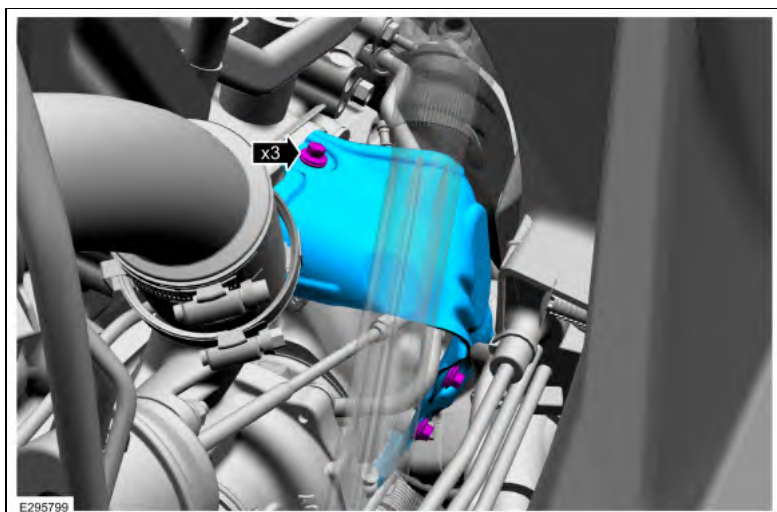
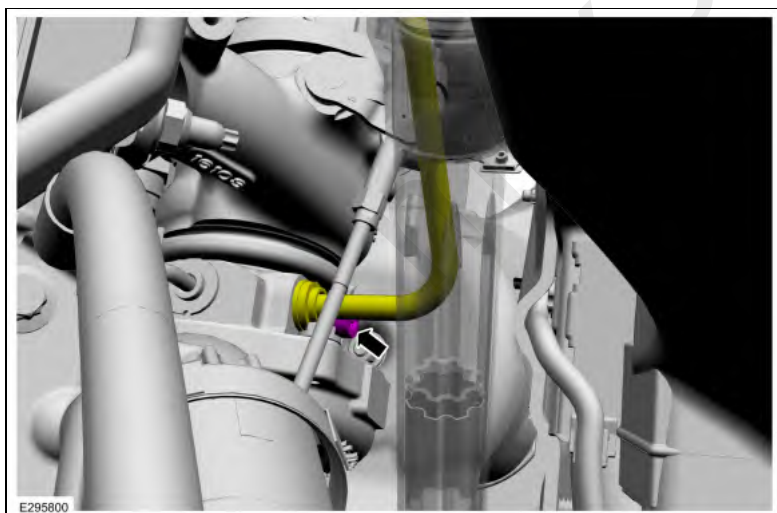


Refer to: Charge Air Cooler (CAC) Intake Pipe (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).

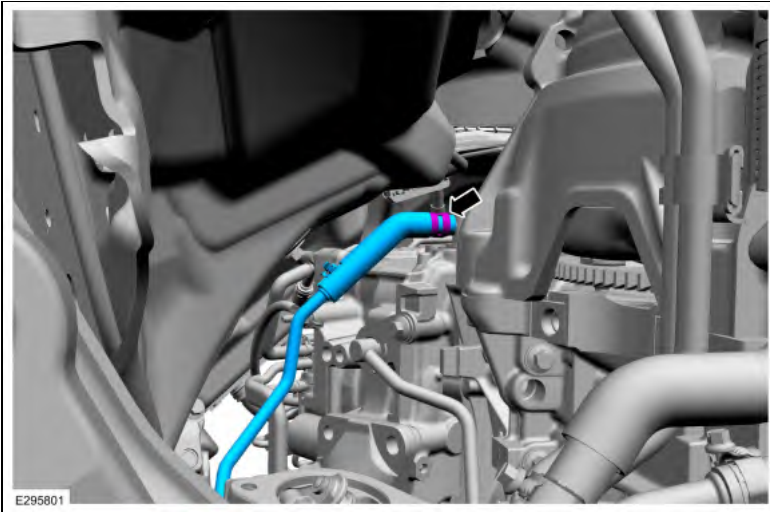
12. Remove the turbocharger heat shield bolts, then remove the heat shield.



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



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



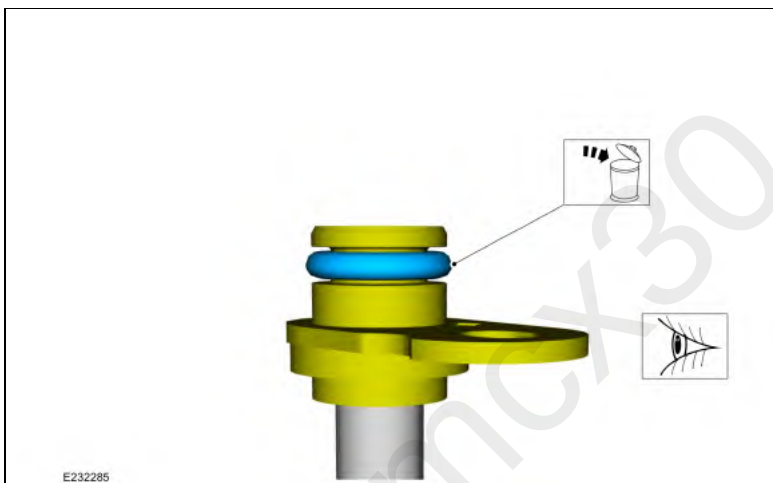
15.

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

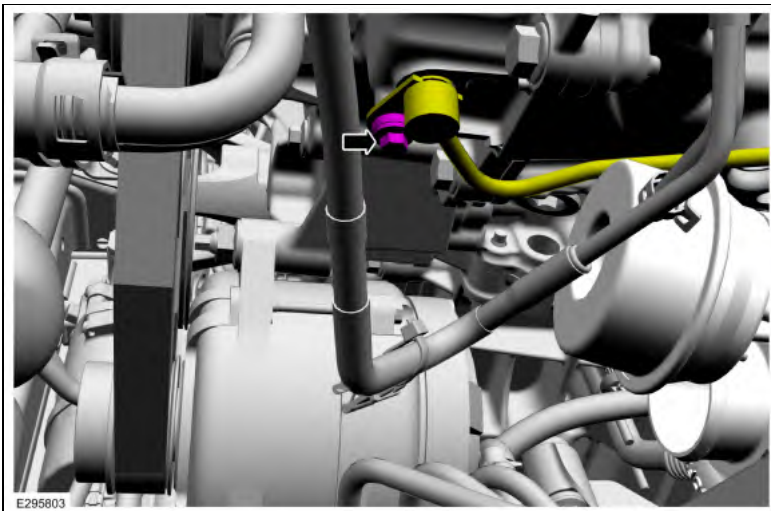
Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Install new components if needed.

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

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

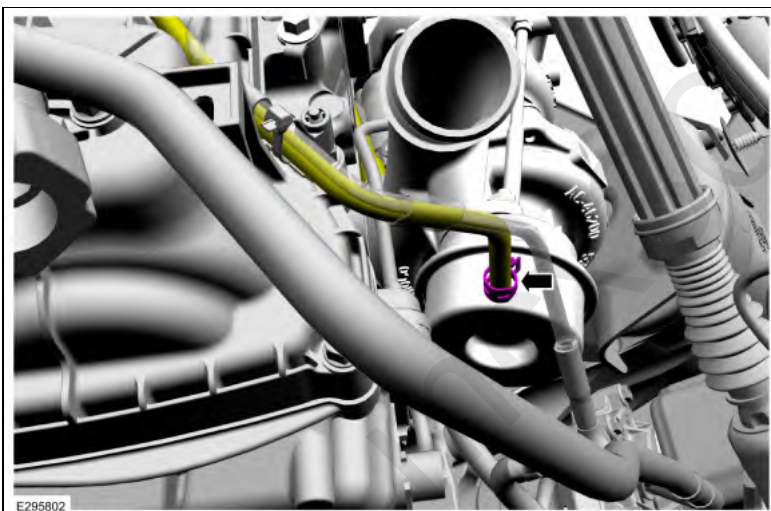


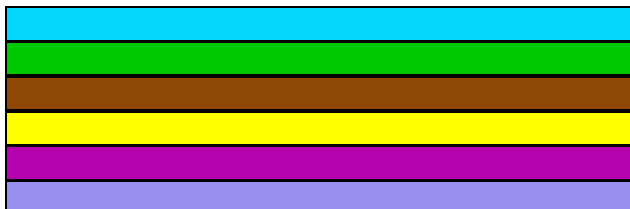
16. Remove the turbocharger oil supply tube bolt, then disconnect the turbocharger oil supply tube.



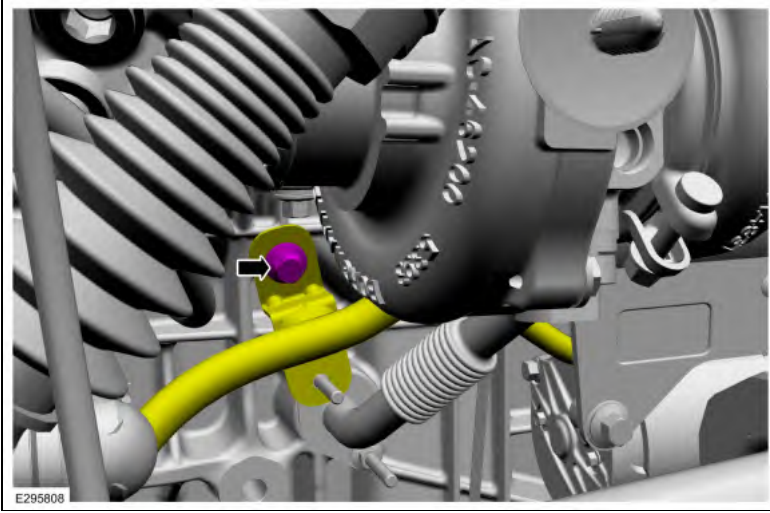


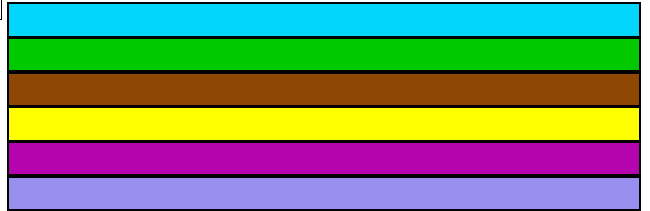
17. Disconnect the clamp and the turbocharger wastegate control hose.
Use the General Equipment: Hose Clamp Remover/Installer



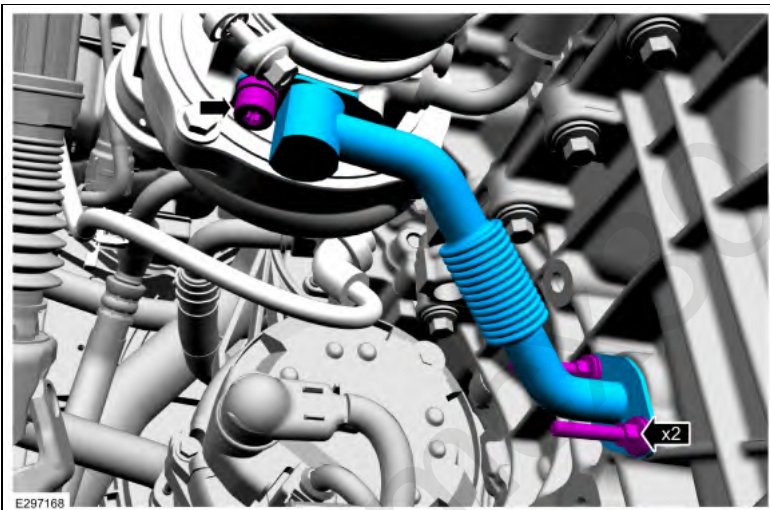


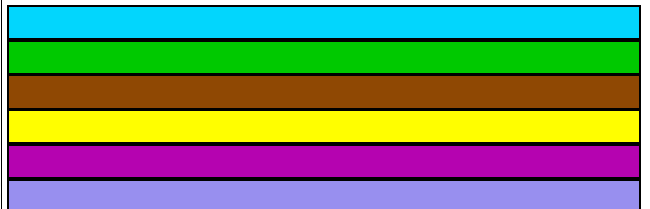
18. Remove the wire harness bracket bolt, then move out of the way.





19. Remove the turbocharger oil return tube bolts, then remove the turbocharger oil return tube.





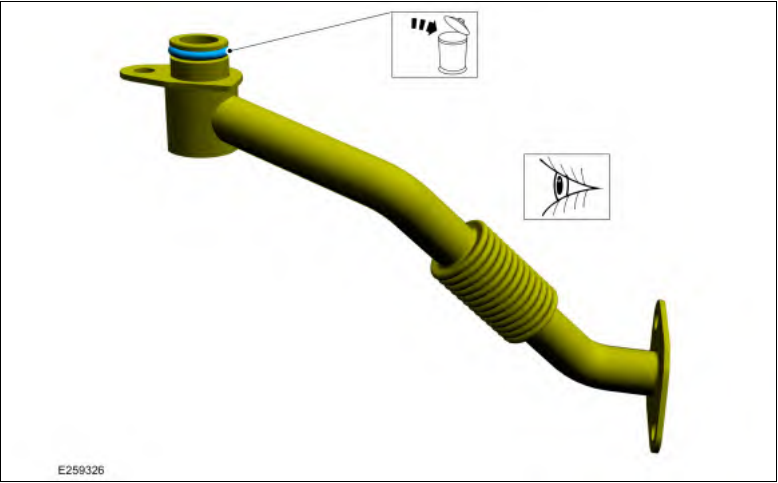
20.

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

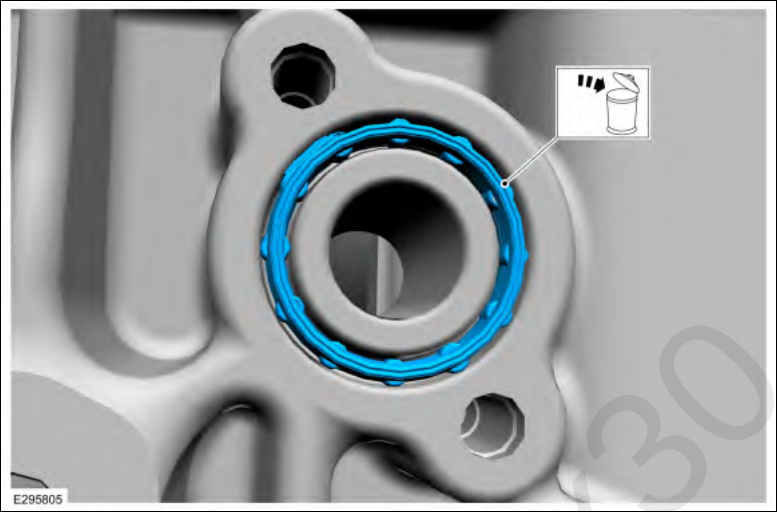
Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Install new components if needed.

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

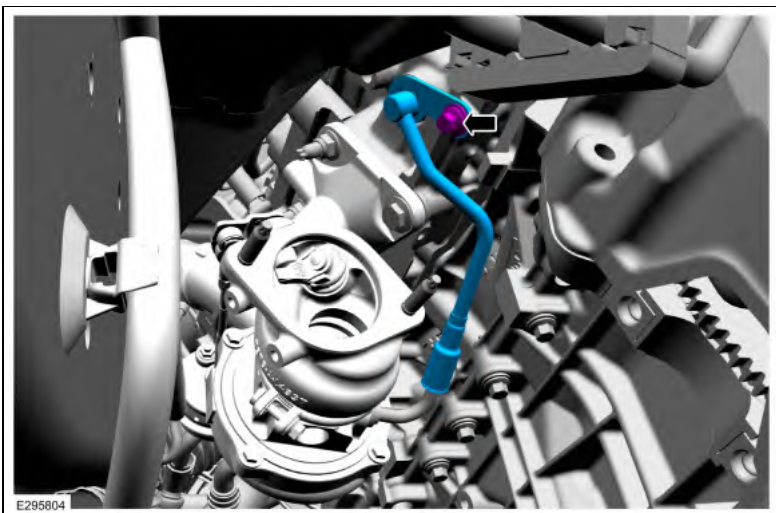
1. Remove and discard the turbocharger oil return tube O-ring seal.



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



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



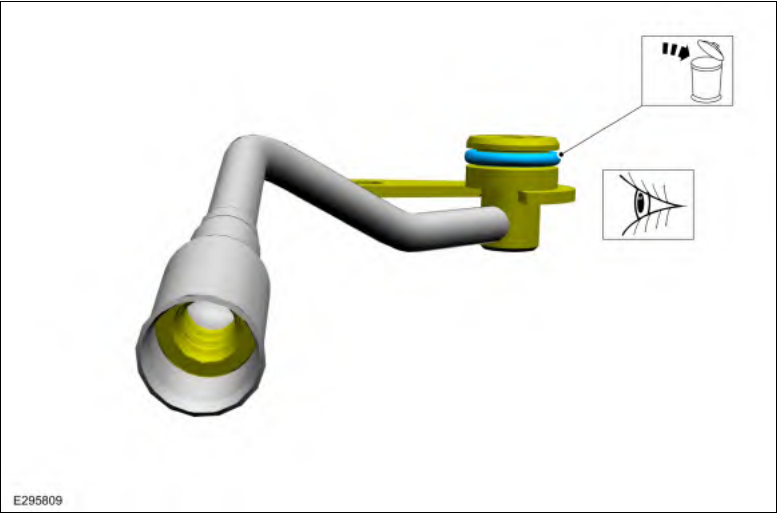
23.

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

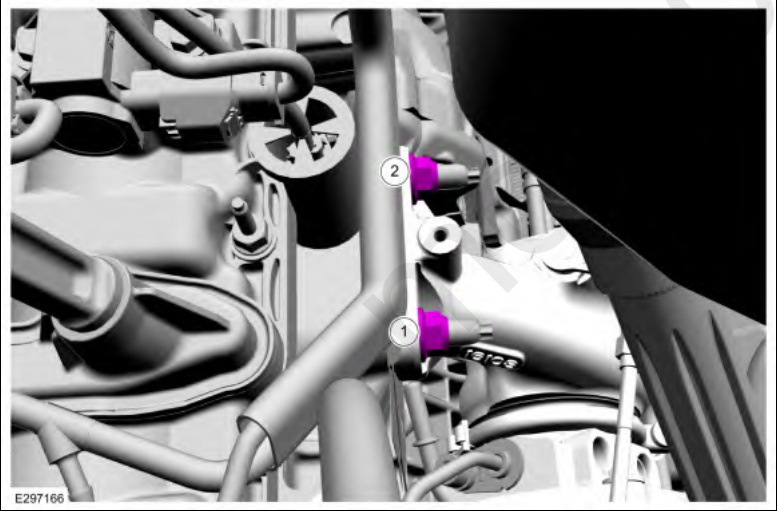
Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area.

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

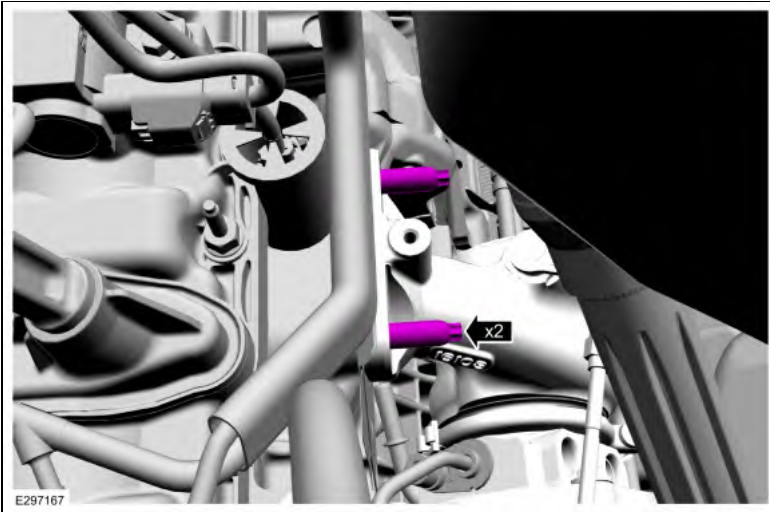
1. Remove and discard the turbocharger coolant supply tube O-ring seal. Inspect the rubber gasket. Install new components if needed.



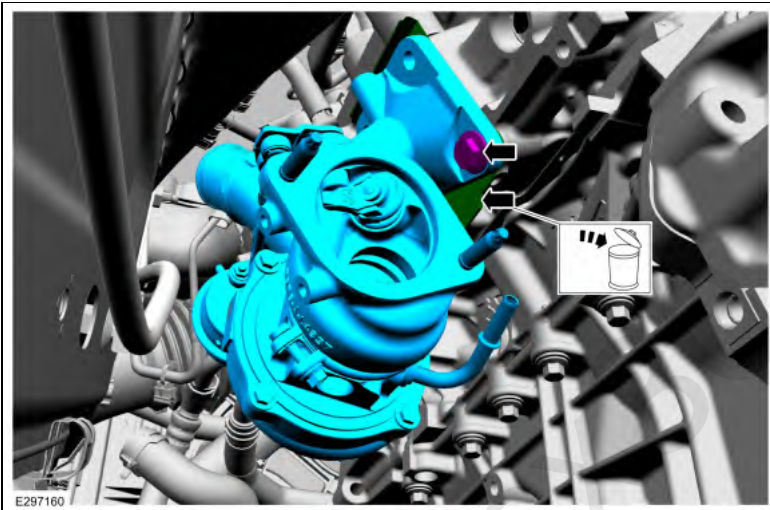
24. Remove the upper turbocharger nuts.



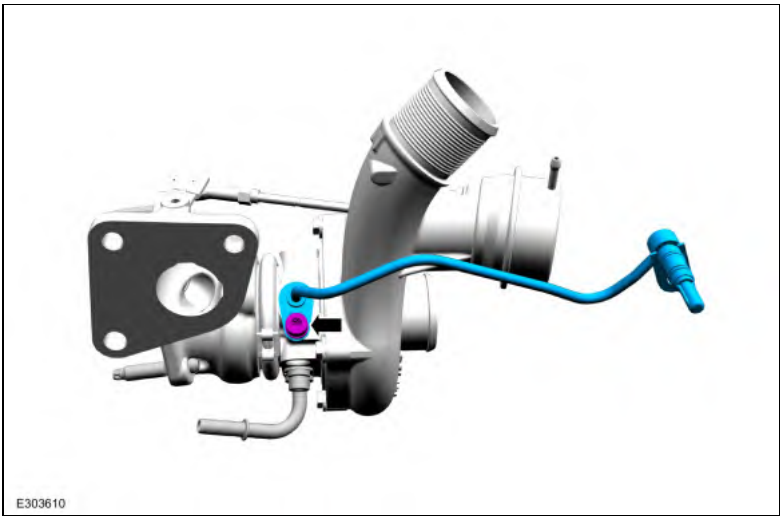
25. Remove the turbocharger studs.



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



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

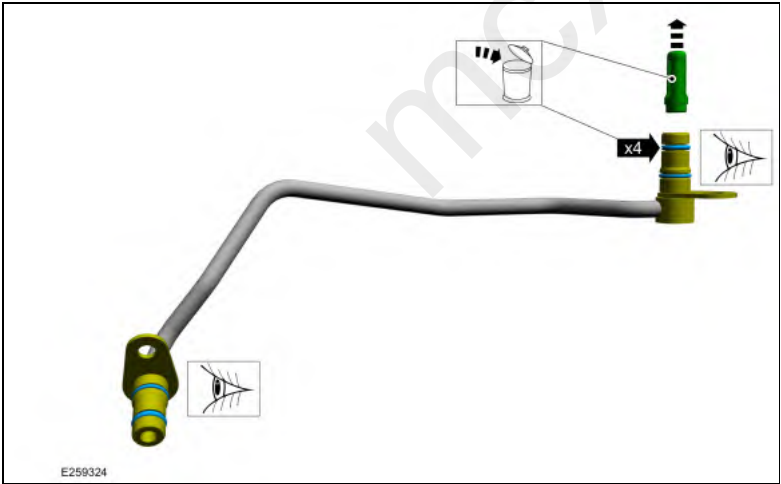


- 28.
- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

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.

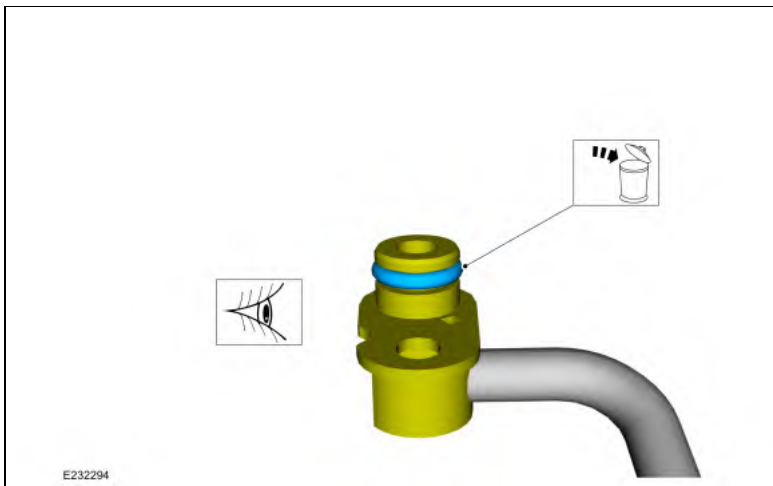


- 29.
- **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

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.

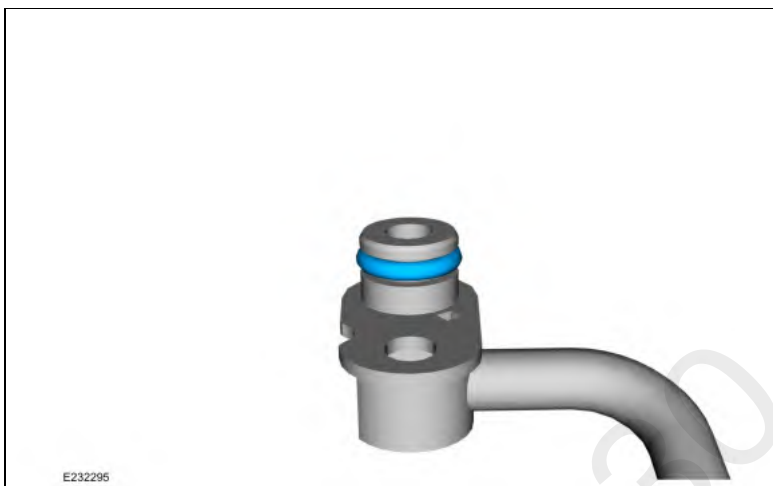
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

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



Installation

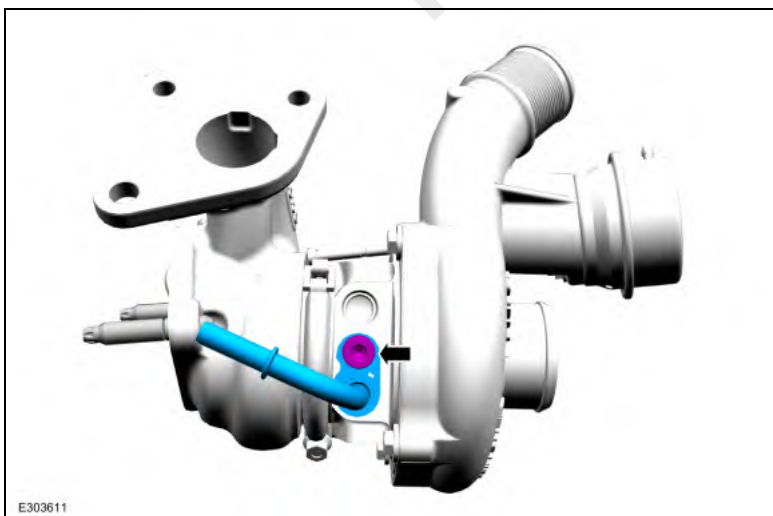
1. Install a new turbocharger end coolant supply tube O-ring seal. Lubricate the new O-ring seal with clean engine coolant. Refer to: Specifications (303-03B Engine Cooling - 3.0L EcoBoost, Specifications).



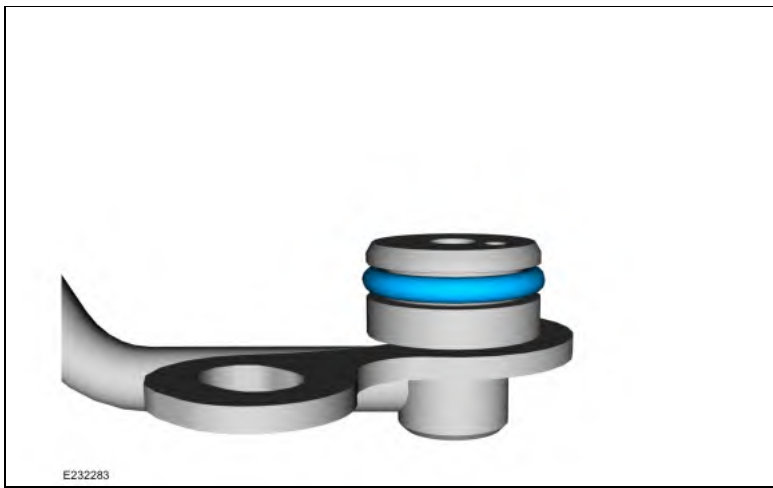
2.
 - **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

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. Inspect the area for deep scratches and gouges. Install new components if needed.

1. Install the turbocharger coolant supply tube to the turbocharger, then install and tighten the turbocharger coolant supply tube bolt.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
Torque: 89 lb.in (10 Nm)



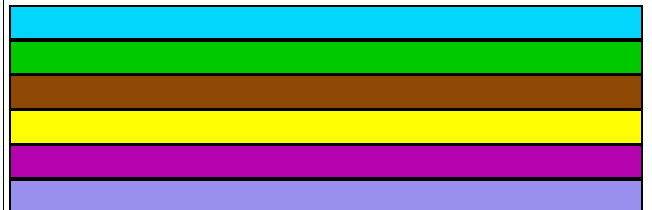
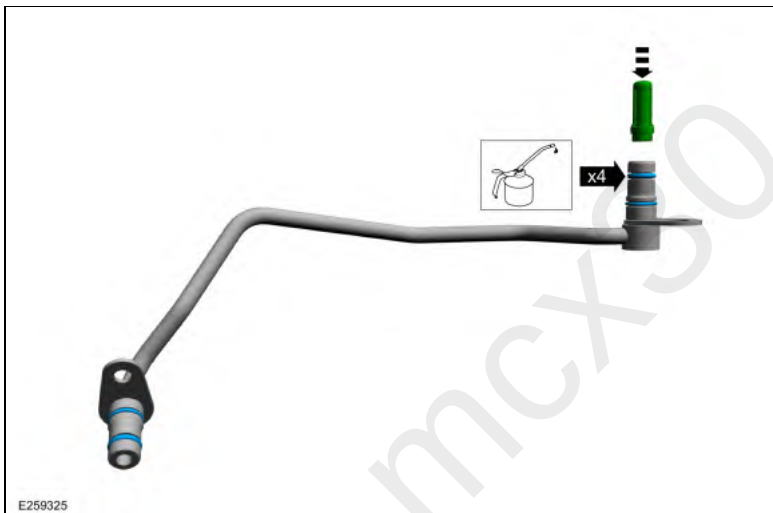
3. Install a new turbocharger coolant supply tube O-ring seal. Lubricate the new O-ring seal with clean engine coolant. Refer to: Specifications (303-03B Engine Cooling - 3.0L EcoBoost, Specifications).



4. 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).



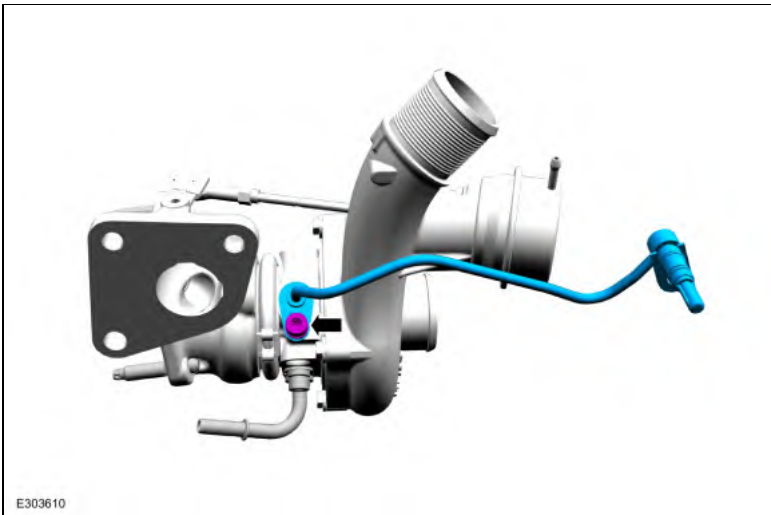
5. NOTICE: Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.

- 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)



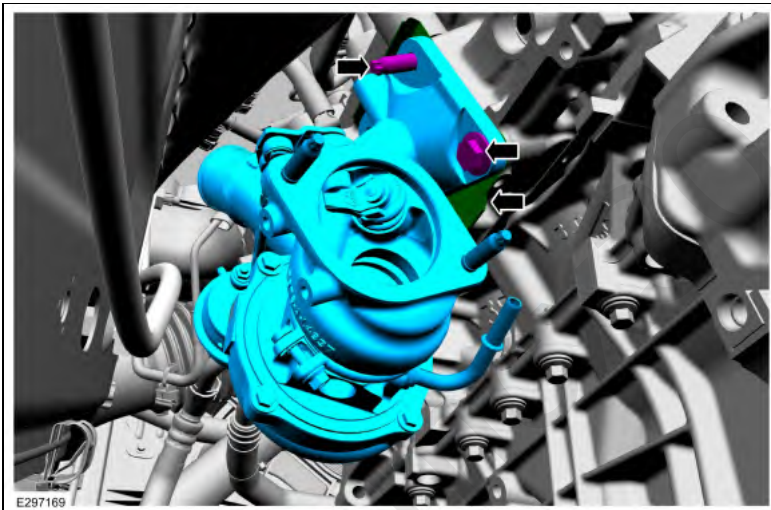
6.

- **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.

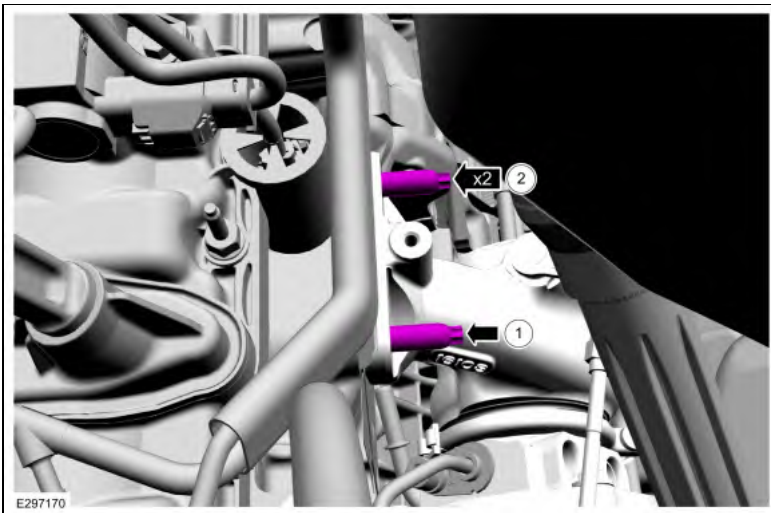
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B



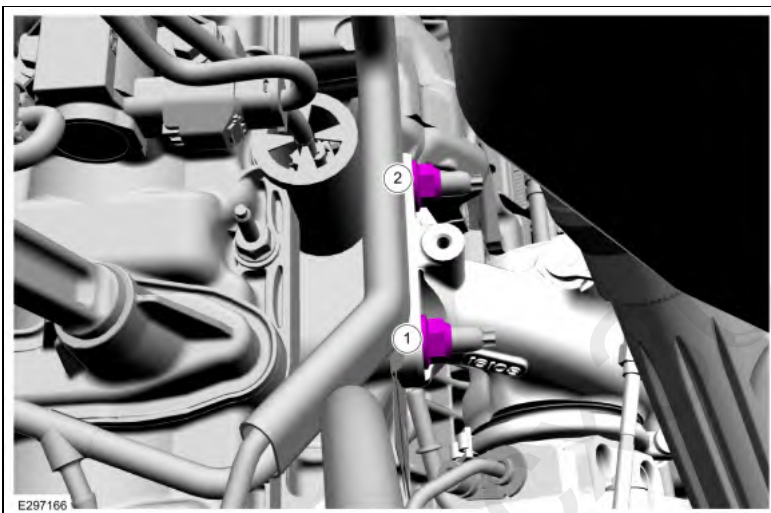
7.

1. Install the front turbocharger stud.
2. Tighten the turbocharger studs.

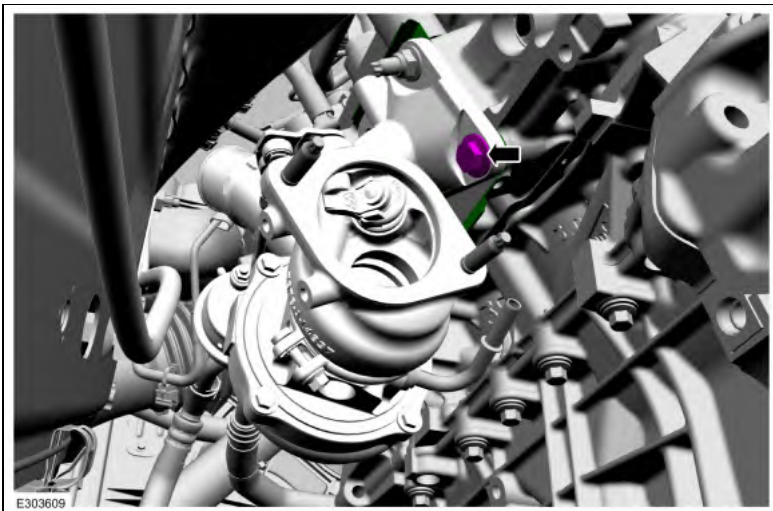
Torque: 106 lb.in (12 Nm)



8. Loosely install the turbocharger nuts.

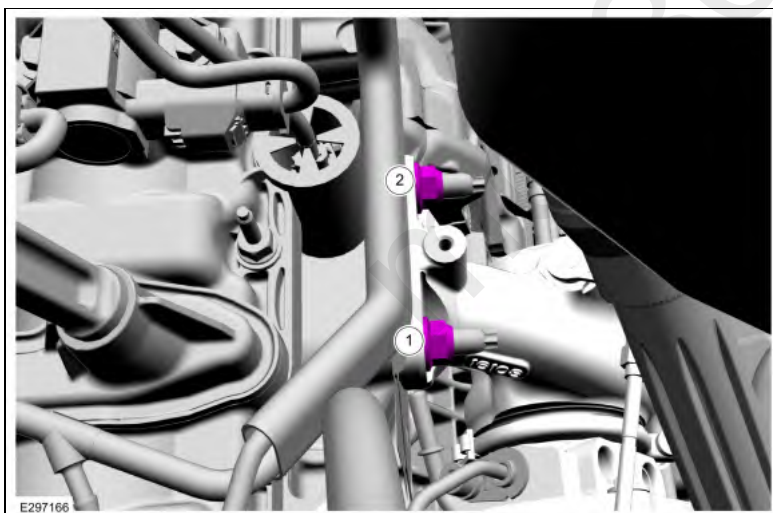


9. Tighten the turbocharger bolt.
Torque: 44 lb.ft (60 Nm)

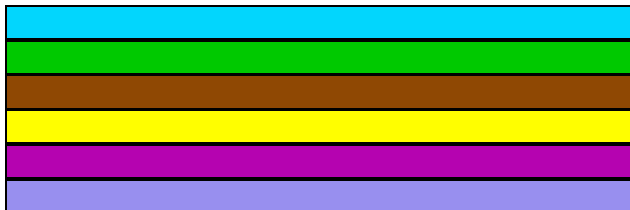
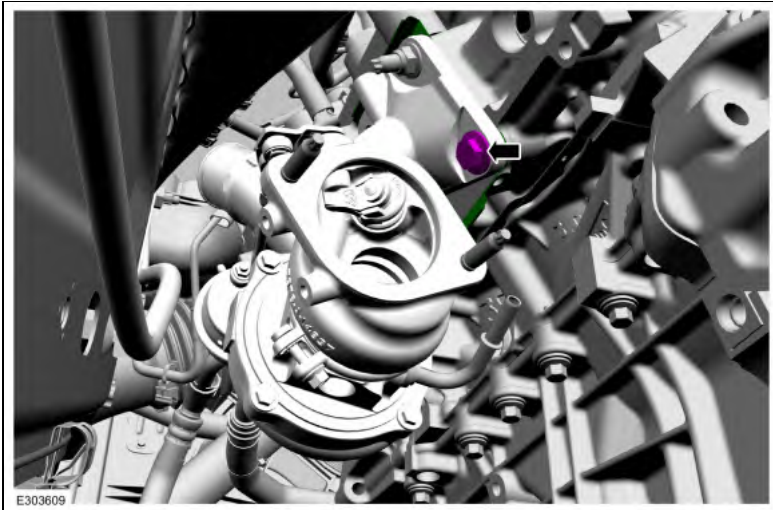


A horizontal bar chart consisting of six equally long, stacked rectangular segments. From top to bottom, the colors are cyan, green, brown, yellow, purple, and light blue. Each segment is outlined in black. A faint, large, light-gray watermark is visible across the center of the chart.

10.
 1. Tighten the turbocharger nut.
Torque: 27 lb.ft (37 Nm)
 2. Tighten the turbocharger nut.
Torque: 44 lb.ft (60 Nm)

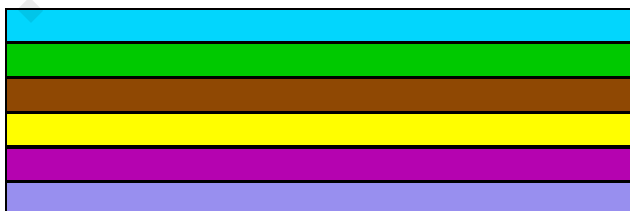
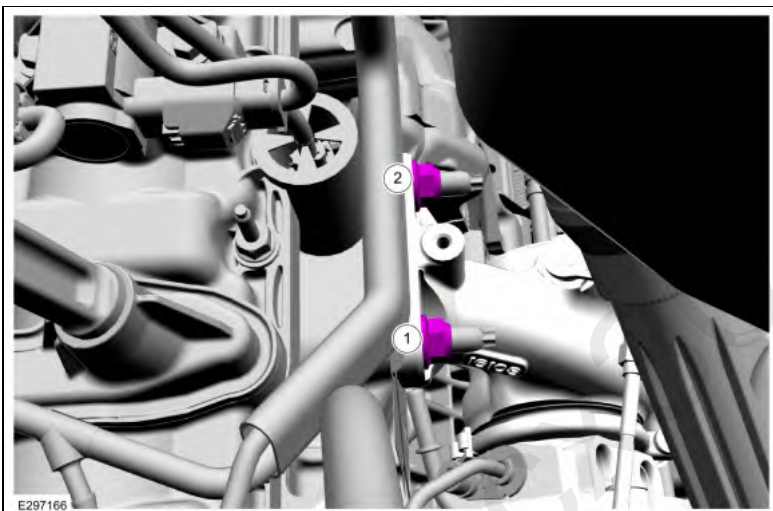


11. Re-tighten the turbocharger bolt.
Torque: 44 lb.ft (60 Nm)

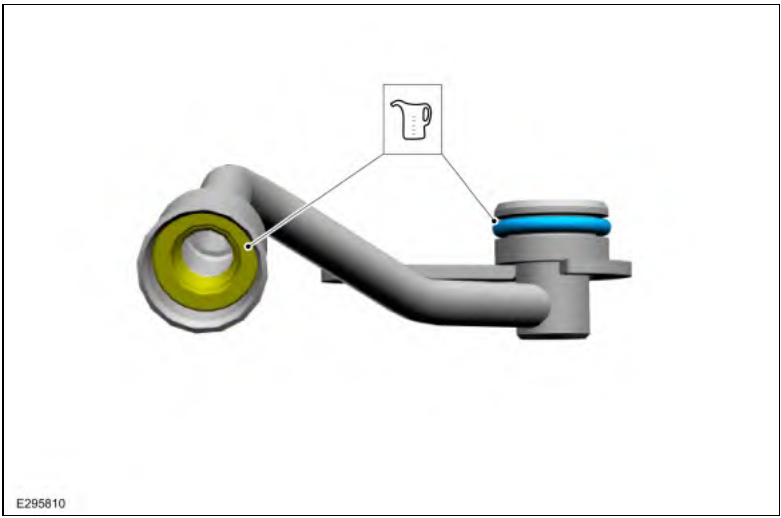


12.

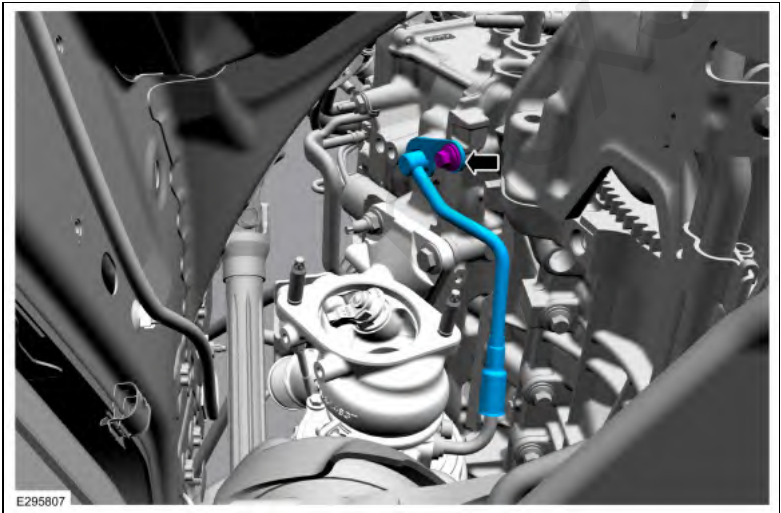
1. Re-tighten the turbocharger nut
Torque: 27 lb.ft (37 Nm)
2. Re-tighten the turbocharger nuts.
Torque: 44 lb.ft (60 Nm)



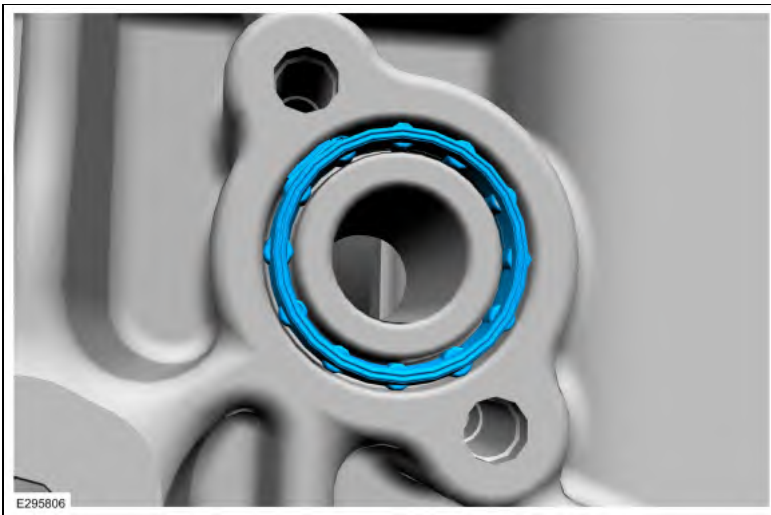
13. Install a new outer turbocharger coolant supply tube O-ring seal. Lubricate the O-ring seal and the rubber gasket with clean engine coolant.
Refer to: Specifications (303-03B Engine Cooling - 3.0L EcoBoost, Specifications).



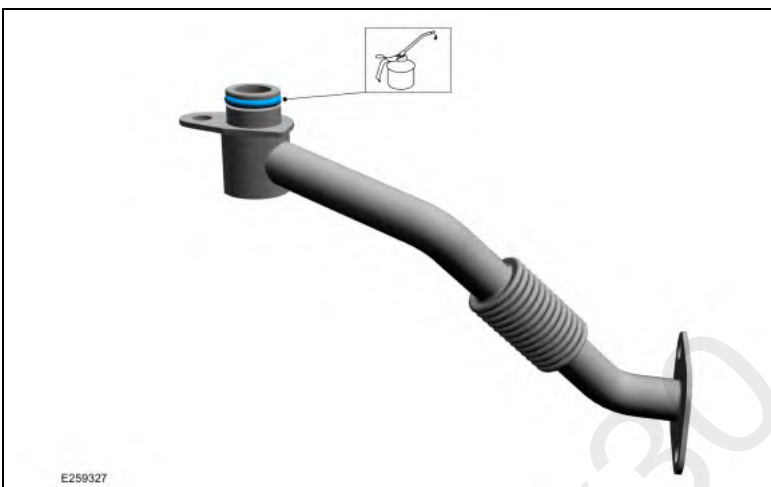
14. **NOTICE:** Use brake cleaner and a nylon brush to clean. Do not use a metal brush, damage to sealing area will result in leaks.
- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger tube to engine O-ring bore. Inspect 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)



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

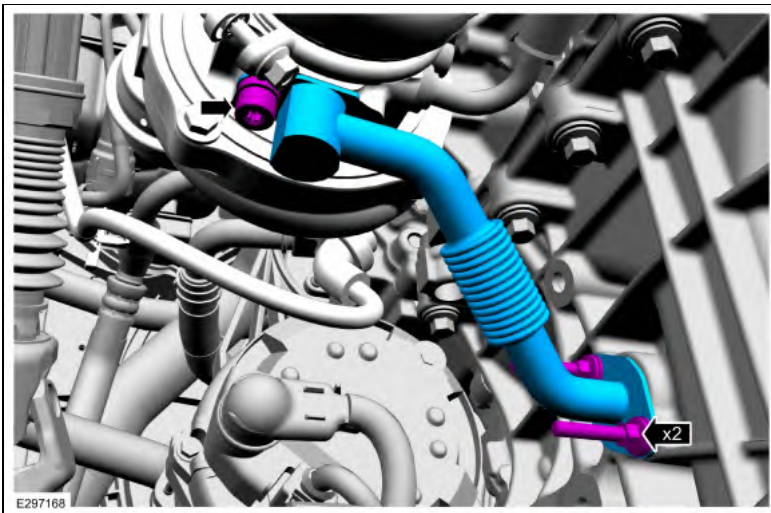


16. Install a new turbocharger oil return tube O-ring seal, then lubricate with clean engine oil.
Refer to: Specifications (303-01B Engine - 3.0L EcoBoost, Specifications).

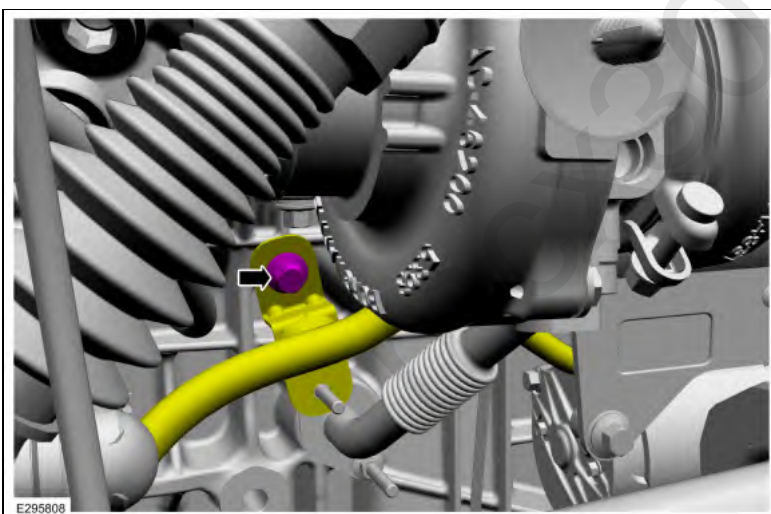


17. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

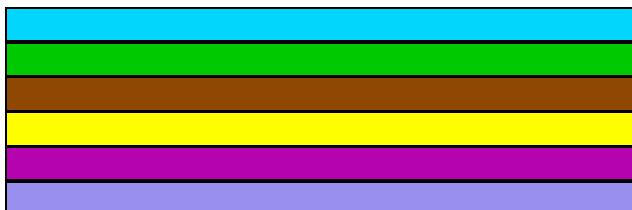
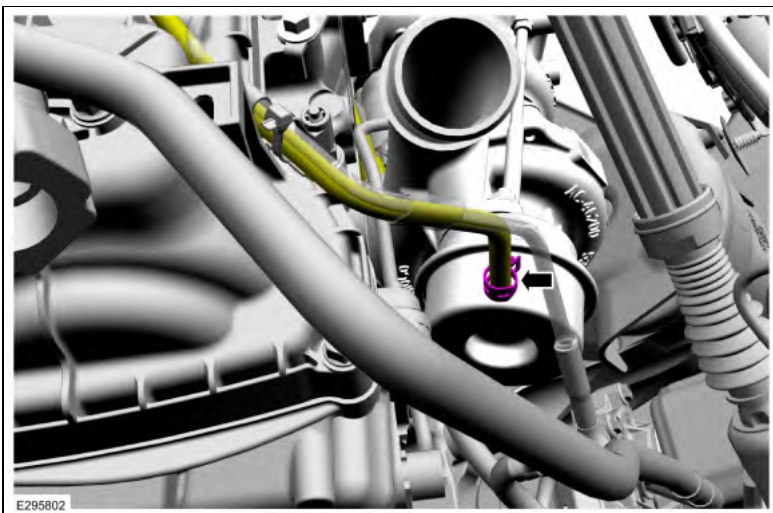
- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges.
1. Install the turbocharger oil return tube, then install and tighten the turbocharger oil return tube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



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



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



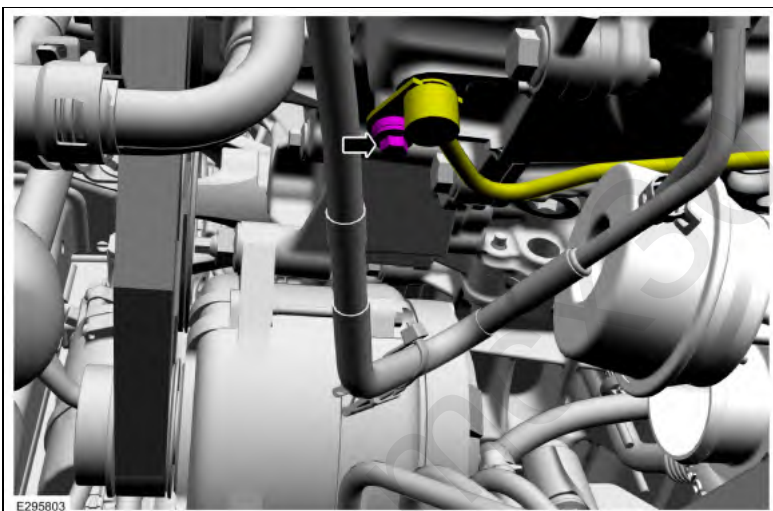
20. NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.

- 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.

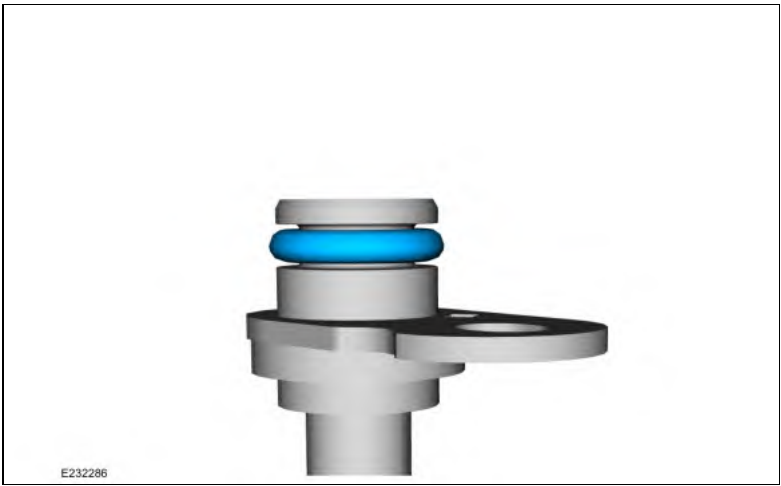
1. Install the turbocharger oil supply tube, then install and tighten the oil supply tube bolt.

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

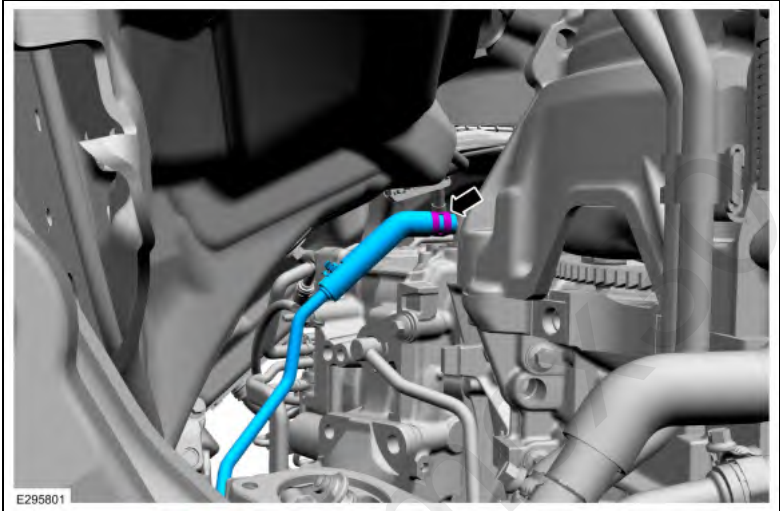
Torque: 89 lb.in (10 Nm)



21. 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).

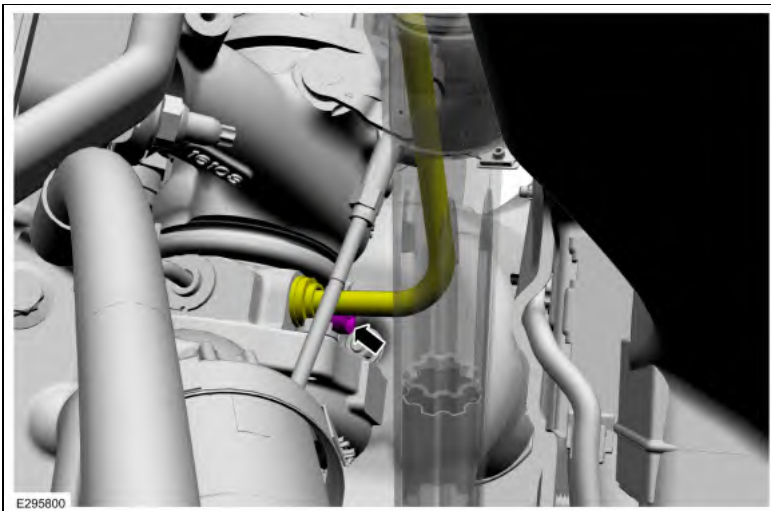


22. Install and connect the turbocharger coolant return tube and clamp.
Use the General Equipment: Hose Clamp Remover/Installer

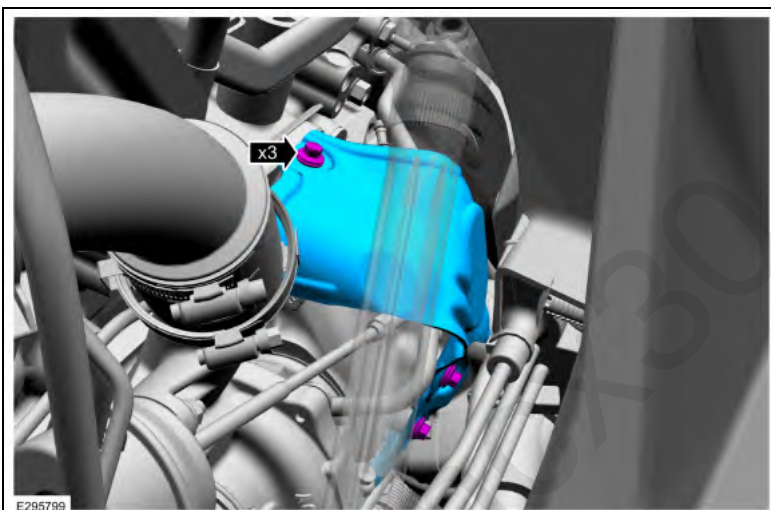


23. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

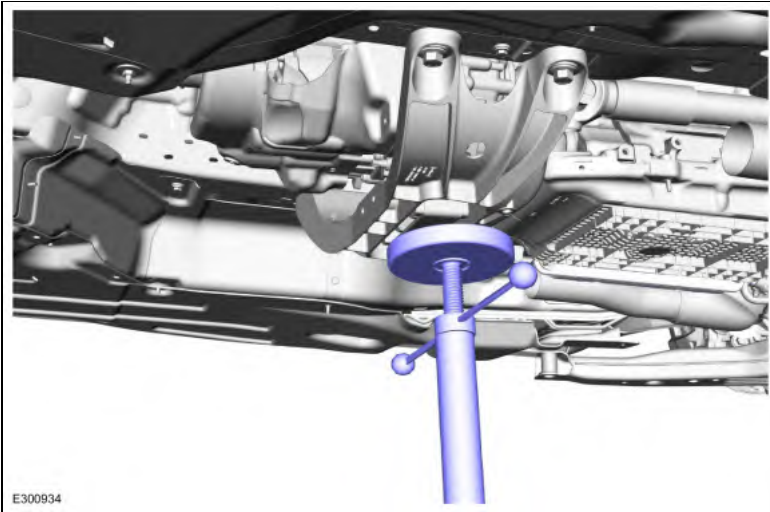
- Carefully use a nylon brush to remove the old O-ring residue and use brake cleaner to rinse the O-ring residue out of the turbocharger O-ring bore. Inspect the area for deep scratches and gouges. Install new components if needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
- 1.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



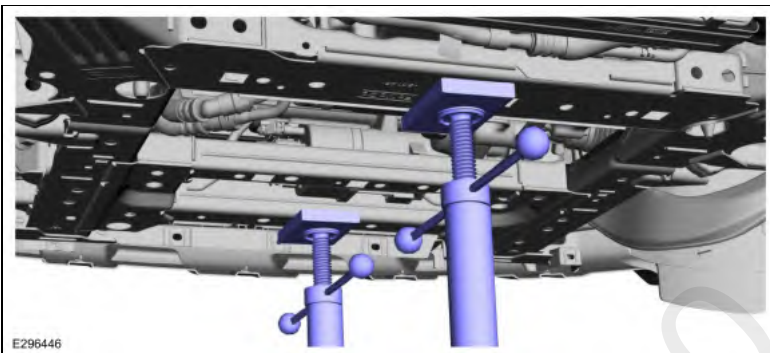
24. Install the turbocharger heat shield, then install and tighten the heat shield bolts.
Torque: 89 lb.in (10 Nm)



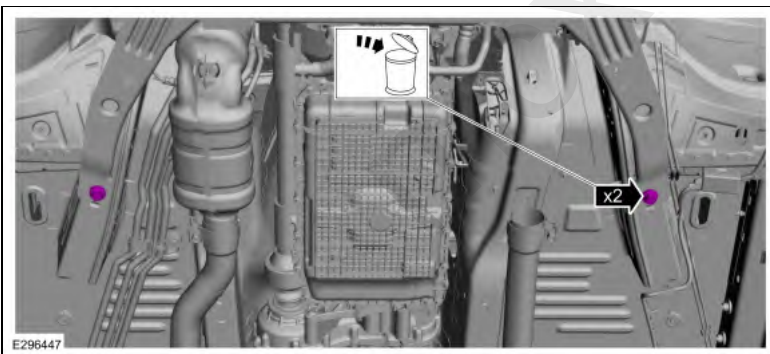
25. Install the left charge air cooler intake pipe.
 Refer to: Charge Air Cooler (CAC) Intake Pipe (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
26. Install the air cleaner.
 Refer to: Air Cleaner (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
27. Install the air cleaner outlet pipe LH.
 Refer to: Air Cleaner Outlet Pipe LH (303-12B Intake Air Distribution and Filtering - 3.0L EcoBoost, Removal and Installation).
28. Position an adjustable jack stand under the transmission crossmember.



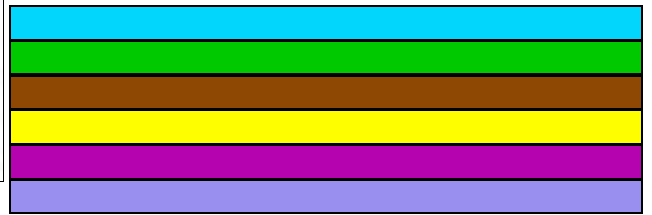
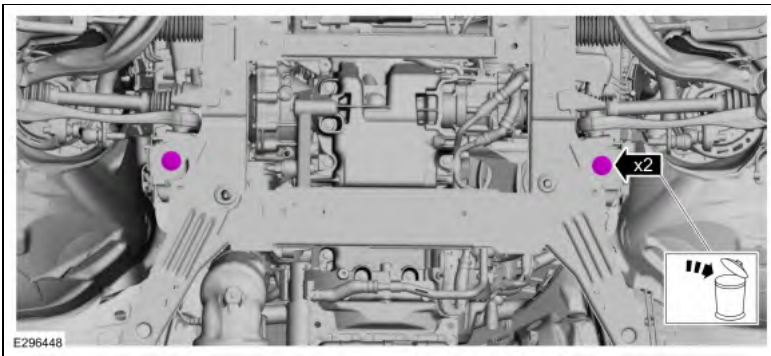
29. Support the front and rear of the subframe with adjustable jack stands.



- 30.
- Remove the rear subframe bolts.
 - Discard the bolts.

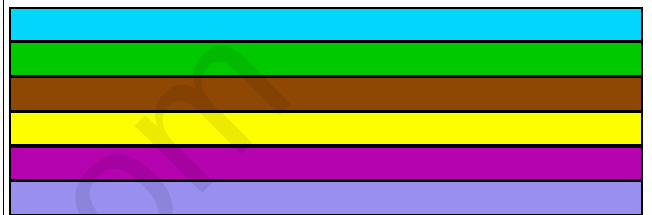
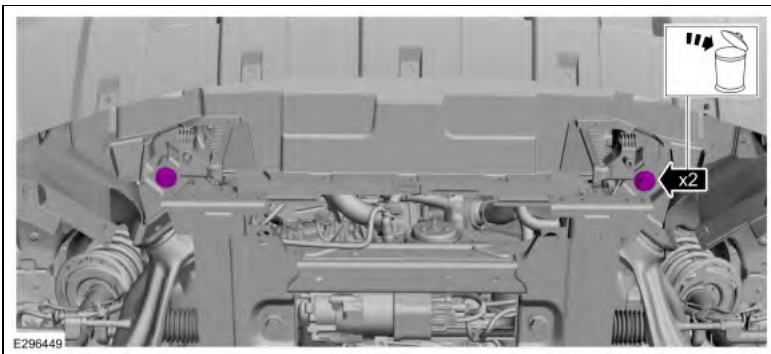


- 31.
- Remove the middle subframe bolts.
 - Discard the bolts.

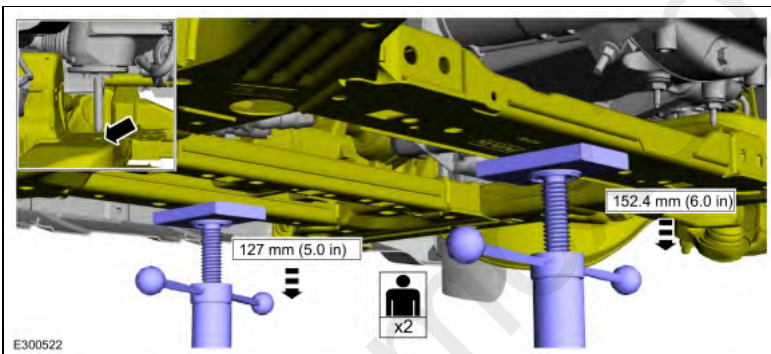


32.

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



33. 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.



34. Install the left engine mount.
Refer to: Engine Mount LH (303-01B Engine - 3.0L EcoBoost, Removal and Installation).
35. Fill the cooling system.
Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03B Engine Cooling - 3.0L EcoBoost, General Procedures).
36. Check and top off the engine oil level as needed.
Refer to: Specifications (303-01C Engine - 3.3L Duratec-V6, Specifications).

Turbocharger RH

Special Tool(s) / General Equipment

Hose Clamp Remover/Installer

Materials

Name	Specification
Motorcraft® Metal Brake Parts Cleaner - PM-4-A, PM-4-B	-

Removal

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

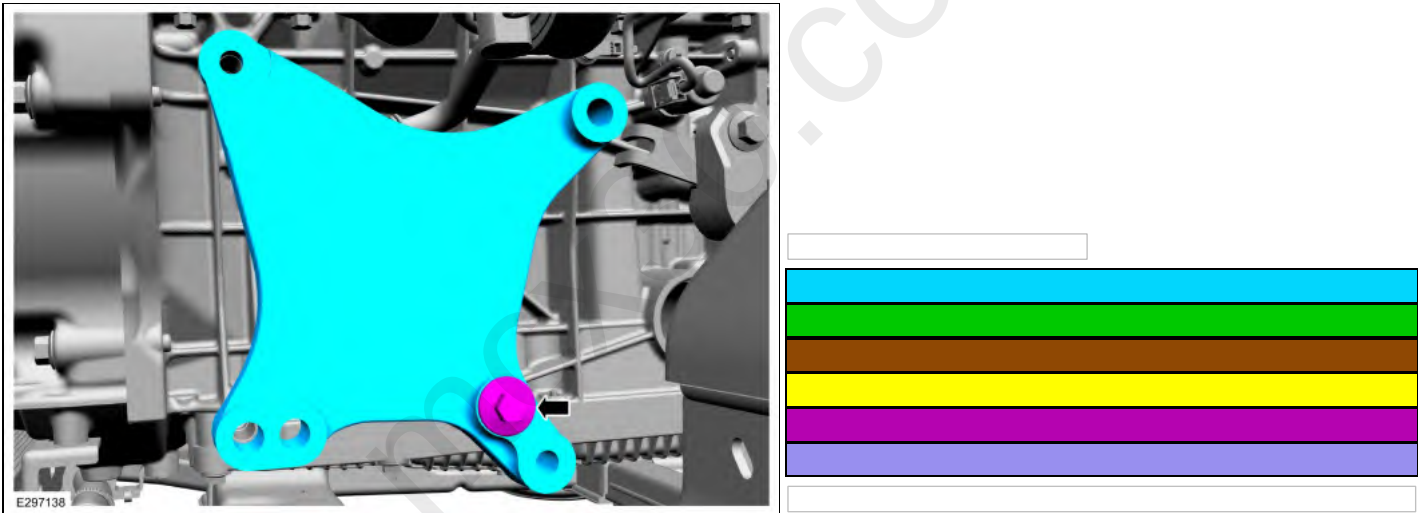
NOTICE: Special attention needs to be given to the sealing ports for the oil feed, the oil drain, and the coolant lines, on turbocharged engines. The sealing ports must be totally clean and free from O-ring residue, have no damage to the sealing surface and the lines to ensure that there are no leaks or repeat repairs.

All vehicles

1. Remove the right engine mount.
Refer to: Engine Mount RH (303-01B Engine - 3.0L EcoBoost, Removal and Installation).

LHD RWD

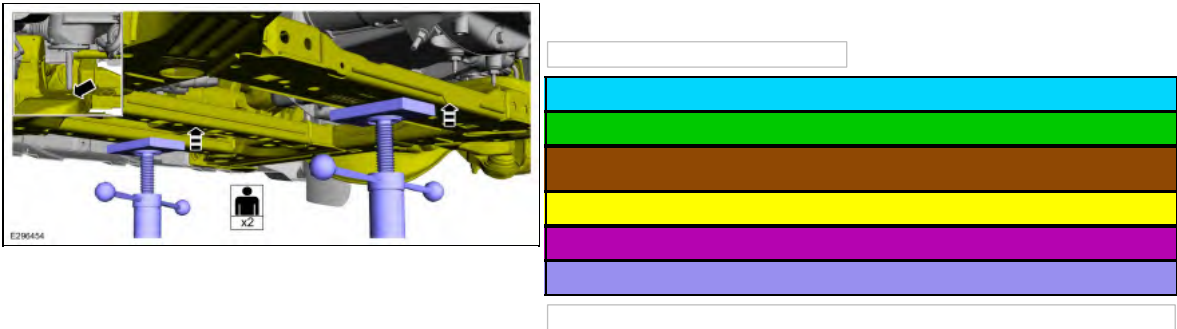
2. Remove the right engine mount spacer mounting bolts, then remove the spacer.



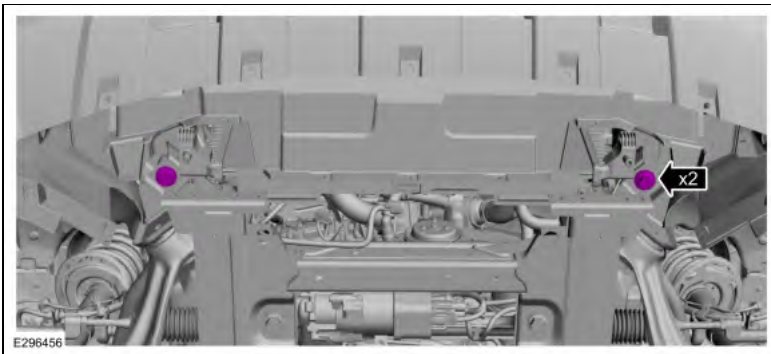
All vehicles

3. **NOTE:** Make sure that the left engine mount studs are in the subframe when raised.

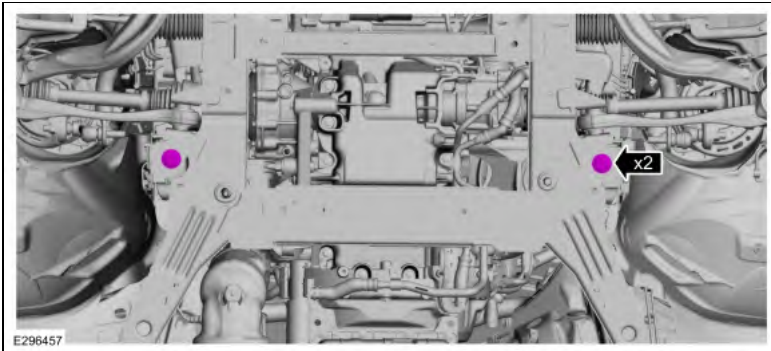
With the aid of an assistant, raise the front and rear jack stand evenly.



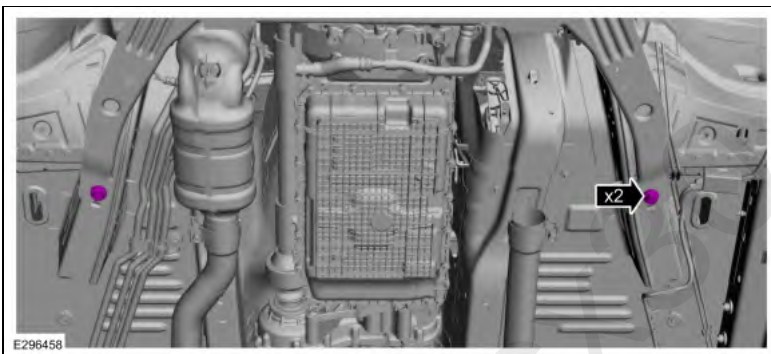
4. Install the old front subframe bolts.



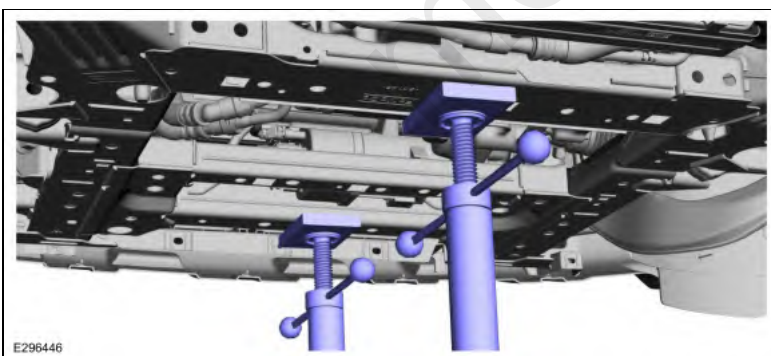
5. Install the old middle subframe bolts.



6. Install the old rear subframe bolts.



7. Remove adjustable jack stands.



8. Remove the adjustable jack stand.

