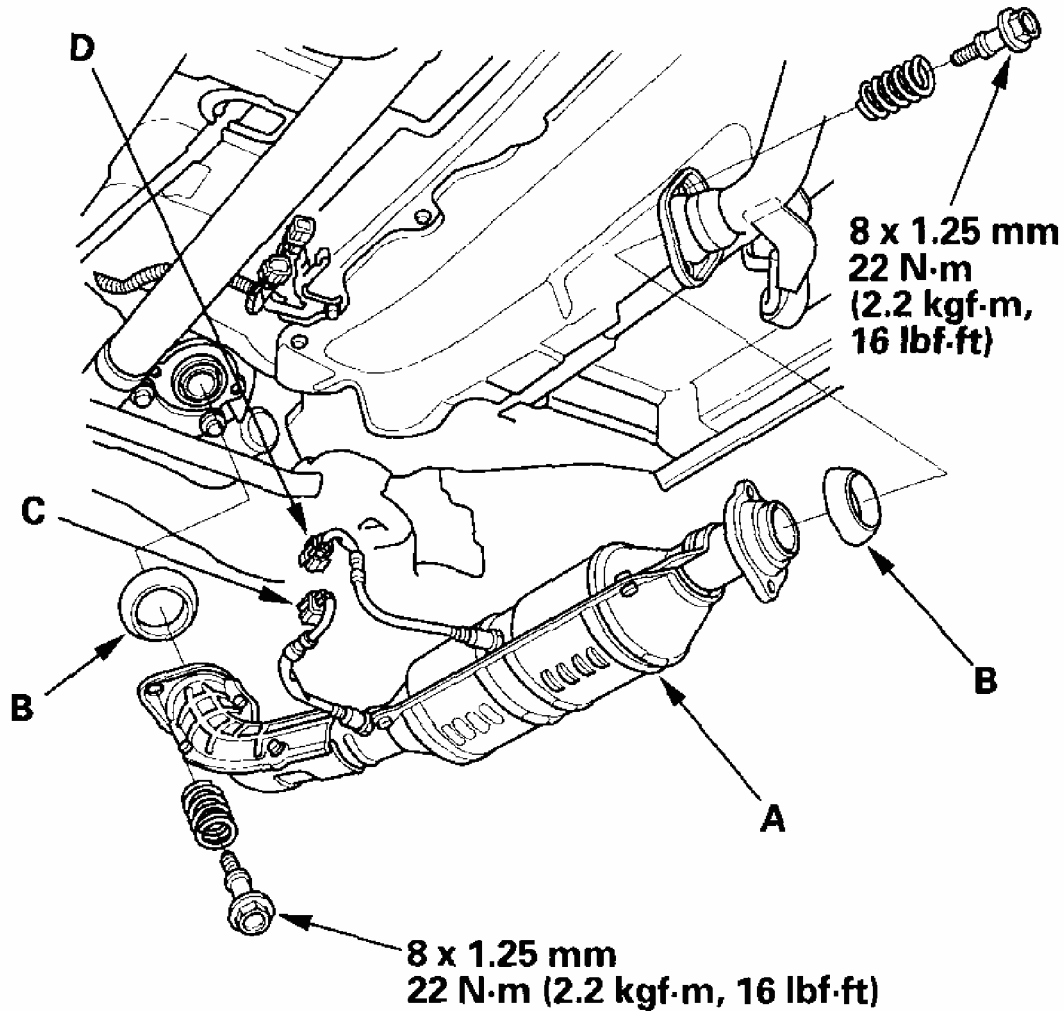
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Fig. 37: Tightening Front Mount Mounting Bolt And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. 4WD model: Install the propeller shaft on the transfer assembly:
 - Manual transmission (see step 3 on **TRANSFER ASSEMBLY REMOVAL**)
 - Automatic transmission (see step 18 on **TRANSMISSION INSTALLATION**)
20. A/T model: Install the shift cable:
 - 2WD (see step 25 on **TRANSMISSION INSTALLATION**)
 - 4WD (see step 24 on **TRANSMISSION INSTALLATION**)
21. Install a new set ring on the end of the left driveshaft and the intermediate shaft then install the driveshafts. Make sure the ring "clicks" into place on the differential and the right driveshaft.
22. Connect the suspension lower arm ball joints (see **LOWER ARM REPLACEMENT**).
23. Connect the stabilizer links (see **STABILIZER LINK**).

REMOVAL/INSTALLATION).

24. Install the three way catalytic converter (TWC) assembly (A) using new gaskets (B).

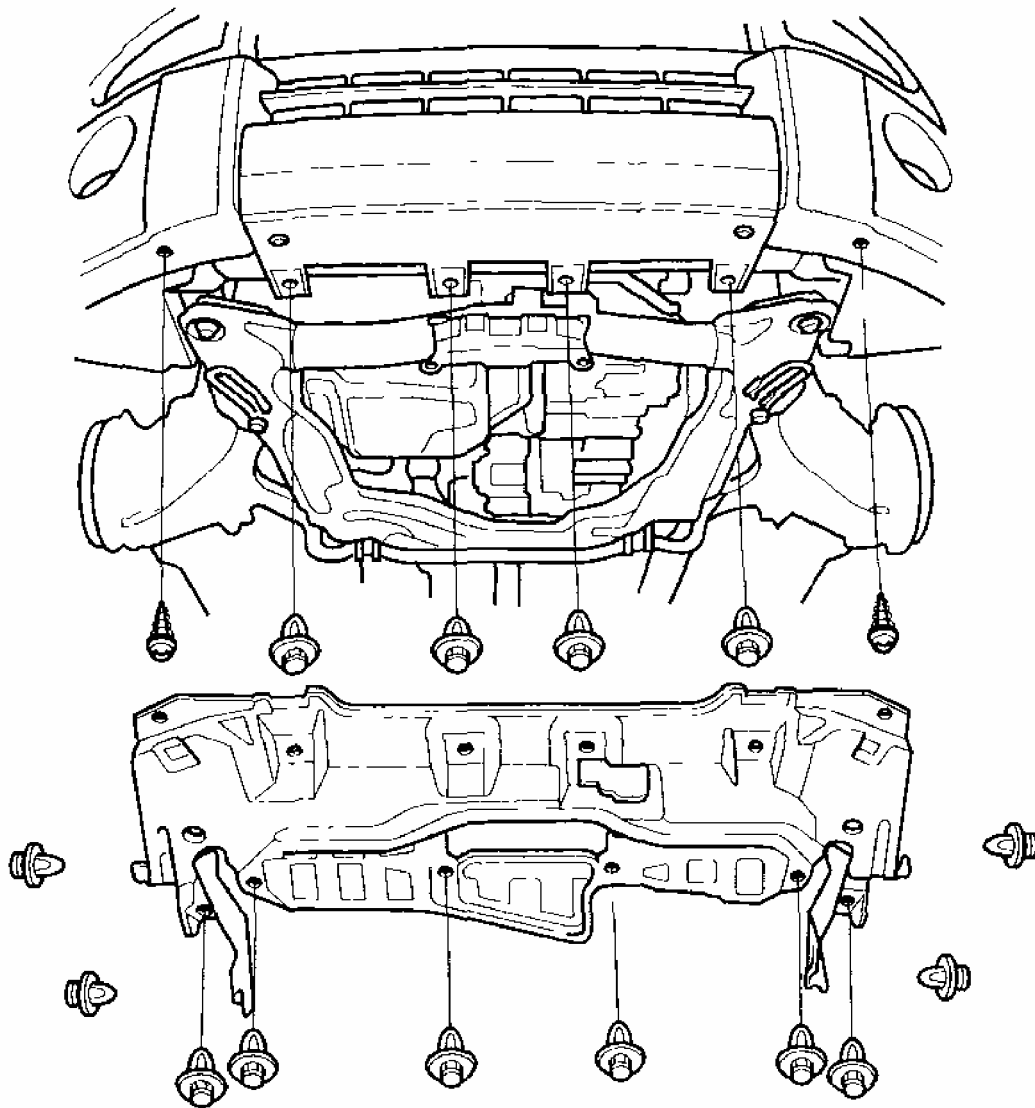


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Fig. 38: Installing Three Way Catalytic Converter Assembly Using New Gaskets And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Connect the air fuel ratio (A/F) sensor connector (C) and the secondary heated oxygen sensor (secondary HO2S) connector (D).
26. Install the splash shield.

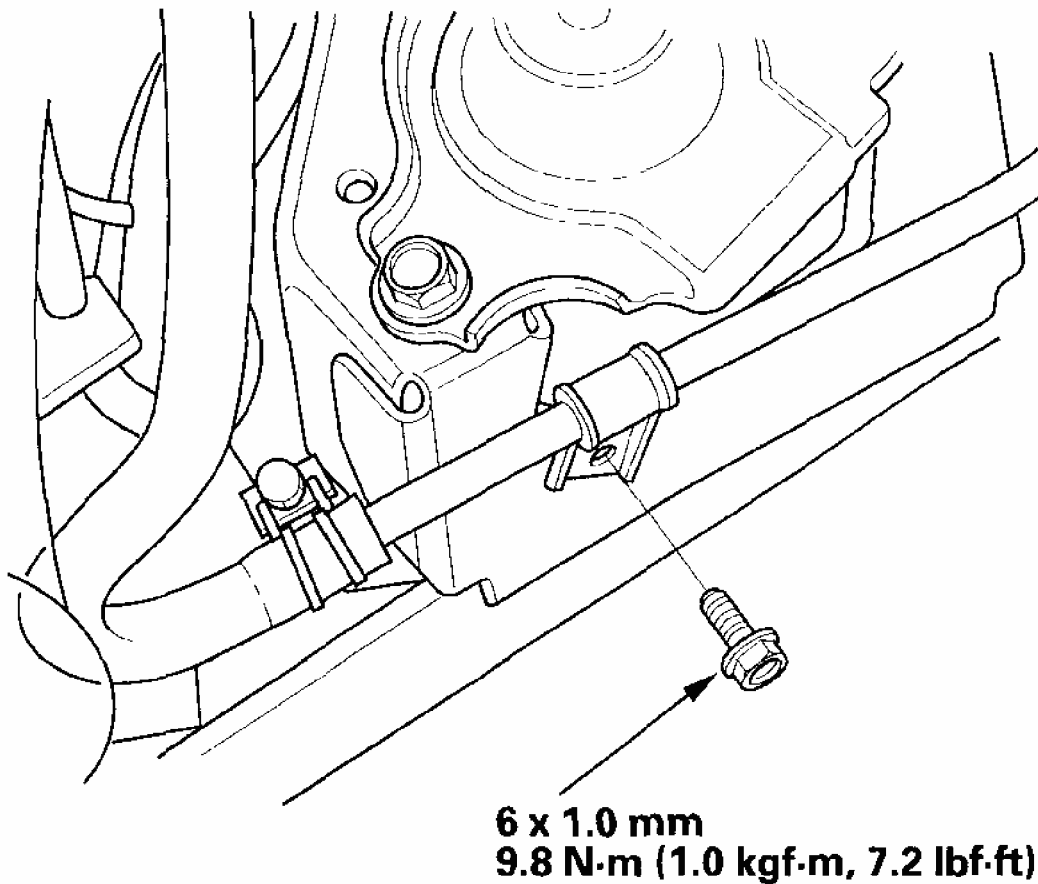


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Fig. 39: Installing Splash Shield

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the front wheels.
28. Lower the vehicle on the hoist.
29. A/T model: Tighten the bolt securing the power steering (P/S) line.

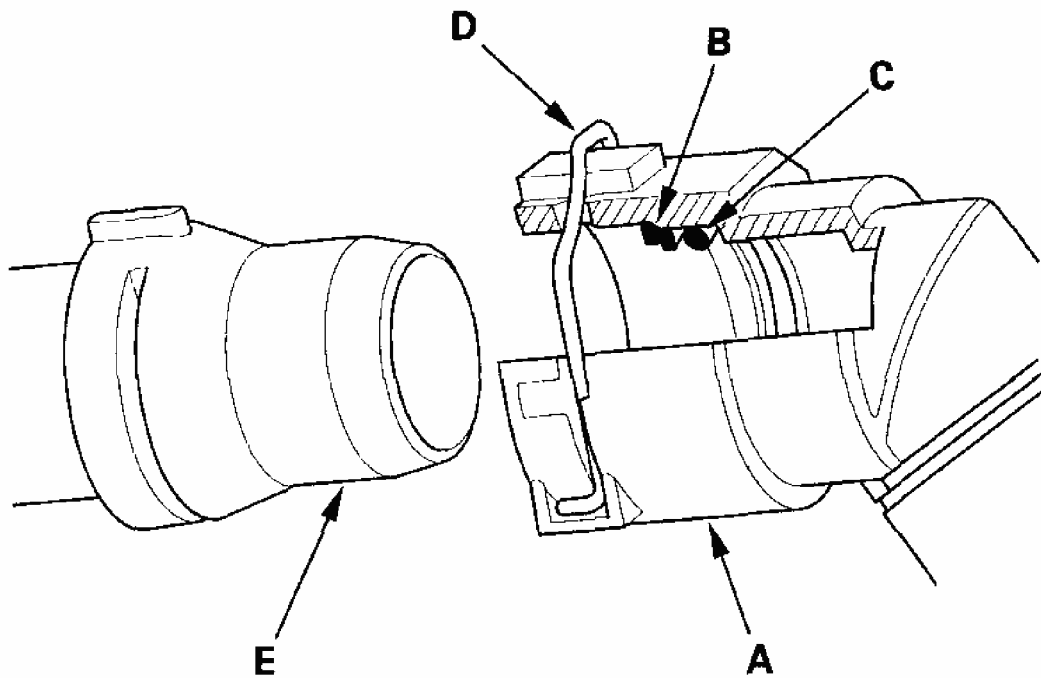


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Fig. 40: Tightening Bolt Securing Power Steering Line (A/T Model) And Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

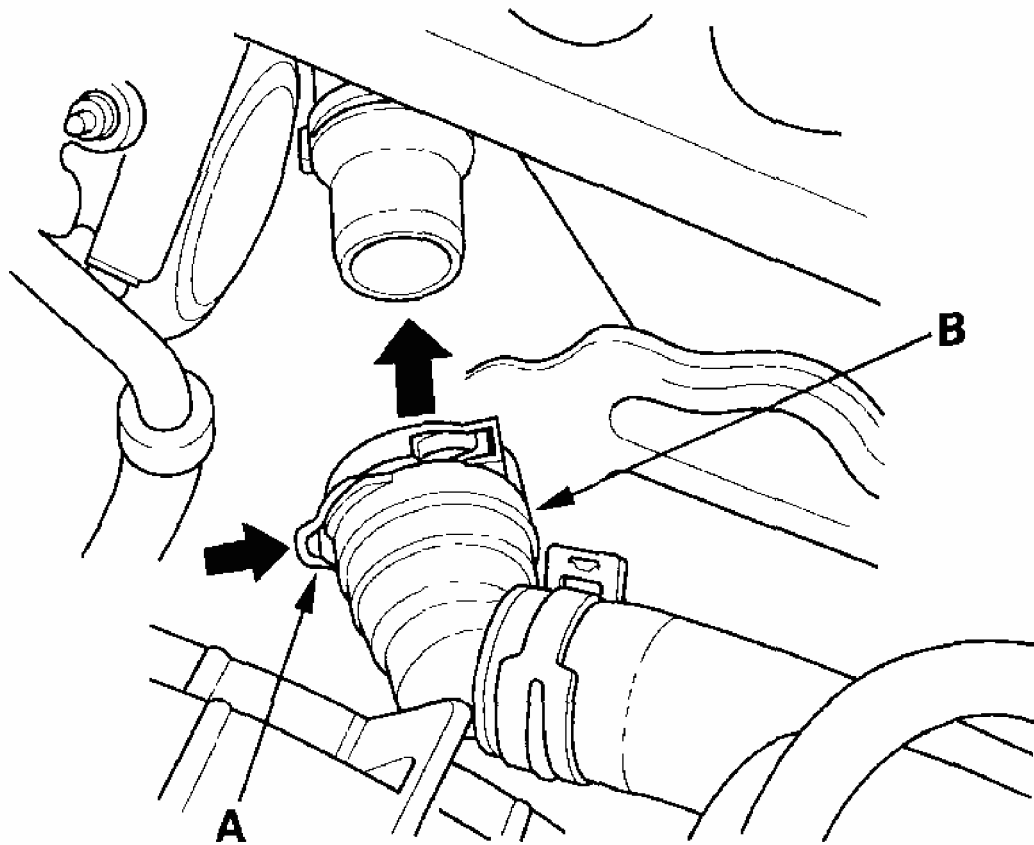
30. Check the quick connector (A) and set ring (B) for cracks or damage. If the connector and/or set ring are cracked or damaged, replace the connector.



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Fig. 41: Checking Quick Connector And Set Ring
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

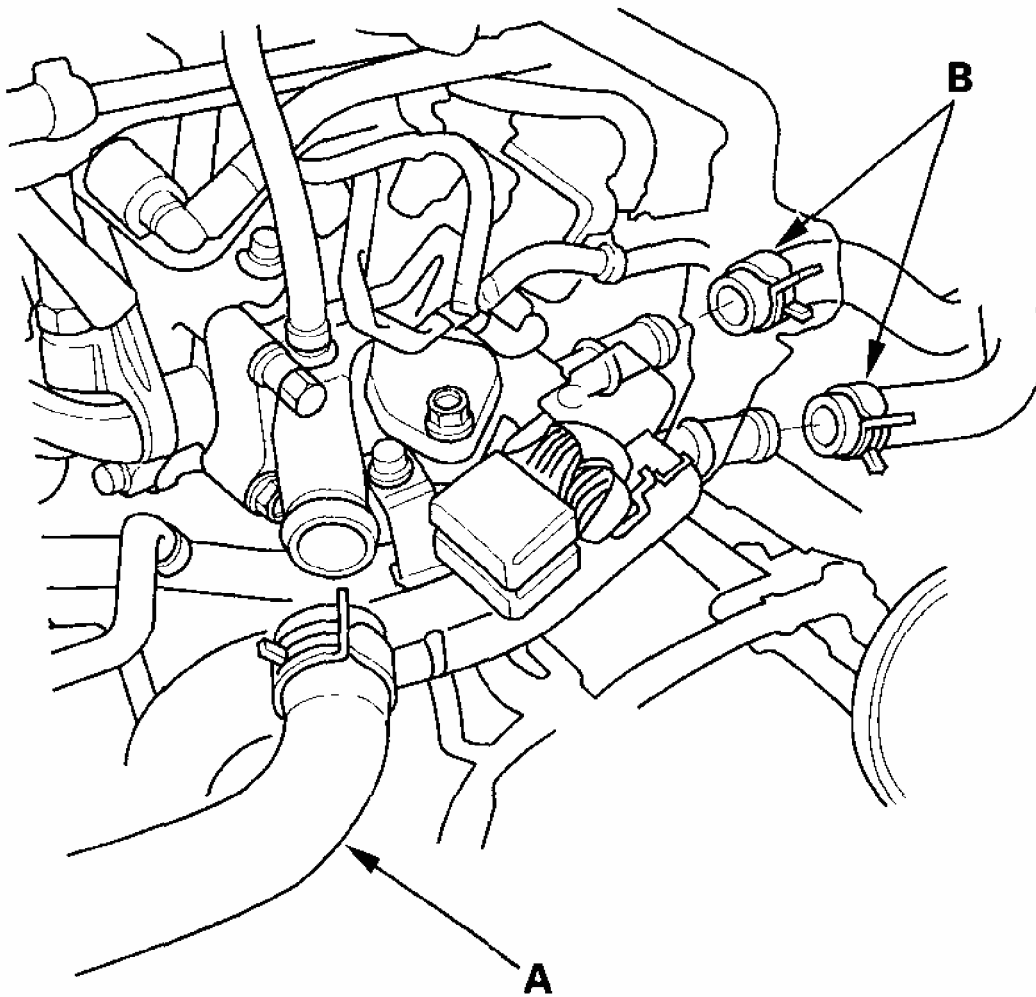
31. Make sure the set ring is in place inside the quick connector. If the set ring is off the connector, replace the quick connector.
32. Replace the O-ring (C) in the quick connector.
33. Check the lock (D) for damage or deformation. If the lock is damaged or deformed, replace it. When installing the new lock to the connector, push it straight down along the groove.
34. Clean the connecting surface of the thermostat cover (E), then apply clean engine coolant around the connecting surface.
35. Push the lock (A) down, then push the quick connector (B) onto the thermostat cover until you hear it click.



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Fig. 42: Pushing Lock Down Onto Thermostat Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

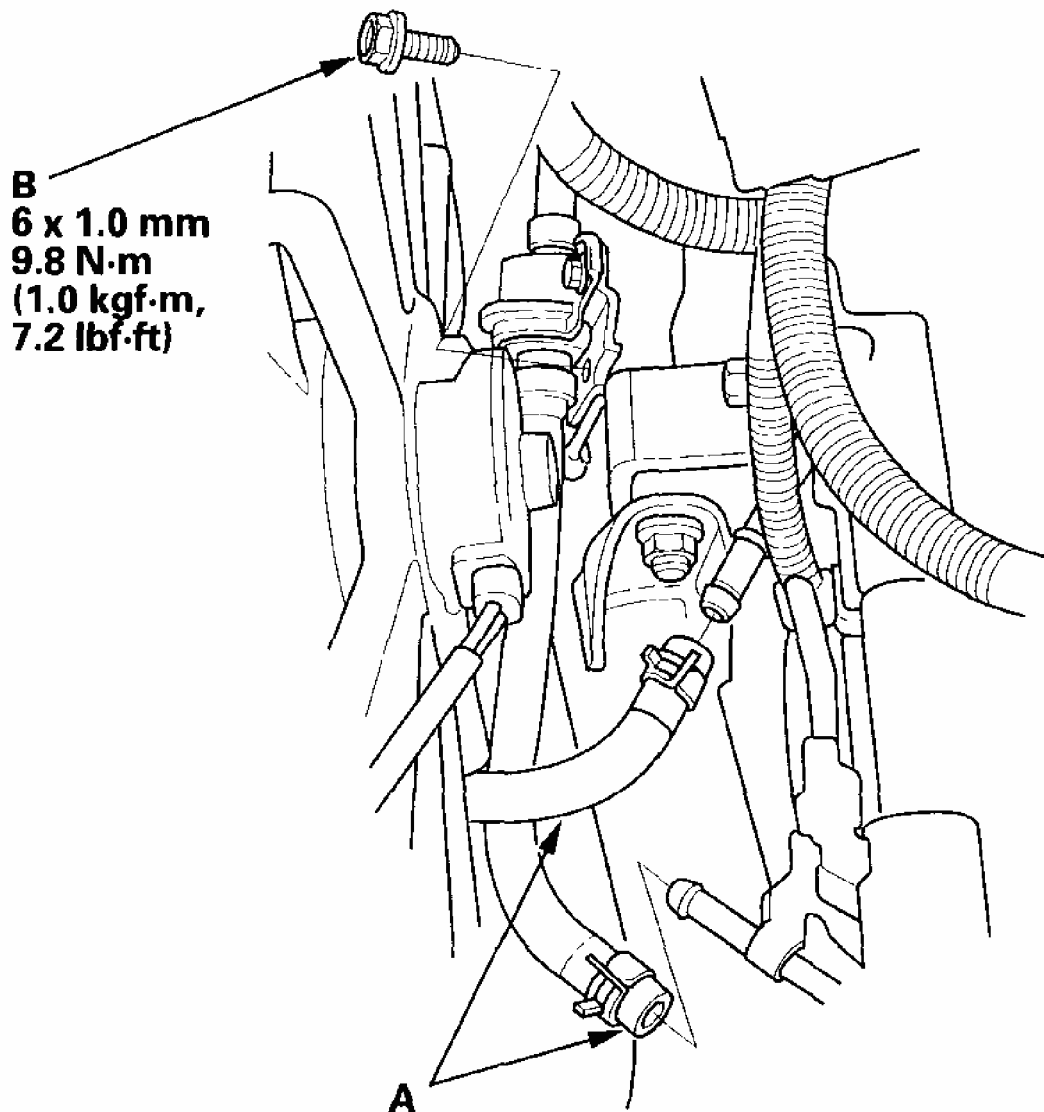
36. Install the upper radiator hose (A) and heater hoses (B).



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Fig. 43: Installing Upper Radiator Hose And Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

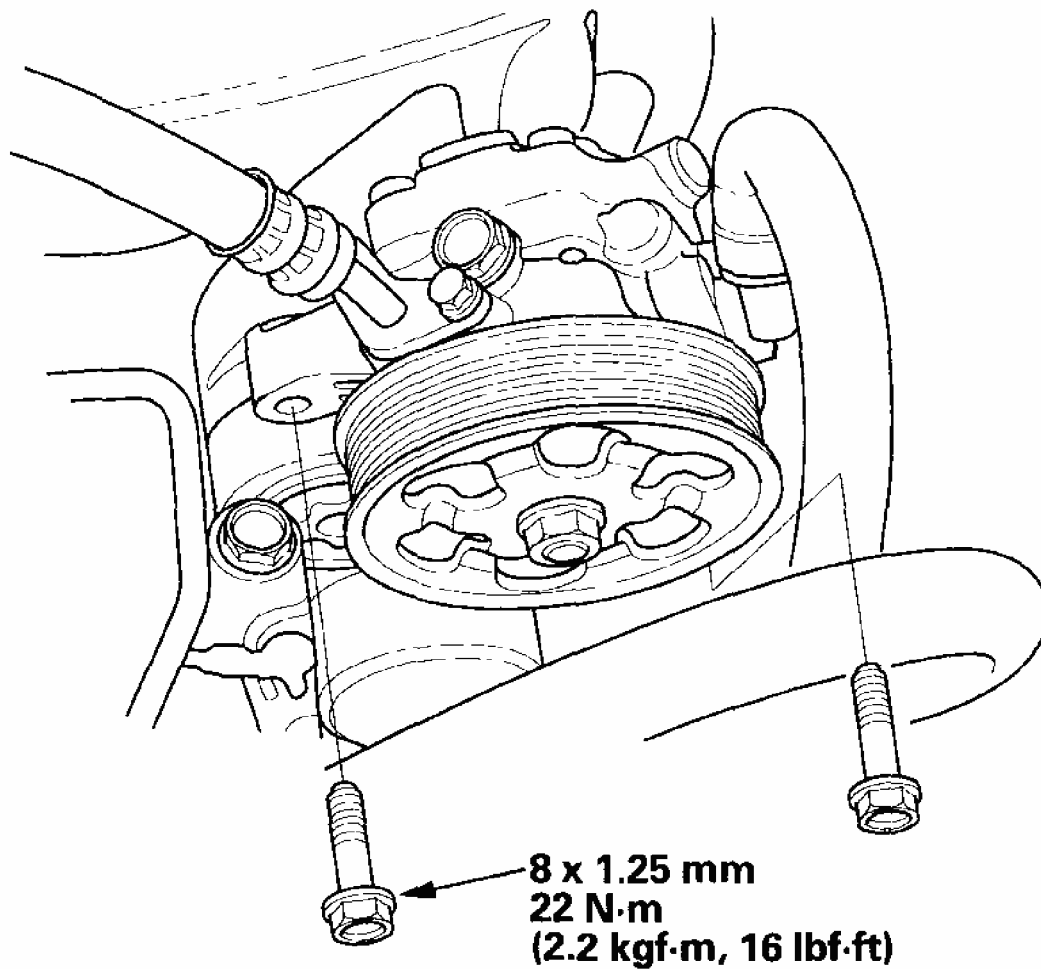
37. A/T model: Install the automatic transmission fluid (ATF) cooler hoses (A) and ATF filter mounting bolt (B).



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Fig. 44: Installing Automatic Transmission Fluid Cooler Hoses And ATF Filter Mounting Bolt (A/T Model) With Specified Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

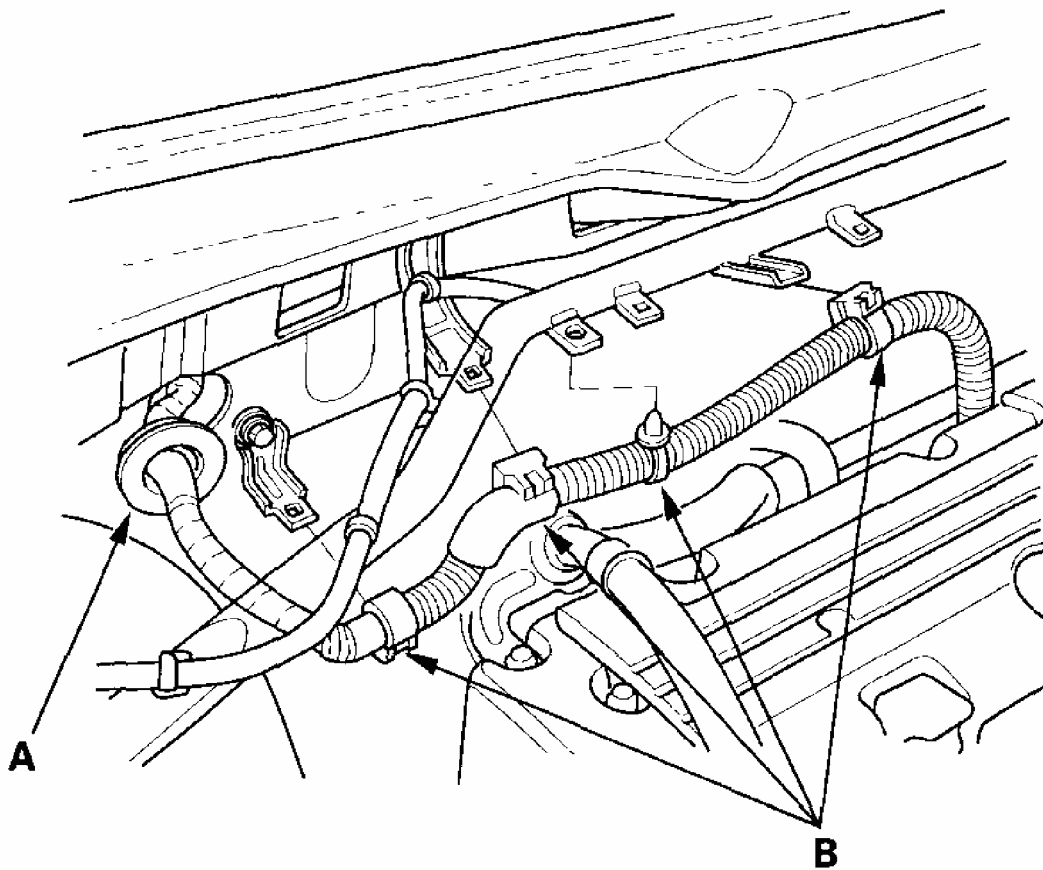
38. Install the P/S pump.



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Fig. 45: Installing Power Steering Pump And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

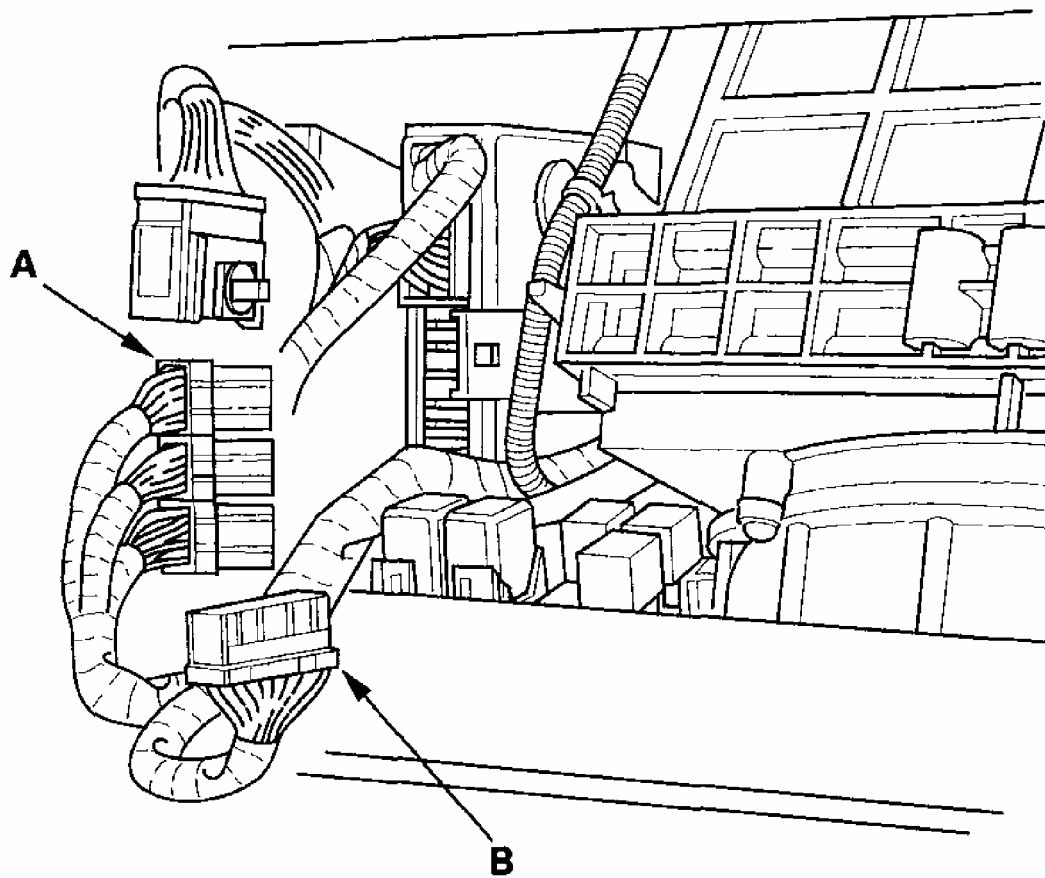
39. Install the drive belt (see **DRIVE BELT INSPECTION**).
40. M/T model: Install the shift cables (see step 22 on **TRANSMISSION INSTALLATION**).
41. M/T model: Install the clutch slave cylinder and clutch line bracket mounting bolt (see step 21 on **TRANSMISSION INSTALLATION**).
42. Push the engine control module (ECM)/powertrain control module (PCM) connector through the bulkhead, then install the grommet (A).



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Fig. 46: Installing Grommet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

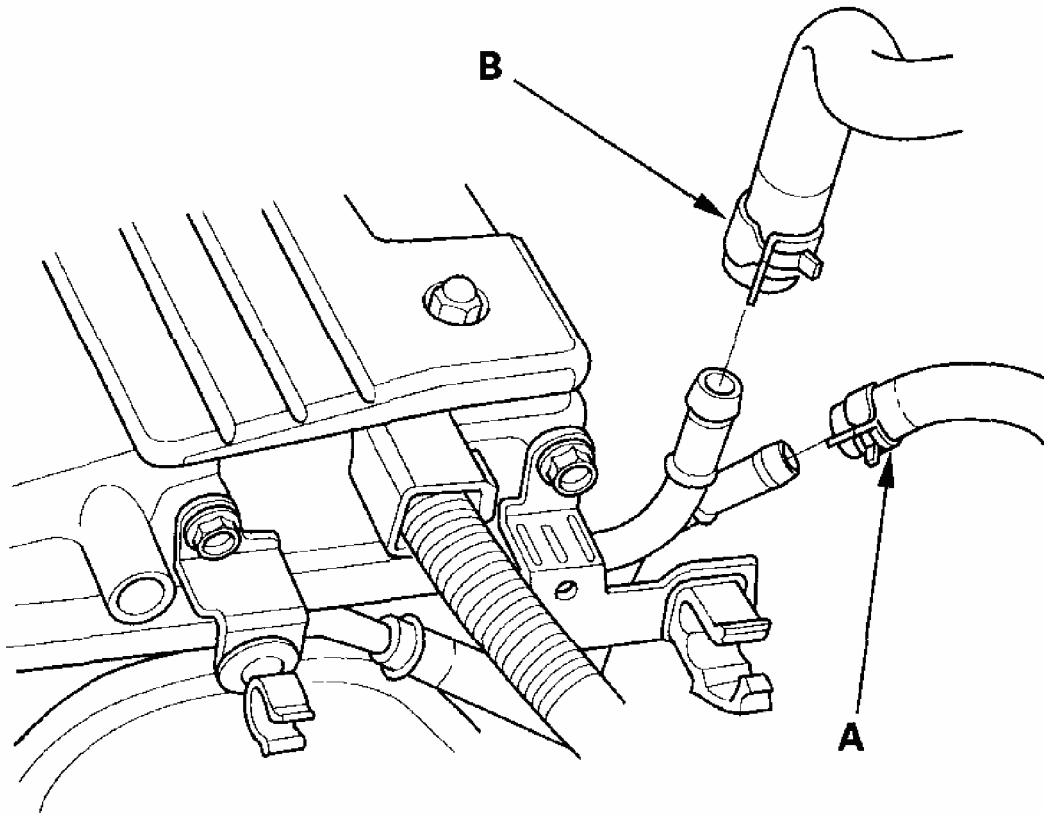
43. Install the harness clamps (B).
44. Connect the ECM/PCM connectors (A) and ECM/PCM wire harness connector (B).



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Fig. 47: Connecting ECM/PCM Connectors And Wire Harness Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

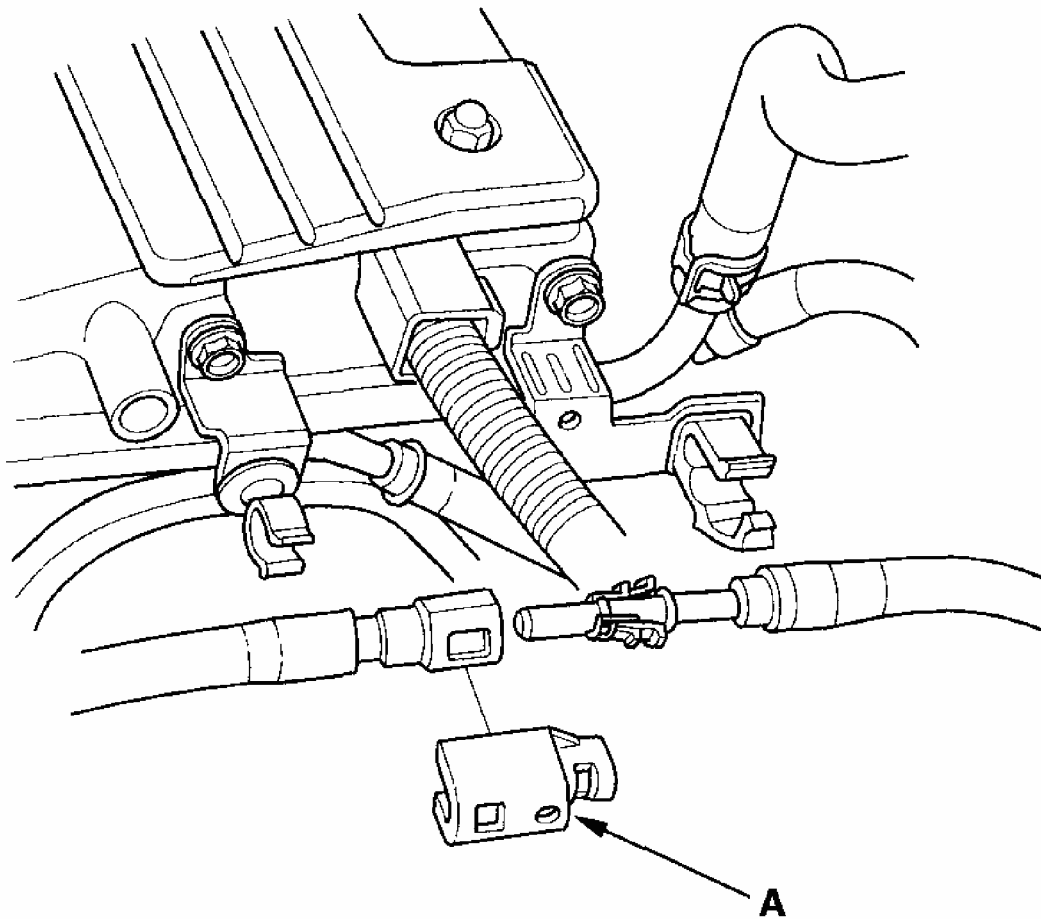


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Fig. 48: Installing Evaporative Emission Canister Hose And Brake Booster Vacuum Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

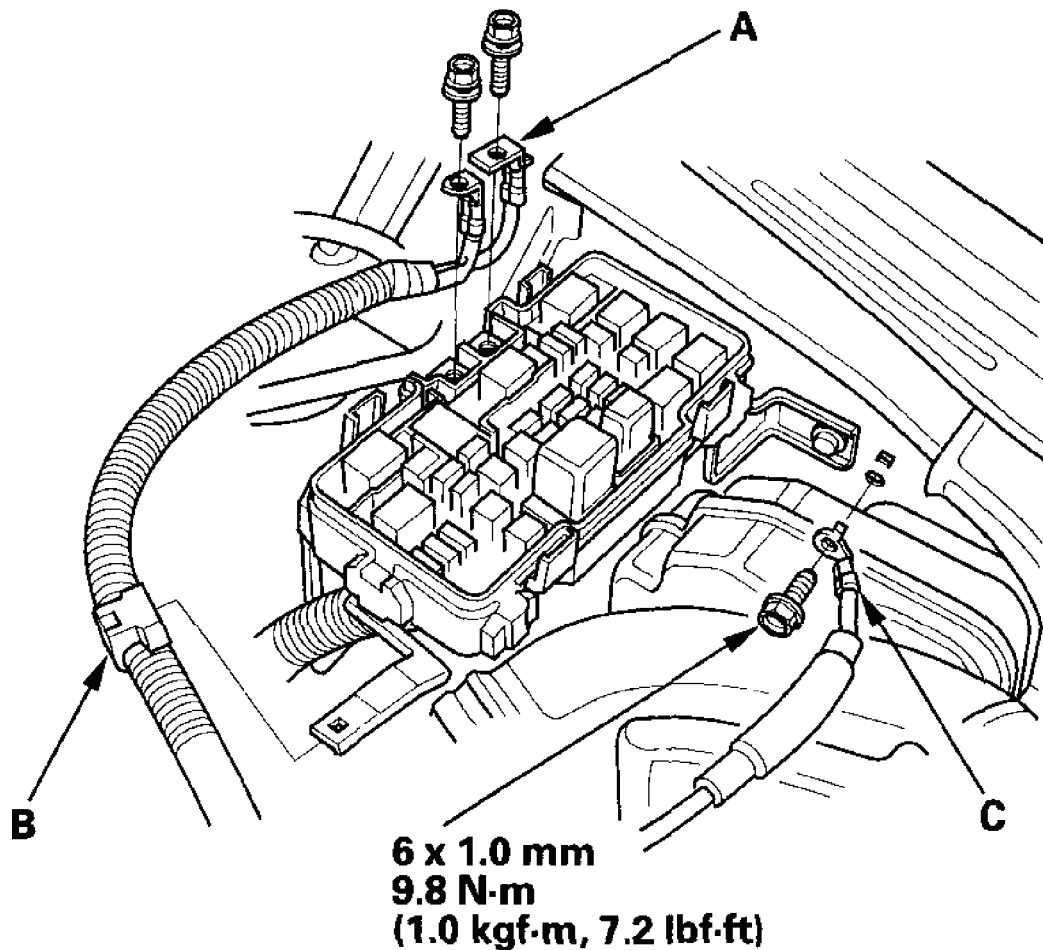
46. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (A).



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Fig. 49: Connecting Fuel Feed Hose And Installing Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Install the battery cables (A) and harness clamp (B) to the under-hood fuse/relay box.

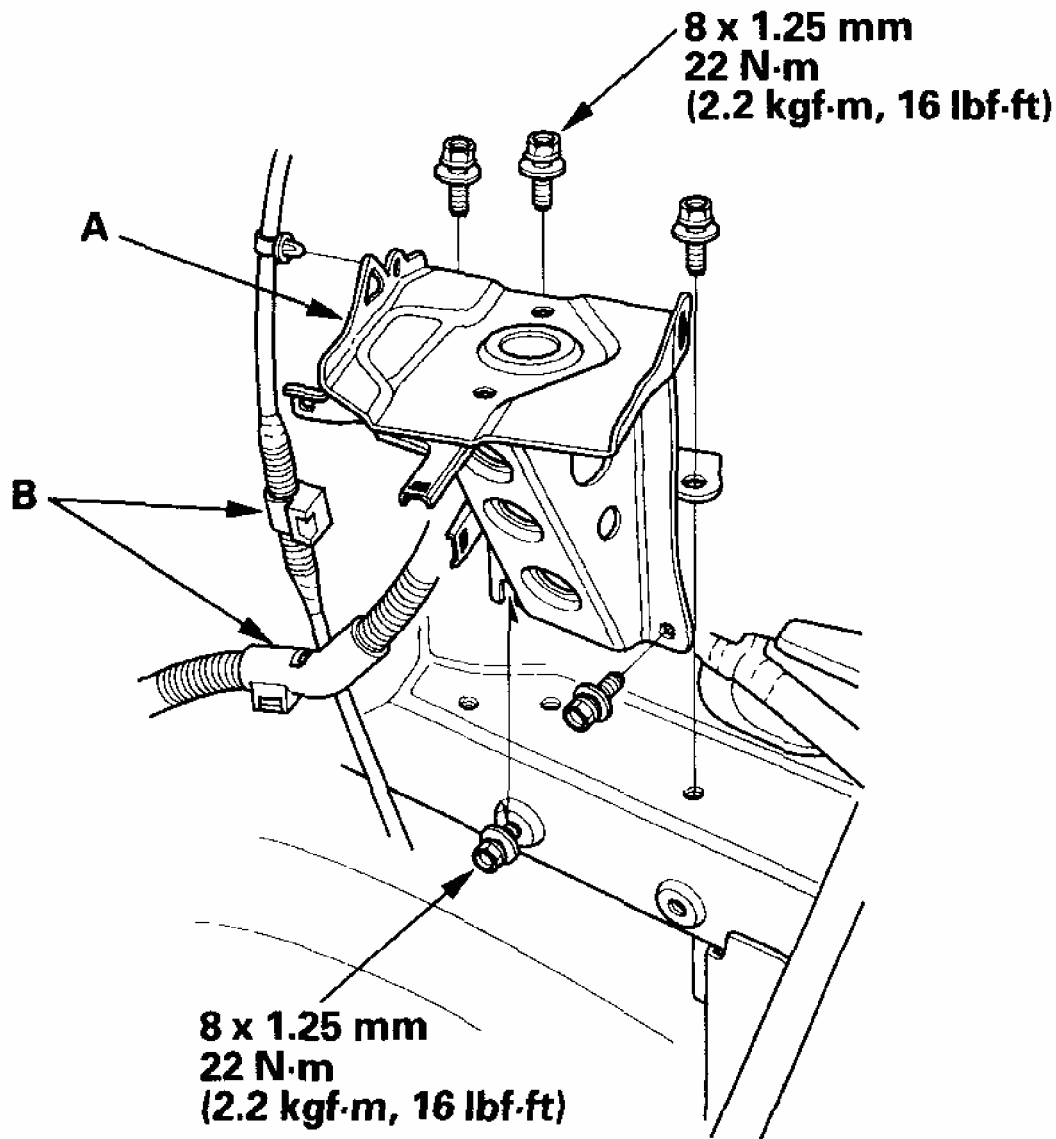


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Fig. 50: Installing Battery Cables And Harness Clamp To Under-Hood Fuse/Relay Box With Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Install the ground cable (C).
49. Install the throttle cable (see **THROTTLE CABLE REMOVAL/INSTALLATION**), then adjust it (see **RESONATOR REMOVAL/INSTALLATION**).
50. Install the cruise control actuator cable (see **CRUISE CONTROL ACTUATOR/CABLE REPLACEMENT**), then adjust it (see **CRUISE CONTROL ACTUATOR CABLE ADJUSTMENT**).
51. Install the battery base (A), then install the harness clamps (B).

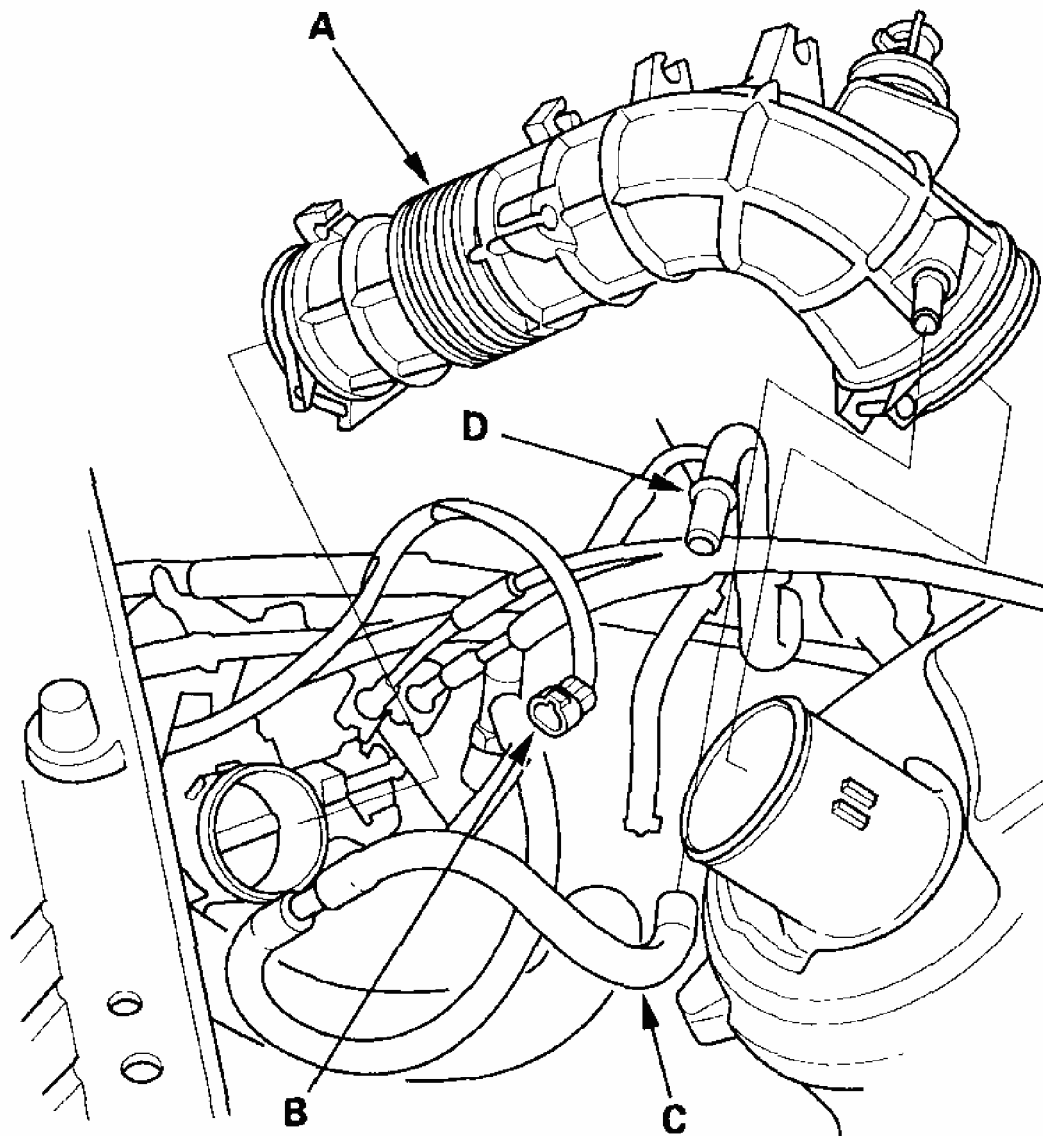


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Fig. 51: Installing Battery Base And Install Harness Clamps And Specified Torques

Courtesy of AMERICAN HONDA MOTOR CO., INC.

52. Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
53. Install the air intake duct (A), then connect the intake air temperature (IAT) sensor connector (B), and install the vacuum hose (C) and breather pipe (D).



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**Fig. 52: Installing Air Intake Duct, Vacuum Hose And Breather Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.**

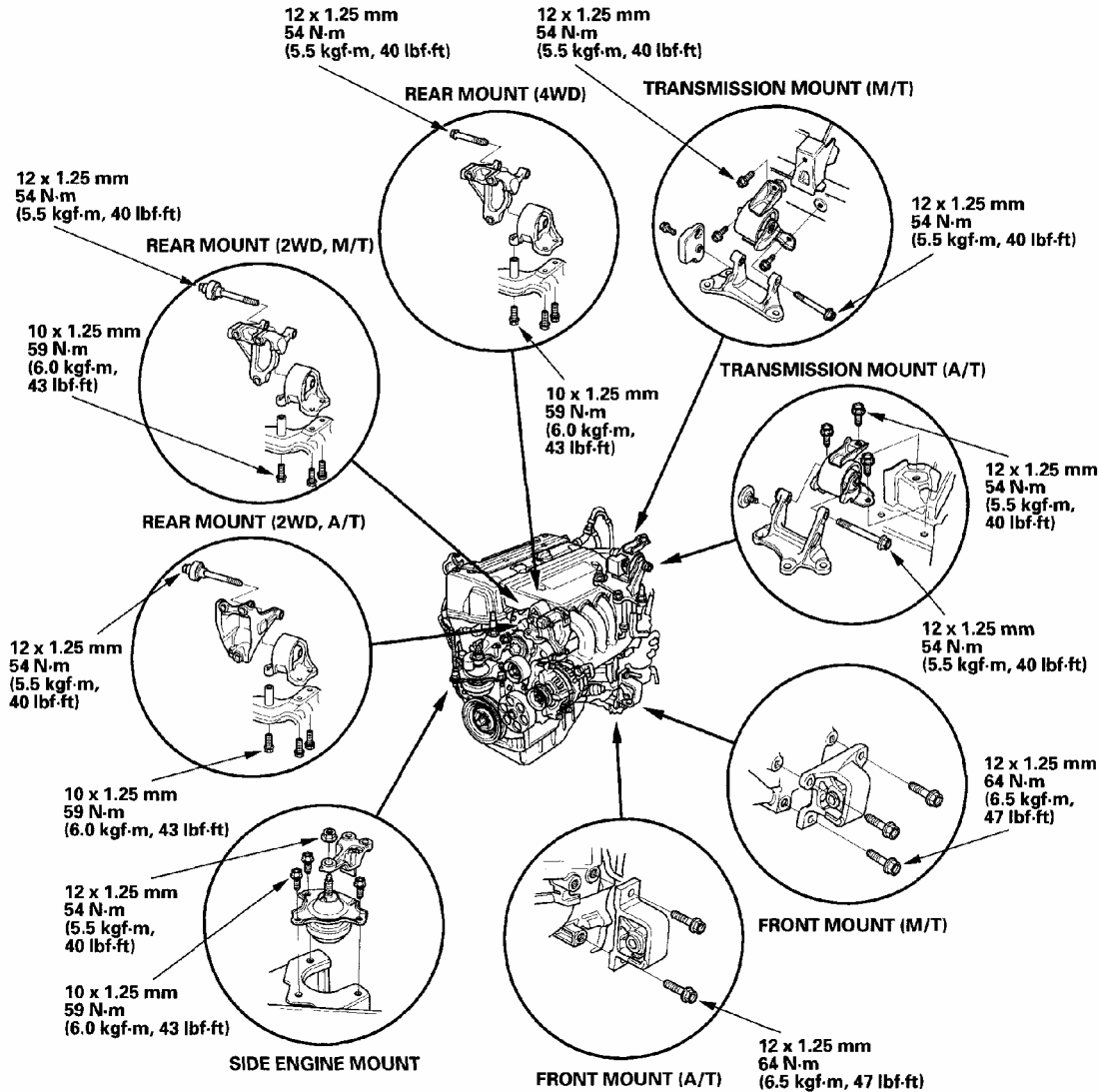
54. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
55. A/T model: Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
56. M/T model: Check that the transmission shifts into gear smoothly.
57. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so 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.
58. Refill the engine with engine oil (see **ENGINE OIL REPLACEMENT**).
 59. Refill the transmission with fluid:
 - Manual transmission (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**)
 - Automatic transmission (see **ATF REPLACEMENT**)
 60. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 7 on **COOLANT REPLACEMENT**).
 61. Do the ECM/PCM reset procedure (see **ECM/PCM RESET**).
 62. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
 63. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
 64. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
 65. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).
 66. Enter the anti-theft codes for the radio, then enter the customer's audio presets.
 67. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).
 68. Set the clock.

ENGINE MOUNT REPLACEMENT

2004 Honda Element DX

2003-06 ENGINE Engine Assembly - Element



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Fig. 53: View Of Various Engine Mounts And Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.