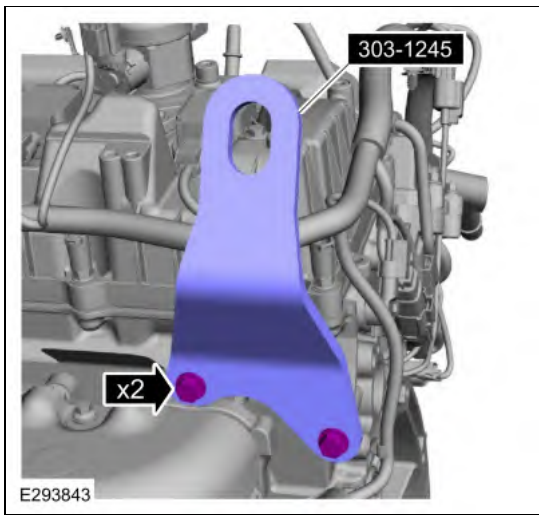
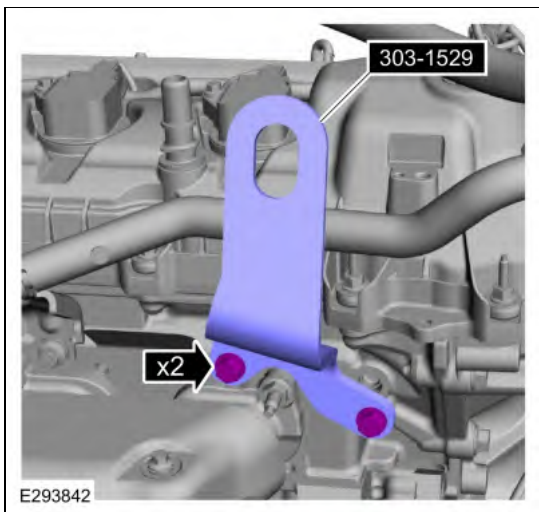
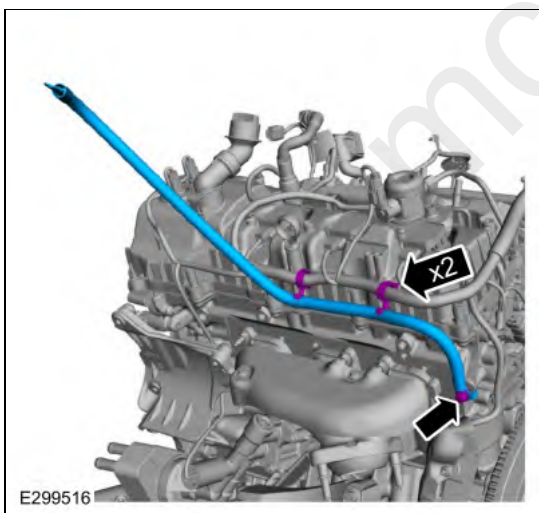




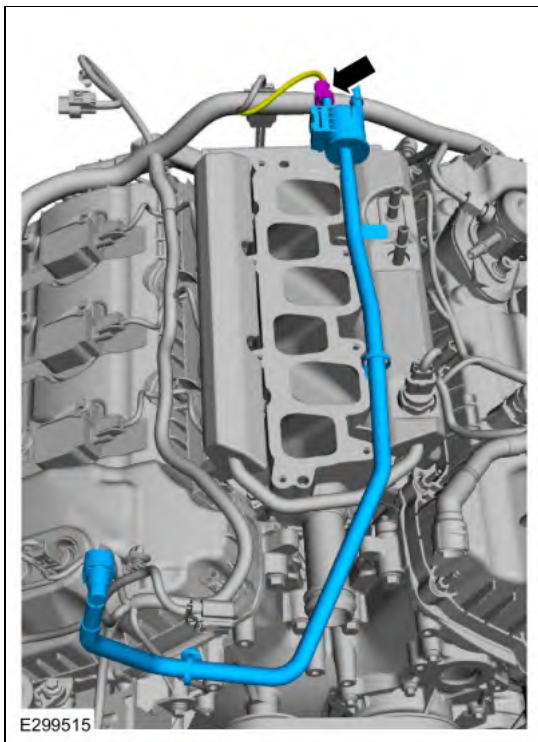
5. Remove Special Service Tool: 303-1529 Lift Eye, Engine.



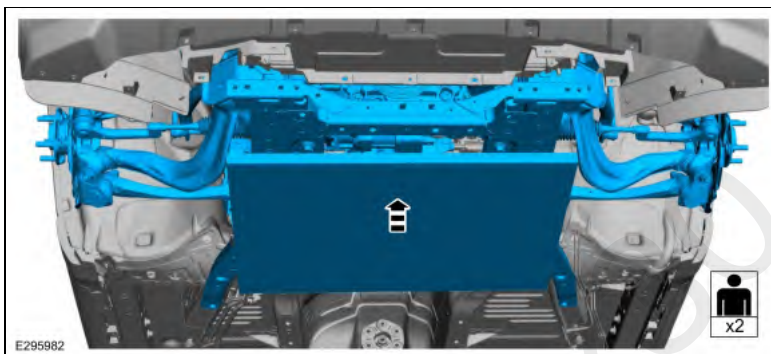
6. Install the ground wire, bolt and attach the retainers.
Torque: 80 lb.in (9 Nm)



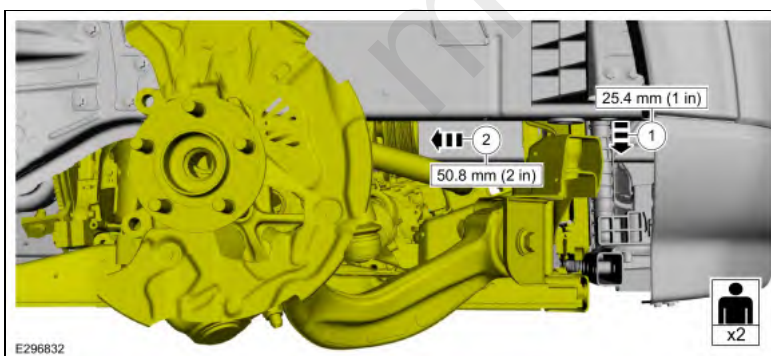
7. • Install the EVAP canister purge valve and connect the wiring harness electrical connector.



8. With the aid of an assistant and using the powertrain jack, raise the powertrain and subframe as an assembly 25.4 mm (1 in) from the frame.



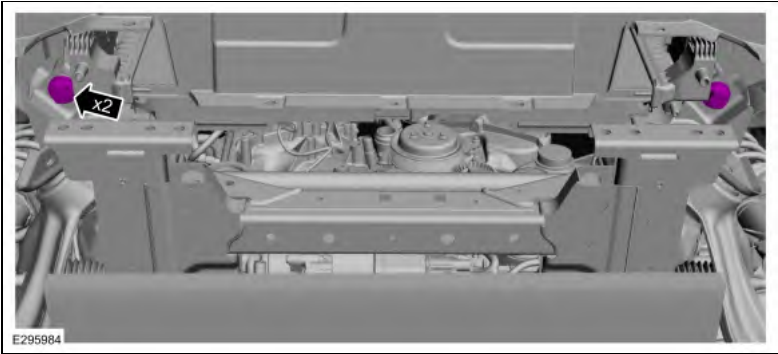
- 9.
1. With the aid of an assistant and using the powertrain jack, position the powertrain and subframe forwards 50.8 mm (2 in).
 2. With the aid of an assistant and using the powertrain jack, raise the powertrain and subframe 25.4 mm (1 in).



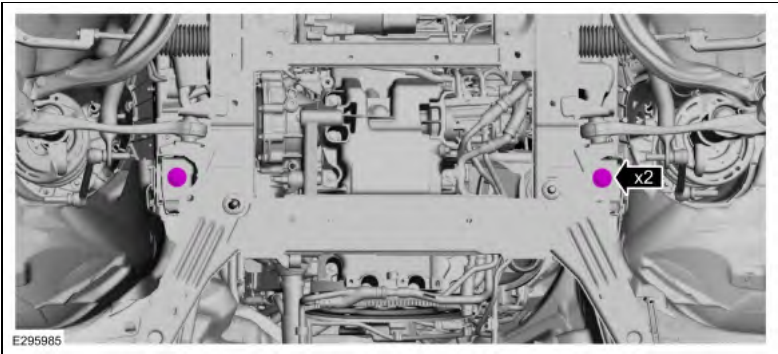
10. Install the new rear subframe bolts finger tight.



11. Install the new front subframe bolts finger tight.



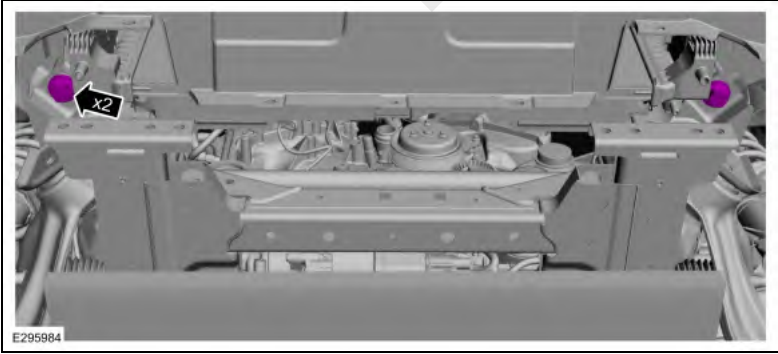
12. Install the new middle subframe bolts finger tight.



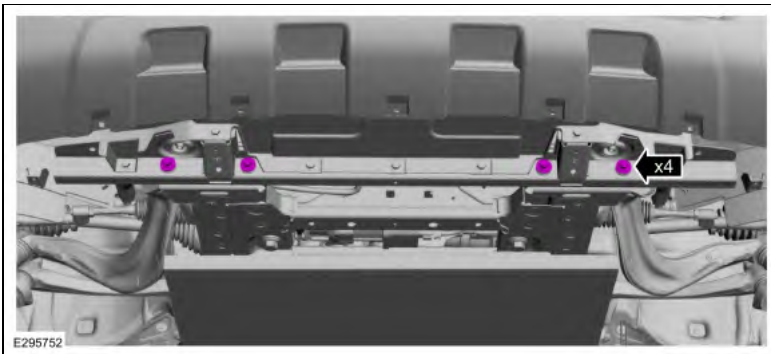
13. Tighten the rear subframe bolts.
Torque: 52 lb.ft (70 Nm)



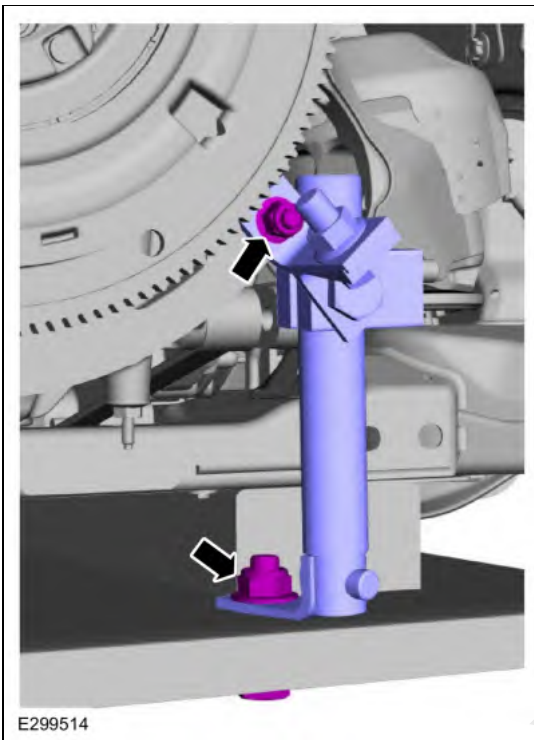
14. Tighten the front subframe bolts.
Torque: 195 lb.ft (265 Nm)



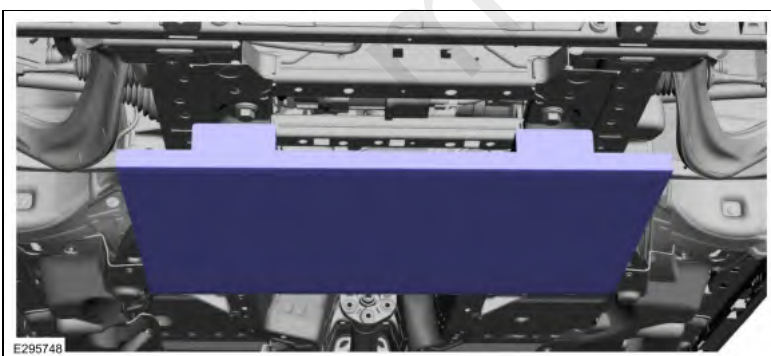
15. Install the front radiator support bar bolts.
Torque: 46 lb.ft (63 Nm)



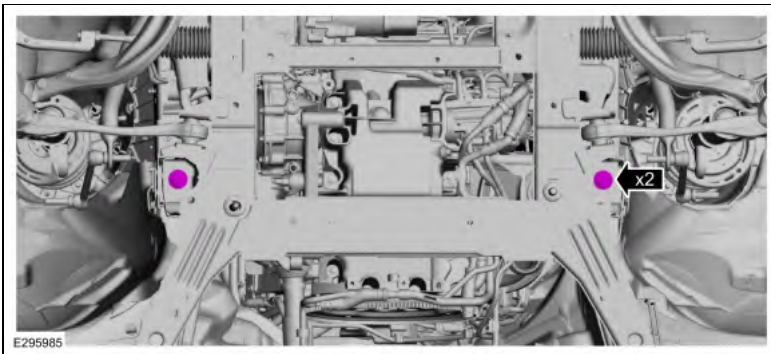
16. Remove.
Use the General Equipment: Adjustable Mounting Arm



17. Remove the powertrain jack and wooden blocks
Use the General Equipment: Wooden Block

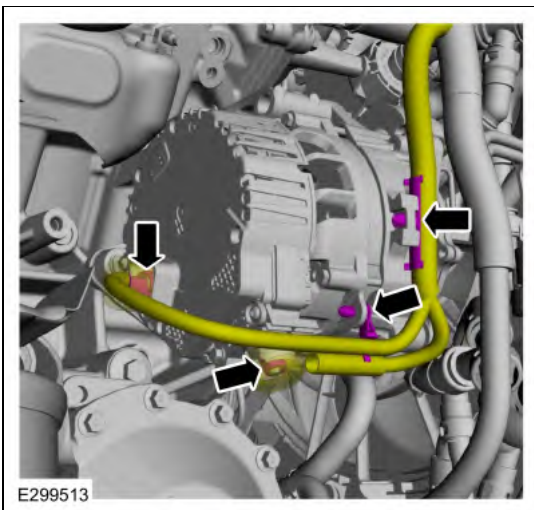


18. Tighten the middle subframe bolts.
Torque: 195 lb.ft (265 Nm)

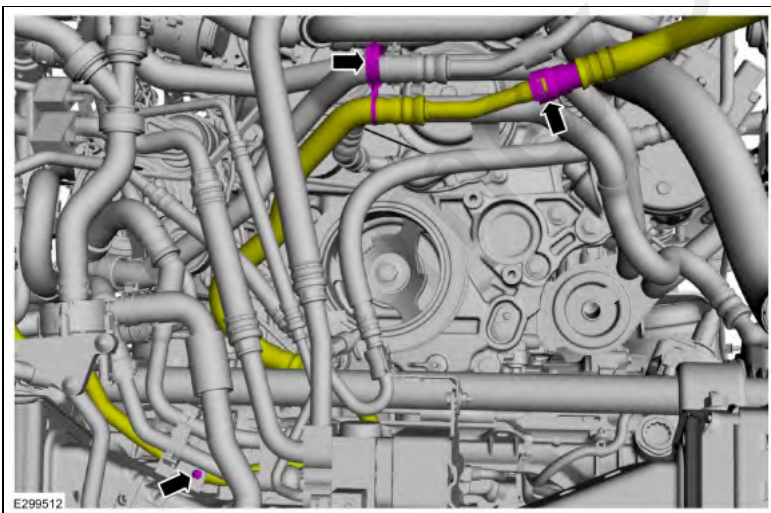


19.

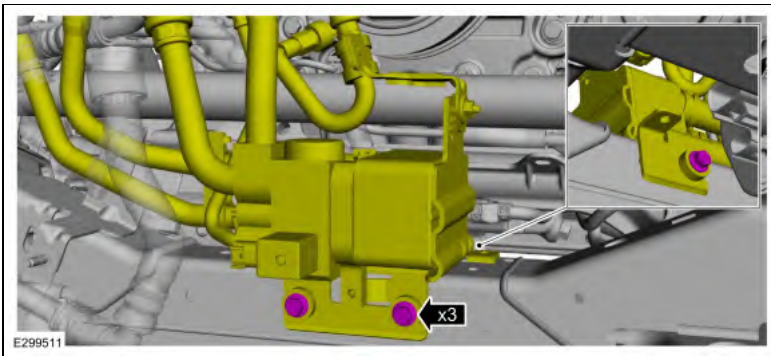
- Attach the wiring harness retainers.
- Connect the generator electrical connector and position the protective cover.
- Install the B+ wire terminal, nut and position the protective cover
Torque: 150 lb.in (17 Nm)



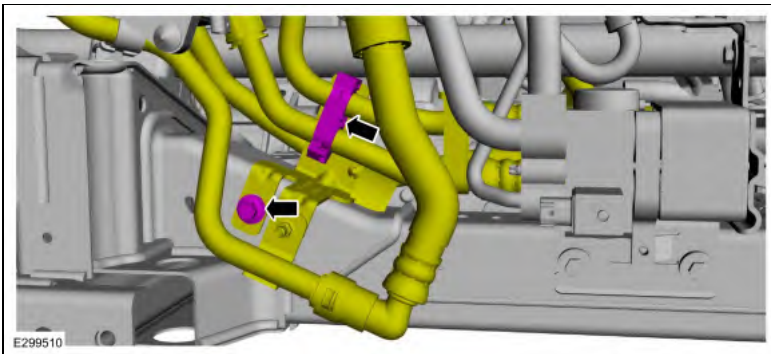
20. Position the coolant tube under the sway bar towards the engine and connect the coolant hose and retainer.



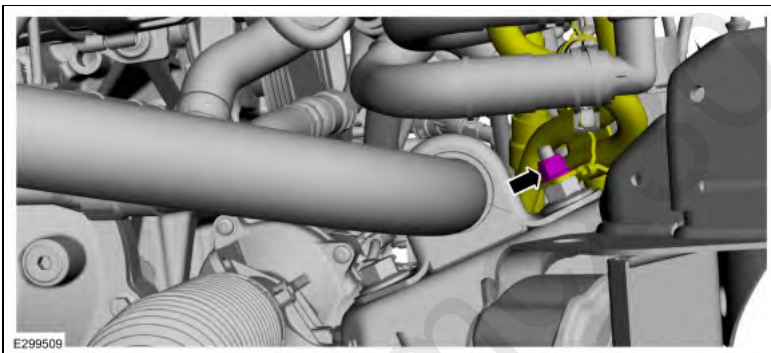
21. Position coolant valve assembly and install the bolts.
Torque: 80 lb.in (9 Nm)



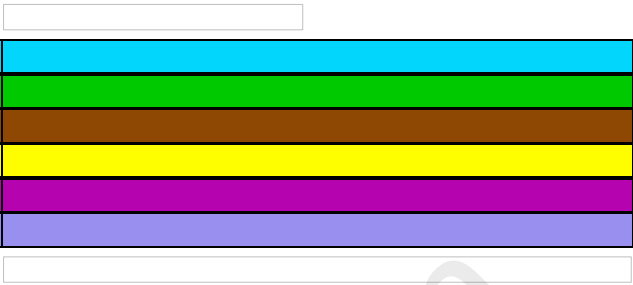
- 22.
- Position the coolant tubes bracket and install bolt.
Torque: 80 lb.in (9 Nm)
 - Attach the coolant tubes retainer to the bracket.



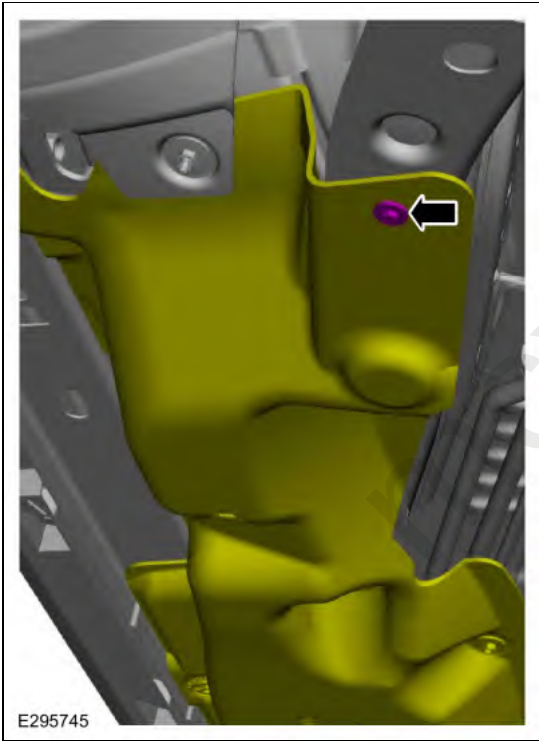
23. Position A/C line bracket and install the nut to the sway bar stud bolt.
Torque: 133 lb.in (15 Nm)



24. Position the LH underbody shield and install the bolt.
Torque: 22 lb.in (2.5 Nm)

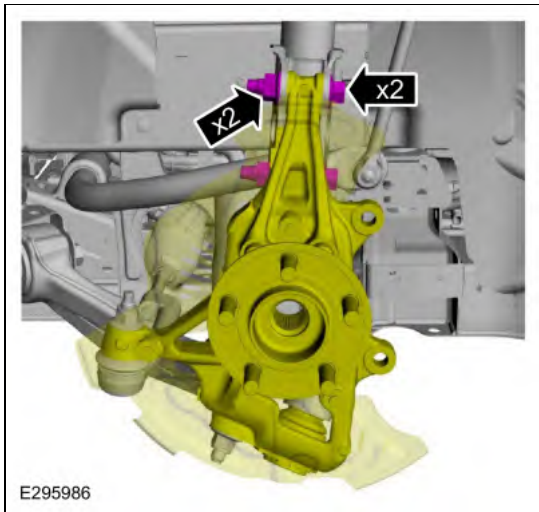


25. Position the RH underbody shield and install the bolt.
Torque: 22 lb.in (2.5 Nm)

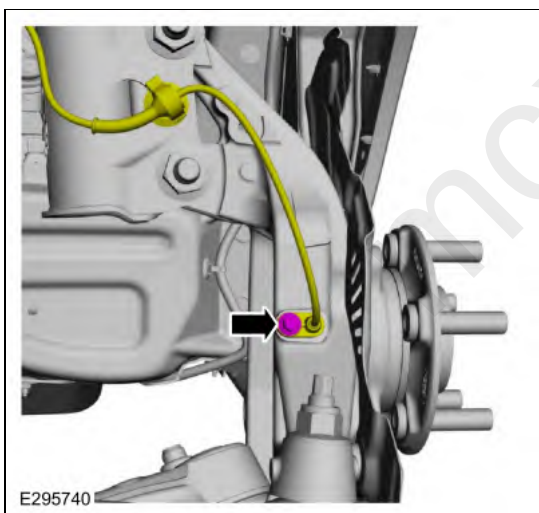


LHD RWD

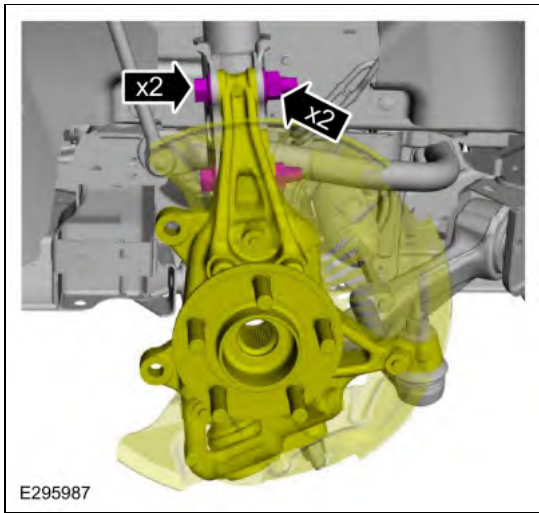
26. Position the LH strut and install the new nuts and bolts.
Torque: 166 lb.ft (225 Nm)



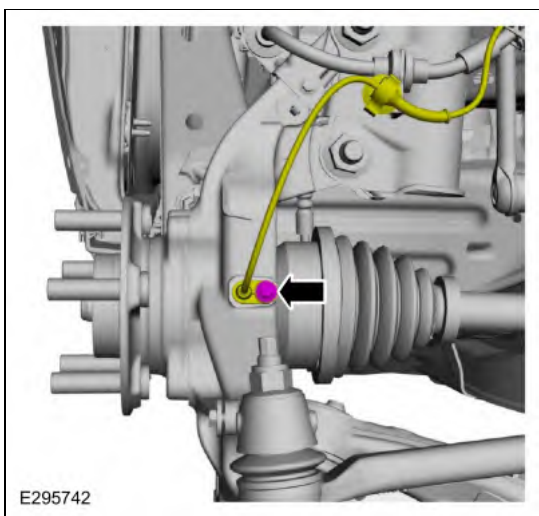
27. Install the LH anti-lock sensor and the bolt.
Torque: 80 lb.in (9 Nm)



28. Position the RH strut and install the new nuts and bolts.
Torque: 166 lb.ft (225 Nm)



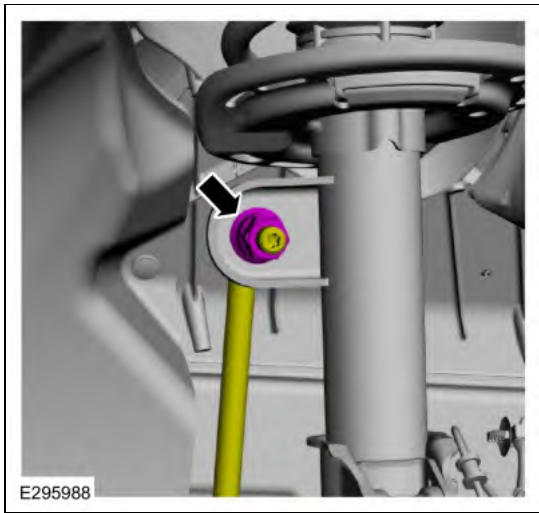
29. Install the RH anti-lock sensor and the bolt.
Torque: 80 lb.in (9 Nm)



LHD AWD/LHD RWD

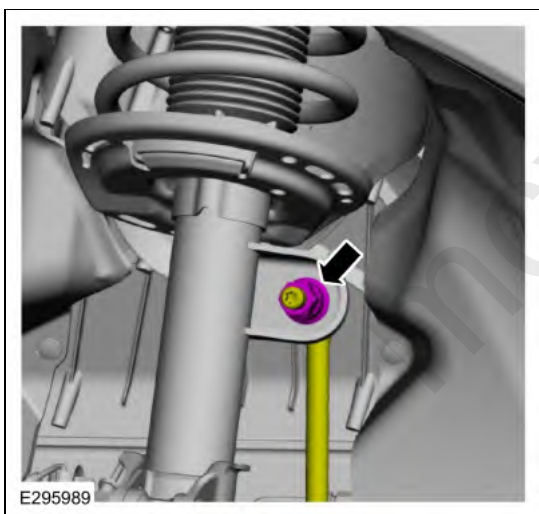
30. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

Position the RH sway bar link and install the new nut.
Torque: 129 lb.ft (175 Nm)



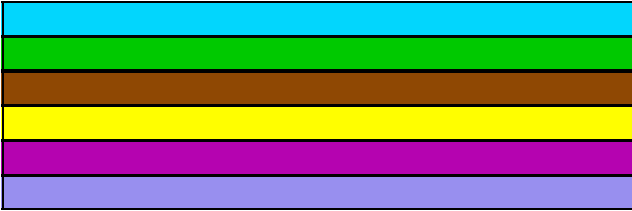
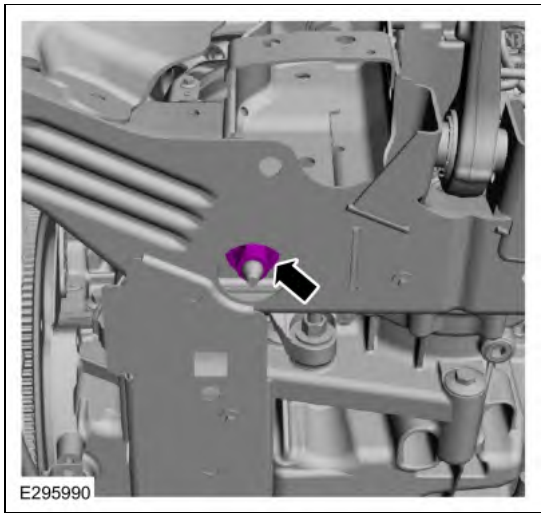
31. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

Position the LH sway bar link and install the new nut.
Torque: 129 lb.ft (175 Nm)



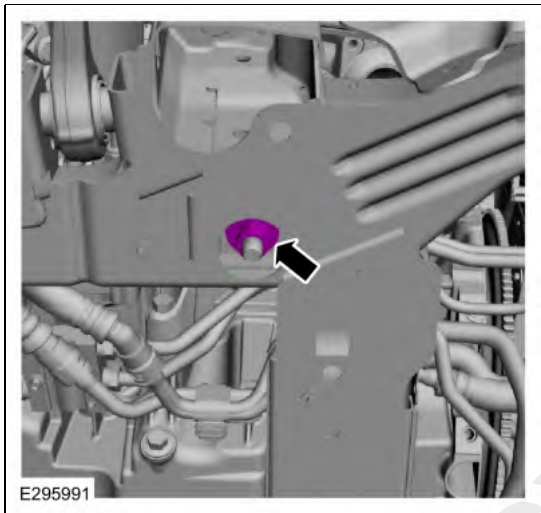
32. **NOTICE:** Only use hand tools when removing the engine mount nuts or damage to the engine mount can occur.

Install the new RH engine mount nut.
Torque: 184 lb.ft (250 Nm)

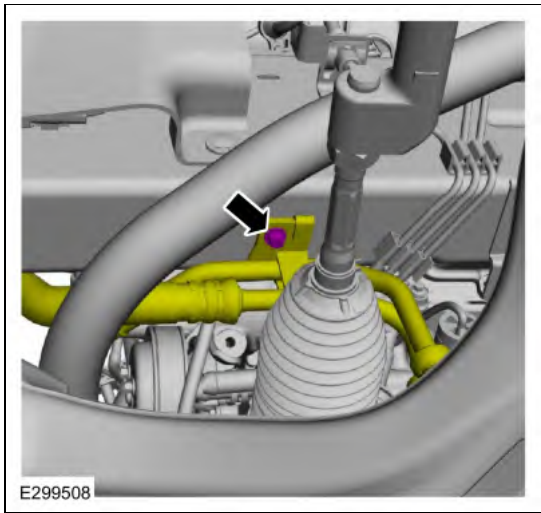


33. **NOTICE:** Only use hand tools when removing the engine mount nuts or damage to the engine mount can occur.

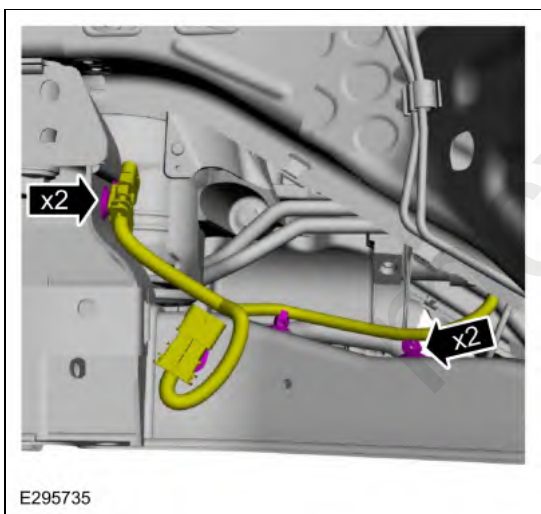
Install the new LH engine mount nut.
Torque: 184 lb.ft (250 Nm)



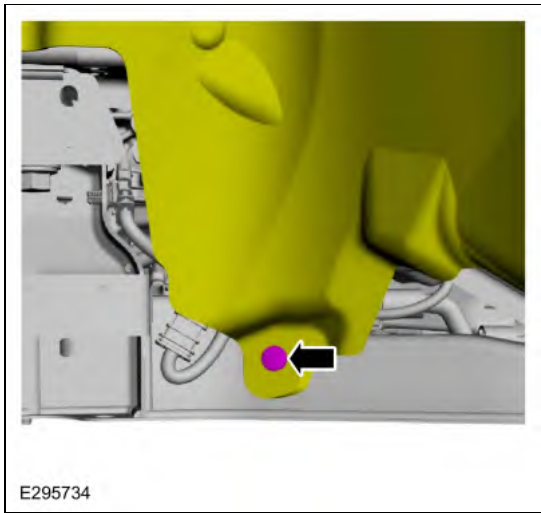
34. Position the coolant tube bracket and install the bolt to the LH side of frame rail.
Torque: 62 lb.in (7 Nm)



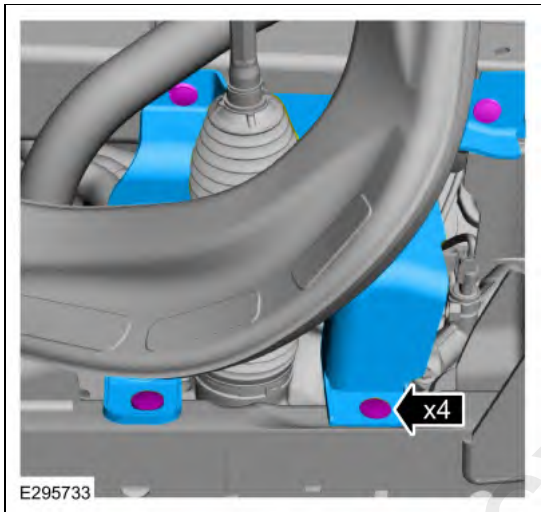
35. Attach the HO2S wiring harness retainers to LH subframe.



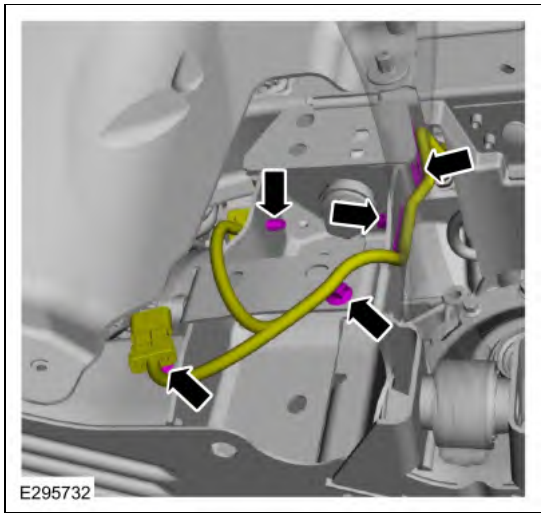
36. Position the splash shield and install the pin-type retainer to the LH subframe.



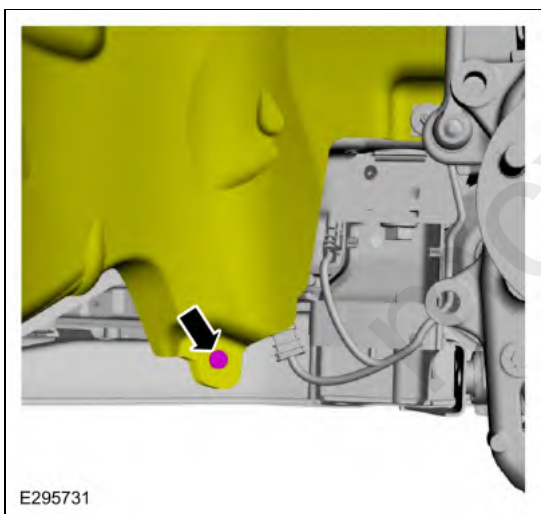
37. Install the steering shield pin-type retainers to the LH subframe.



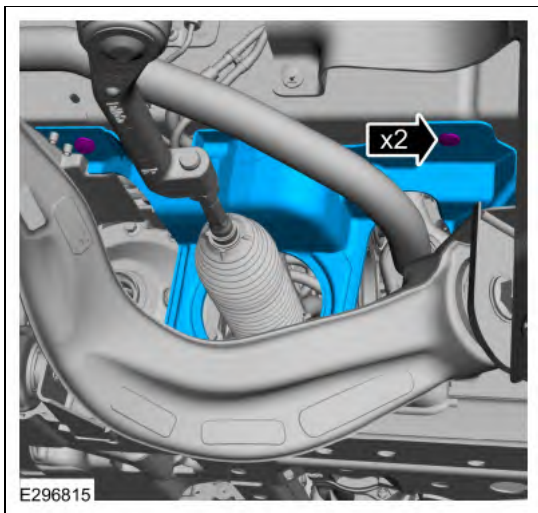
38. Attach the HO2S wiring harness retainers to the RH subframe.



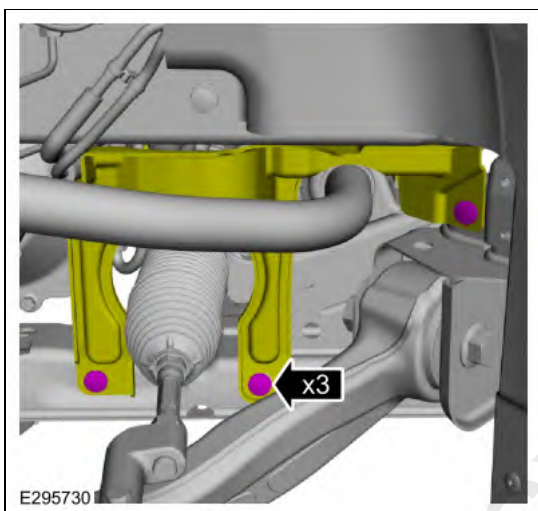
39. Install the splash shield pin-type retainer to the RH subframe.



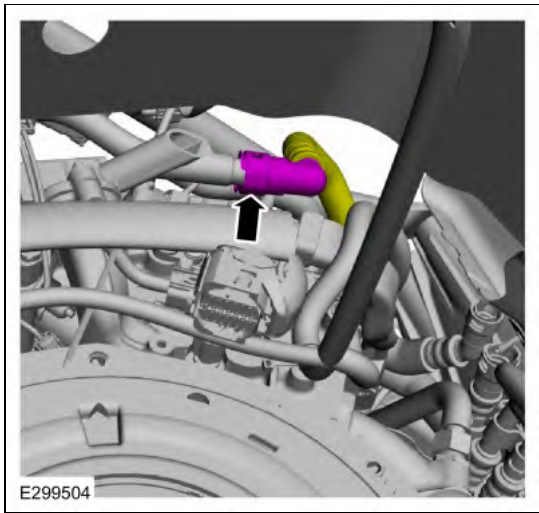
40. Install the steering shield and the pin-type retainers to the RH subframe.



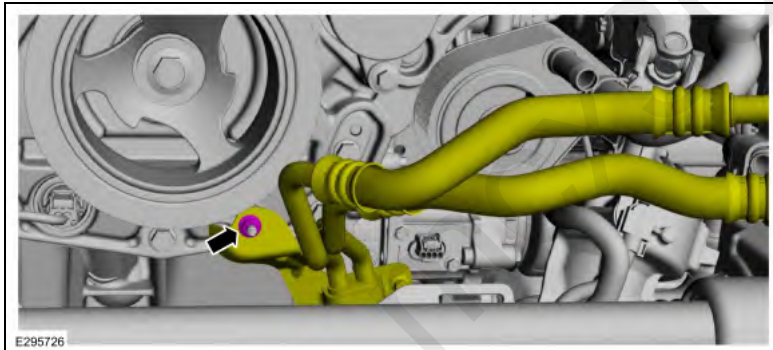
41. Install the steering shield pin-type retainers to the RH subframe.



42. Connect the heater hose to the lower intake manifold at the rear of the engine.



43. If equipped, position the transmission cooling tube bracket on the stud bolt and install the nut.
Torque: 97 lb.in (11 Nm)

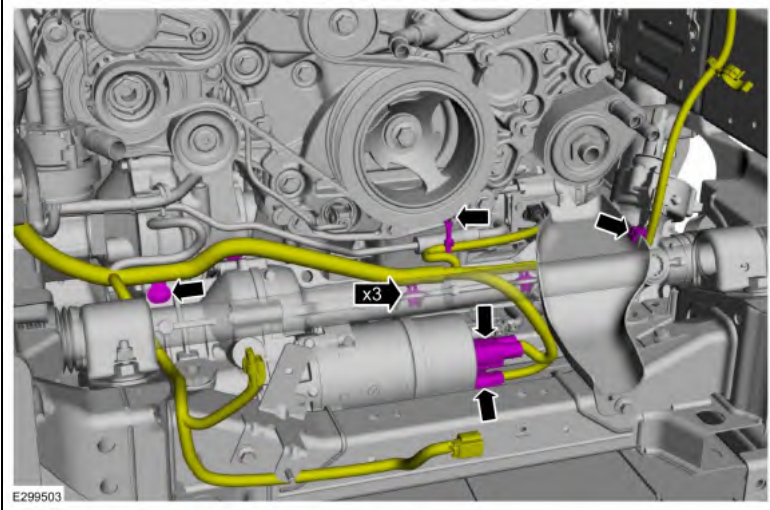


44. **NOTE:** *Do not fill the transmission until the engine is completely installed.*

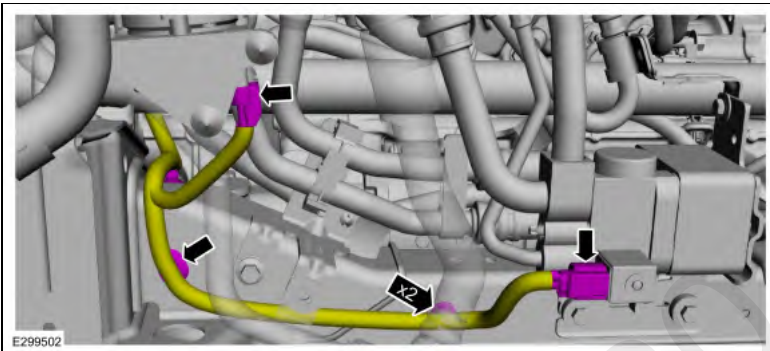
Install the transmission.

Refer to: Transmission - 3.3L Duratec-V6 â€ Hybrid (BP) (307-01C Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€ 10R80 MHT, Removal and Installation).

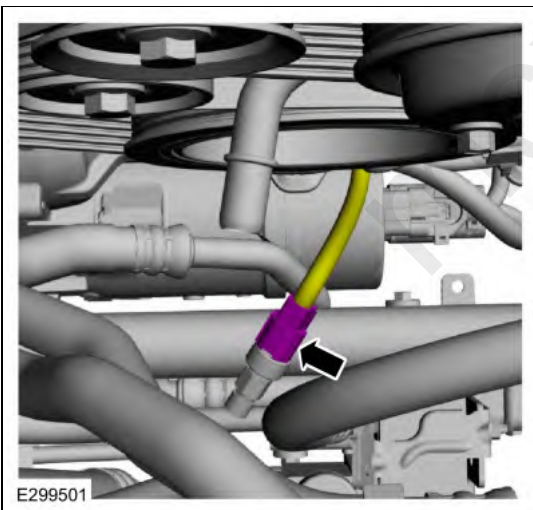
45. Position the wiring harness and connect the steering gear wiring harness electrical connectors and retainers.



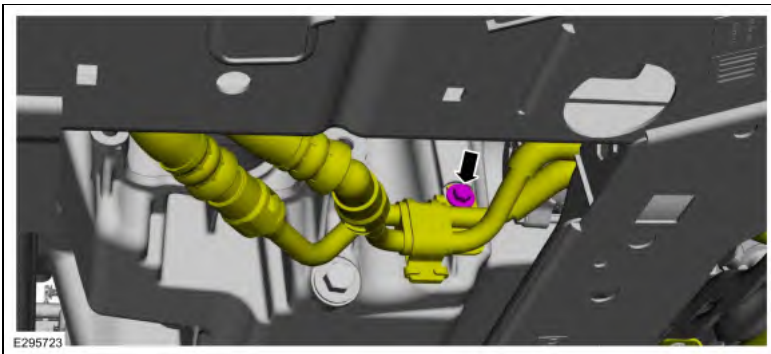
46. Connect the wiring harness electrical connectors and the retainers.



47. Connect the A/C pressure switch.

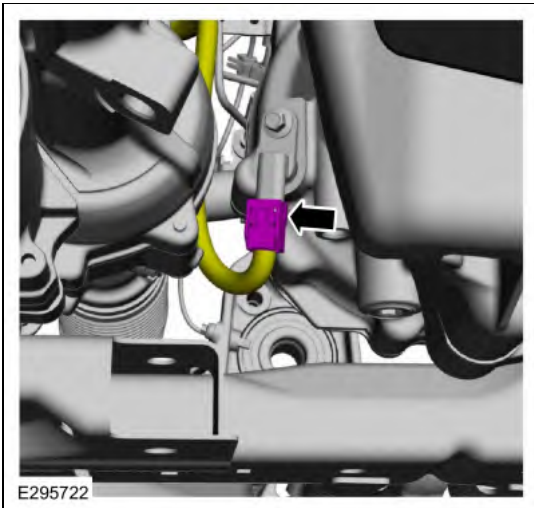


48. Position the coolant tubes and install the bolt in the oil pan.
Torque: 80 lb.in (9 Nm)

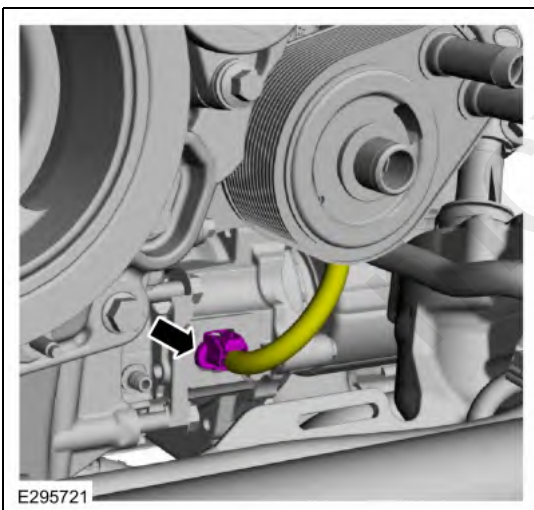


LHD AWD

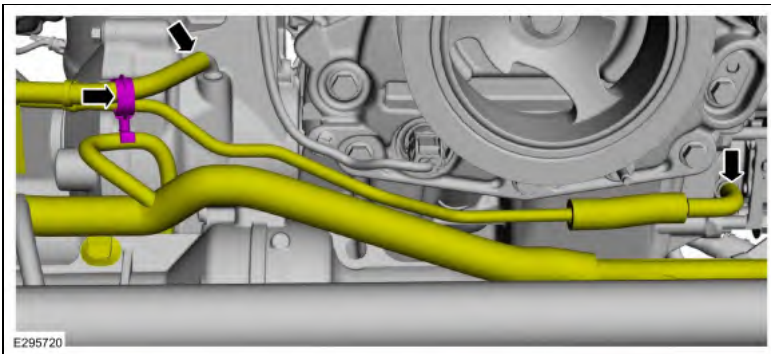
49. Connect the wiring harness electrical connector to the front axle assembly.



50. Connect the wiring harness electrical connector to the LH axle connector.



- 51.
- Position the vent tubes and connect the vent hose to the front axle assembly.
 - Attach the wiring harness retainer to the vent tubes.
 - Connect the vent hose to the LH axle connector.



52. **NOTE:** Make sure to tighten the new wheel hub nut after the brakes disc are installed.

Install the RH and LH halfshaft.

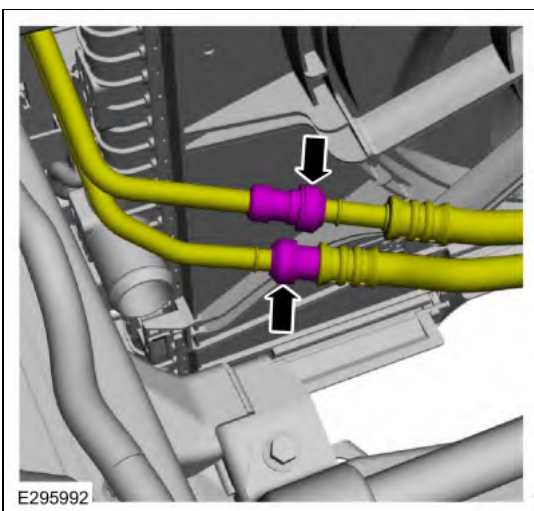
Refer to: Halfshaft (205-04 Front Drive Halfshafts, Removal and Installation).

LHD AWD/LHD RWD

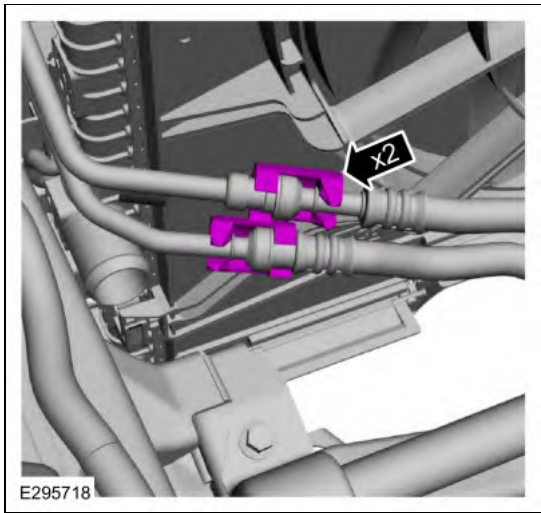
53. Install both front brake disc.

Refer to: Brake Disc (206-03 Front Disc Brake, Removal and Installation).

54. If equipped, connect the transmission fluid cooler tubes.

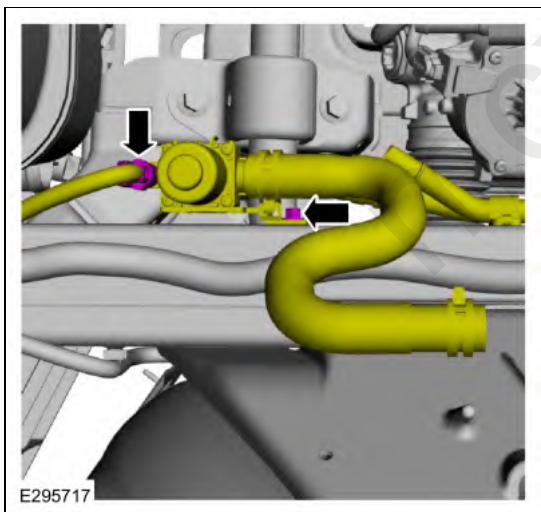


55. If equipped, install the transmission fluid cooler tube secondary latches.

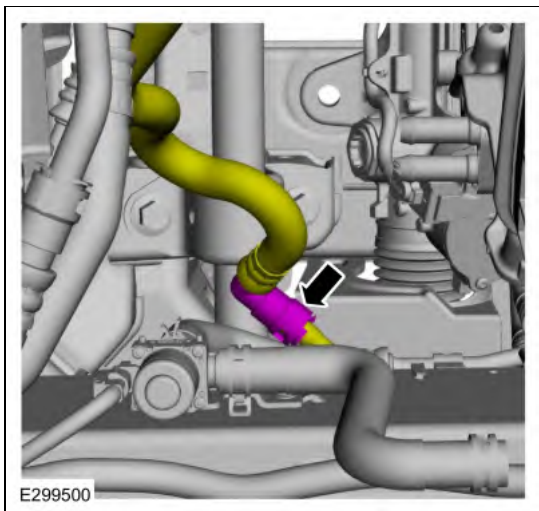


56.

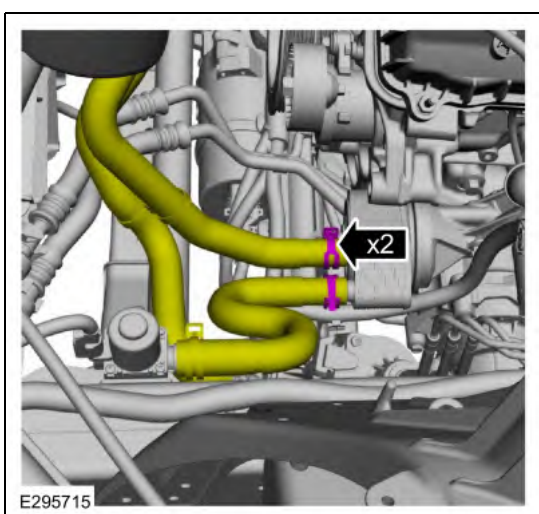
- Position the coolant solenoid bracket and install the bolt.
Torque: 62 lb.in (7 Nm)
- Connect the coolant solenoid wiring harness electrical connector.



57. Connect the coolant hose to transmission cooler hose.



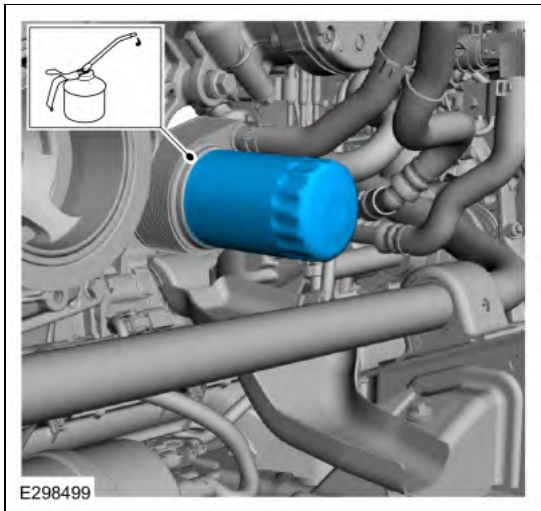
58. Connect the coolant hoses to the oil cooler.
Use the General Equipment: Hose Clamp Remover/Installer



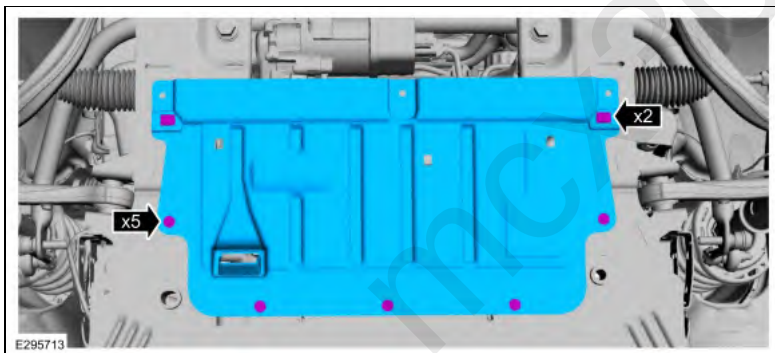
A diagram showing a vertical stack of six colored rectangles: white, cyan, green, brown, yellow, and purple. A light blue arrow points from the white rectangle to the cyan rectangle.

59.

- Lubricate the oil filter seal with clean engine oil and install and tighten in 2 stages.
- Stage 1: Install to initial gasket contact.
- Stage 2: Tighten 3/4 to 1 turn.

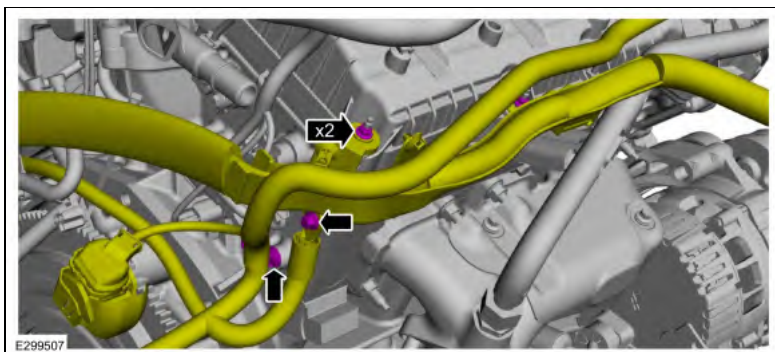


60. Install the rear underbody shield, bolts and the pin-type retainers.
Torque: 22 lb.in (2.5 Nm)

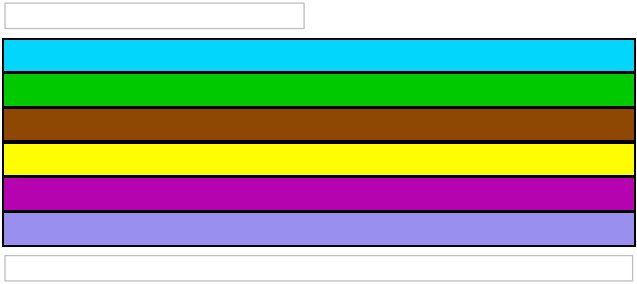
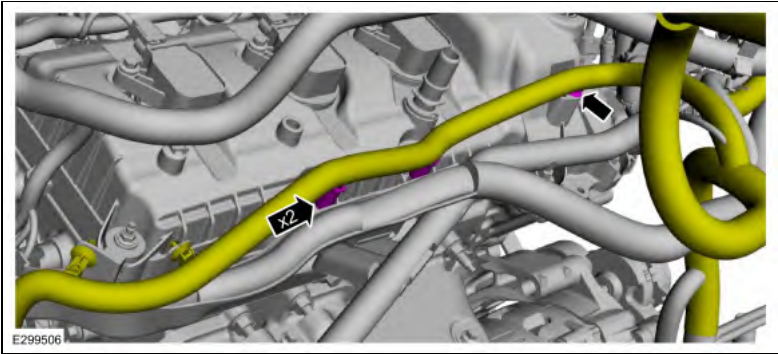


61. Install the EGR valve.
 Refer to: Exhaust Gas Recirculation (EGR) Valve (303-08D Engine Emission Control - 3.3L Duratec-V6 4-cyl Hybrid (BP), Removal and Installation).

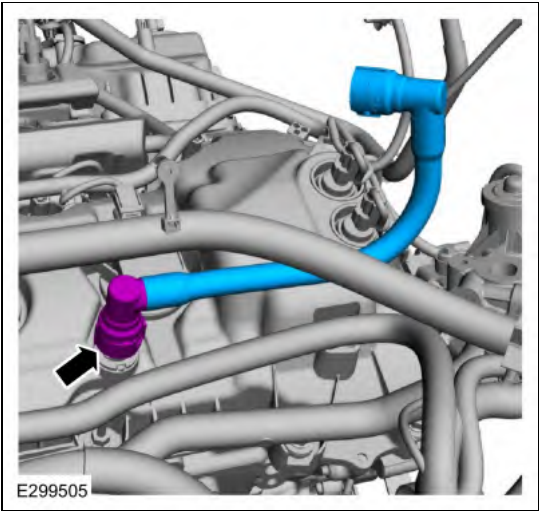
- 62.
- Attach the wiring harness retainer.
 - Position the cable and install the bolt.
Torque: 97 lb.in (11 Nm)
 - Position the high-voltage cable and install the nuts.
Torque: 62 lb.in (7 Nm)



63. Position the transmission wiring harness and attach the wiring harness retainers.

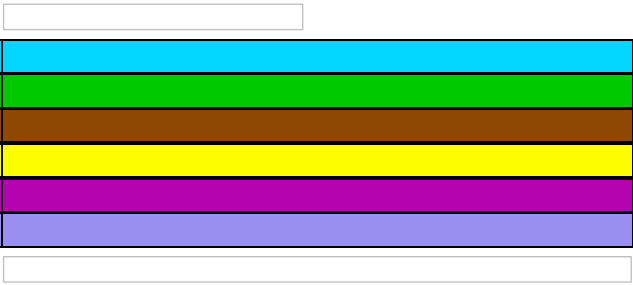
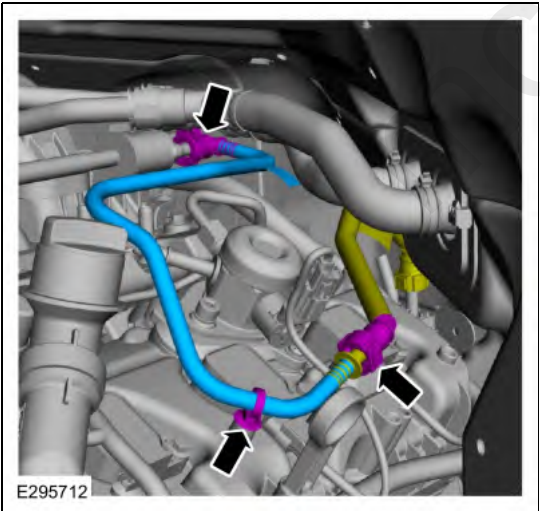


64. Install the PCV tube.

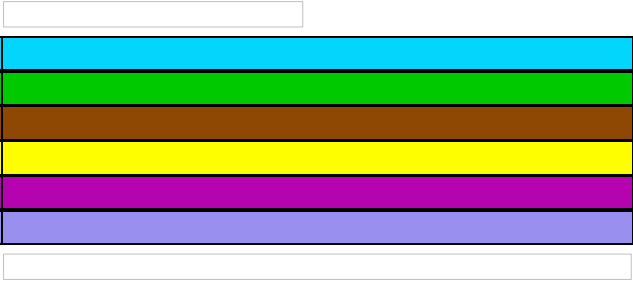
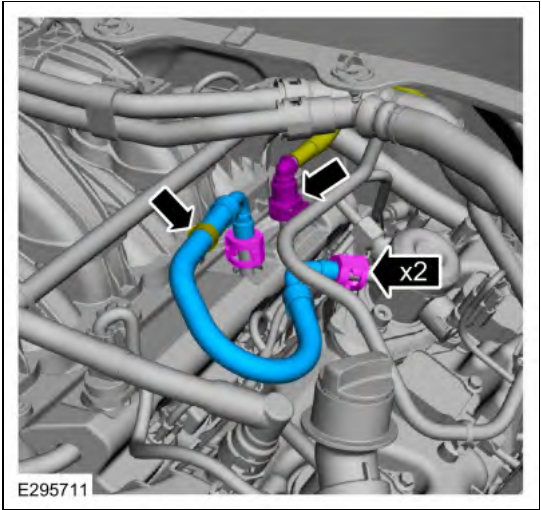


65. Install the upper intake manifold.
Refer to: Upper Intake Manifold (303-01C Engine - 3.3L Duratec-V6, Removal and Installation).

- 66.
- Install the EVAP tube and connect the quick release couplings.
 - Attach the EVAP tube retainer.

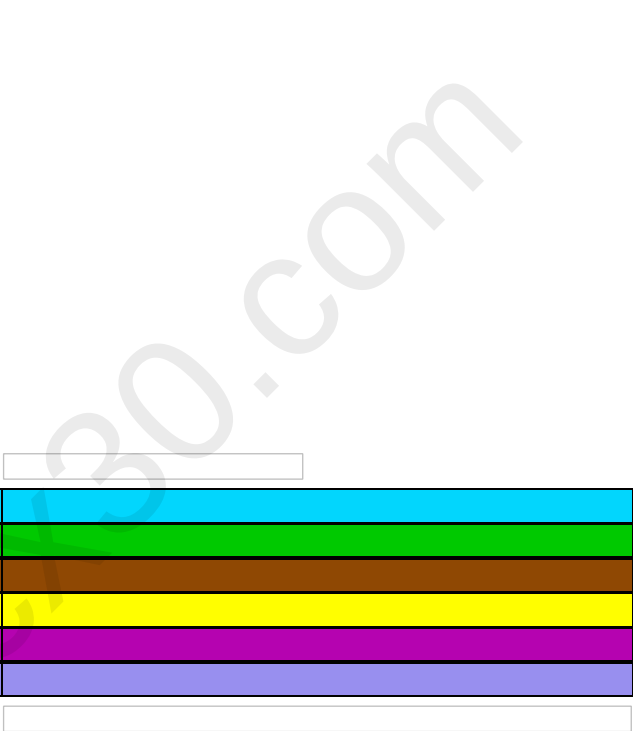
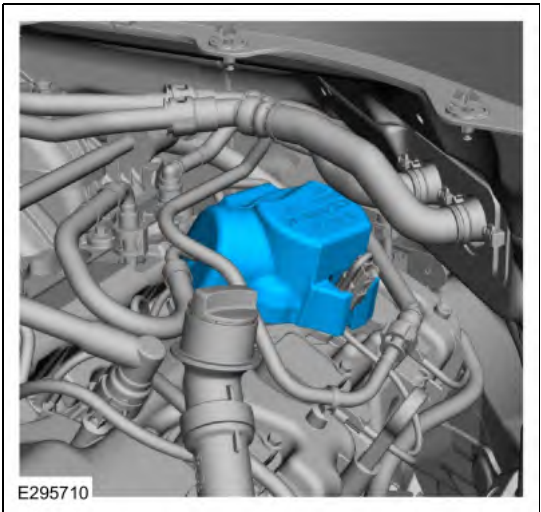


67. **NOTICE:** The high-pressure fuel pump supply tube must be installed with the Oetiker® clamp end installed to the port fuel rail; if it is installed backwards a check valve will prevent the engine from running properly.
- Install the high-pressure fuel pump to port injection fuel rail tube with the Oetiker® clamp end installed towards the port fuel rail and connect the quick release couplings.
 - Connect the fuel supply tube quick release coupling.

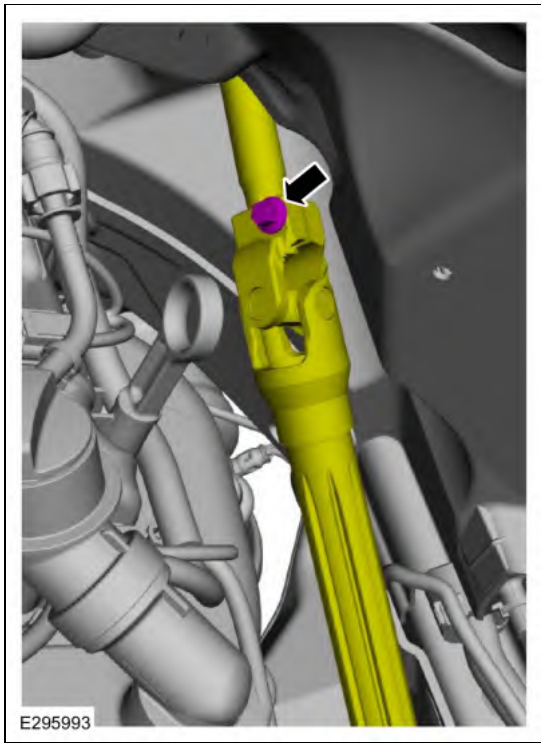


68. **NOTE:** When removing or installing the high-pressure fuel pump noise insulator, spreading the openings will reduce the risk of damage.

Install the high-pressure fuel pump noise insulator.

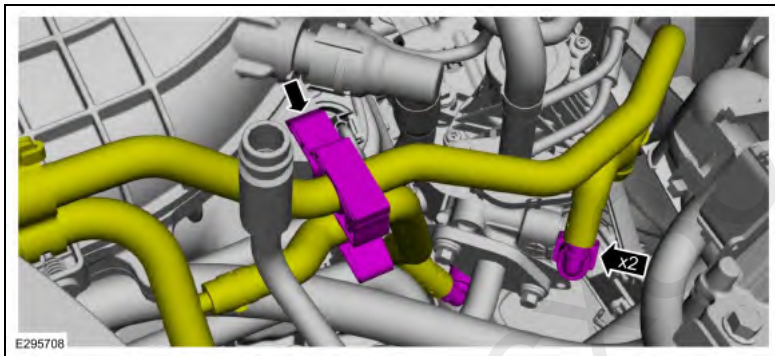


69. Connect the steering shaft and install the bolt.
Torque: 22 lb.ft (30 Nm)

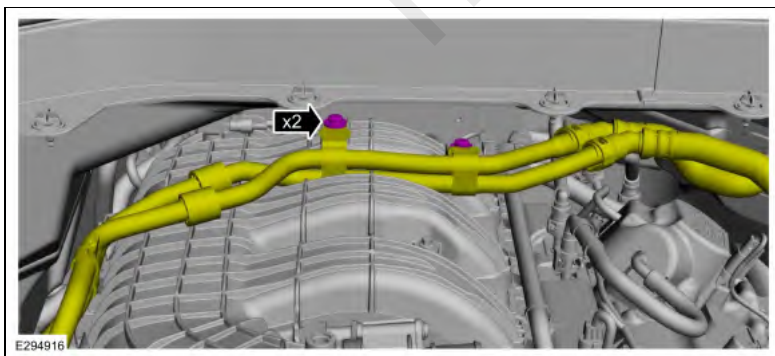


70.

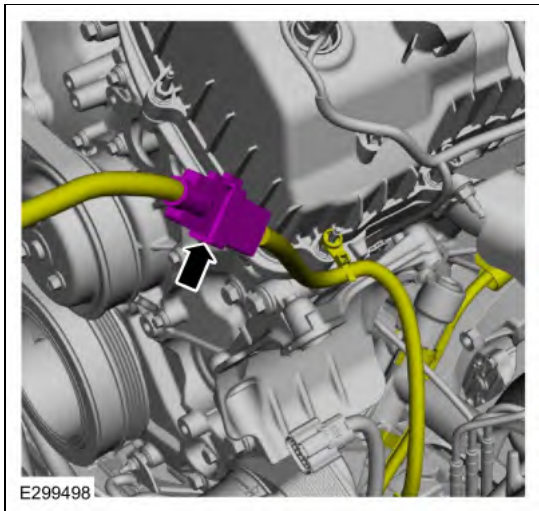
- Connect the coolant hoses to the EGR valve.
- Attach coolant tubes retainer to the upper intake manifold.



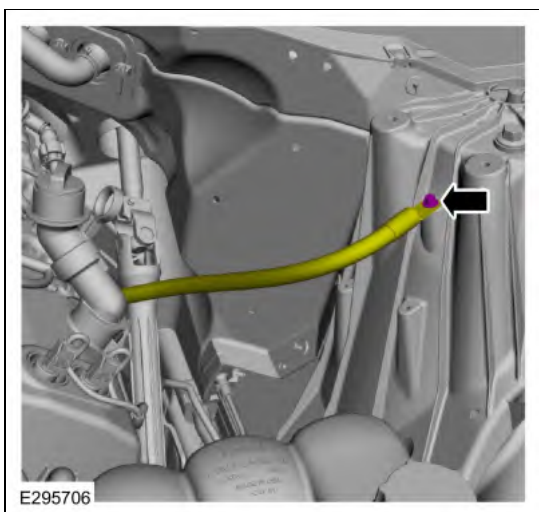
71. Install the coolant tube bolts to the top of intake manifold.
Torque: 62 lb.in (7 Nm)



72. If equipped, connect the block heater.

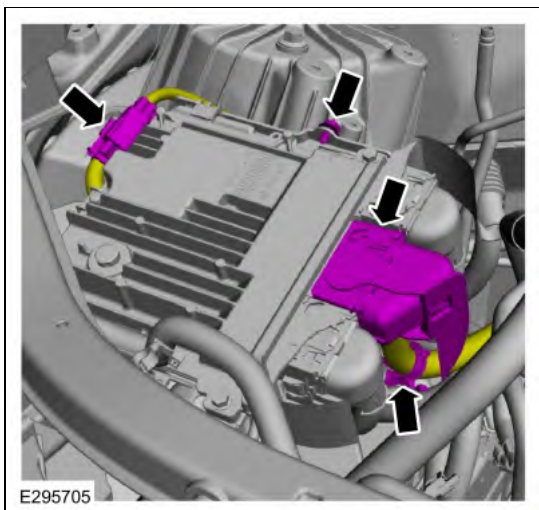


73. Position the ground and install the bolt to the LH shock tower.
Torque: 62 lb.in (7 Nm)

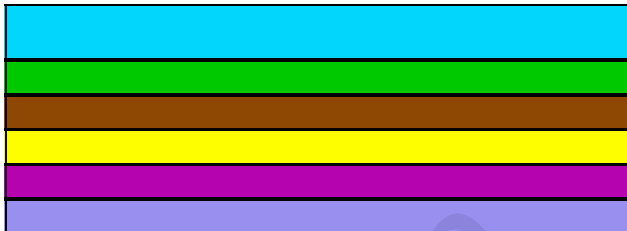
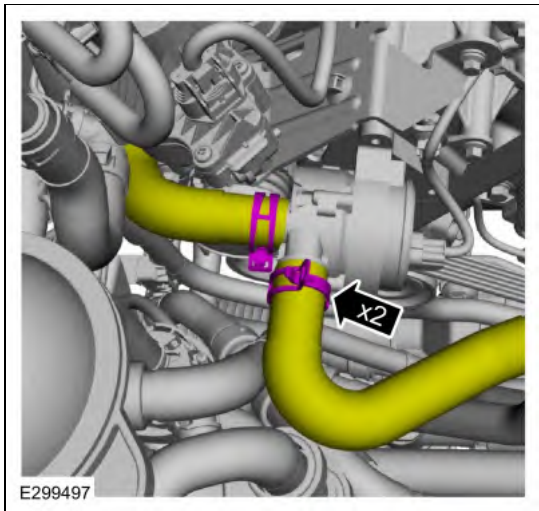


74.

- Connect the engine harness electrical connector and retainer.
- Connect the center PCM electrical connector and wiring harness retainer.



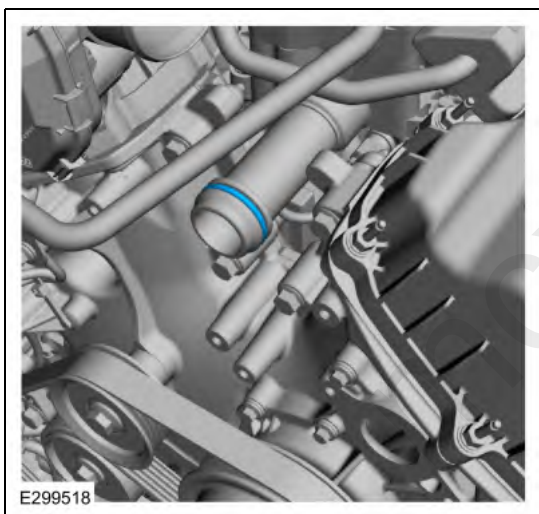
75. Connect the coolant hoses to the cabin heater coolant pump.
 Use the General Equipment: Hose Clamp Remover/Installer



76. Install the accessory drive belt.

Refer to: Accessory Drive Belt (303-05D Accessory Drive - 3.3L Duratec-V6 â€” Hybrid (BP), Removal and Installation).

77. Install a new thermostat housing O-ring seal and lubricate with clean engine coolant.



78.

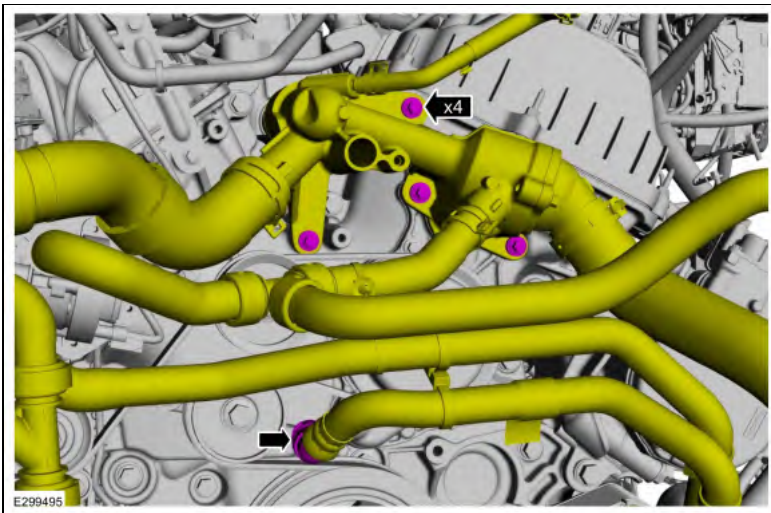
- Position the thermostat housing and coolant hoses and install the bolts.

Torque:

Stage 1: 71 lb.in (8 Nm)

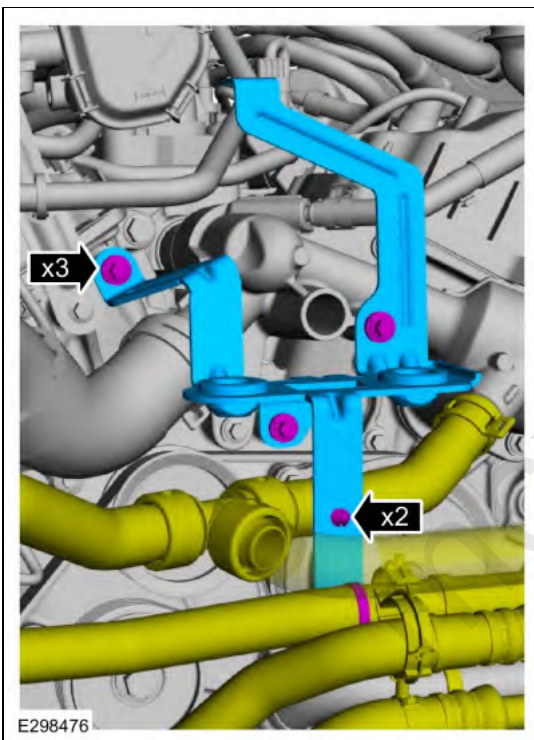
Stage 2: 45Â°

- Connect the coolant hose to the coolant pump.

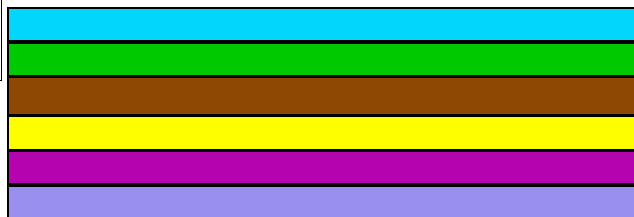
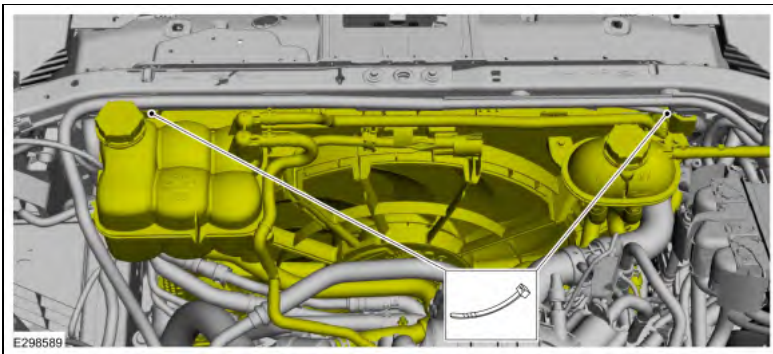


79.

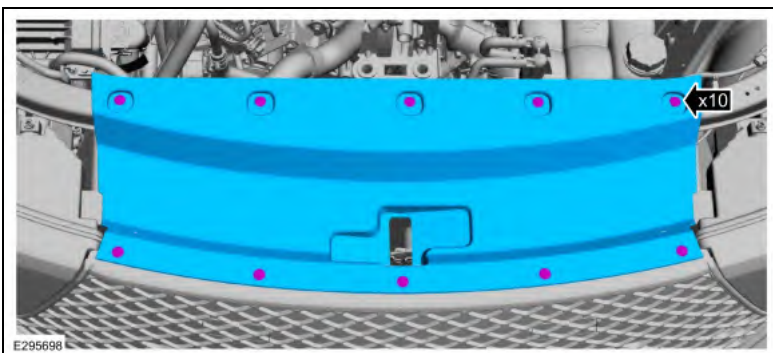
- Install the air cleaner bracket and the bolts.
Torque: 97 lb.in (11 Nm)
- Attach the coolant hose retainers.



80. Remove the radiator support cable ties or mechanics wire.



81. Install the upper radiator panel and the retainers.



82. Install the following items:

1. Install the A/C compressor.

Refer to: Air Conditioning (A/C) Compressor - 3.3L Duratec-V6 Hybrid (BP) (412-00 Climate Control System - General Information, Removal and Installation).

2. Install the air cleaner.

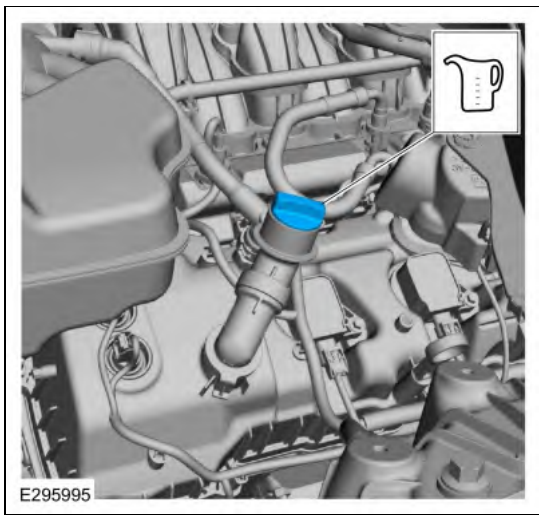
Refer to: Air Cleaner (303-12C Intake Air Distribution and Filtering - 3.3L Duratec-V6, Removal and Installation).

3. Install the air cleaner outlet pipe.

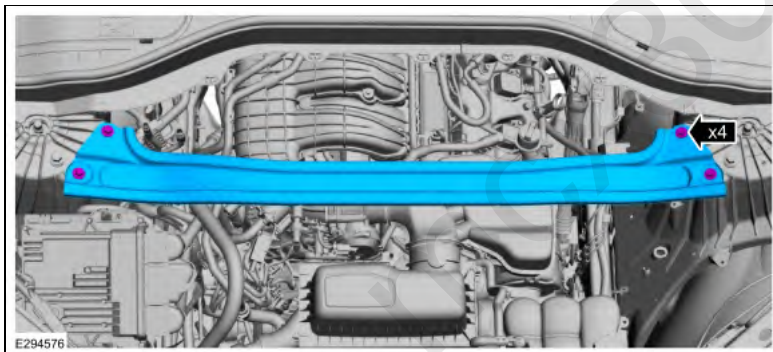
Refer to: Air Cleaner Outlet Pipe (303-12C Intake Air Distribution and Filtering - 3.3L Duratec-V6, Removal and Installation).

83. Fill the engine with clean engine oil.

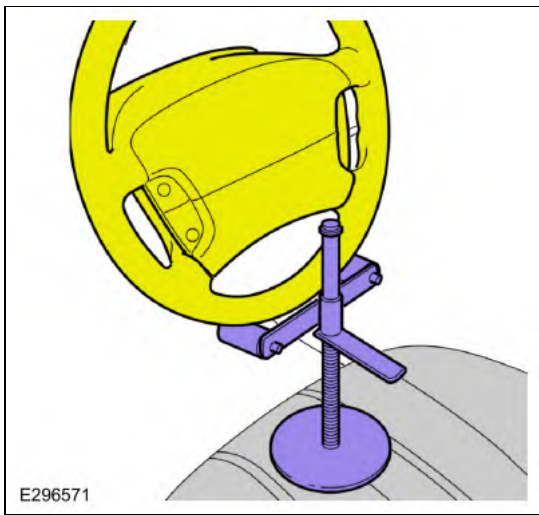
Refer to: Specifications (303-01C Engine - 3.3L Duratec-V6, Specifications).



84. Install the suspension support bar and the bolts.
Torque: 22 lb.ft (30 Nm)



85. Connect the HEV high voltage battery.
 Refer to: High Voltage System De-energizing (414-03 High Voltage Battery, Mounting and Cables, General Procedures).
86. Connect the battery ground cable.
 Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).
87. Pressurize the fuel system.
 Refer to: Fuel System Pressure Release (310-00D Fuel System - General Information - 3.3L Duratec-V6 â€ Hybrid (BP), General Procedures).
88. Fill the cooling system.
 Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03D Engine Cooling - 3.3L Duratec-V6 â€ Hybrid (BP), General Procedures).
89. Check the transmission fluid level.
 Refer to: Transmission Fluid Level Check (307-01C Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€ 10R80 MHT, General Procedures).
90. Remove the holding device.



91. Use the Powertrain Control Module (PCM) Misfire Monitor Profile Correction routine in the diagnostic scan tool.
 92. Start and check the exhaust system for leaks.
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303-01E Electric Motor

Description and Operation