

## Engine



### Special Tool(s) / General Equipment

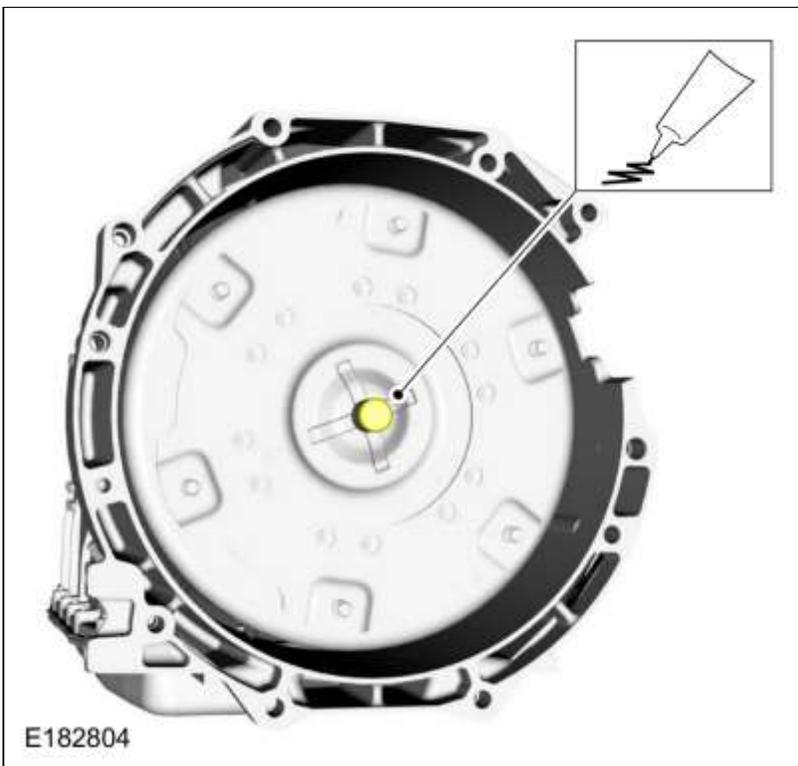
 <p>ST1341-A</p>	<p><a href="#">300-OTC1819E</a>                  2,200# Floor Crane, Fold Away</p>
	<p><a href="#">303-050 (T70P-6000)</a>                  Lifting Bracket, Engine</p>
Magnetic Socket	
Trolley Jack	
Vehicle/Axle Stands	
Hose Clamp Remover/Installer	
Wooden Block	

### Materials

Name	Specification
Motorcraft® Multi-Purpose Grease Spray XL-5-A	ESB-M1C93-B

### 6-Speed Automatic Transmission – 6R80

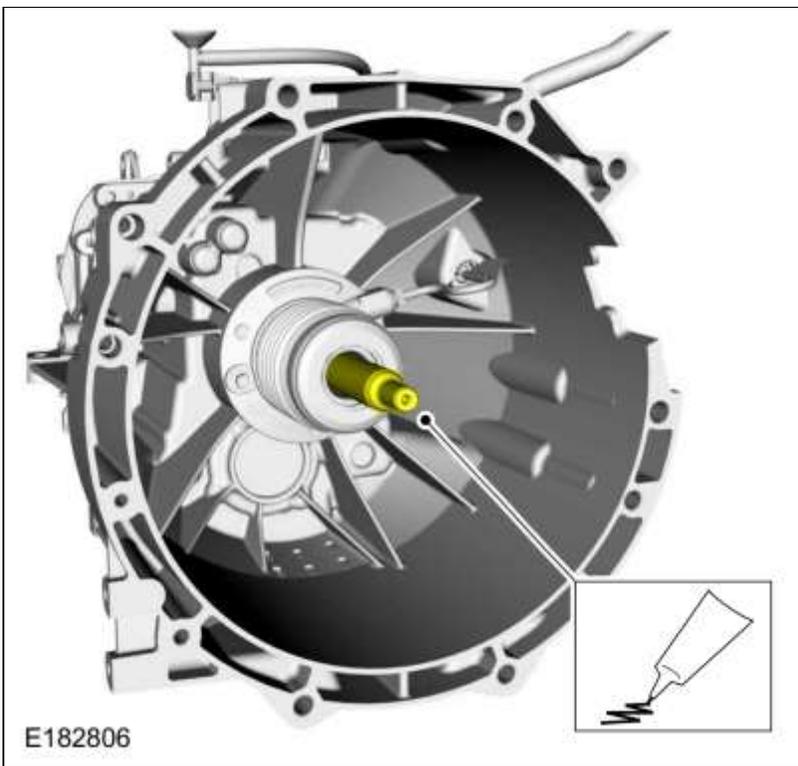
1. Lubricate the torque converter pilot hub with multi-purpose grease.  
*Material:* Motorcraft® Multi-Purpose Grease Spray / XL-5-A (ESB-M1C93-B)



## 6-Speed Manual Transmission – MT82

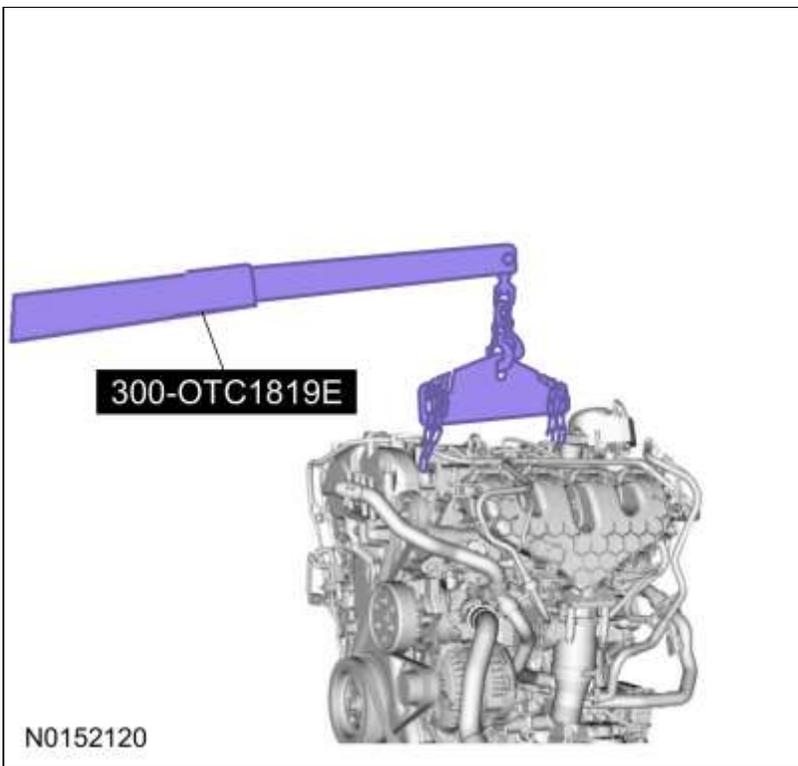
2. Lubricate the input shaft with multi-purpose grease.

*Material:* Motorcraft® Multi-Purpose Grease Spray / XL-5-A (ESB-M1C93-B)



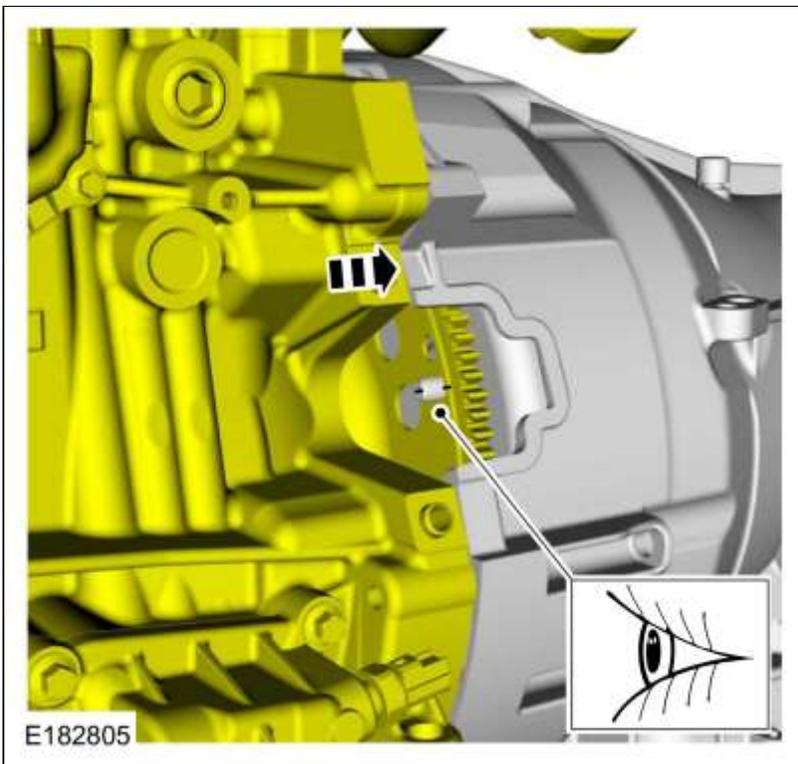
**6-Speed Automatic Transmission – 6R80/6-Speed Manual Transmission – MT82**

3. Using the special tool, install the engine.  
Use Special Service Tool: [300-OTC1819E](#) 2,200# Floor Crane, [Fold Away](#).



#### 6-Speed Automatic Transmission – 6R80

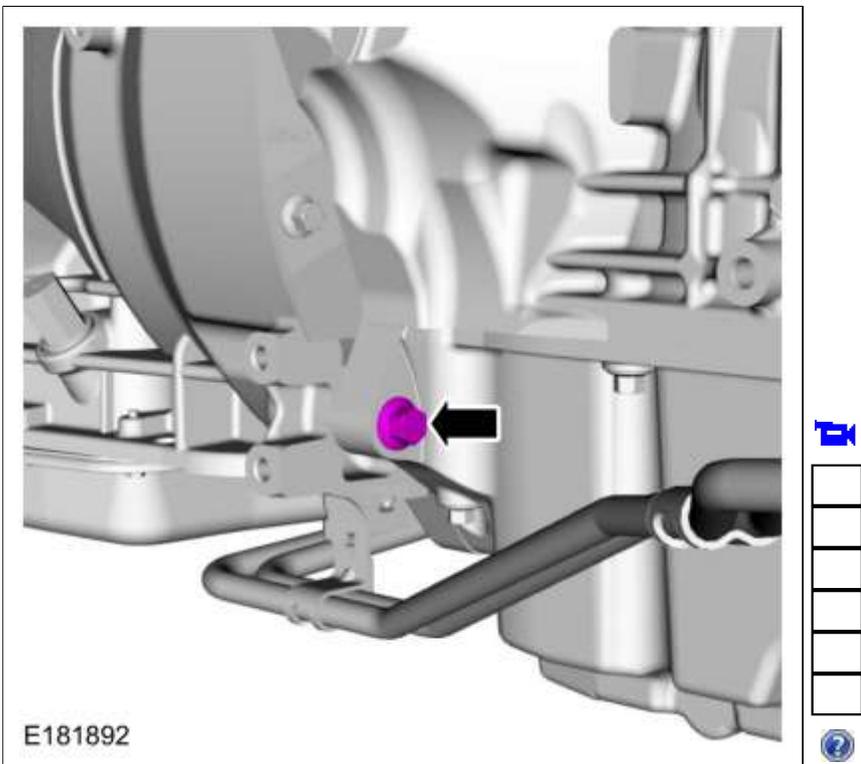
4. Align the torque converter stud marked during removal with the flexplate.



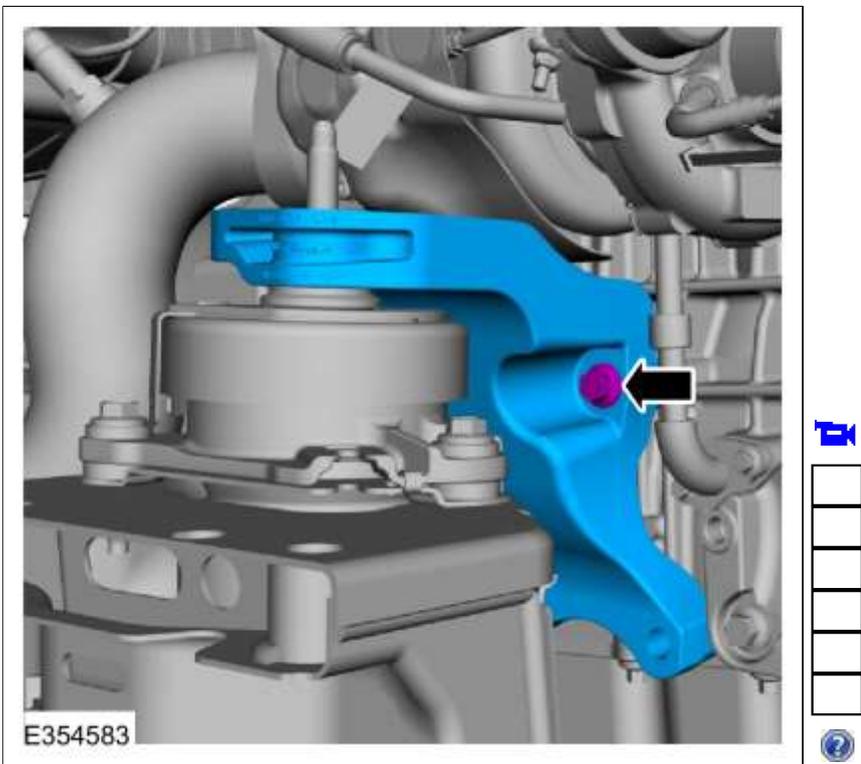
**6-Speed Automatic Transmission – 6R80/6-Speed Manual Transmission – MT82**

5. **NOTE:** *Automatic transmission shown, manual transmission similar.*

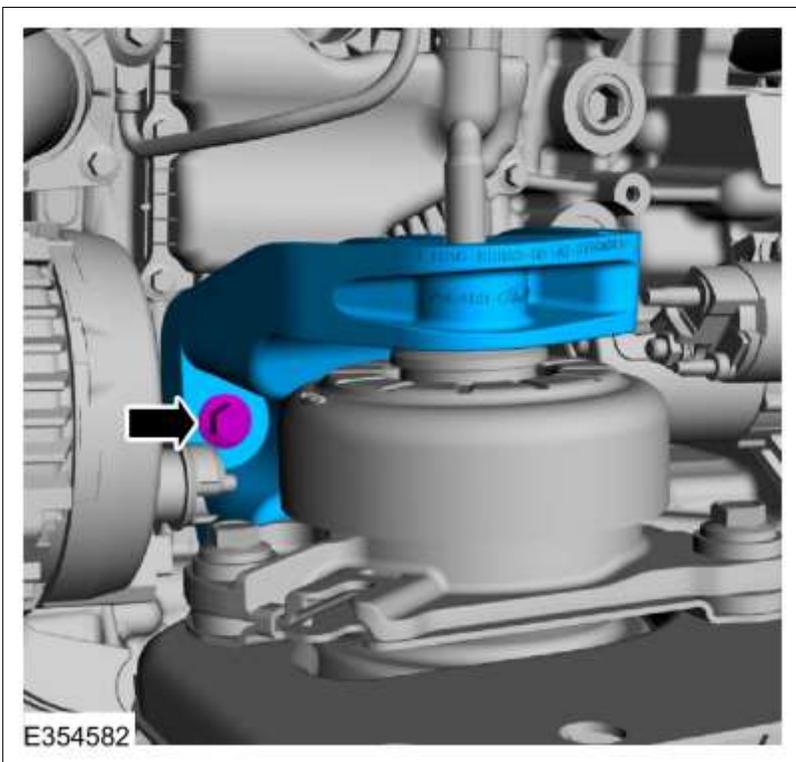
Install the oil pan bolt.  
*Torque:* 35 lb.ft (48 Nm)



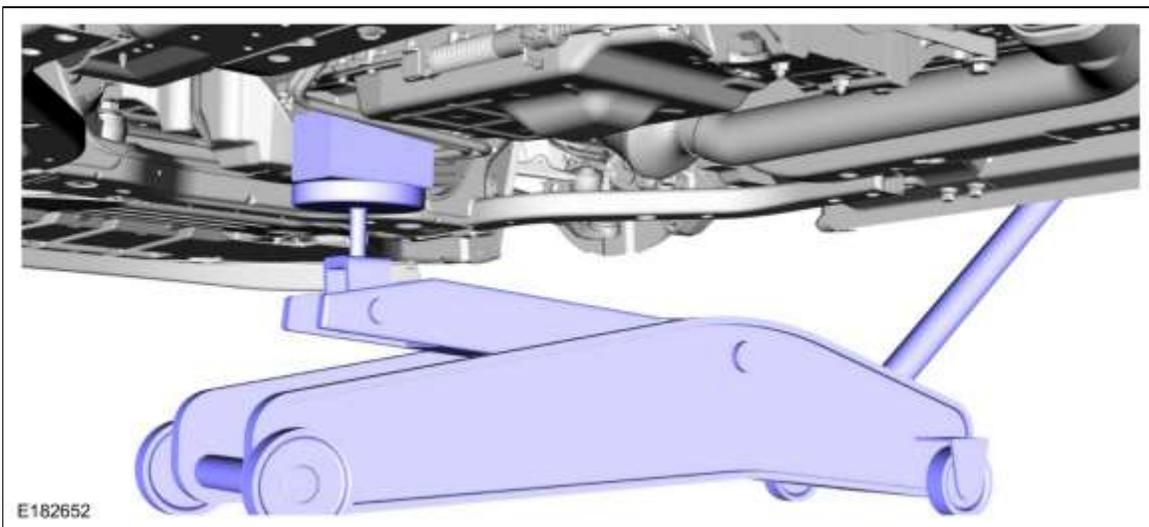
6. Install RH engine mount bracket and the front upper bolt finger tight.



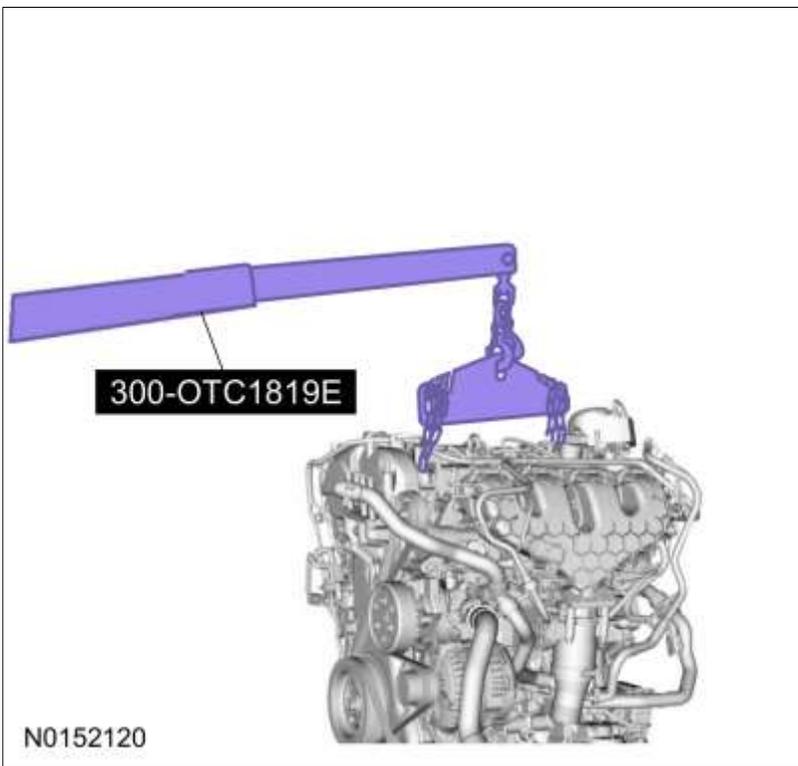
7. Install the LH engine mount bracket and the front upper bolt finger tight.



- 8. Remove the jack and wooden block.  
Use the General Equipment: Wooden Block  
Use the General Equipment: Trolley Jack

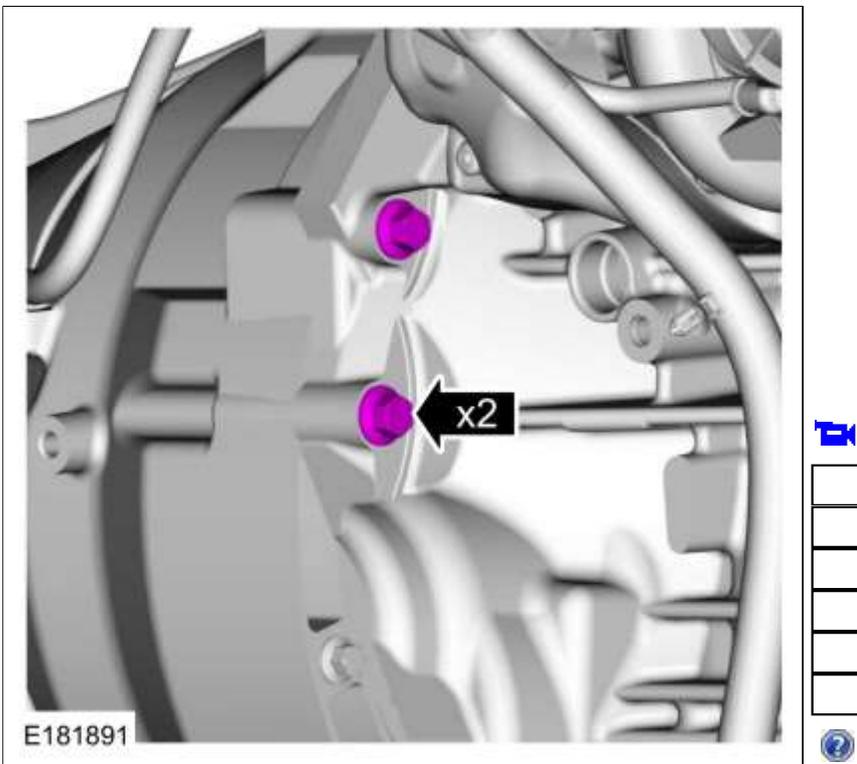


- 9. Remove Special Service Tool: [300-OTC1819E 2,200# Floor Crane](#), Fold Away.



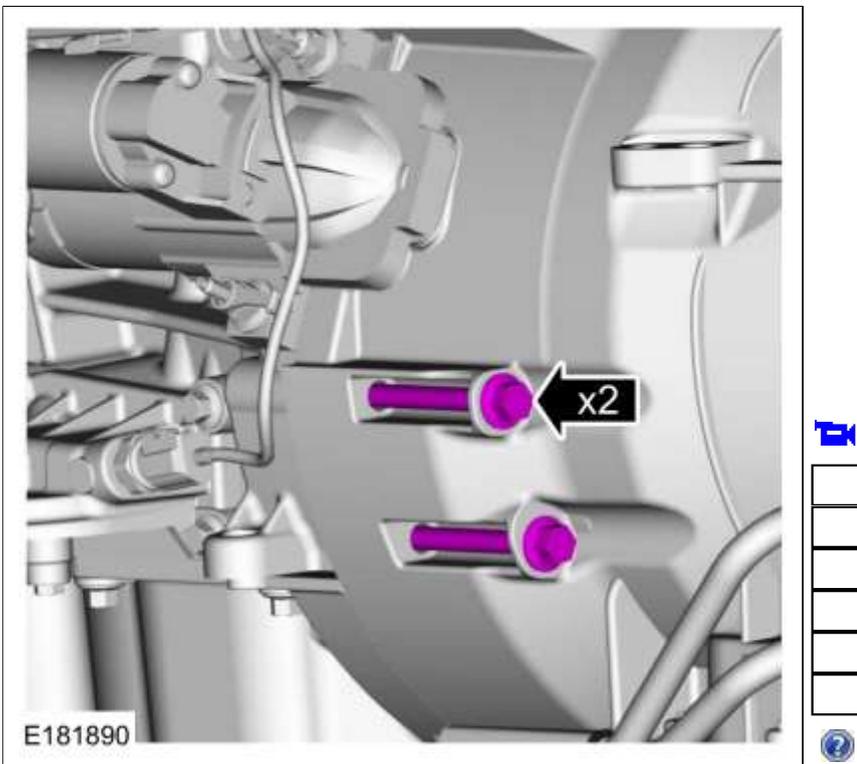
10. **NOTE:** Automatic transmission shown, manual transmission similar.

Install the transmission bolts.  
Torque: 35 lb.ft (48 Nm)



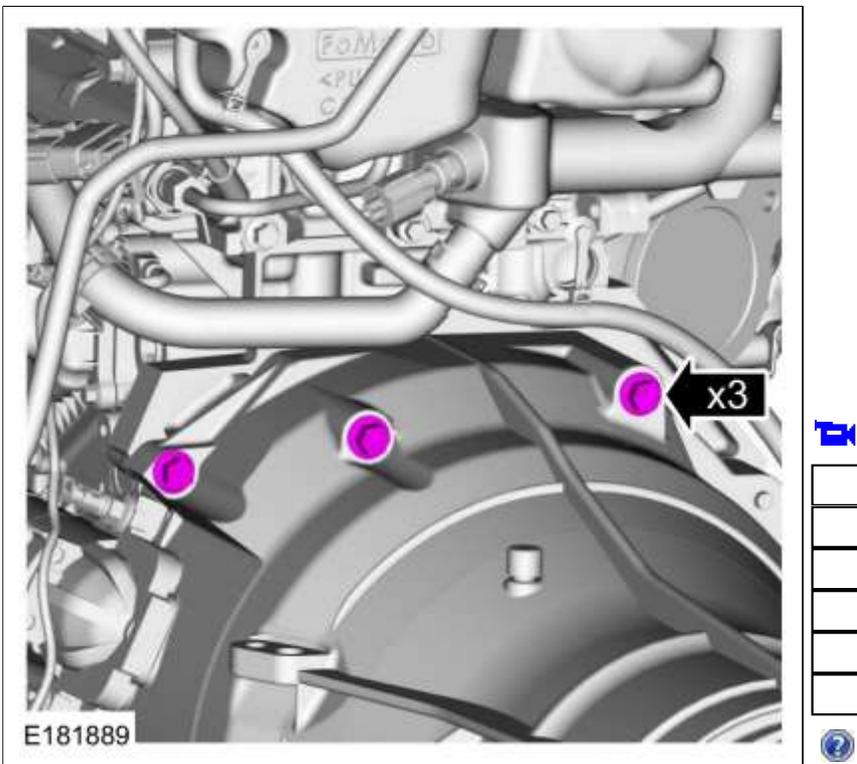
11. **NOTE:** Automatic transmission shown, manual transmission similar.

Install the transmission bolts.  
Torque: 35 lb.ft (48 Nm)



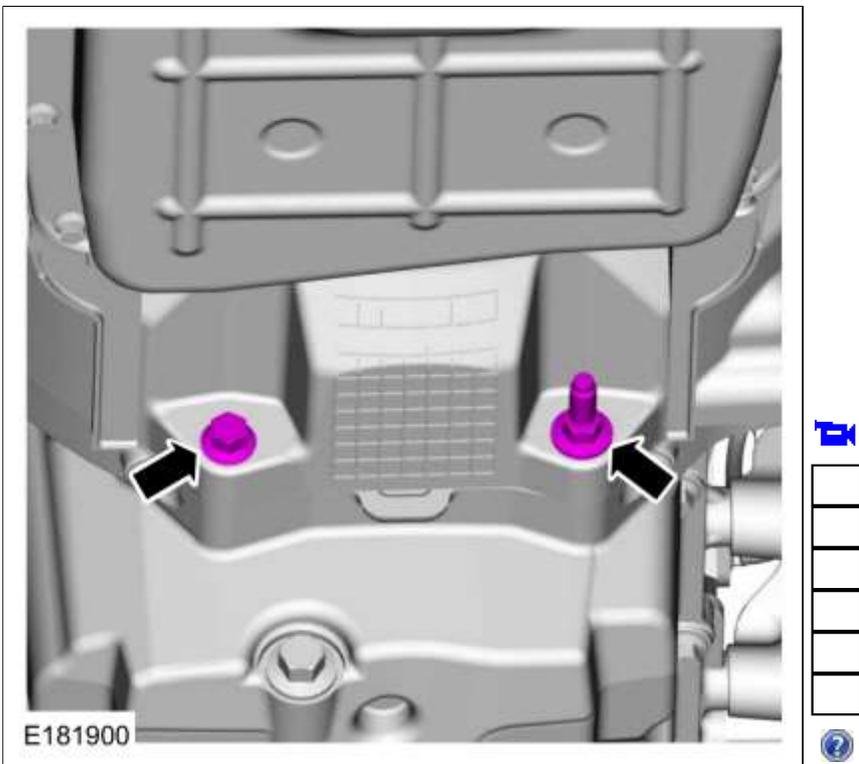
12. **NOTE:** Automatic transmission shown, manual transmission similar.

Install the transmission bolts.  
Torque: 35 lb.ft (48 Nm)

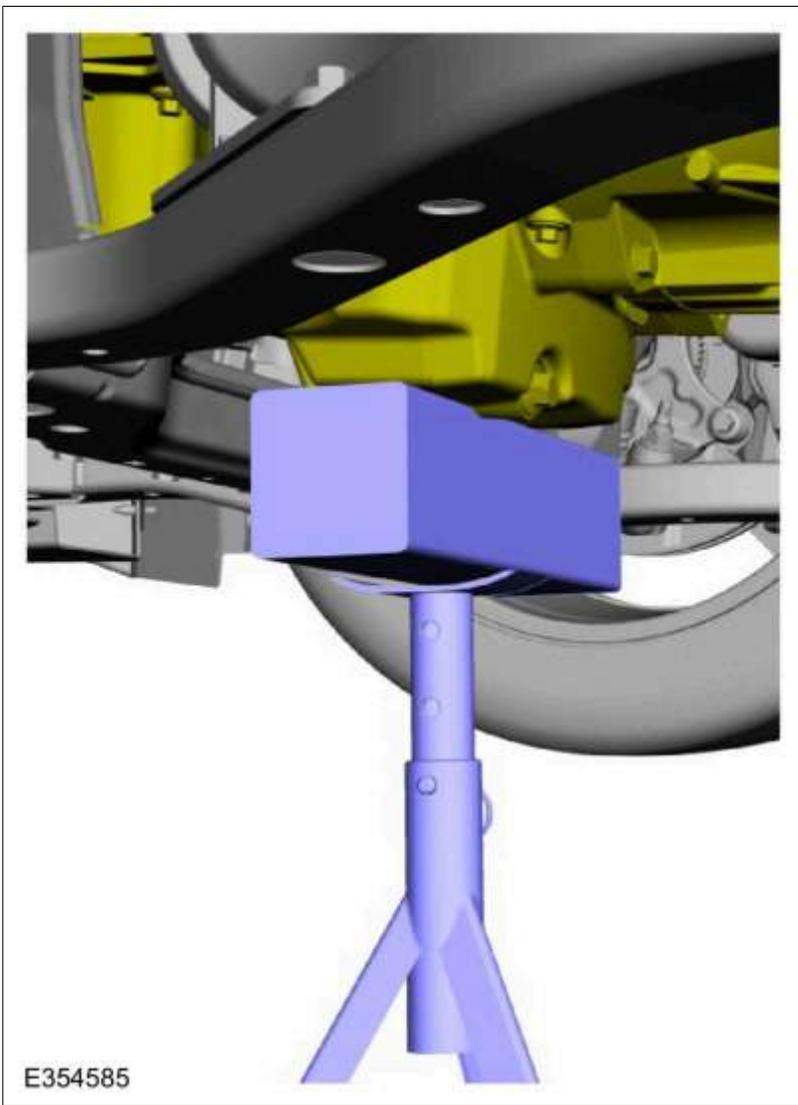


13. **NOTE:** Automatic transmission shown, manual transmission similar.

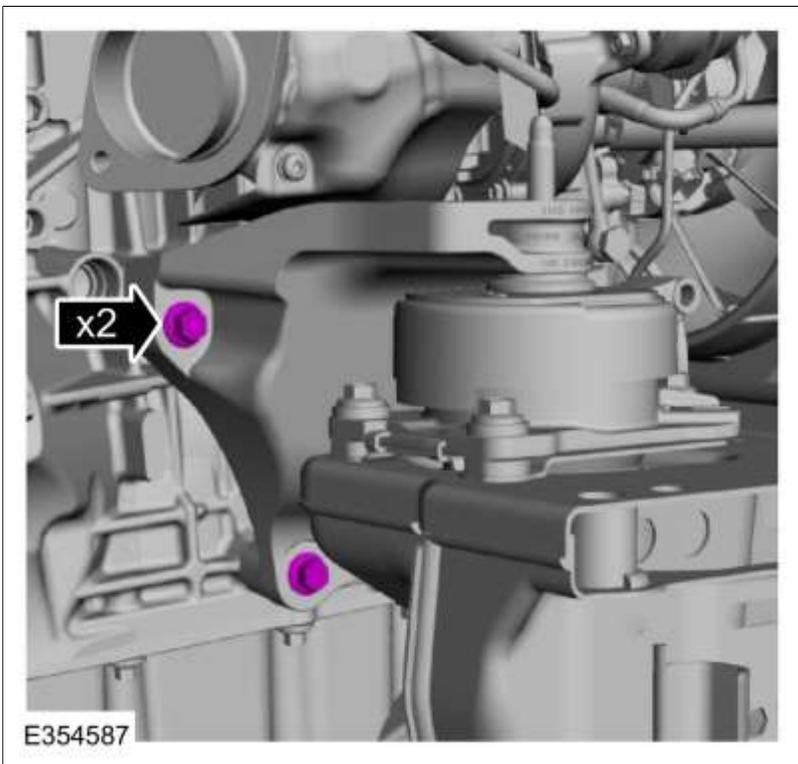
Install the oil pan bolts.  
Torque: 35 lb.ft (48 Nm)



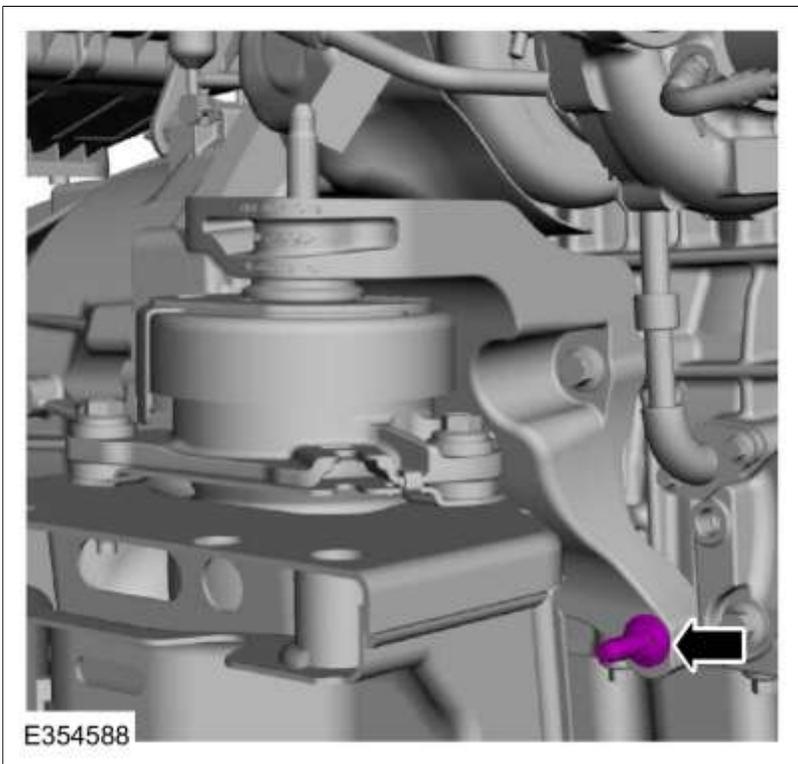
14. Install the jack stand and wooden block under the oil pan and support the engine.  
Use the General Equipment: Wooden Block  
Use the General Equipment: Vehicle/Axle Stands



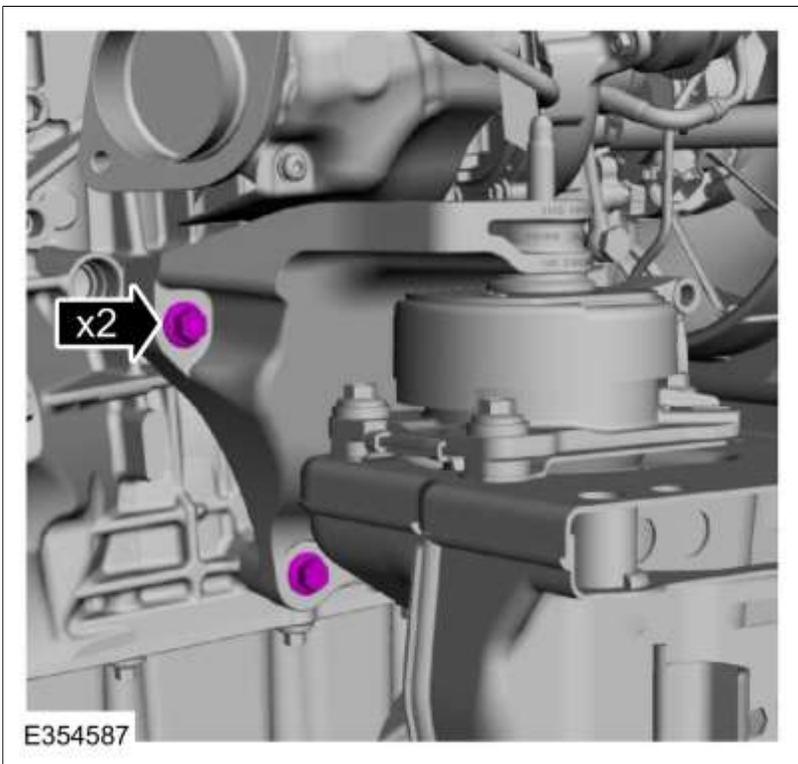
15. Install the rear bolts for the RH engine mount bracket finger tight.



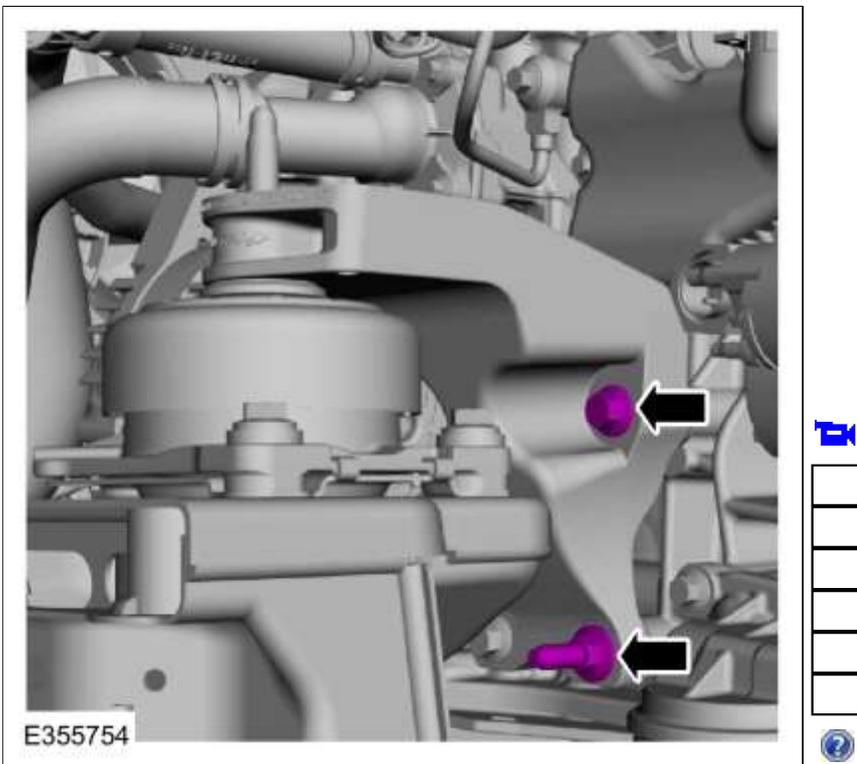
16. Install and tighten the front lower stud bolt for the RH engine mount bracket.  
*Torque: 46 lb.ft (63 Nm)*



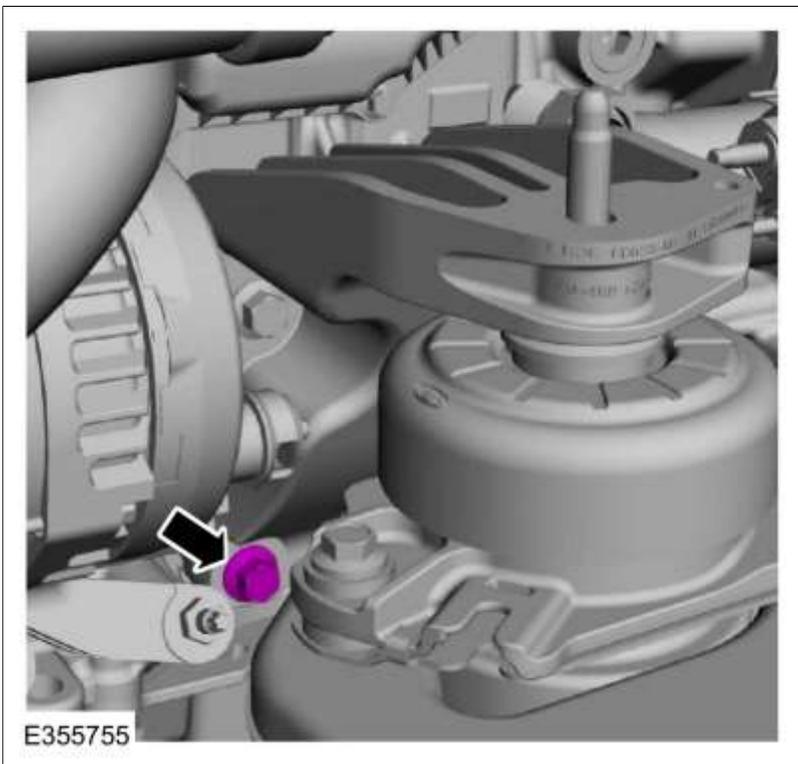
17. Tighten the rear bolts for the RH engine mount bracket.  
*Torque: 46 lb.ft (63 Nm)*



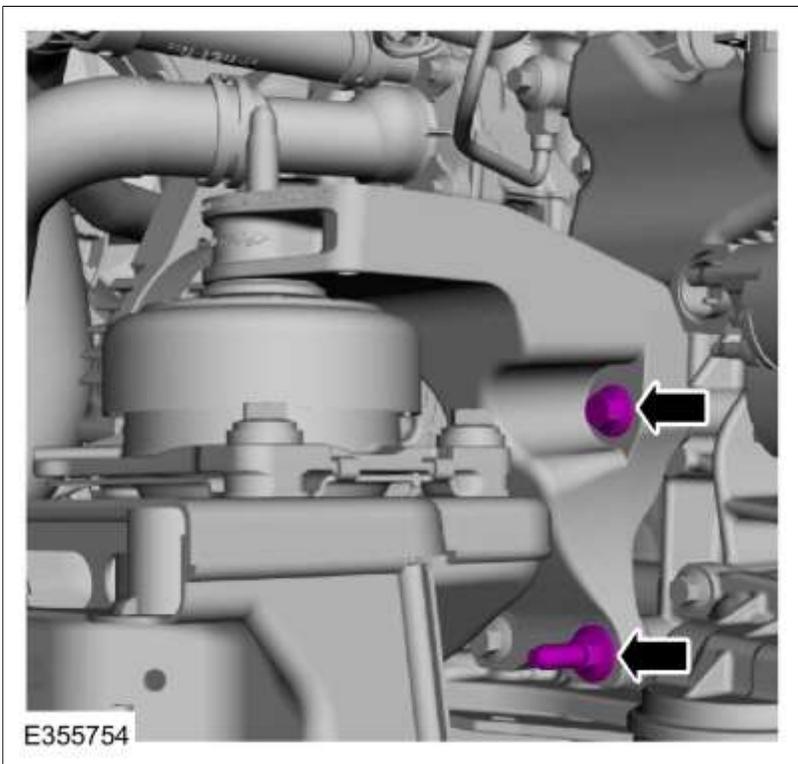
18. Install the rear stud bolt and bolt for the LH engine mount bracket finger tight.



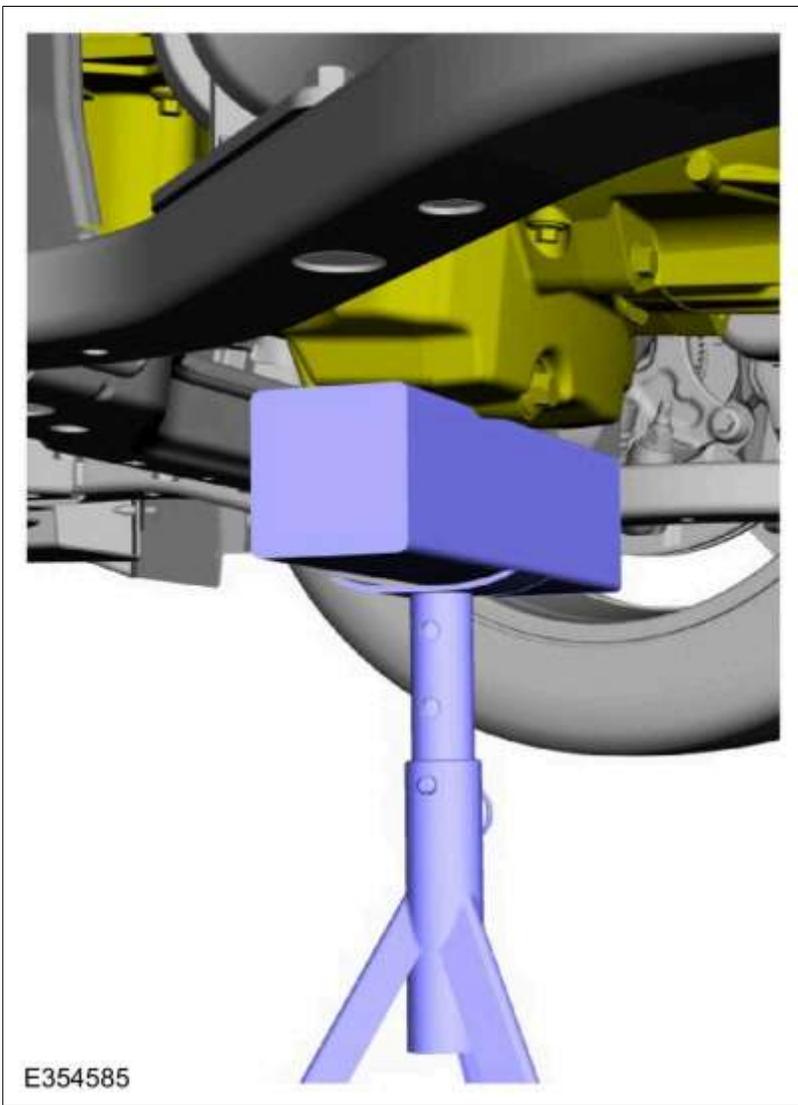
19. Install and tighten the front lower bolt for the LH engine mount bracket.  
*Torque: 46 lb.ft (63 Nm)*



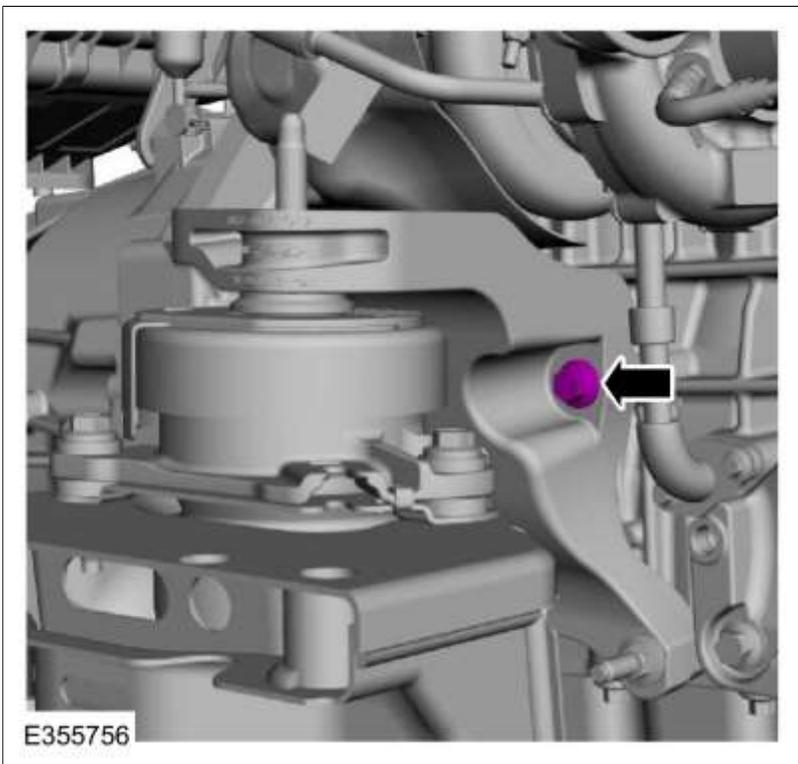
20. Tighten the rear stud bolt and bolt for the LH engine mount bracket.  
*Torque: 46 lb.ft (63 Nm)*



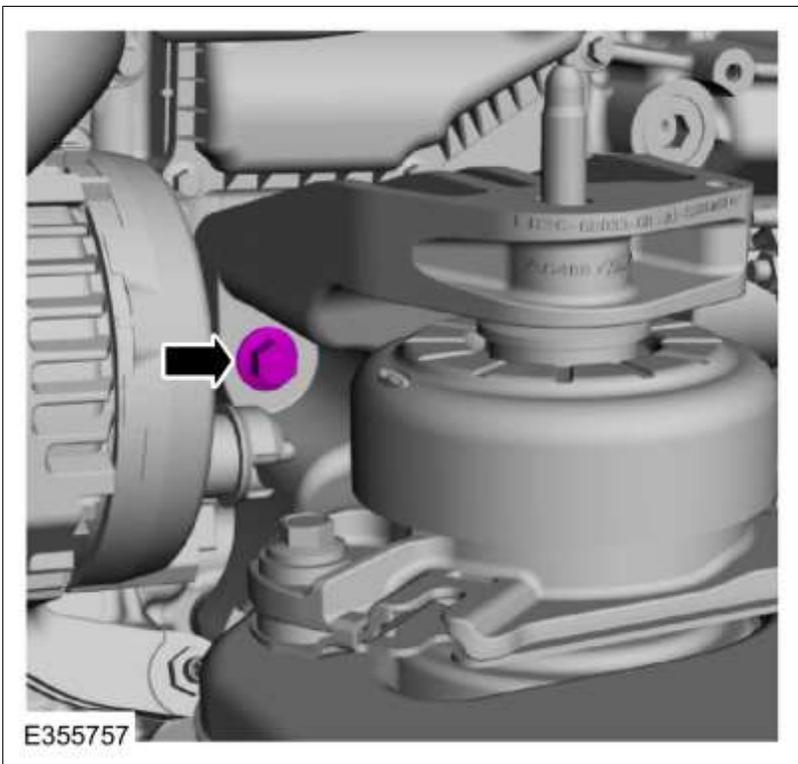
- 21. Remove the jack stand and wooden block.  
Use the General Equipment: Wooden Block  
Use the General Equipment: Vehicle/Axle Stands



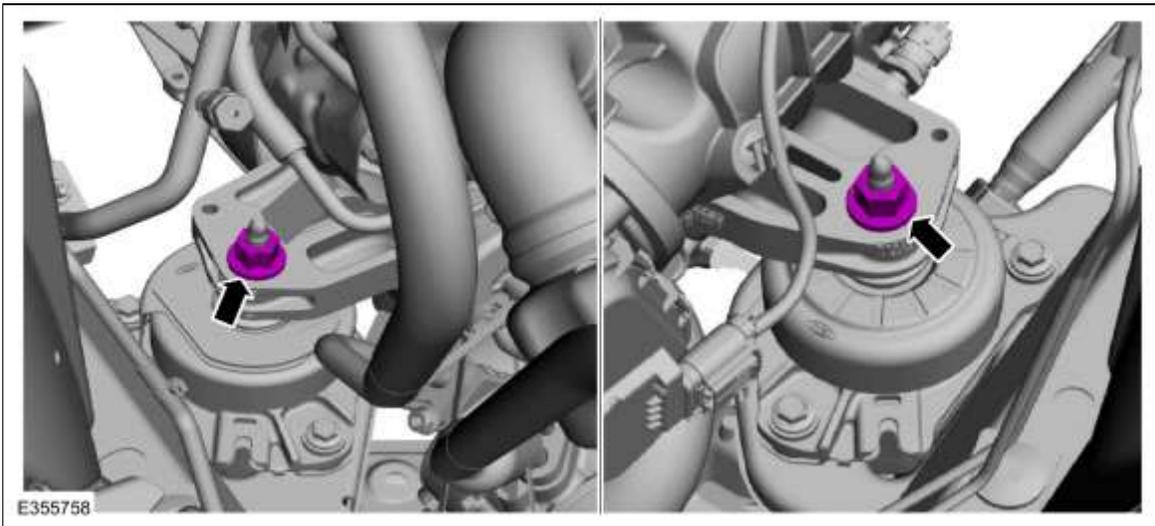
22. Tighten the front upper bolt for the RH engine mount bracket.  
*Torque: 46 lb.ft (63 Nm)*



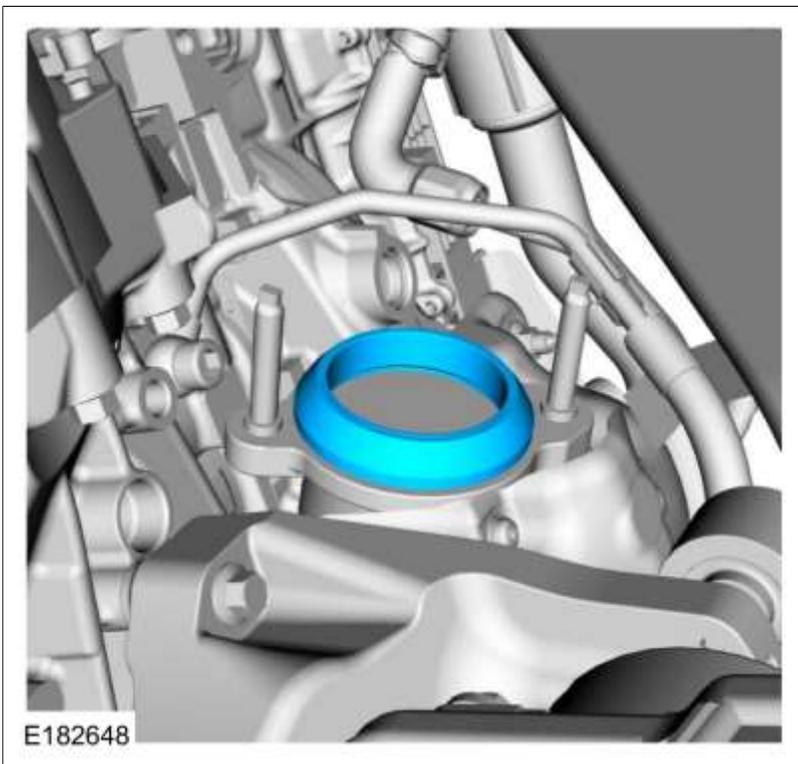
23. Tighten the front upper bolt for the LH engine mount bracket.  
*Torque:* 46 lb.ft (63 Nm)



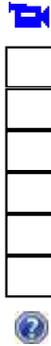
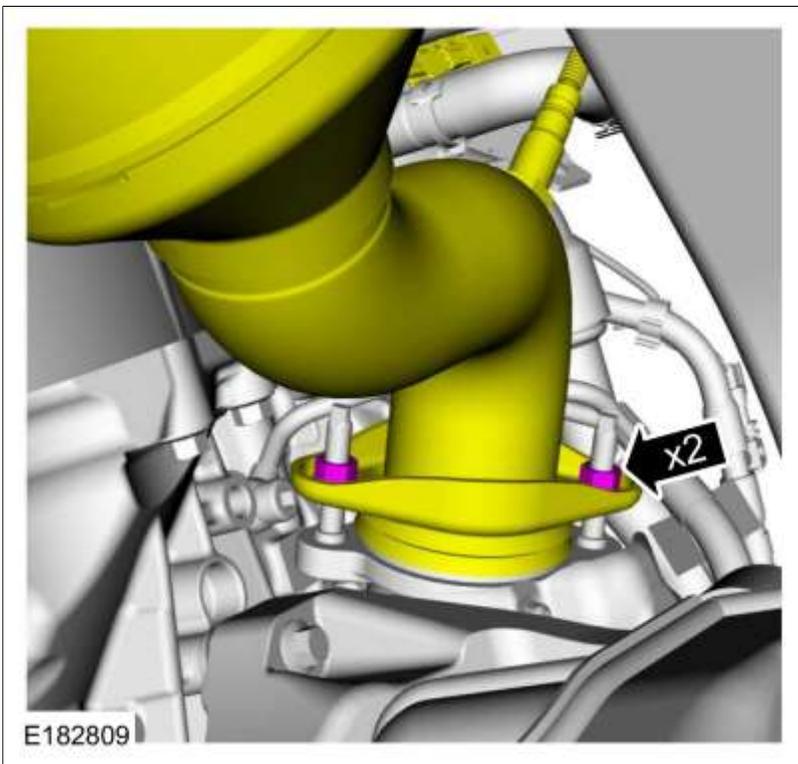
24. Install the RH and LH engine mount bracket nuts.  
Torque: 92 lb.ft (125 Nm)



25. Install a new gasket.

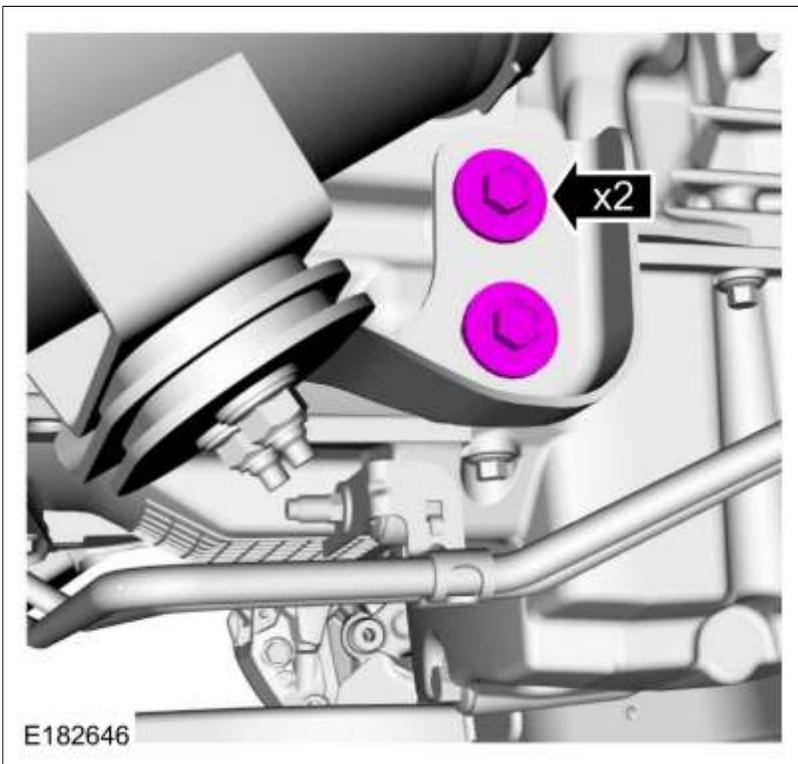


26. Position the catalytic converter and install the new nuts.  
*Torque:* 30 lb.ft (40 Nm)

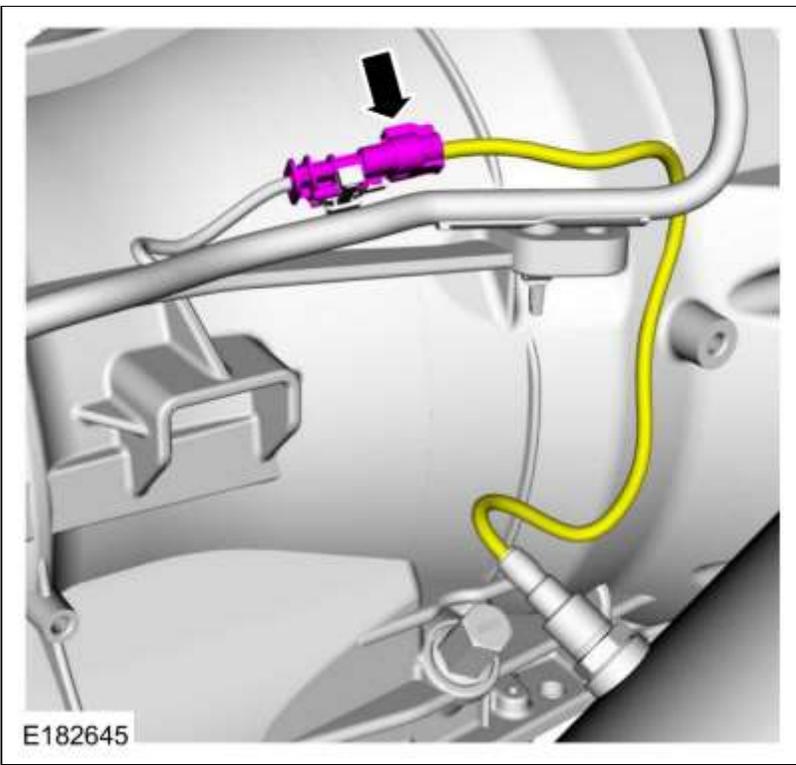


27. **NOTE:** Automatic transmission shown, manual transmission similar.

Install the bolts for the catalytic converter bracket.  
Torque: 18 lb.ft (25 Nm)

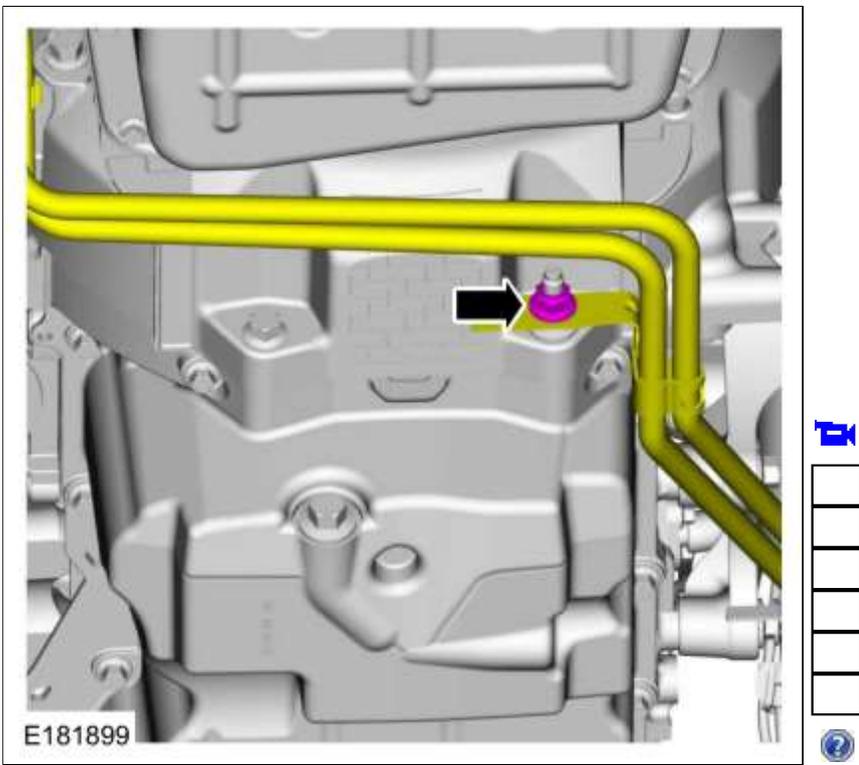


28. **NOTE:** Automatic transmission shown, manual transmission similar.  
Connect the catalyst monitor sensor (CMS) sensor electrical connector.

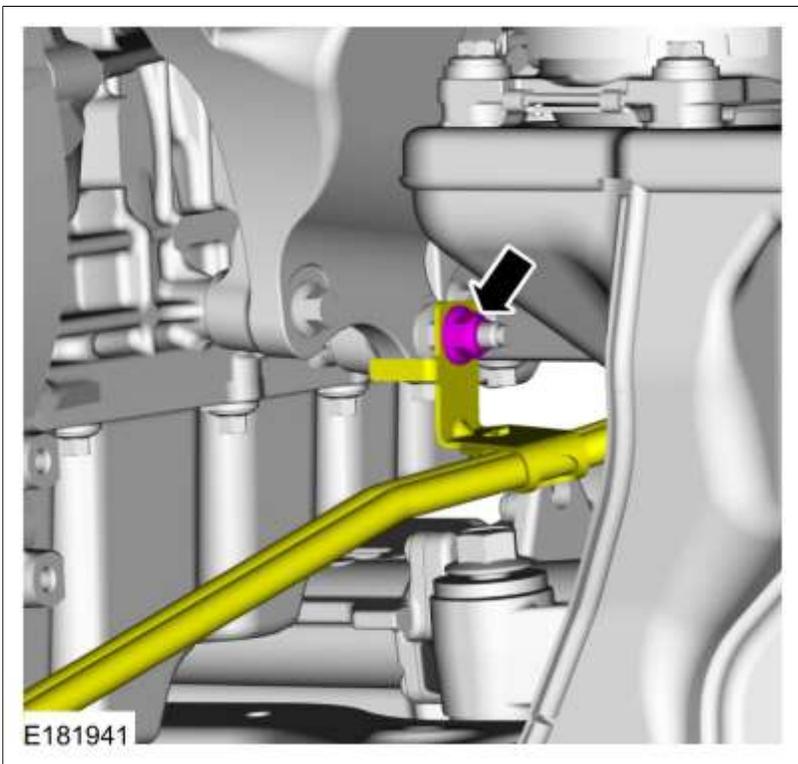


**6-Speed Automatic Transmission – 6R80**

29. Install the transmission cooling tube bracket and nut.

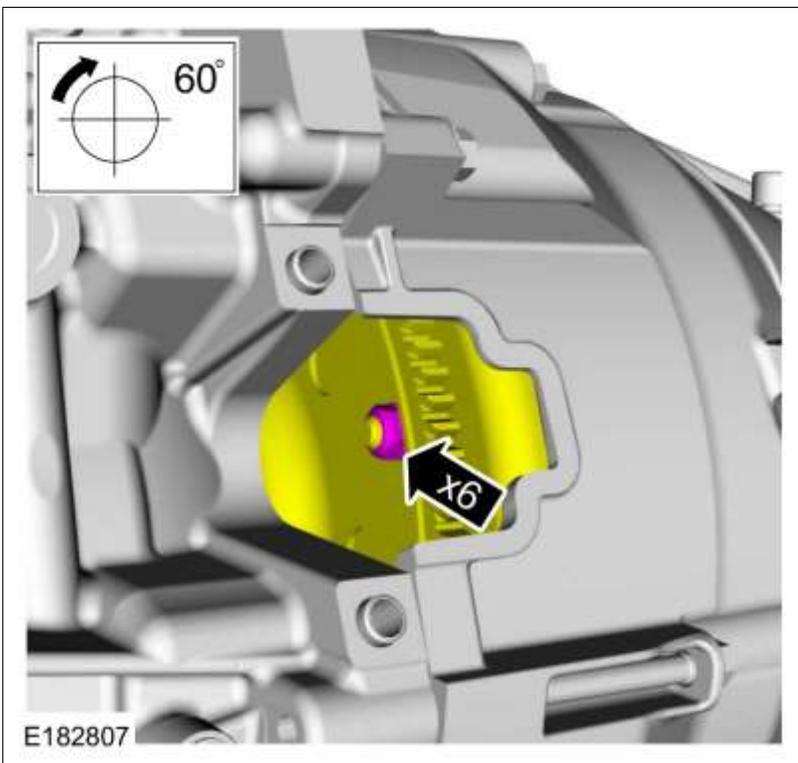


30. Position the automatic transmission tube bracket and install the nut.  
*Torque: 35 lb.ft (48 Nm)*

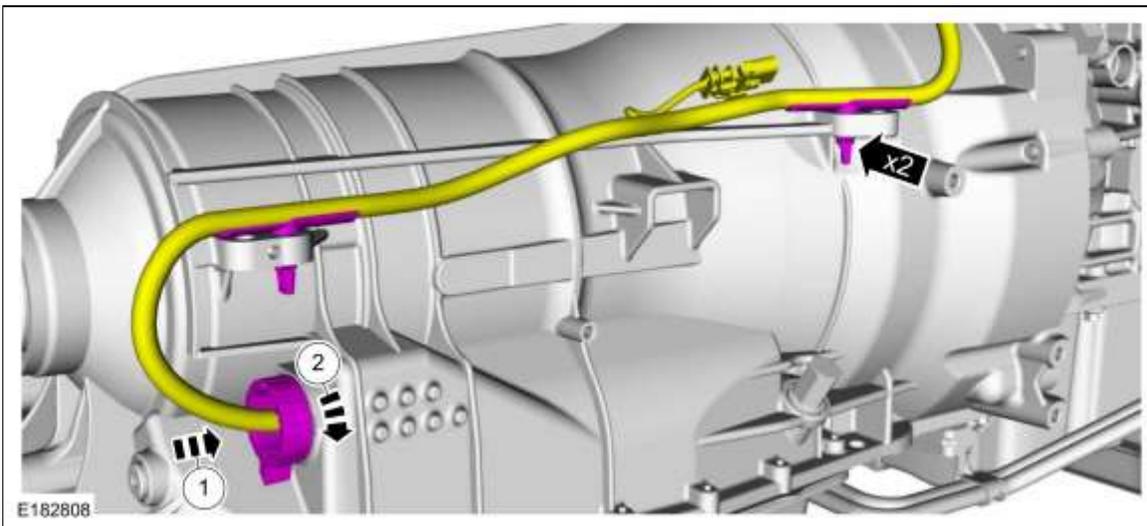


31. **NOTE:** Only rotate the crankshaft in a clockwise direction.

Install the new torque convertor nuts.  
Use the General Equipment: Magnetic Socket  
Torque: 30 lb.ft (40 Nm)



32. 1. Push the transmission electrical connector in to connect.  
 2. Rotate the transmission electrical connector clockwise.
- Attach the wiring harness retainers.



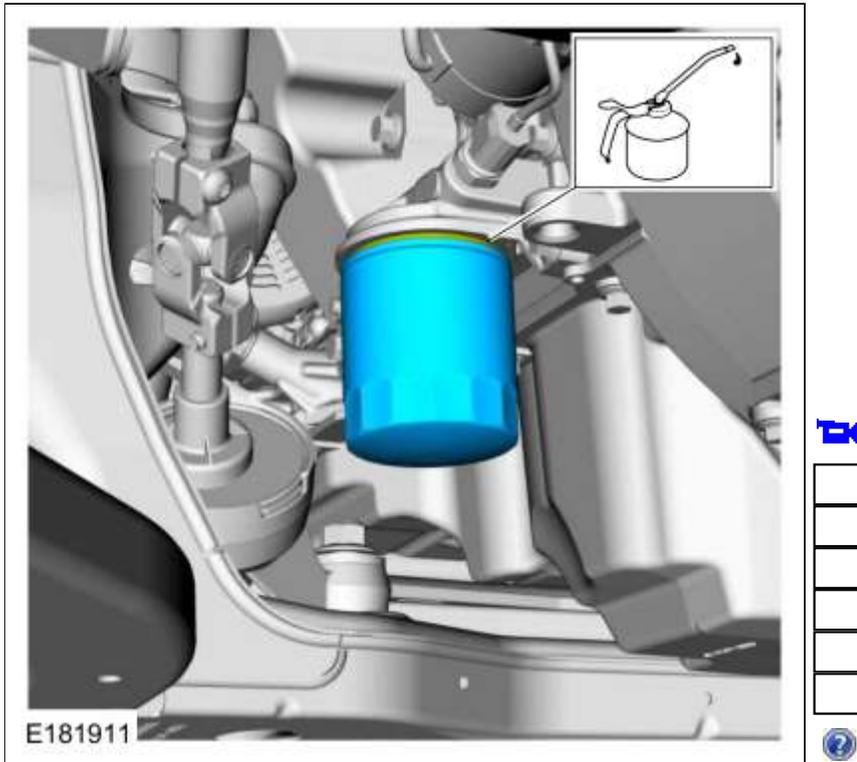
33. **NOTE:** Lubricate the engine oil filter seal with clean engine oil.

Install a new engine oil filter.

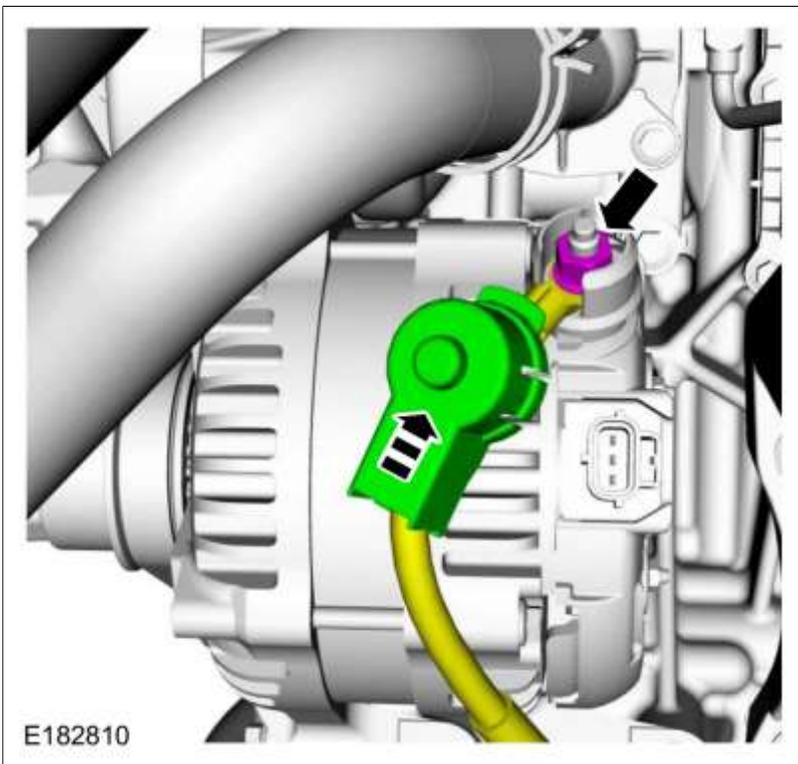
*Torque:*

Stage 1: 71 lb.in (8 Nm)

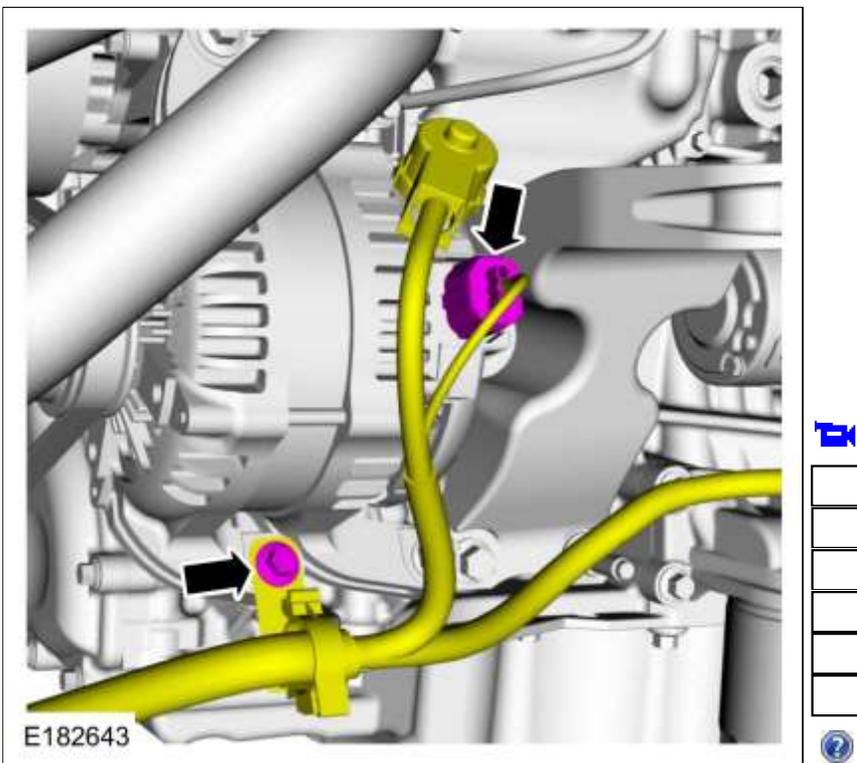
Stage 2: 180°



- 34.
- Install the B+ cable and the nut.  
*Torque:* 150 lb.in (17 Nm)
  - Position the protective cover.

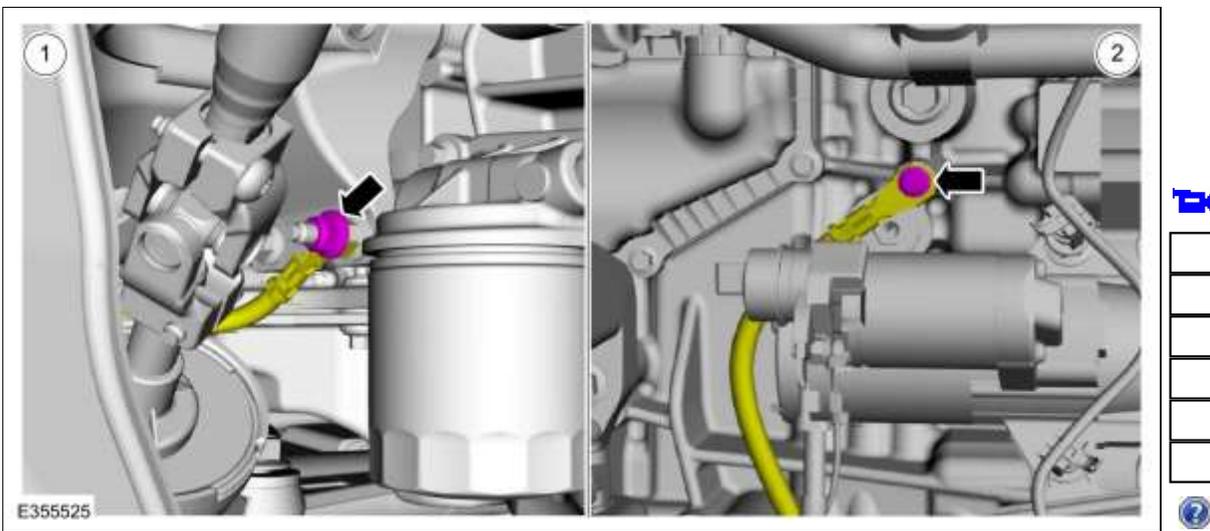


- 35.
- Connect the generator electrical connector.
  - Position the wire harness retainer and install the bolt.  
*Torque: 89 lb.in (10 Nm)*

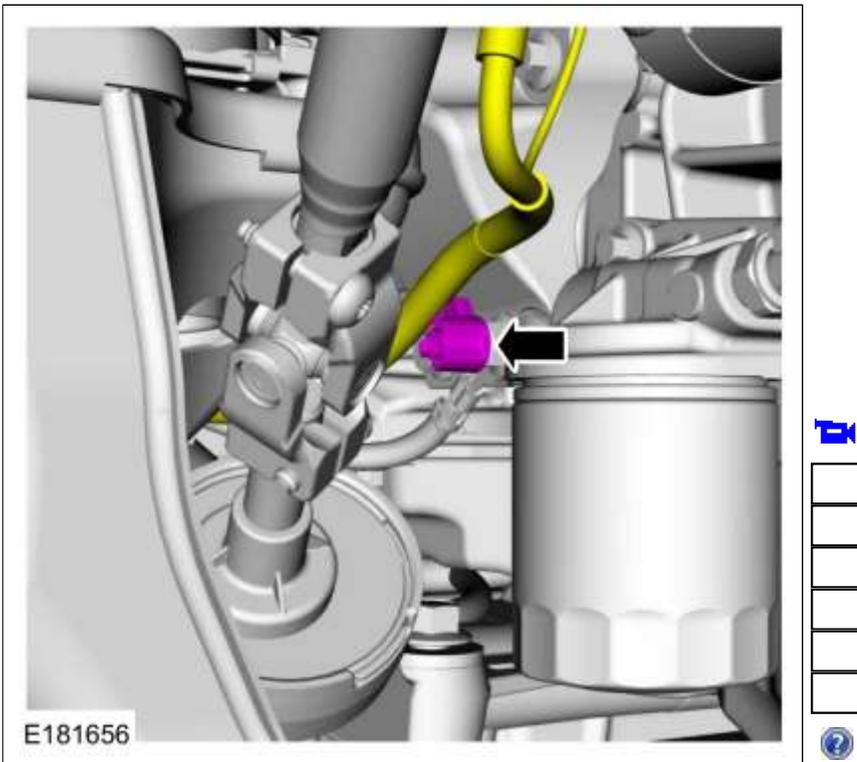


36. **NOTE:** *The engine ground wire may be located in one of the following locations.*

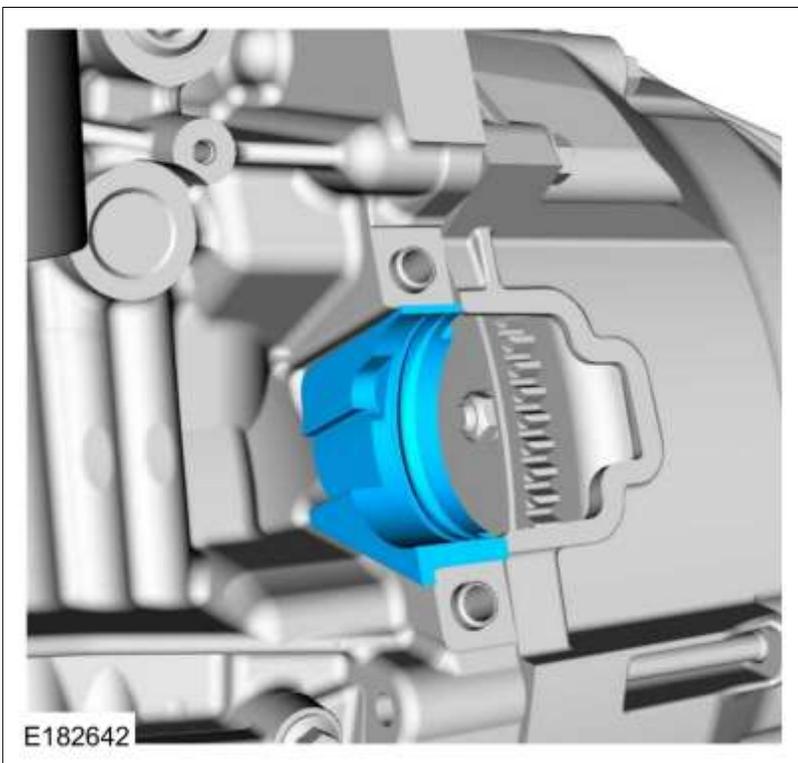
1. If equipped, install the ground wire and nut to the LH engine mount bracket stud bolt.  
*Torque: 35 lb.ft (48 Nm)*
2. If equipped, install the ground wire and bolt to the LH side of the engine block.  
*Torque: 35 lb.ft (48 Nm)*



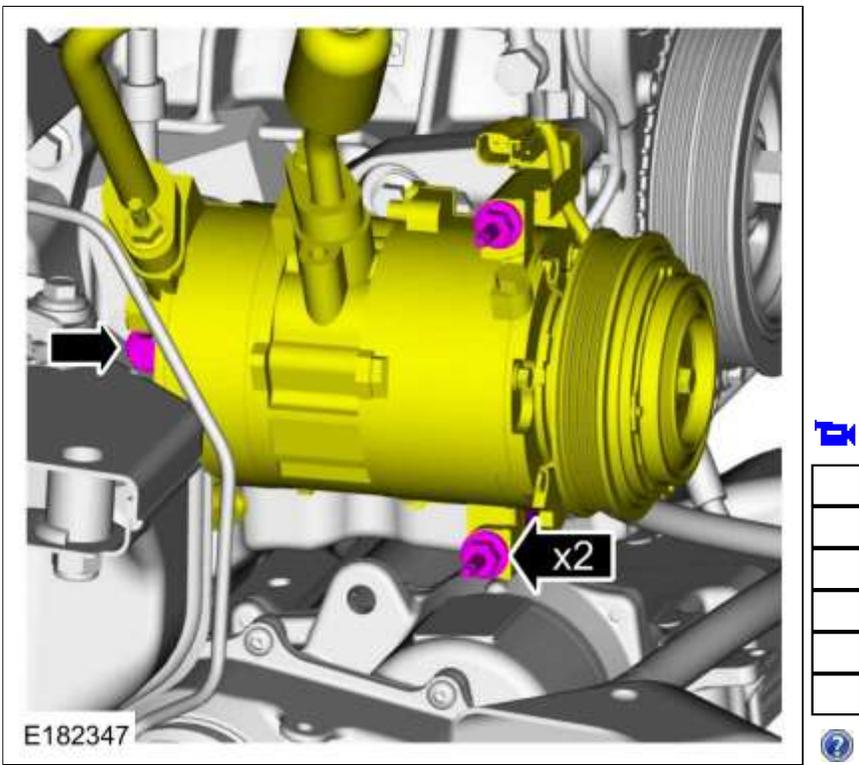
37. Attach the wire harness retainer to the engine mount bracket stud bolt.



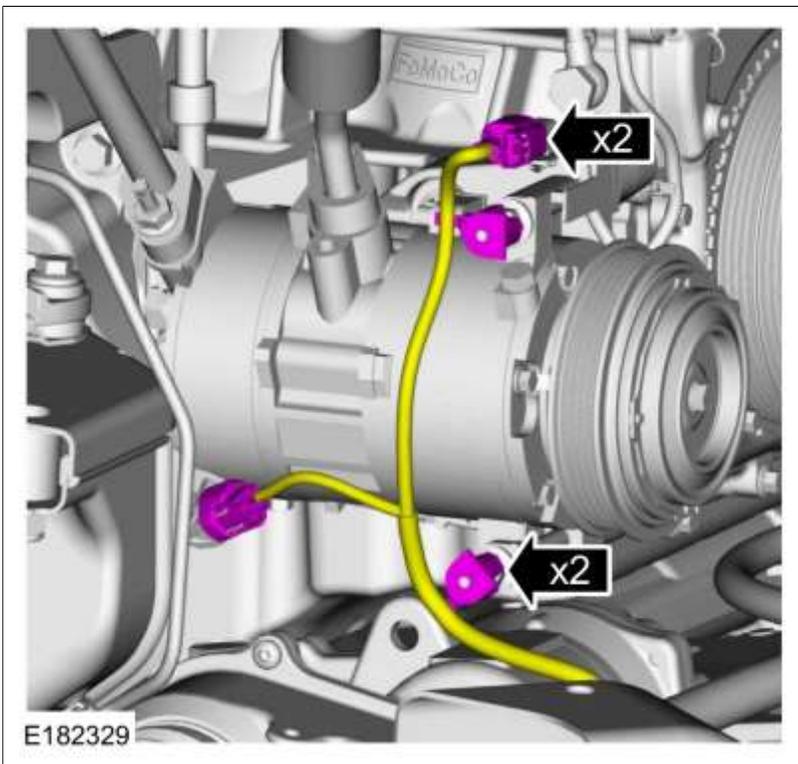
38. Install the starter motor insulator.



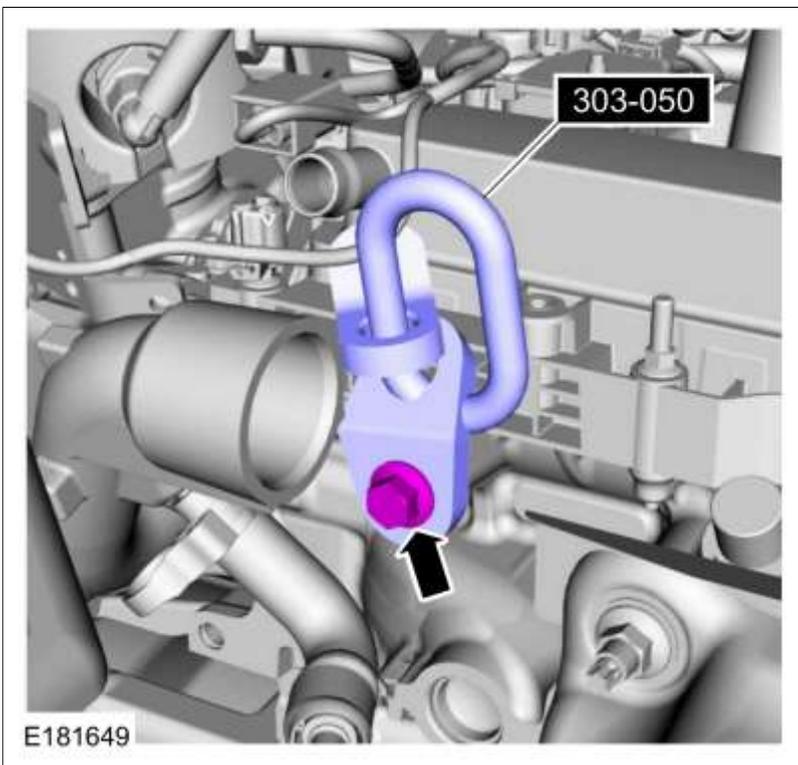
39. Install the starter motor.  
Refer to: [Starter Motor](#) (303-06A Starting System - 2.3L EcoBoost (231kW/314PS), Removal and Installation).
40. Position the A/C compressor and install the bolts.  
*Torque: 18 lb.ft (25 Nm)*



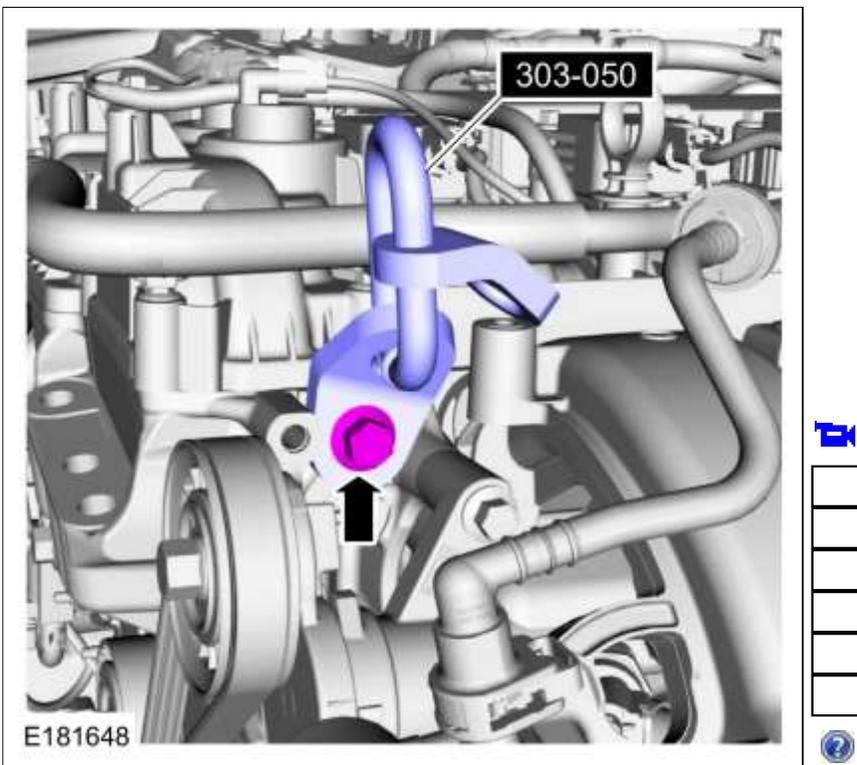
41. Connect the A/C compressor electrical connectors and the wire harness retainers.



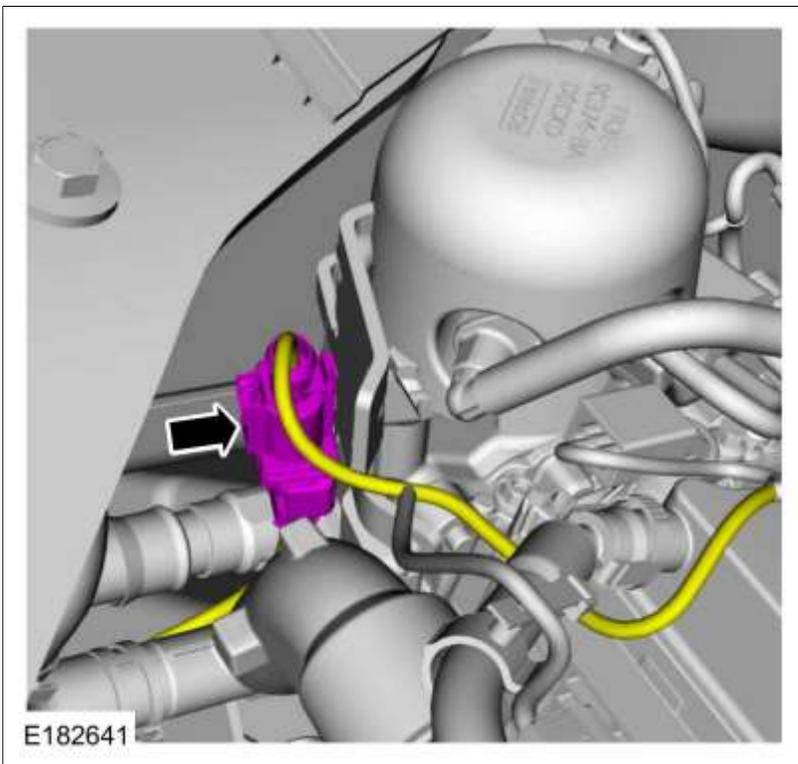
42. Remove Special Service Tool: [303-050 \(T70P-6000\) Lifting Bracket, Engine.](#)



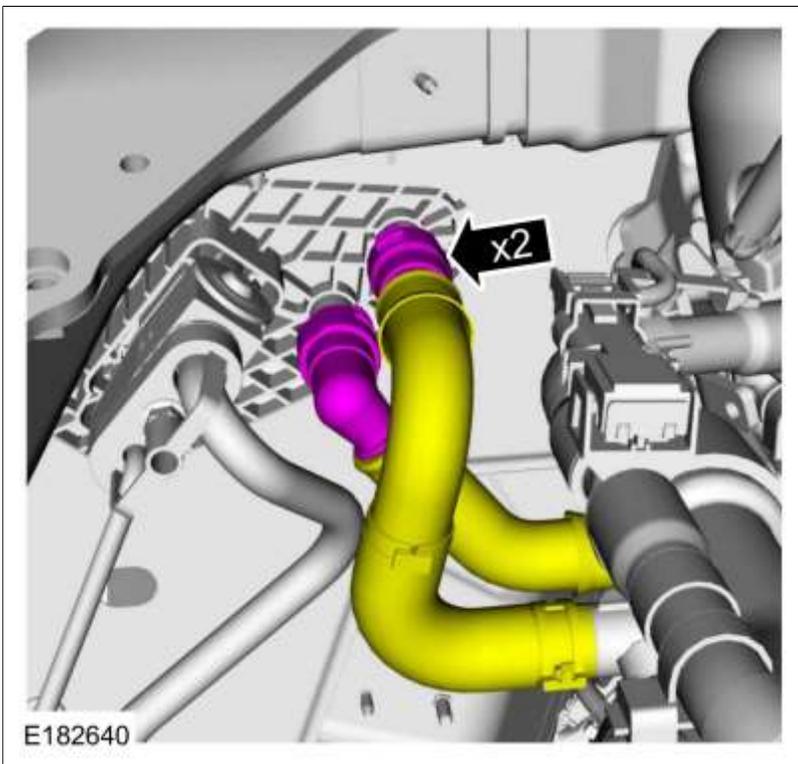
43. Remove Special Service Tool: [303-050 \(T70P-6000\) Lifting Bracket, Engine.](#)



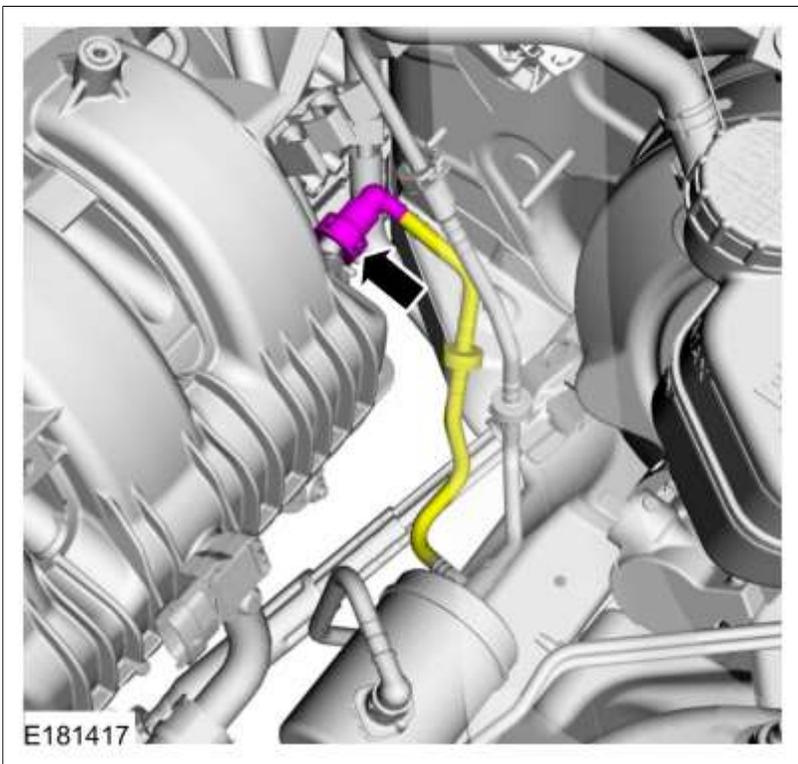
44. Connect and attach the HO2S electrical connector.



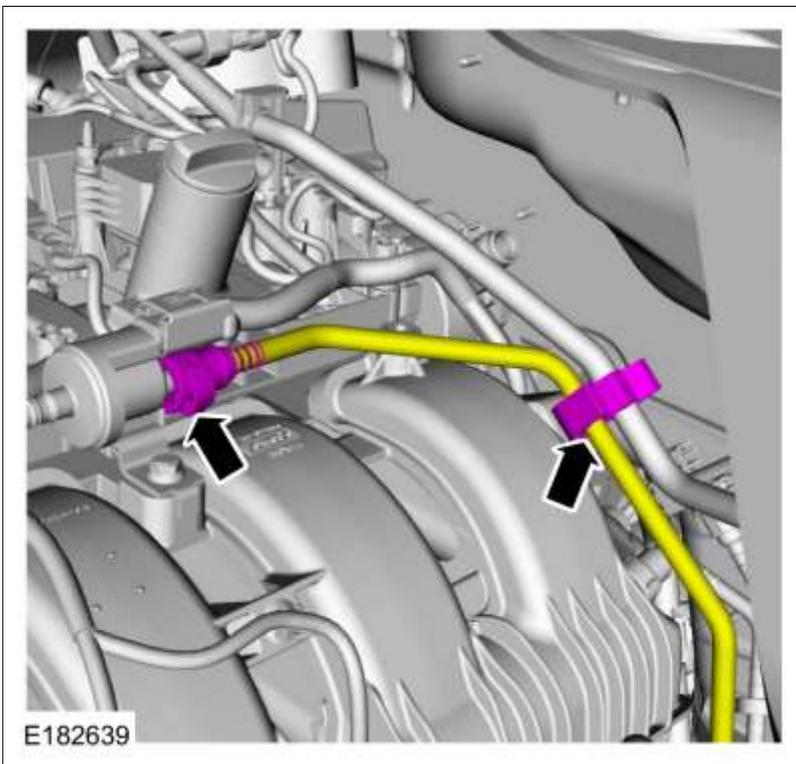
45. Connect the coolant hoses to the heater core.



46. Connect the vacuum tube to the rear of the intake manifold.

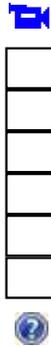
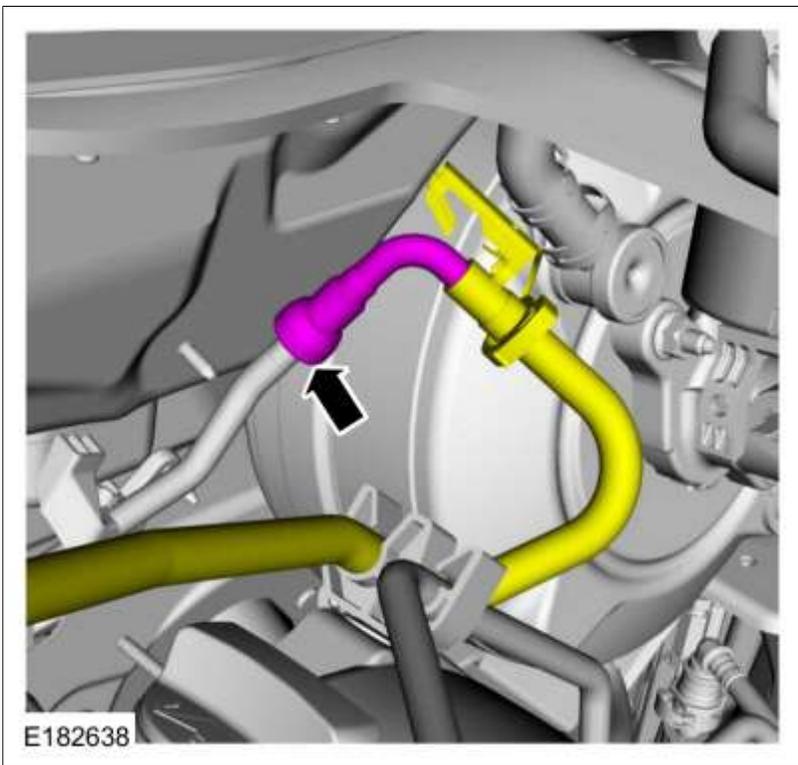


- 47.
- Attach the vacuum tube to the intake manifold retainer.
  - Connect the vacuum tube quick release coupling to the EVAP canister purge valve.

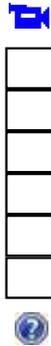
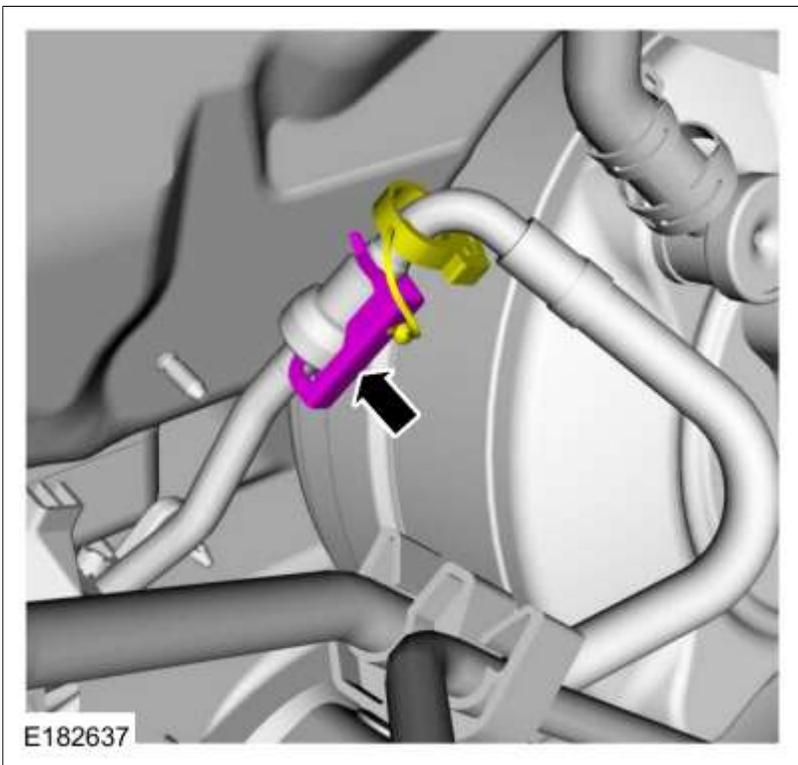


48. Connect the fuel supply tube.

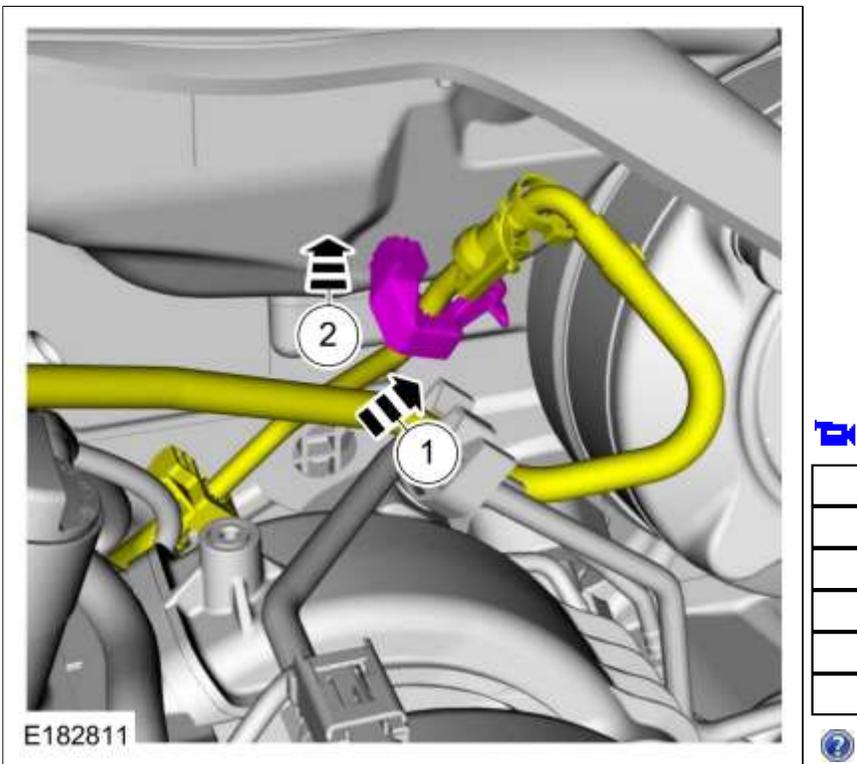
Refer to: [Spring Lock Couplings](#) (310-00A Fuel System - General Information - 2.3L EcoBoost (231kW/314PS), General Procedures).



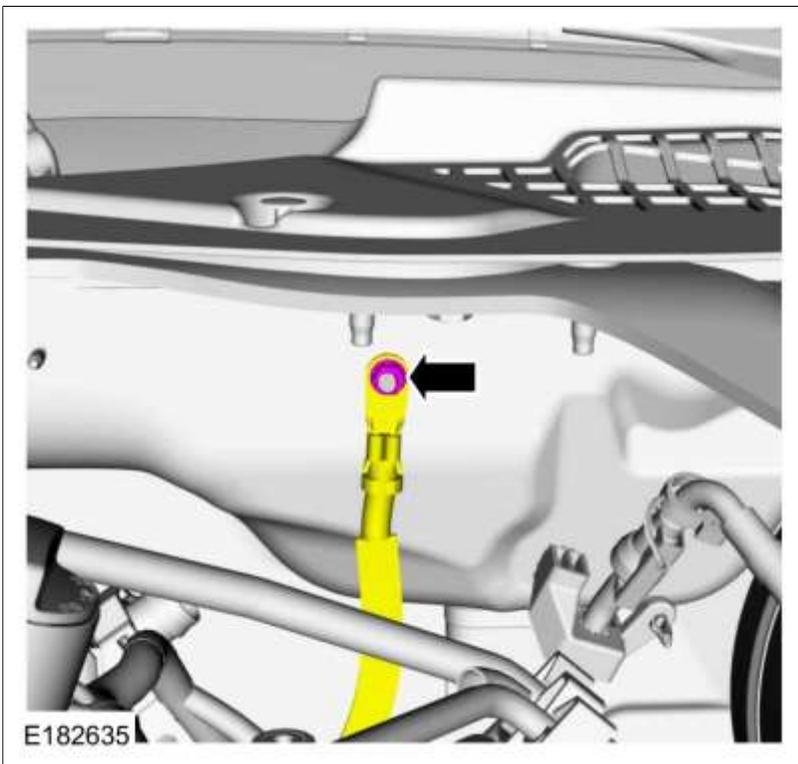
49. Install the fuel supply tube spring lock coupling retainer.



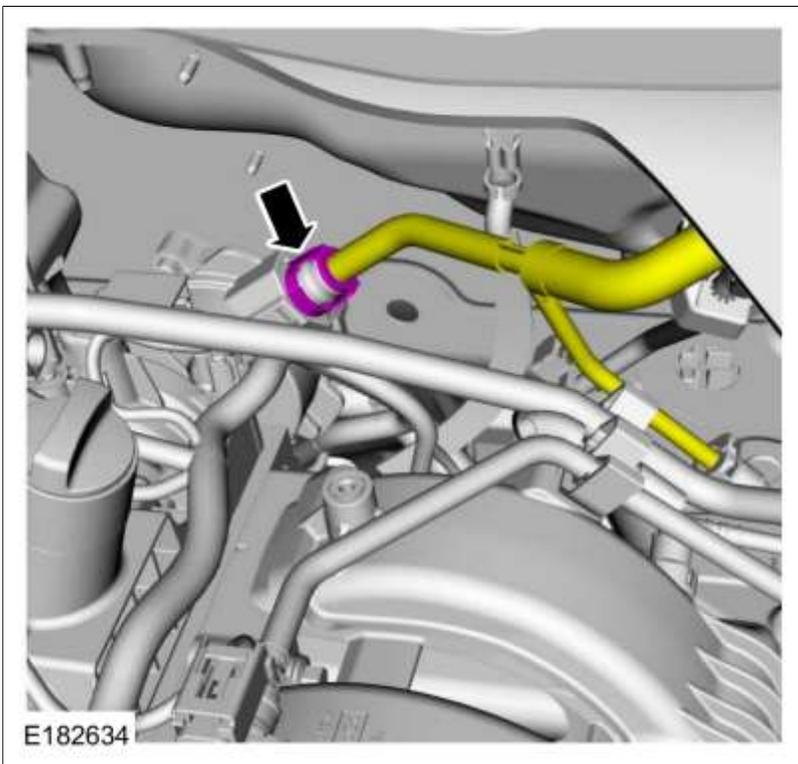
50.
  1. Slide the retainer up the fuel supply tube.
  2. Attach the fuel supply tube retainer to the cowl.



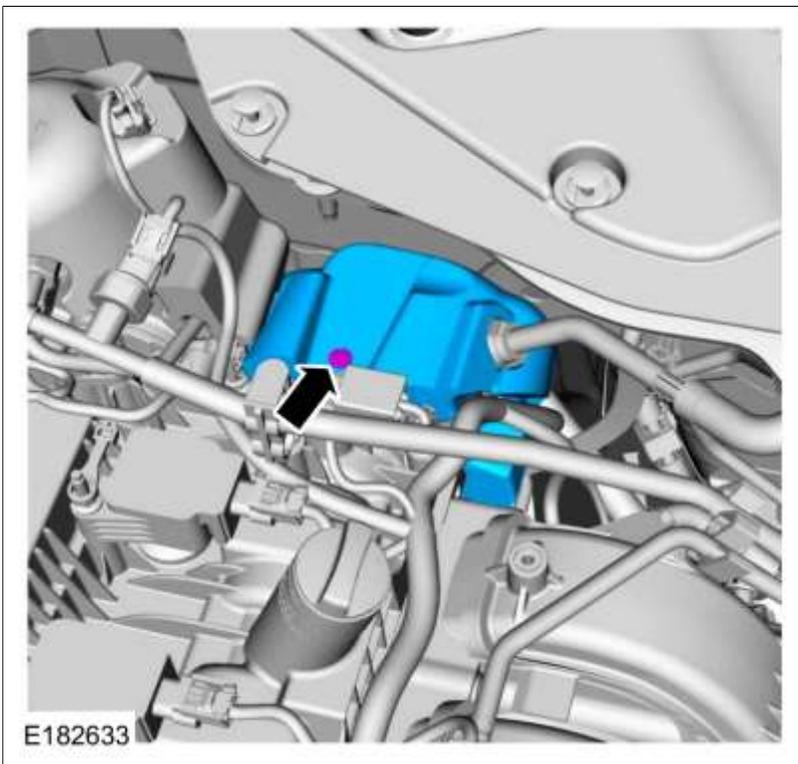
51. Install the engine ground strap and nut to the cowl.  
*Torque:* 80 lb.in (9 Nm)



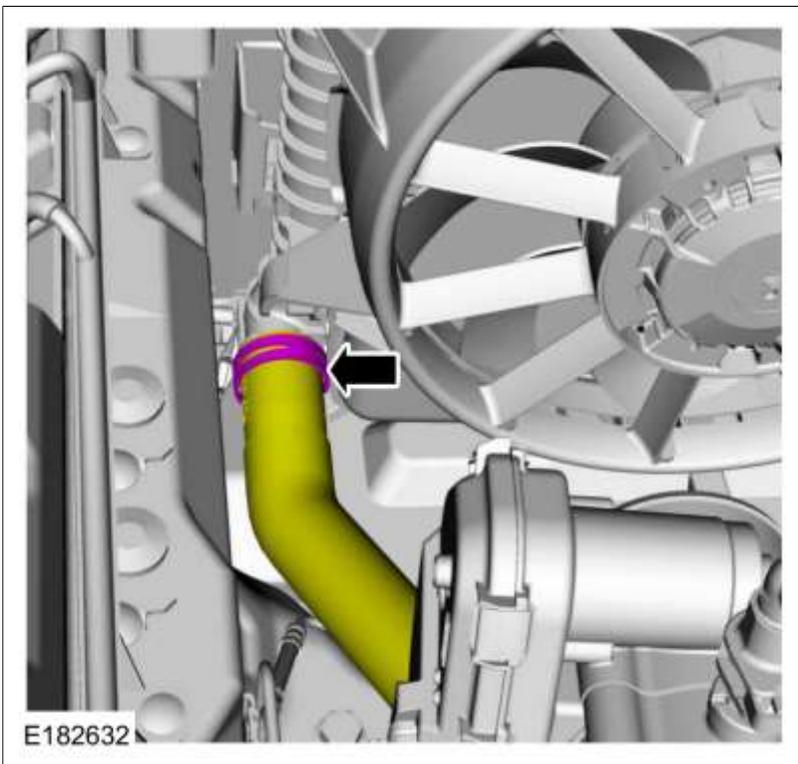
52. Connect the vacuum hose to the brake vacuum pump.



53. Install the brake vacuum pump insulator cover and the retainer.

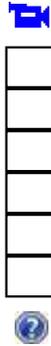
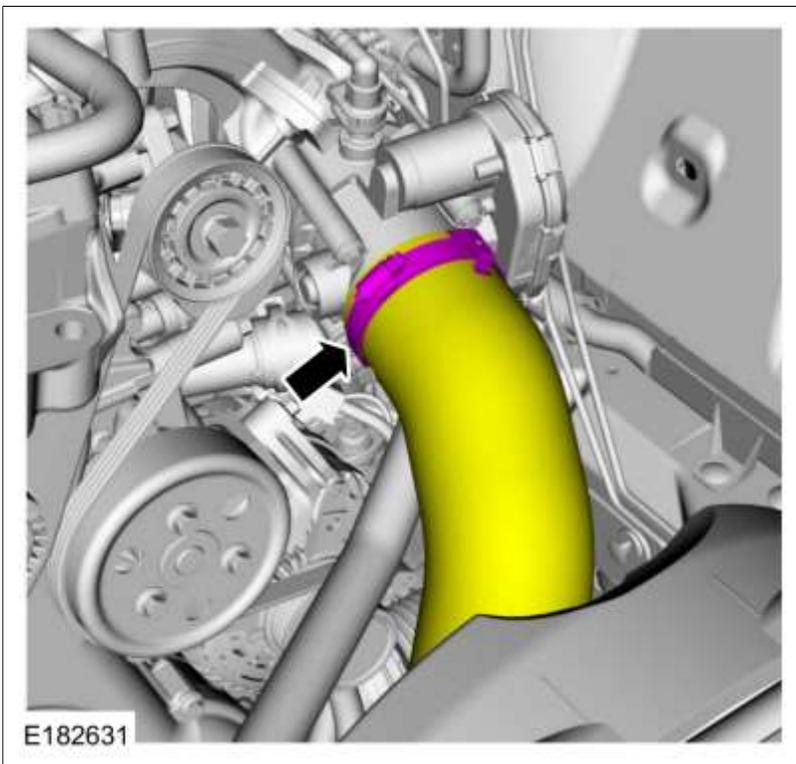


54. Install the lower radiator hose to the radiator.  
Use the General Equipment: Hose Clamp Remover/Installer

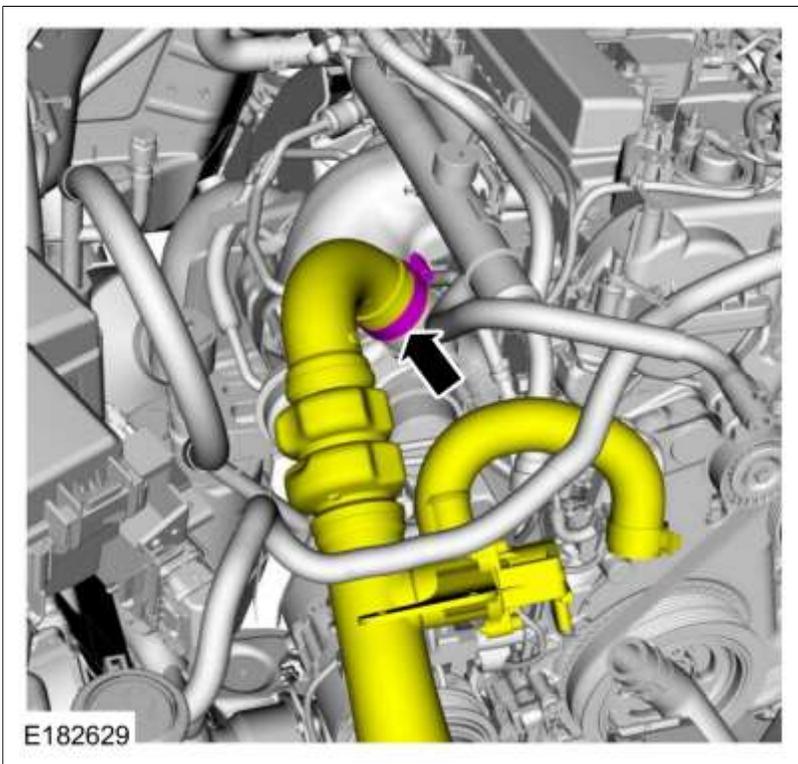


55. Position the CAC outlet tube and tighten the clamp.

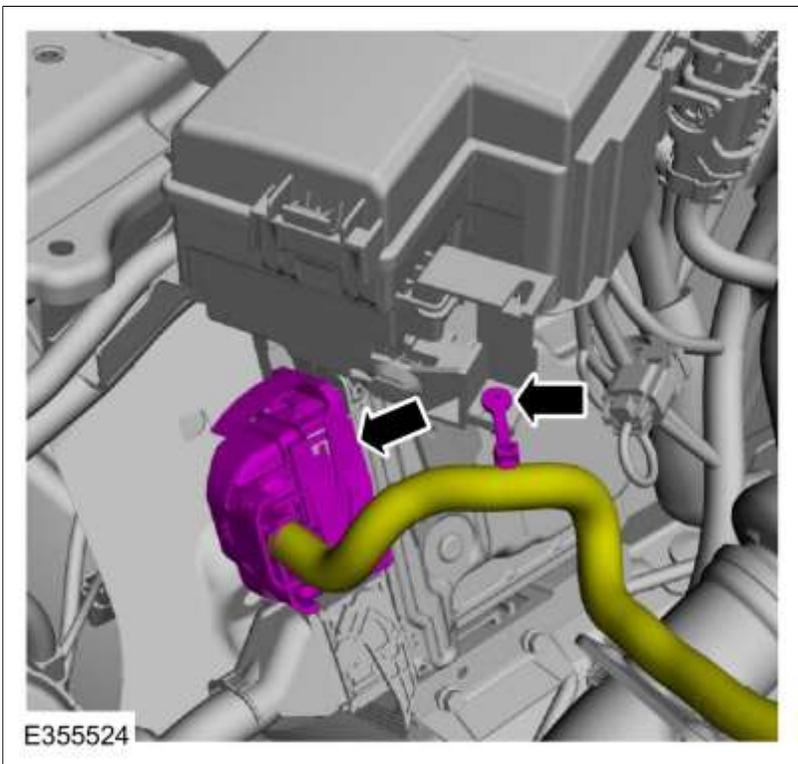
*Torque: 44 lb.in (5 Nm)*



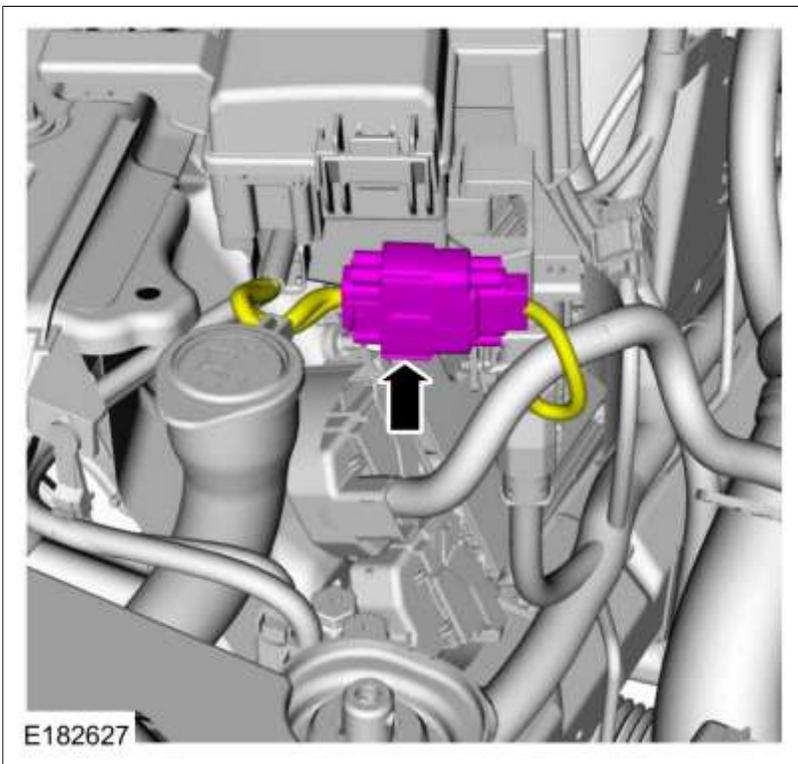
56. Position the CAC inlet tube and tighten the clamp.  
*Torque: 44 lb.in (5 Nm)*



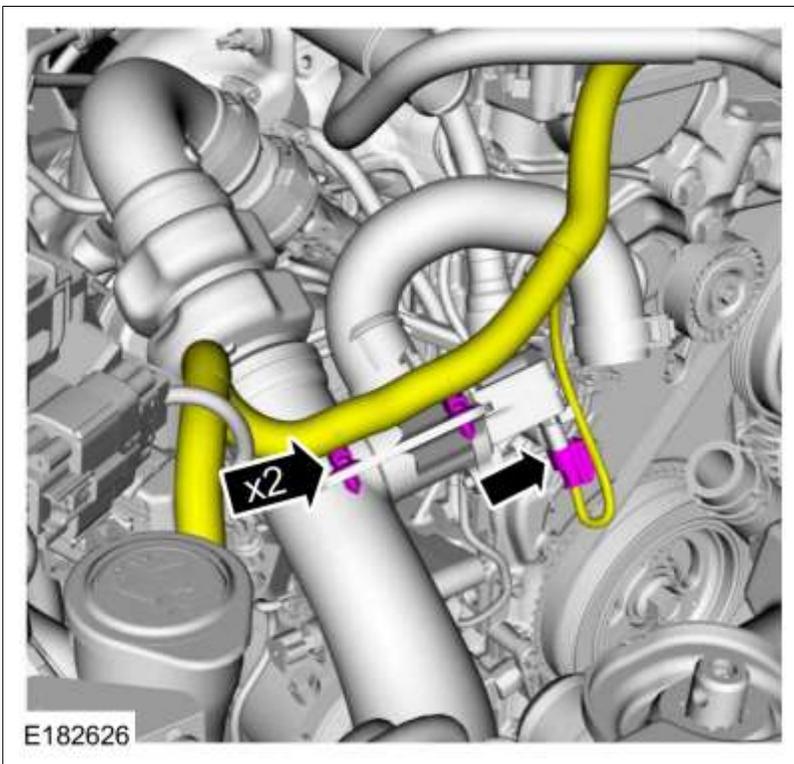
57. Connect the upper PCM electrical connector and the retainer.



58. Connect and attach the engine harness electrical connector.



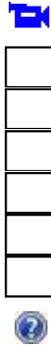
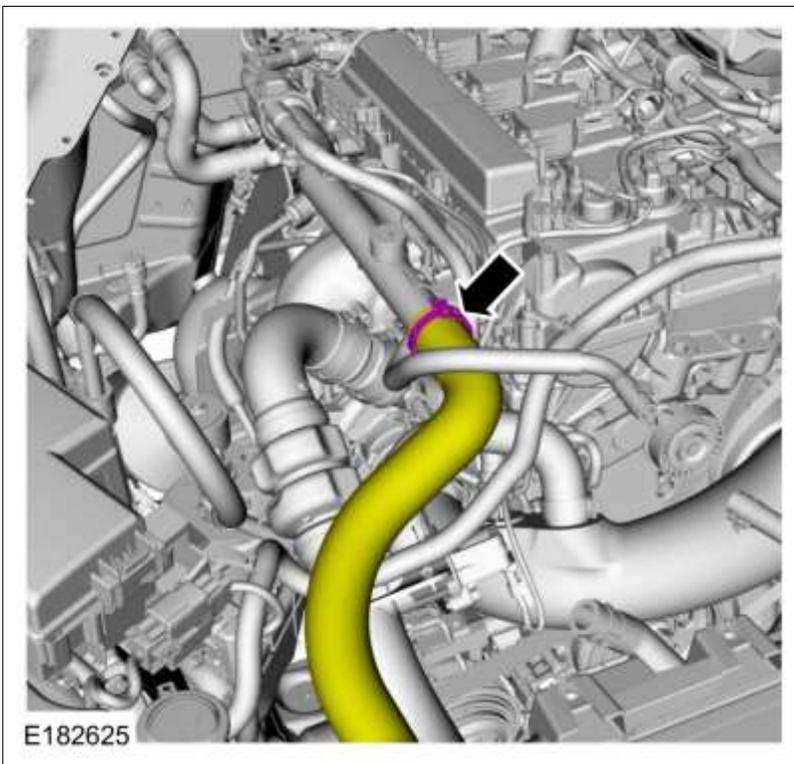
59. Connect the CAC valve electrical connector and the wire harness retainers.



60. Install the following items:

1. Refer to: [Air Conditioning \(A/C\) Compressor Belt](#) (303-05A Accessory Drive - 2.3L EcoBoost (231kW/314PS), Removal and Installation).
2. Refer to: [Air Cleaner](#) (303-12A Intake Air Distribution and Filtering - 2.3L EcoBoost (231kW/314PS), Removal and Installation).
3. Refer to: [Air Cleaner Outlet Pipe](#) (303-12A Intake Air Distribution and Filtering - 2.3L EcoBoost (231kW/314PS), Removal and Installation).

61. Install the upper radiator hose to the coolant tube.  
Use the General Equipment: Hose Clamp Remover/Installer



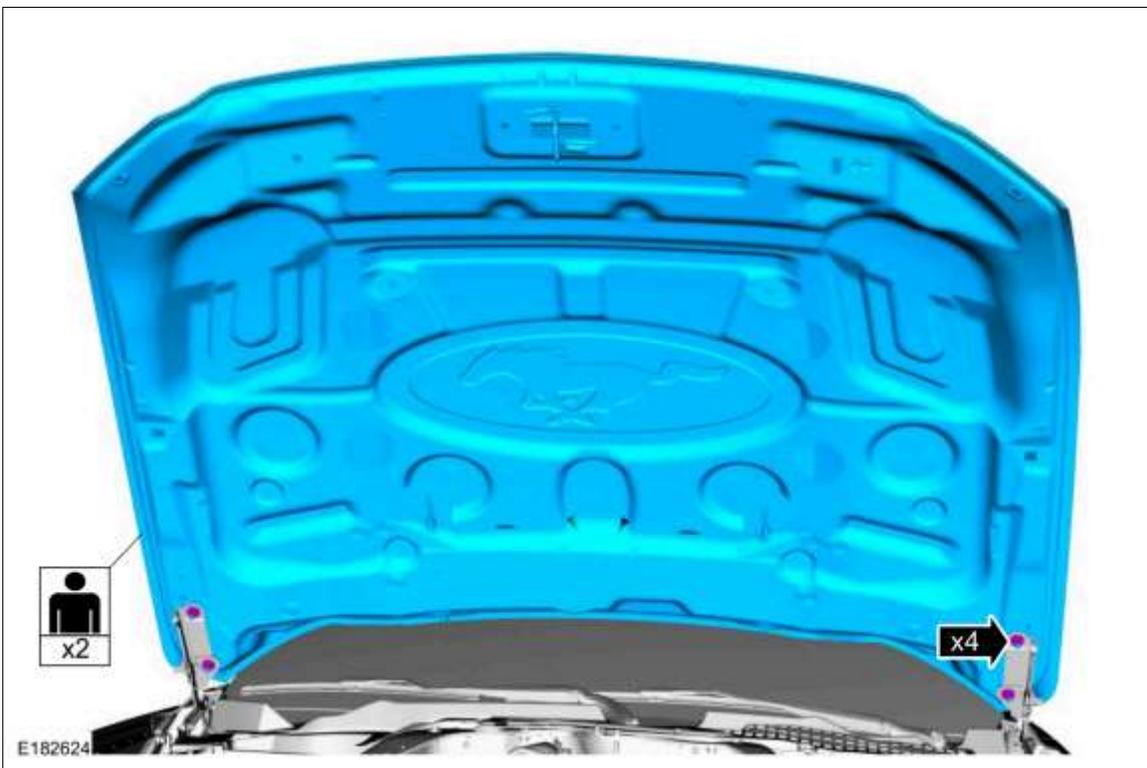
62. Install the degas bottle.

Refer to: [Degas Bottle](#) (303-03A Engine Cooling - 2.3L EcoBoost (231kW/314PS), Removal and Installation).

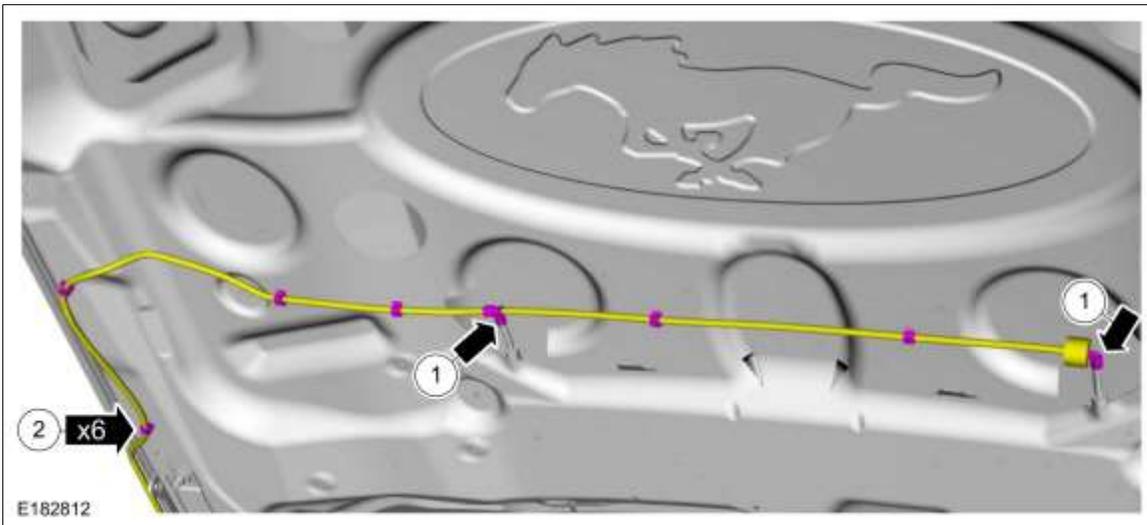
63. **NOTE:** Use the index-mark for location to aid in hood installation.

Install the hood and the 4 nuts.

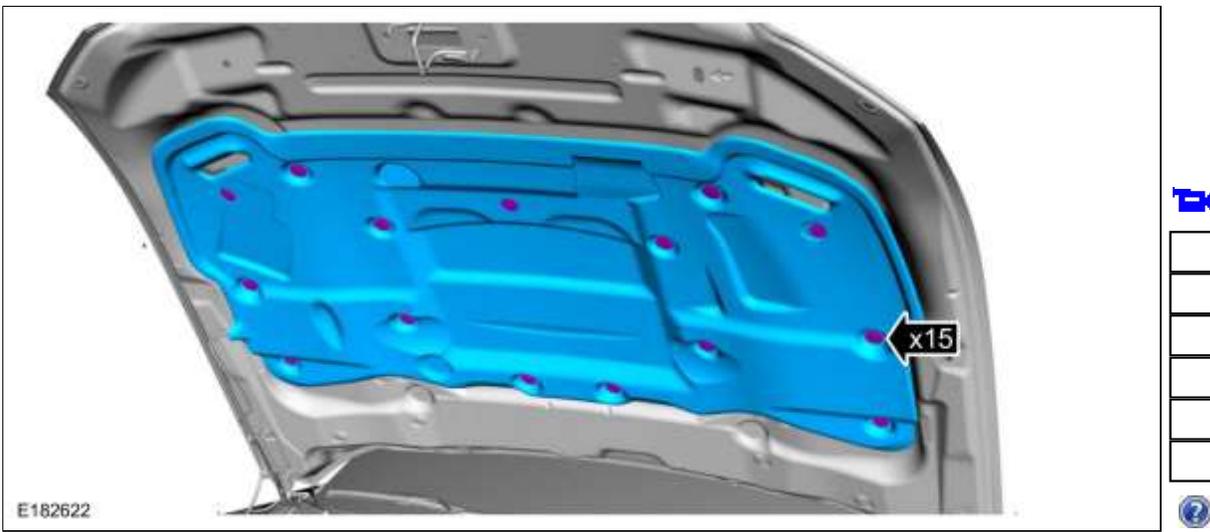
Torque: 17 lb.ft (23 Nm)



64. 1. Connect the windshield washer hose couplings.  
 Refer to: [Washer Hose Coupling](#) (501-16 Wipers and Washers, General Procedures).  
 2. Attach the windshield washer hose retainers.

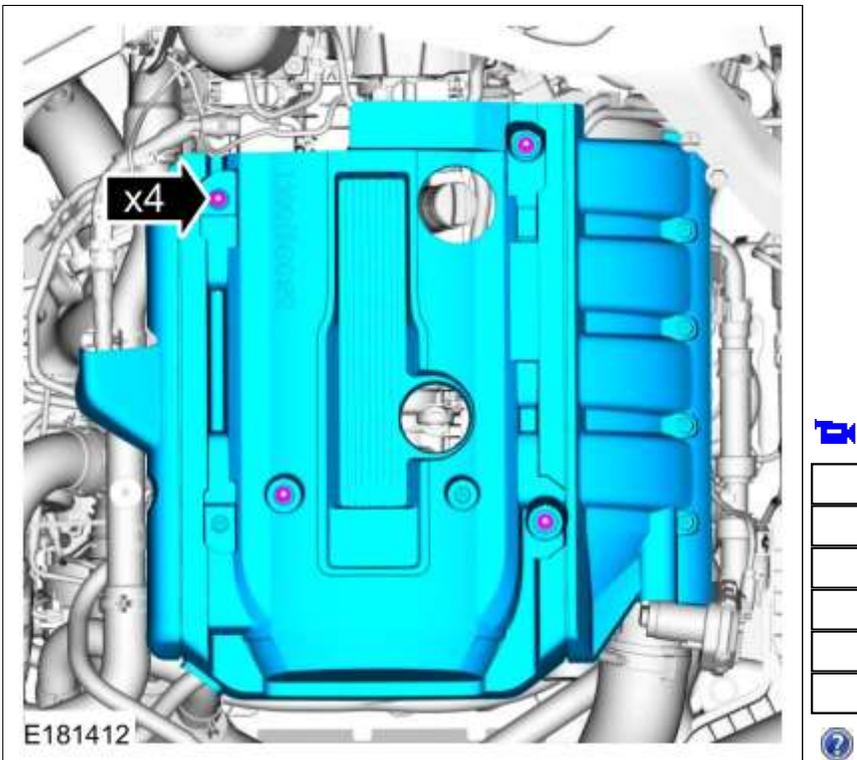


65. Install the hood insulation and the pin-type retainers.

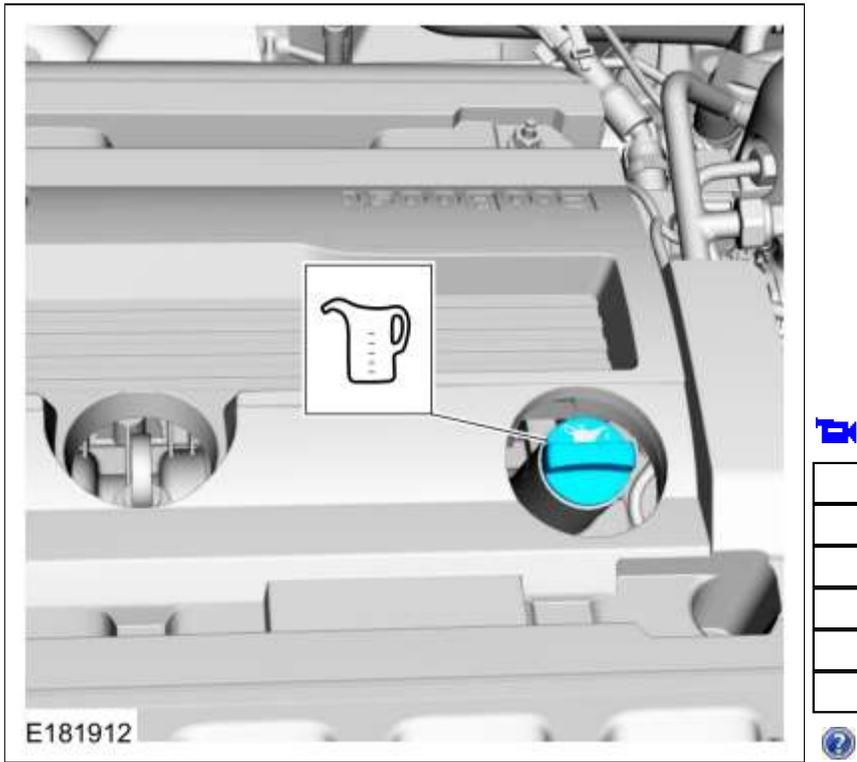


66. Connect the battery ground cable.  
Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).

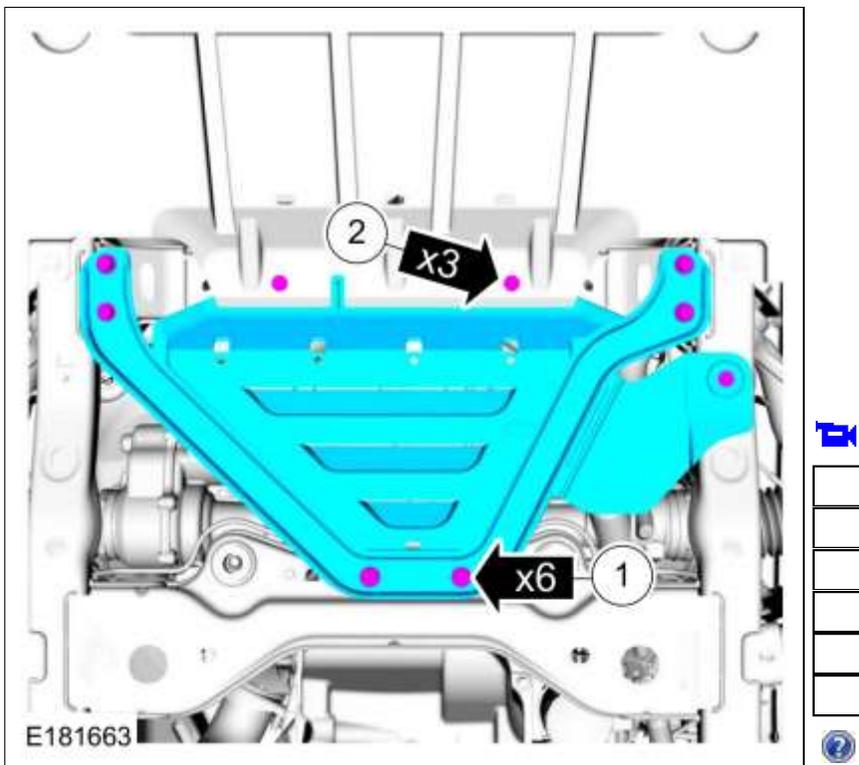
67. Install the engine appearance cover and the nuts.  
*Torque: 80 lb.in (9 Nm)*



68. Fill the engine with clean engine oil.  
Refer to: [Specifications](#) (303-01A Engine - 2.3L EcoBoost (231kW/314PS), Specifications).



69. Fill the cooling system.  
Refer to: [Engine Cooling System Draining, Vacuum Filling and Bleeding](#) (303-03A Engine Cooling - 2.3L EcoBoost (231kW/314PS), General Procedures).
70. 1. Install the underbody shield and the bolts.  
*Torque: 46 lb.ft (63 Nm)*
2. Install the underbody shield screws.



71. Start and check the exhaust system for leaks.

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

73. Road test the vehicle.

