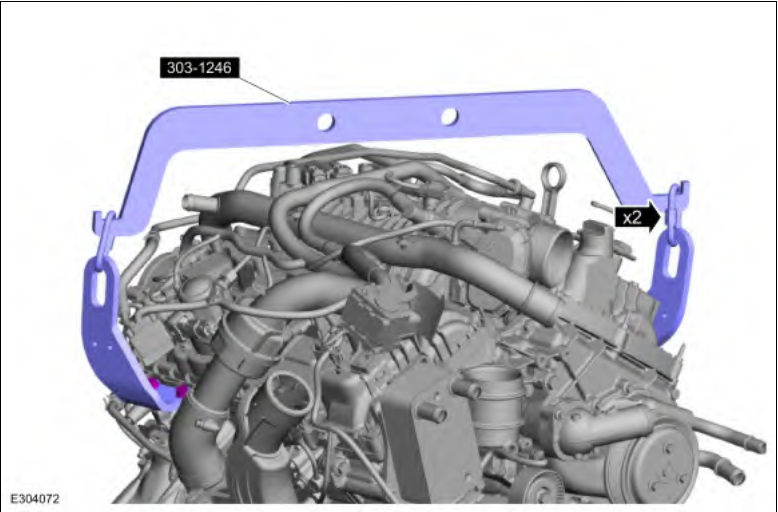
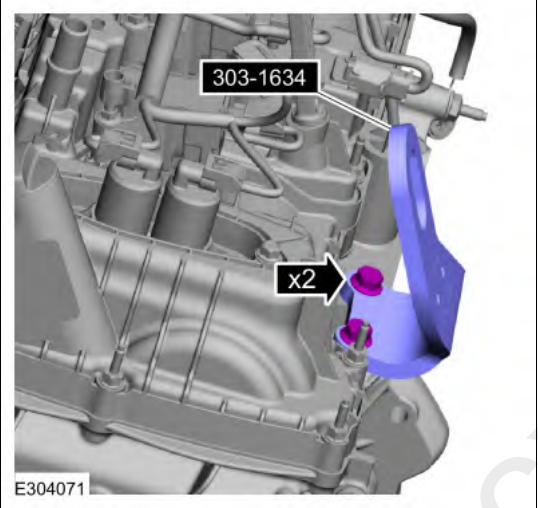
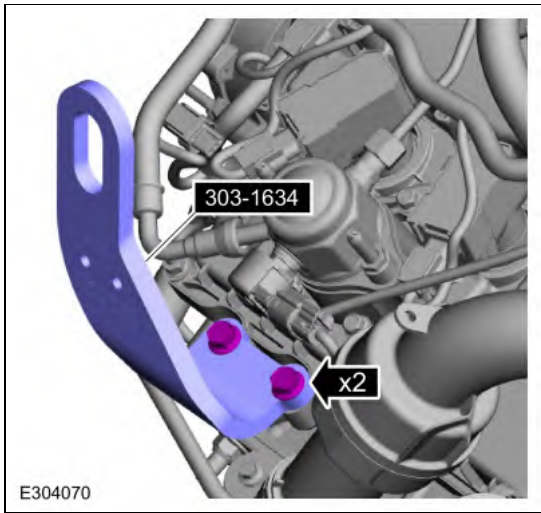




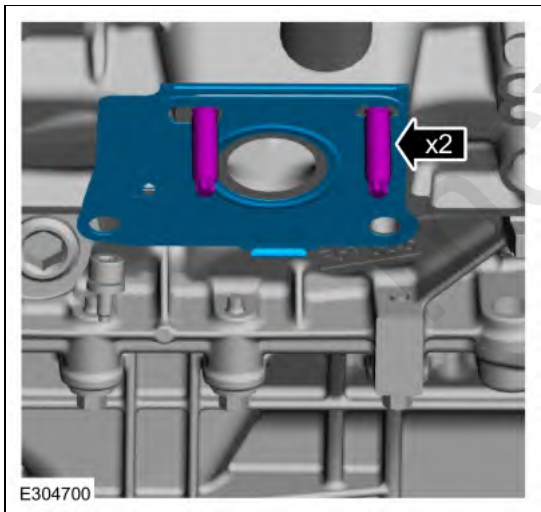
6. Remove Special Service Tool: 303-1634 Lift Eyes (2).



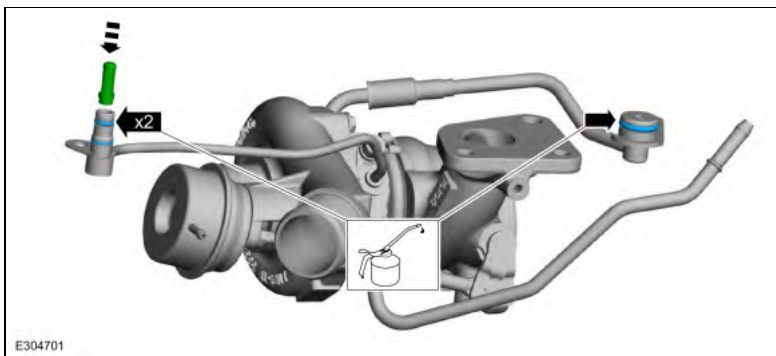
7. Remove Special Service Tool: 303-1634 Lift Eyes (2).



- 8.
- If removed, install new TC mounting studs.
Torque: 102 lb.in (11.5 Nm)
 - Install a new TC gasket.



- 9.
1. Install new TC oil supply tube O-ring seals and a new TC oil supply tube oil filter. Lubricate the new TC oil supply tube O-ring seals with clean engine oil.
 2. Install a new TC coolant supply tube O-ring seal. Lubricate the new TC coolant supply tube O-ring seal with clean engine coolant.



10.

1. **NOTE:** Install the coolant supply tube and the oil supply tube to the engine block while installing the TC.

Install the TC and loosely install the new fasteners.

2. Tighten the fasteners in sequence.

Torque:

Fastener 1: 44 lb.ft (60 Nm)

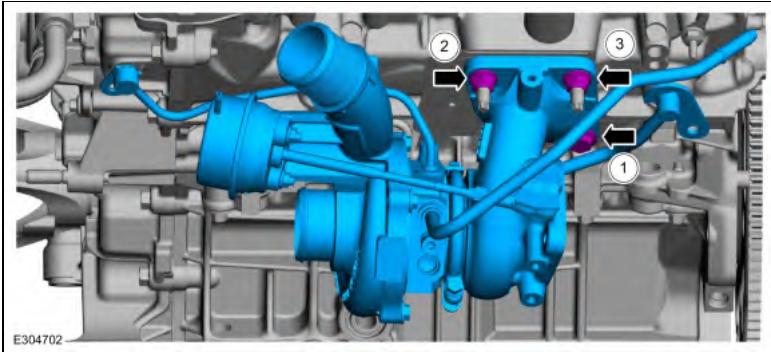
Fastener 2: 44 lb.ft (60 Nm)

Fastener 3: 27 lb.ft (37 Nm)

Re-tighten fastener 1: 44 lb.ft (60 Nm)

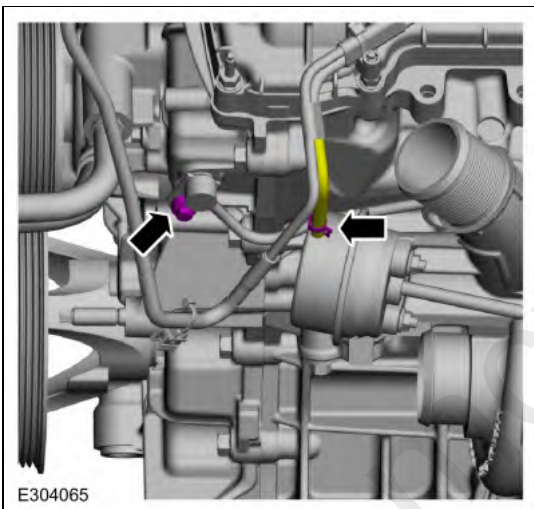
Re-tighten fastener 2: 44 lb.ft (60 Nm)

Re-tighten fastener 3: 27 lb.ft (37 Nm)



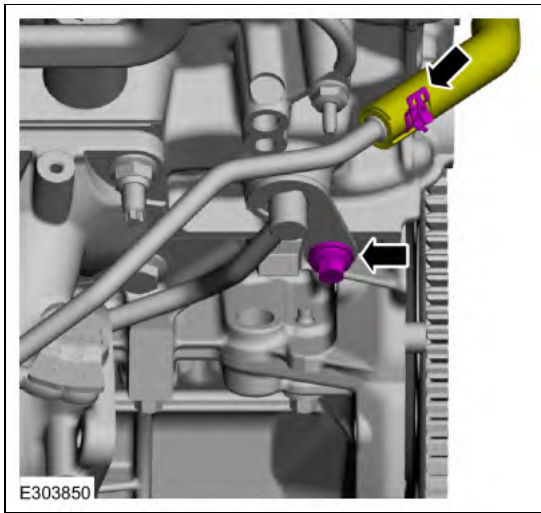
11.

- Install the TC oil supply tube bolt.
Torque: 18 lb.ft (24 Nm)
- Connect the vacuum hose and clamp.

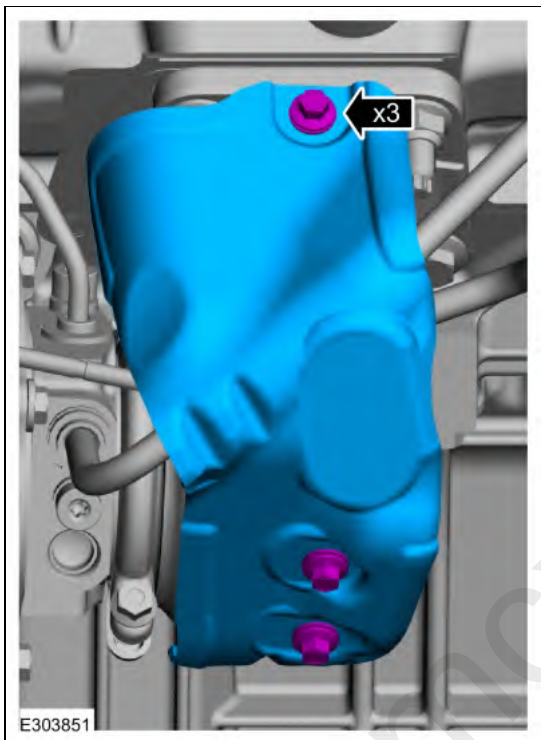


12.

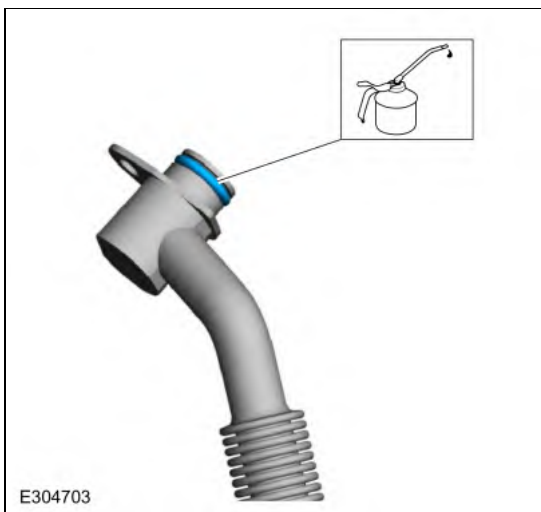
- Install the TC coolant supply tube bolt.
Torque: 89 lb.in (10 Nm)
- Connect the TC coolant return hose and clamp.



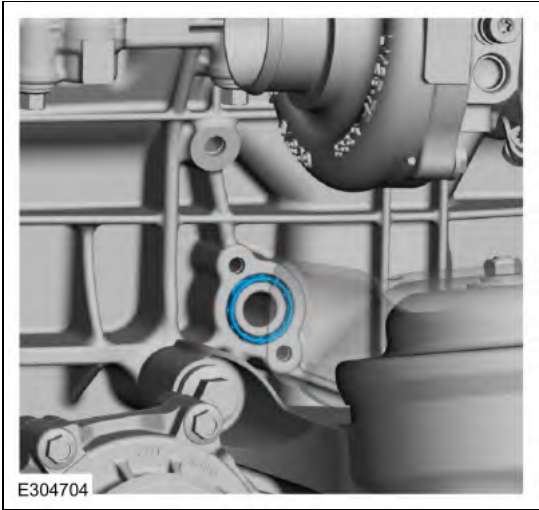
13. Install the heat shield and the bolts.
Torque: 89 lb.in (10 Nm)



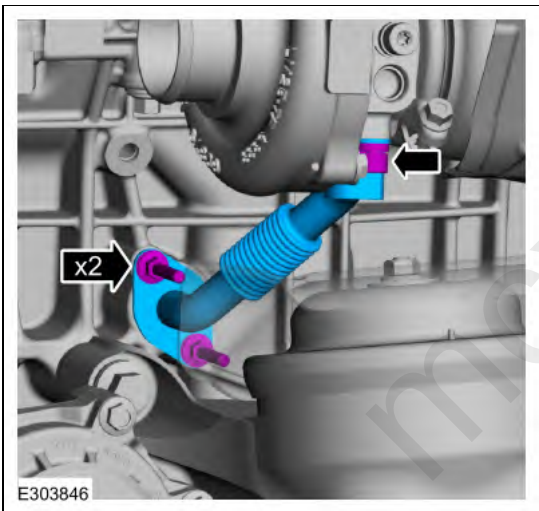
14. Install a new TC oil return tube O-ring seal and lubricate with clean engine oil.



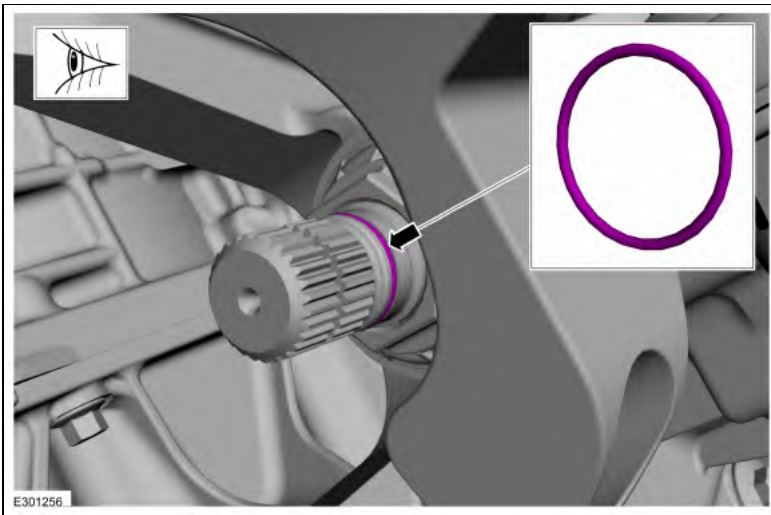
15. Install a new TC oil return tube-to-engine block gasket.



16. Install the TC oil return tube and the fasteners.
Torque: 89 lb.in (10 Nm)

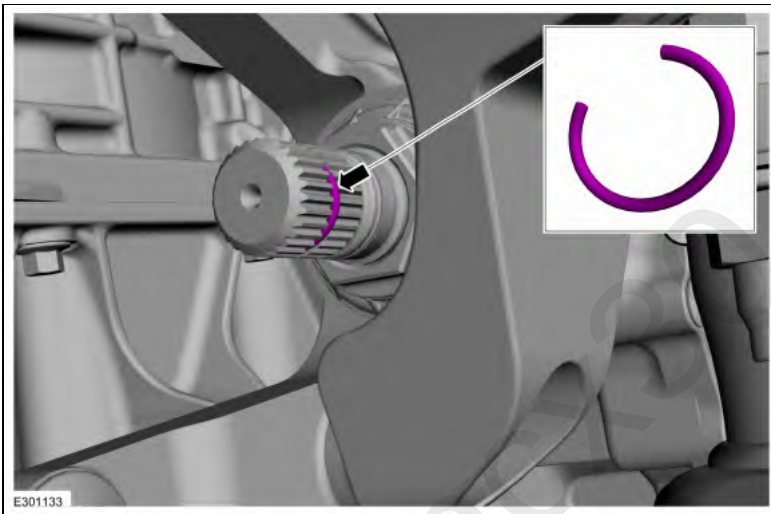


17. **NOTE:** Make sure that a new component is installed.
NOTE: Make sure that the O-ring is seated correctly.
Install a new front axle pinion stem O-ring.



18. **NOTE:** Make sure that a new component is installed.

Install the new front axle pinion stem circlip.



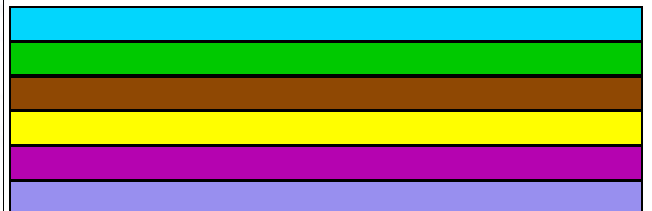
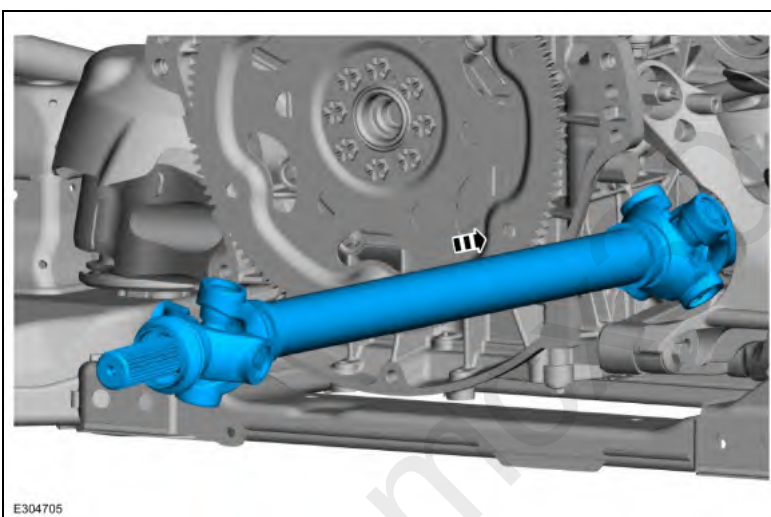
19. **NOTICE:** Do not over-lubricate the driveshaft components. Using excessive grease may damage the driveshaft components.

NOTE: Wipe off any excess grease.

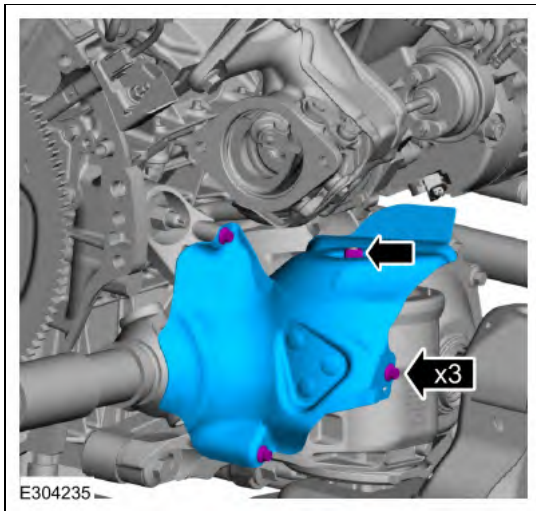
Lubricate the front drive axle splines with grease.
Material: Motorcraft® Premium Long-Life Grease / XG-1-E1 (ESA-M1C75-B)



20. Install the front drive shaft.

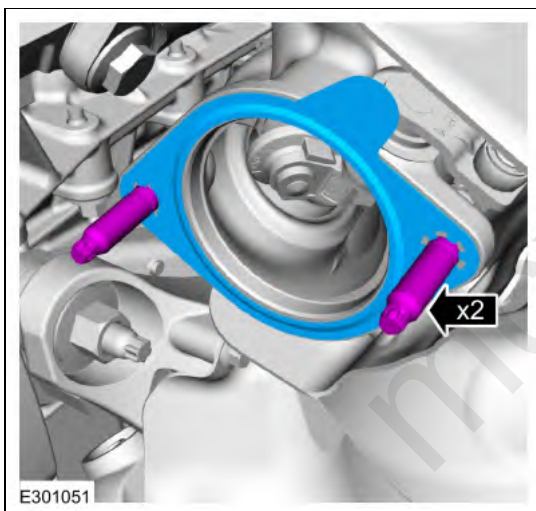


21. Install the heat shield and the fasteners.
Torque: 89 lb.in (10 Nm)

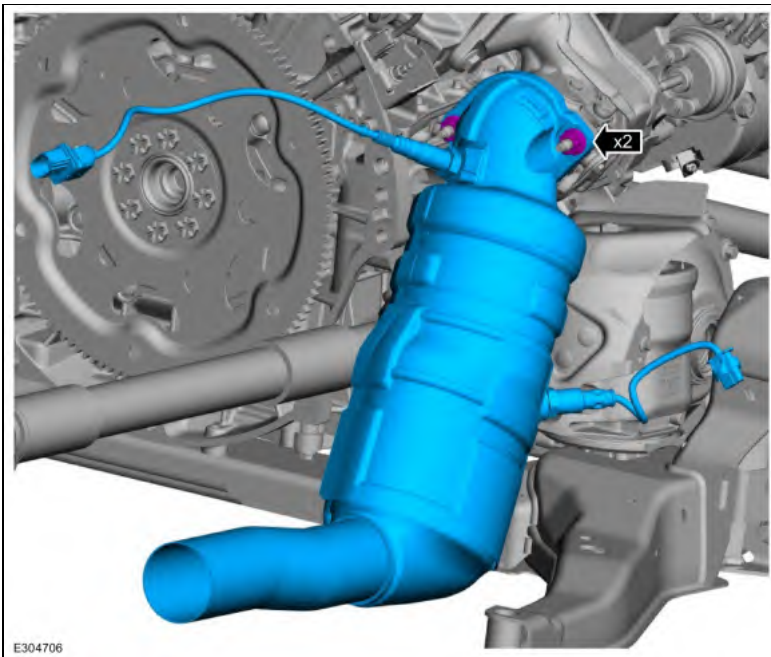


22.

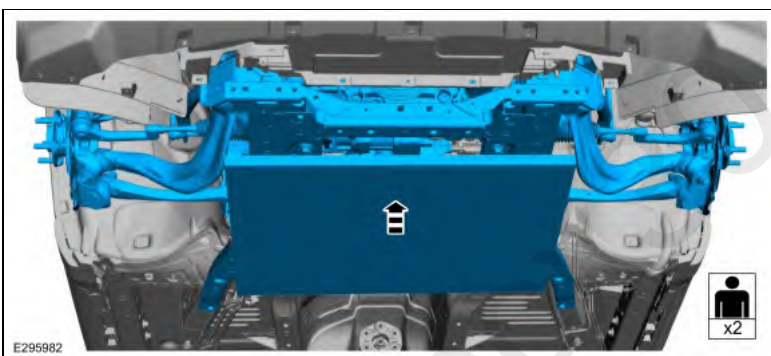
- If removed, install new studs.
Torque: 18 lb.ft (25 Nm)
- Install the new gasket.



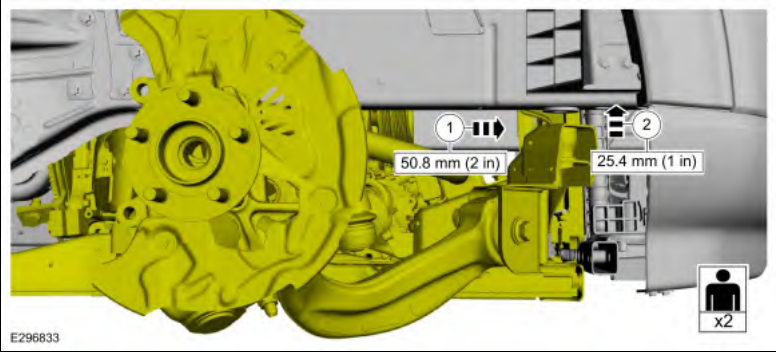
23. Install the RH catalytic converter and the new nuts.
Torque: 35 lb.ft (48 Nm)



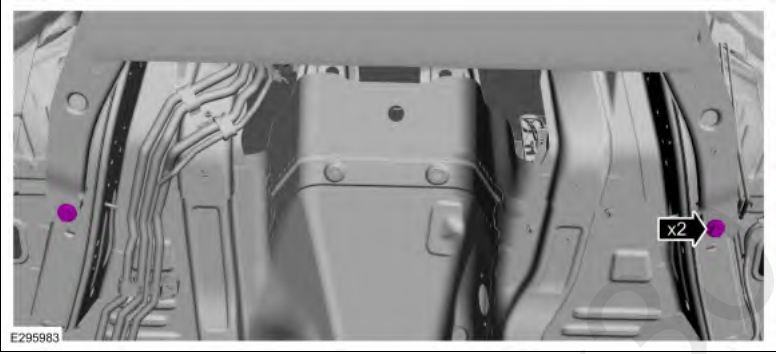
24. With the aid of an assistant and using the powertrain jack, raise the powertrain and subframe as an assembly 25.4 mm (1 in) from the frame.



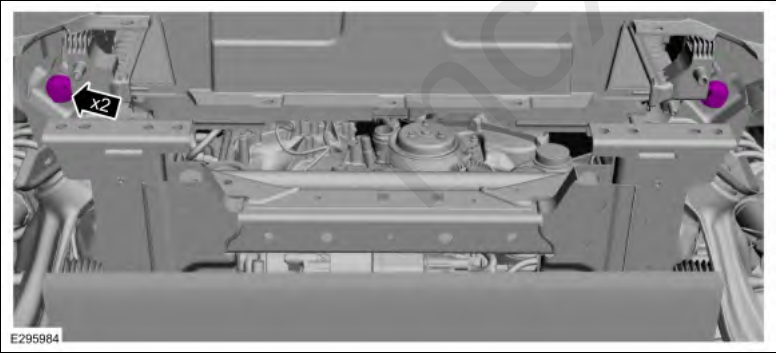
- 25.
1. With the aid of an assistant and using the powertrain jack, position the powertrain and subframe forwards 50.8 mm (2 in).
 2. With the aid of an assistant and using the powertrain jack, raise the powertrain and subframe 25.4 mm (1 in).



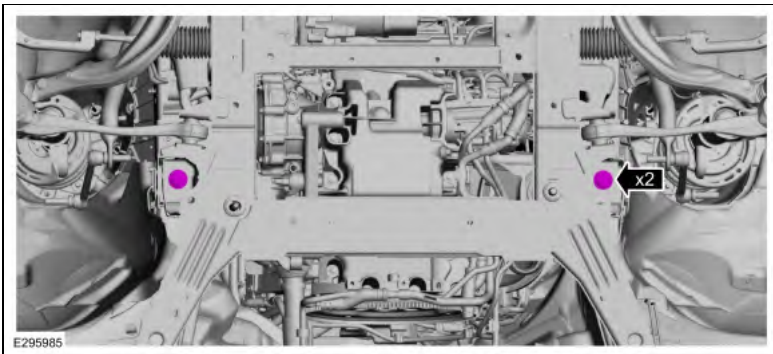
26. Install the new rear subframe bolts finger tight.



27. Install the new front subframe bolts finger tight.



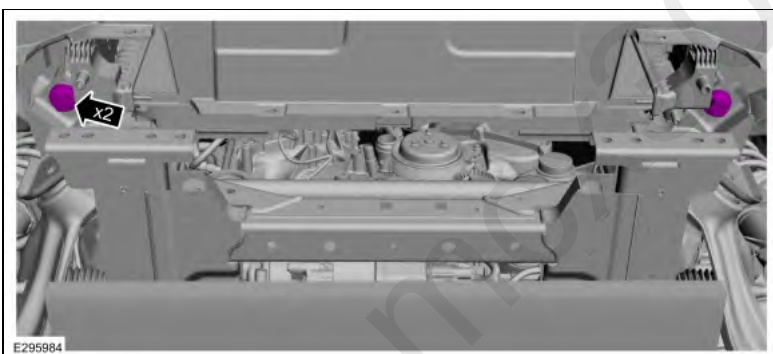
28. Install the new middle subframe bolts finger tight.



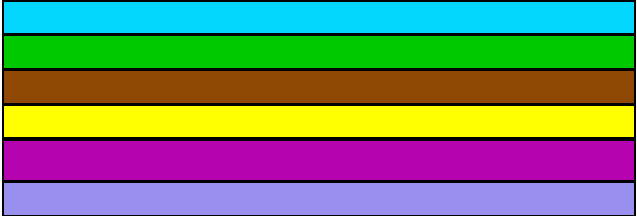
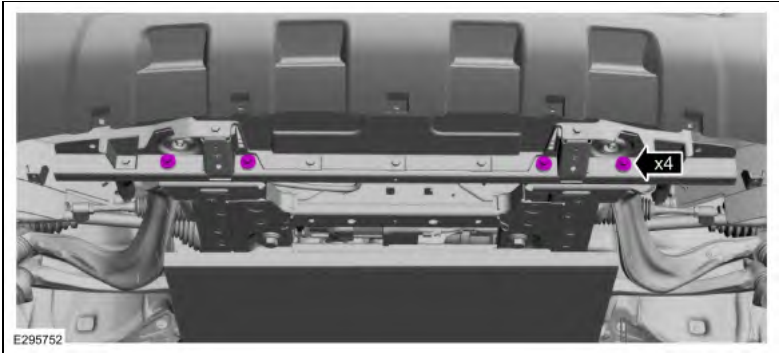
29. Tighten the rear subframe bolts.
Torque: 52 lb.ft (70 Nm)



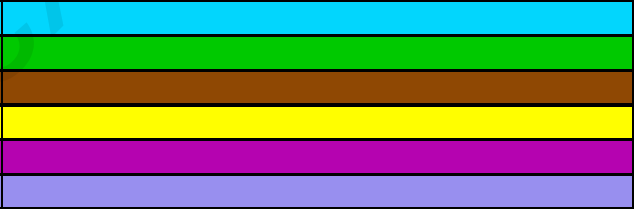
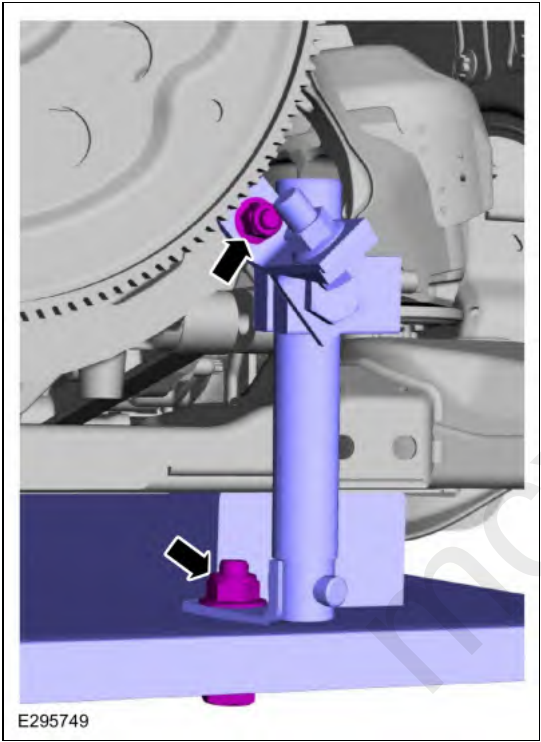
30. Tighten the front subframe bolts.
Torque: 195 lb.ft (265 Nm)



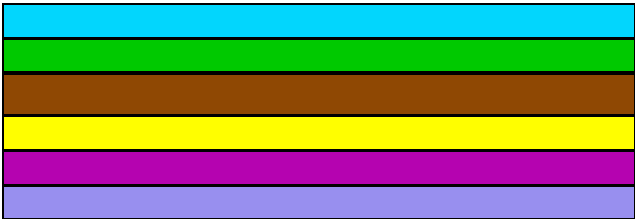
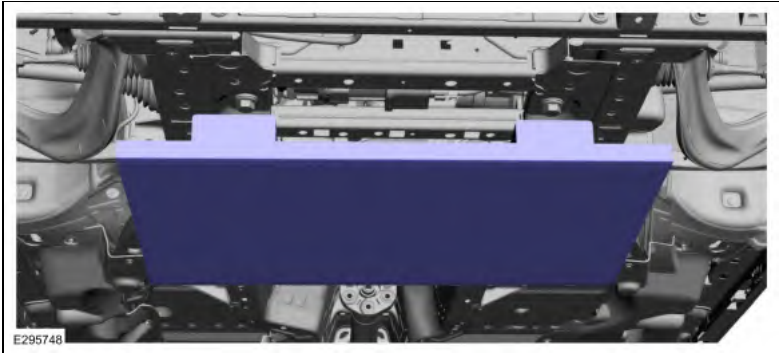
31. Install the front radiator support bar bolts.
Torque: 46 lb.ft (63 Nm)



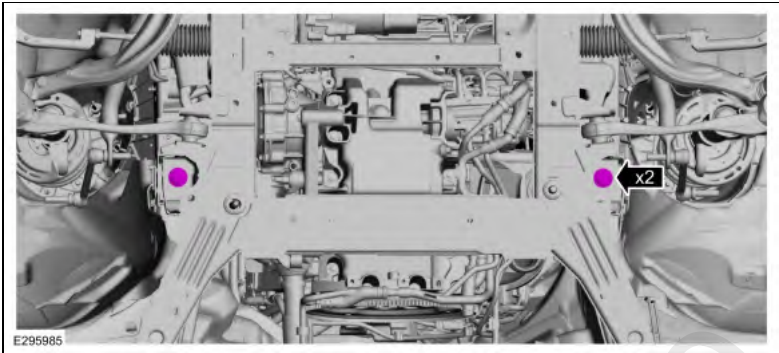
32. Remove.
Use the General Equipment: Adjustable Mounting Arm



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



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

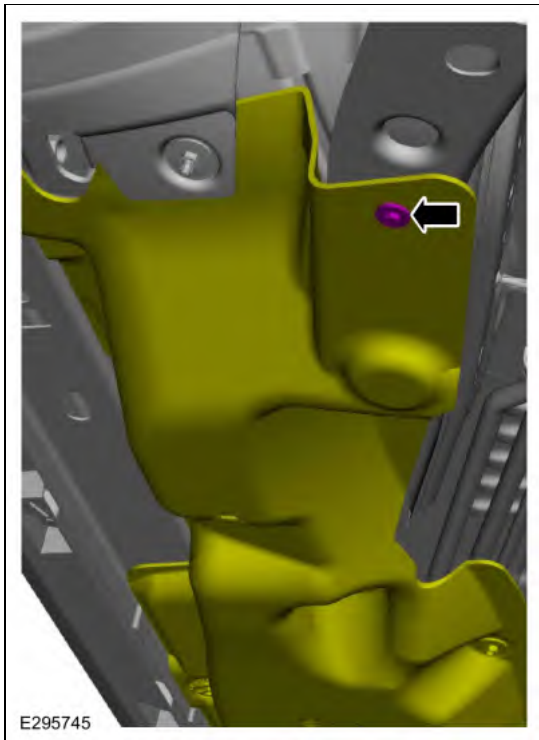


35. Position the LH underbody shield and install the bolt.
Torque: 22 lb.in (2.5 Nm)

mcx30.0

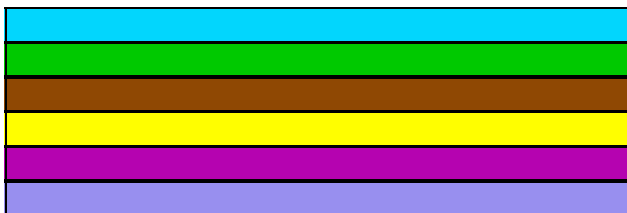
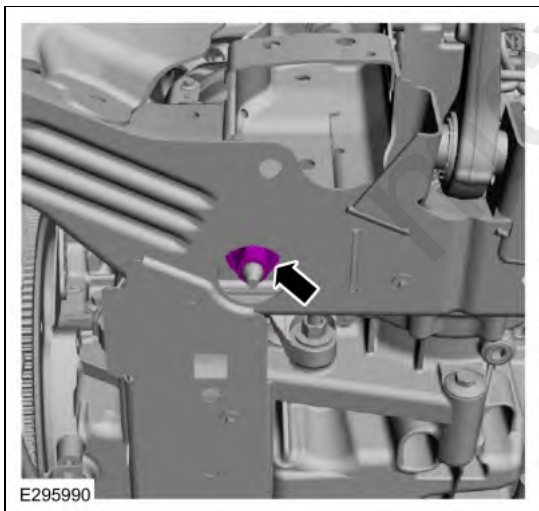


36. Position the RH underbody shield and install the bolt.
Torque: 22 lb.in (2.5 Nm)



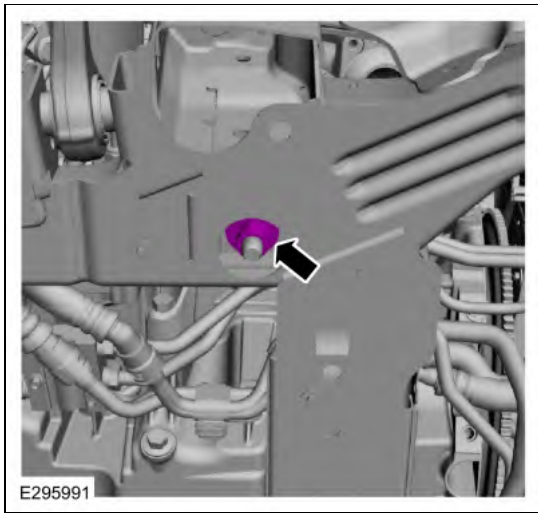
37. **NOTICE:** Only use hand tools when removing the engine mount nuts or damage to the engine mount can occur.

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



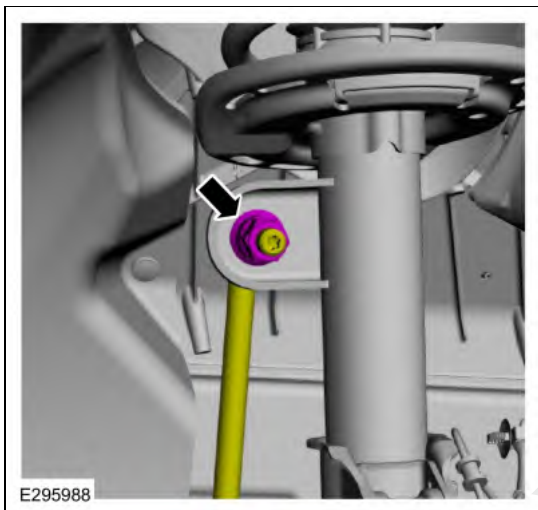
38. **NOTICE:** Only use hand tools when removing the engine mount nuts or damage to the engine mount can occur.

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



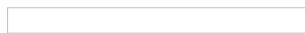
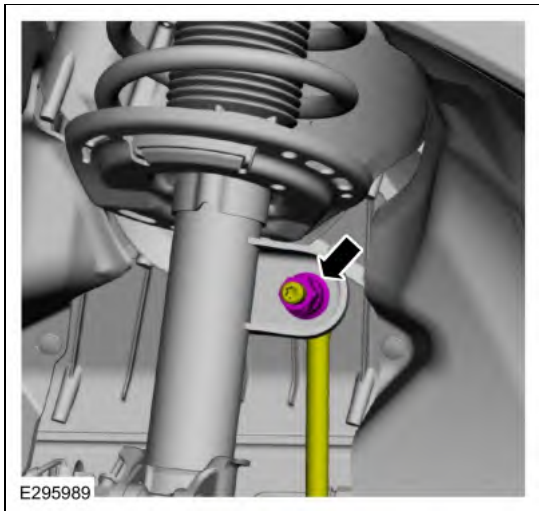
39. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

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

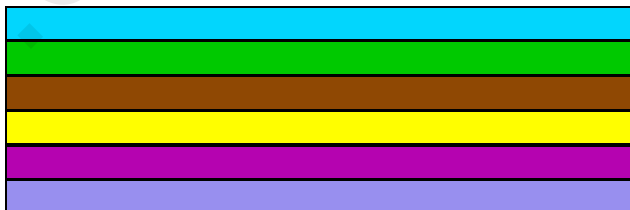
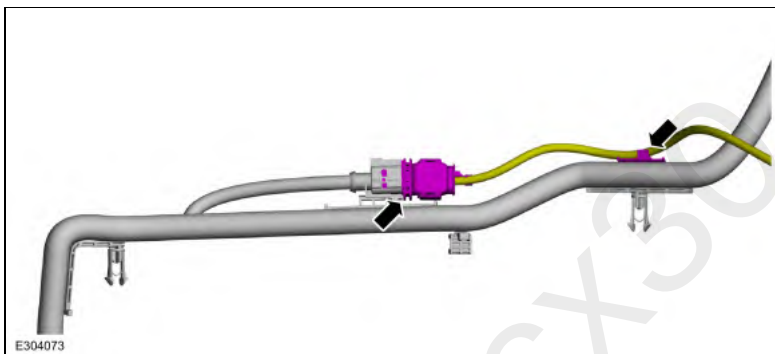


40. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

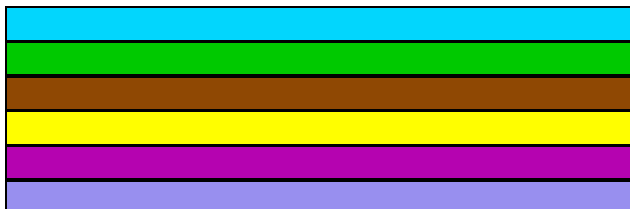
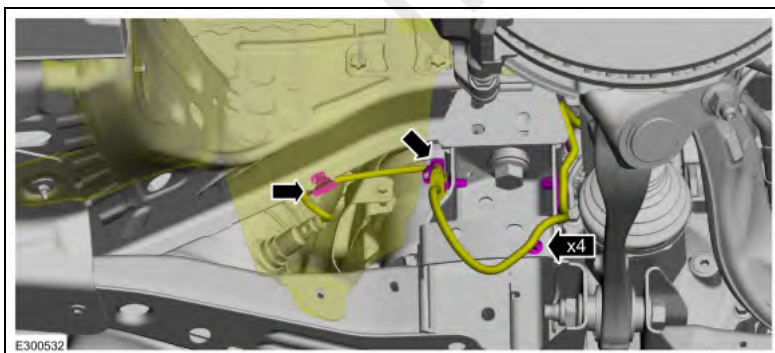
Position the LH sway bar link and install the new nut.
Torque: 129 lb.ft (175 Nm)



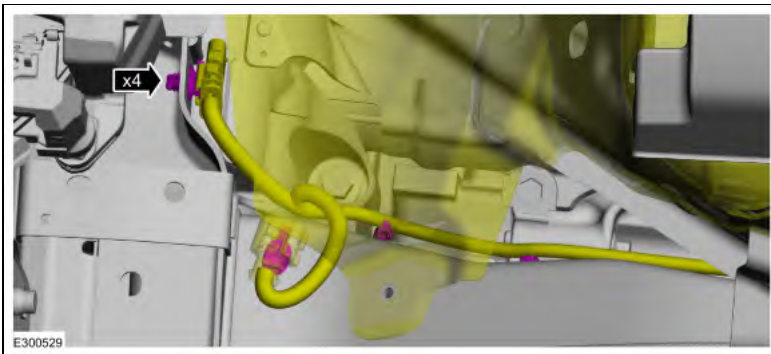
- 41.
- Connect the RH heated oxygen sensor electrical connector.
 - Attach the wiring harness retainer.



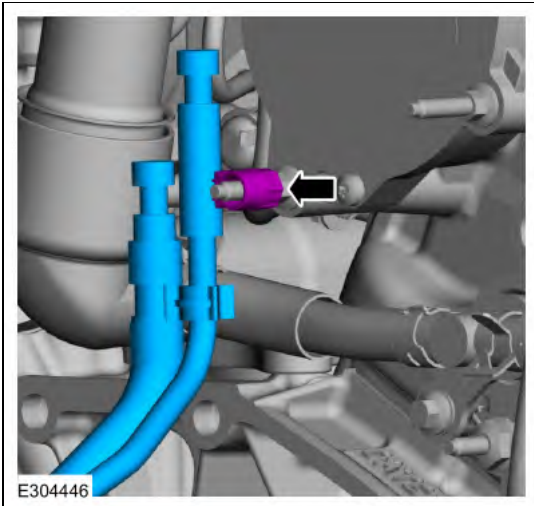
- 42.
- Connect the catalyst monitor sensor electrical connector.
 - Attach the wiring harness retainers to the RH subframe.



43. Attach the wiring harness retainers to the LH subframe.



44. Install the vent hose(s) and attach the retainer.

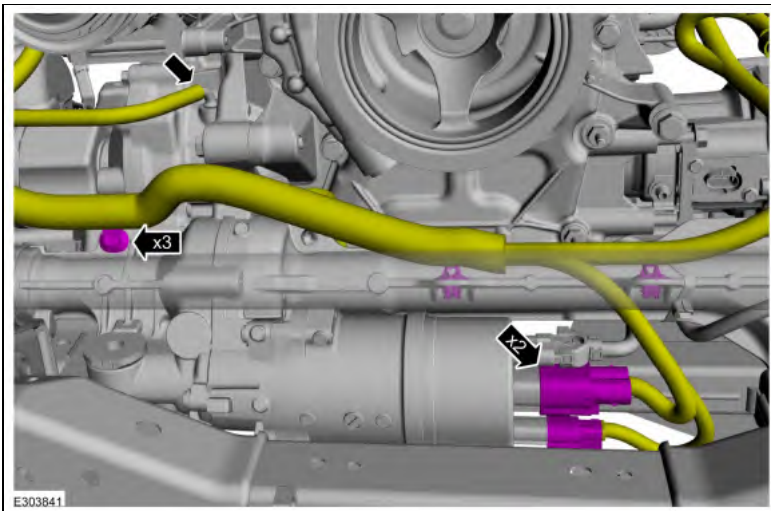


45. Install the following items:

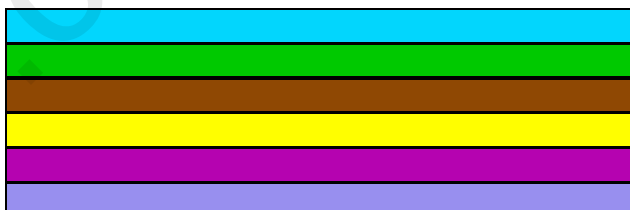
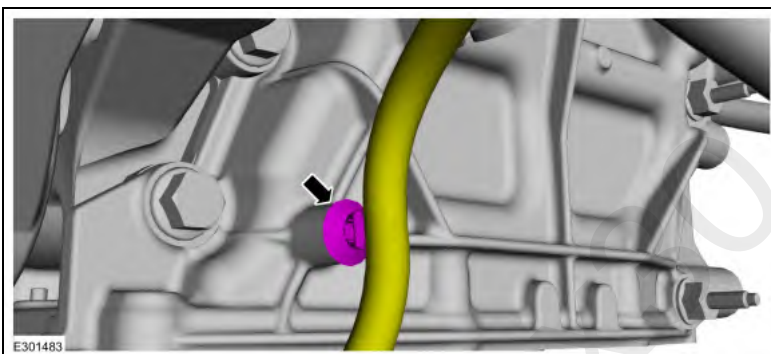
1. RH side.
Refer to: Exhaust Flexible Pipe (309-00B Exhaust System - 3.0L EcoBoost, Removal and Installation).
2. If equipped with 10R80 transmission.
Refer to: Transmission - 3.0L EcoBoost (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€” 10R80, Removal and Installation).
3. If equipped with 10R60 transmission.
Refer to: Transmission - 3.0L EcoBoost (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€” 10R60, Removal and Installation).
4. RH and LH side.
Refer to: Halfshaft (205-04 Front Drive Halfshafts, Removal and Installation).
5. RH and LH side.
Refer to: Brake Disc (206-03 Front Disc Brake, Removal and Installation).

46.

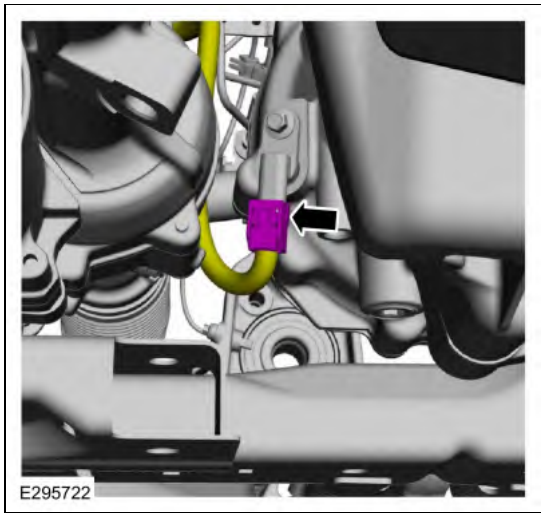
- Connect the RH transfer case vent hose.
- Connect the steering gear wiring harness electrical connectors and attach the wiring harness retainers.



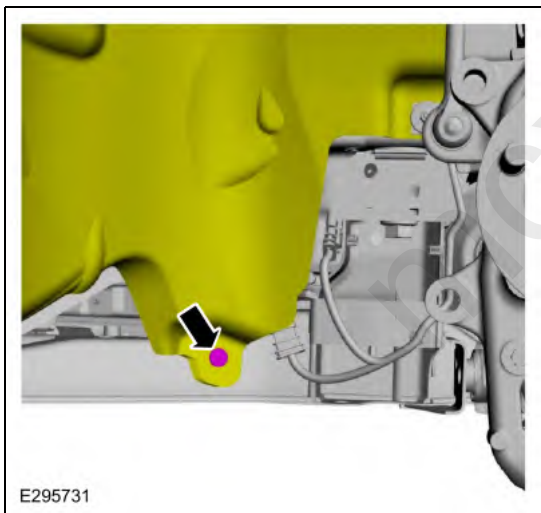
47. Attach the wiring harness retainer.



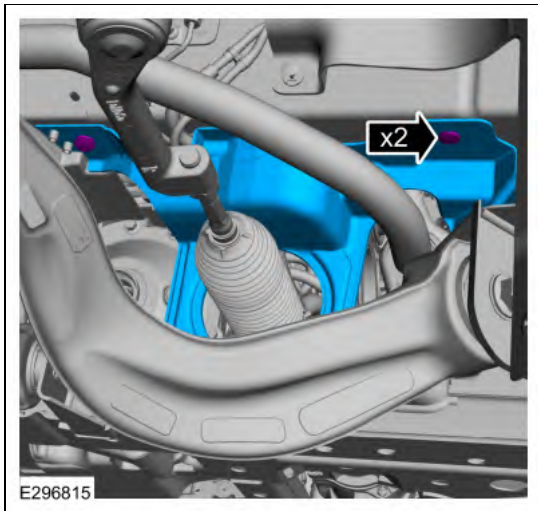
48. Connect the wiring harness electrical connector to the RH transfer case.



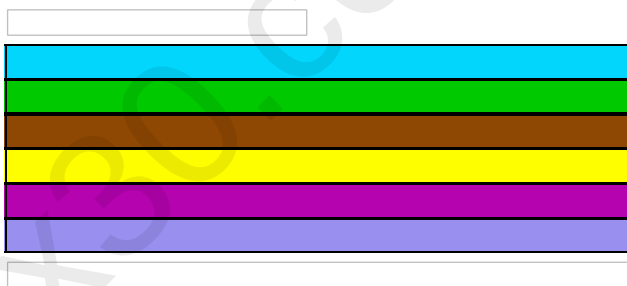
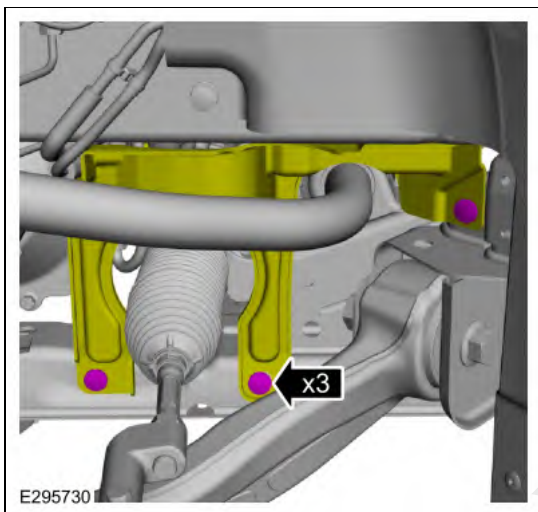
49. Install the splash shield pin-type retainer to the RH subframe.



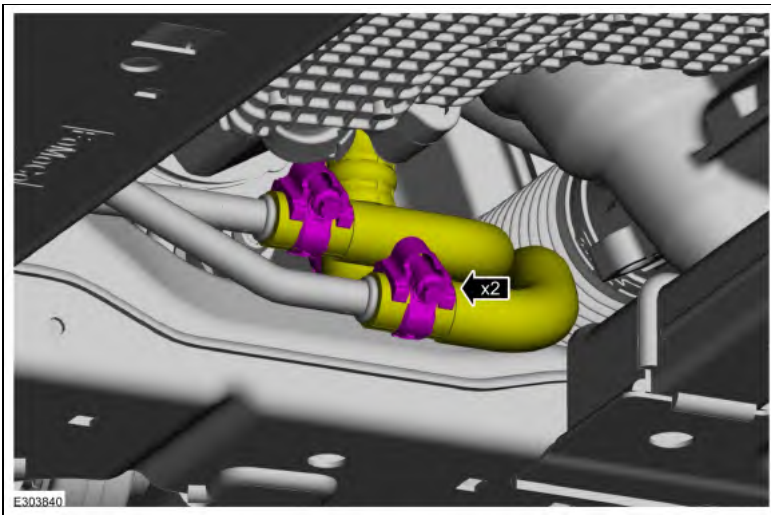
50. Install the steering shield and the pin-type retainers to the RH subframe.



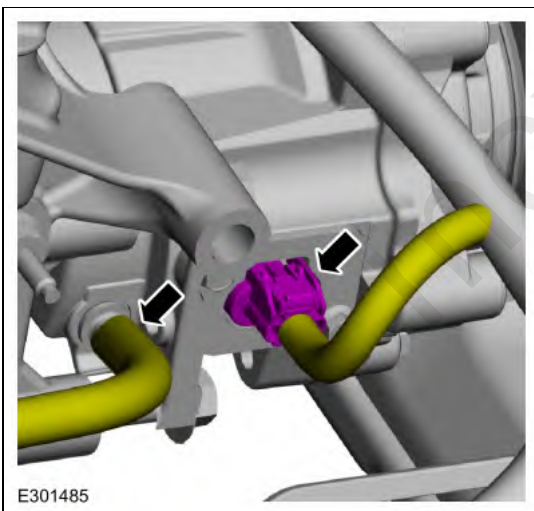
51. Install the steering shield pin-type retainers to the RH subframe.



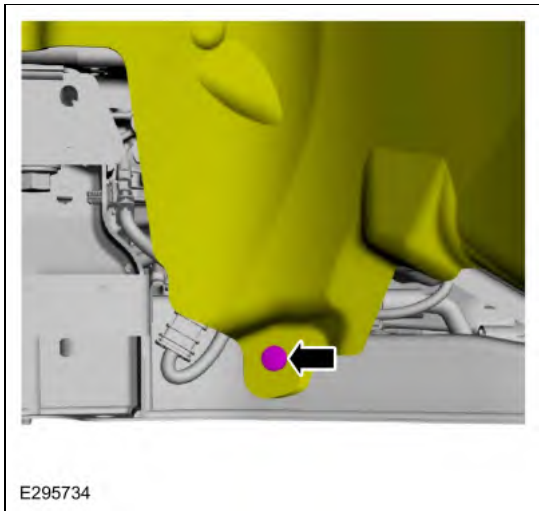
52. Connect the coolant hoses and tighten the clamps.
Torque: 33 lb.in (3.7 Nm)



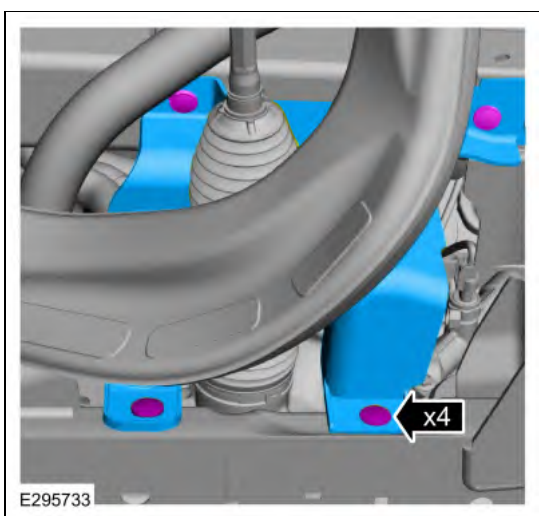
- 53.
- Connect the vent hose.
 - Connect the wiring harness electrical connector.



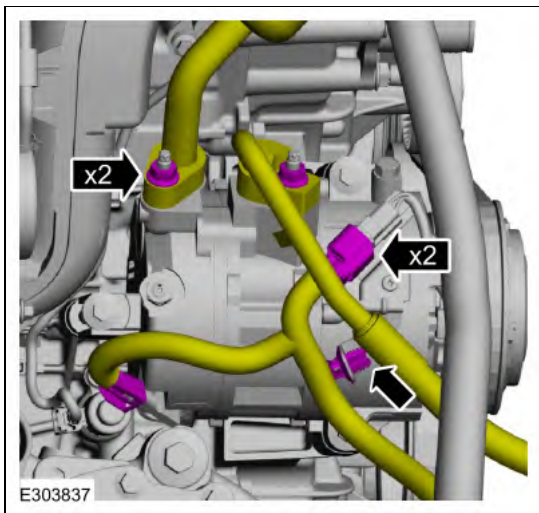
54. Position the splash shield and install the pin-type retainer to the LH subframe.



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

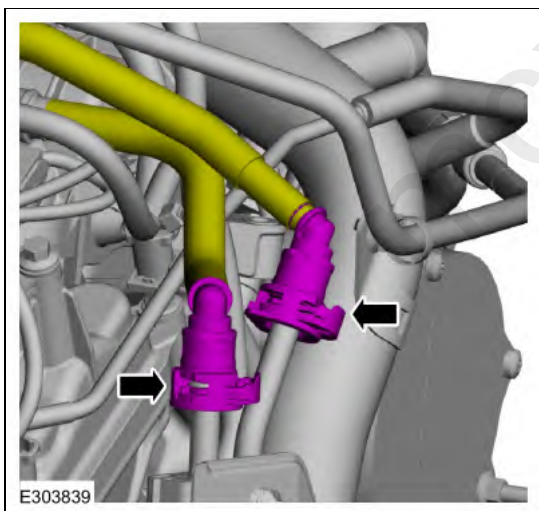


- 56.
- Connect the A/C wiring harness electrical connectors.
 - Attach the wiring harness retainer.
 - Install a new O-ring seal.
 - Connect the A/C lines to A/C compressor and install the nuts.
Torque: 159 lb.in (18 Nm)

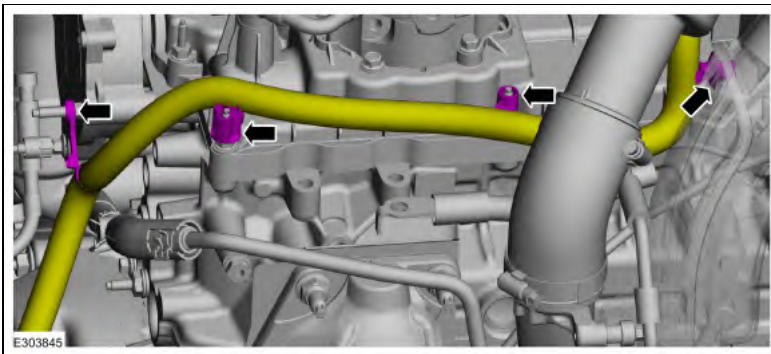


57. Install the front wheels and tires.
Refer to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).

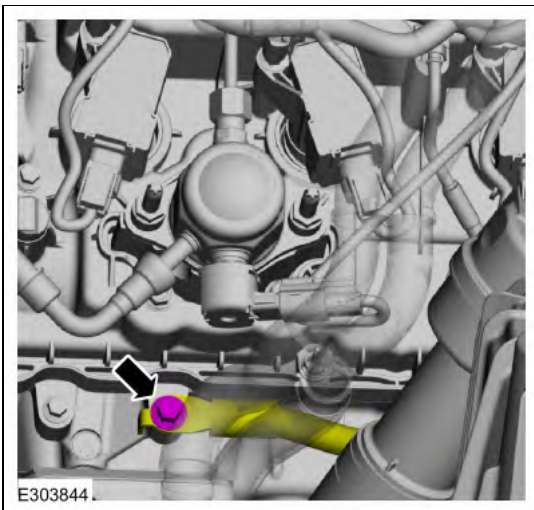
- 58.
- Connect the fuel supply tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .
 - Connect the EVAP supply tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .



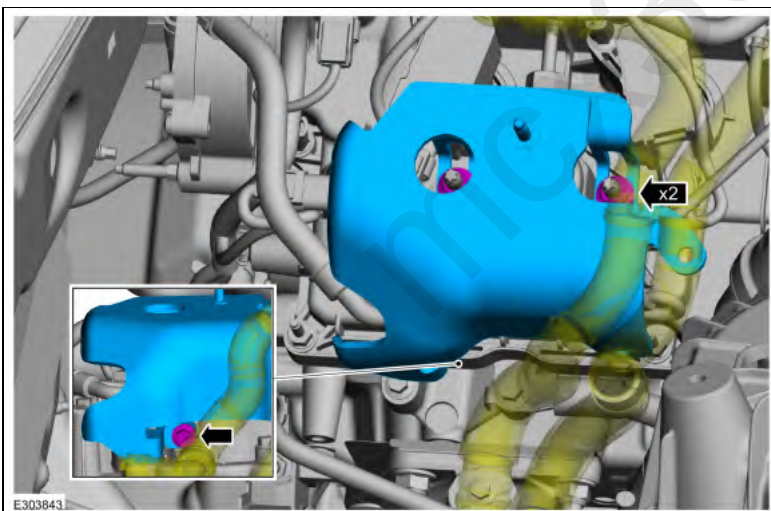
59. Attach the wiring harness retainers.



60. Install the ground cable and the bolt.
Torque: 106 lb.in (12 Nm)

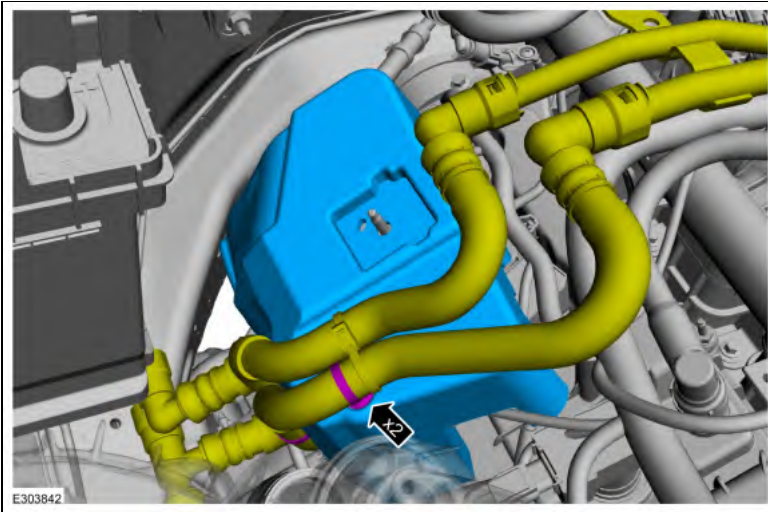


61. Install the high-pressure fuel pump shield, the nuts and the bolt.
Torque: 18 lb.ft (25 Nm)



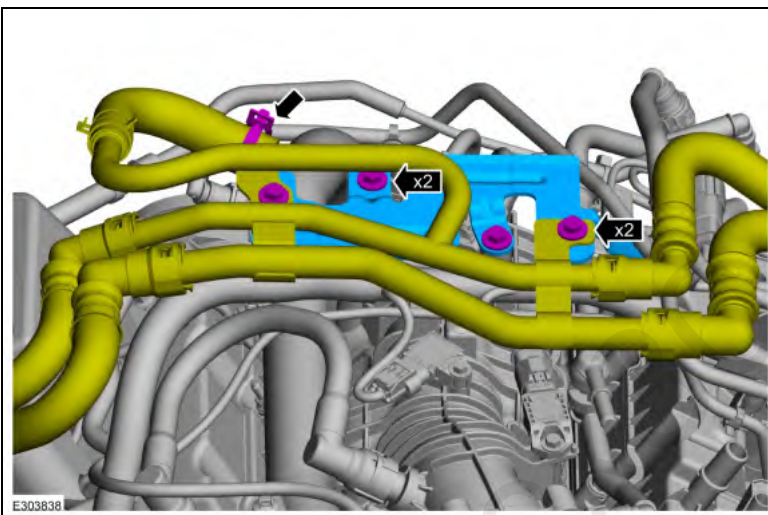
62. **NOTE:** When removing or installing the fuel injection pump noise insulator, spreading the openings will reduce the risk of damage.

1. Install the fuel injection pump noise insulator.
2. Attach the coolant hose retainers.



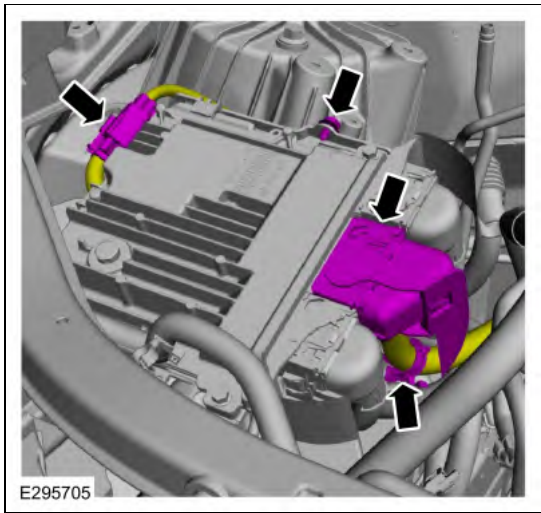
63.

- Install the intake manifold bracket and the bolts.
Torque: 97 lb.in (11 Nm)
- Position the heater hose brackets and install the bolts.
Torque: 97 lb.in (11 Nm)
- Connect the heater hose and clamp.

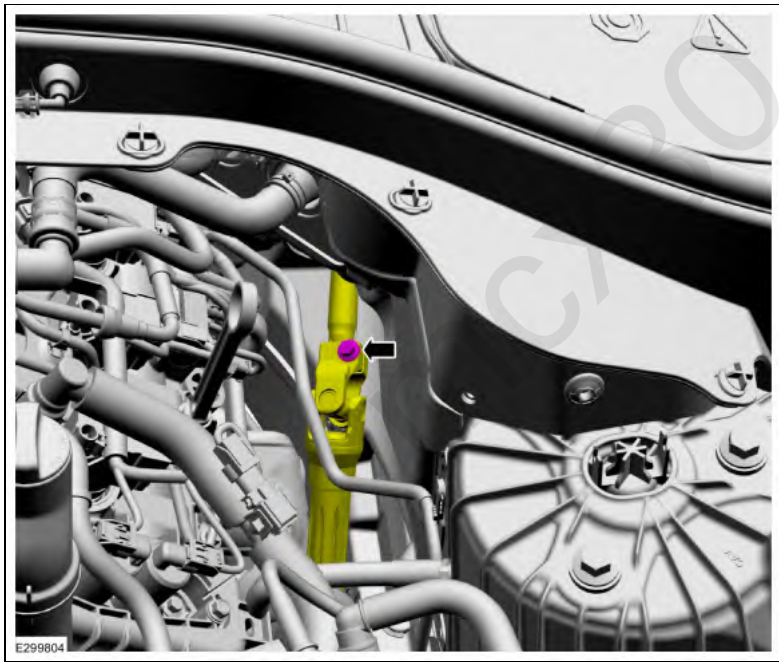


64.

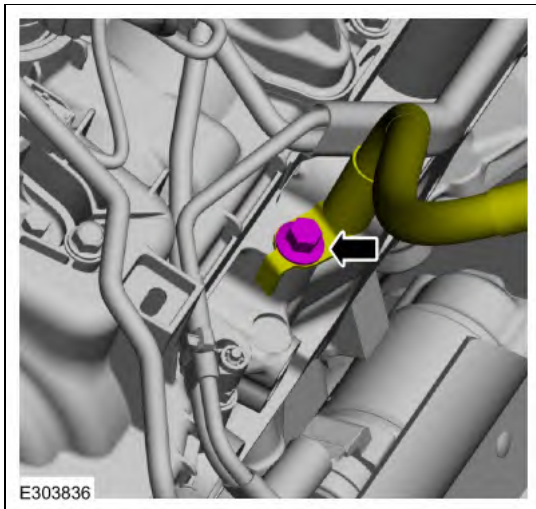
- Connect the center PCM electrical connector and attach the wiring harness retainer.
- Connect the engine harness electrical connector, and attach the retainer.



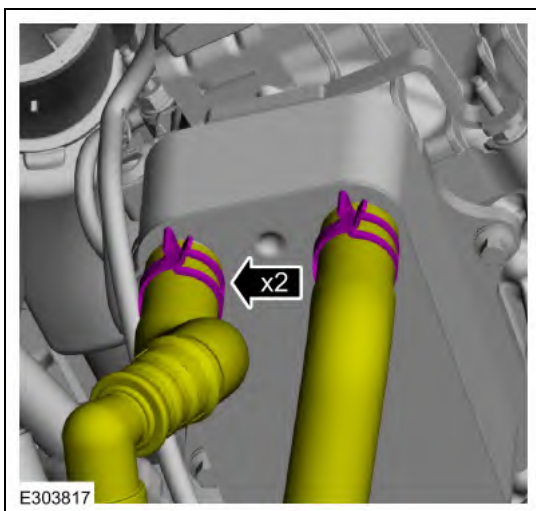
65. Install the new steering shaft bolt.
Torque: 22 lb.ft (30 Nm)



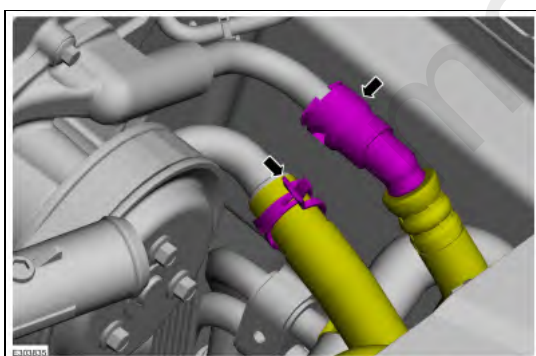
66. Install the generator.
 Refer to: Generator - 3.0L EcoBoost (414-02 Generator and Regulator, Removal and Installation).
67. Install the ground cable and the bolt.
Torque: 106 lb.in (12 Nm)



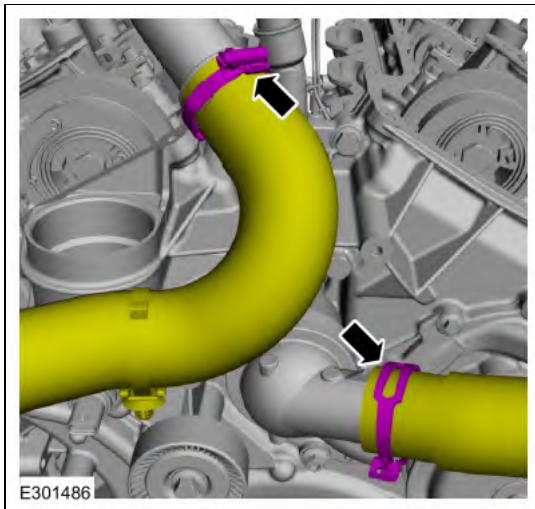
68. Connect the oil cooler hoses and the clamps.



- 69.
- Connect the coolant hose quick release coupling.
 - Connect the coolant hose and the clamp.

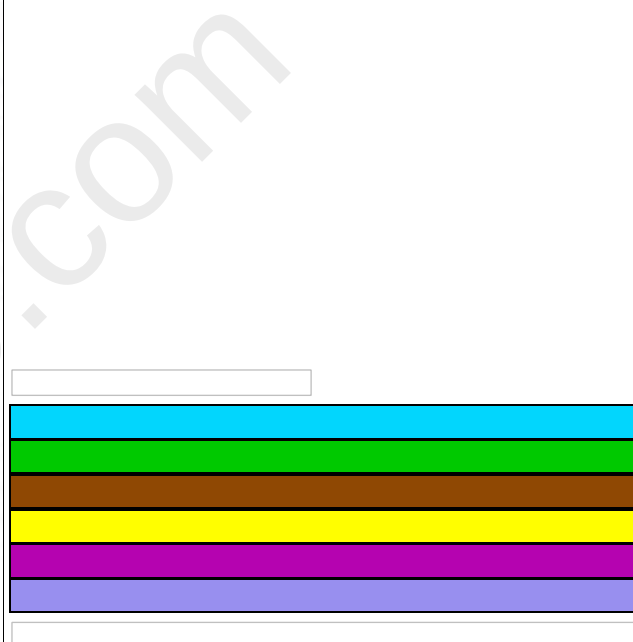
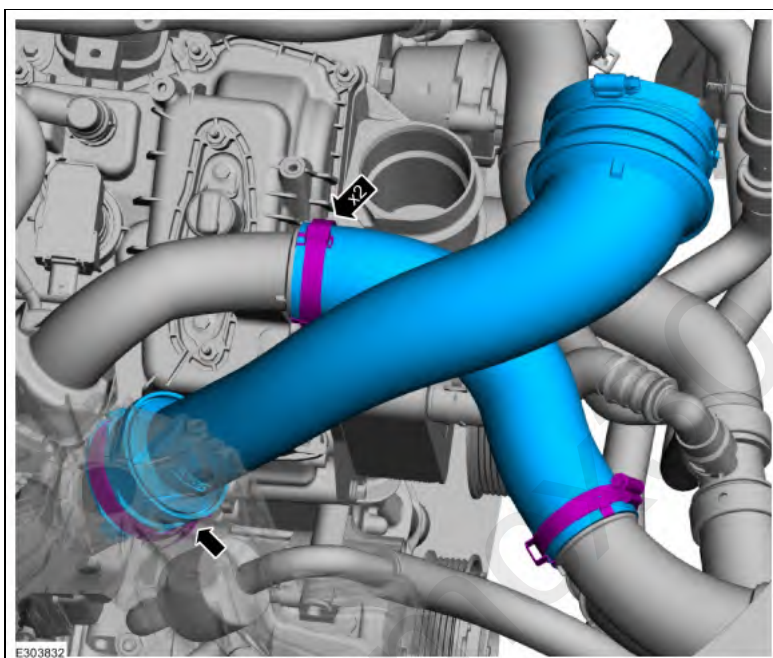


- 70.
- Connect the upper radiator hose and the clamp.
 - Connect the lower radiator hose and the clamp.
- Torque: 48 lb.in (5.4 Nm)*



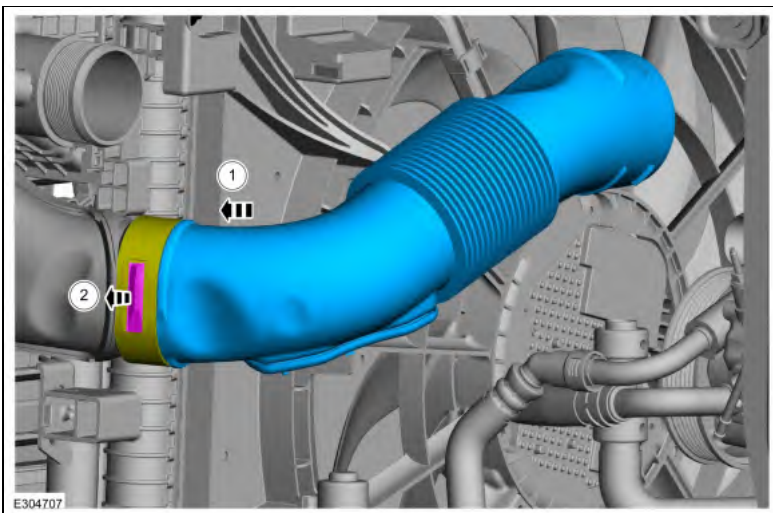
71.

1. Install the air cleaner outlet pipe and the clamp.
Torque: 42 lb.in (4.8 Nm)
2. Install the CAC inlet pipe and the clamps.
Torque: 42 lb.in (4.8 Nm)

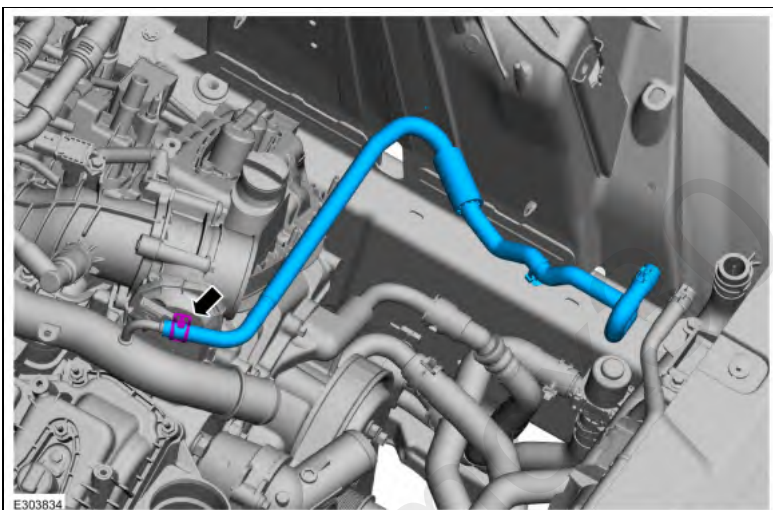


72.

1. Install the air cleaner inlet pipe.
2. Verify the raised area of the pipe is fully engaged.



73. Install the coolant hose and the clamp.



74. Install the following items:

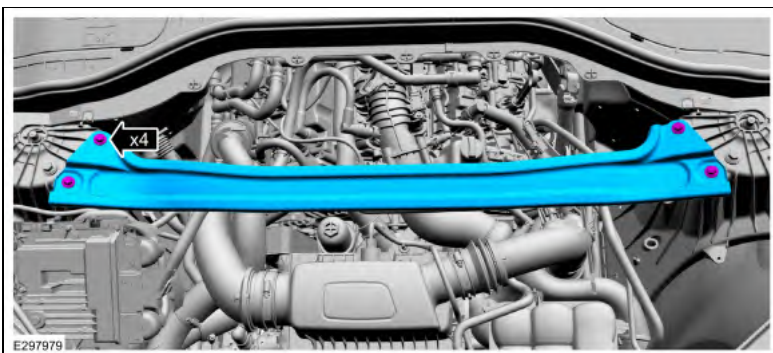
1. LH side.
Refer to: Charge Air Cooler (CAC) Intake Pipe (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
2. Refer to: Air Cleaner Outlet Pipe LH (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
3. Refer to: Charge Air Cooler (CAC) Outlet Pipe (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
4. Refer to: Air Cleaner (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
5. Refer to: Degas Bottle (303-03B Engine Cooling - 3.0L EcoBoost, Removal and Installation).
6. Refer to: Cowl Panel (501-02 Front End Body Panels, Removal and Installation).

75. Install a new oil filter and fill the engine with clean engine oil.

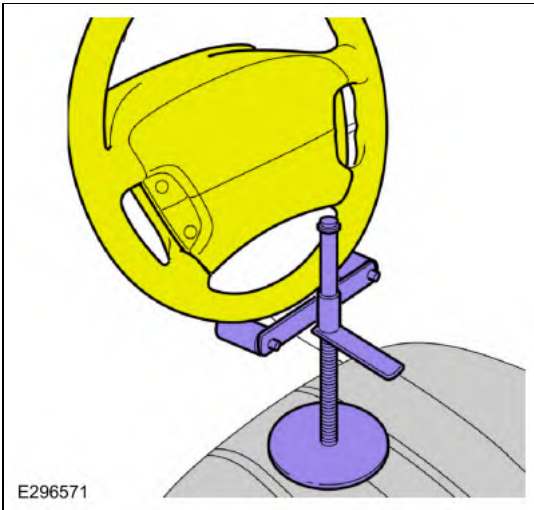
Refer to: Engine Oil Draining and Filling (303-01B Engine - 3.0L EcoBoost, General Procedures).

76. Install the suspension support bar and the bolts.

Torque: 22 lb.ft (30 Nm)



77. Remove the holding device.



78. Connect the battery ground cable.

Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

79. Charge the A/C system.

Refer to: Air Conditioning (A/C) System Recovery, Evacuation and Charging - Vehicles With: R1234YF Refrigerant (412-00 Climate Control System - General Information, General Procedures).

80. Front transfer case fluid level check.

Refer to: Transfer Case Fluid Level Check (308-07B Transfer Case, General Procedures).

81. Fill the cooling system.

Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03B Engine Cooling - 3.0L EcoBoost, General Procedures).

82. Check the transmission fluid level.

- If equipped with 10R60.

Refer to: Transmission Fluid Level Check (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R60, General Procedures).

- If equipped with 10R80.

Refer to: Transmission Fluid Level Check (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R80, General Procedures).

83. Pressurize the fuel system.

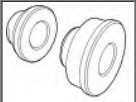
Refer to: Fuel System Pressure Release (310-00B Fuel System - General Information - 3.0L EcoBoost, General Procedures).

84. Use the Powertrain Control Module (PCM) Misfire Monitor Profile Correction routine in the diagnostic scan tool.

85. Start and check the exhaust system for leaks.

Engine Block Skirt Stiffener

Special Tool(s) / General Equipment

 E133913	205-153 (T80T-4000-W) Handle
	303-1246 Engine Spreader Bar TKIT-2006UF-FLM TKIT-2006UF-ROW
 E175042	303-1247 VCT Spark Plug Tube Seal Remover and Installer TKIT-2006UF-FLM TKIT-2006UF-ROW
 E274084	303-1250 Seal Installer, Rear Main TKIT-2006UFFLM
 E216458	303-1531 Installer, Front Crank Seal and Damper
 E168625	303-1634 Lift Eyes (2) TKIT-2014D-ROW3 TKIT-2014D-FL_ROW
 E222985	303-335 (T88T-6701-A) Installer, Front Cover Oil Seal TKIT-1988-FLM TKIT-1988-F
Floor Crane	
Mounting Stand	
Plastic Scraper	
Flat-Bladed Screwdriver	
Vise	
Vise Jaw Protectors	

Materials

Name	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6
Motorcraft® Silicone Gasket Remover ZC-30-A	-
Motorcraft® Metal Surface Prep Wipes ZC-31-B	-
Motorcraft® Metal Brake Parts Cleaner PM-4-A, PM-4-B	-

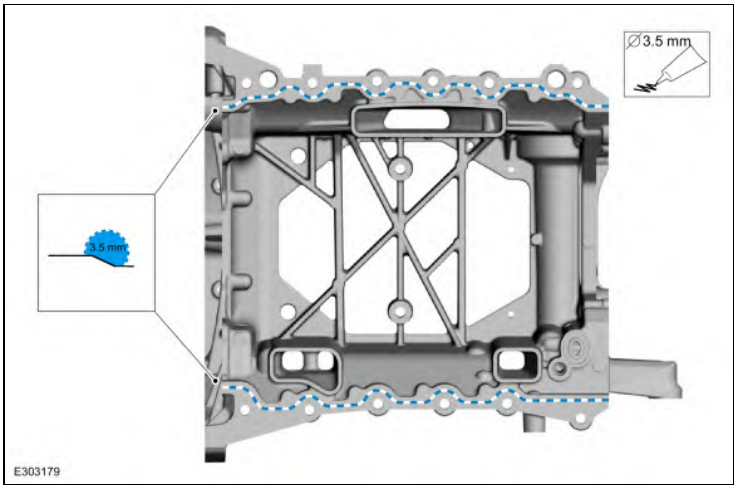
NOTICE: During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan, can cause engine failure.

NOTICE: The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.

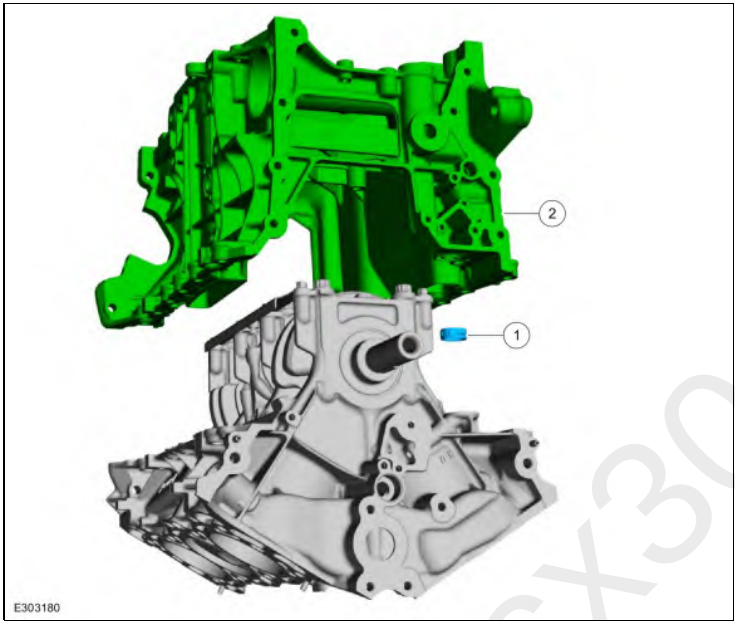
1. Inspect the turbocharger or engine air intake system components and clean, if necessary.
2. **NOTICE:** If the engine block skirt stiffener is not installed, aligned and the bolts tightened to minimum specification within 10 minutes, the sealant must be removed and the sealing area cleaned.

Apply a 3.5 mm (0.14 in) bead of Motorcraft® High Performance Engine RTV Silicone to the chamfer of the engine block skirt stiffener.

Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



3.
 1. Position the oil seal.
 2. Install the engine block skirt stiffener.



4.
 1. Install the bolts finger tight.
 2. Tighten the 2 bolts.

Torque:
 Stage 1: 35 lb.in (4 Nm)
 Stage 2: Loosen: 360°