

Engine

Base Part Number: Base Part Number: 6L084

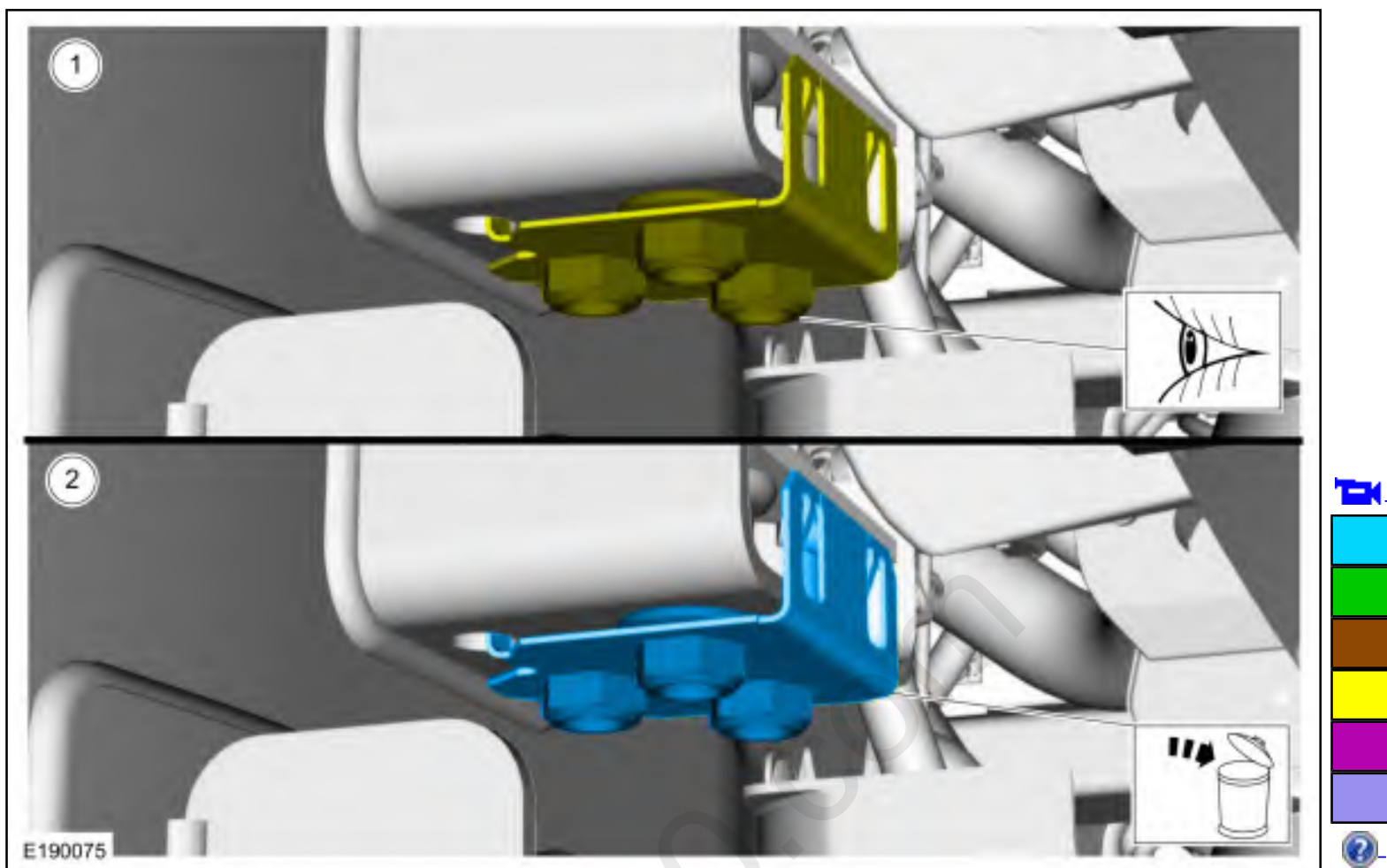
Special Tool(s) / General Equipment

	303-F047 Lifting Bracket, Engine
Magnetic Socket	
Floor Crane	
Trolley Jack	
Hose Clamp Remover/Installer	
Wooden Block	

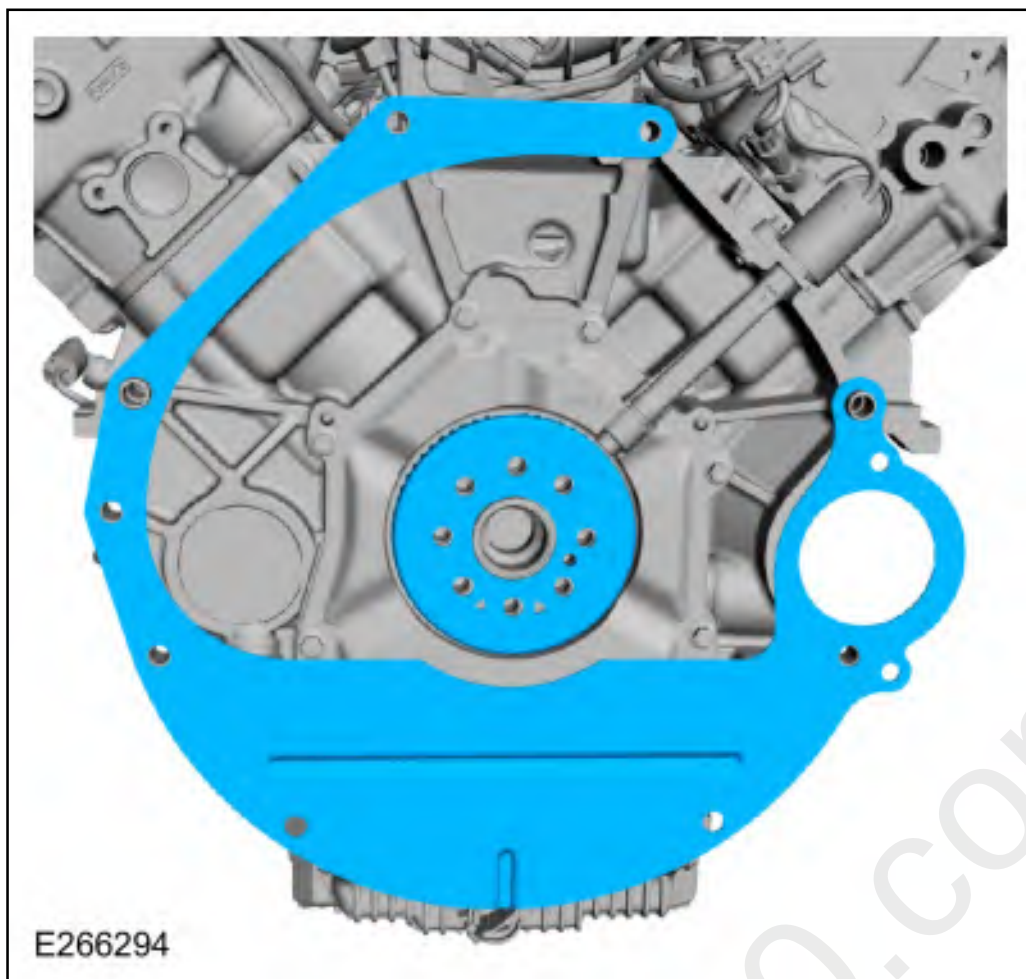
Materials

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

1. Inspect the engine mount-to-frame nut plate for thread damage.
2. If the nut plate is damaged, remove and discard the engine mount-to-frame nut plate.
 - Clean the engine mount-to-frame mating surfaces of any dirt or foreign material prior to installation.



2. Install the engine-to-transmission spacer plate and the crankshaft sensor ring.

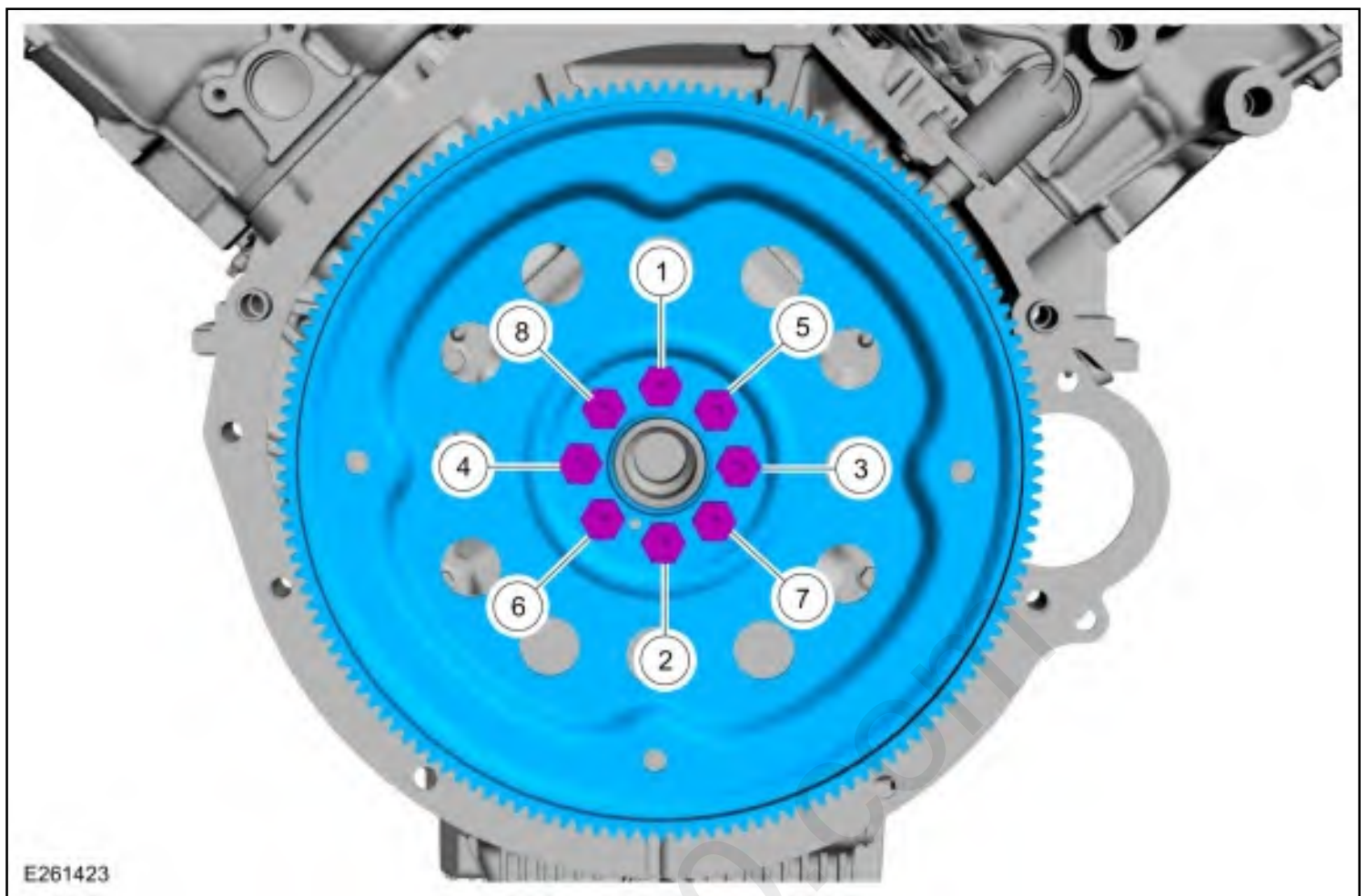


3. Install the flexplate and the bolts.

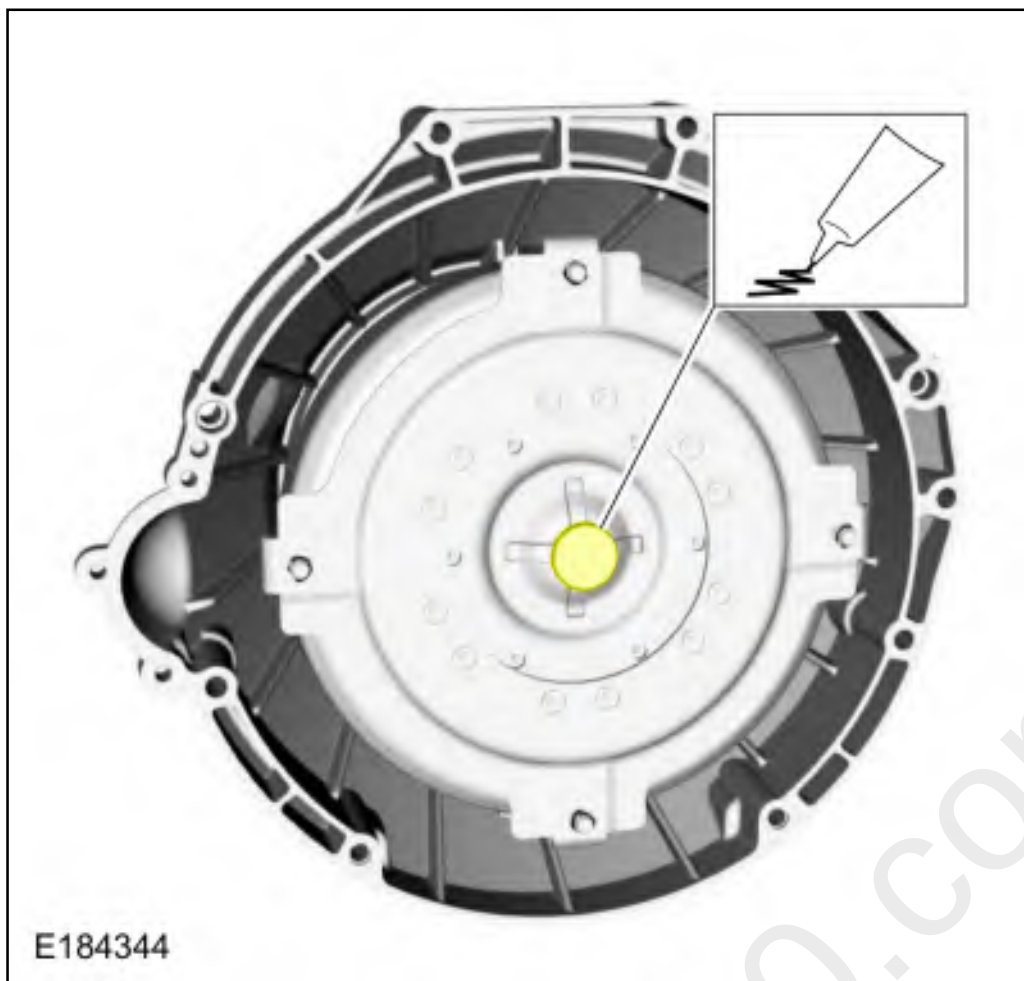
Torque:

Stage 1: 43 lb.ft (58 Nm)

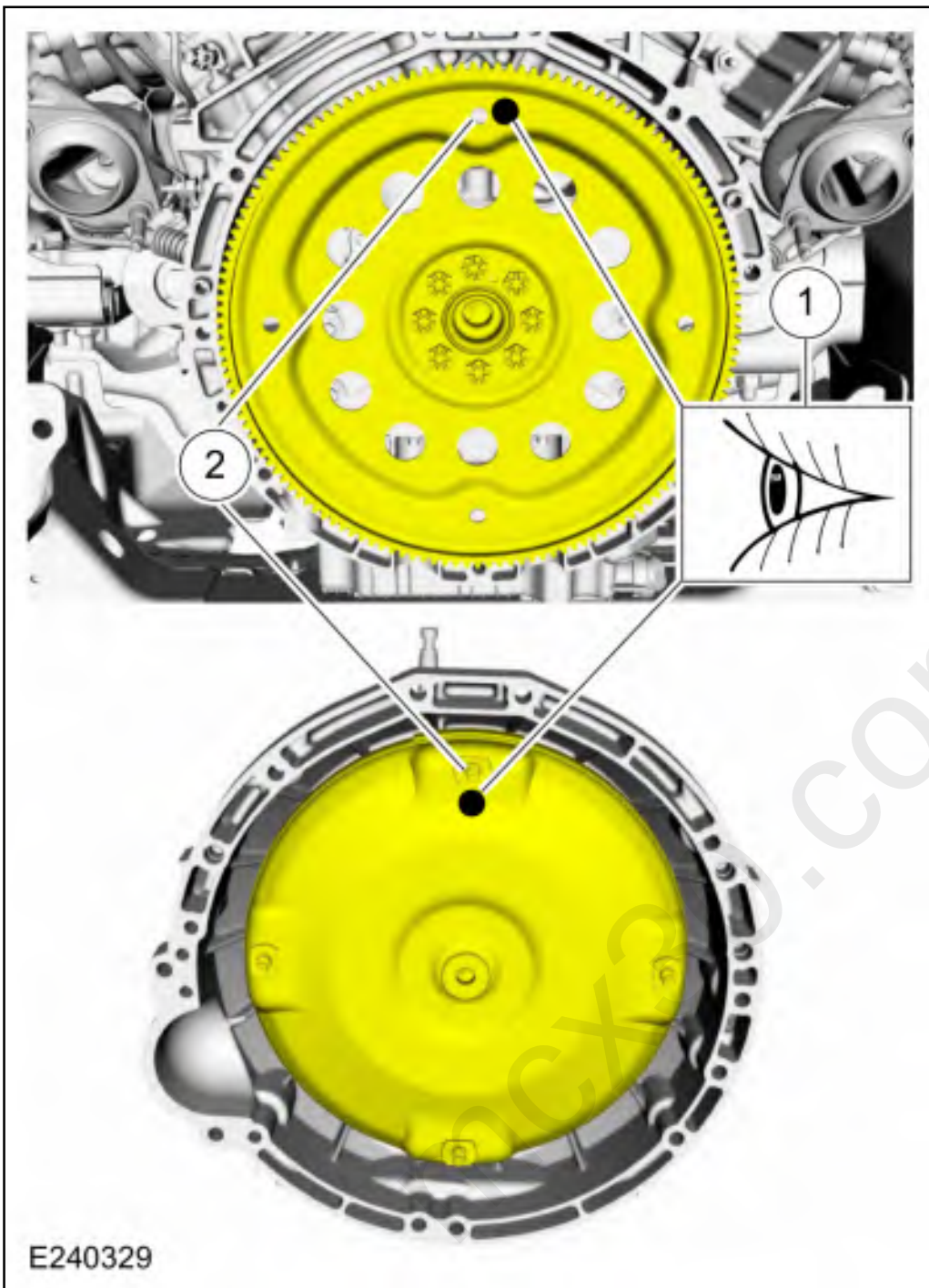
Stage 2: 45°



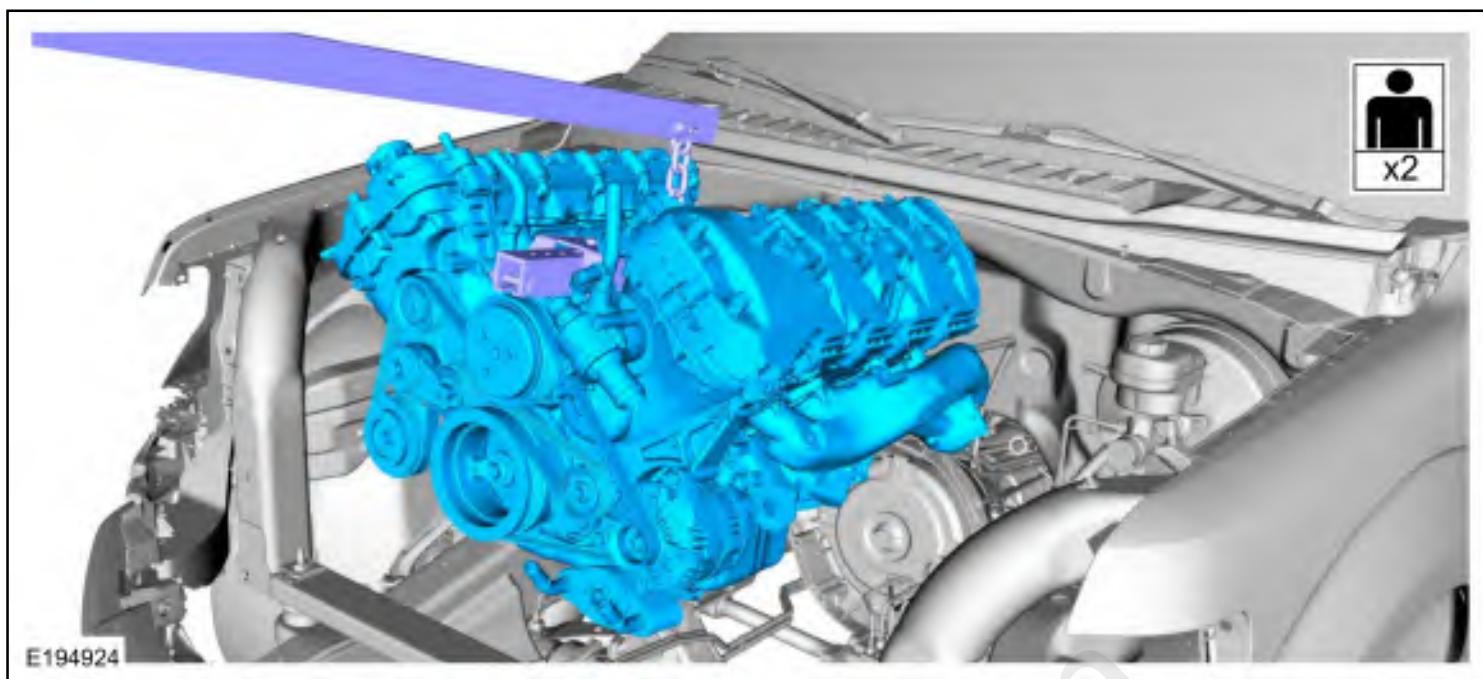
4. Lubricate the torque converter pilot hub with multi-purpose grease.
Material: Motorcraft® Multi-Purpose Grease Spray / XL-5-A (ESB-M1C93-B)



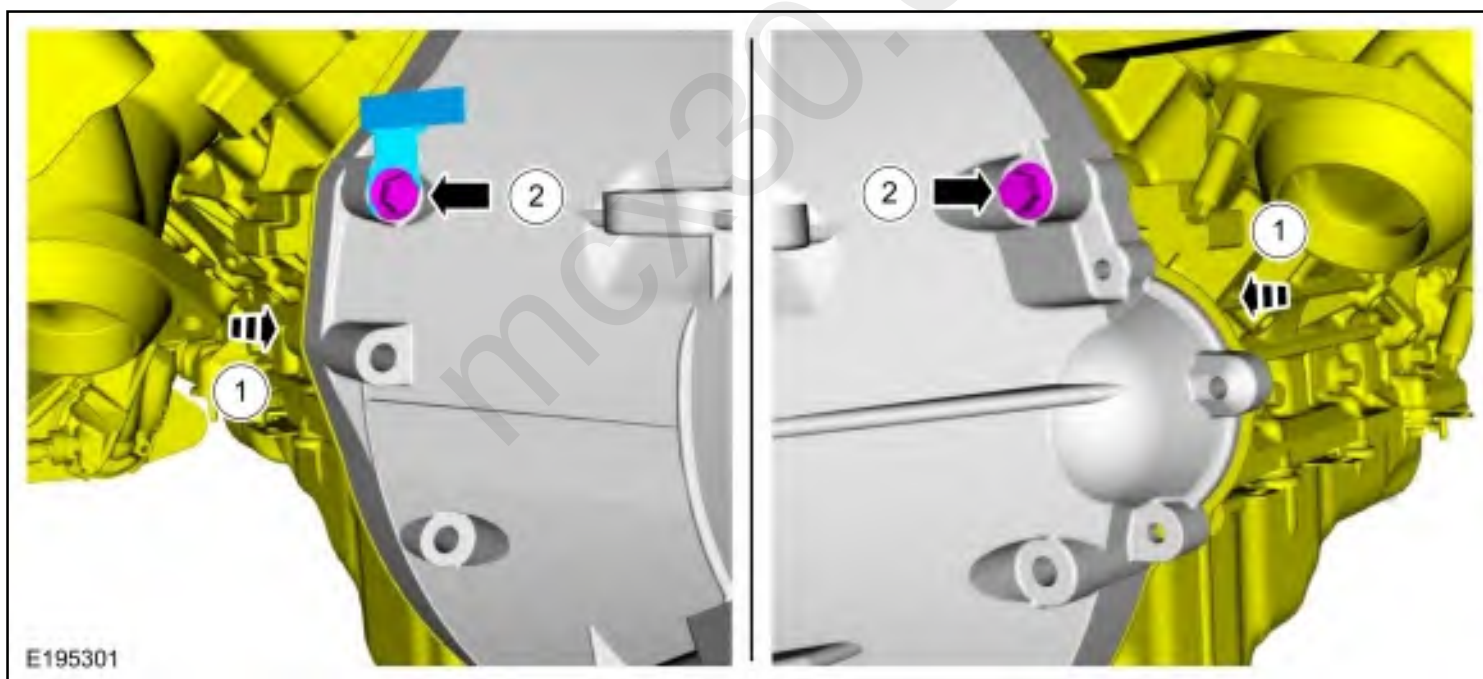
- Inspect the torque converter stud and flexplate for paint marks.
- Align the torque converter stud and flexplate hole near the paint marks to the 12 o'clock position.



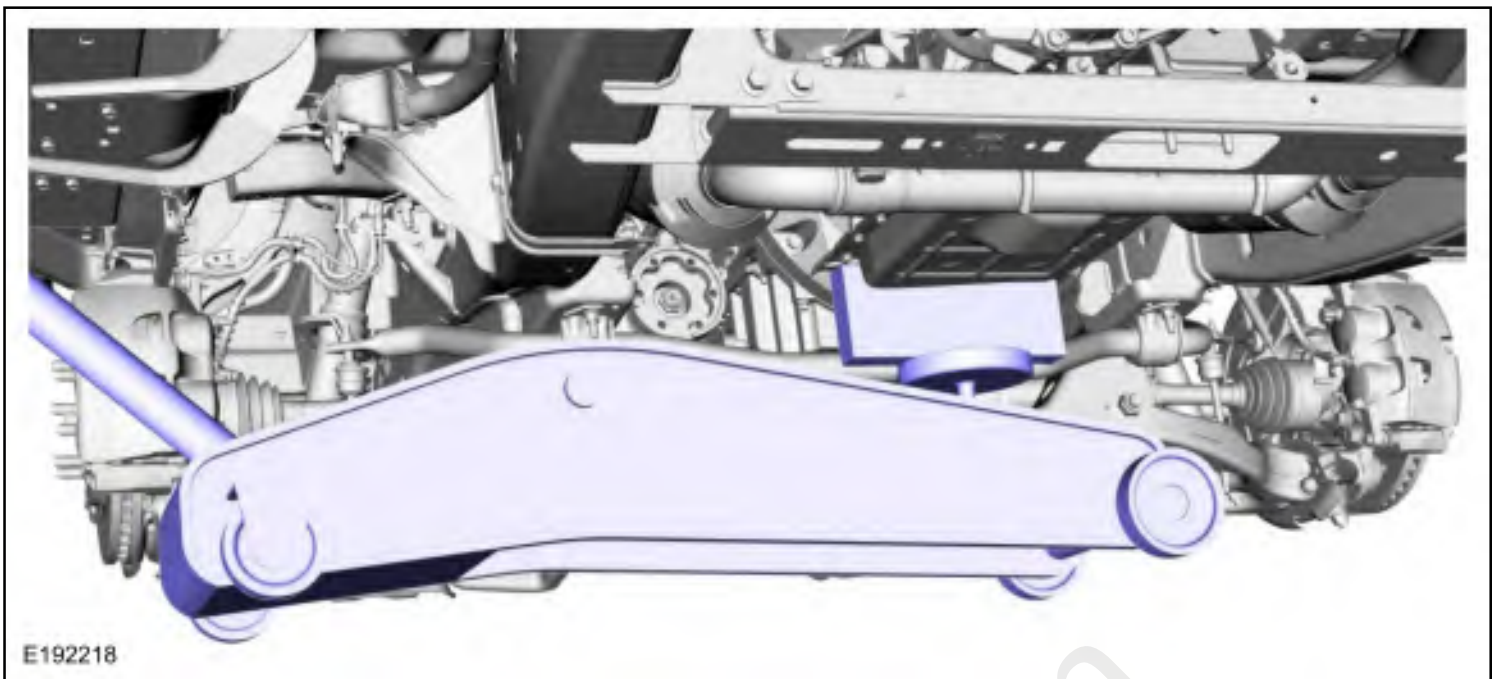
6. Using the Heavy Duty Floor Crane, install the engine assembly into the vehicle.
Use the General Equipment: Floor Crane



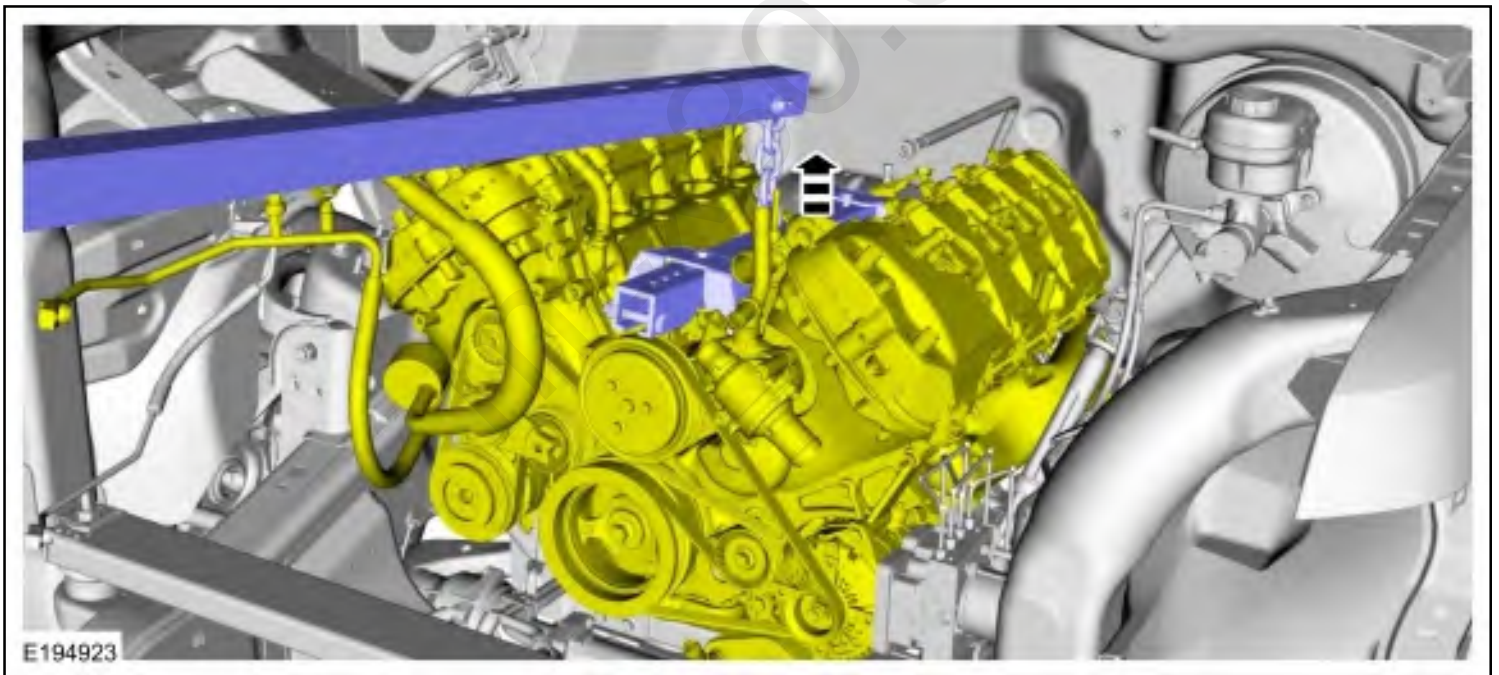
1. Align the engine to the transmission.
 2. Install the clip and draw the engine and transmission together using the bolts.
- Torque: 35 lb.ft (48 Nm)*



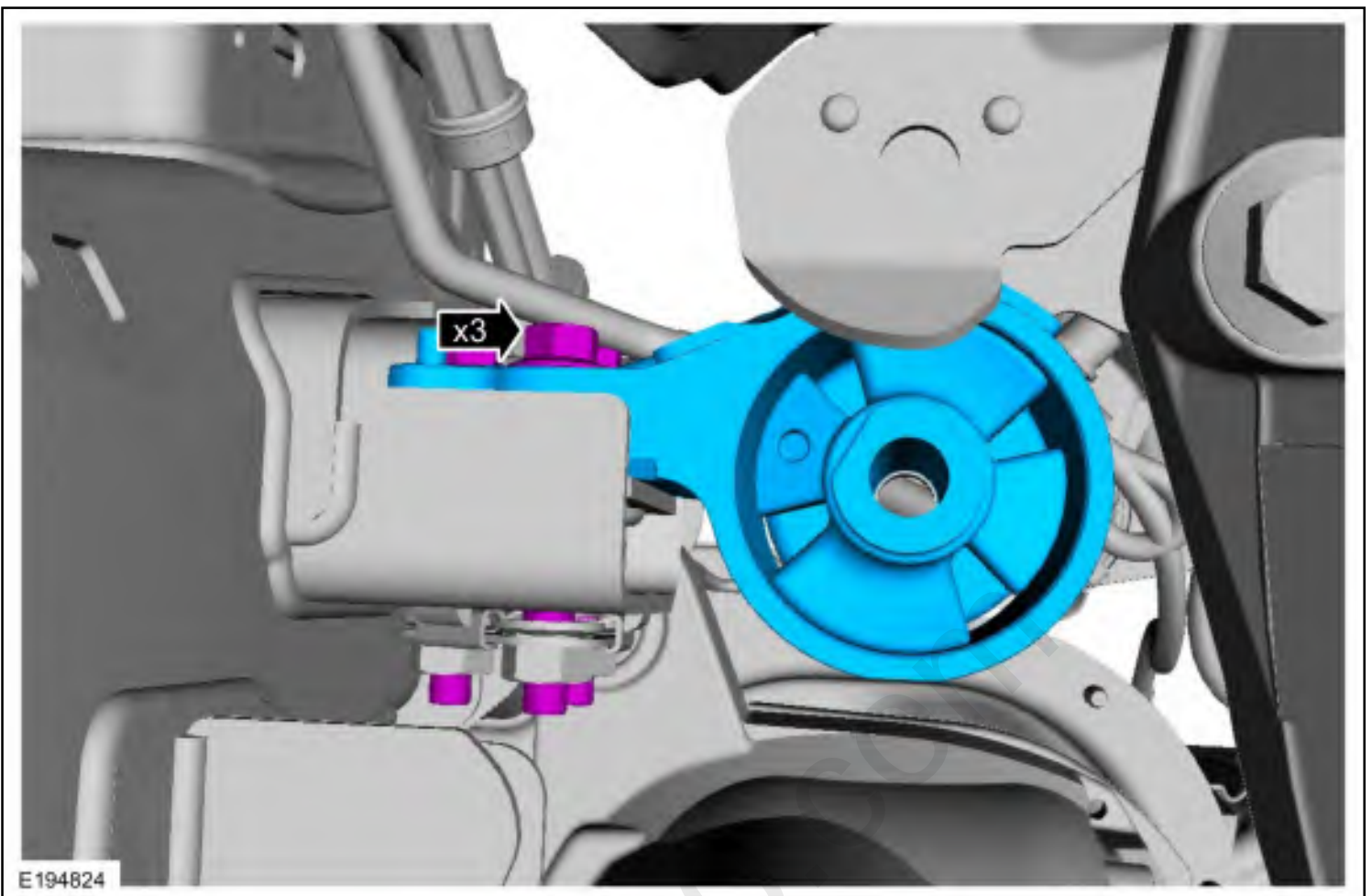
8. Remove the floor jack and a block of wood.
Use the General Equipment: Trolley Jack
Use the General Equipment: Wooden Block



9. Using the Heavy Duty Floor Crane, raise the engine assembly to gain clearance to install the LH engine mount.
Use the General Equipment: Floor Crane



10. Install the LH engine mount and the new engine mount-to-frame bolts.
Torque: 129 lb.ft (175 Nm)

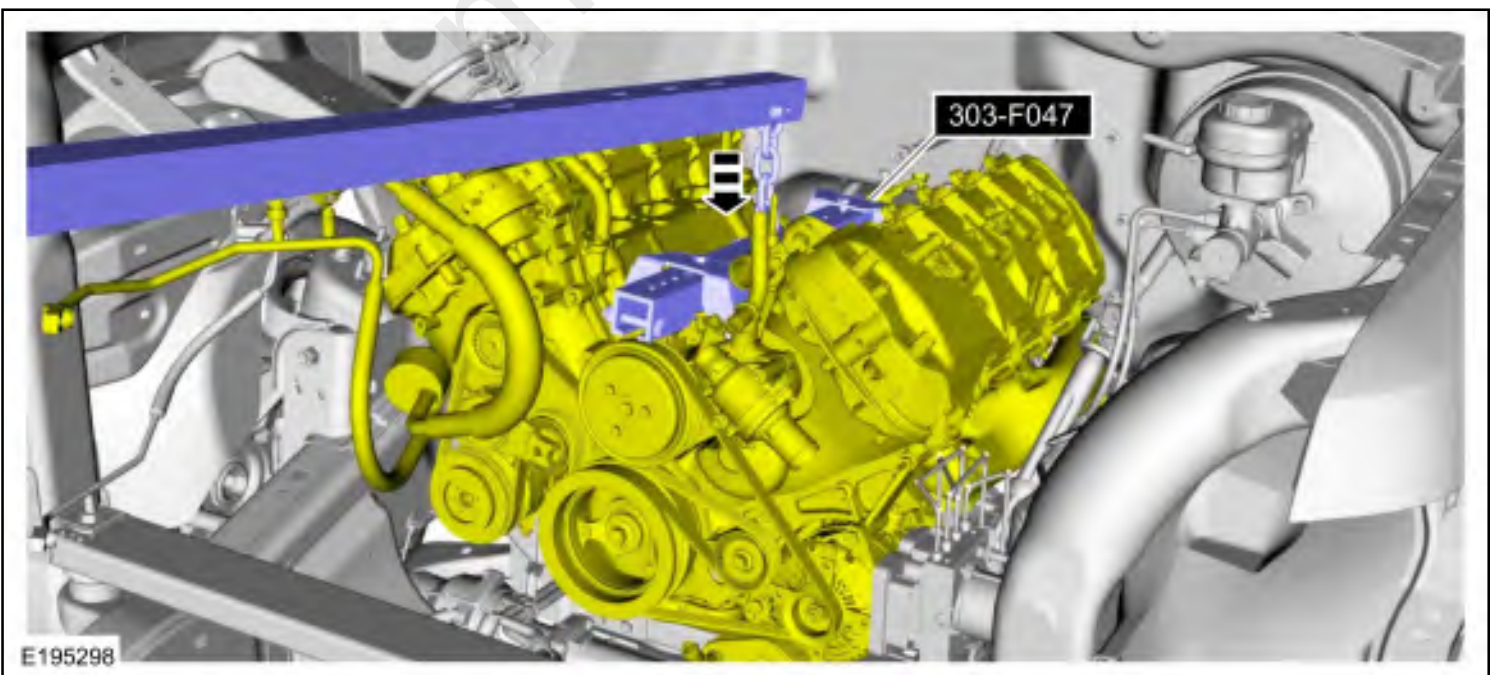


11. Using the Heavy Duty Floor Crane, lower the engine assembly into the installed position.

1. Remove Heavy Duty Floor Crane.

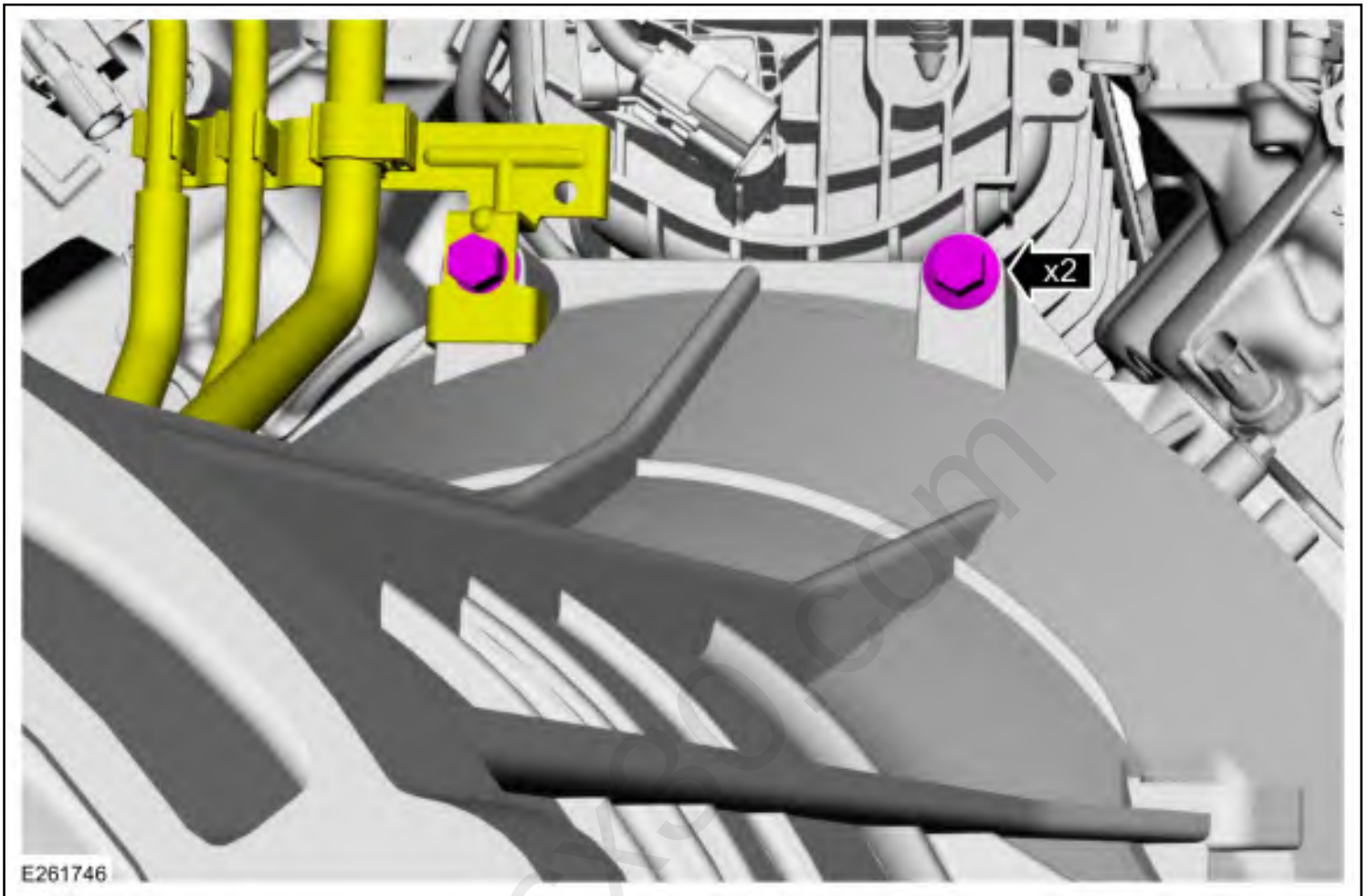
Use the General Equipment: Floor Crane

2. Remove Special Service Tool: 303-F047 Lifting Bracket, Engine.



12. Position the bracket and install the upper transmission-to-engine bolts.

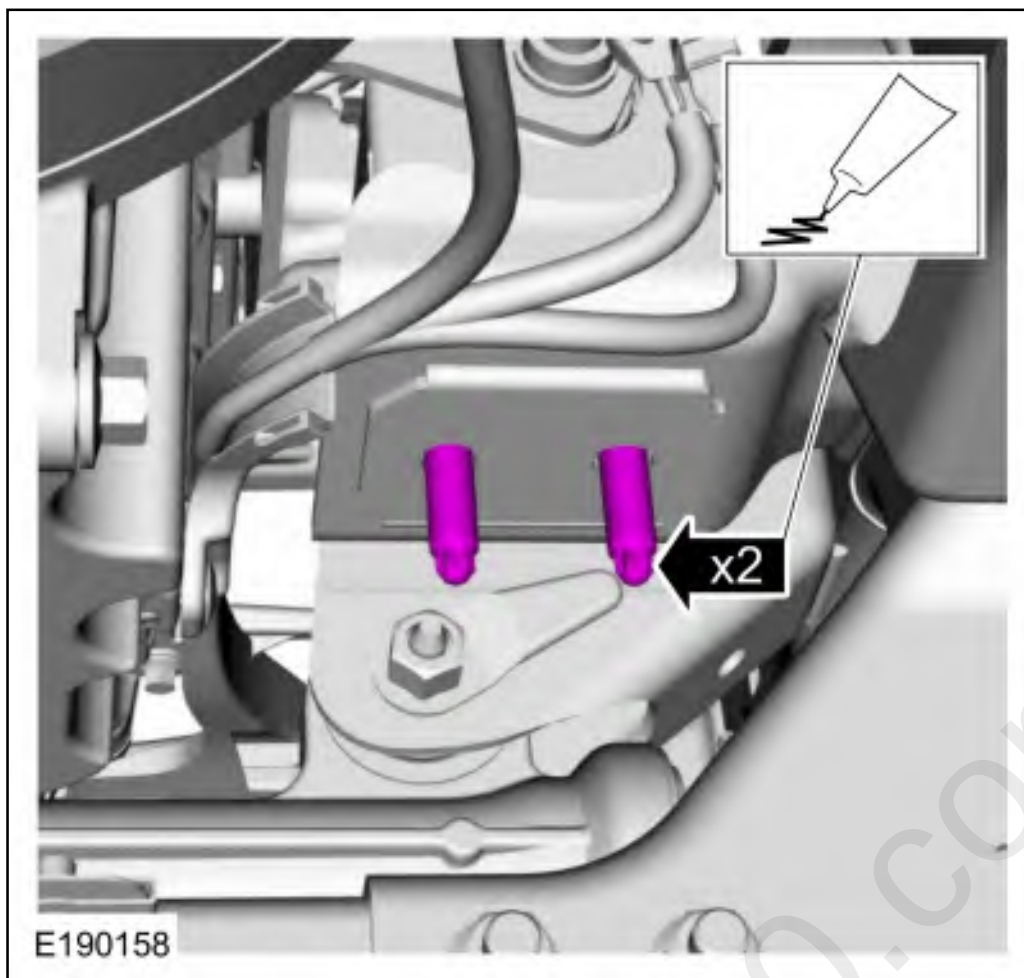
Torque: 35 lb.ft (48 Nm)



13. **NOTICE:** Only use hand tools when installing the engine mount stud bolts or damage to the engine mount can occur.

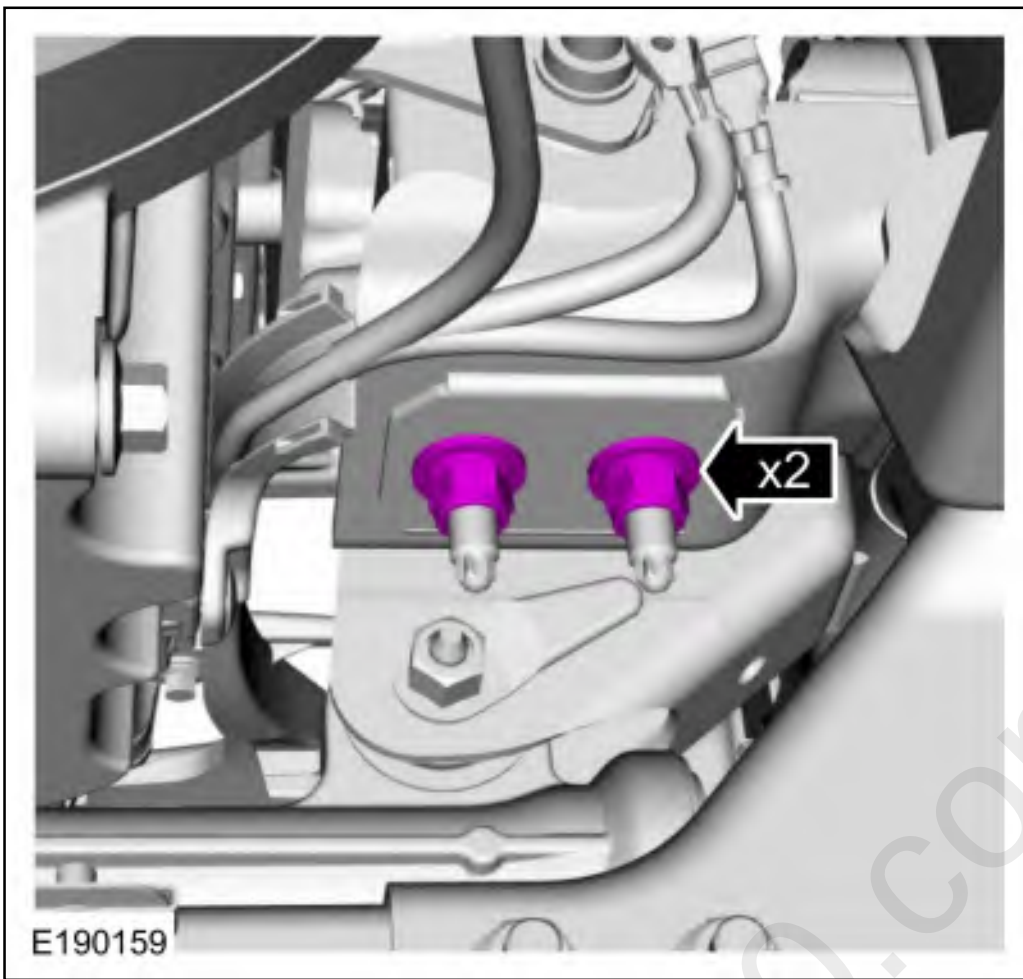
Install the new RH engine mount stud bolts.

Torque: 22 lb.ft (30 Nm)



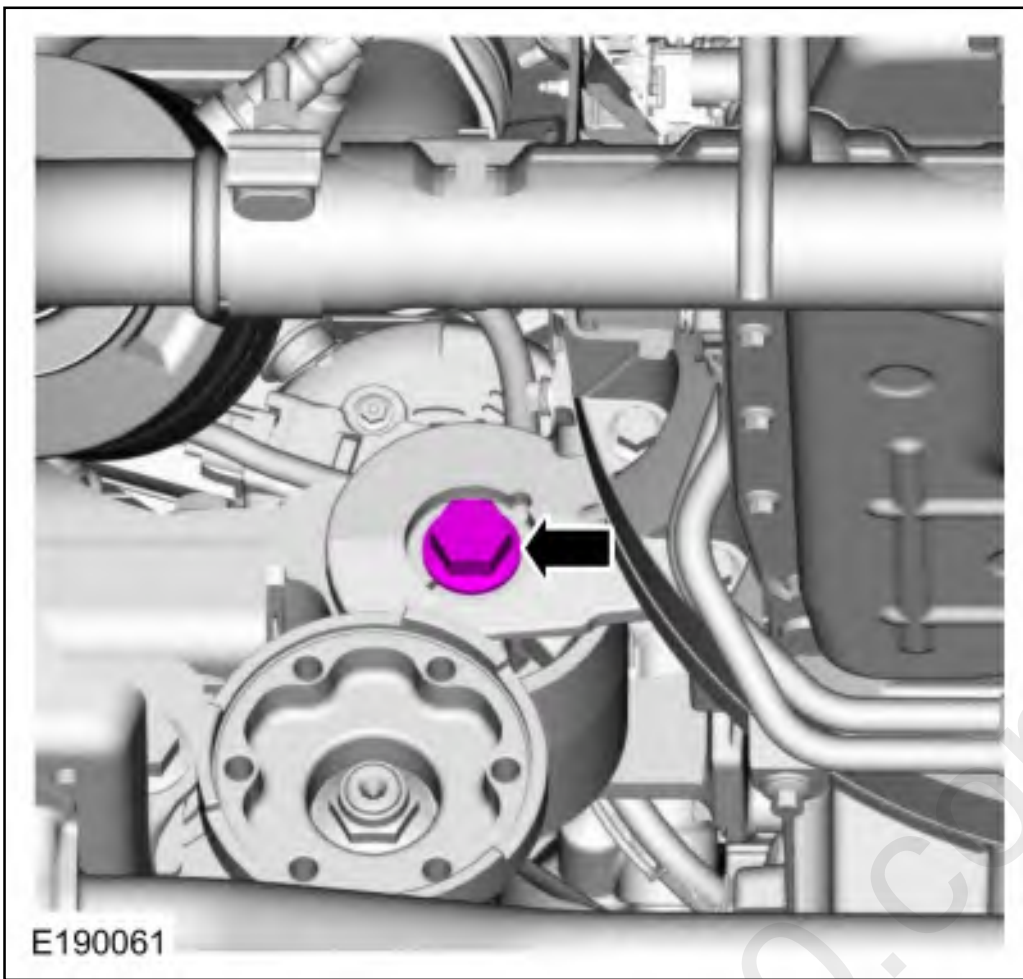
14. **NOTICE:** Only use hand tools when installing the engine mount nuts or damage to the engine mount can occur.

Install the new RH engine mount nuts.
Torque: 111 lb.ft (150 Nm)



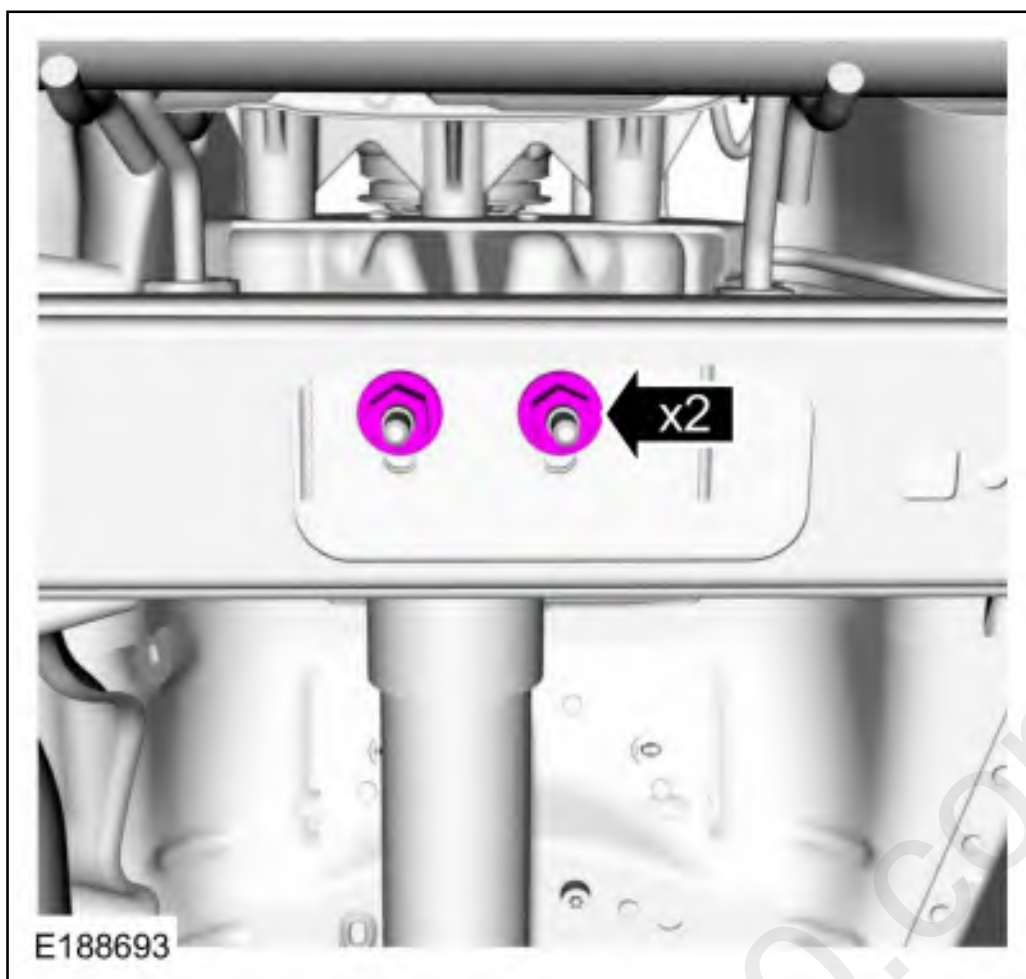
15. **NOTICE:** Only use hand tools when tightening the engine mount through bolts or damage to the engine mount-to-cylinder block bracket can occur.

Install the new LH engine mount through bolt.
Torque: 258 lb.ft (350 Nm)

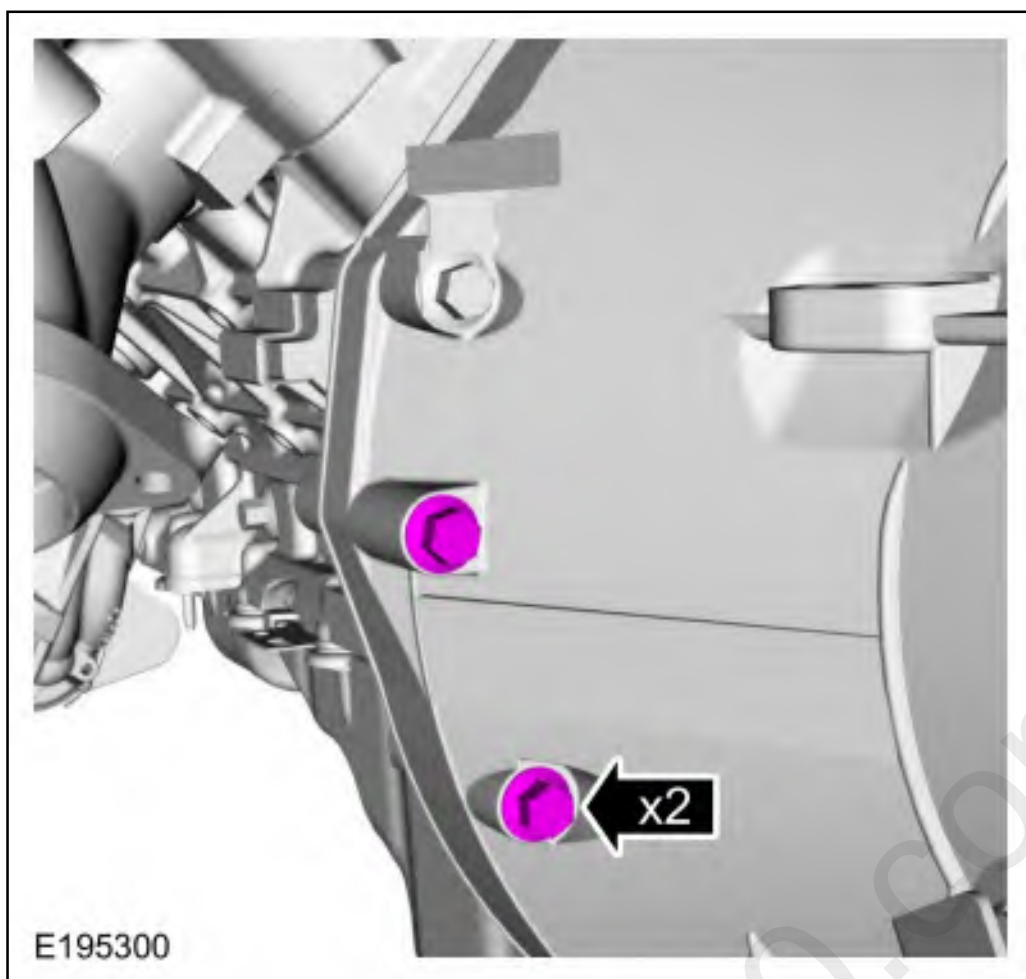


16. **NOTICE:** Only use hand tools when installing the transmission mount-to-crossmember nuts or damage to the transmission mount can occur.

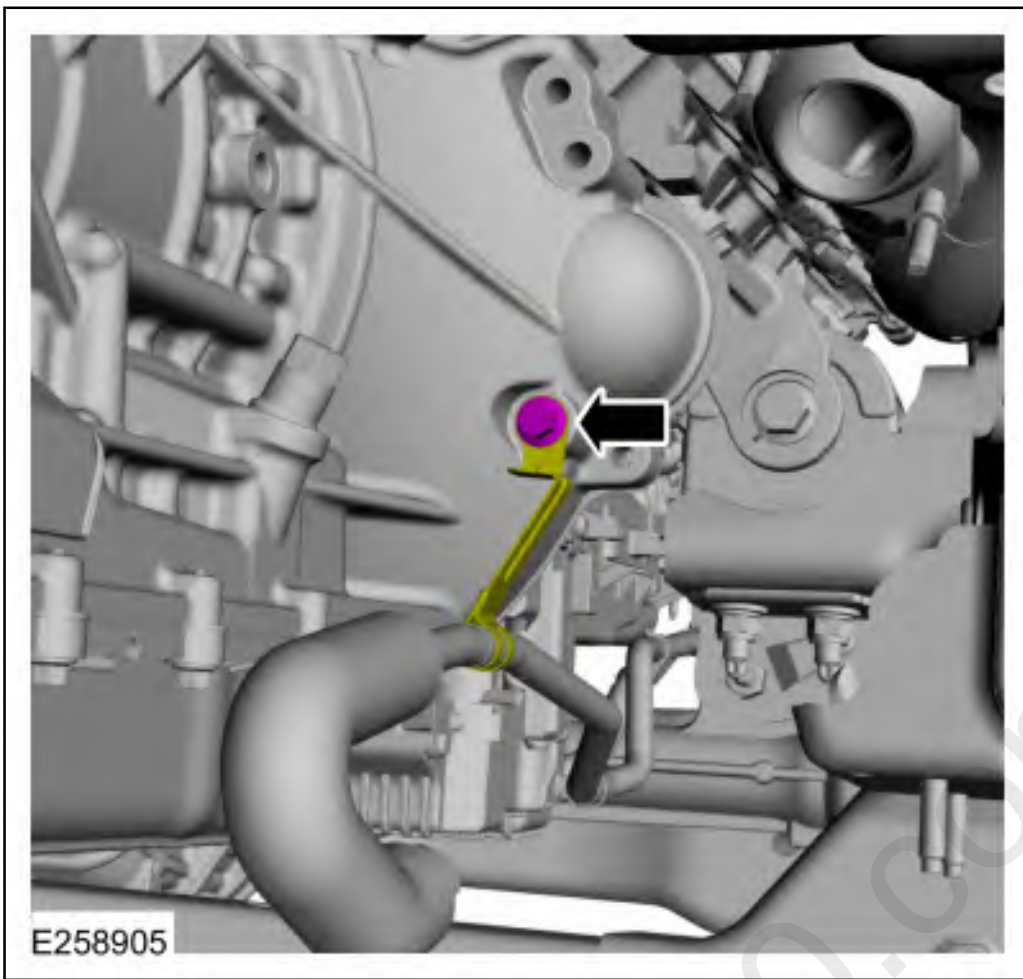
Tighten the transmission mount-to-crossmember nuts.
Torque: 85 lb.ft (115 Nm)



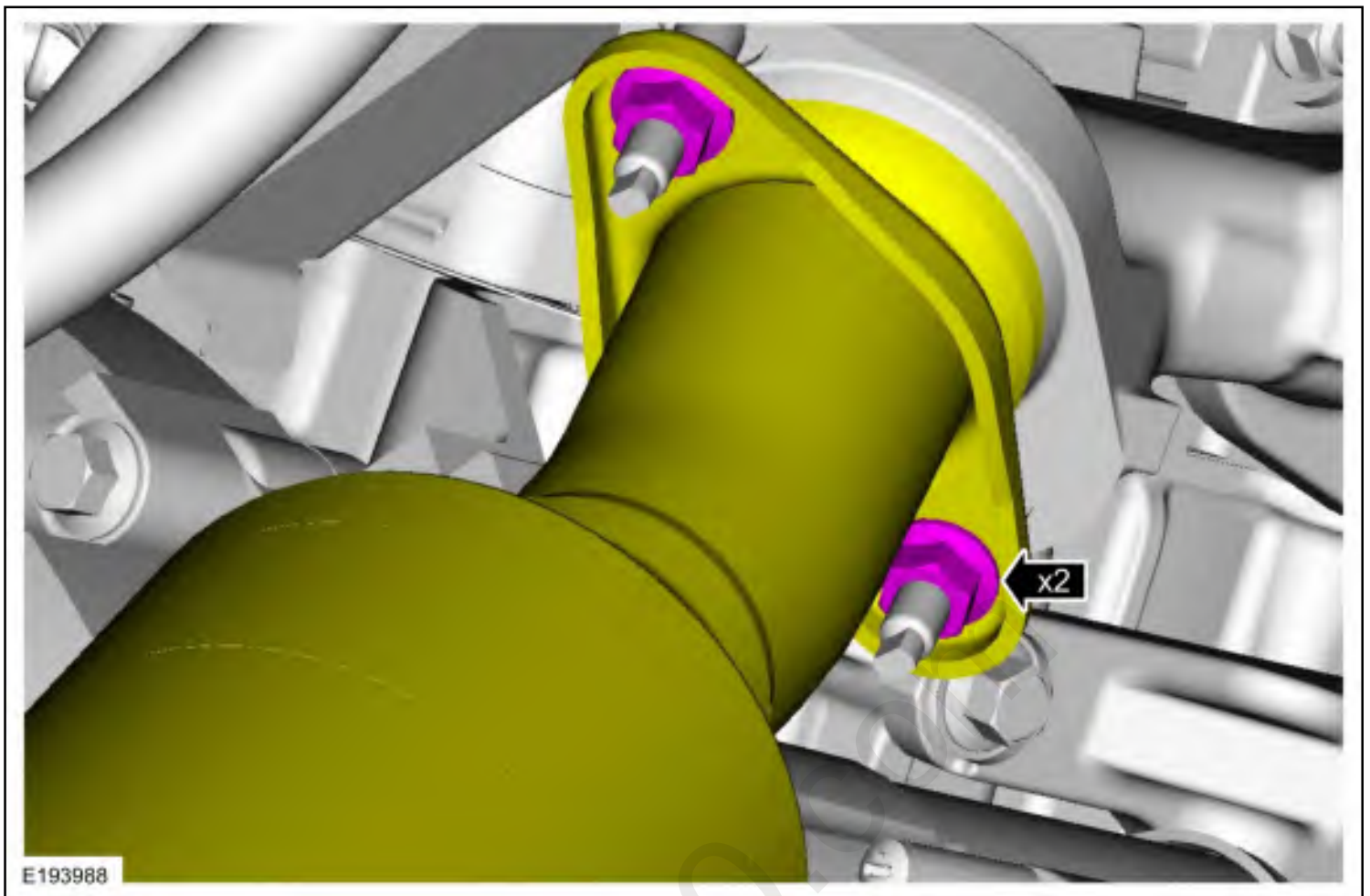
17. Install LH transmission-to-engine bolts.
Torque: 35 lb.ft (48 Nm)



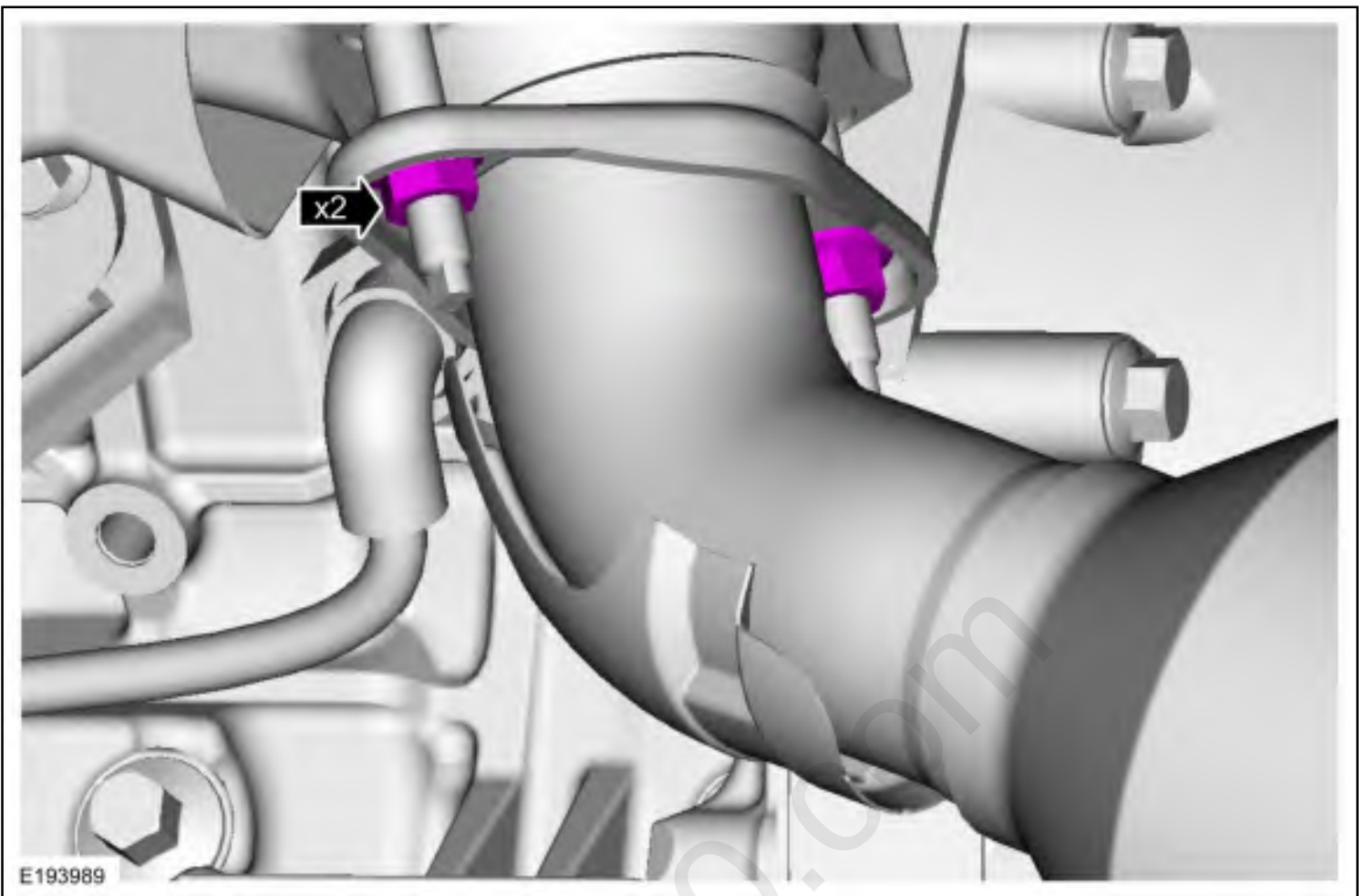
18. Install the transmission cooler tube support bracket and the transmission-to-engine bolt.
Torque: 35 lb.ft (48 Nm)



19. Position the exhaust Y-pipe dual catalytic converter onto the exhaust manifolds and loosely install new RH catalytic converter-to-exhaust manifold nuts.



20. Loosely install new LH catalytic converter-to-exhaust manifold nuts.

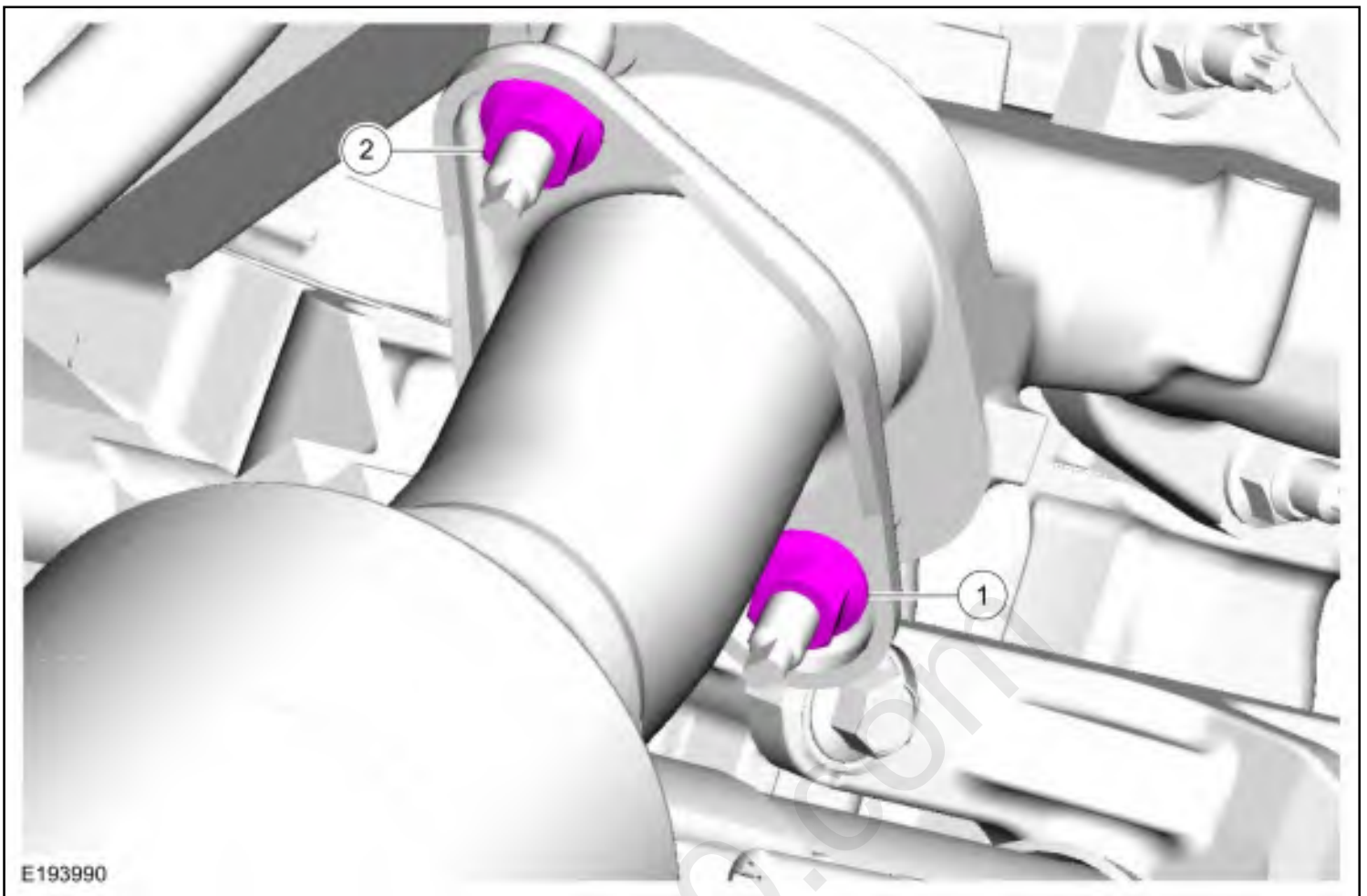


21. Tighten the nuts.

Torque:

1: 30 lb.ft (40 Nm)

2: 30 lb.ft (40 Nm)

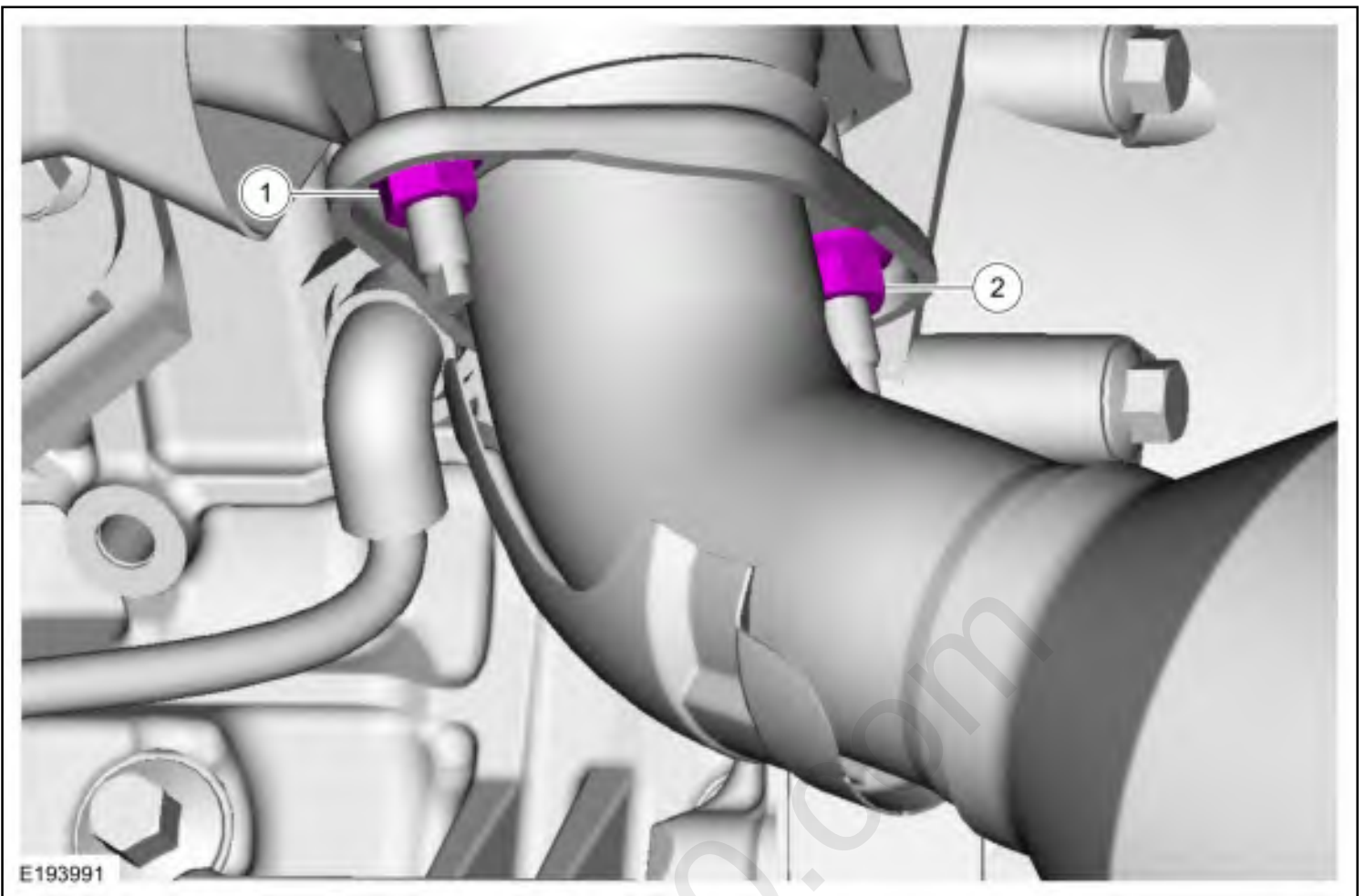


22. Tighten the nuts.

Torque:

1: 30 lb.ft (40 Nm)

2: 30 lb.ft (40 Nm)

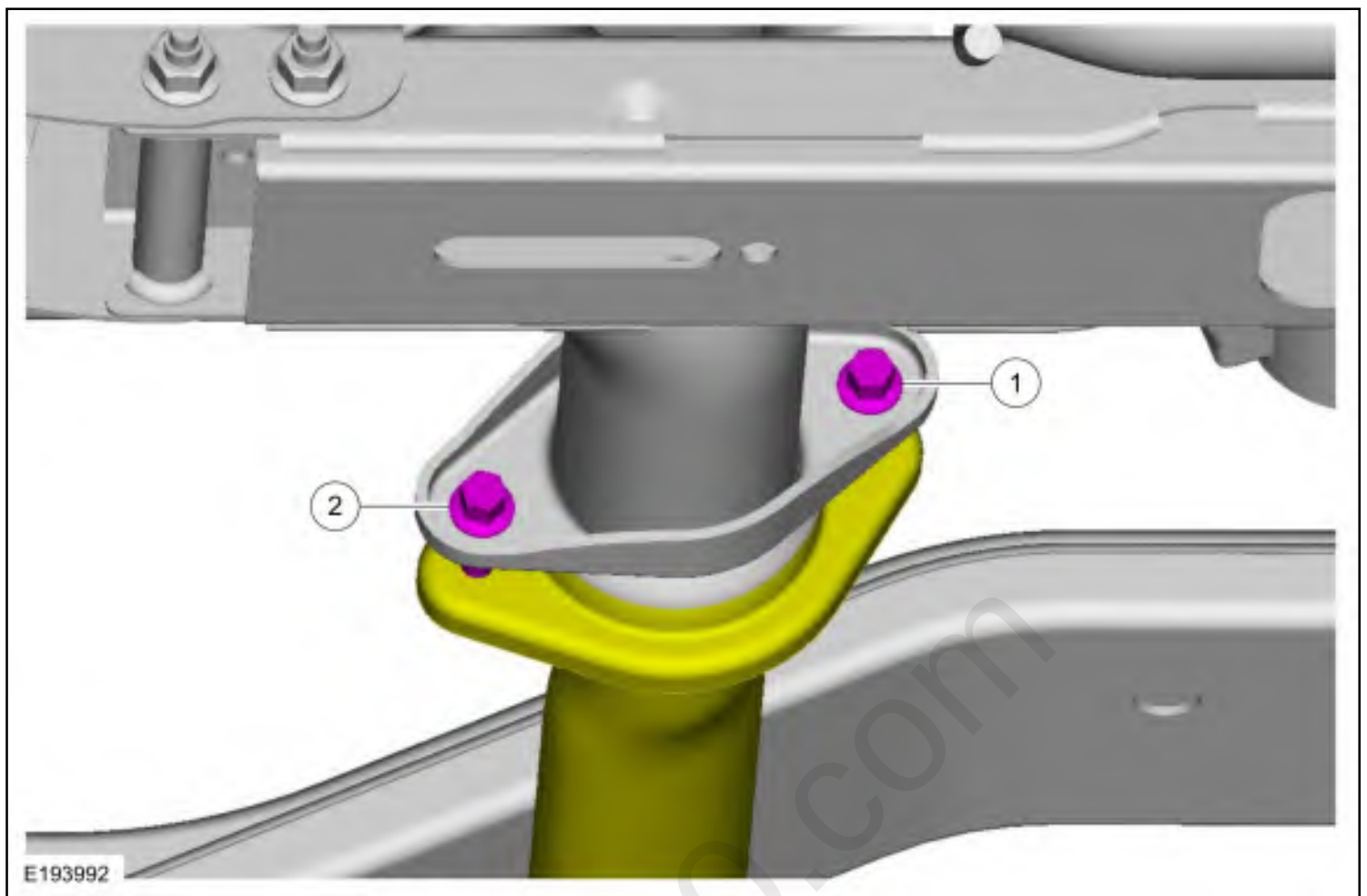


23. Position the exhaust Y-pipe dual catalytic converter-to-exhaust intermediate pipe and install new bolts.

Torque:

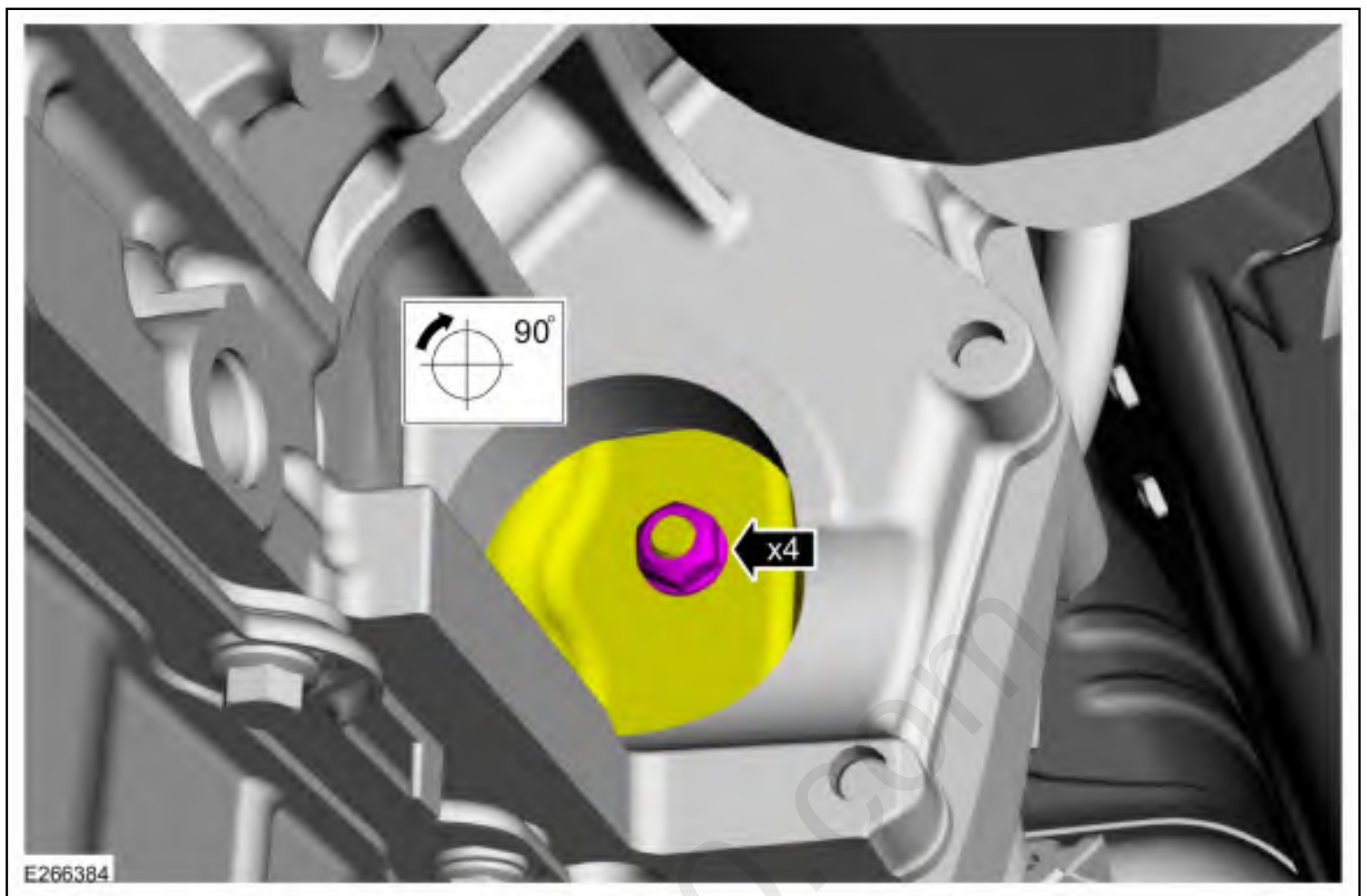
1: 46 lb.ft (63 Nm)

2: 46 lb.ft (63 Nm)

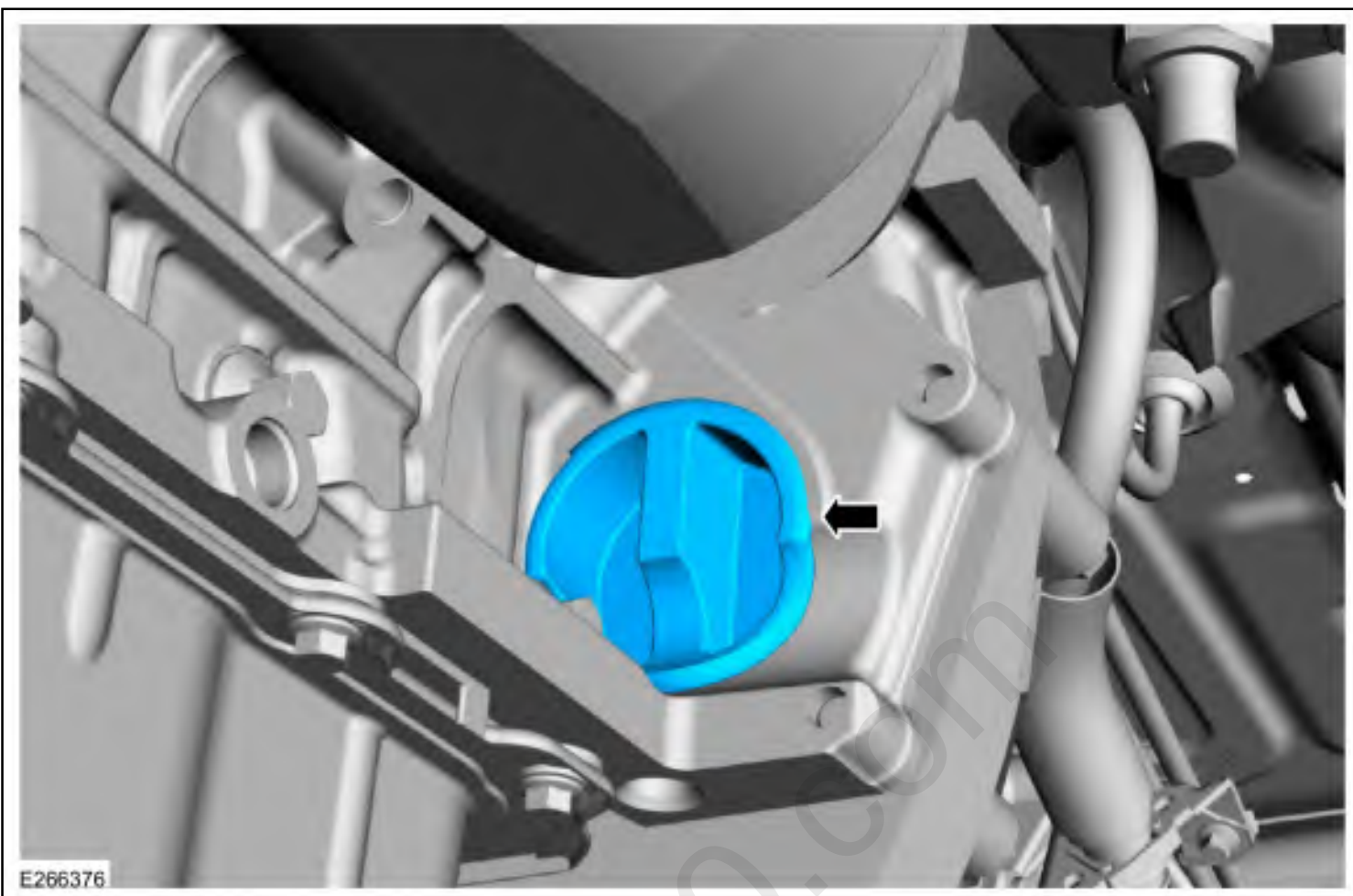


24. **NOTE:** Only rotate the crankshaft in a clockwise direction.

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

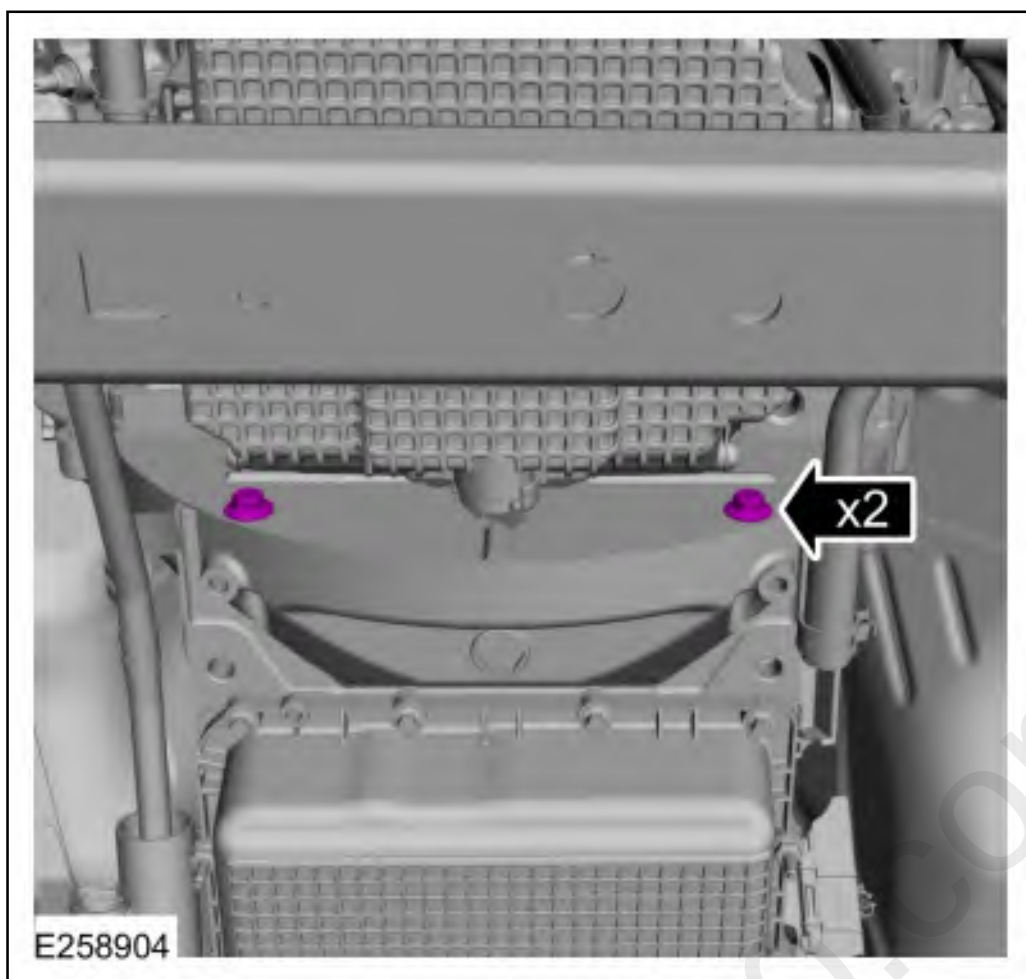


25. Install the cylinder block opening cover.

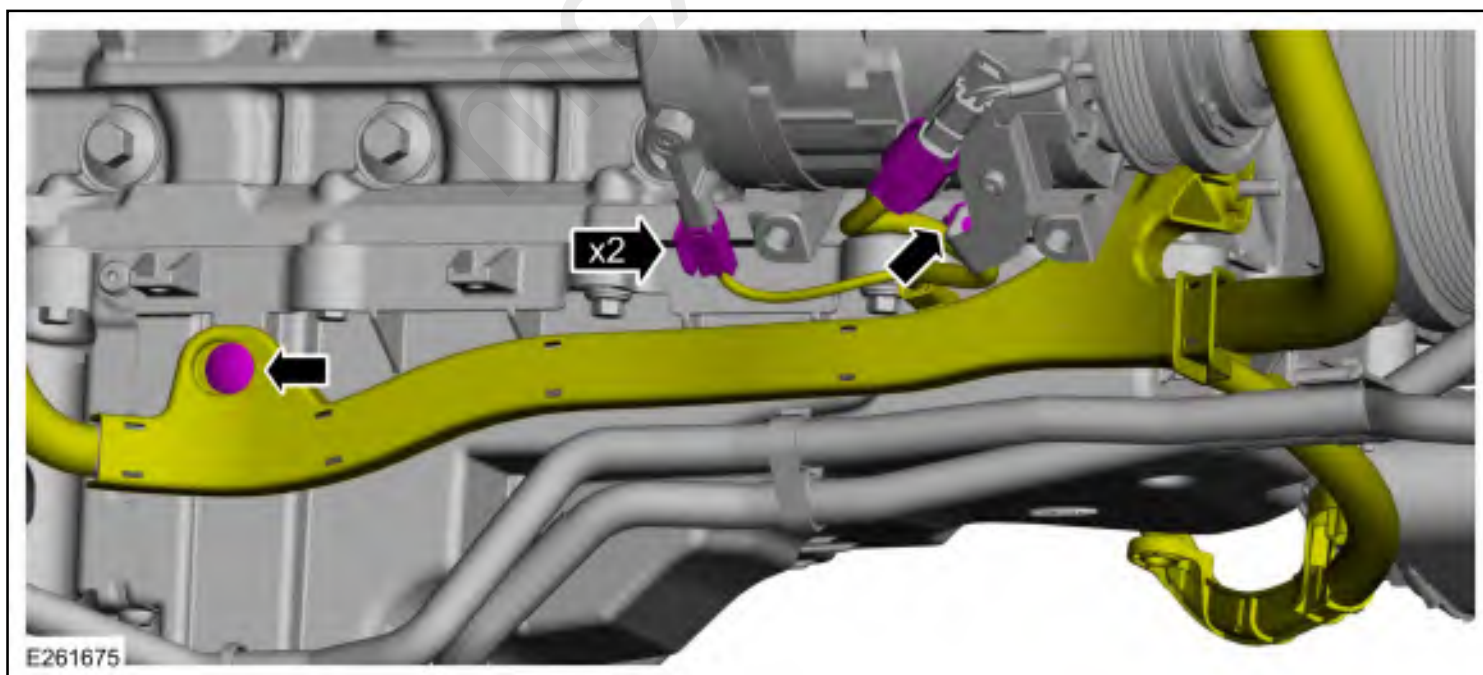


26. Install the flexplate inspection cover and the bolts.
Torque: 26 lb.ft (35 Nm)





1. Connect the A/C compressor electrical connectors.
2. Attach the wiring harness retainers.

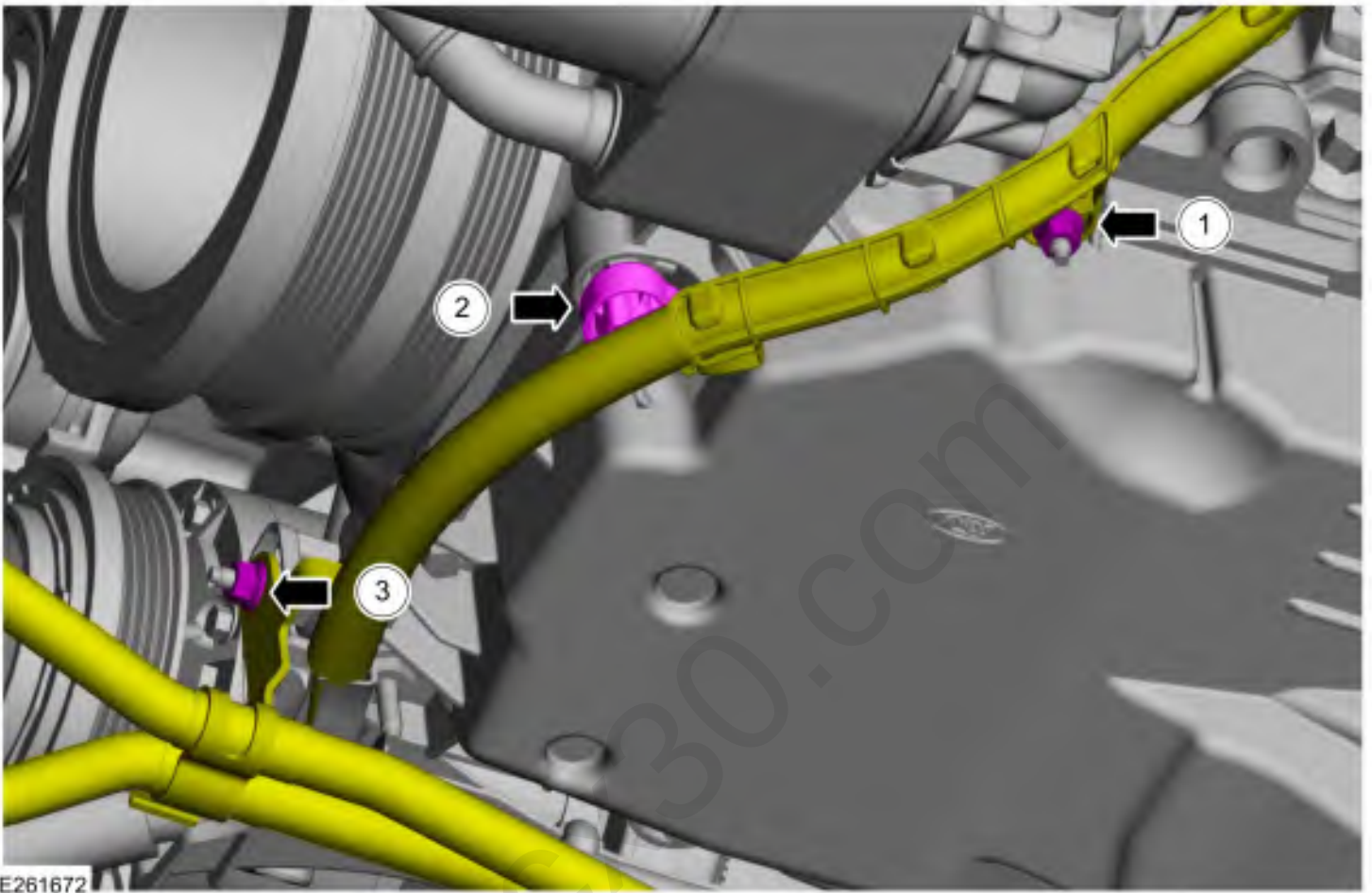


1. Install the nut.

Torque: 106 lb.in (12 Nm)

2. Attach the wiring harness retainer.
3. Position the coolant tube and wiring harness brackets and install the nut.

Torque: 115 lb.in (13 Nm)



29. Install the following items:

1. Refer to: [Starter Motor](#) (303-06D Starting System - 5.0L 32V Ti-VCT, Removal and Installation).
2. If equipped.
Refer to: [Front Driveshaft](#) (205-01 Driveshaft, Removal and Installation).

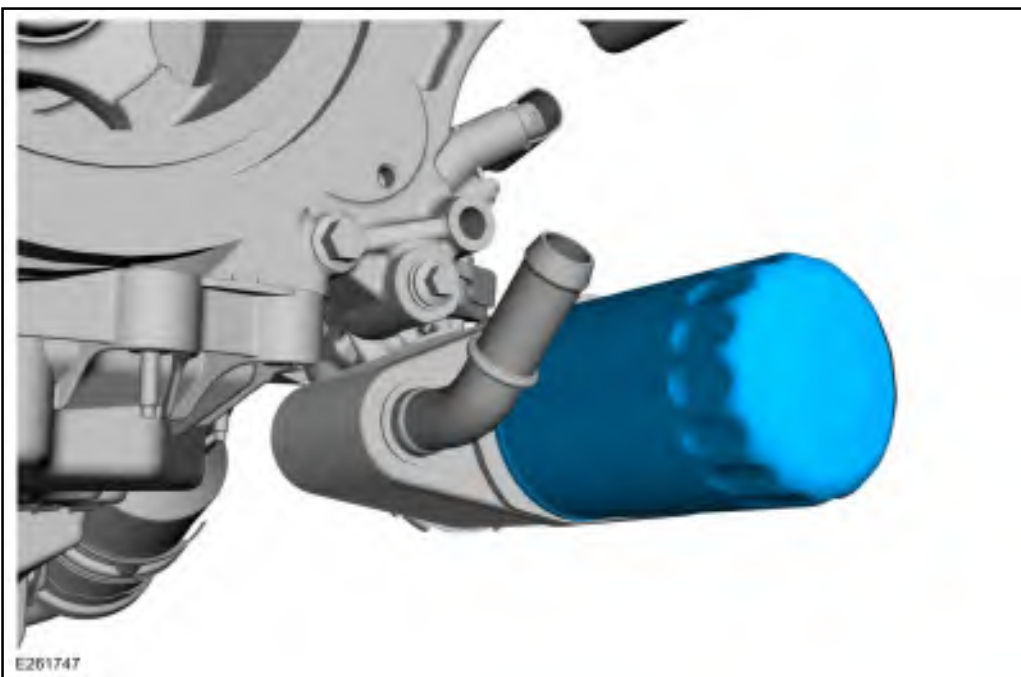
30. **NOTE:** *Do not lubricate the O-ring seal.*

Install a new oil filter.

Torque:

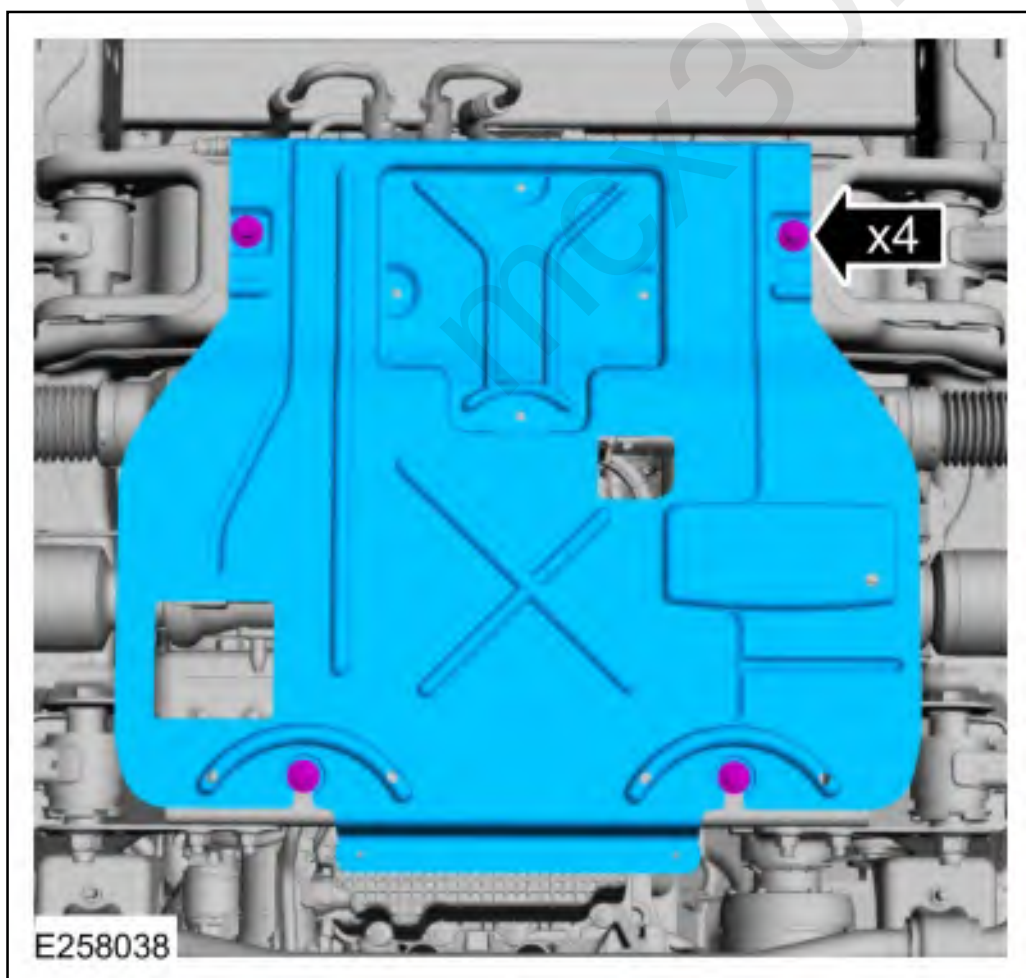
Stage 1: 44 lb.in (5 Nm)

Stage 2: 180°



31. **NOTE:** *If equipped.*

Install the skid plate and bolts.
Torque: 30 lb.ft (40 Nm)



32. **NOTE:** *If equipped.*

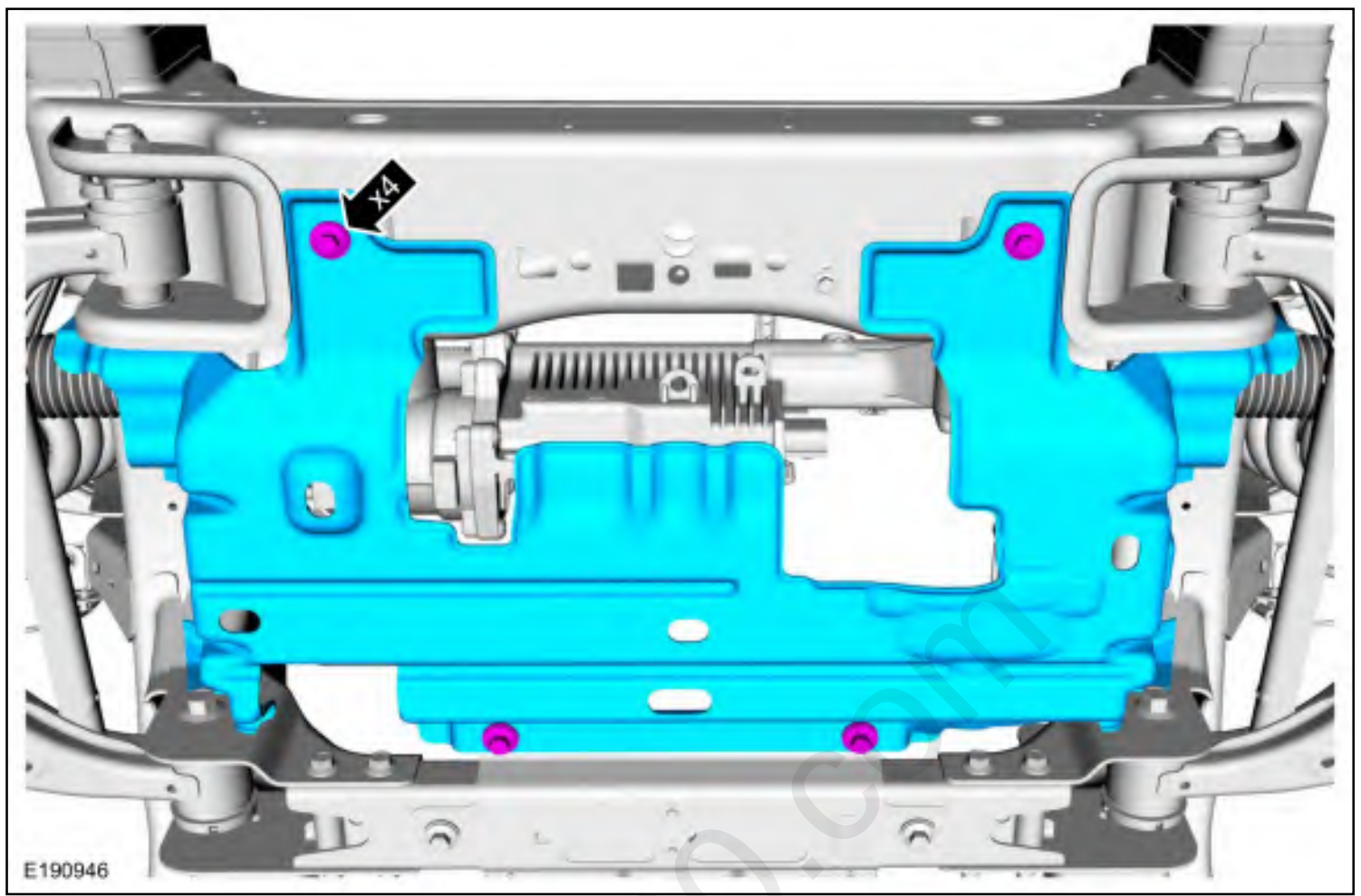
Install the underbody shield and the bolts.

Torque: 71 lb.in (8 Nm)

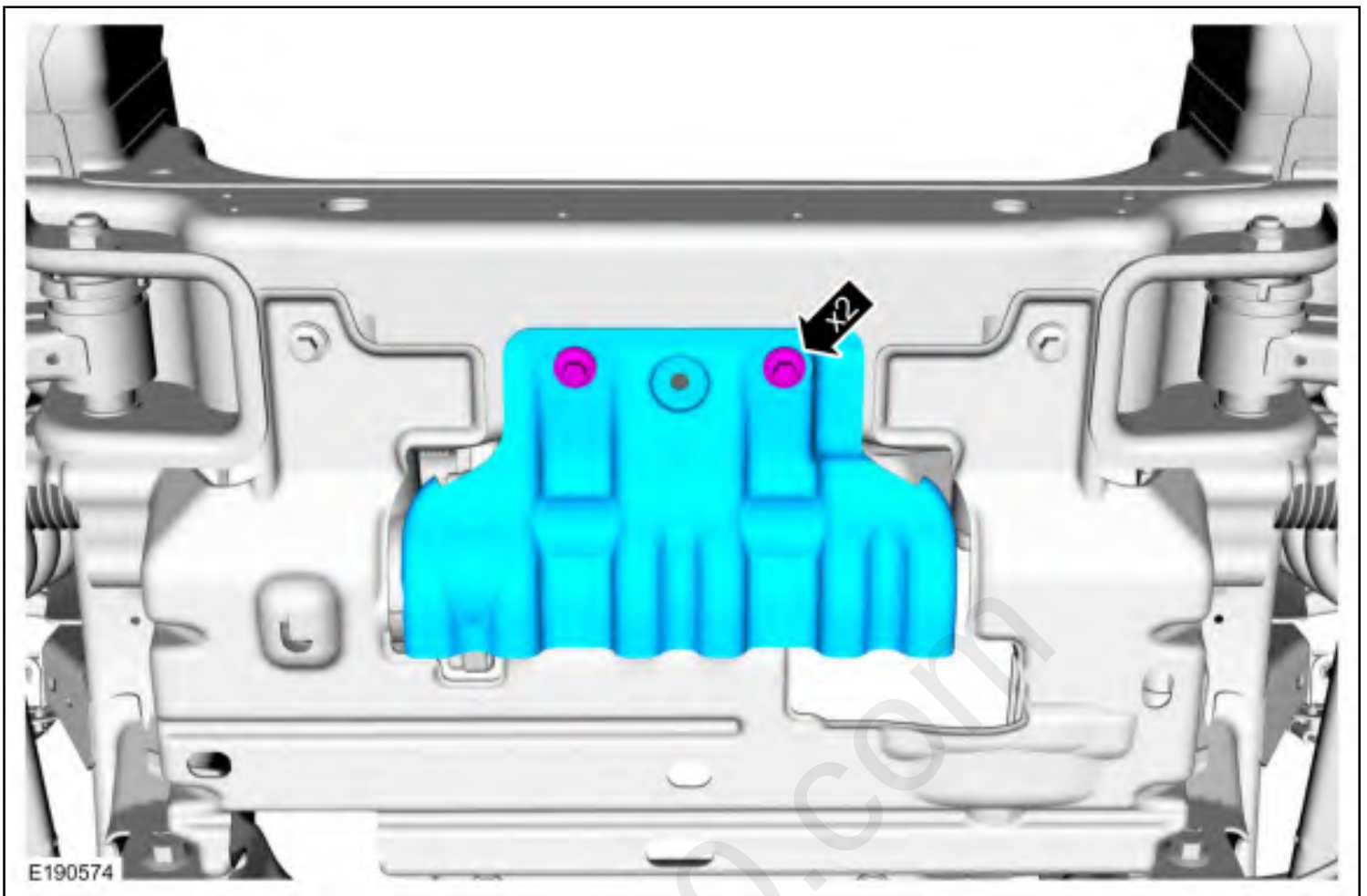


33. If equipped, install the underbody shield and fasteners.

Torque: 30 lb.ft (40 Nm)



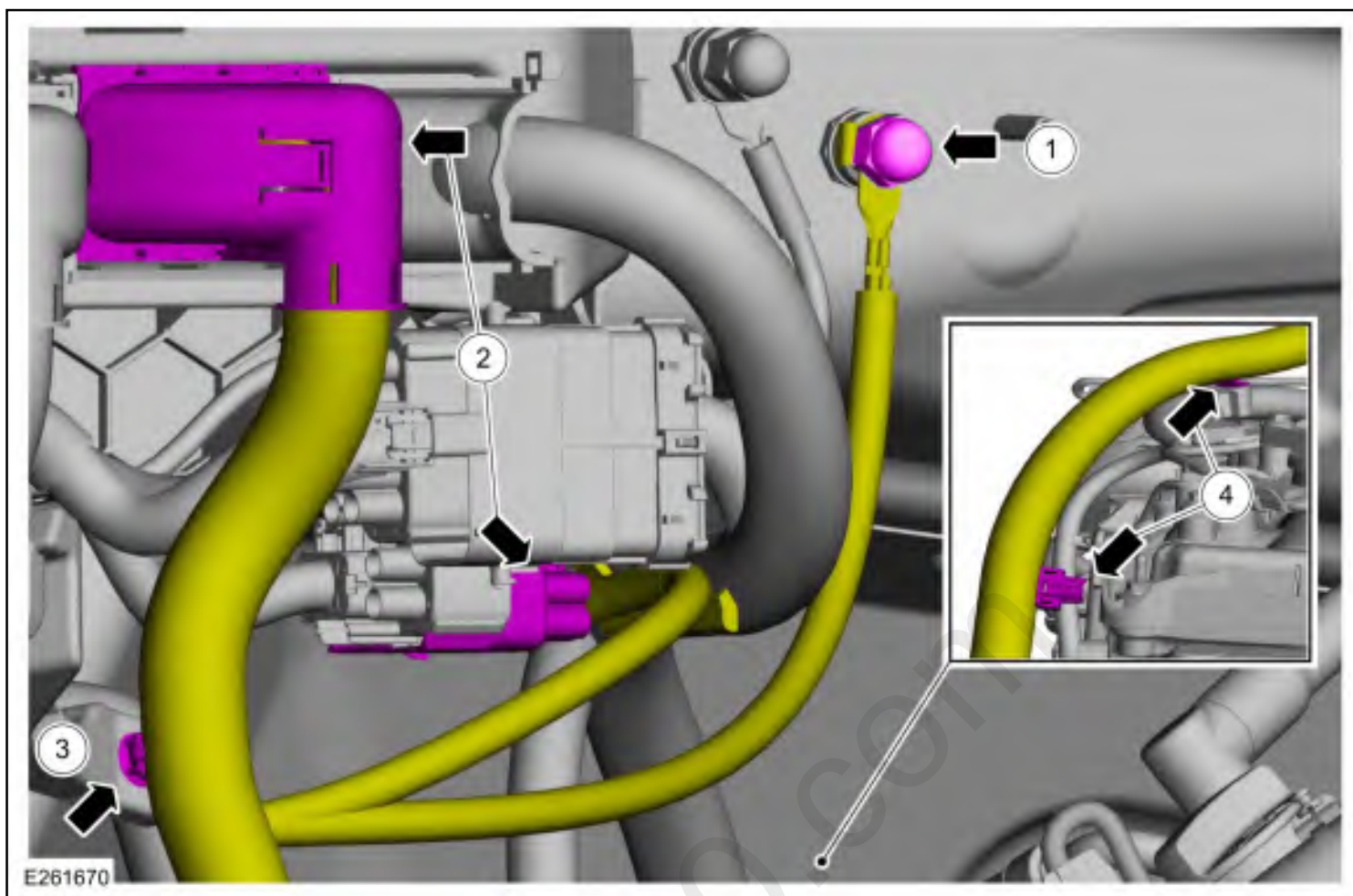
34. If equipped, install the skid plate and bolts.
Torque: 30 lb.ft (40 Nm)



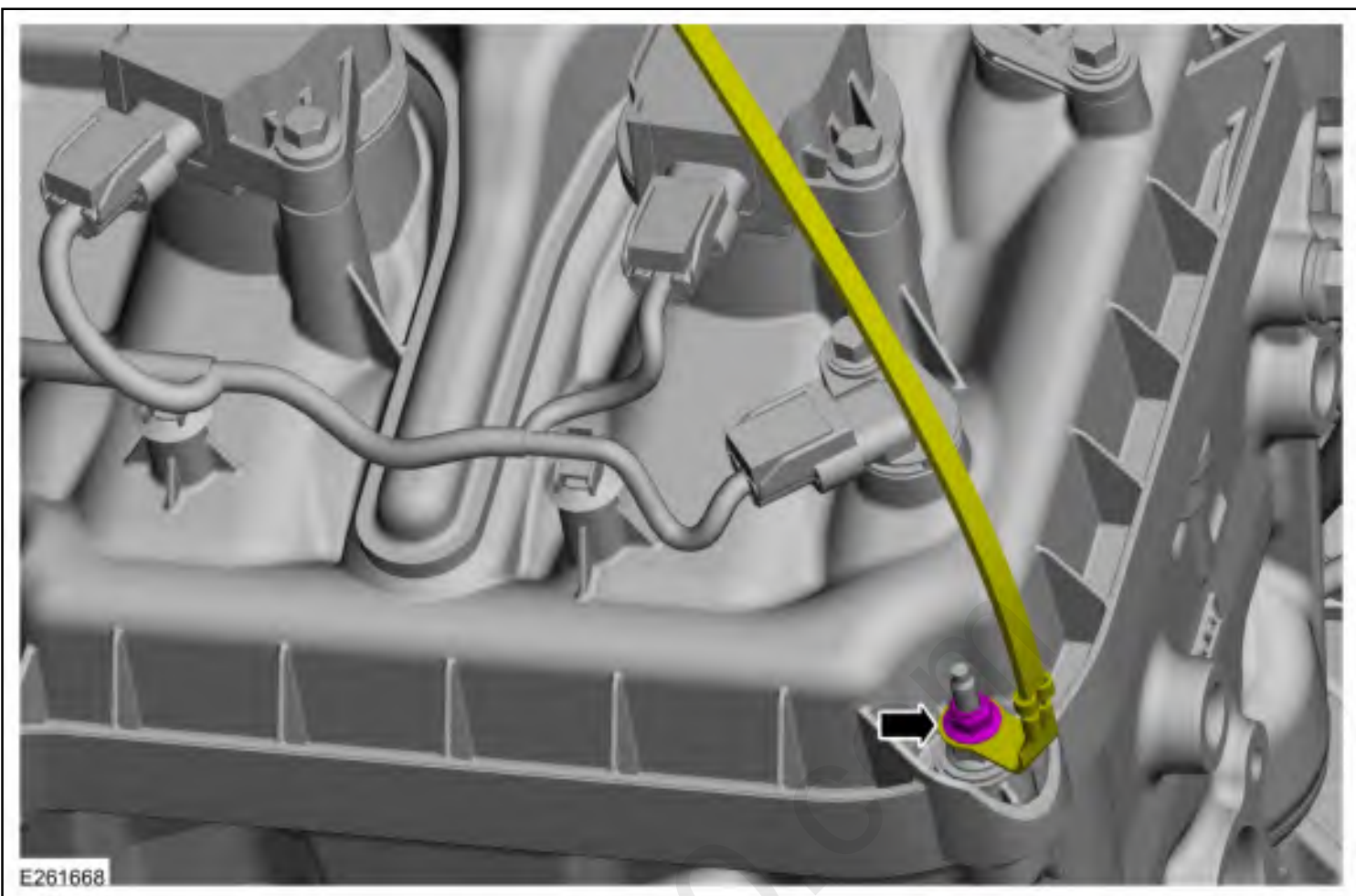
35. Install the generator.

Refer to: [Generator - 5.0L 32V Ti-VCT](#) (414-02 Generator and Regulator, Removal and Installation).

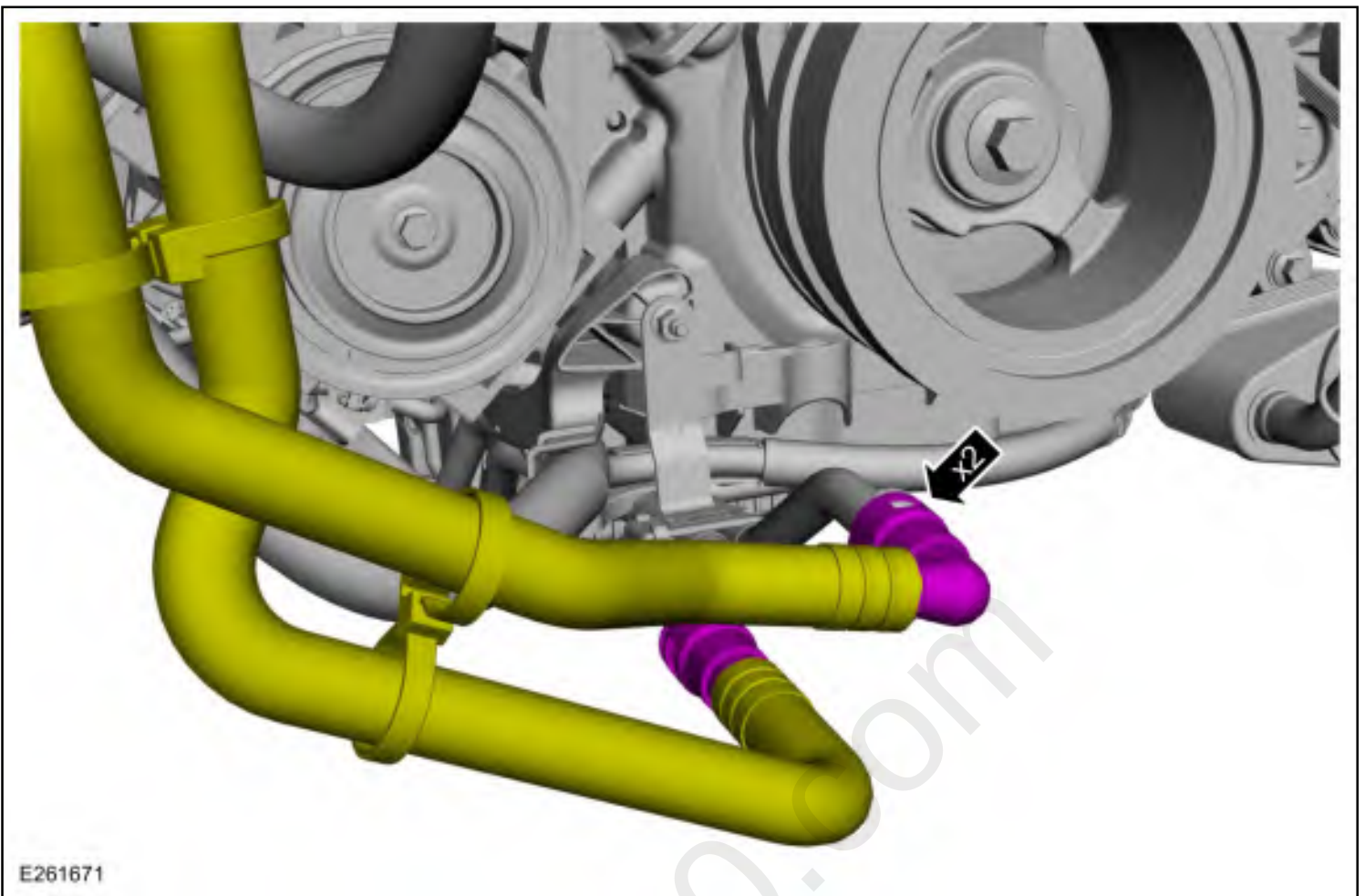
1. Install the ground strap and the nut.
Torque: 106 lb.in (12 Nm)
2. Connect the engine wiring harness connectors.
3. Attach the engine wiring harness retainer.
4. Attach the transmission wiring harness retainers.



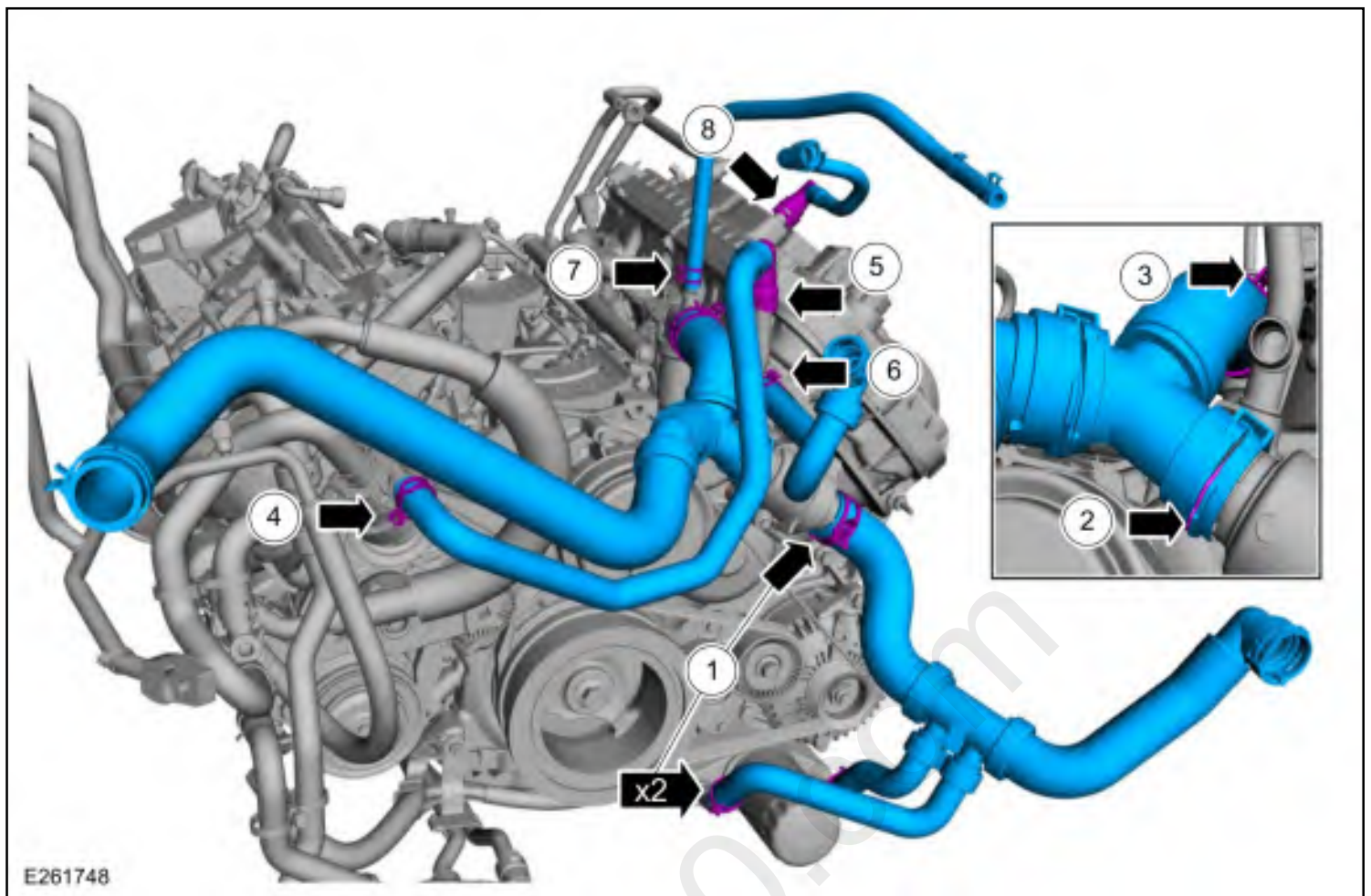
37. Install the ground strap and nut onto the LH valve cover stud bolt.
Torque: 53 lb.in (6 Nm)



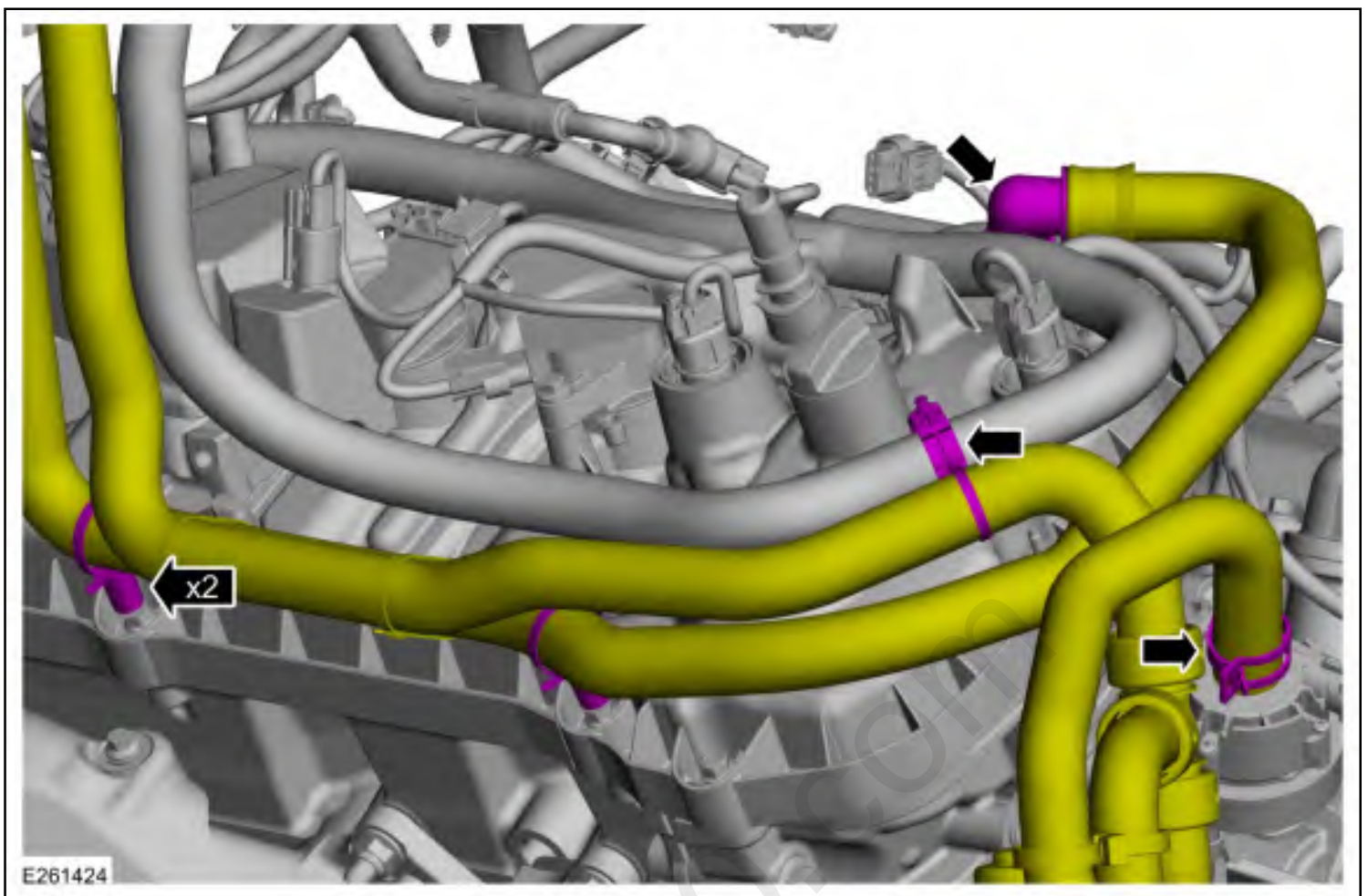
38. Connect the coolant hose quick release couplings.



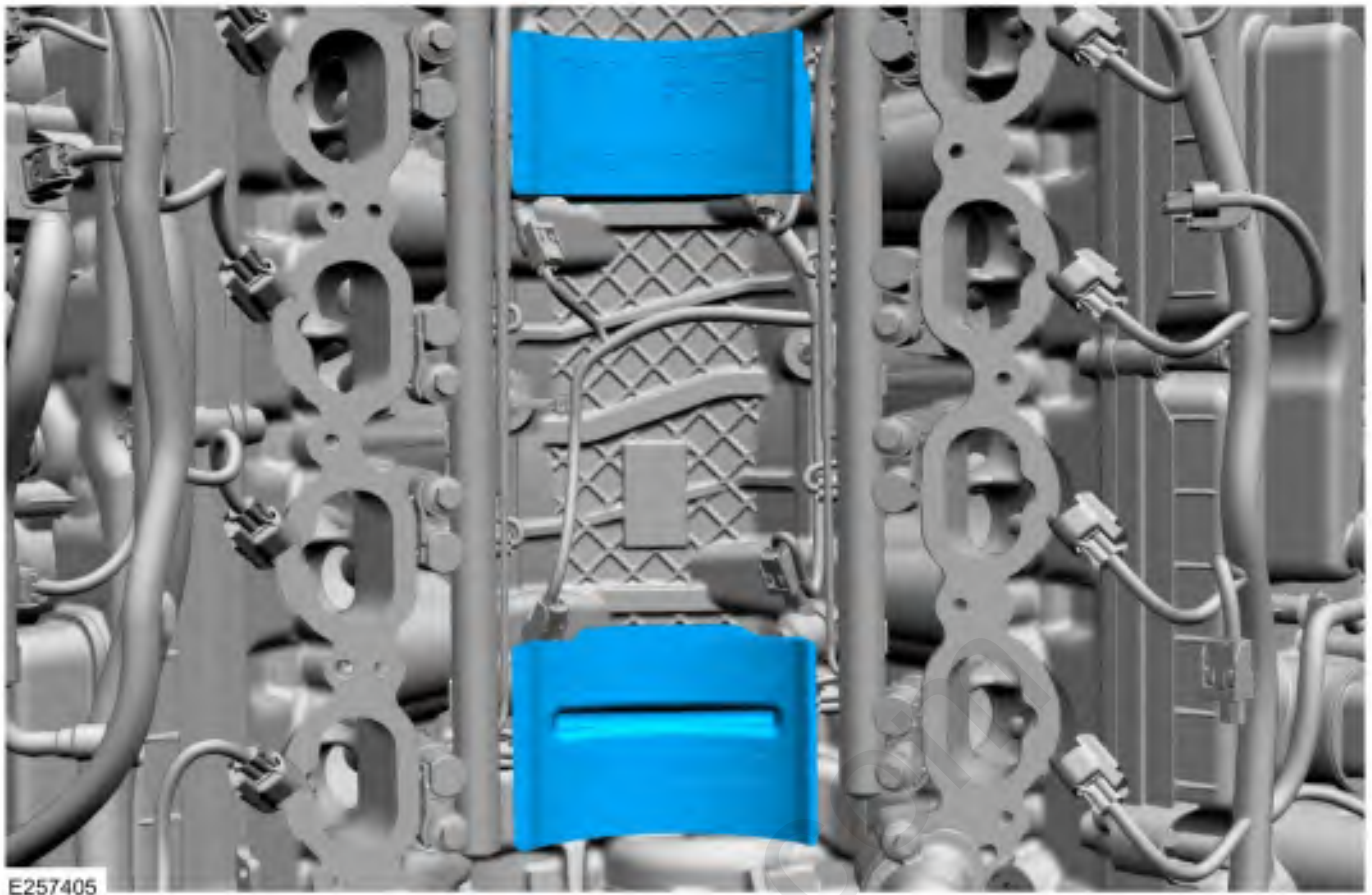
1. Install the coolant hose assembly and the clamps.
Use the General Equipment: Hose Clamp Remover/Installer
2. Install the coolant bypass T assembly and engage the spring clip.
3. Install the coolant hose and clamp.
Use the General Equipment: Hose Clamp Remover/Installer
4. Install the coolant hose and clamp.
Use the General Equipment: Hose Clamp Remover/Installer
5. Connect the quick release coupling.
6. Install the coolant hose and clamp.
Use the General Equipment: Hose Clamp Remover/Installer
7. Install the coolant hose and clamp.
Use the General Equipment: Hose Clamp Remover/Installer
8. Install the crankcase vent tube and connect the quick release coupling.
Refer to: [Quick Release Coupling](#) (310-00D Fuel System - General Information - 5.0L 32V Ti-VCT, General Procedures).



1. Install the coolant hose and clamp.
Use the General Equipment: Hose Clamp Remover/Installer
2. Connect the coolant hose quick release coupling.
3. Attach the coolant hose retainer to the wiring harness.
4. Attach the coolant hose retainers to the valve cover stud bolts.



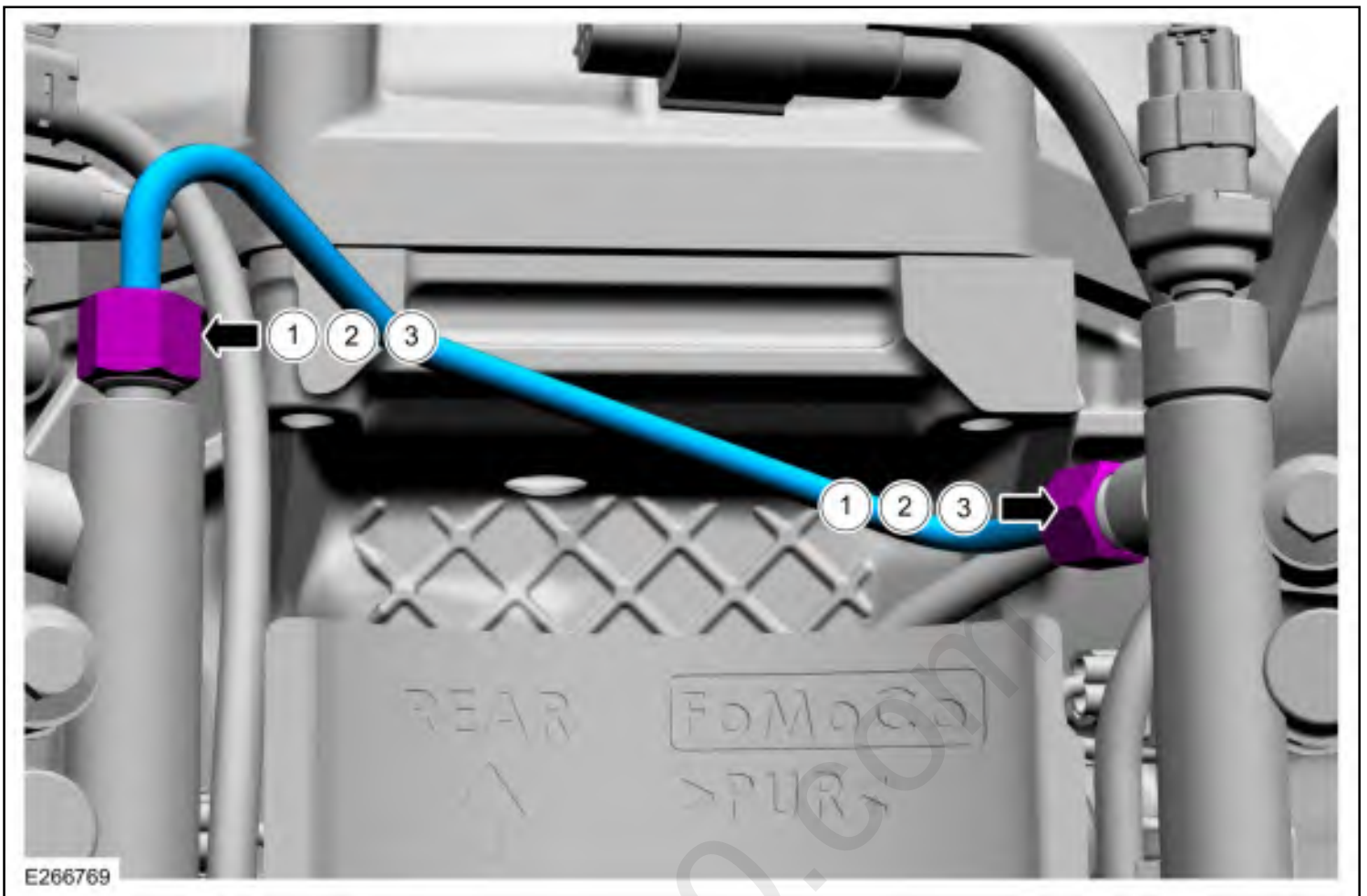
41. Install the insulators.



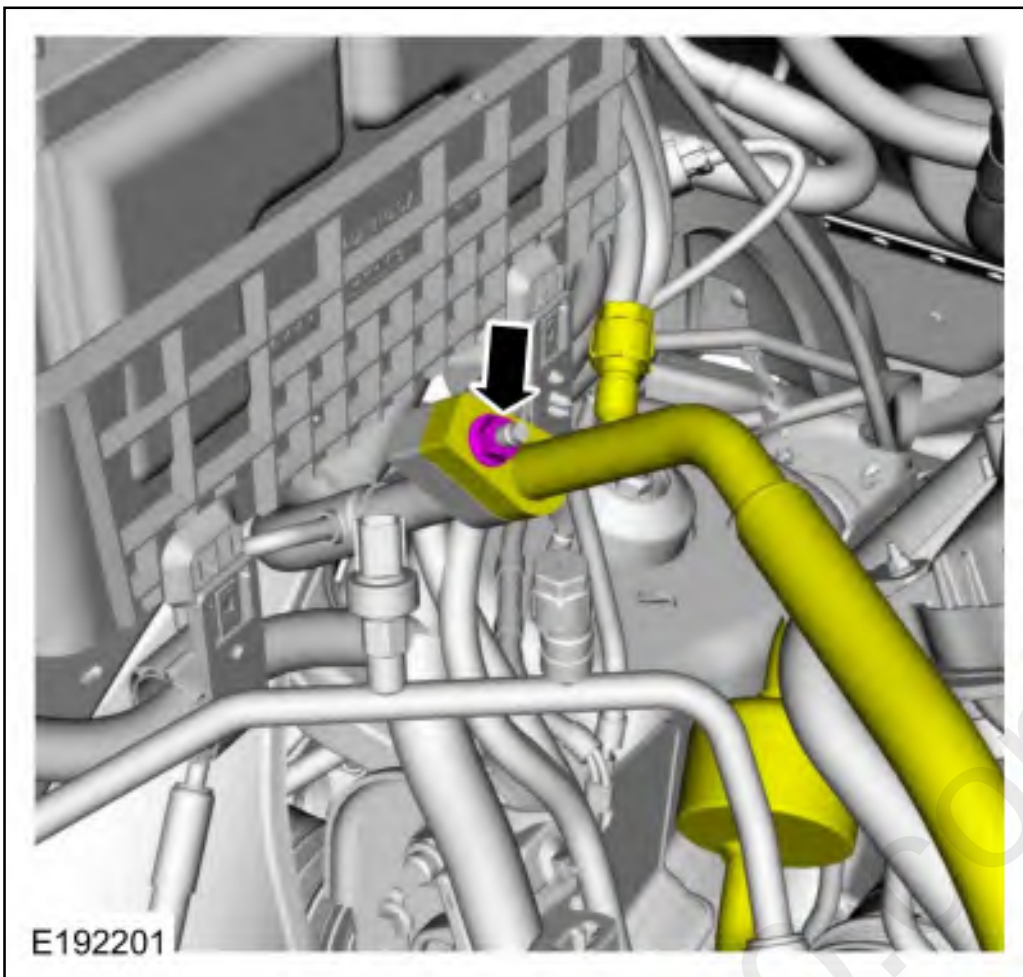
42. **NOTICE:** In stage 3, if the torque required to tighten any flare nut on the new high-pressure fuel tube reaches or exceeds 55 lb.ft (50 Nm), then that high pressure fuel tube must be discarded and replaced with another new high-pressure fuel tube.

Torque:

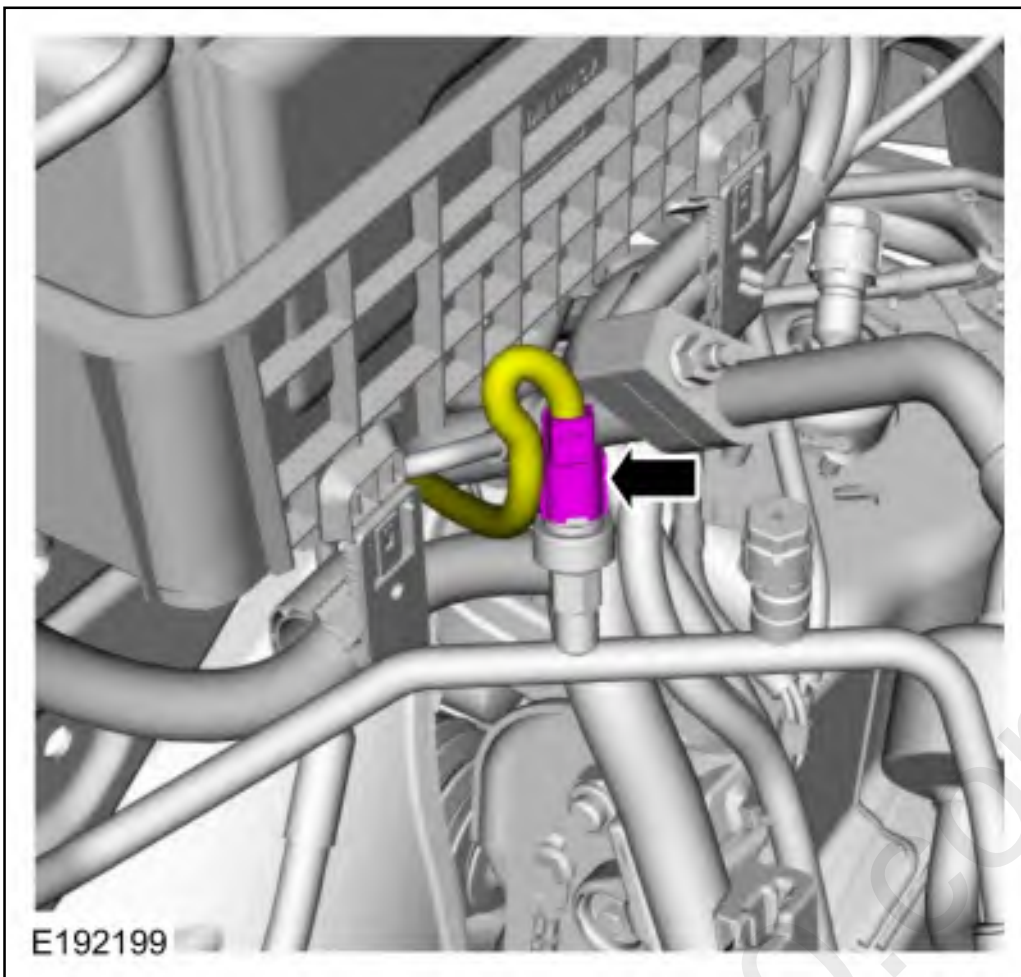
- Stage 1: Tighten the high-pressure fuel tube flare nuts to : 71 lb.in (8 Nm)
- Stage 2: Tighten the high-pressure fuel tube flare nuts to : 89 lb.in (10 Nm)
- Stage 3: Tighten the high-pressure fuel tube flare nuts an additional : 25°



- Install a new O-ring seal and gasket seal.
- Connect the A/C tube and install the nut.
Torque: 133 lb.in (15 Nm)



44. Connect the A/C pressure transducer electrical connector.



45. Install the following items:

1. **NOTICE:** If the engine is repaired or replaced because of upper engine failure, typically including valve or piston damage, check the intake manifold for metal debris. If metal debris is found, install a new intake manifold. Failure to follow these instructions can result in engine damage.

Refer to: [Intake Manifold](#) (303-01D Engine - 5.0L 32V Ti-VCT, Removal and Installation).

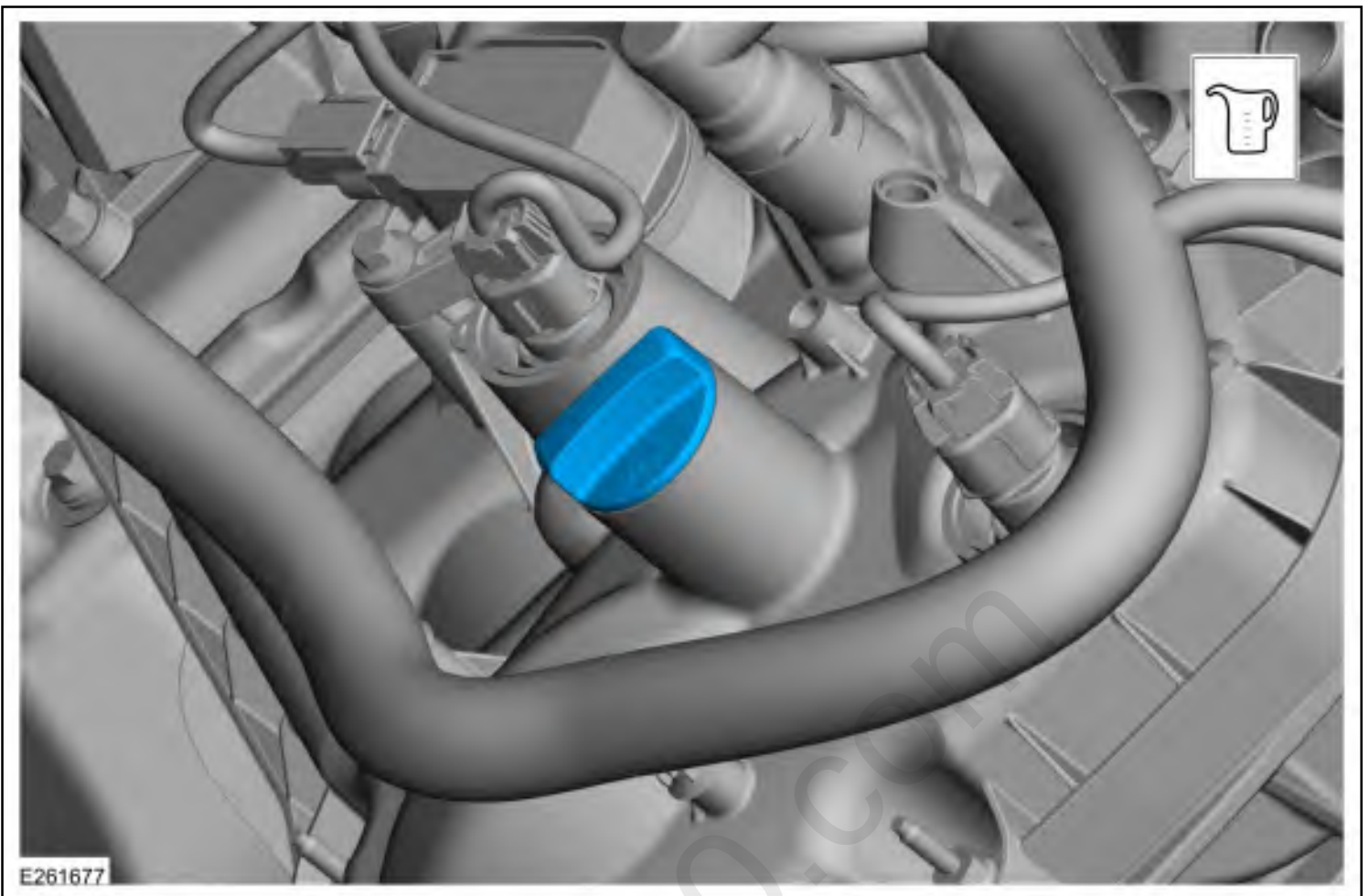
2. Refer to: [Cooling Module](#) (303-03D Engine Cooling - 5.0L 32V Ti-VCT, Removal and Installation).
3. Refer to: [Degas Bottle](#) (303-03D Engine Cooling - 5.0L 32V Ti-VCT, Removal and Installation).
4. Refer to: [Hood](#) (501-02 Front End Body Panels, Removal and Installation).

46. Connect the battery ground cable.

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

47. Fill the engine with clean engine oil.

Refer to: [Specifications](#) (303-01D Engine - 5.0L 32V Ti-VCT, Specifications).



48. Fill and bleed the engine cooling system.
Refer to: Cooling System Draining, Vacuum Filling and Bleeding (303-03 Engine Cooling - 5.0L 32V Ti-VCT) .
49. Check and top off the transmission fluid.
Refer to: [Transmission Fluid Level Check](#) (307-01A Automatic Transmission - 6-Speed Automatic Transmission - 6R80, General Procedures).
50. Start engine and check exhaust system for leaks.
51. Use the Powertrain Control Module (PCM) Misfire Monitor Profile Correction routine in the diagnostic scan tool.