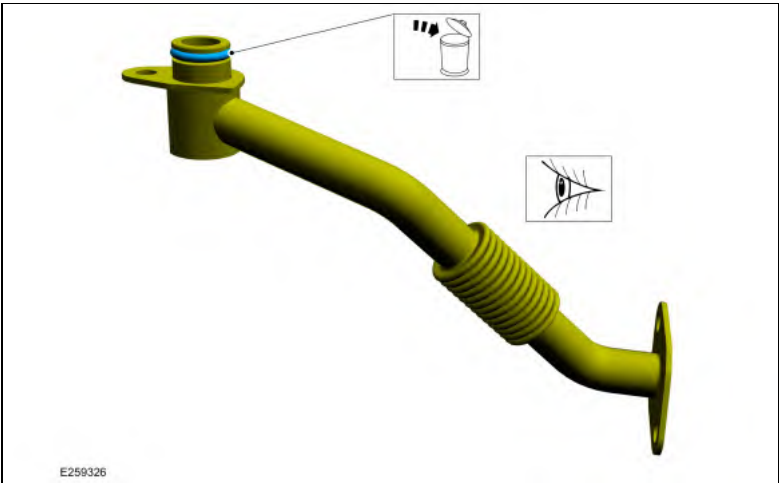


- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Install new components if needed.

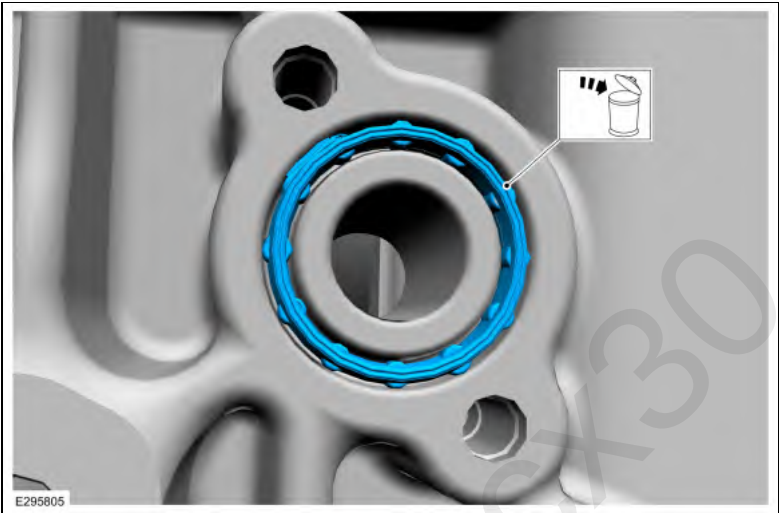
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger oil return tube O-ring seal.



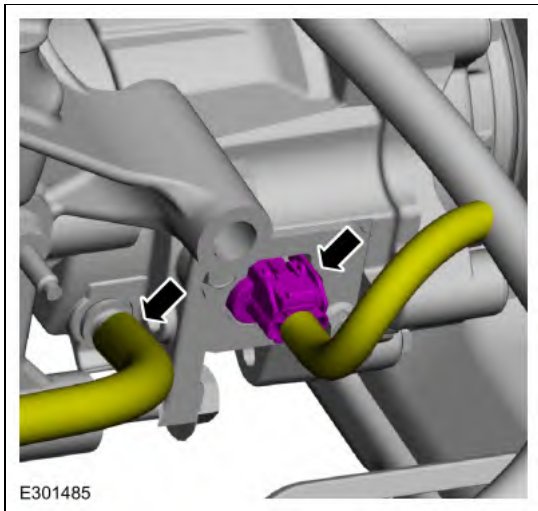
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11. Remove and discard the turbocharger oil return tube tube-to-engine block gasket.



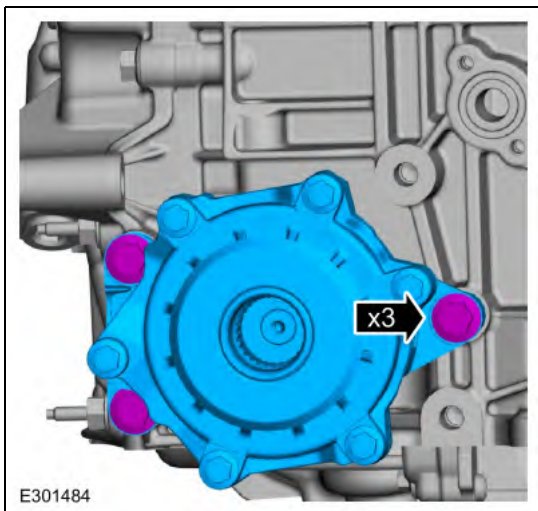
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12. Disconnect the front axle disconnect actuator electrical connector and vent hose.



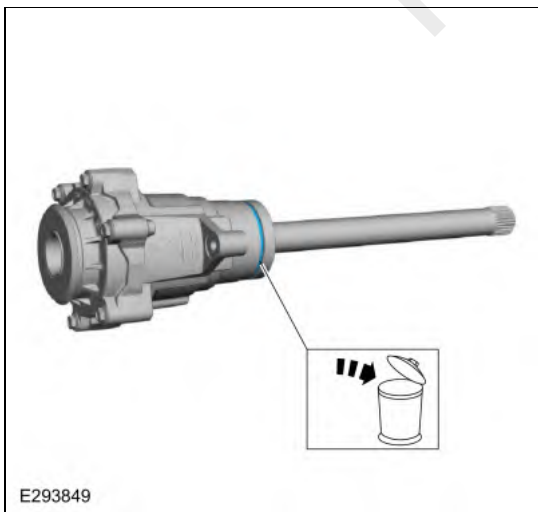
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13. Remove the bolts and the front axle disconnect actuator.



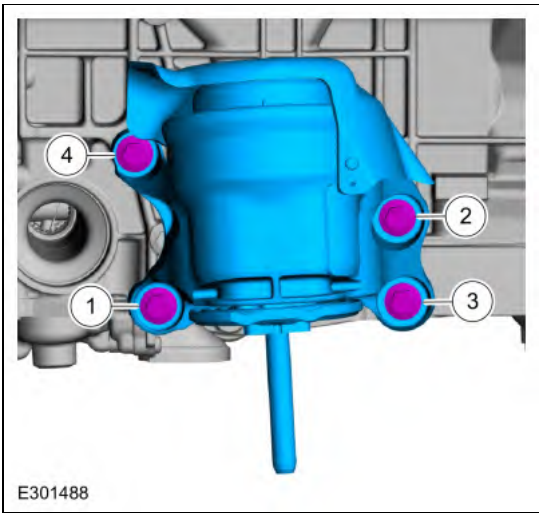
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14. Remove and discard the seal.



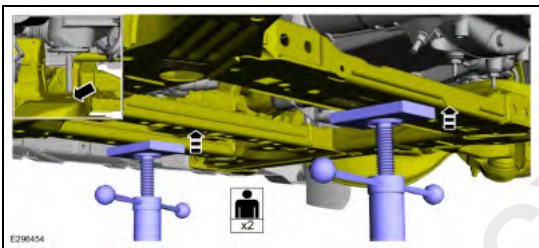
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15. Install the LH engine mount, the original bolts finger-tight and then tighten in sequence.  
Torque: 46 lb.ft (63 Nm)

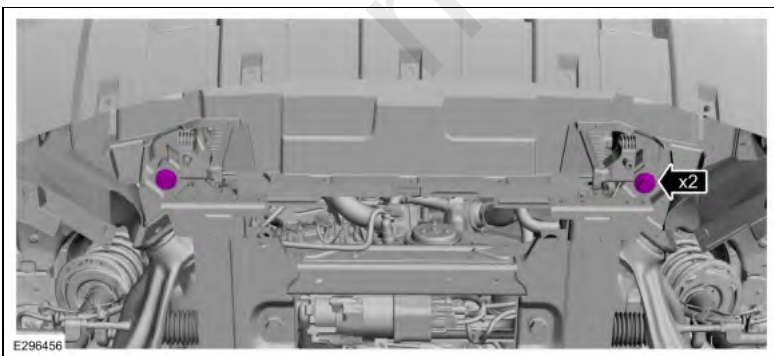


16. **NOTE:** Make sure that the LH and RH engine mount studs are in the subframe when raised.

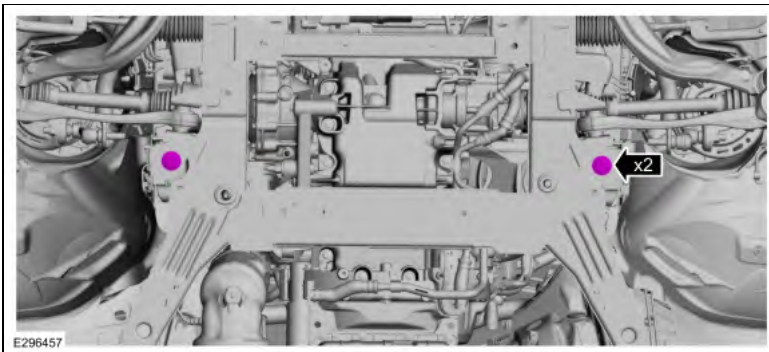
With the aid of an assistant, raise the front and rear jack stand evenly.



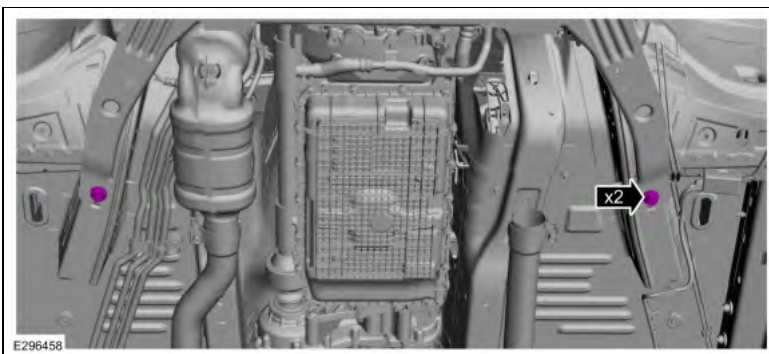
17. Install the original front subframe bolts finger tight.



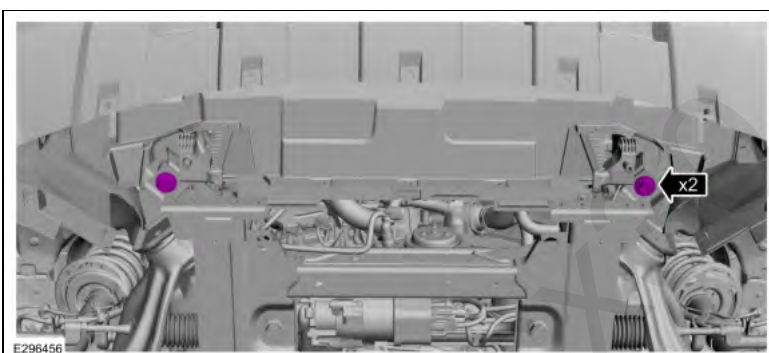
18. Install the original middle subframe bolts finger tight.



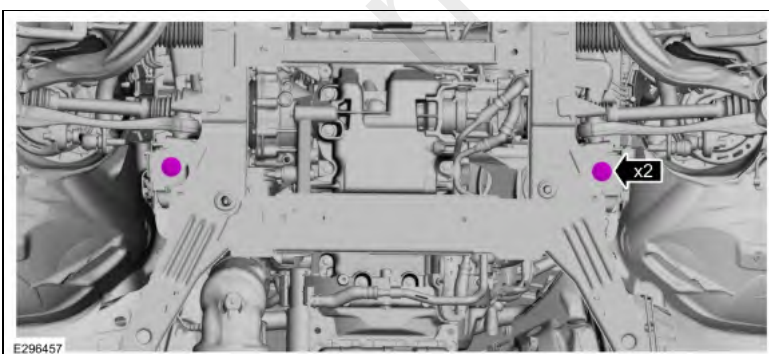
19. Install the original rear subframe bolts finger tight.



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

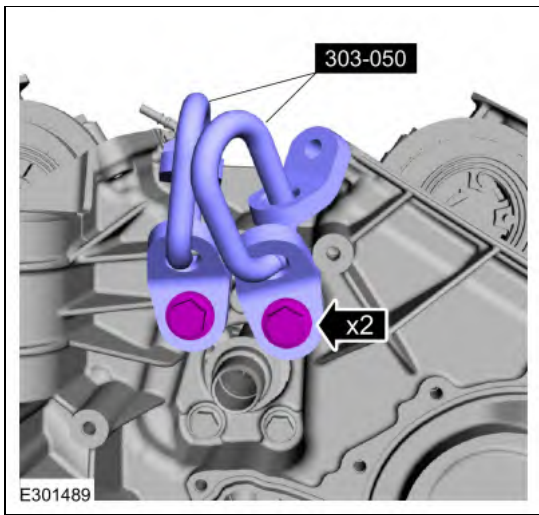


21. Tighten the middle subframe bolts.  
Torque: 195 lb.ft (265 Nm)

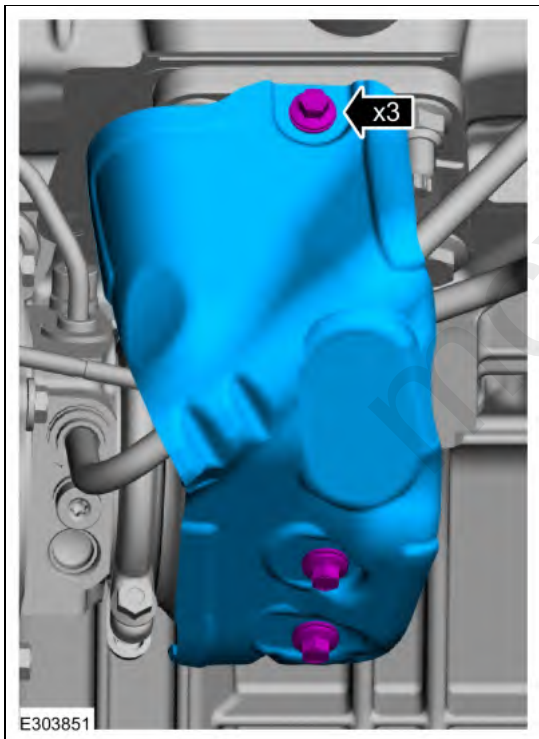


22. Tighten the rear subframe bolts.  
Torque: 52 lb.ft (70 Nm)

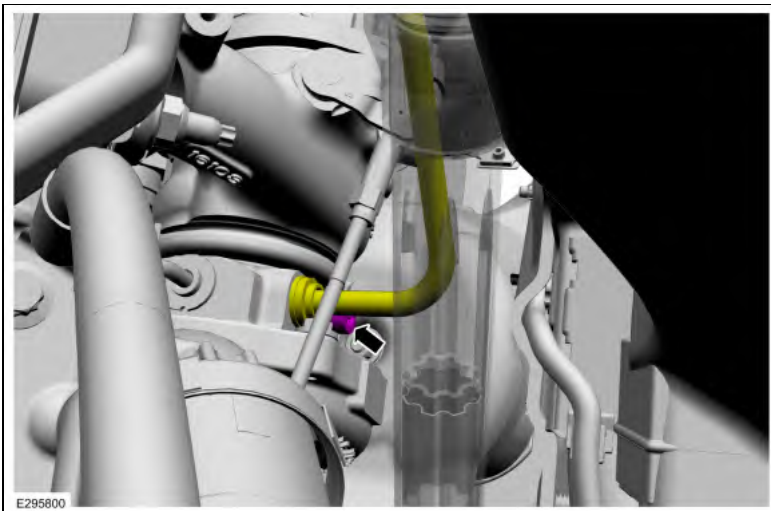




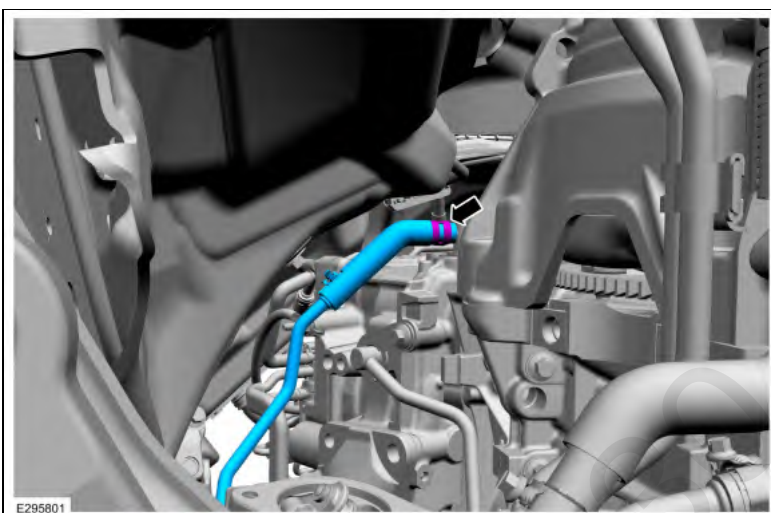
26. Remove the bolts and the heat shield.



27. Remove the bolt, then disconnect the turbocharger coolant return tube from the turbocharger.



28. Release the clamp, then disconnect and remove the turbocharger coolant return tube.  
Use the General Equipment: Hose Clamp Remover/Installer

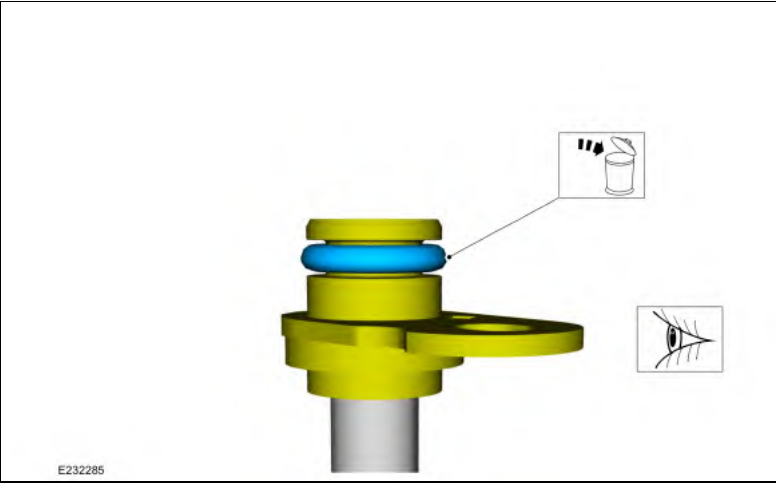


- 29.
- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Install new components if needed.

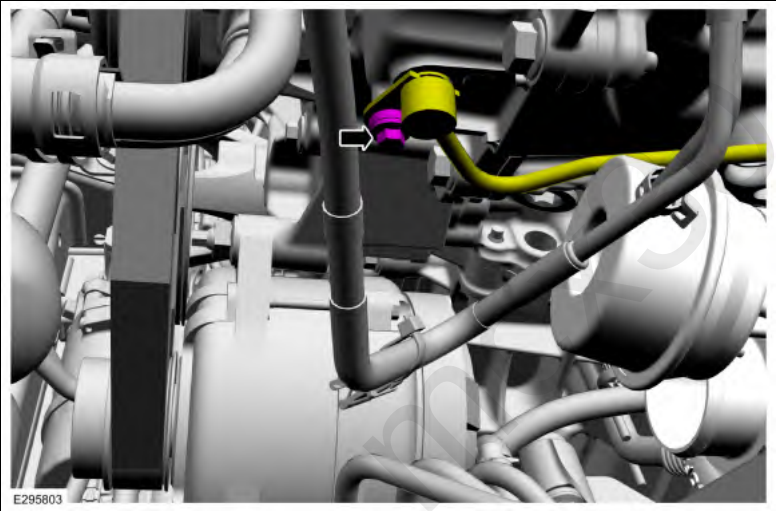
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger coolant return tube O-ring seal.



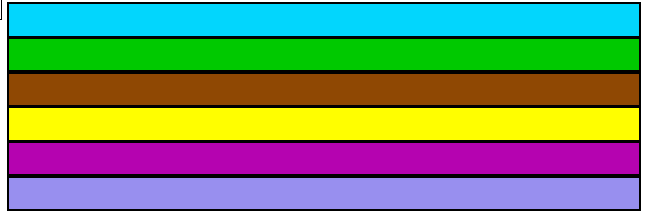
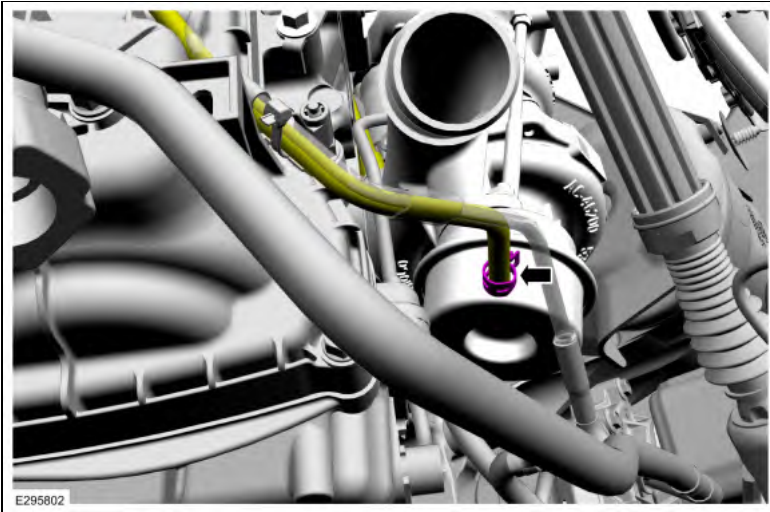
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30. Remove the turbocharger oil supply tube bolt, then disconnect the turbocharger oil supply tube.

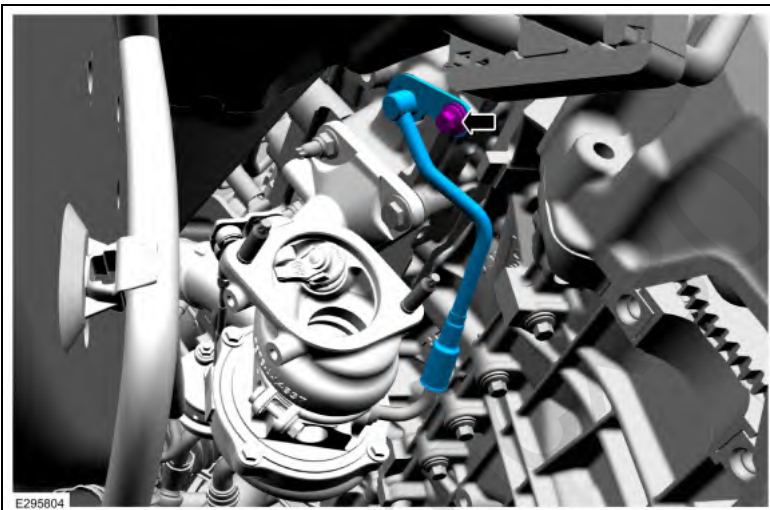


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31. Disconnect the clamp and the turbocharger wastegate control hose.  
Use the General Equipment: Hose Clamp Remover/Installer



32. Remove the turbocharger coolant supply tube bolt, then remove the outer tube.



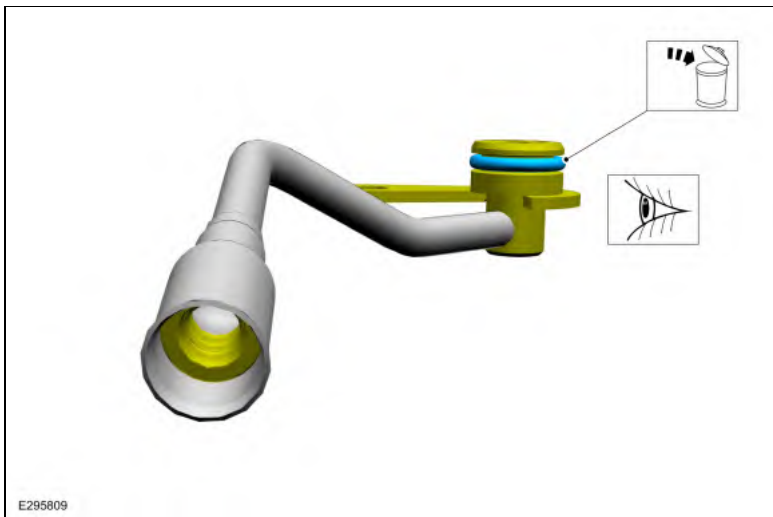
33.

- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area.

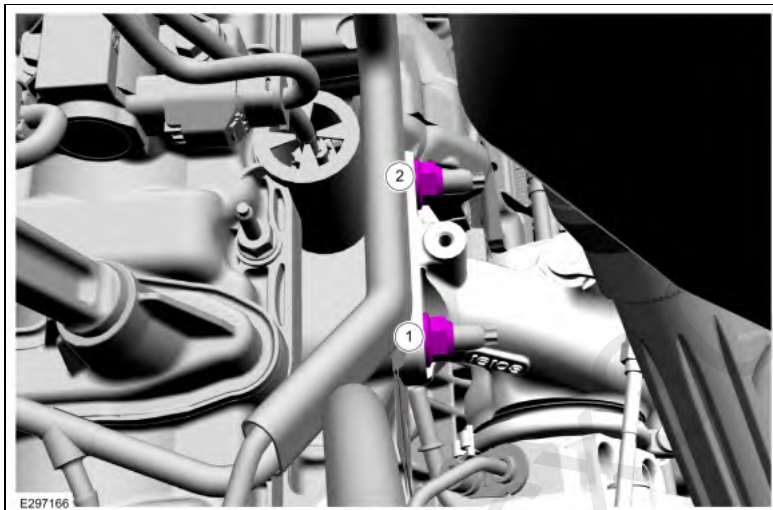
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger coolant supply tube O-ring seal. Inspect the rubber gasket. Install new components if needed.



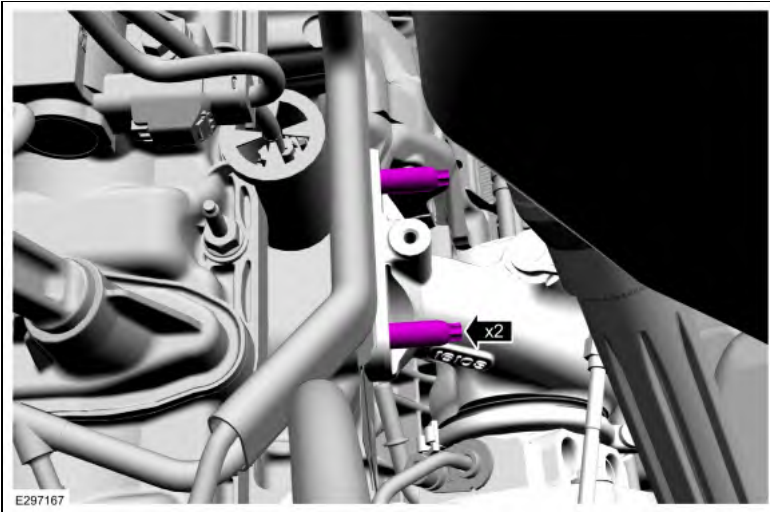
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34. Remove the upper turbocharger nuts.



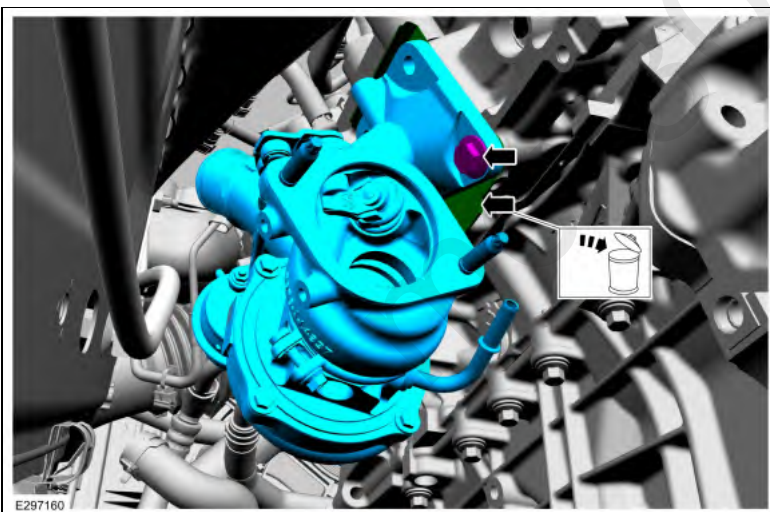
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35. Remove the turbocharger studs.



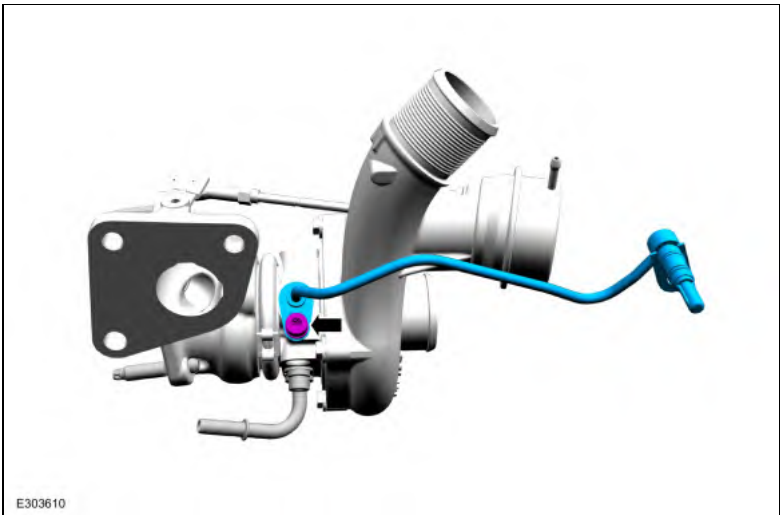
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36. Remove the turbocharger bolt, then remove the turbocharger and gasket. Discard the gasket.



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37. Remove the turbocharger oil supply tube bolt, then disconnect the turbocharger oil supply tube from the turbocharger.



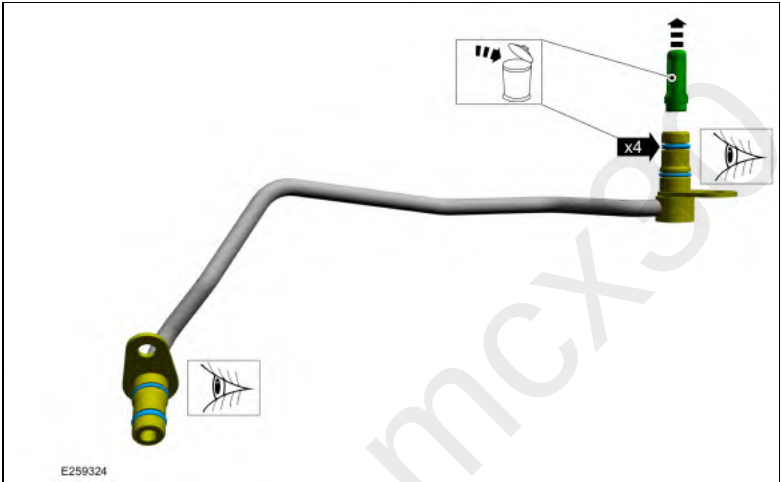
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- 38.
- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area.

*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger oil supply tube O-ring seals and the turbocharger oil supply tube oil filter. Install new components if needed.



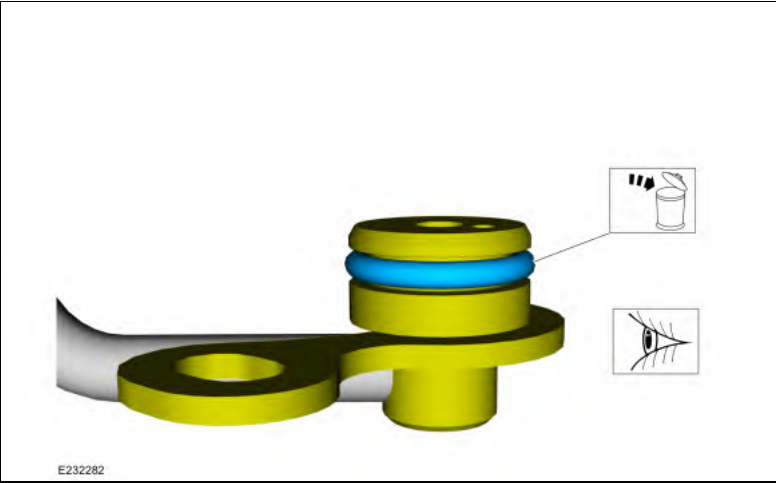
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- 39.
- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Install new components if needed.

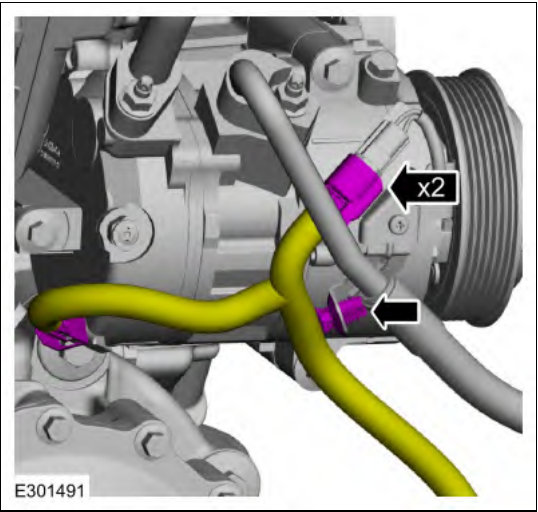
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger coolant return tube O-ring seals.



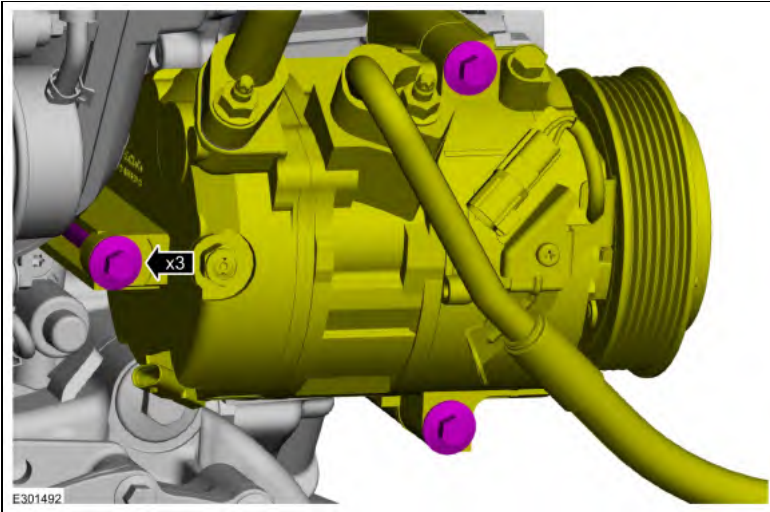
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40. Disconnect the A/C compressor electrical connectors.
- Detach the wiring harness retainer.

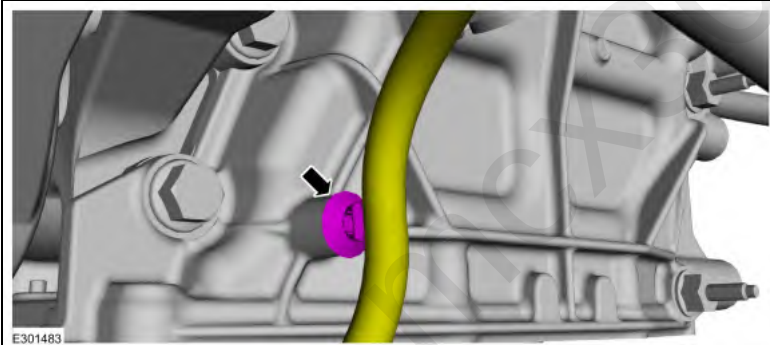


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41. Remove the bolts.
- Position the A/C compressor aside.

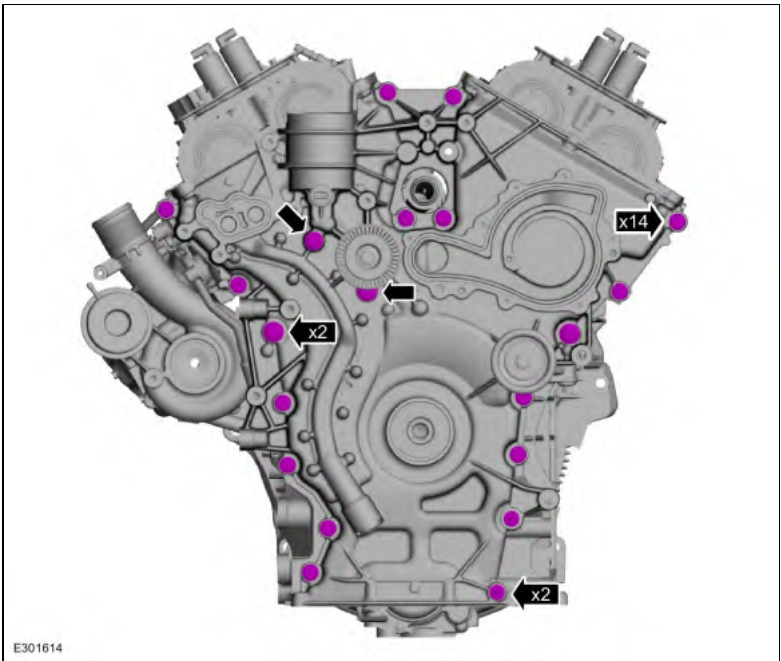


42. Detach the wiring harness retainer.

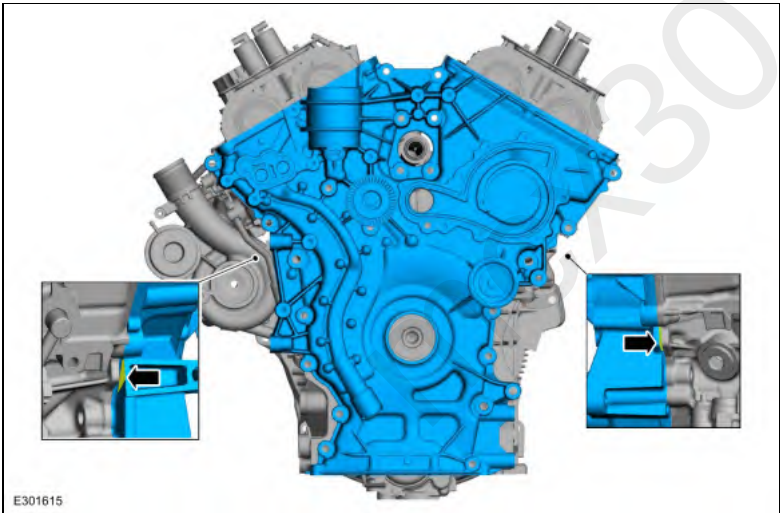


43. **NOTE:** There are 5 different types of fasteners, note location of each fastener for assembly.

Remove the engine front cover fasteners.



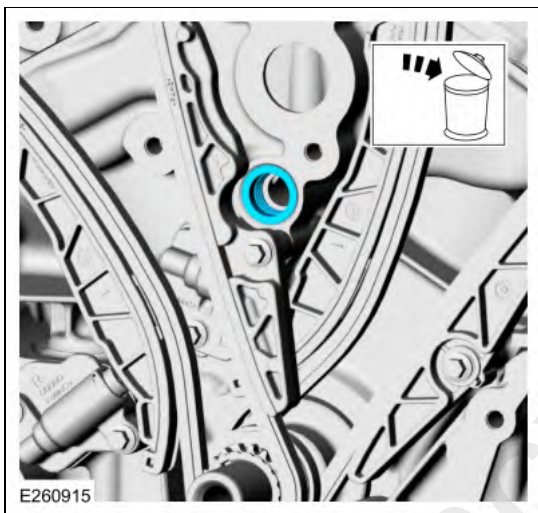
44. Using a large flat-bladed screwdriver and the indicated pry pads, release the sealer and remove the engine front cover.  
Use the General Equipment: Flat-Bladed Screwdriver



45. Remove and discard the engine front cover gaskets.

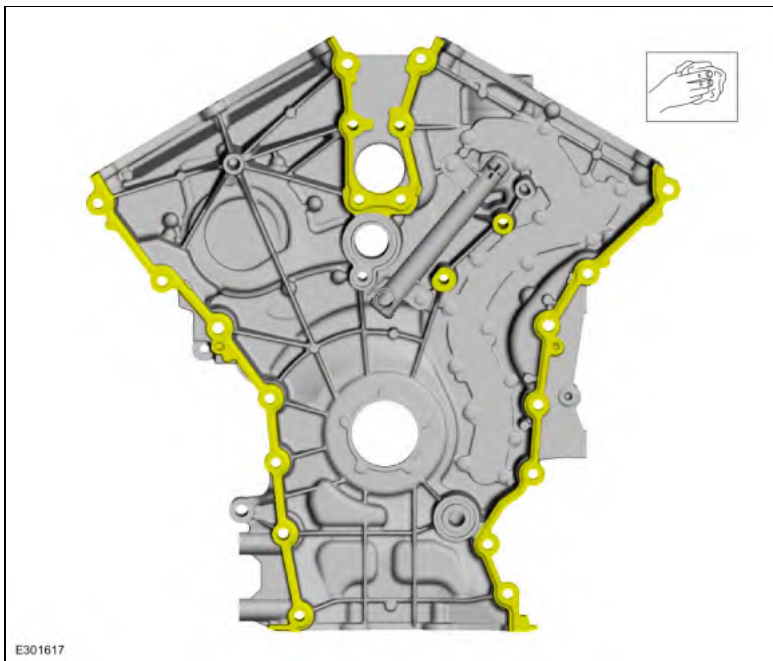


46. Remove and discard the oil gallery seal (6G068).



47. **NOTICE:** Only use a 3M<sup>®</sup>, <sup>ç</sup> Roloc<sup>®</sup> Bristle Disk (2-in white, part number 07528) to clean the engine front cover. Do not use metal scrapers, wire brushes or any other power abrasive disk to clean front cover.

- Clean the engine front cover using a 3M<sup>®</sup>, <sup>ç</sup> Roloc<sup>®</sup> Bristle Disk (2-in white, part number 07528) in a suitable tool turning at the recommended speed of 15,000 rpm.  
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
- Thoroughly wash the engine front cover to remove any foreign material, including any abrasive particles created during the cleaning process.  
*Material:* Motorcraft<sup>®</sup> Silicone Gasket Remover / ZC-30-A  
*Material:* Motorcraft<sup>®</sup> Metal Brake Parts Cleaner / PM-4-A, PM-4-B  
*Material:* Motorcraft<sup>®</sup> Metal Surface Prep Wipes / ZC-31-B



48. **NOTICE:** Place clean, lint-free shop towels over exposed engine cavities. Carefully remove the towels so foreign material is not dropped into the engine. Any foreign material (including any material created while cleaning gasket surfaces) that enters the oil passages may cause engine failure.

**NOTICE:** Do not use wire brushes, power abrasive discs or 3M<sup>®</sup> Roloc<sup>®</sup> Bristle Disk (2-in white part number 07528) to clean the sealing surfaces. These tools cause scratches and gouges that make leak paths. They also cause contamination that will cause premature engine failure. Remove all traces of the gasket.

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

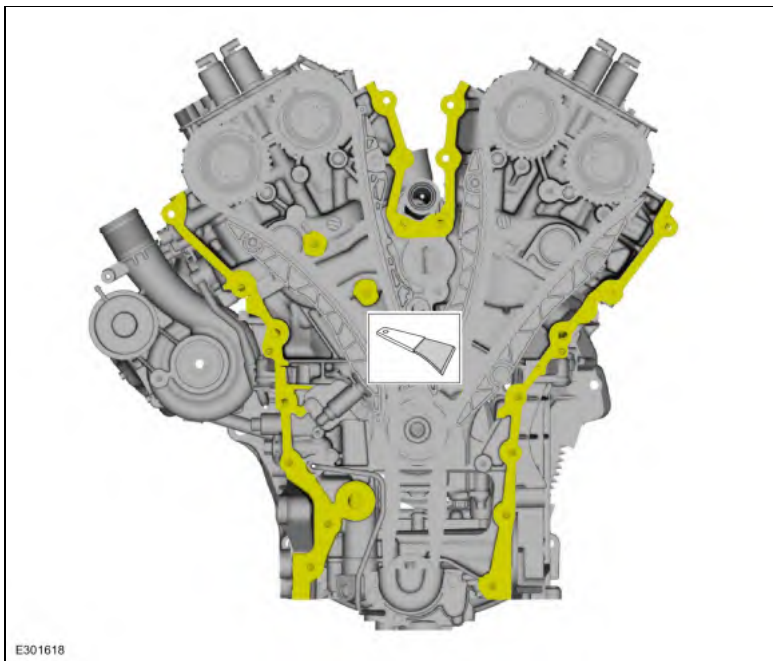
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).

Use the General Equipment: Plastic Scraper

*Material:* Motorcraft<sup>®</sup> Silicone Gasket Remover / ZC-30-A

*Material:* Motorcraft<sup>®</sup> Metal Brake Parts Cleaner / PM-4-A, PM-4-B

*Material:* Motorcraft<sup>®</sup> Metal Surface Prep Wipes / ZC-31-B



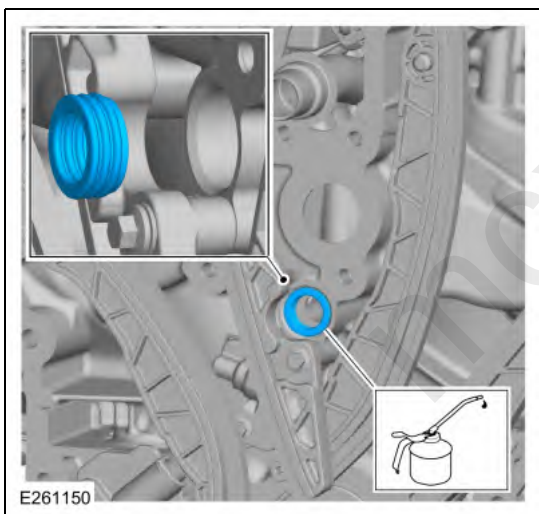
### Installation

1. Inspect the turbocharger or engine air intake system components and clean, if necessary.
2. Install new engine front cover gaskets.



3. **NOTE:** Lubricate the new oil gallery seal with clean engine oil.

Lubricate and install a new oil gallery seal (6G068).

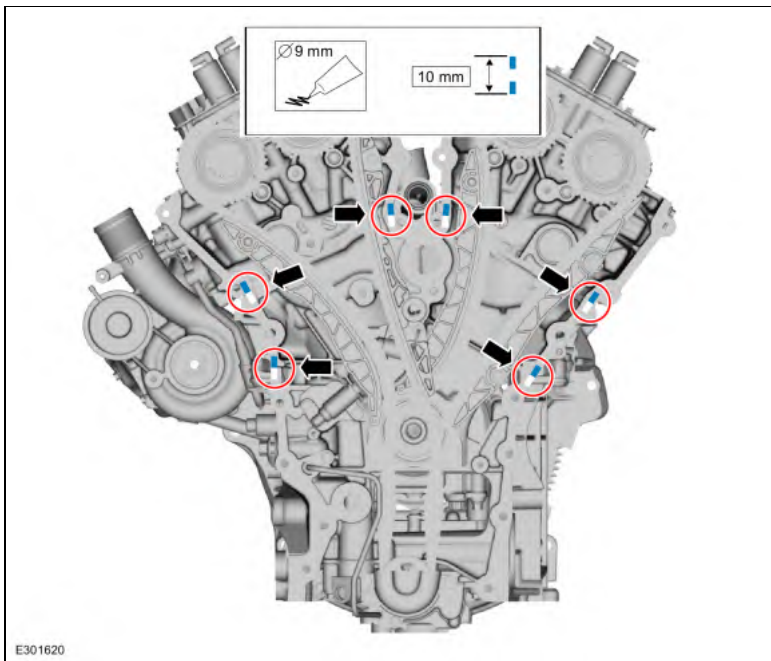


4. **NOTICE:** Failure to use Motorcraft® High Performance Engine RTV Silicone may cause the engine oil to foam excessively and result in serious engine damage.

**NOTE:** The engine front cover must be installed within 10 minutes of applying the sealer and the bolts must be installed and tightened to 2-5 Nm (18-44 lb-in) within 15 of applying the sealer. Final tightening of the bolts must be completed within 60 minutes of applying the sealer. Failure to follow this procedure can cause future oil leakage.

Apply 9 mm (0.35 in) beads of Motorcraft® High Performance Engine RTV Silicone 10 mm (0.40 in) in length to the cylinder block skirt-to-cylinder block joints and the cylinder head-to-cylinder block joints as indicated.

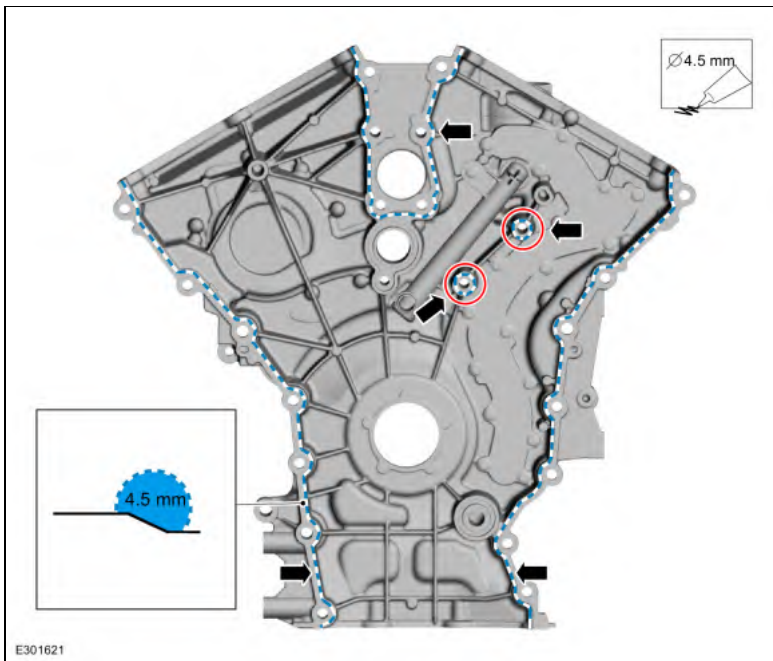
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



5. **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 engine front cover must be installed within 10 minutes of applying the sealer and the bolts must be installed and tightened to 2-5 Nm (18-44 lb-in) within 15 of applying the sealer. Final tightening of the bolts must be completed within 60 minutes of applying the sealer. 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 engine front cover sealing surfaces of the inner bolt bosses.  
*Material:* Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)
2. Apply a 4.5 mm (0.18 in) bead of Motorcraft® High Performance Engine RTV Silicone to the chamfer of the engine front cover sealing surfaces.  
*Material:* Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



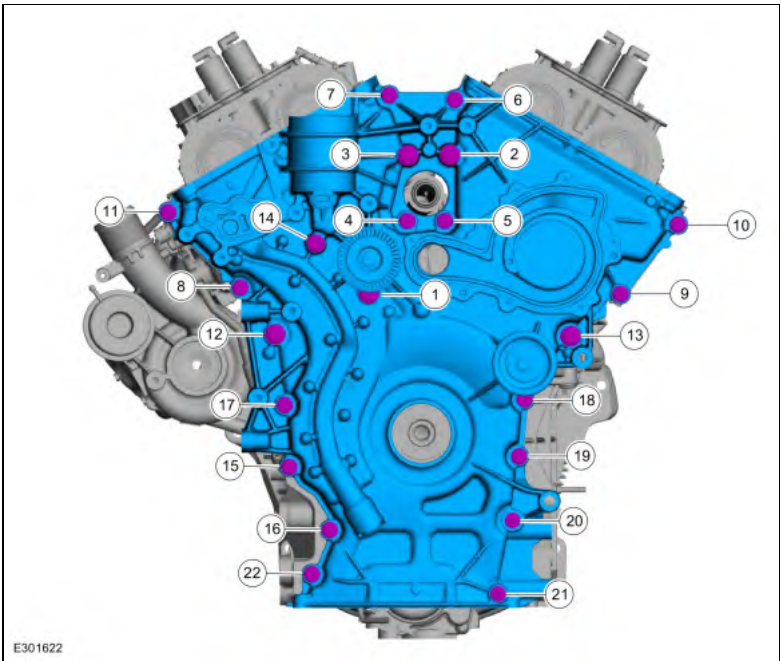
6. Install the engine front cover and the fasteners.

*Torque:*

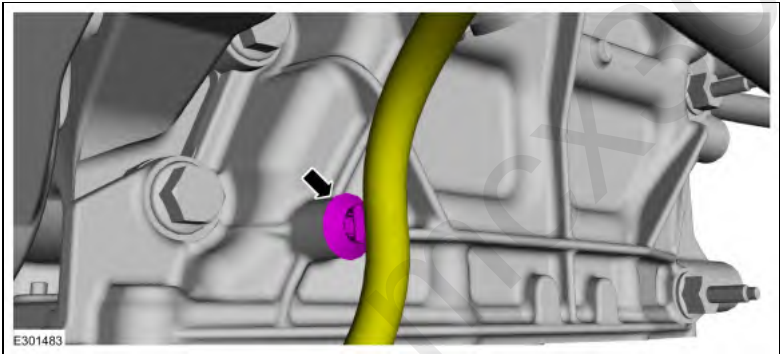
Stage 1: Tighten bolts 1 through 11 to: 18 lb.ft (24 Nm)

Stage 2: Tighten bolts 12 through 13 to: 35 lb.ft (48 Nm)

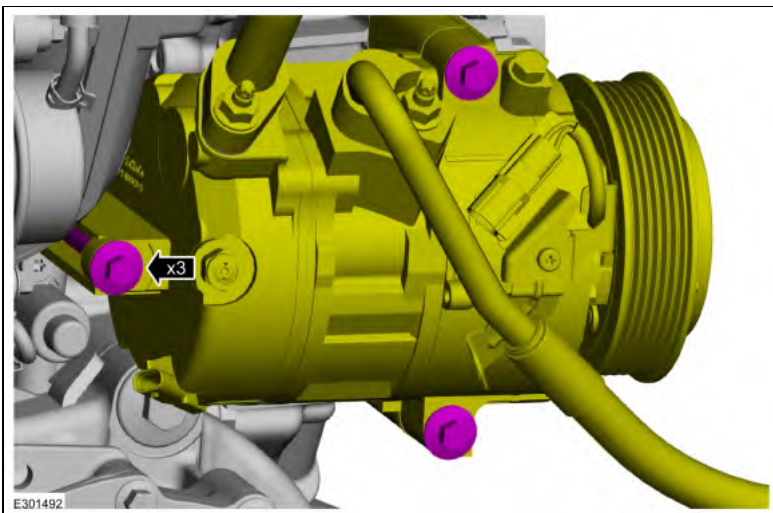
Stage 3: Tighten bolts 14 through 20 to: 18 lb.ft (24 Nm)



7. Attach the wiring harness retainer.

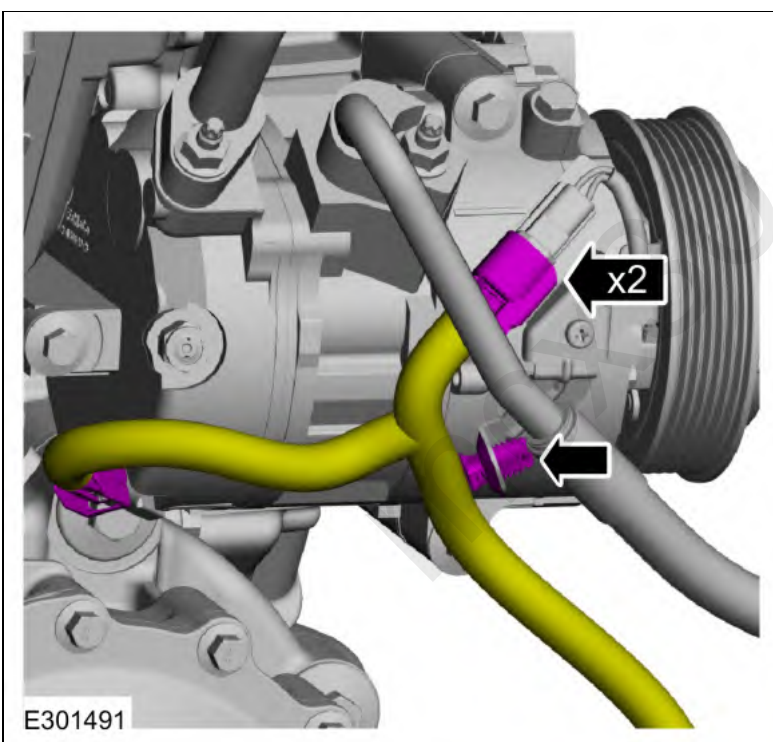


8. Position the A/C compressor.
- Install the bolts.
- Torque: 18 lb.ft (25 Nm)*



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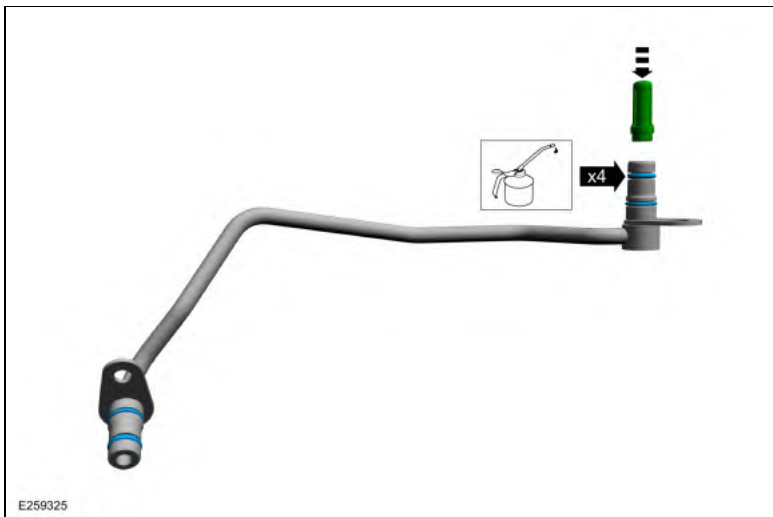
- 9.
- Connect the A/C compressor electrical connectors.
- Attach the wiring harness retainer.



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10. **NOTICE: A new turbocharger oil supply filter must be installed. Failure to follow these instructions can result in turbocharger damage.**

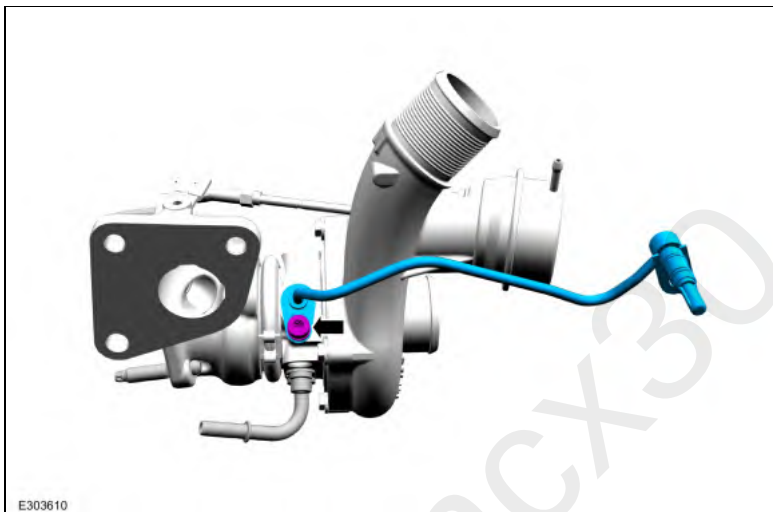
Install the new turbocharger oil supply tube O-ring seals and the new turbocharger oil supply tube oil filter. Lubricate the new turbocharger oil supply tube O-ring seals with clean engine oil.  
 Refer to: Specifications (303-01B Engine - 3.0L EcoBoost, Specifications).



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11. **NOTICE: Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.**

- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore and the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Do not use a metal brush, damage to sealing area will result in leaks. Install new components if needed.
1. Connect the turbocharger oil supply tube to the turbocharger, then install and tighten the turbocharger oil supply tube bolt.  
*Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B*  
*Torque: 89 lb.in (10 Nm)*



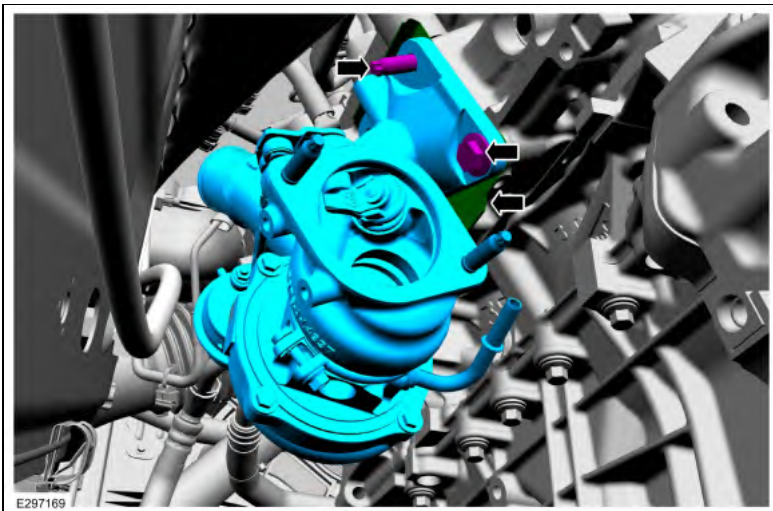
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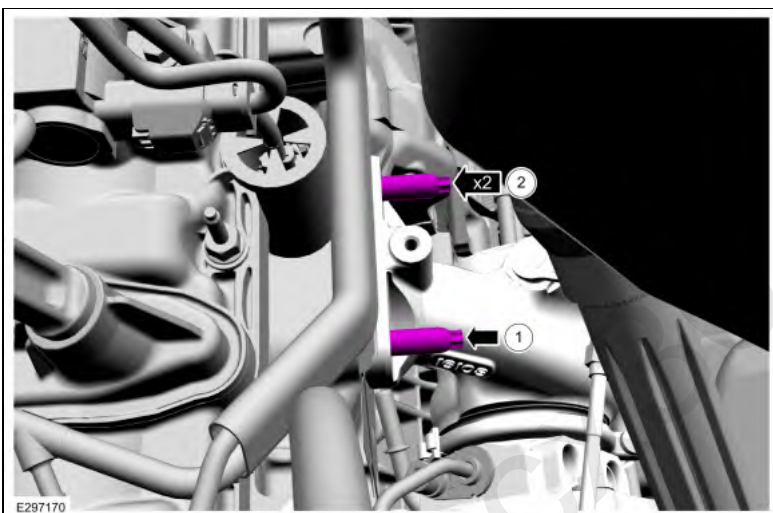
- NOTICE: Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.**

Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to engine O-ring bores for both the oil and coolant tubes. Inspect the area for deep scratches and gouges. Do not use a metal brush, damage to sealing area will result in leaks. Install new components if needed.

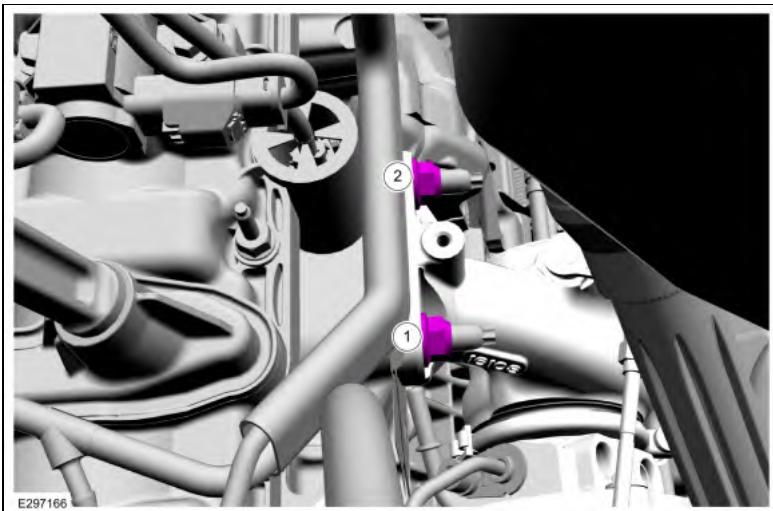
1. Install the turbocharger, the new gasket, the bolt and the stud. Install the turbocharger oil supply tube to the engine while installing the turbocharger.  
*Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B*



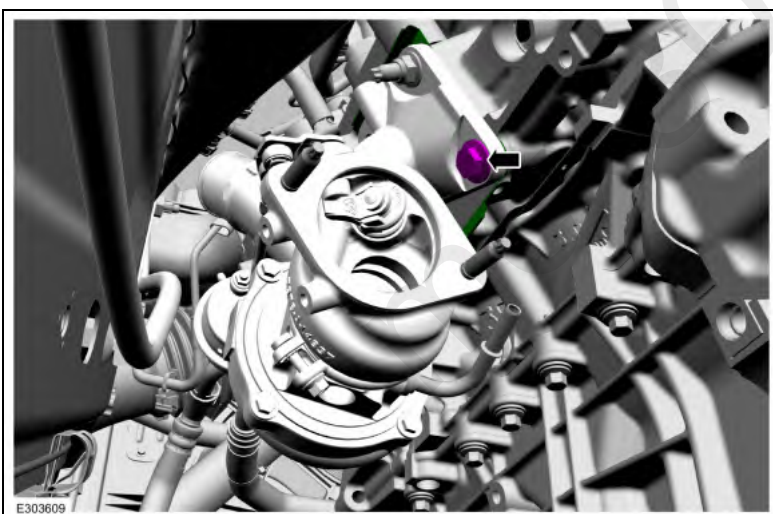
- 13.
1. Install the front turbocharger stud.
  2. Tighten the turbocharger studs.  
*Torque: 106 lb.in (12 Nm)*



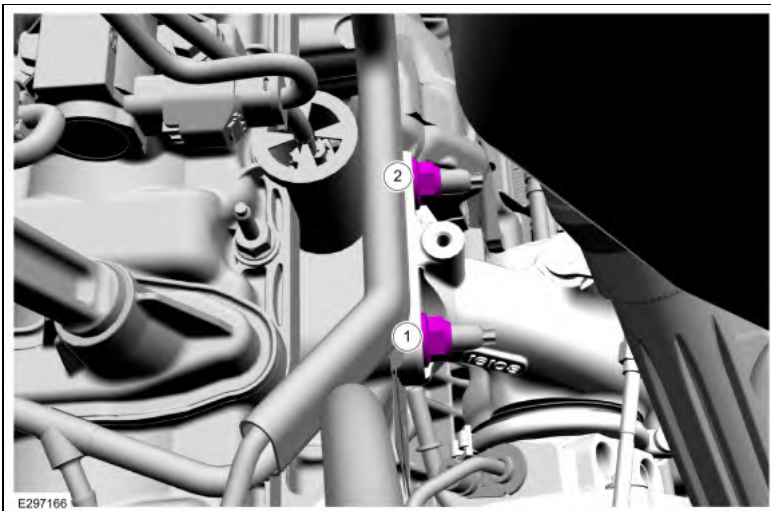
14. Loosely install the turbocharger nuts.



15. Tighten the turbocharger bolt.  
*Torque: 44 lb.ft (60 Nm)*

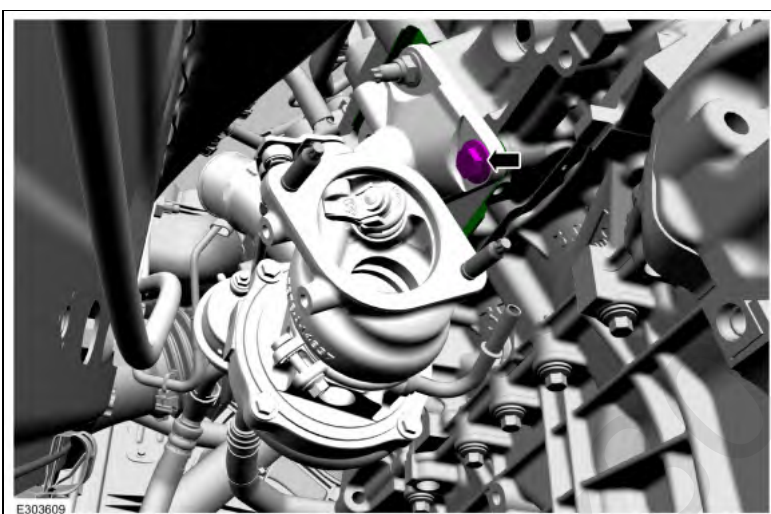


- 16.
1. Tighten the turbocharger nut.  
*Torque: 27 lb.ft (37 Nm)*
  2. Tighten the turbocharger nut.  
*Torque: 44 lb.ft (60 Nm)*



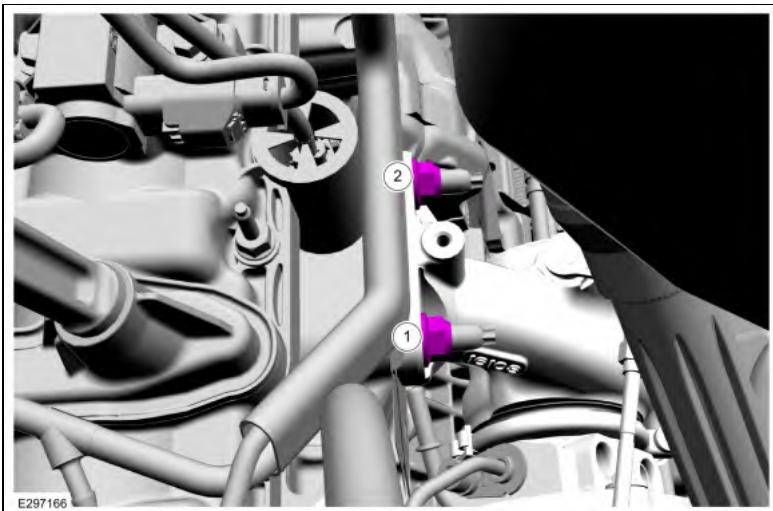
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17. Re-tighten the turbocharger bolt.  
*Torque: 44 lb.ft (60 Nm)*

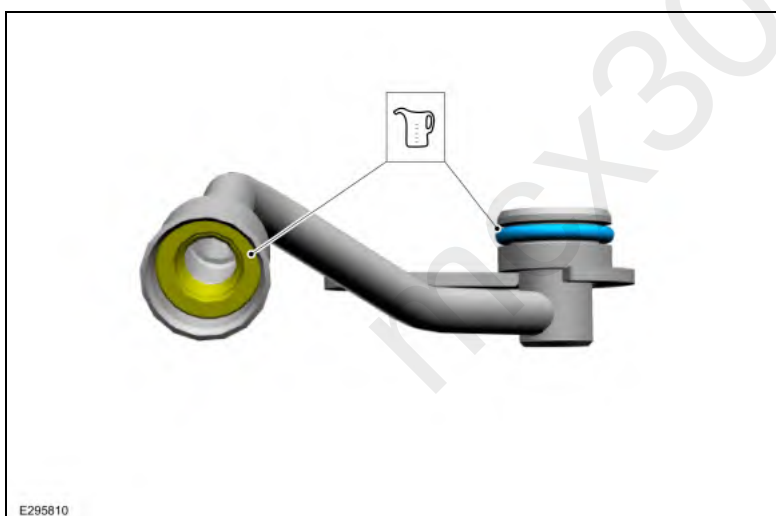


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- 18.
1. Re-tighten the turbocharger nut  
*Torque: 27 lb.ft (37 Nm)*
  2. Re-tighten the turbocharger nuts.  
*Torque: 44 lb.ft (60 Nm)*

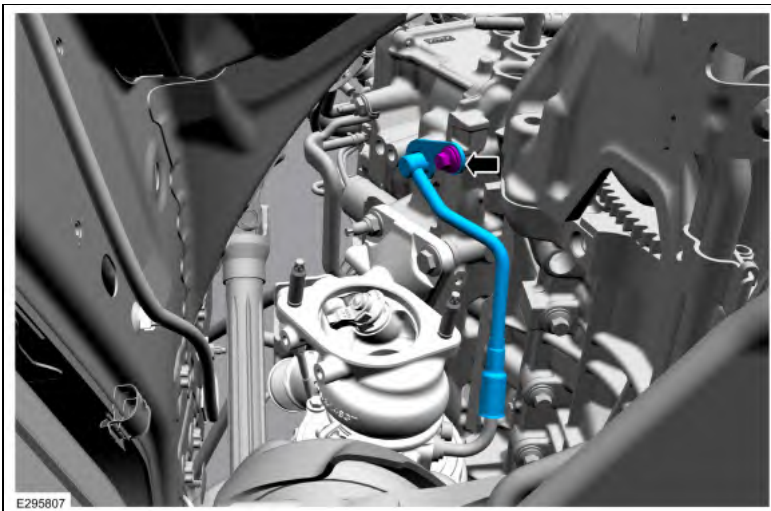


19. Install a new outer turbocharger coolant supply tube O-ring seal. Lubricate the O-ring seal and the rubber gasket with clean engine coolant.  
Refer to: Specifications (303-03B Engine Cooling - 3.0L EcoBoost, Specifications).

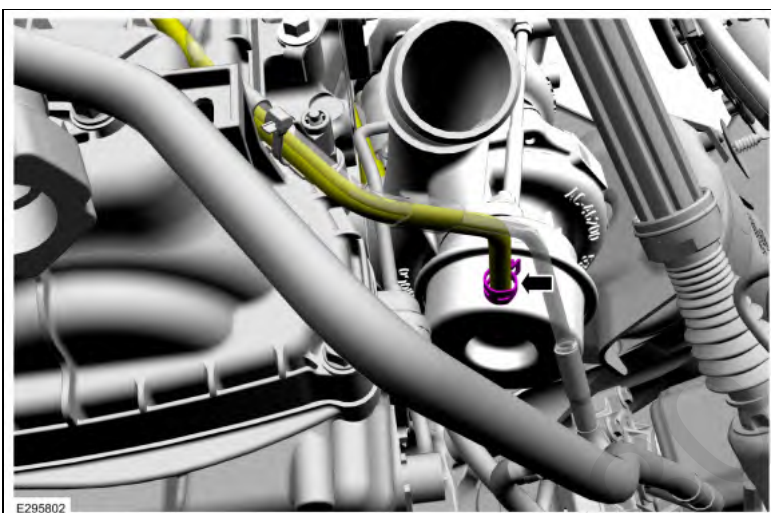


20. **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components if needed.
1. Install the outer turbocharger coolant supply tube, then install and tighten the bolt.  
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B  
*Torque:* 89 lb.in (10 Nm)



21. Connect the turbocharger wastegate control hose and clamp.  
Use the General Equipment: Hose Clamp Remover/Installer



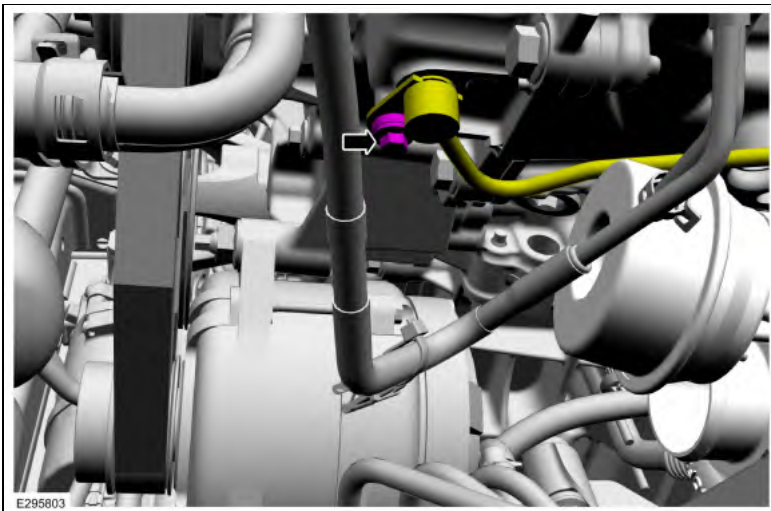
22. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to turbocharger O-ring bore and the turbocharger tube to engine O-ring bore. Inspect the area for deep scratches and gouges. Install new components if needed.

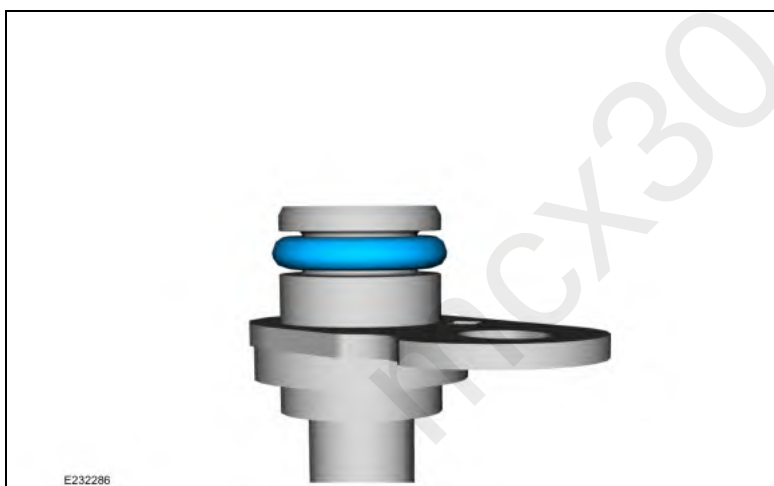
1. Install the turbocharger oil supply tube, then install and tighten the oil supply tube bolt.

*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

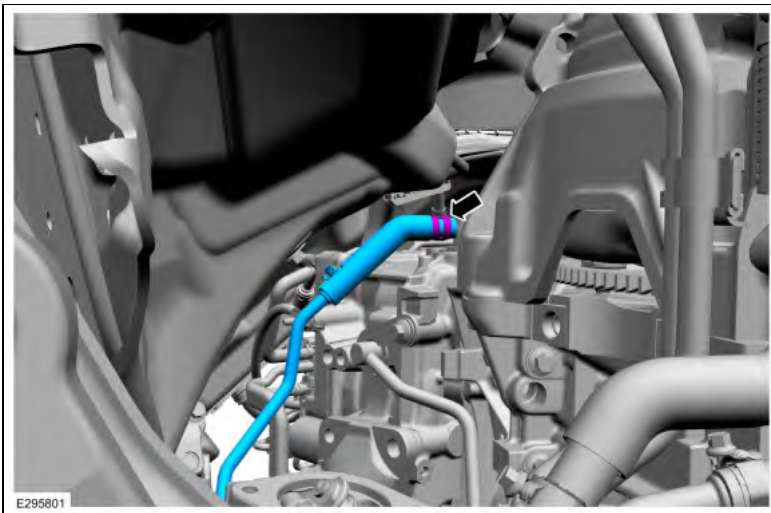
*Torque:* 89 lb.in (10 Nm)



23. Install a new turbocharger coolant return tube O-ring seal. Lubricate the new O-ring seal with clean engine coolant. Refer to: Specifications (303-03B Engine Cooling - 3.0L EcoBoost, Specifications).



24. Install and connect the turbocharger coolant return tube and clamp. Use the General Equipment: Hose Clamp Remover/Installer



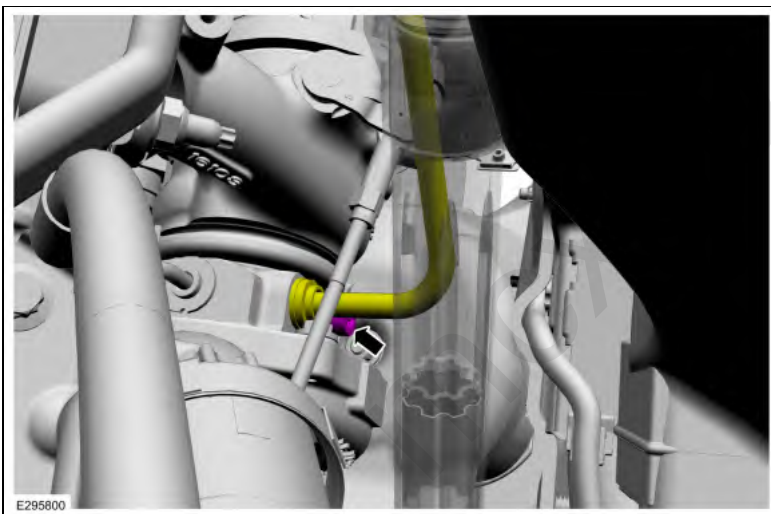
25. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components if needed.

*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

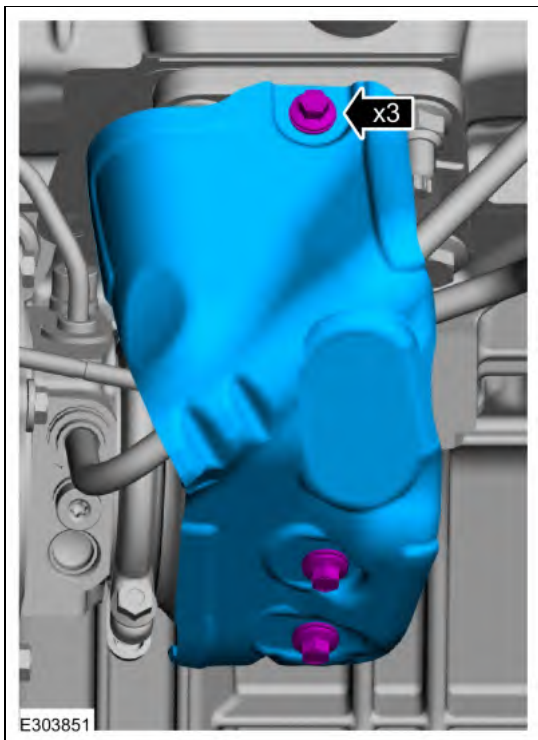
1. Connect the turbocharger coolant return tube to the turbocharger, then install and tighten the bolt.

*Torque:* 89 lb.in (10 Nm)

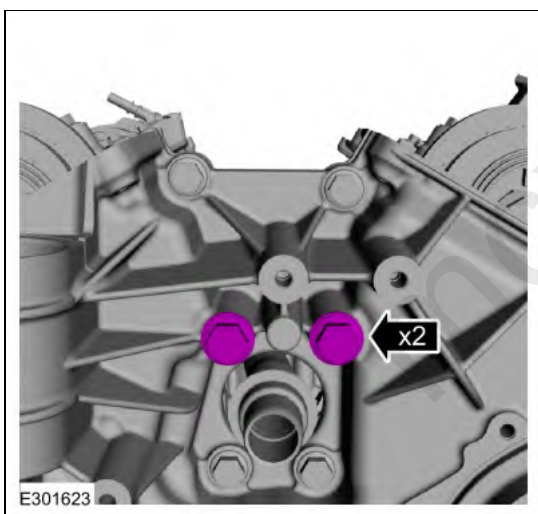


26. Install the turbocharger heat shield and the bolts.

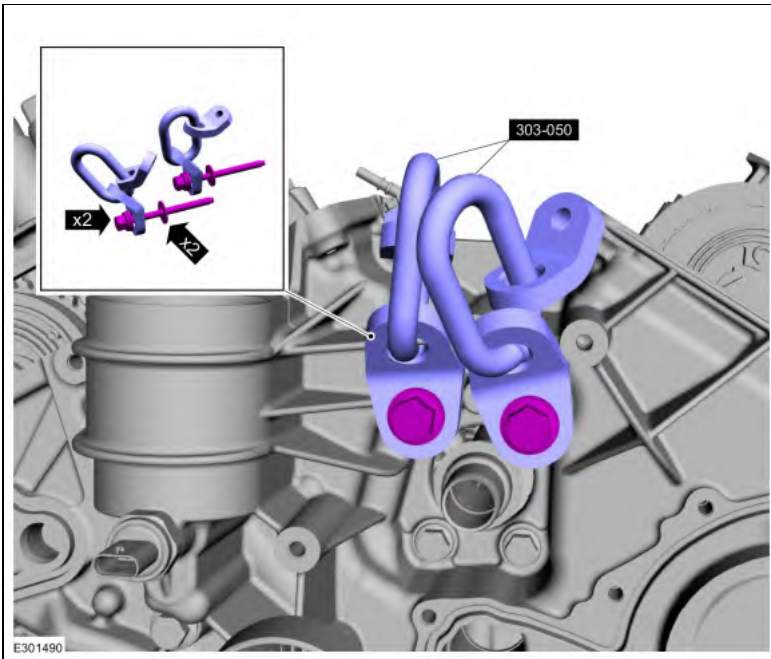
*Torque:* 89 lb.in (10 Nm)



27. Remove the engine front cover bolts.

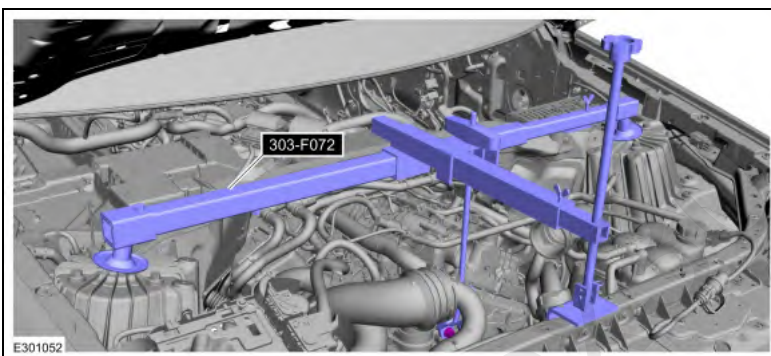


28. Using two M8 x 1.25 x 105 mm bolts and two washers, install the special tools to the engine.  
Install Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.



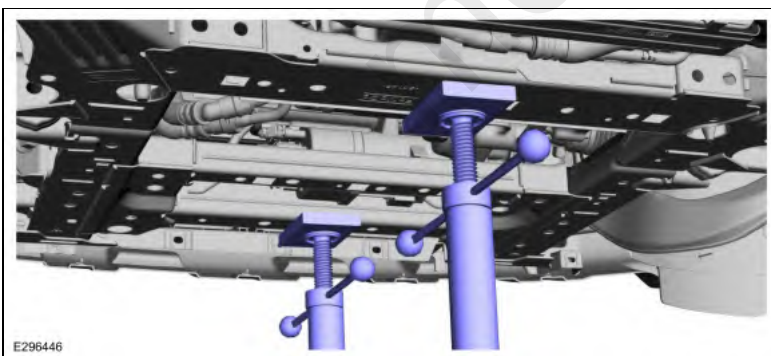
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29. Install Special Service Tool: 303-F072 Support Bar, Engine.



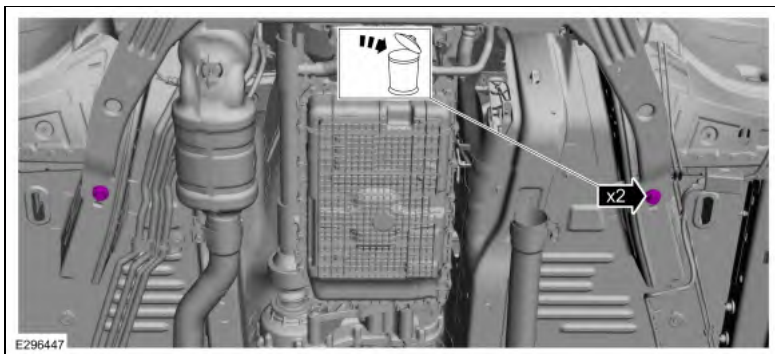
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30. Support the front and rear of the subframe with adjustable jack stands.



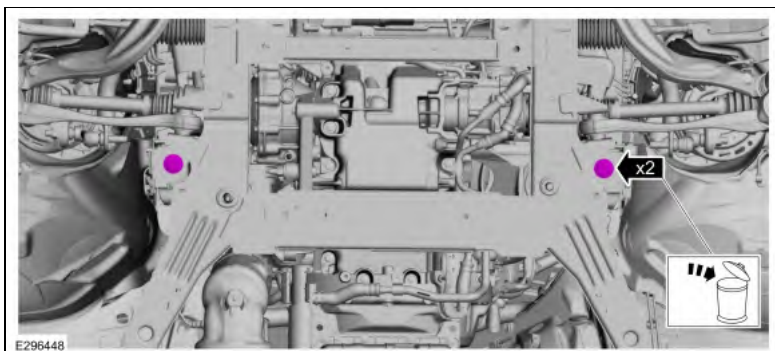
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- 31.
- Remove the rear subframe bolts.
  - Discard the bolts.



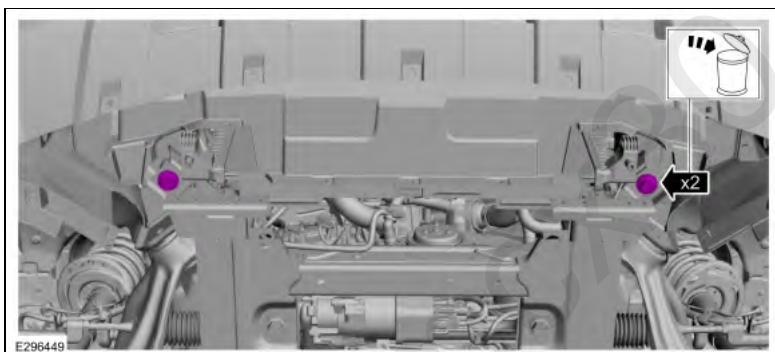
32.

- Remove the middle subframe bolts.
- Discard the bolts.

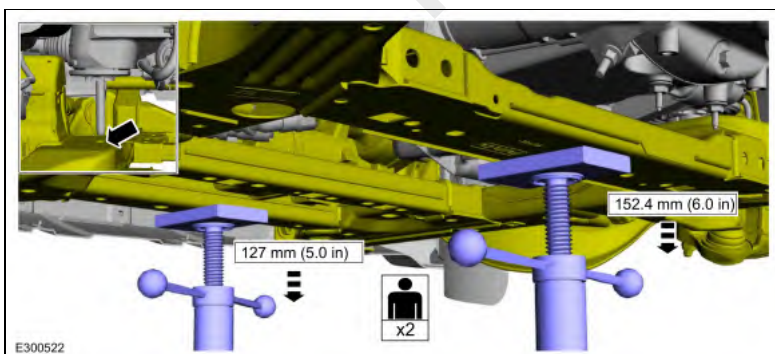


33.

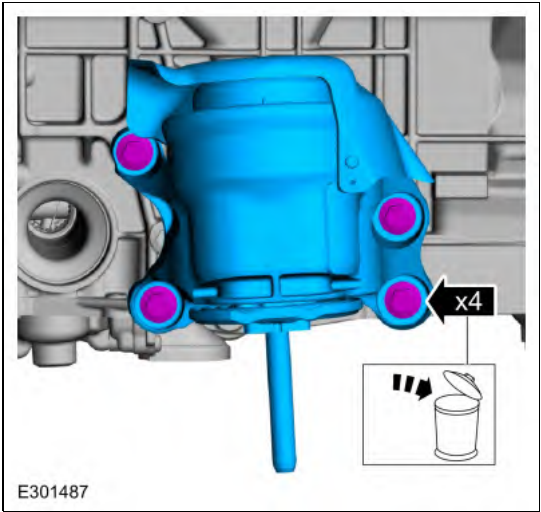
- Remove the front subframe bolts.
- Discard the bolts.



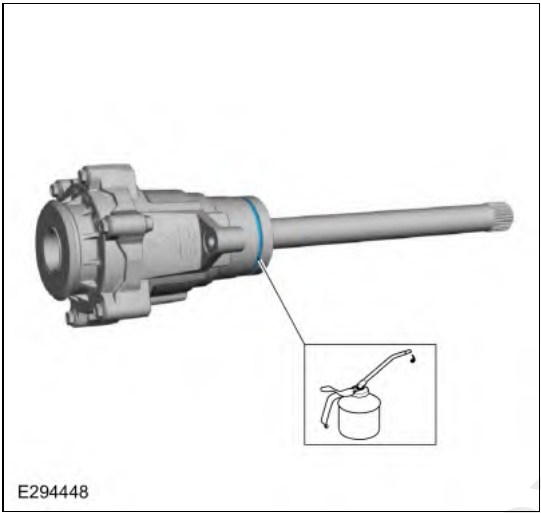
34. With the aid of an assistant, lower the front jack stand 127 mm (5.0 in) and the rear jack stand 152.4 mm (6.0 in) evenly or until engine mount stud clears the subframe.



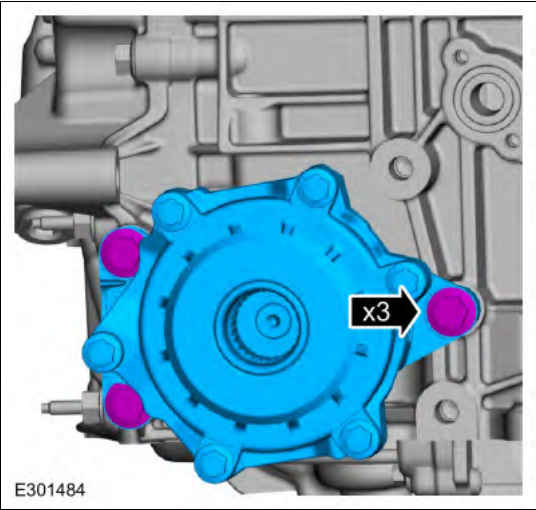
- 35.
- Remove the bolts and the LH engine mount.
  - Discard the bolts.



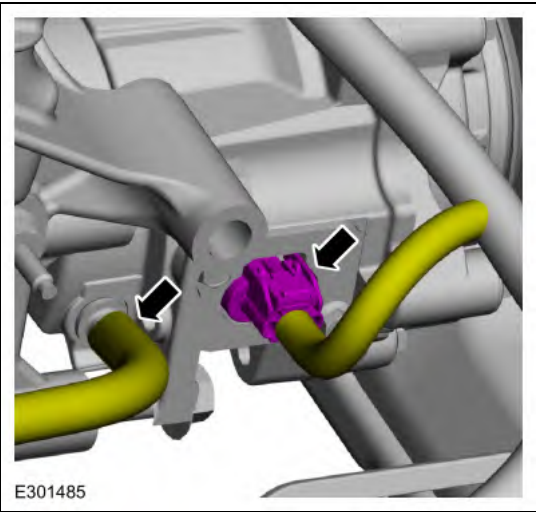
36. Install a new seal and lubricate.



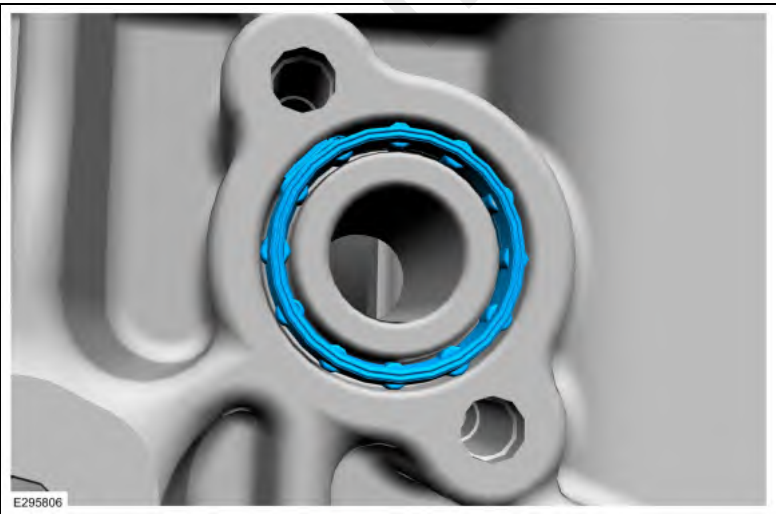
37. Install the front axle disconnect actuator and the bolts.  
*Torque: 26 lb.ft (35 Nm)*



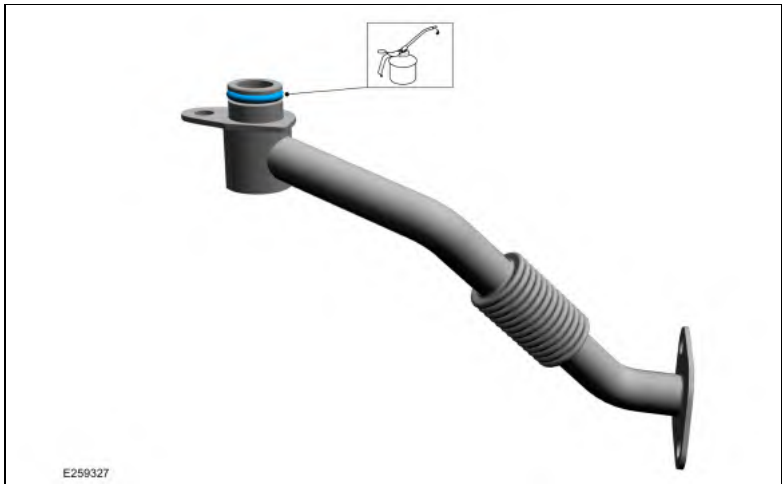
38. Connect the front axle disconnect actuator electrical connector and vent hose.



39. Install the new turbocharger oil return tube-to-engine block gasket.

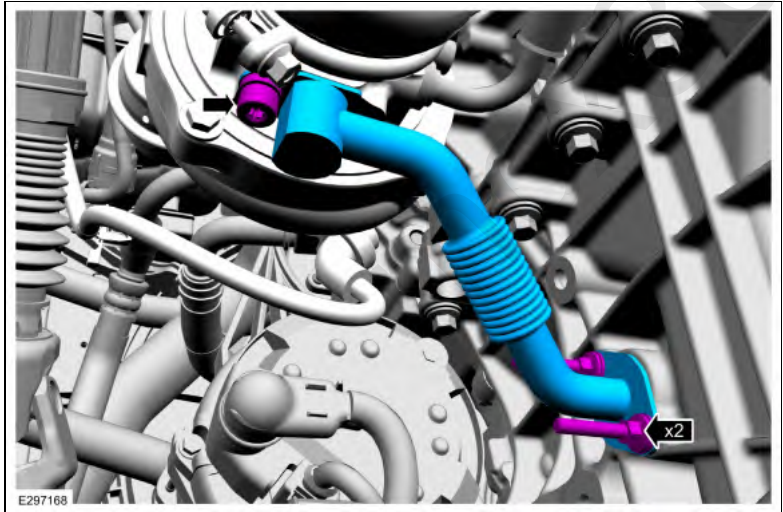


40. Install a new turbocharger oil return tube O-ring seal, then lubricate with clean engine oil.  
Refer to: Specifications (303-01B Engine - 3.0L EcoBoost, Specifications).

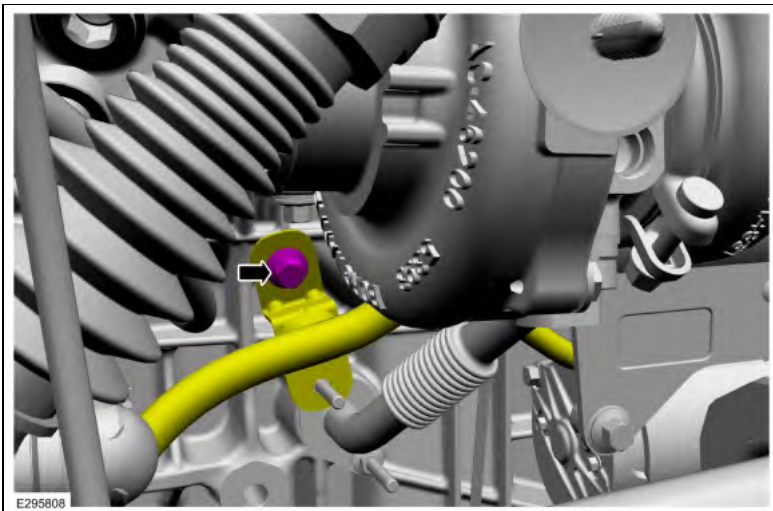


41. NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.

- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges.
1. Install the turbocharger oil return tube, then install and tighten the turbocharger oil return tube bolts.
- Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
- Torque: 89 lb.in (10 Nm)



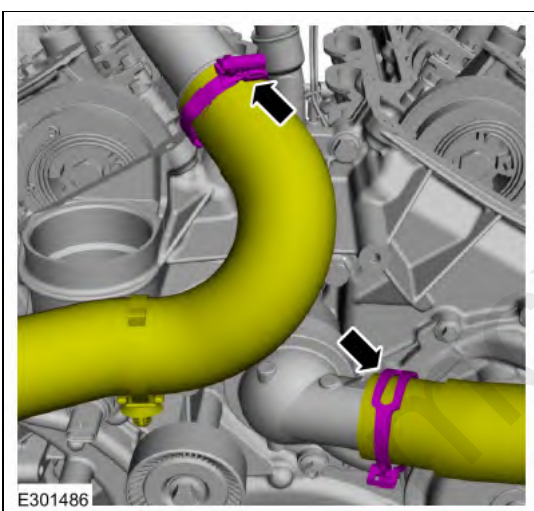
42. Install the wire harness bracket, then install and tighten the bolt.
- Torque: 106 lb.in (12 Nm)



43. Install the following items:

1. Refer to: Engine Mount LH (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
2. LH side.  
Refer to: Halfshaft (205-04 Front Drive Halfshafts, Removal and Installation).
3. Refer to: Crankshaft Front Seal (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
4. Refer to: Generator - 3.0L EcoBoost (414-02 Generator and Regulator, Removal and Installation).
5. Refer to: Coolant Pump (303-03B Engine Cooling - 3.0L EcoBoost, Removal and Installation).
6. Refer to: Accessory Drive Belt Tensioner (303-05B Accessory Drive - 3.0L EcoBoost, Removal and Installation).
7. Refer to: Accessory Drive Belt (303-05B Accessory Drive - 3.0L EcoBoost, Removal and Installation).

44. Install the upper and lower radiator hoses and clamps.



45. 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: Oil Cooler (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
3. Refer to: Valve Cover LH (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
4. Refer to: Valve Cover RH (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
5. Refer to: Degas Bottle (303-03B Engine Cooling - 3.0L EcoBoost, Removal and Installation).
6. Refer to: Oil Pan (303-01B Engine - 3.0L EcoBoost, Removal and Installation).

46. Install a new engine 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).

47. Connect the battery ground cable.

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

48. Pressurize the fuel system.

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

49. Fill and bleed the engine cooling system.

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

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

51. Start and check the exhaust system for leaks.



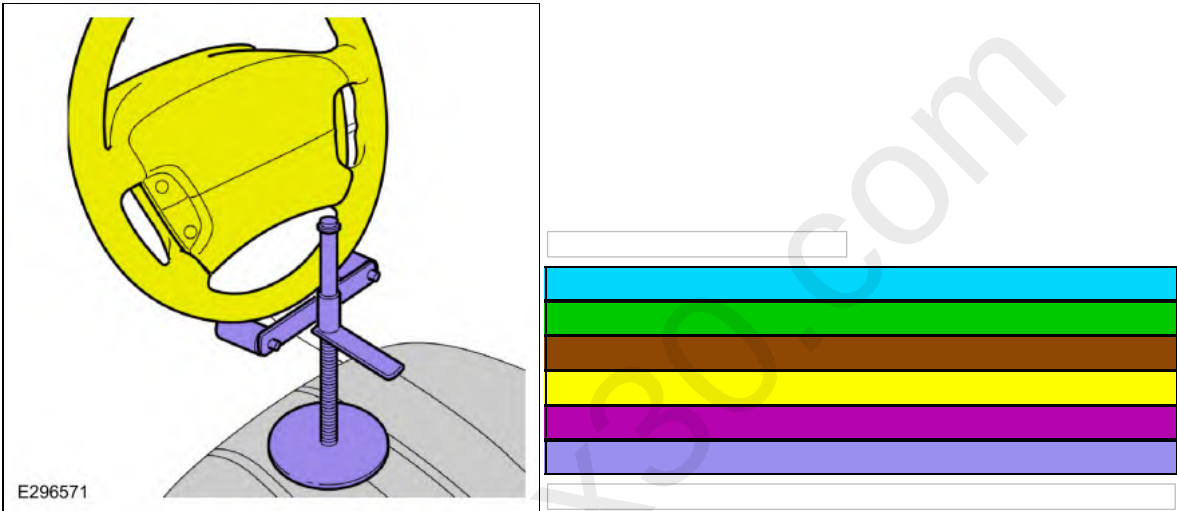
# Engine Mount LH

## Special Tool(s) / General Equipment

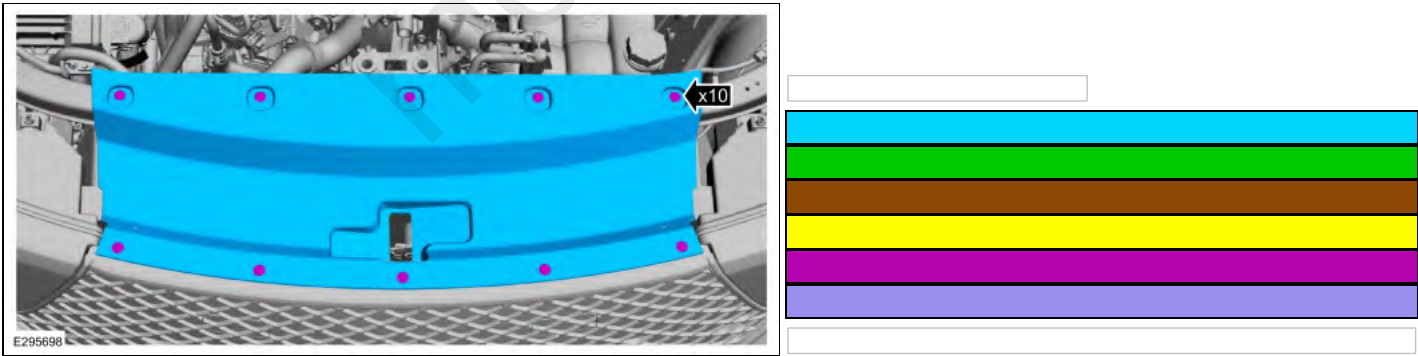
|                                                                                  |                                                |
|----------------------------------------------------------------------------------|------------------------------------------------|
|  | 303-050 (T70P-6000)<br>Lifting Bracket, Engine |
|  | 303-F072<br>Support Bar, Engine                |

## Removal

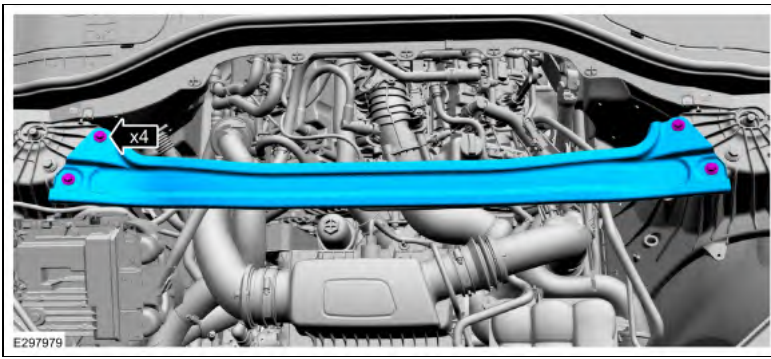
- With the vehicle in NEUTRAL, position it on a hoist.  
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
- Using a holding device, hold the steering wheel.



- Remove the retainers and the upper radiator panel.



- Remove the bolts and the suspension support bar.



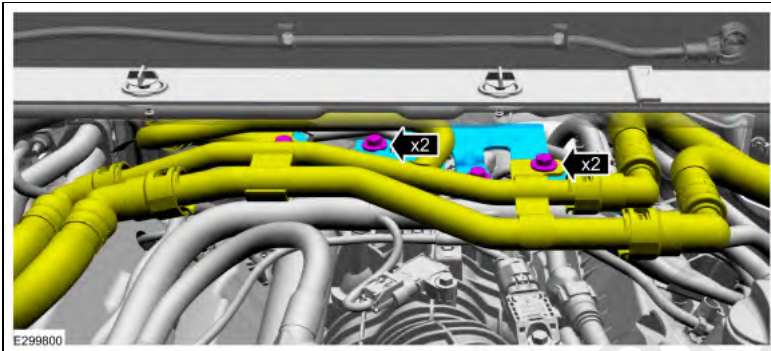
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5. Remove the following items:

1. Charge air cooler outlet pipe.  
Refer to: Charge Air Cooler (CAC) Outlet Pipe (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
2. Coolant pump.  
Refer to: Coolant Pump (303-03B Engine Cooling - 3.0L EcoBoost, Removal and Installation).

6.

- Remove the coolant pipe bracket retaining bolts.
- Remove the intake manifold bracket retaining bolts.
- Remove the intake manifold bracket.



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7.

- Detach the wiring harness retainers.
- Remove the coolant pipe bolts.
- Position the coolant pipe aside.