

Oil Pan

Special Tool(s) / General Equipment

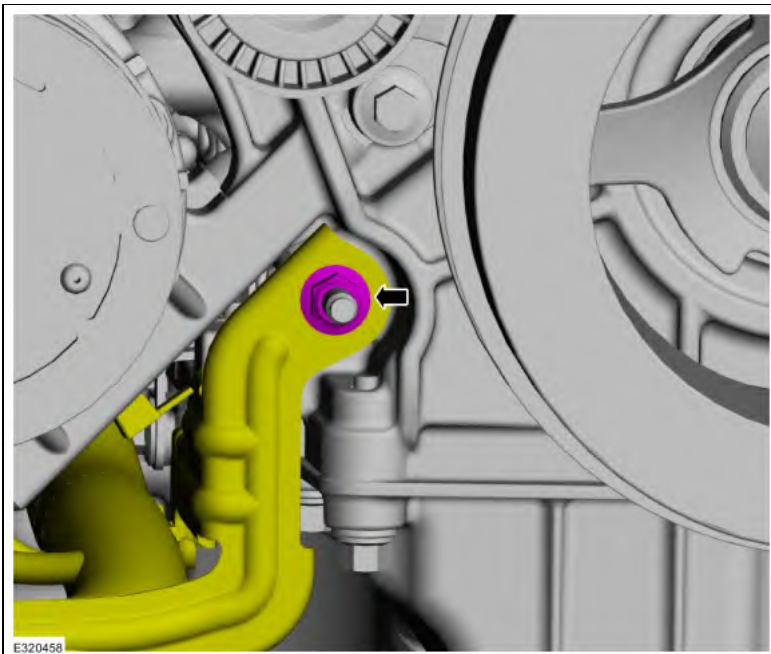
	303-050 (T70P-6000) Lifting Bracket, Engine
	303-050-01 7.3L Bracket, Engine (P558)
	303-1703 7.3L RTV Guards
	303-F070 Support Bar, Engine TKIT-1999A-F/LT TKIT-1999A-FM/FLM

Materials

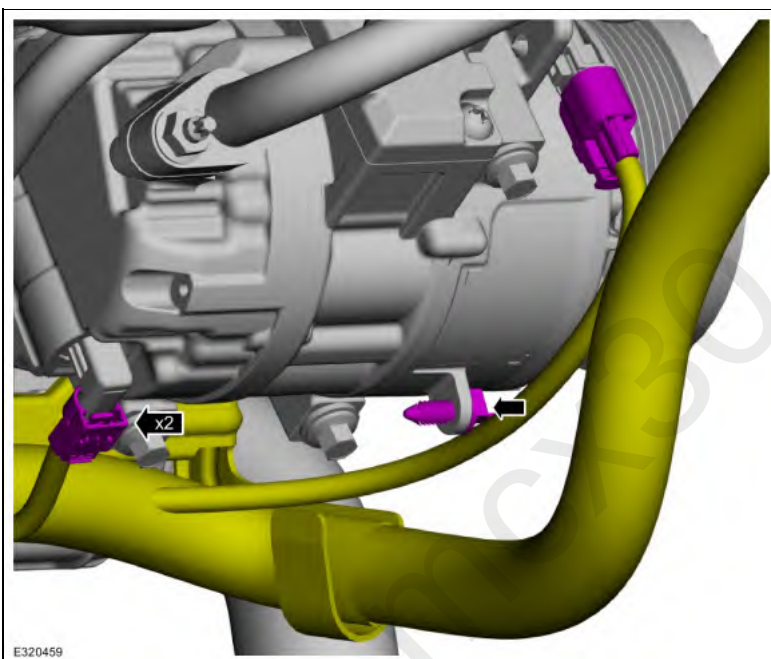
Name	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6

Removal

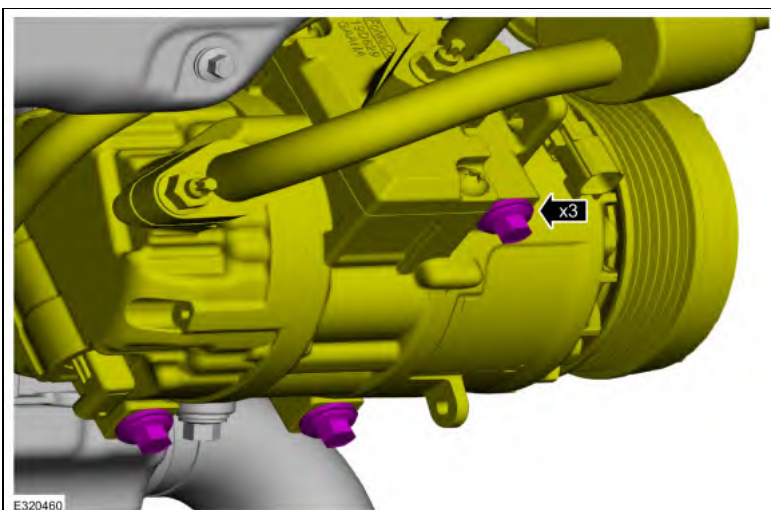
1. With the vehicle in NEUTRAL, position it on a hoist.
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
2. Release the fuel system pressure.
Refer to: Fuel System Pressure Release (310-00C Fuel System - General Information - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).
3. Disconnect the battery ground cable.
Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).
4. Drain the engine cooling system.
Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03D Engine Cooling - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).
5. Drain the engine oil and remove and discard oil filter.
Refer to: Engine Oil Draining and Filling (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).
6. Remove the following items:
 1. Starter.
Refer to: Starter Motor (303-06C Starting System - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
 2. Engine oil cooler.
Refer to: Oil Cooler (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
 3. Transmission fluid cooler.
Refer to: Transmission Fluid Cooler - 6.2L V8/7.3L 2V DEVCT V8 (239kW/320PS) (J0) (307-02B Transmission Cooling - 10-Speed Automatic Transmission â€” 10R140, Removal and Installation).
 4. Intake manifold.
Refer to: Intake Manifold (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
 5. Cooling fan.
Refer to: Cooling Fan (303-03D Engine Cooling - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
 6. A/C compressor belt.
Refer to: Air Conditioning (A/C) Compressor Belt (303-05C Accessory Drive - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
 7. Battery tray.
Refer to: Battery Tray (414-01 Battery, Mounting and Cables, Removal and Installation).
7. Remove the nut and position the starter motor wiring harness bracket aside.



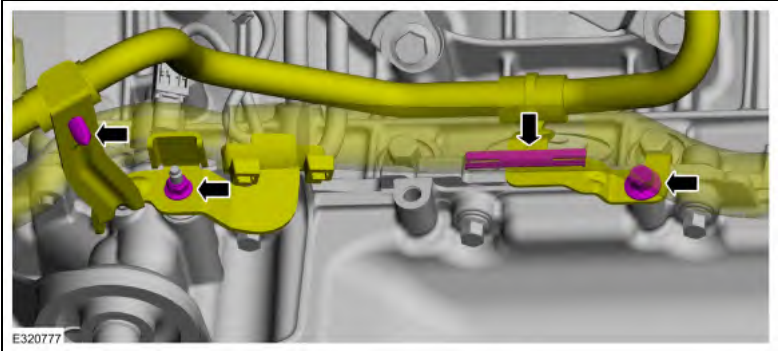
8. Disconnect the A/C compressor wiring harness electrical connectors and detach the wiring harness retainer.



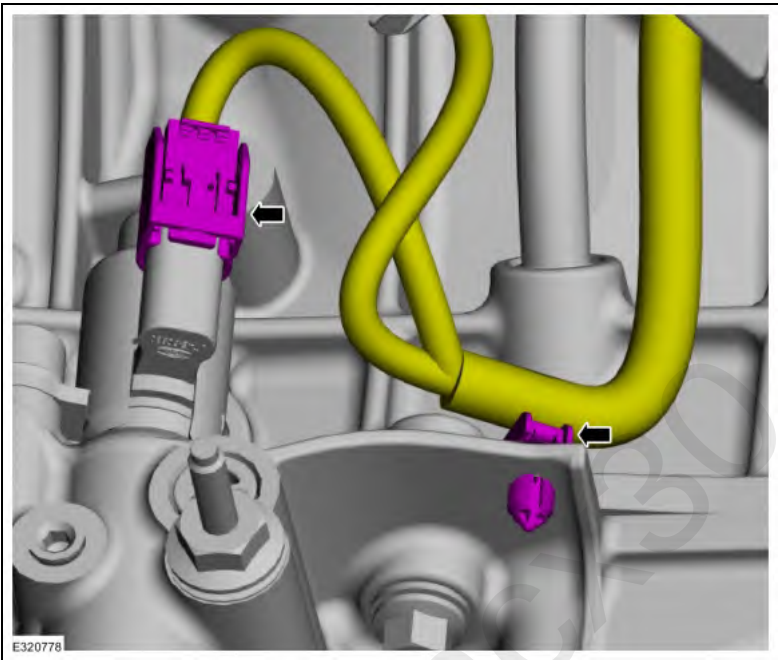
9. Remove the bolts and position the A/C compressor aside.



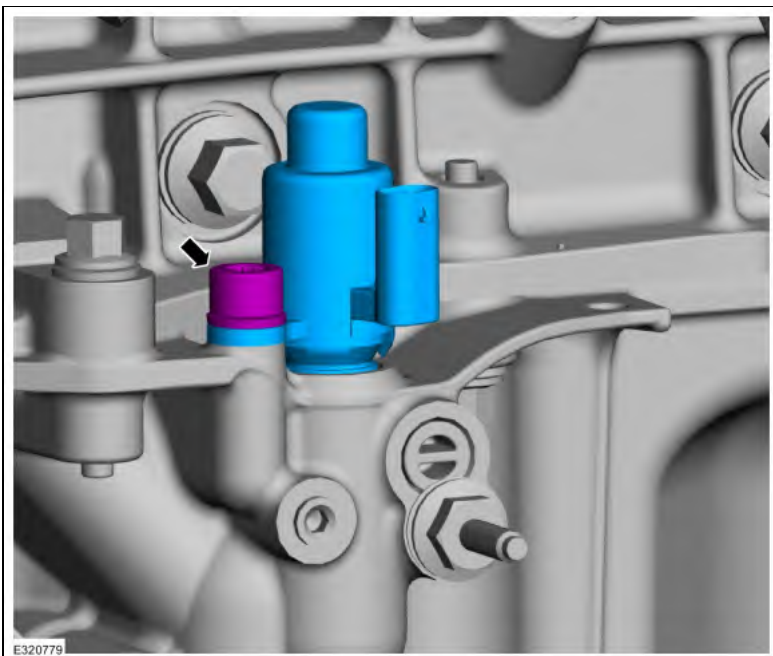
- 10.
- Detach the wiring harness retainers.
 - Remove the nut and position the bracket aside.
 - Remove the bolt and position the bracket aside.



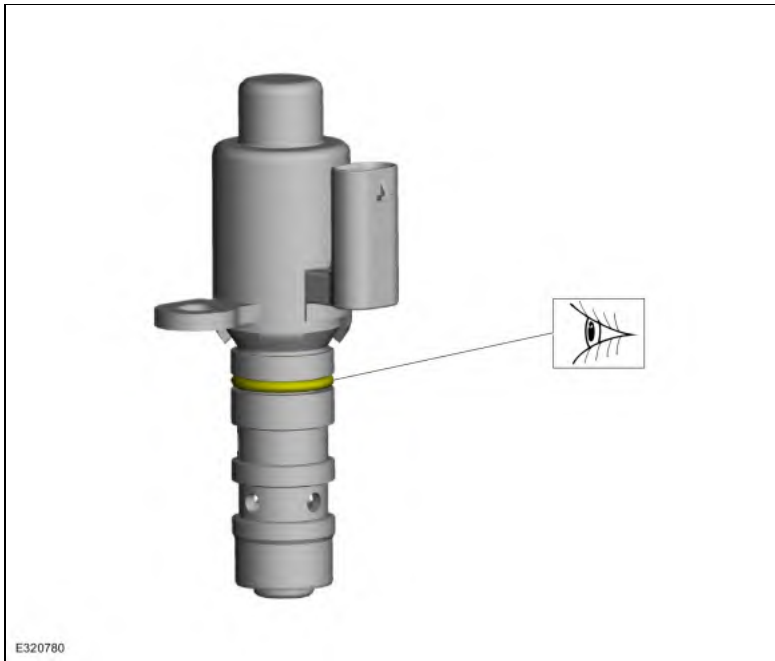
- 11.
- Disconnect the oil control solenoid electrical connector.
 - Detach the wiring harness retainer.



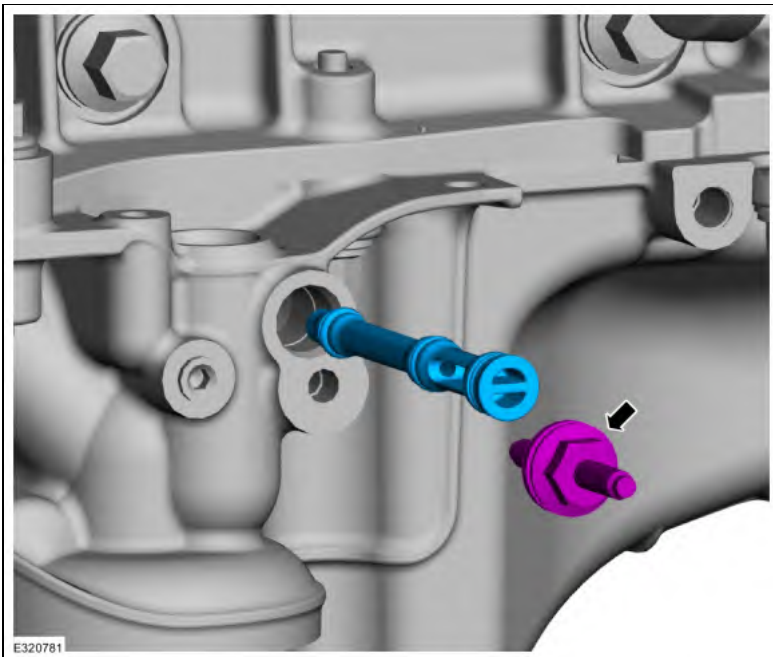
12. Remove the bolt and the oil control solenoid.



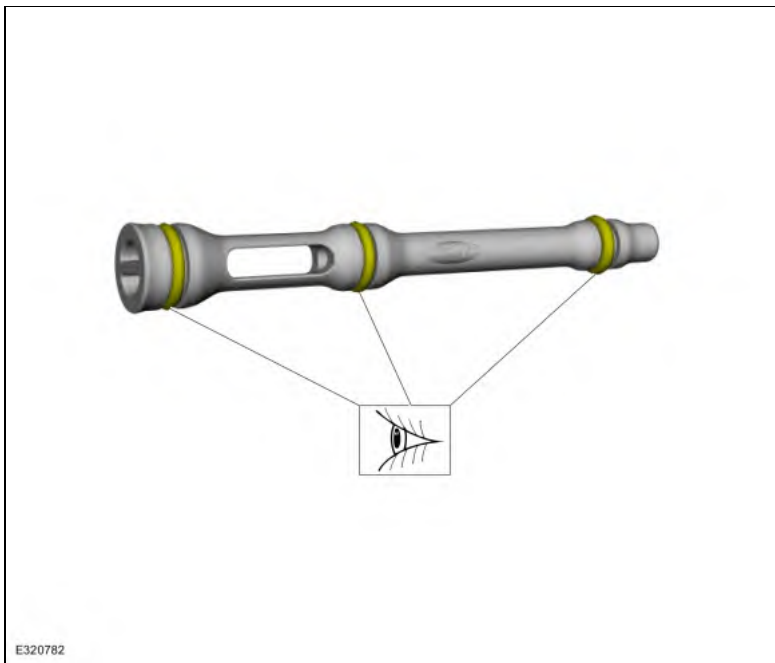
13. Inspect the O-ring seal and replace as necessary.



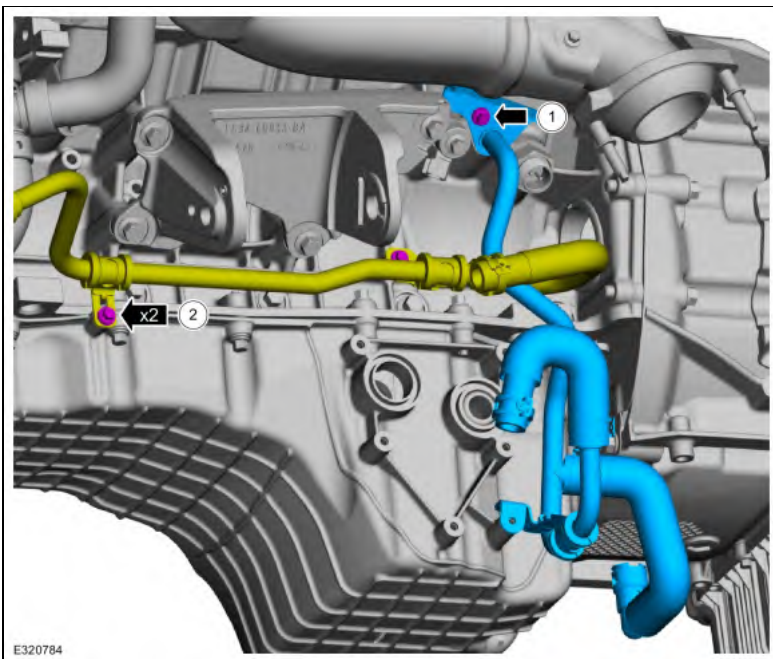
14. Remove the stud bolt and the oil return tube.



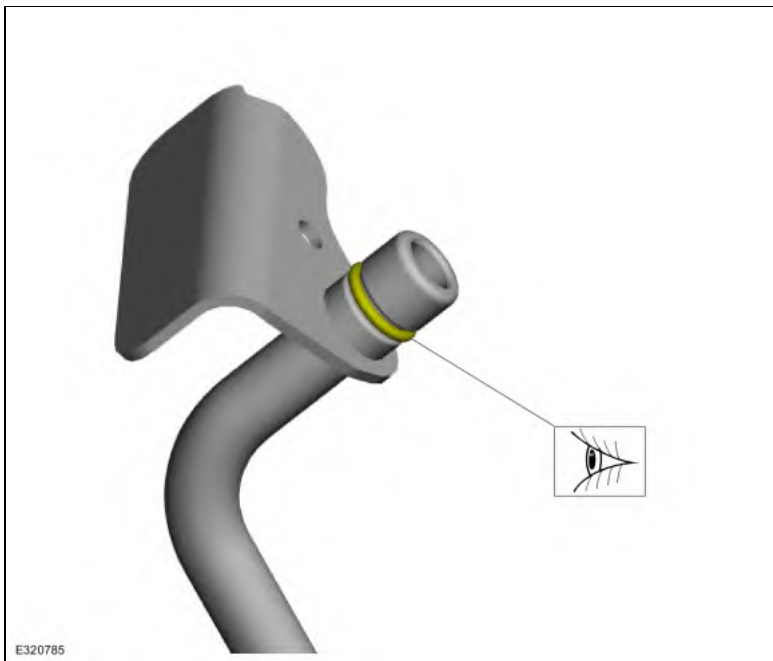
15. Inspect the O-ring seals and replace as necessary.



- 16.
1. Remove the bolt and remove the coolant tube.
 2. Remove the bolts and position the coolant tube aside.



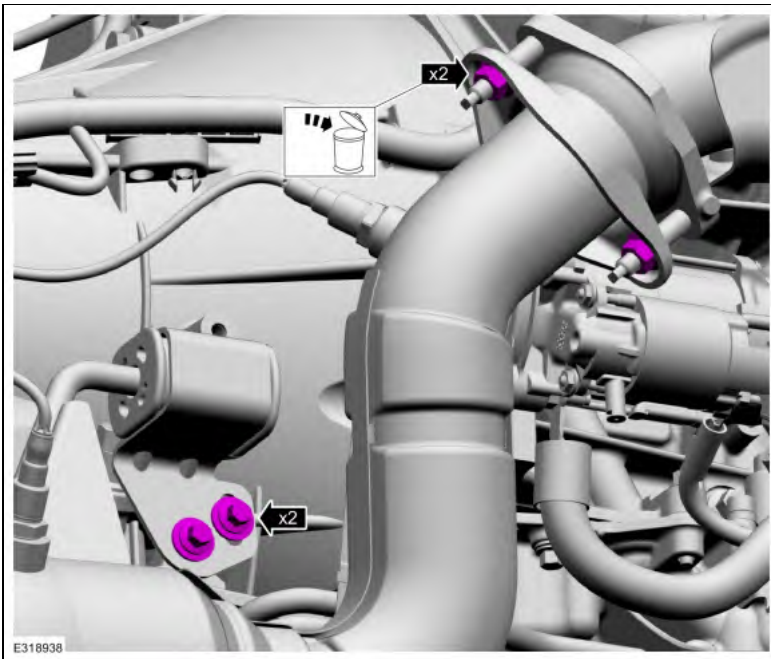
17. Inspect the O-ring seal and replace as necessary.



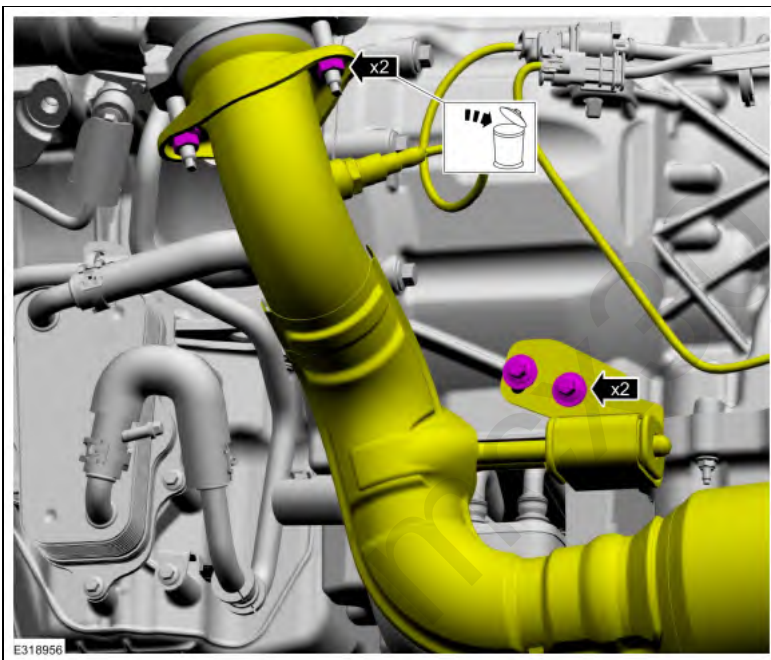
18. Remove the bolts and the inspection cover.



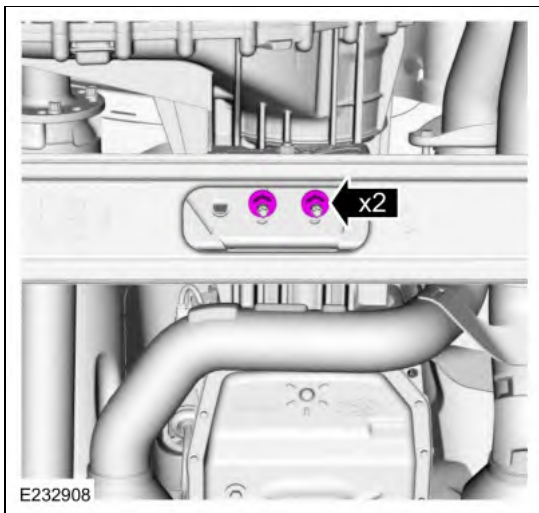
- 19.
1. Remove and discard the Y-pipe nuts.
 2. Remove the exhaust hanger bolts.



- 20.
1. Remove and discard the Y-pipe nuts.
 2. Remove the exhaust hanger bolts and lower the Y-pipe.



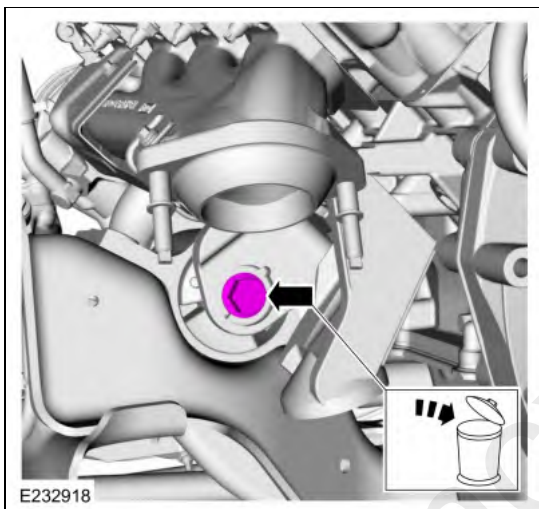
21. **NOTICE:** Failure to replace the transmission support insulator nuts may result in transmission support insulator damage. New transmission support insulator nuts will be installed during engine installation.
- Loosen the transmission support insulator-to-crossmember nuts.



22. **NOTICE:** The engine mount through bolt must be discarded and a new bolt installed, or damage to the vehicle or engine mount may occur.

NOTICE: Only use hand tools when removing the engine mount through bolt or damage to the engine mount may occur.

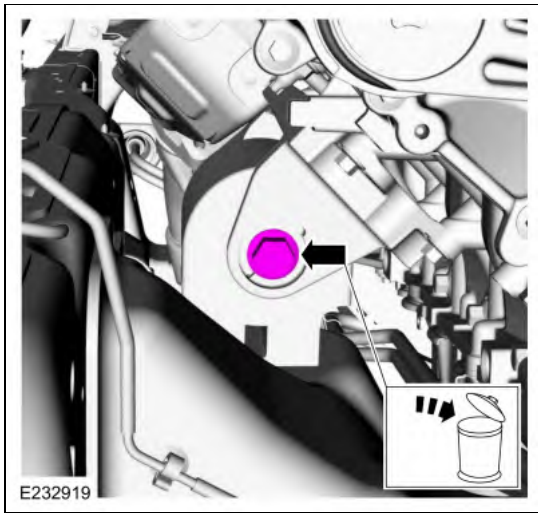
Remove and discard the LH engine mount through bolt.



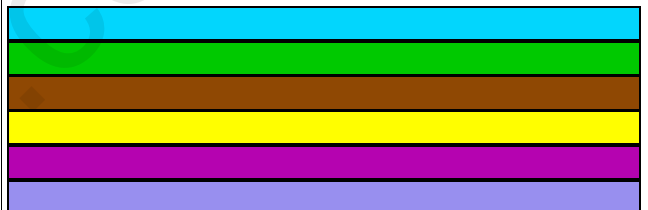
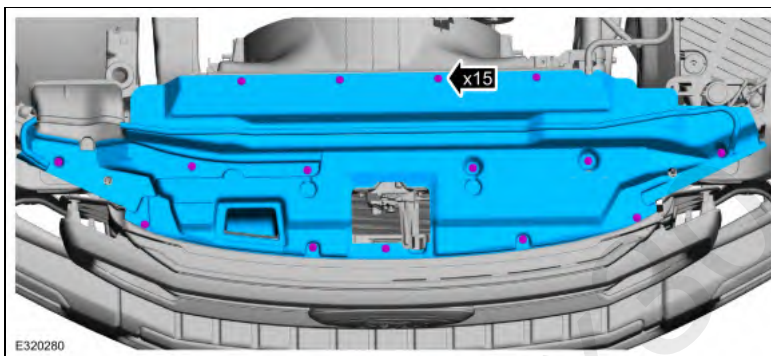
23. **NOTICE:** The engine mount through bolt must be discarded and a new bolt installed, or damage to the vehicle or engine mount may occur.

NOTICE: Only use hand tools when removing the engine mount through bolt or damage to the engine mount may occur.

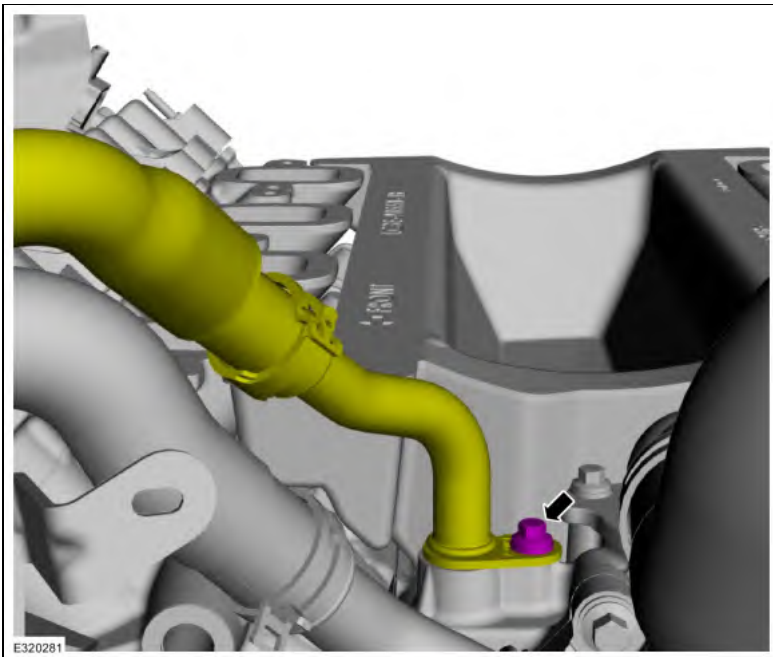
Remove and discard the RH engine mount through bolt.



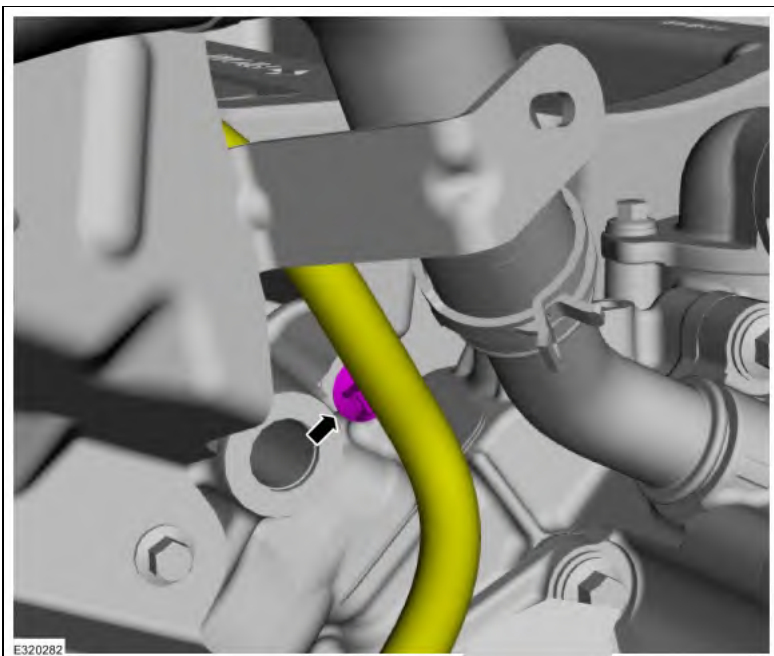
24. Remove and retainers and the upper radiator shield.



25. Remove the bolt and position the coolant outlet pipe aside.

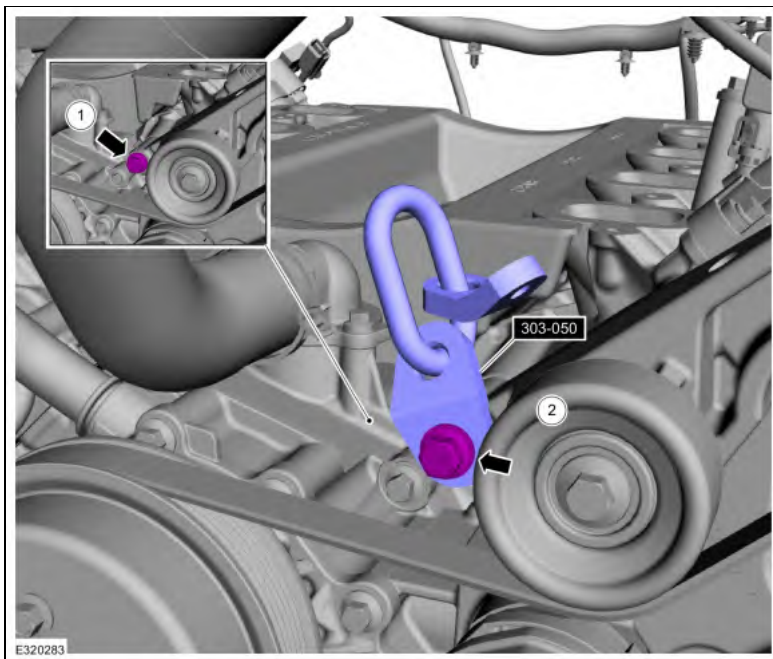


26. Detach the retainer and position the wiring harness aside.

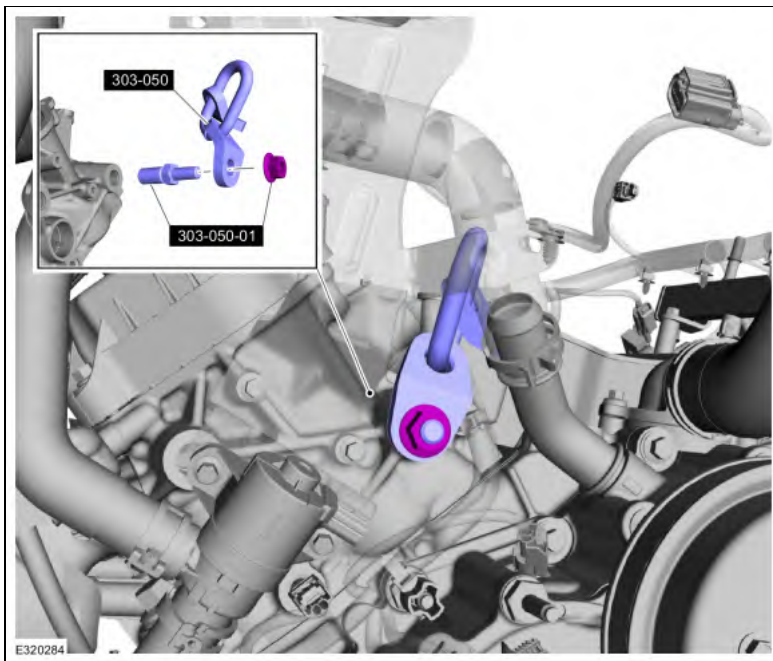


27.

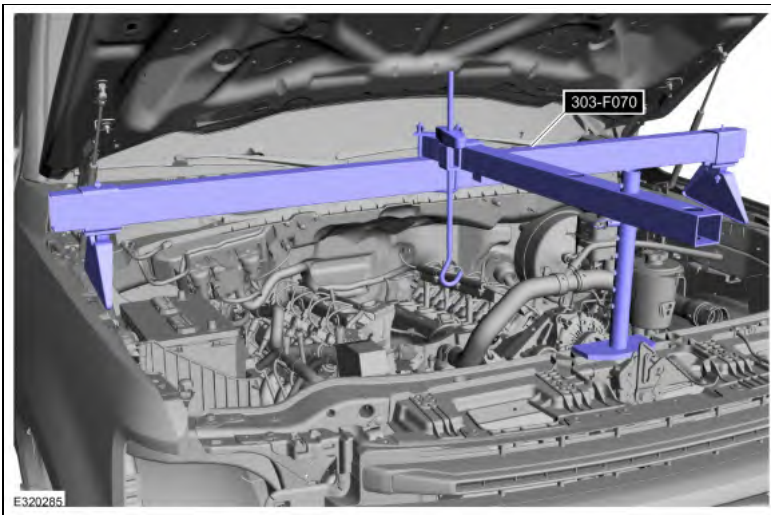
1. Remove the generator bracket bolt.
2. Install the special tool using the generator bracket bolt.
Install Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.



28. Install Special Service Tool: 303-050-01 7.3L Bracket, Engine (P558). , 303-050 (T70P-6000) Lifting Bracket, Engine.



29. Install Special Service Tool: 303-F070 Support Bar, Engine.



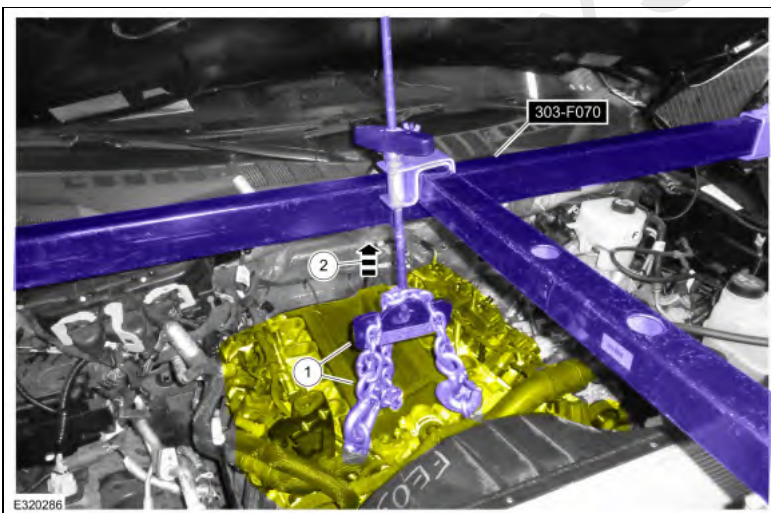
30.

1. **NOTE:** Use a commercially available sling (such as an OTC 38841 or equivalent).

Install a suitable length of chain and a sling.

2. Raise the engine 100 mm (4 in.).

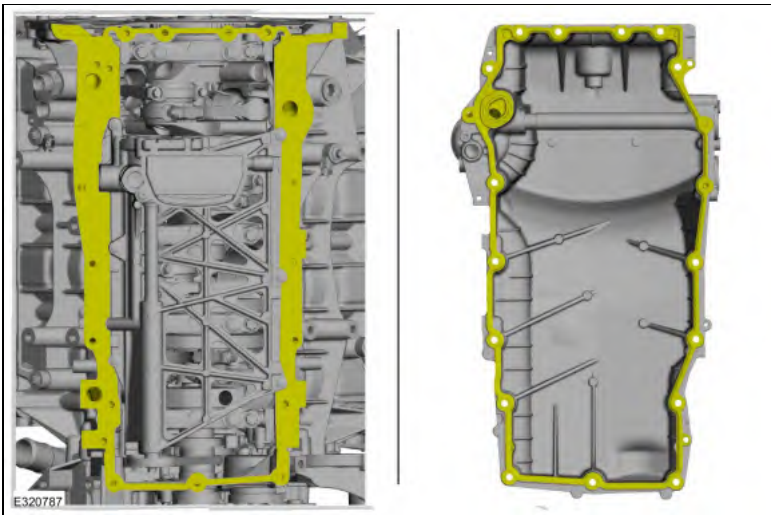
Use Special Service Tool: 303-F070 Support Bar, Engine.



31.

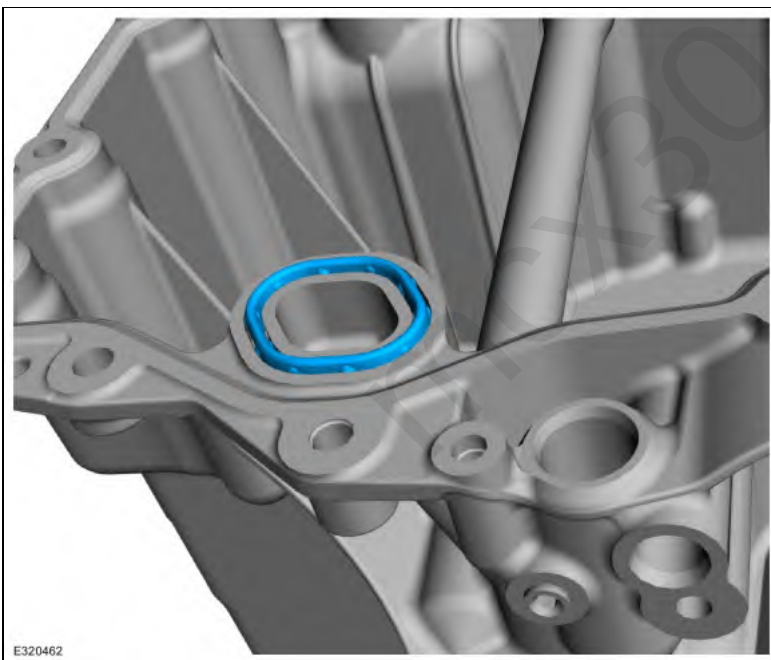
Remove the oil pan bolts.

- Carefully pry the oil pan from the cylinder block to release the sealant and remove the oil pan.



Installation

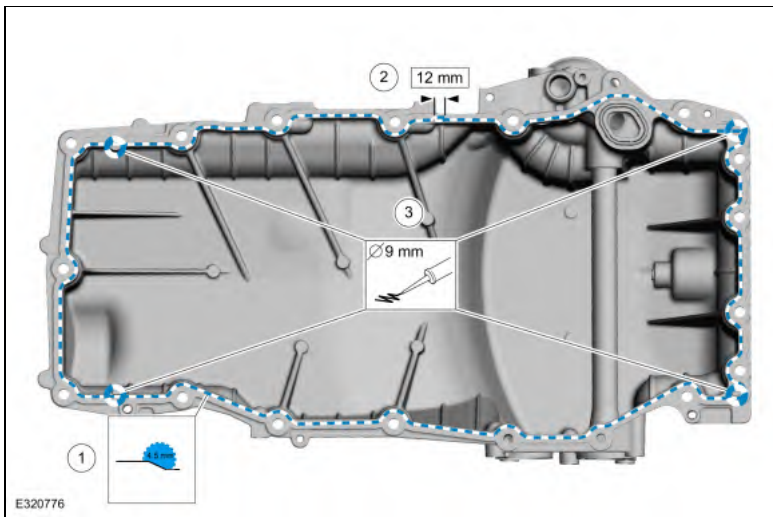
1. Install a new gasket.



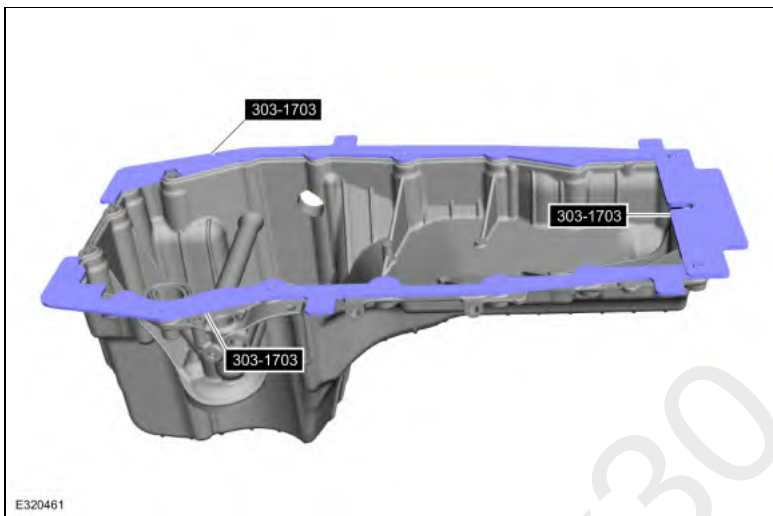
2. **NOTICE:** Failure to use Motorcraft® High Performance Engine RTV Silicone may cause the engine oil to foam excessively and result in serious engine damage.

NOTE: The oil pan and bolts must be installed within 10 minutes of applying the sealer. The bolts must be tightened within 15 minutes of installing the oil pan. Failure to follow this procedure can cause future oil leakage.

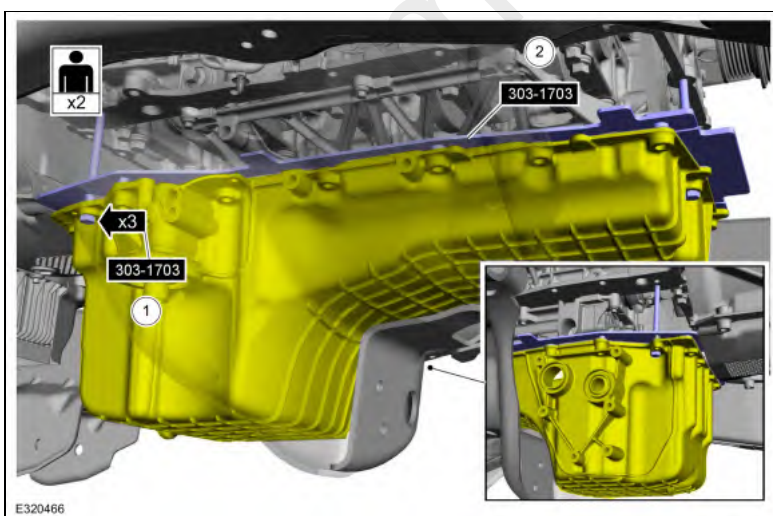
1. Apply a 4.5 mm (0.18 in) bead of Motorcraft® High Performance Engine RTV Silicone to the chamfer of the oil pan sealing surfaces.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)
2. Overlap the beginning and ending of the sealant bead 12 mm (0.47 in).
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)
3. Apply 9 mm (0.35 in) drops of Motorcraft® High Performance Engine RTV Silicone to the joint areas as indicated.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



3. Install the RTV guards.
Install Special Service Tool: 303-1703 7.3L RTV Guards.



4.
 1. With the aid of an assistant, position the oil pan below the engine and install the 3 bolts supplied with the RTV guards.
Install Special Service Tool: 303-1703 7.3L RTV Guards.
 2. Remove the RTV guards.
Remove Special Service Tool: 303-1703 7.3L RTV Guards.



5. With the aid of an assistant, install the oil pan.
 1. Position the oil pan up onto the engine.

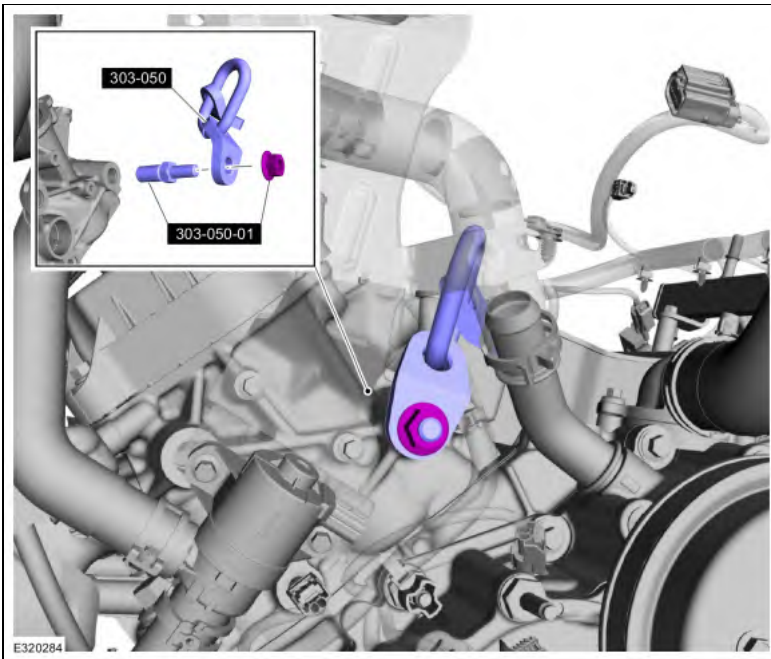
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- Diagram illustrating the engine oil pan assembly. The oil pan is shown in blue, and the engine block is in grey. Callouts indicate the following components:
- 1**: Oil pan gasket (top left inset).
 - 2**: Oil pan drain plug (bottom center).
 - 3**: Oil pan mounting bracket (left side).
 - x2**: Oil pan mounting bracket (top right inset).
 - x3**: Oil pan mounting bracket (left side).
 - x16**: Oil pan mounting bracket (bottom center).
- E320467



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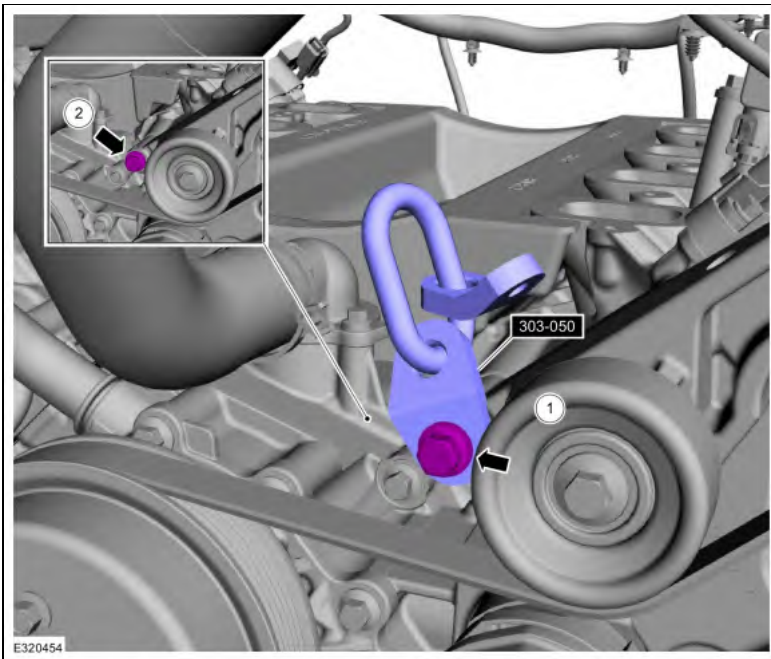


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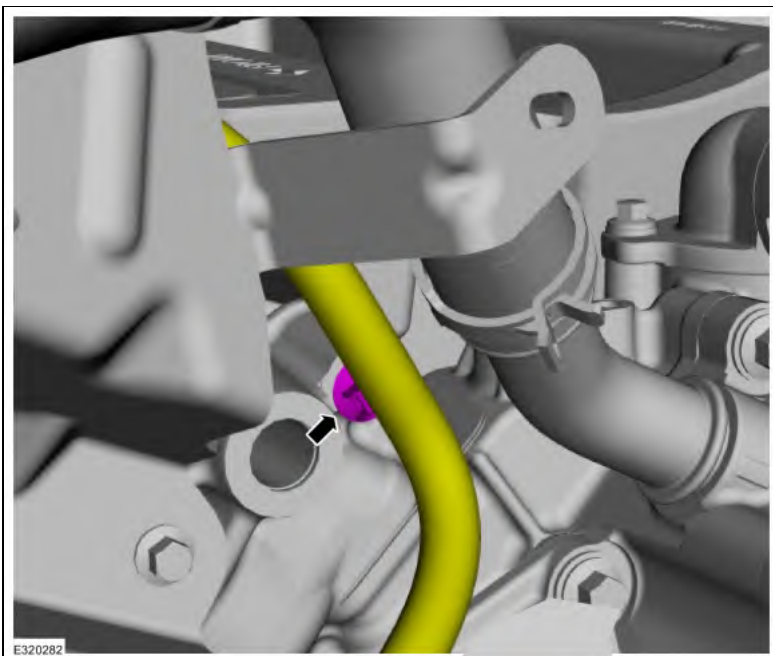


11.

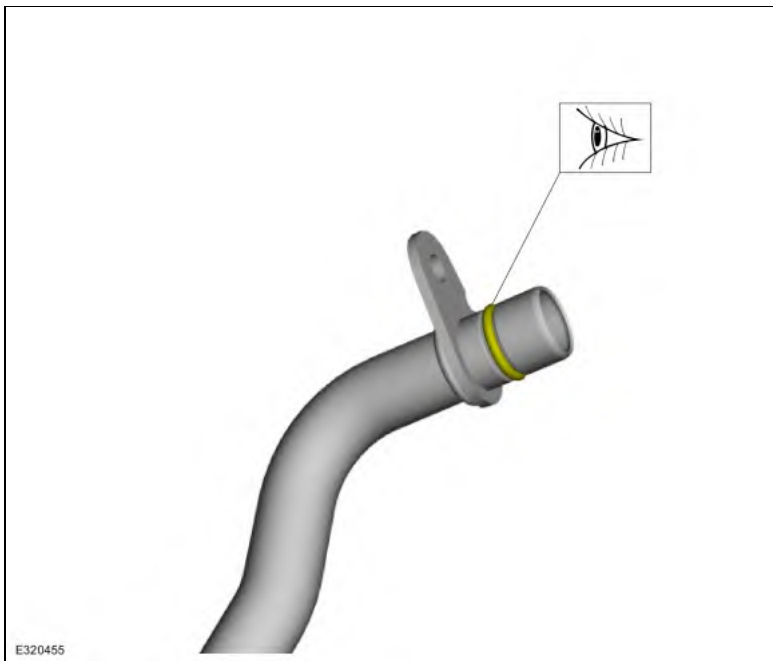
1. Remove the special tool and the generator bracket bolt.
Install Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.
2. Install the generator bracket bolt.
Torque: 35 lb.ft (48 Nm)



12. Attach the wiring harness retainer.

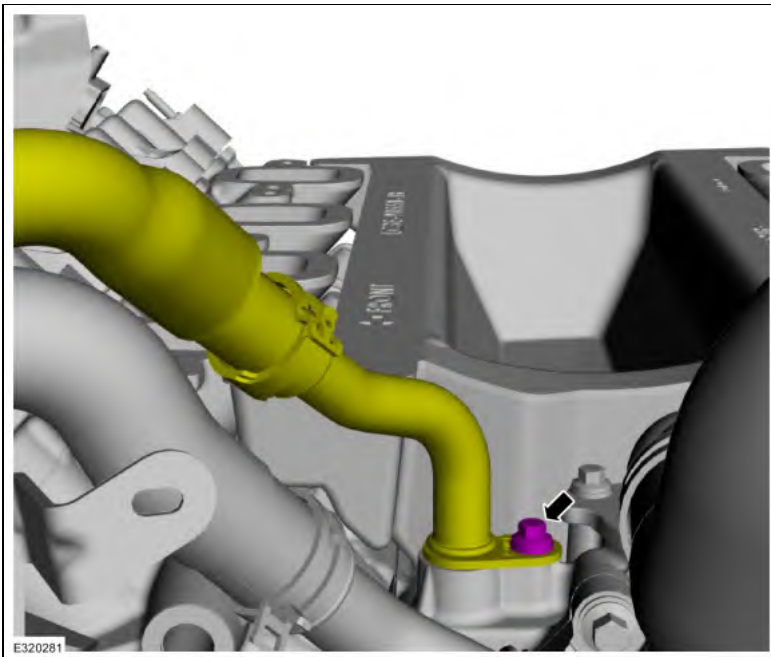


13. Inspect the O-ring seal and replace as necessary.

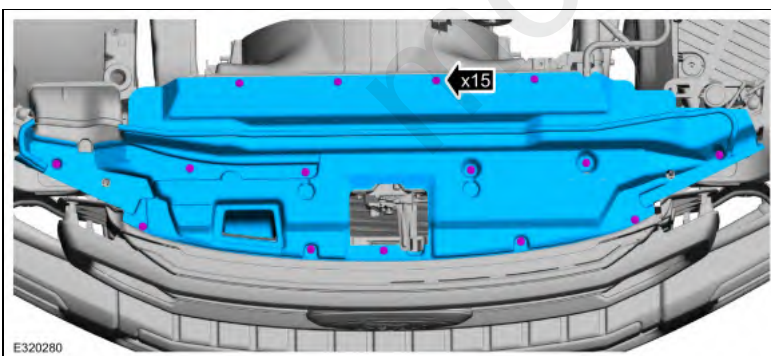


14. Install the coolant outlet pipe and the bolt.
Torque: 89 lb.in (10 Nm)

Torque: 89 lb.in (10 Nm)

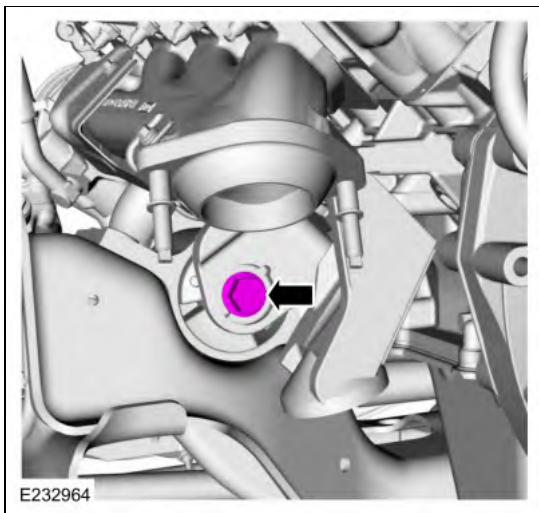


15. Install the upper radiator shield and the fasteners.



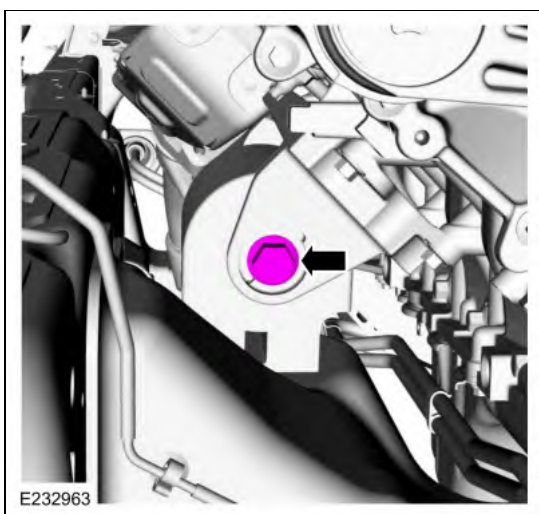
16. **NOTE:** Do not tighten the fasteners at this time.

Install the new LH mount through bolt.



17. **NOTE:** Do not tighten the fasteners at this time.

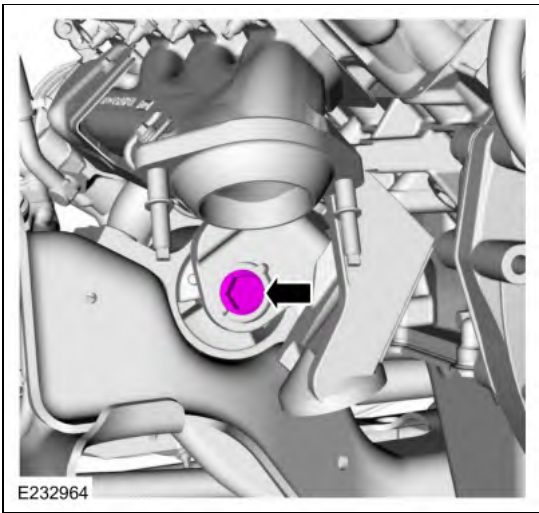
Install the new RH mount through bolt.



18. **NOTICE:** Only use hand tools when tightening the engine mount bolt or damage to the engine mount may occur.

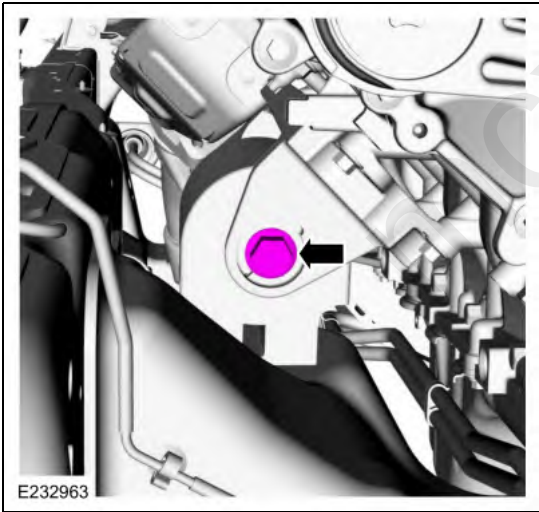
Tighten the LH engine mount through bolt.

Torque: 258 lb.ft (350 Nm)



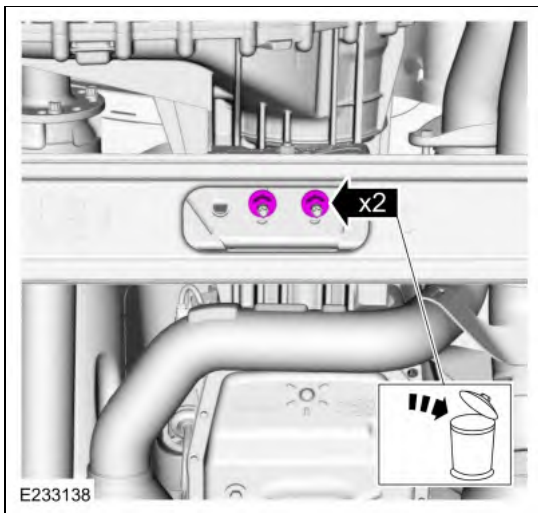
19. **NOTICE:** Only use hand tools when tightening the engine mount bolt or damage to the engine mount may occur.

Tighten the RH engine mount through bolt.
Torque: 258 lb.ft (350 Nm)



20. **NOTICE:** The transmission support insulator-to-crossmember nuts must be discarded and new nuts installed, or damage to the vehicle or transmission support insulator may occur.

Remove and discard the transmission support insulator nuts.



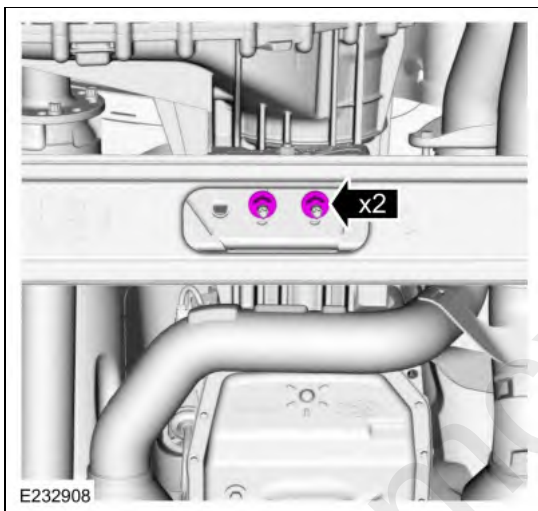
21.

- **NOTE:** The transmission support insulator studs may come out of the insulator while removing the nuts.

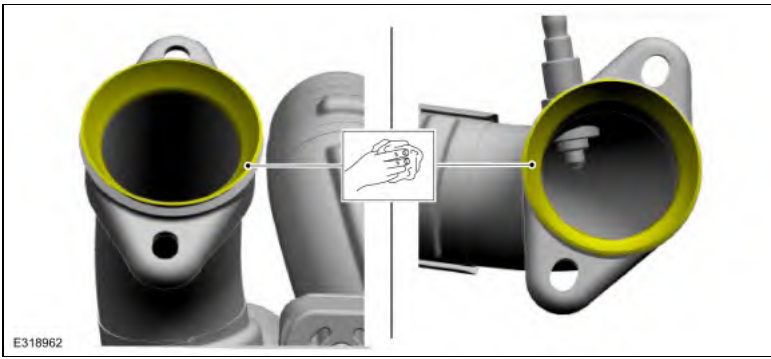
If required, tighten transmission support insulator studs.

Torque: 55 lb.ft (75 Nm)

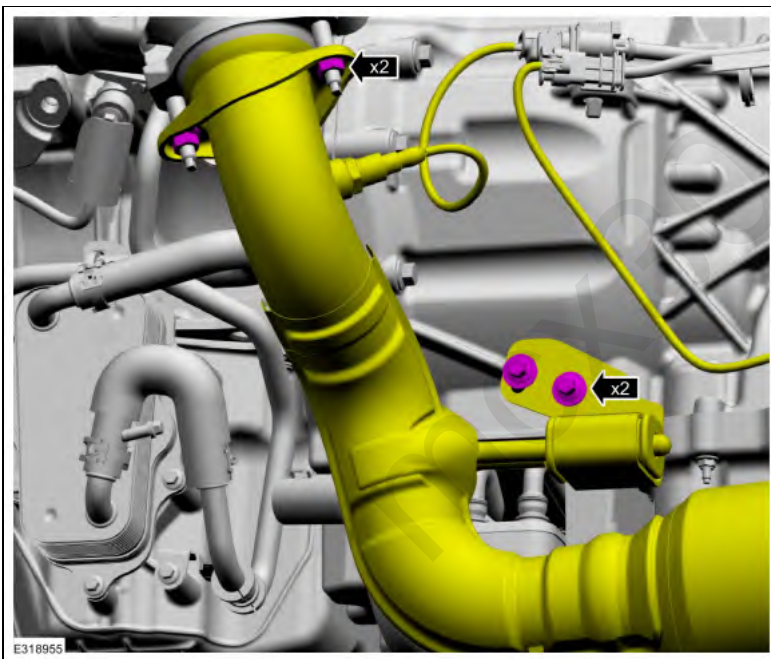
- If the transmission support insulator studs can not be tightened, the transmission support insulator must be replaced.
Refer to: Transmission Support Insulator (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€” 10R140, Removal and Installation).
- Install new transmission support insulator nuts.
Torque: 85 lb.ft (115 Nm)



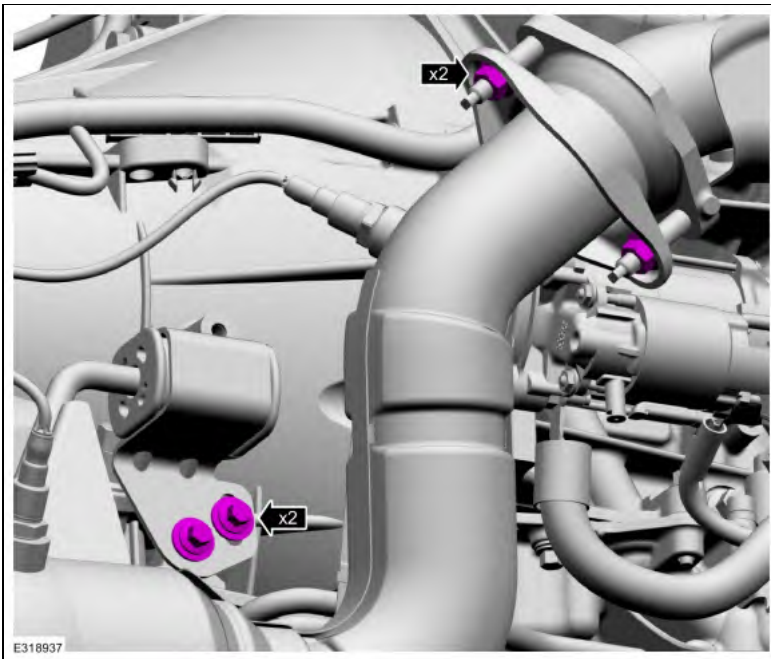
22. Make sure that the mating faces are clean and free of foreign material.



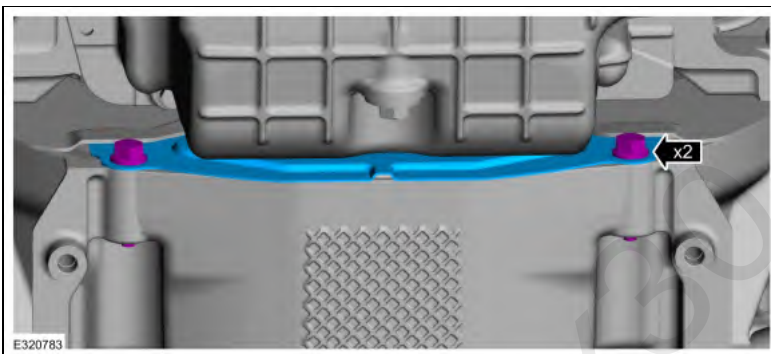
- 23.
1. Position the Y-pipe and install the new nuts.
Torque: 30 lb.ft (40 Nm)
 2. Install the exhaust hanger bolts.
Torque: 18 lb.ft (25 Nm)



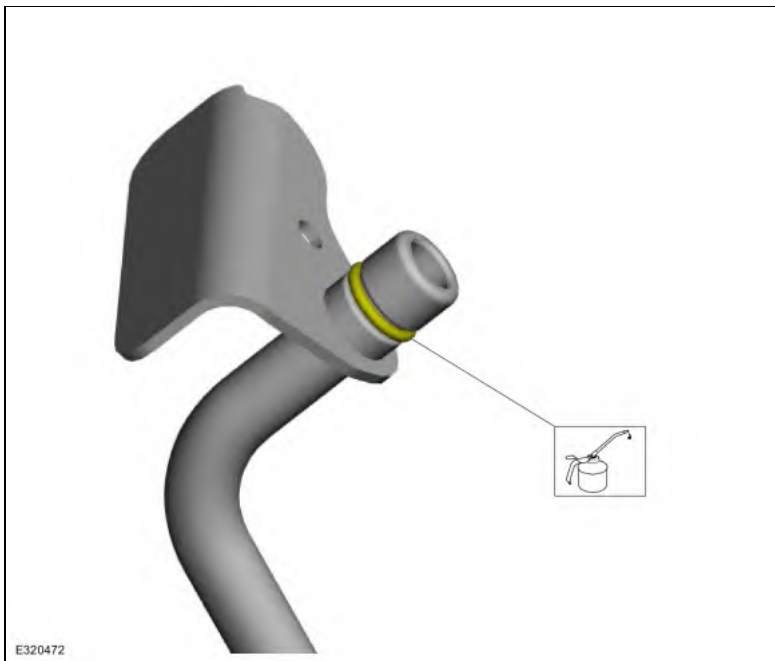
- 24.
1. Install the new Y-pipe nuts.
Torque: 30 lb.ft (40 Nm)
 2. Install the exhaust hanger bolts.
Torque: 18 lb.ft (25 Nm)



25. Install the inspection cover and the bolts.
Torque: 26 lb.ft (35 Nm)

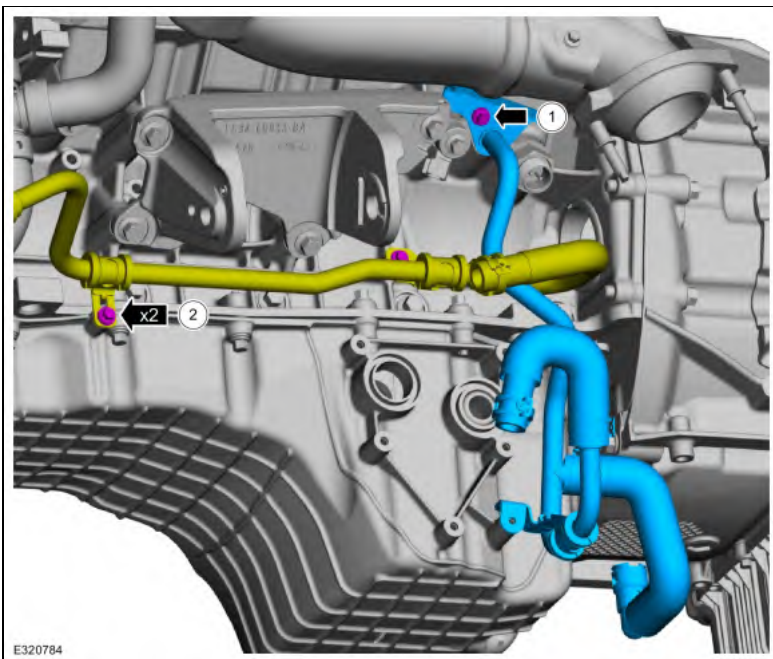


26. Lubricate the O-ring seal with clean engine coolant.



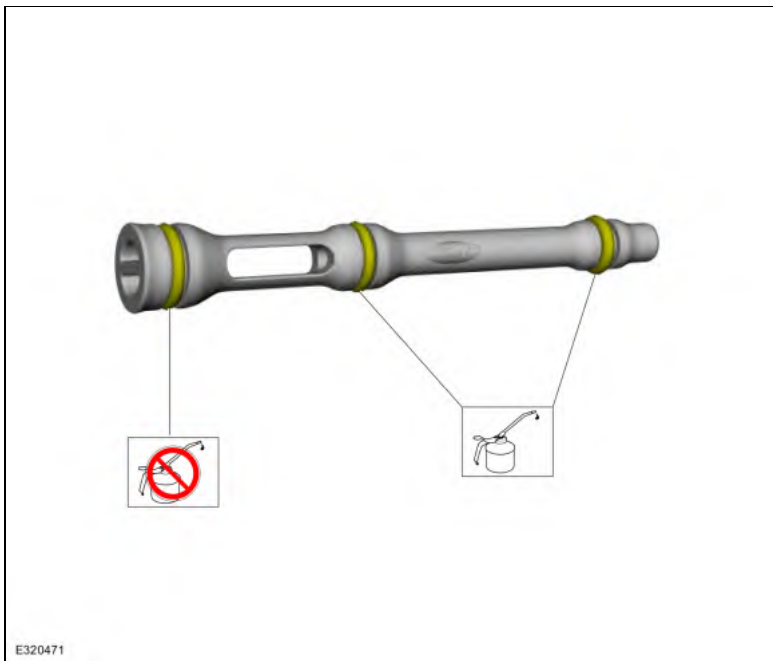
27.

1. Install the coolant tube and the bolt.
Torque: 97 lb.in (11 Nm)
2. Position the coolant tube and install the bolts.
Torque: 97 lb.in (11 Nm)



28. **NOTE:** Do not lubricate the large outer O-ring seal.

Lubricate the middle and inner O-ring seals with clean engine oil.

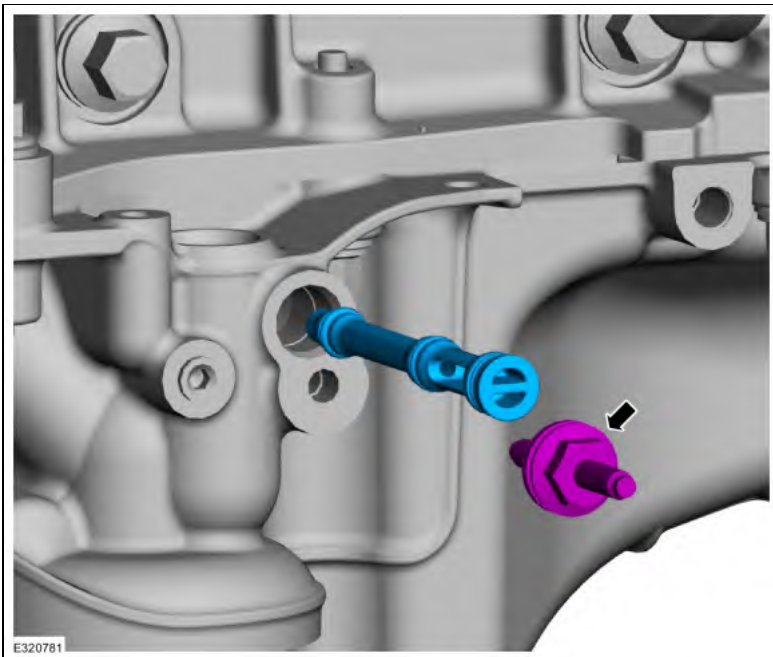


29. Install the oil return tube and the stud bolt.

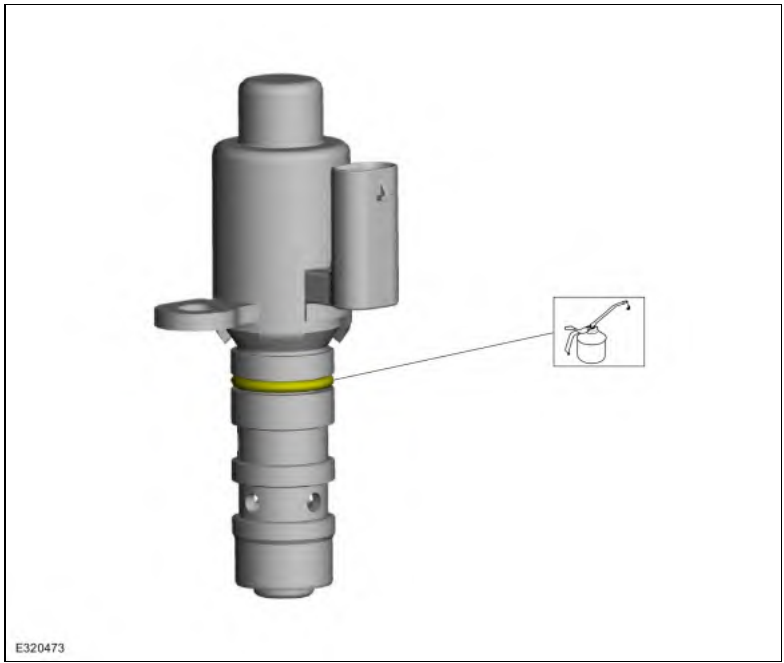
Torque:

Stage 1: 124 lb.in (14 Nm)

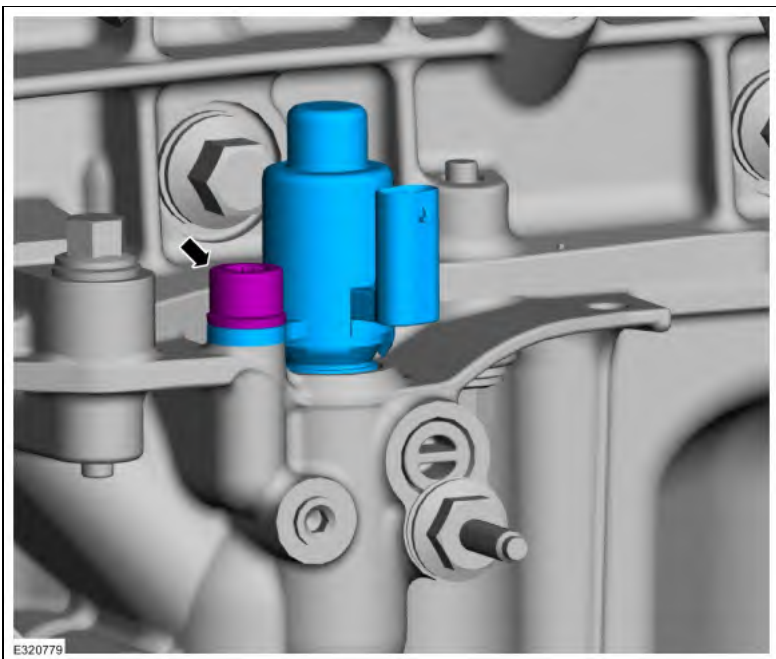
Stage 2: 30°



30. Lubricate the O-ring seal with clean engine oil.

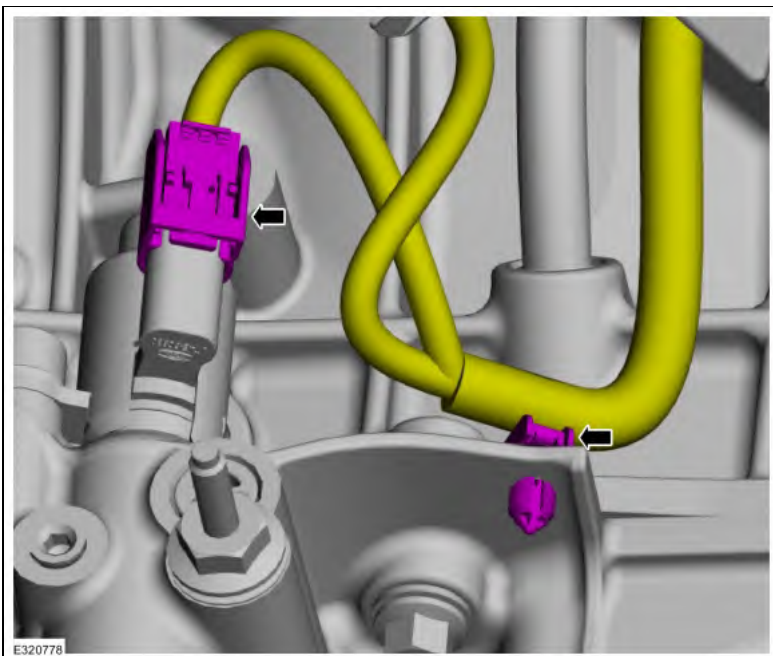


31. Install the oil control solenoid and the bolt.
Torque: 89 lb.in (10 Nm)



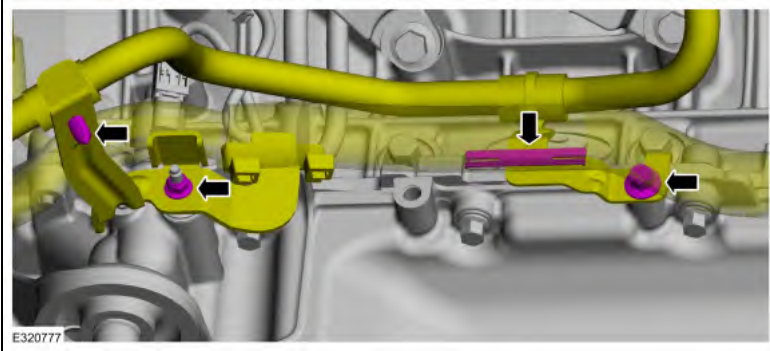
32.

- Connect the oil control solenoid electrical connector.
- Attach the wiring harness retainer.

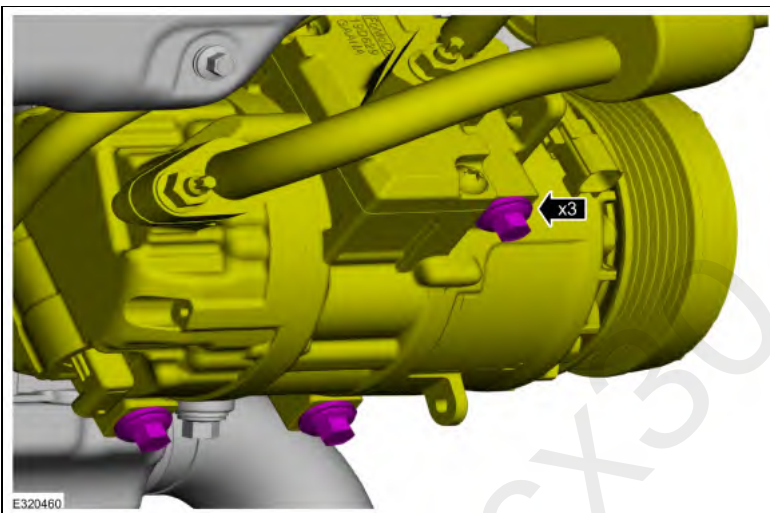


33.

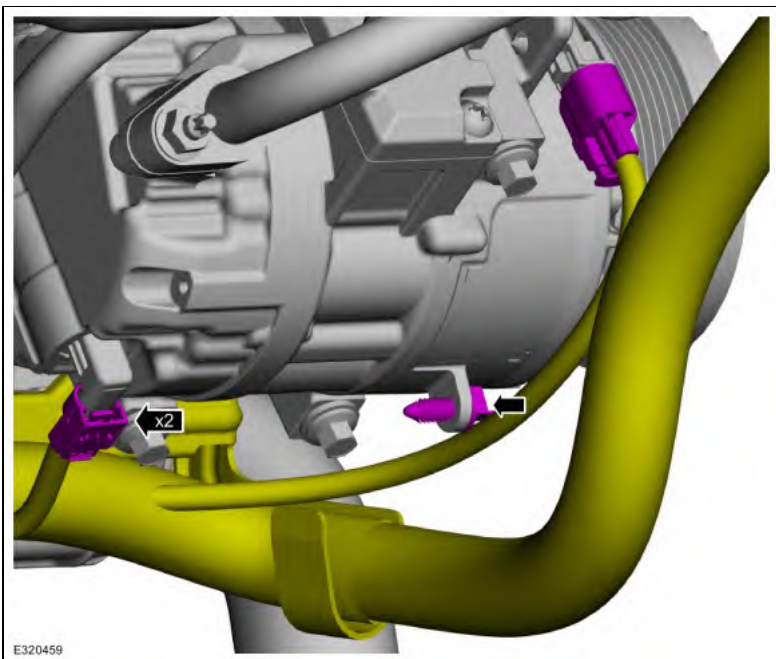
- Position the bracket and install the bolt.
Torque: 18 lb.ft (25 Nm)
- Position the bracket and install the nut.
Torque: 97 lb.in (11 Nm)
- Attach the wiring harness retainers.



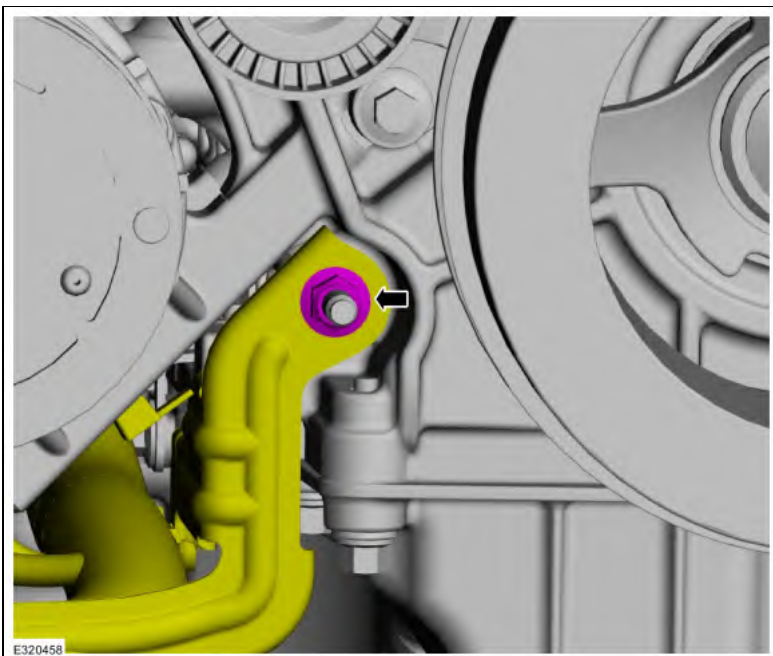
34. Position the A/C compressor and install the bolts.
Torque: 18 lb.ft (25 Nm)



35. Connect the A/C compressor wiring harness electrical connectors and attach the wiring harness retainer.



36. Install the starter motor wiring harness bracket and the nut.
Torque: 18 lb.ft (25 Nm)



37. Install the following items:

1. Battery tray.
Refer to: Battery Tray (414-01 Battery, Mounting and Cables, Removal and Installation).
2. A/C compressor belt.
Refer to: Air Conditioning (A/C) Compressor Belt (303-05C Accessory Drive - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
3. Cooling fan.
Refer to: Cooling Fan (303-03D Engine Cooling - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
4. Intake manifold.
Refer to: Intake Manifold (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
5. Transmission fluid cooler.
Refer to: Transmission Fluid Cooler - 6.2L V8/7.3L 2V DEVCT V8 (239kW/320PS) (J0) (307-02B Transmission Cooling - 10-Speed Automatic Transmission â€” 10R140, Removal and Installation).
6. Engine oil cooler.
Refer to: Oil Cooler (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).
7. Starter.
Refer to: Starter Motor (303-06C Starting System - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), Removal and Installation).

38. Install a new oil filter and fill the engine with clean engine oil.
Refer to: Engine Oil Draining and Filling (303-01C Engine - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).

39. Fill and bleed the engine cooling system.
Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03D Engine Cooling - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).

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

41. Pressurize the fuel system.
Refer to: Fuel System Pressure Release (310-00C Fuel System - General Information - 7.3L 2V DEVCT V8 (239kW/320PS) (J0), General Procedures).

42. Start and check the exhaust system for leaks.