

303-04B Fuel Charging and Controls - Turbocharger - 2.3L EcoBoost  
(201kW/273PS)

2019 Ranger

Removal and Installation

Procedure revision date:  
12/5/2018

## Turbocharger

### Materials

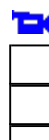
Name	Specification
Motorcraft® Silicone Brake Caliper Grease and Dielectric Compound XG-3-A	ESE-M1C171-A
Motorcraft® Metal Brake Parts Cleaner PM-4-A, PM-4-B	-

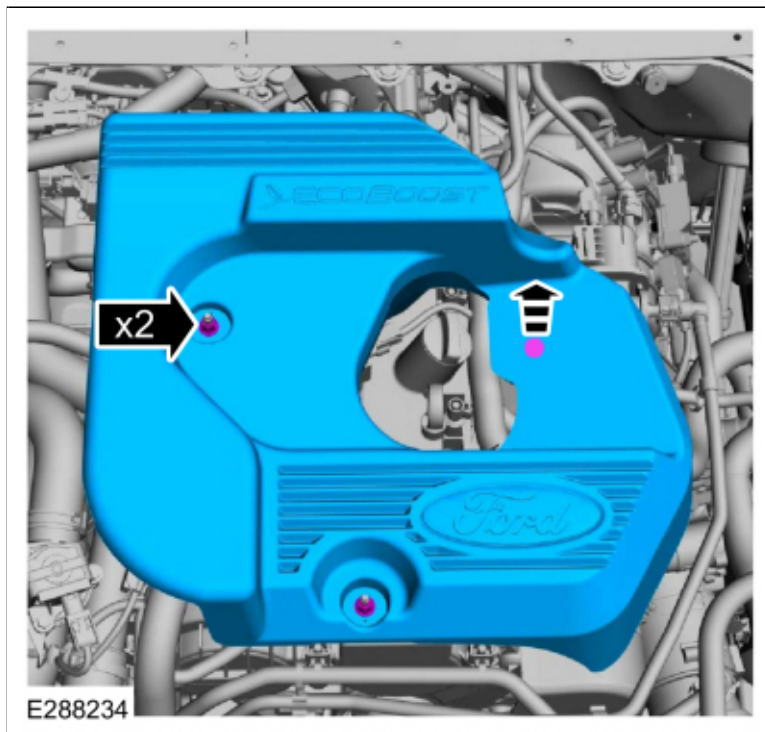
### Removal

**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 supply, the oil return, and the coolant tubes, 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 tubes to ensure that there are no leaks or repeat repairs.

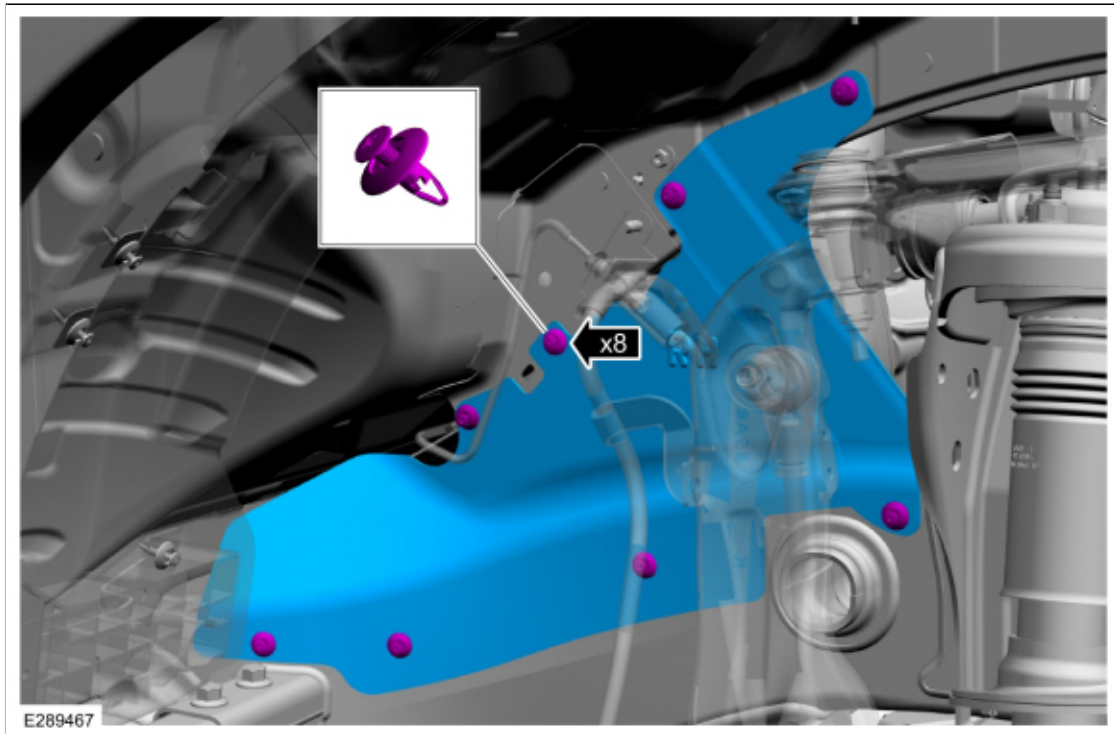
1. **NOTICE:** Do not pull the engine appearance cover forward or sideways to remove. Failure to press straight upward on the underside of the cover at the attachment points may result in damage to the cover or engine components.
  1. Remove the engine appearance cover nut.
  2. Place your hand under the engine appearance cover at each grommet location and push straight up to release each grommet from the studs.
  3. After all of the grommets have been released from the studs, remove the appearance cover from the engine.





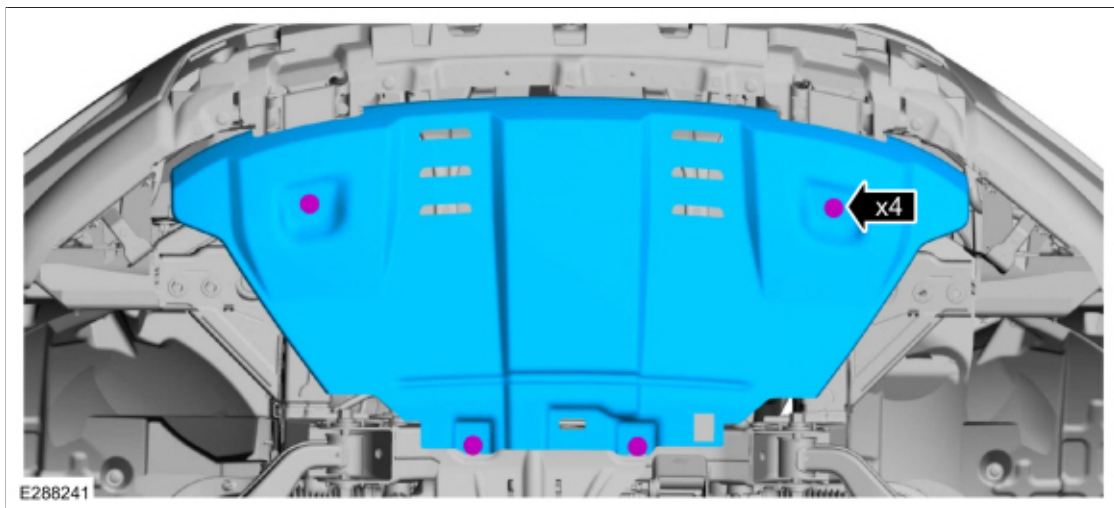
2. Remove the air cleaner outlet pipe.  
Refer to: [Air Cleaner Outlet Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
3. Remove the air cleaner.  
Refer to: [Air Cleaner](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
4. Remove the charge air cooler (CAC) intake pipe.  
Refer to: [Charge Air Cooler \(CAC\) Intake Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
5. Remove the right front wheel and tire.  
Refer to: [Wheel and Tire](#) (204-04A Wheels and Tires, Removal and Installation).
6. Remove the retainers and the right fender splash shield.



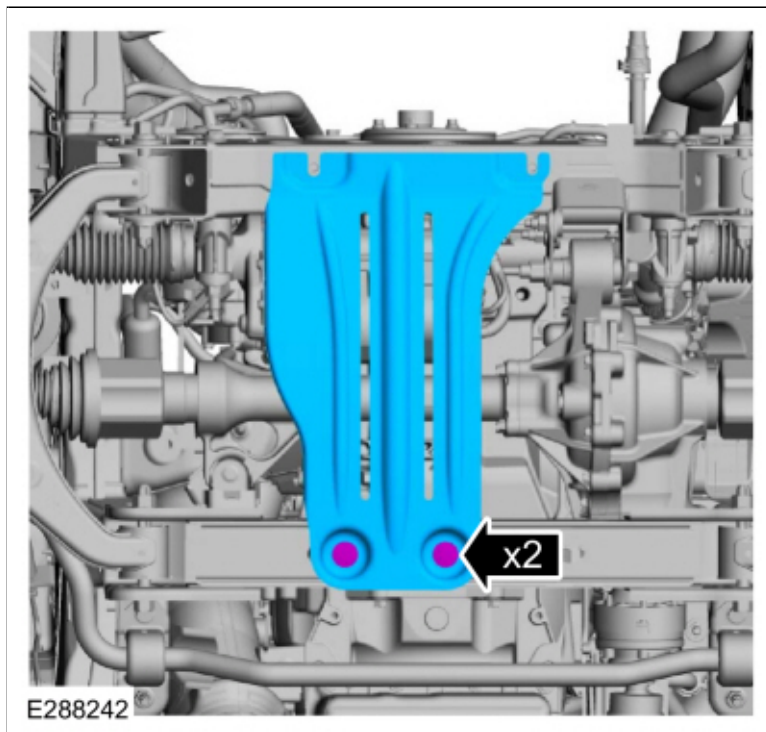


7. **NOTE:** Off road package shown, others are similar.

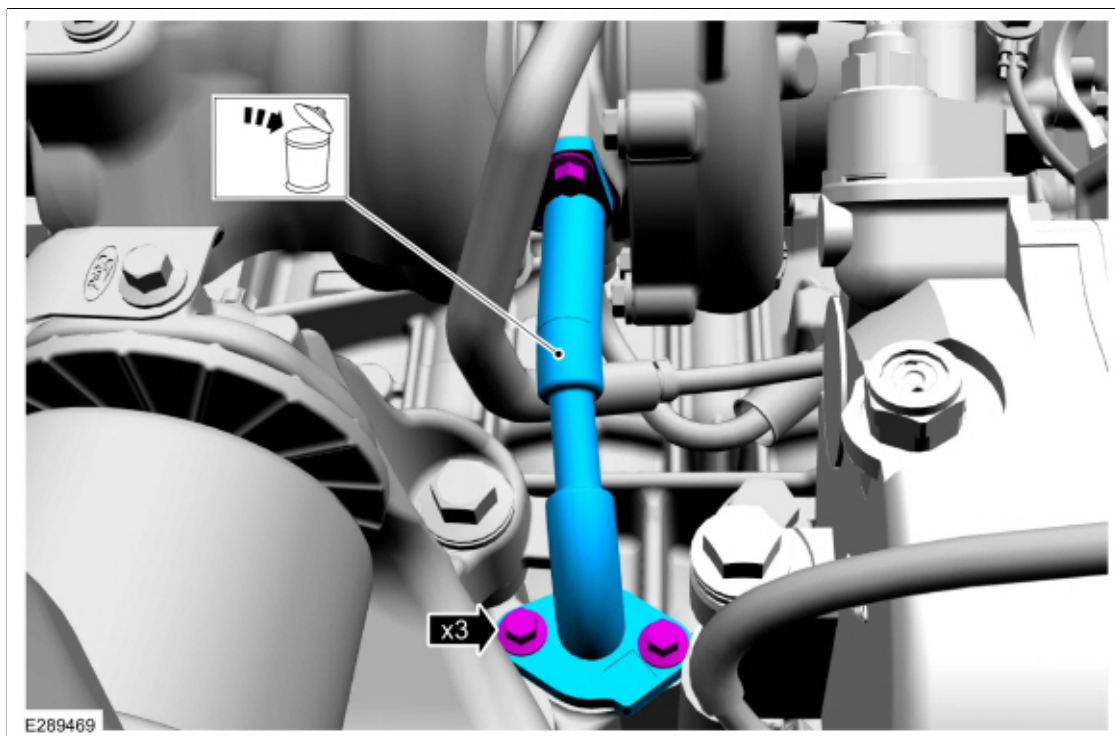
Remove the bolts and the front skid plate.



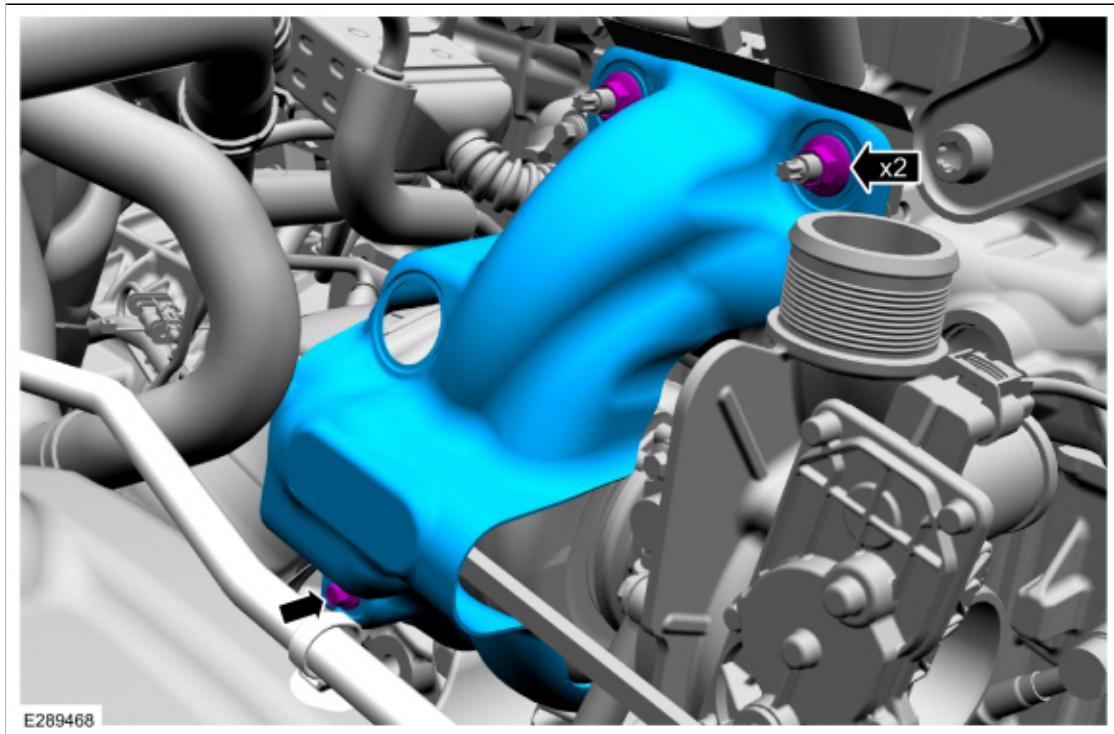
8. Remove the bolts and the rear skid plate.



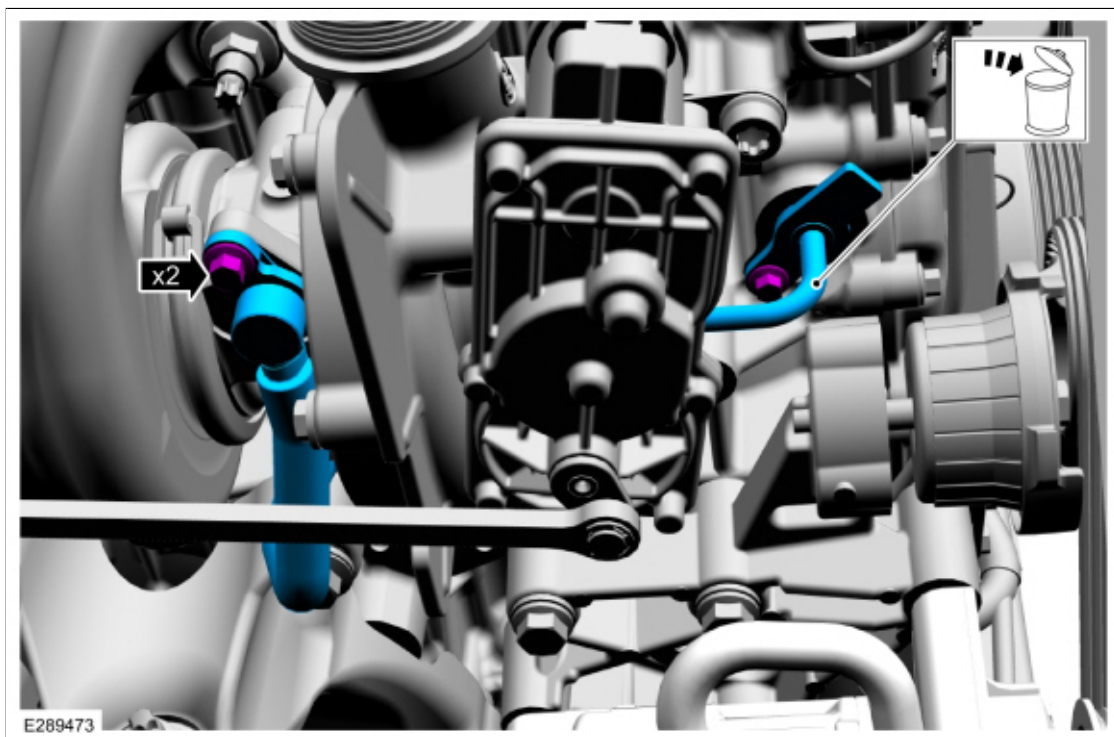
9. Remove the bolts, then remove and discard the turbocharger oil return tube.



10. Remove the turbocharger heat shield lower bolt, the upper nuts, then remove the heat shield.

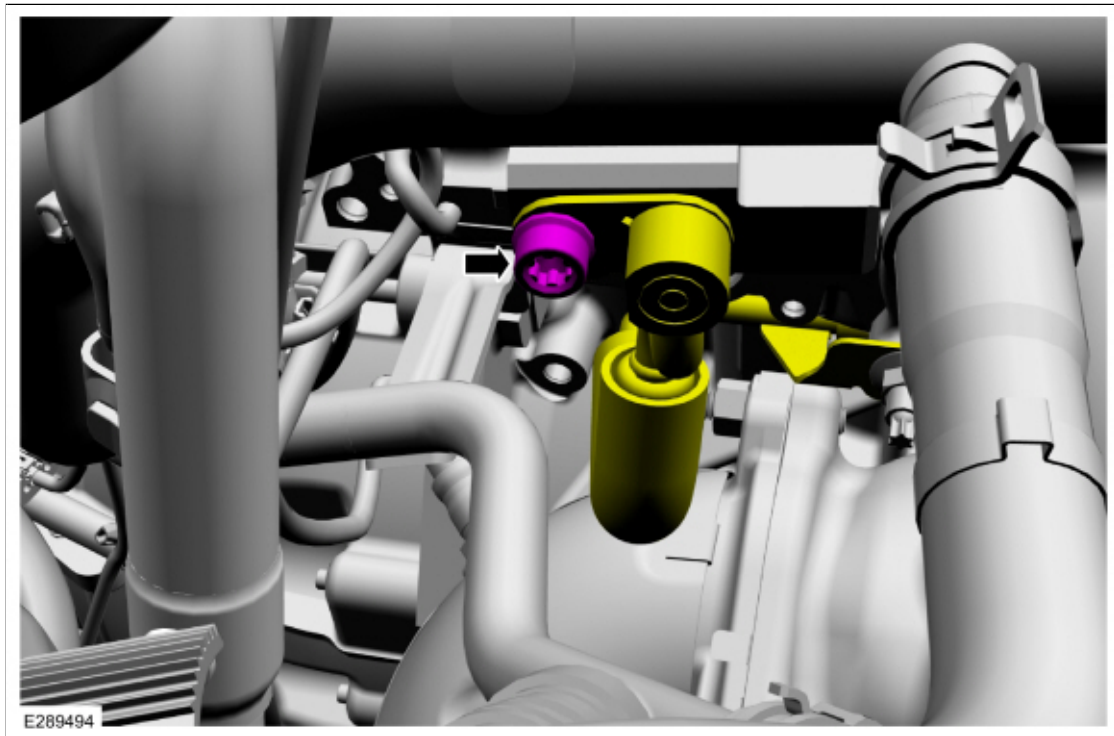


11. Remove the bolts, then remove and discard the turbocharger oil supply tube.



12. Remove the exhaust gas recirculation (EGR) cooler.  
Refer to: [Exhaust Gas Recirculation \(EGR\) Cooler](#) (303-08 Engine Emission Control - 2.3L EcoBoost (201kW/273PS), Removal and Installation).

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

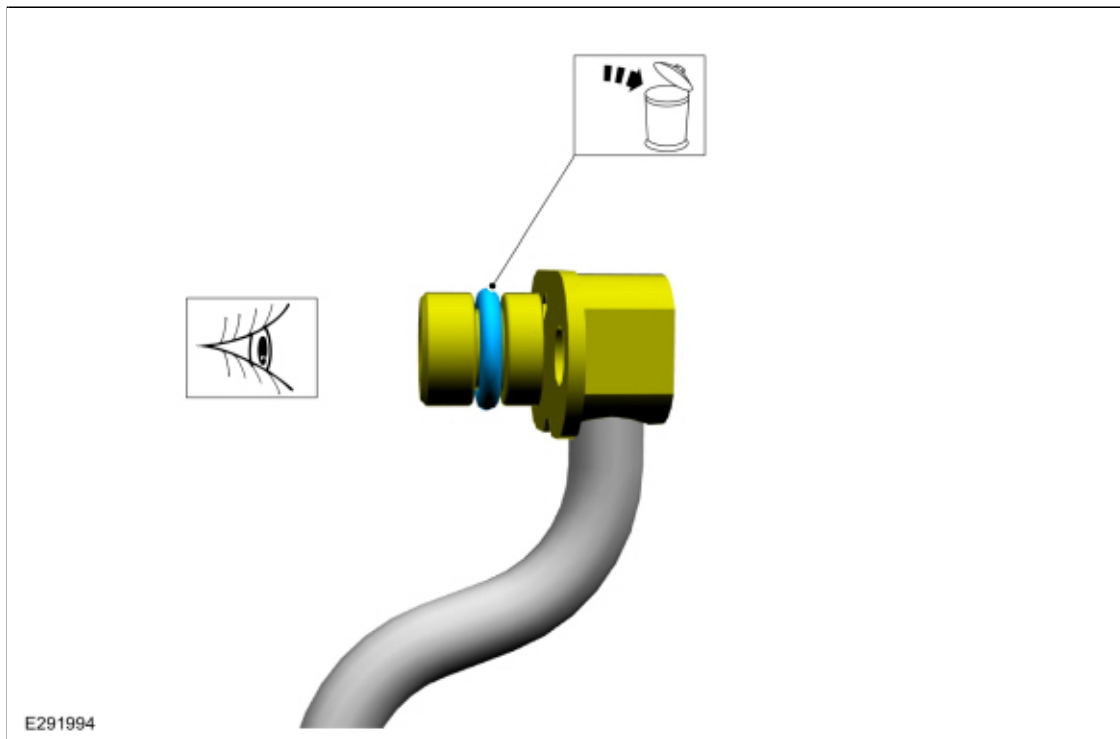


14.

1. Remove and discard the turbocharger coolant tube O-ring seal.
2. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

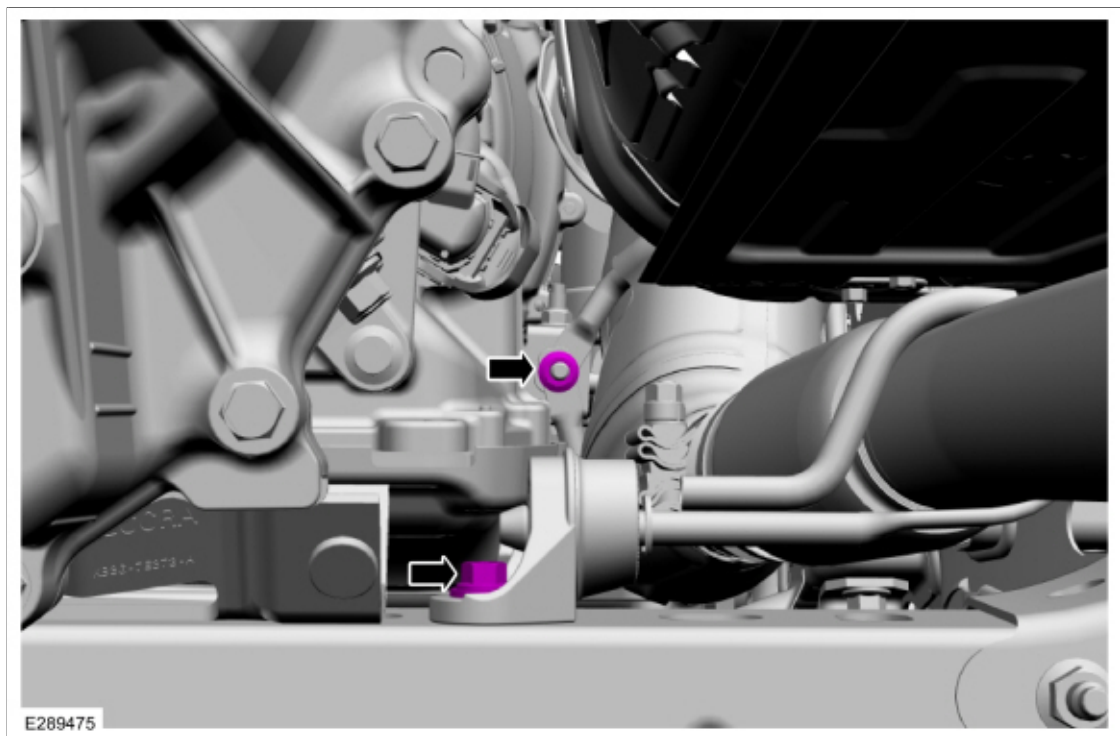
Use brake cleaner and a nylon brush to clean. Clean the turbocharger coolant tube sealing surfaces. Inspect the sealing surfaces for debris or damage and make sure the retaining bracket is not bent, check for squareness of the O-ring area. Install new components if needed.

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

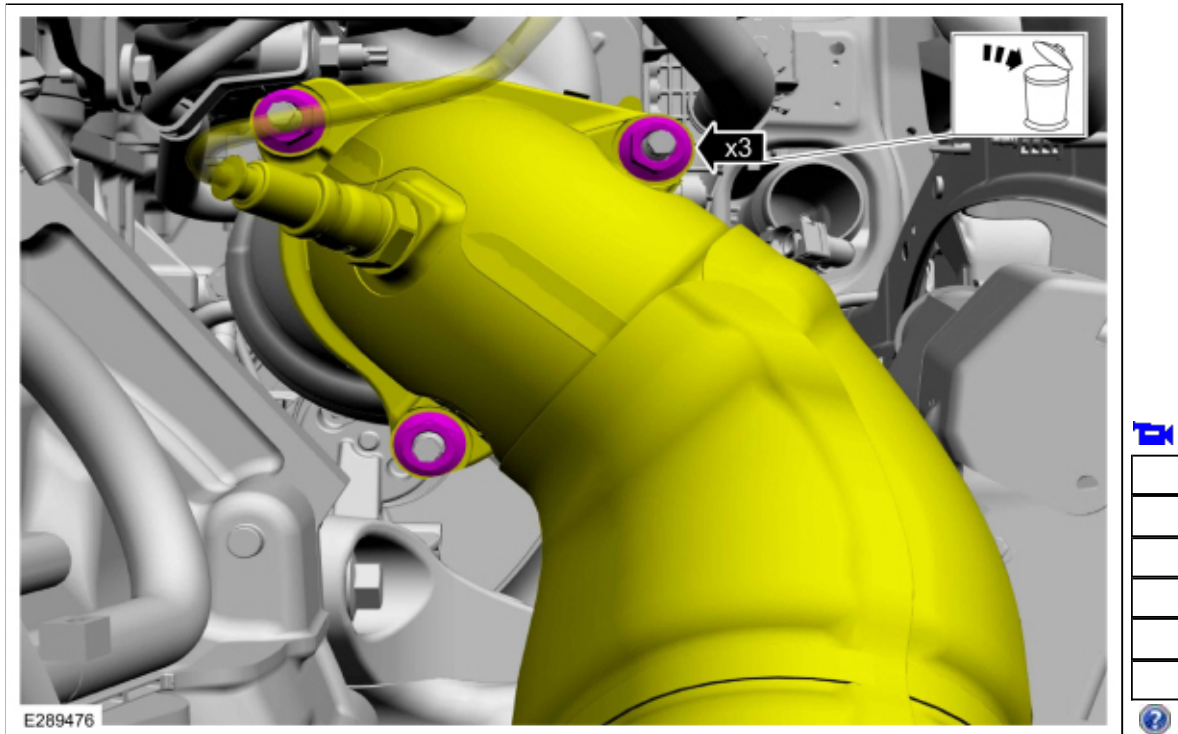


15.

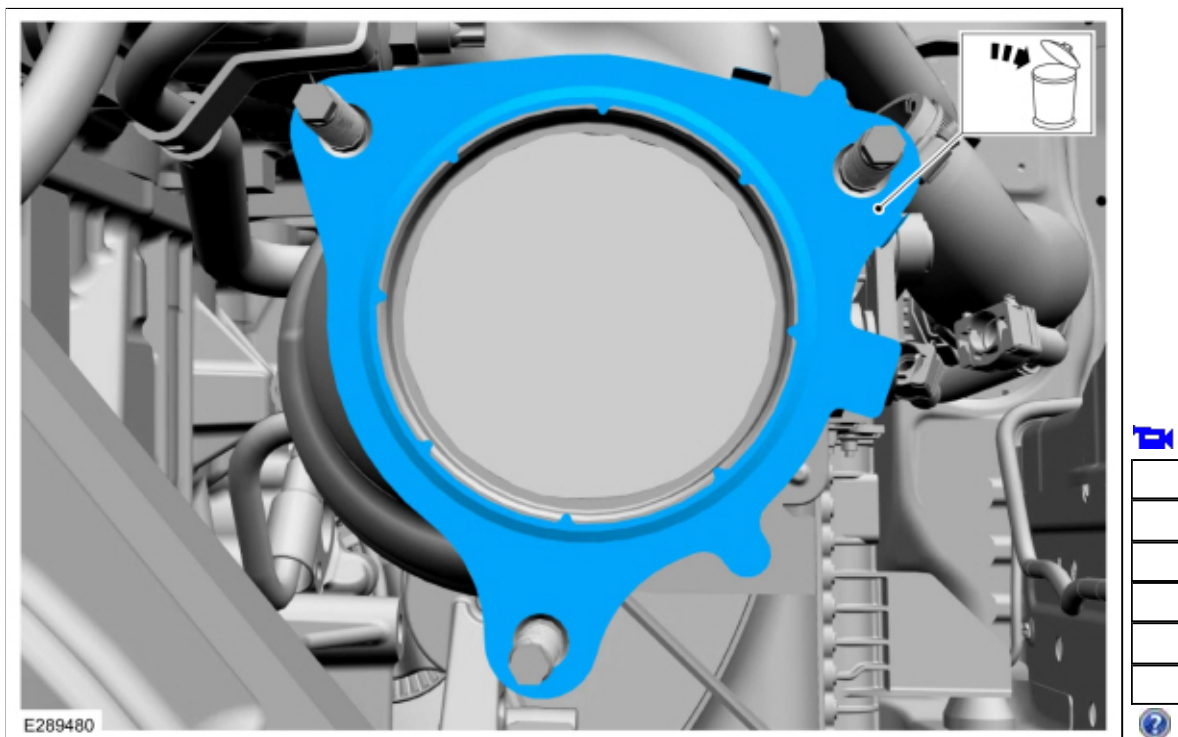
1. Remove the nut.
2. Remove the isolator hanger bracket bolt.



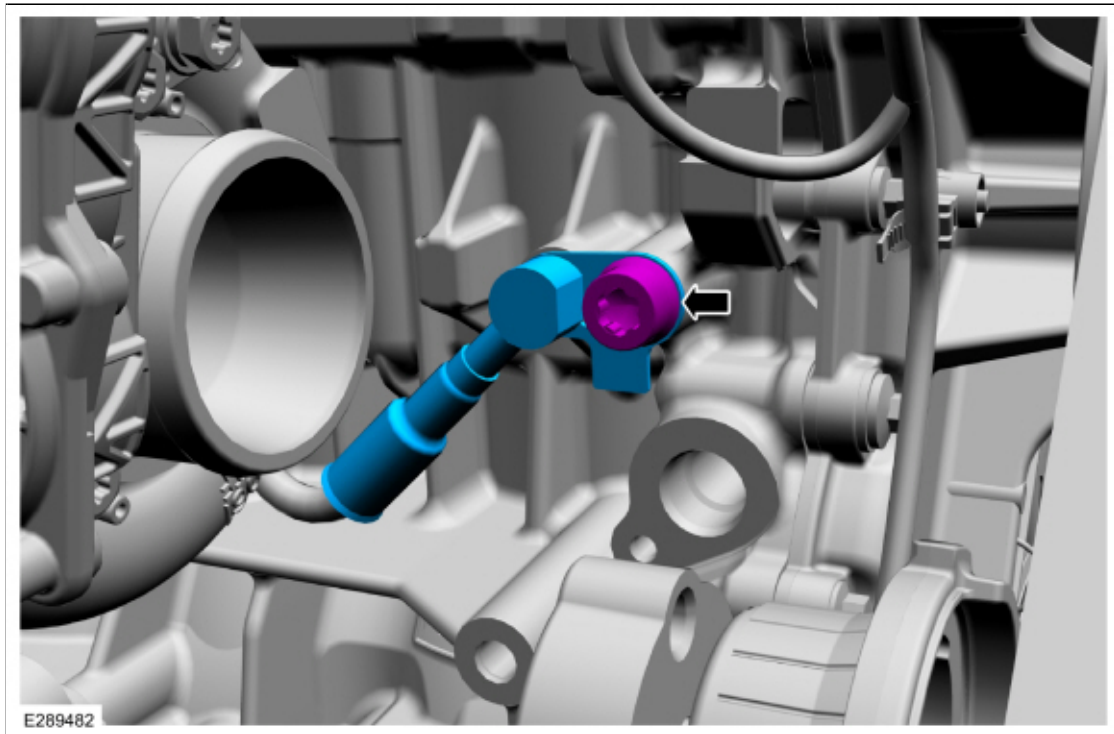
16. Remove and discard the catalytic converter nuts, then move the catalytic converter out of the way.



17. Remove and discard the gasket.



18. Remove the bolt, then remove the outer half of the turbocharger coolant supply tube.

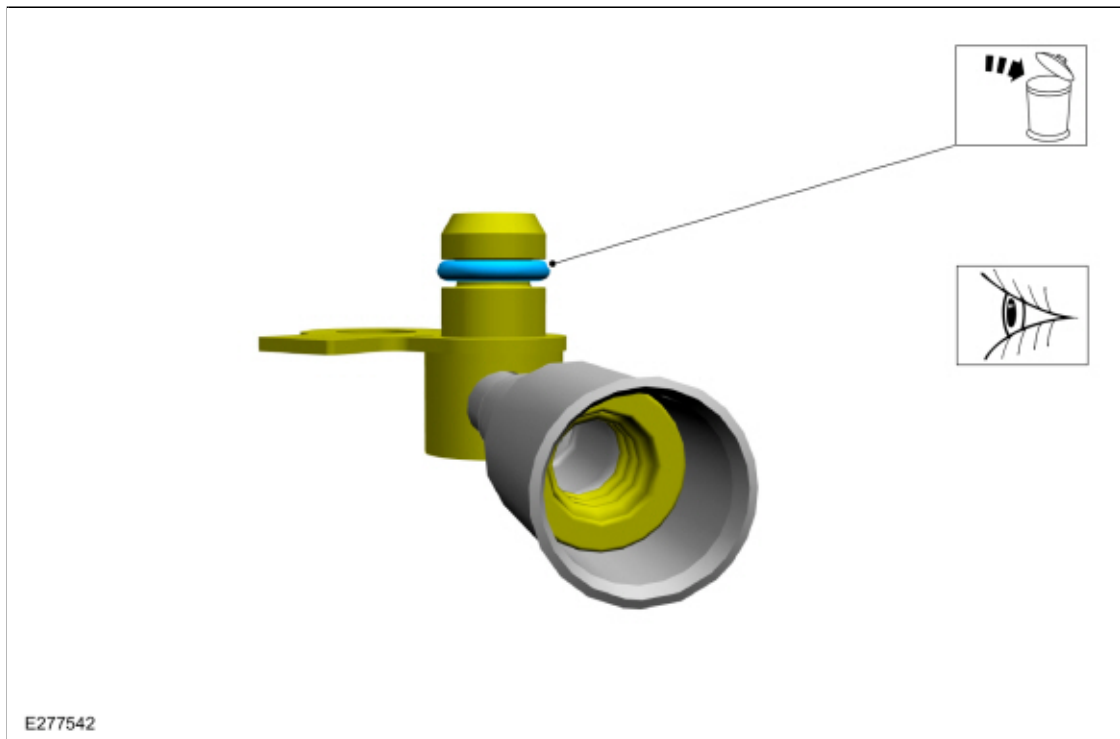


19.

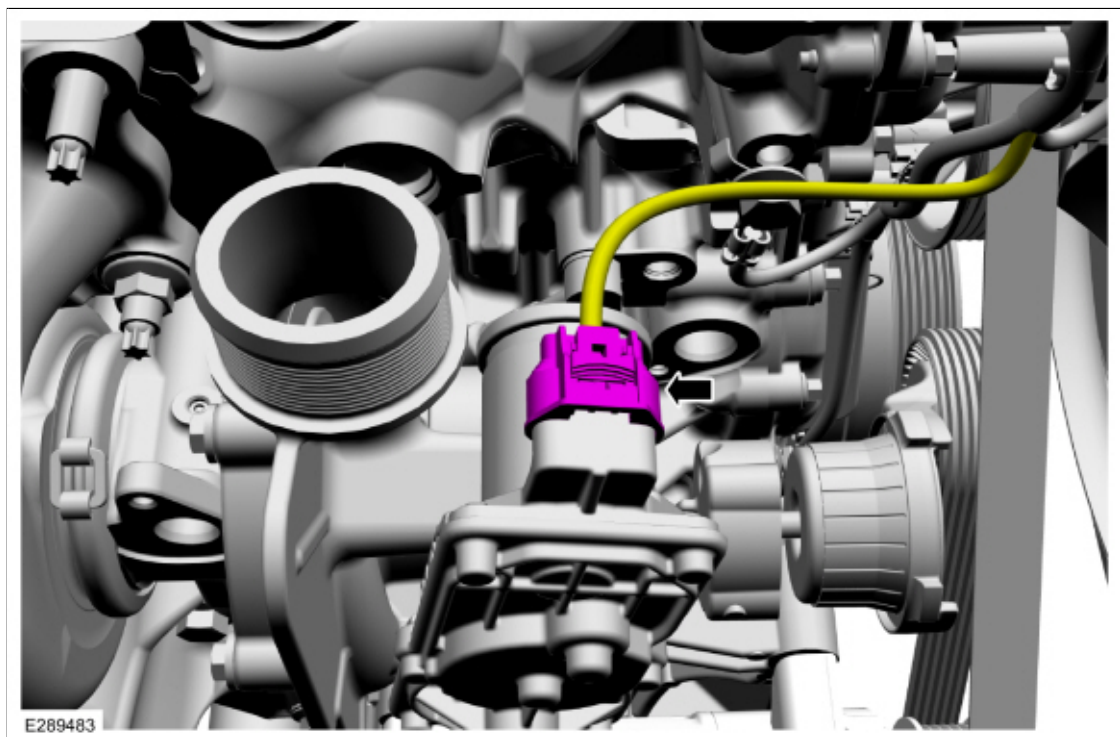
1. Remove and discard the turbocharger coolant tube O-ring seal.
2. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

Use brake cleaner and a nylon brush to clean. Clean the turbocharger coolant tube sealing surfaces. Inspect the sealing surfaces for debris or damage, make sure the retaining bracket is not bent, check for squareness of the O-ring area. Inspect the rubber gasket. Install new components if needed.

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

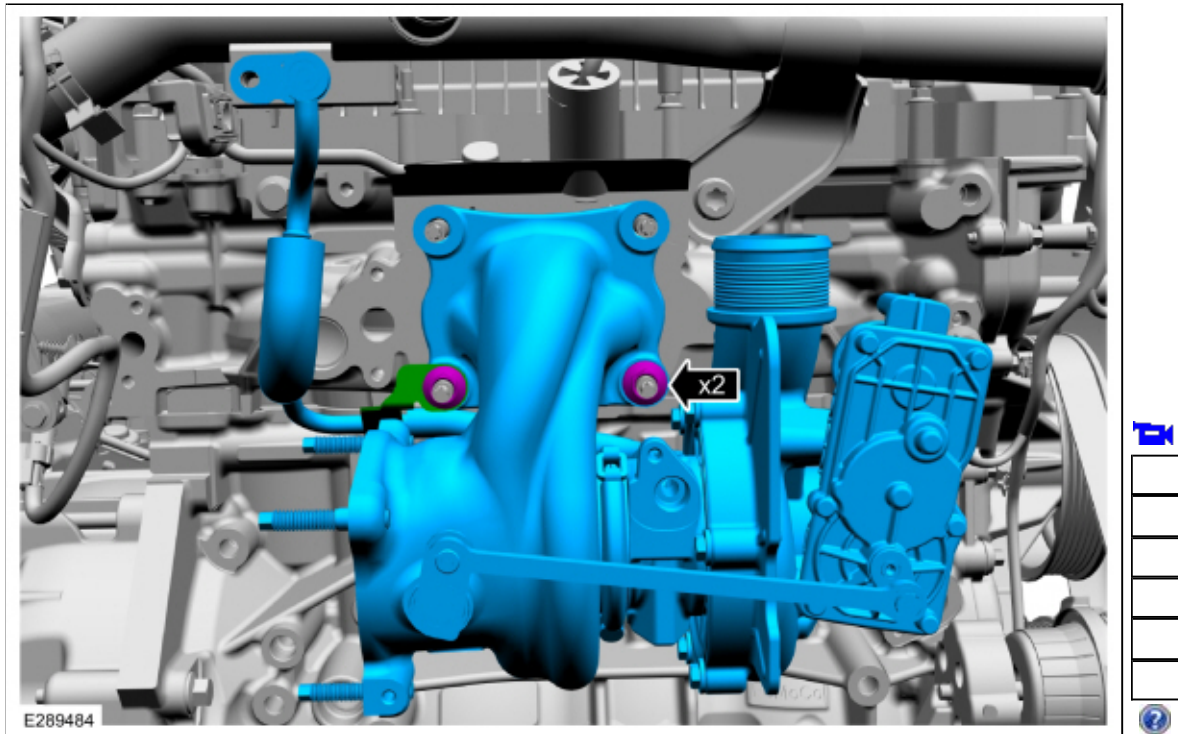


20. Disconnect the turbocharger electrical connector.

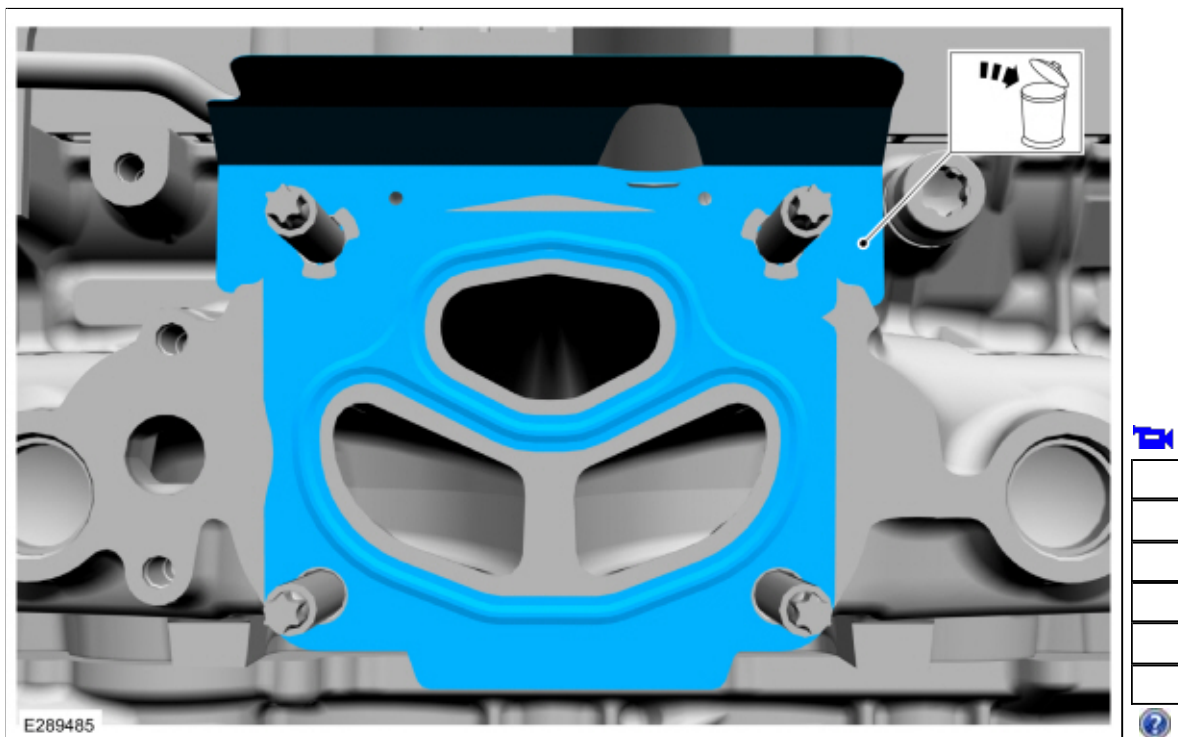


21. **NOTE:** The coolant tube bracket is retained by the left lower turbocharger stud and nut.

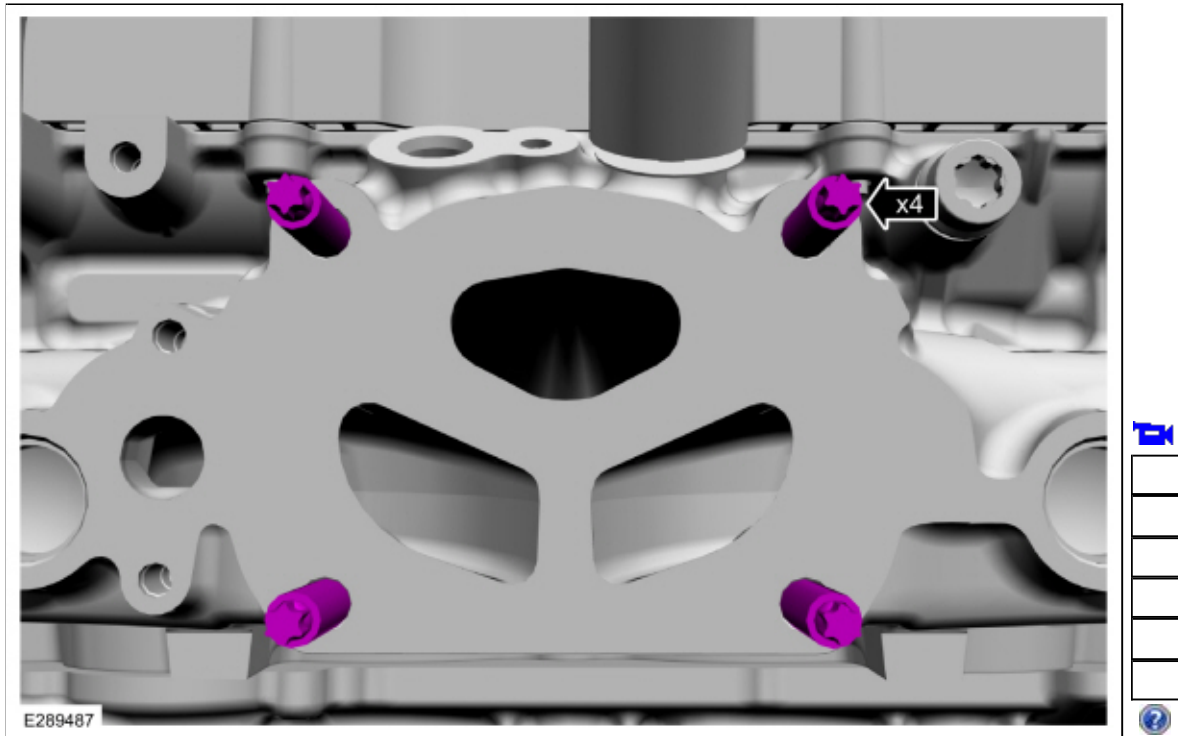
Remove the turbocharger lower mounting nuts, detach the coolant tube bracket, then remove the turbocharger.



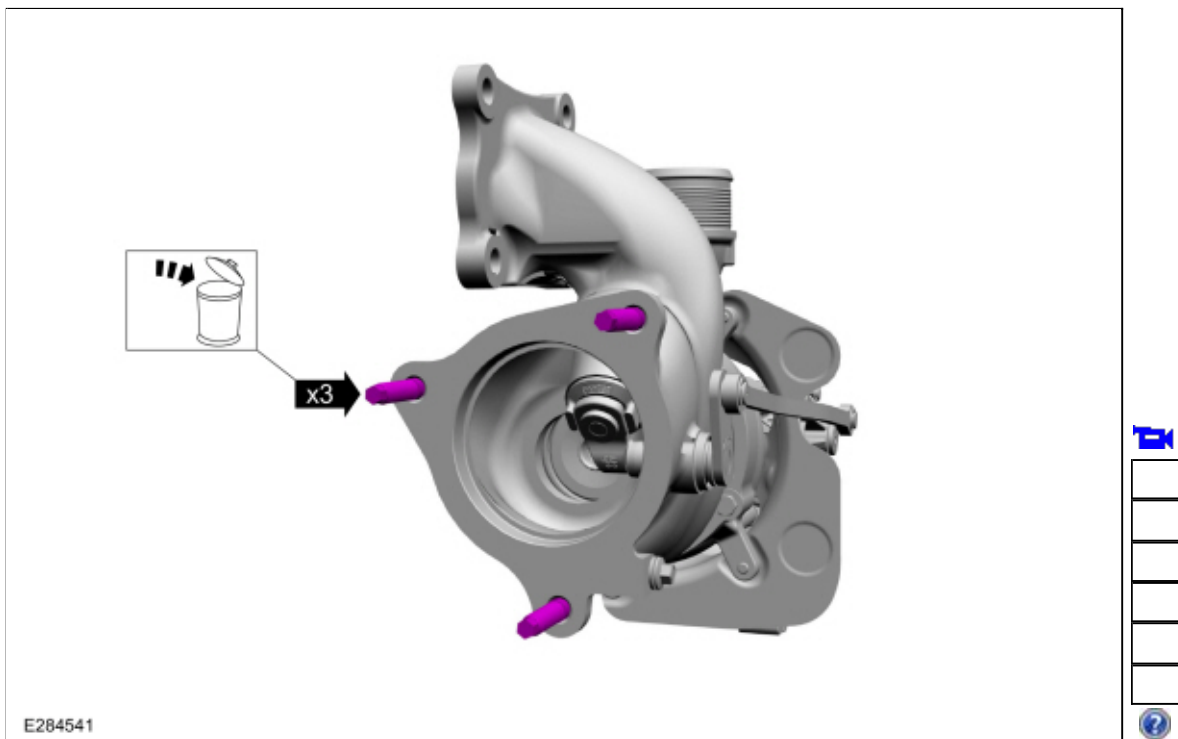
22. Remove and discard the turbocharger gasket.



23. Remove the turbocharger mounting studs, if they need to be removed.

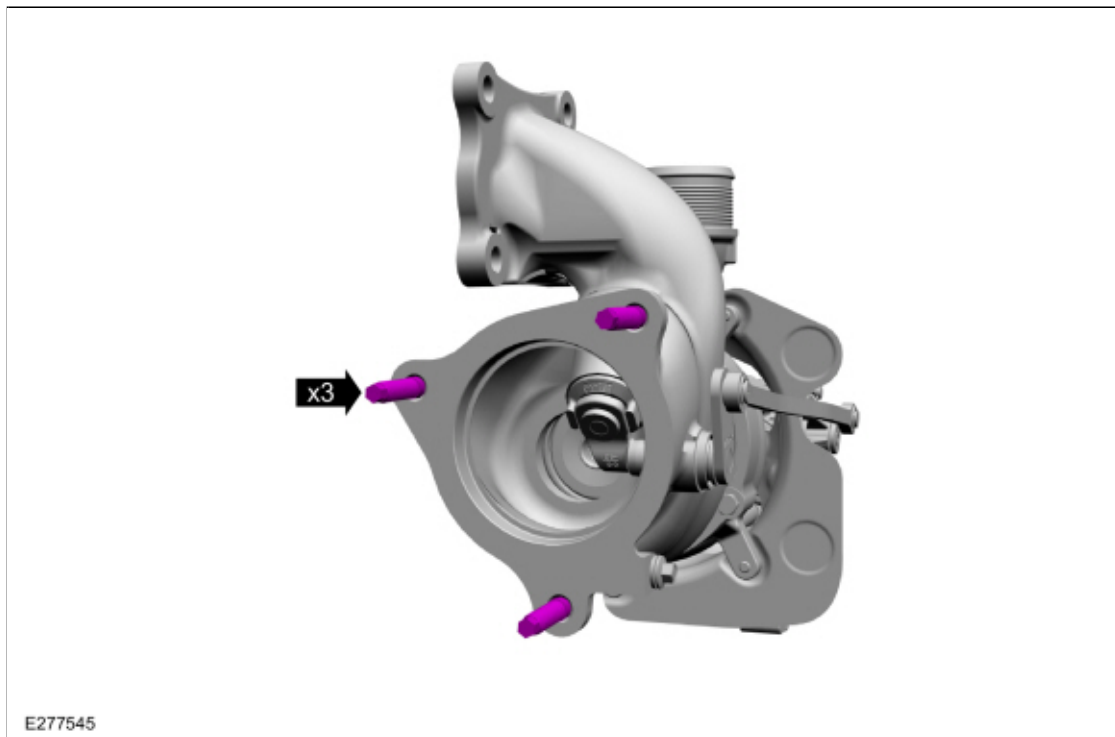


24. Remove and discard the turbocharger exhaust flange studs.

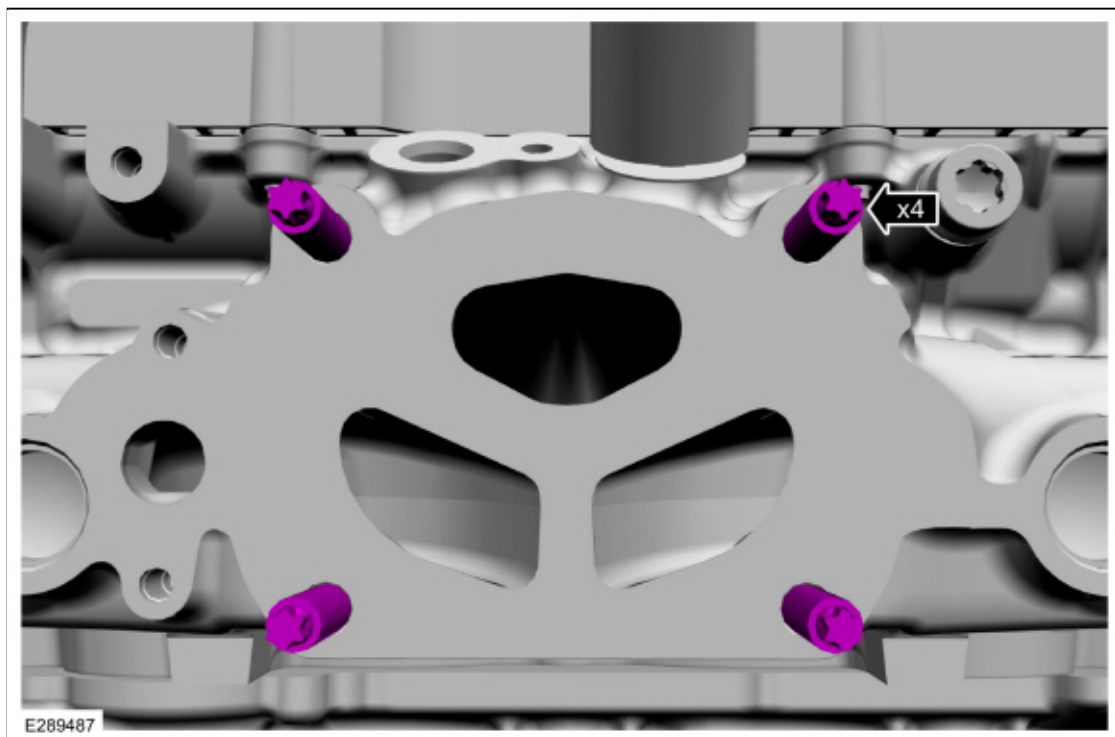


### Installation

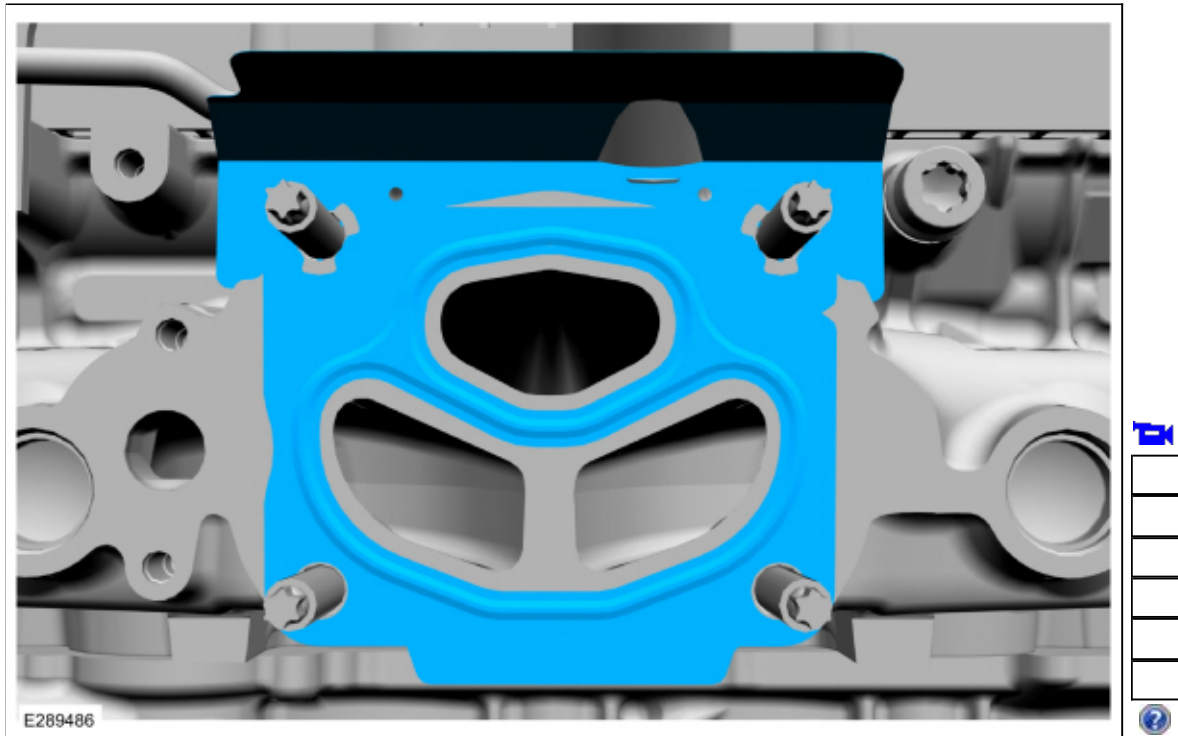
1. Install and tighten the turbocharger exhaust flange studs.  
*Torque: 30 lb.ft (40 Nm)*



2. If removed, install and tighten the turbocharger mounting studs.  
Torque: 159 lb.in (18 Nm)



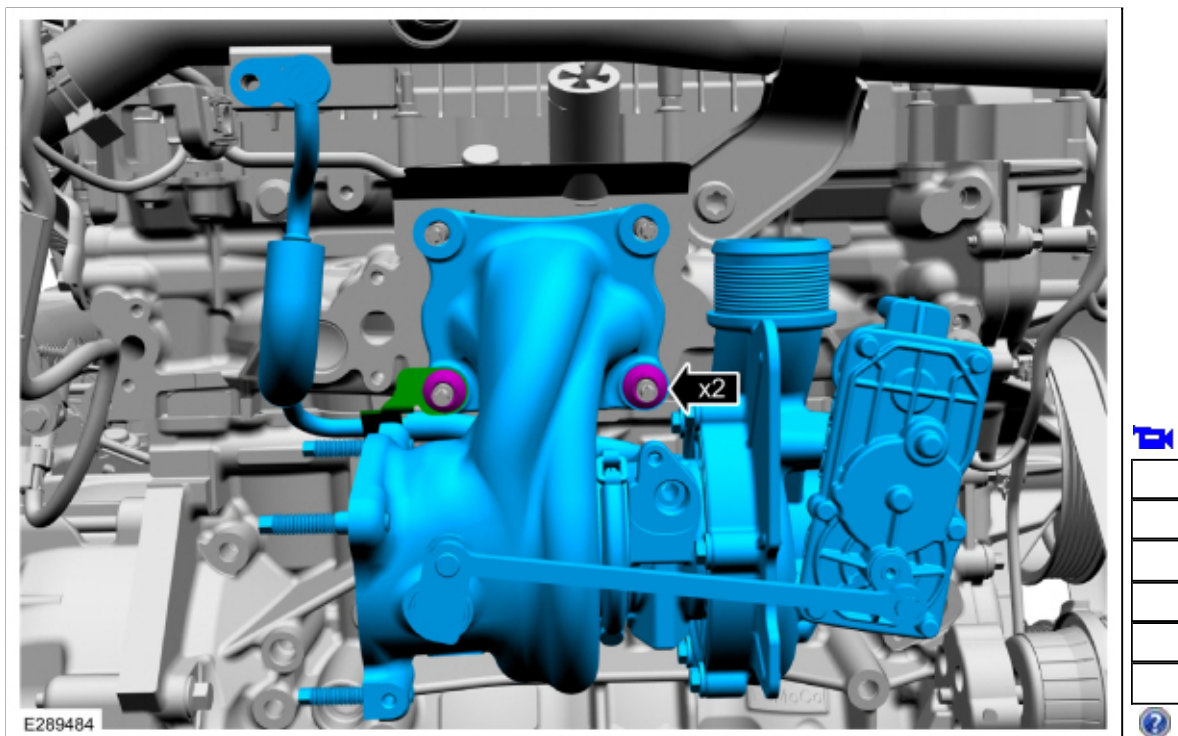
3. Install the new turbocharger gasket.



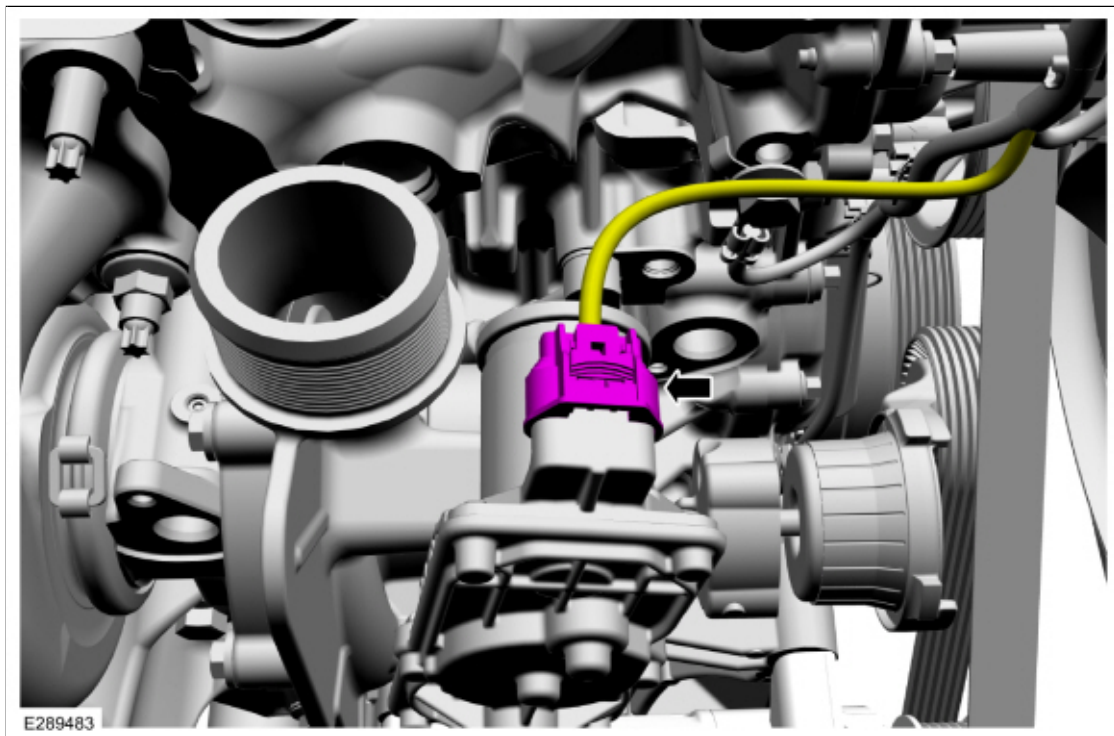
4. **NOTE:** The coolant tube bracket is retained by the left lower turbocharger stud and nut.

Install the turbocharger, attach the coolant tube bracket, then install and tighten the turbocharger lower mounting nuts.

Torque: 39 lb.ft (53 Nm)



5. Connect the turbocharger electrical connector.



6. Install a new turbocharger coolant tube O-ring seal. Lubricate the turbocharger coolant tube O-ring seal and rubber gasket with clean engine coolant. Refer to: [Specifications](#) (303-03 Engine Cooling - 2.3L EcoBoost (201kW/273PS), Specifications).



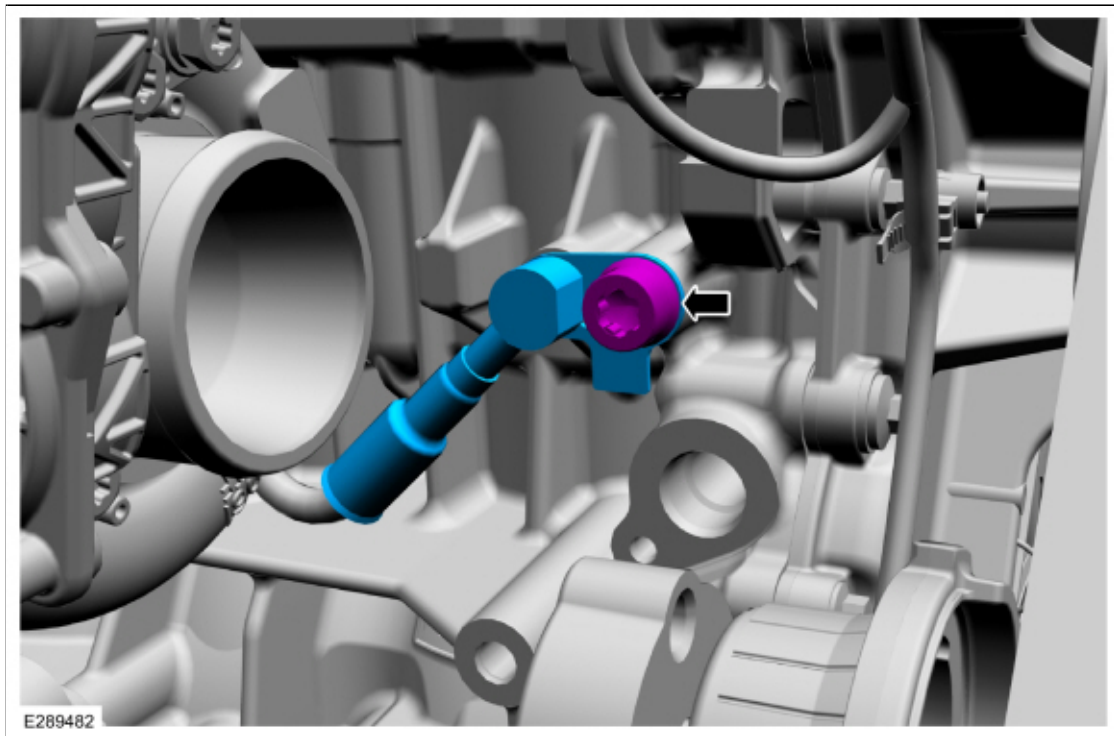
7.

- **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, 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.

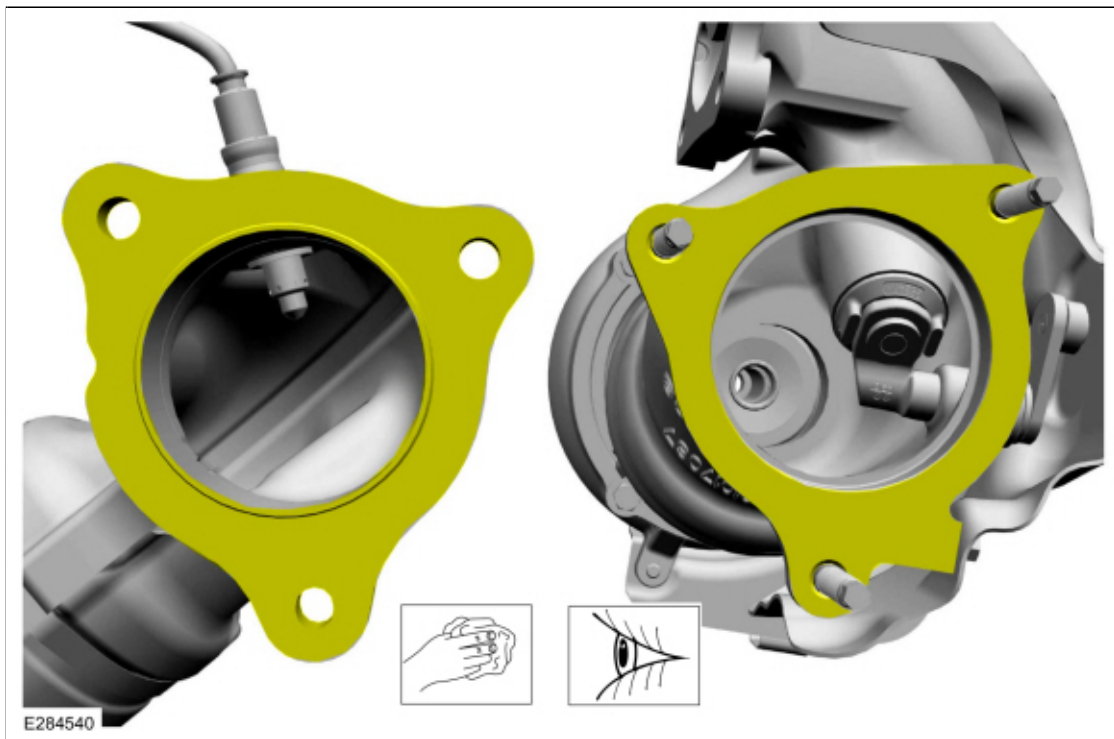
*Material:* Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Install the outer half of the turbocharger coolant supply tube, then install and tighten the bolt.  
*Torque:* 35 lb.ft (48 Nm)

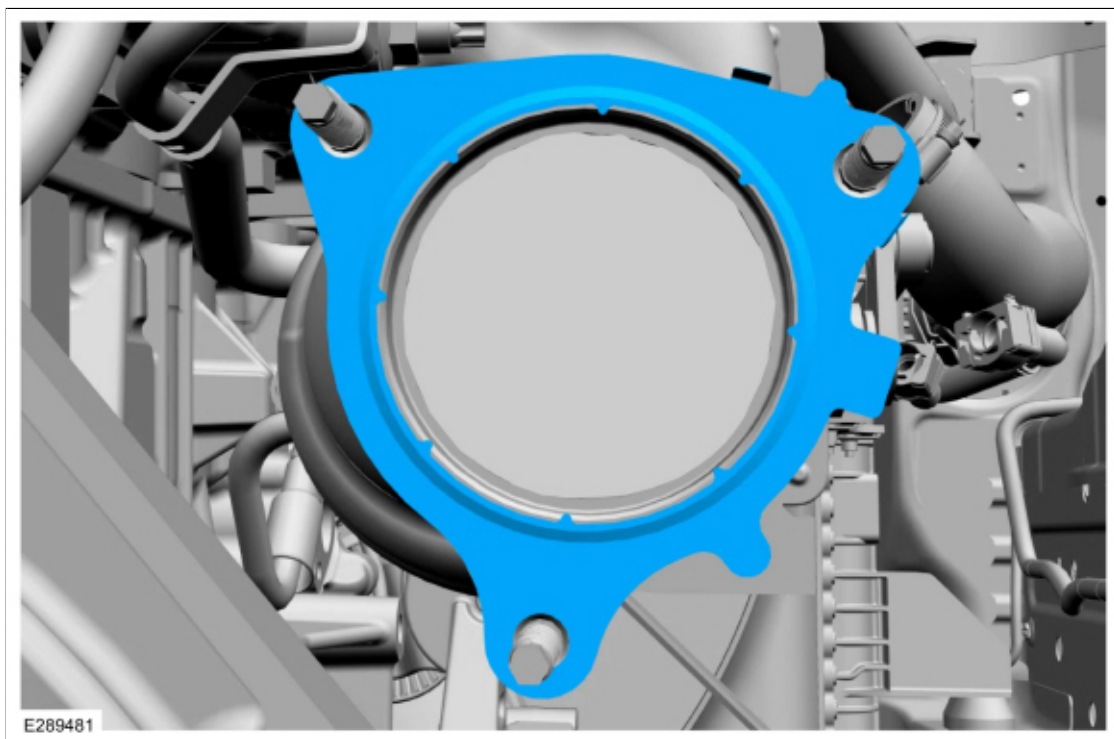


8. Clean and Inspect the gasket surfaces.

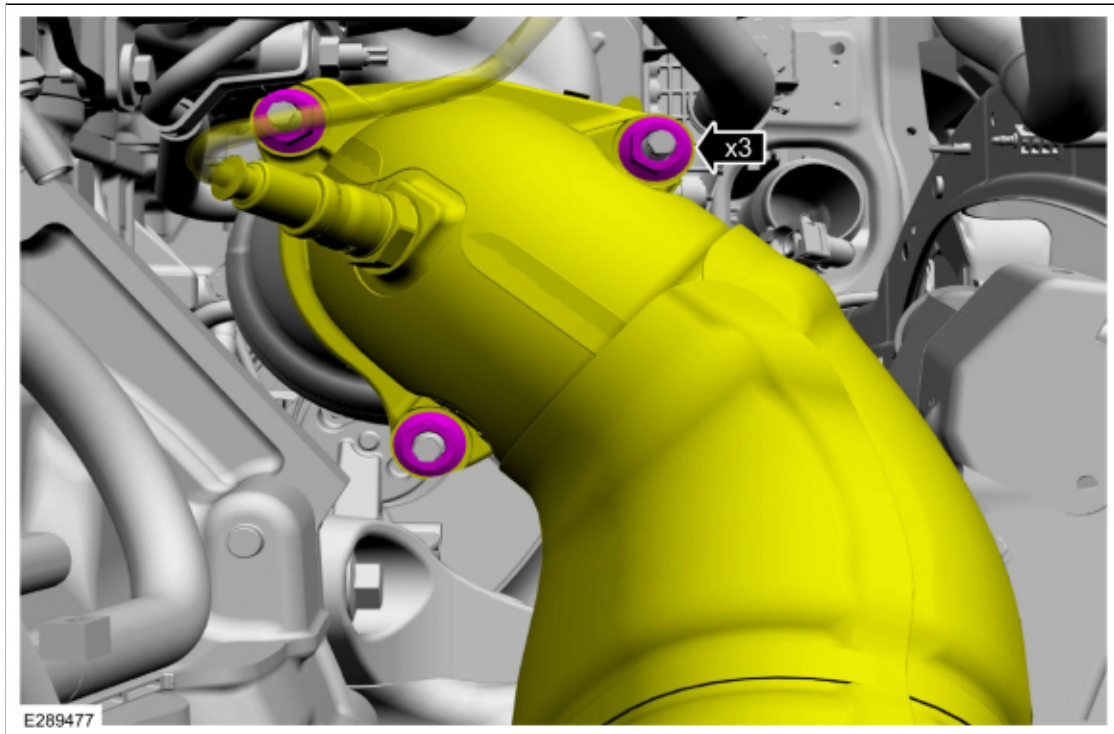




9. Install a new gasket.

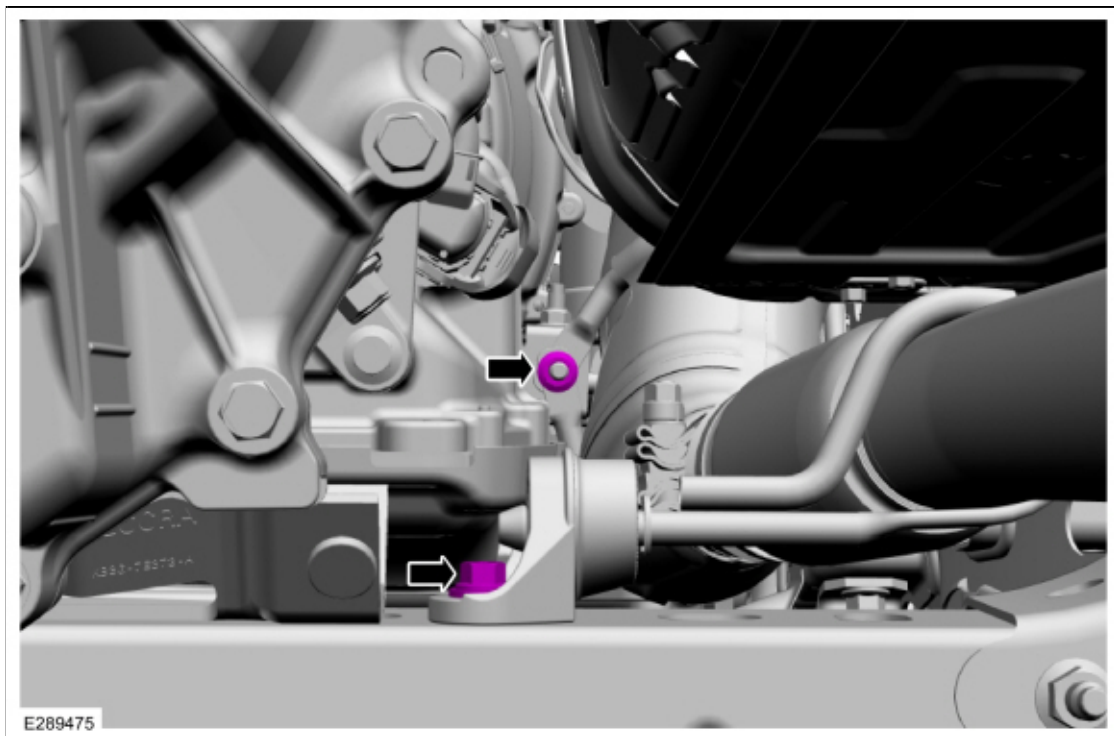


10. Install the catalytic converter, then install and tighten the new catalytic converter nuts.  
Torque: 30 lb.ft (40 Nm)



11.

1. Install and tighten the nut.  
*Torque: 30 lb.ft (40 Nm)*
2. Install and tighten the isolator hanger bracket bolt.  
*Torque: 18 lb.ft (25 Nm)*

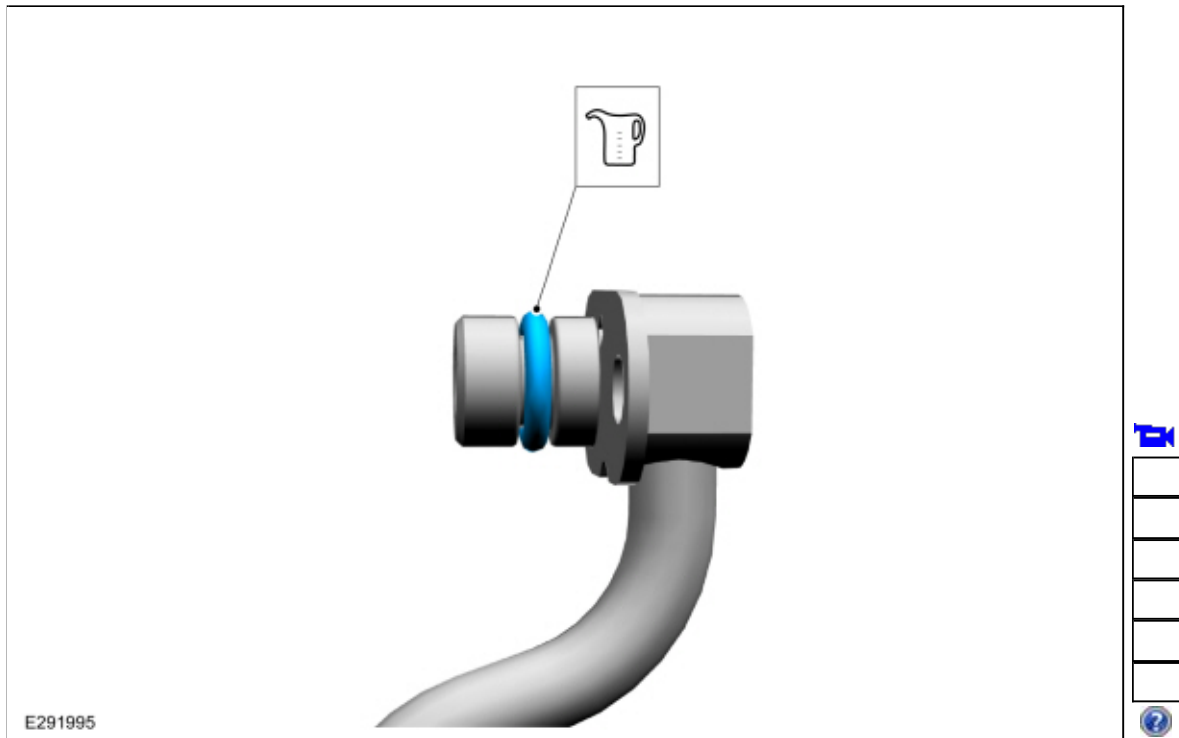


12. Install the exhaust gas recirculation (EGR) cooler.

Refer to: [Exhaust Gas Recirculation \(EGR\) Cooler](#) (303-08 Engine Emission Control - 2.3L EcoBoost (201kW/273PS), Removal and Installation).

13.

1. Install the new turbocharger coolant tube O-ring seal and lubricate with clean engine coolant.  
Refer to: [Specifications](#) (303-03 Engine Cooling - 2.3L EcoBoost (201kW/273PS), Specifications).



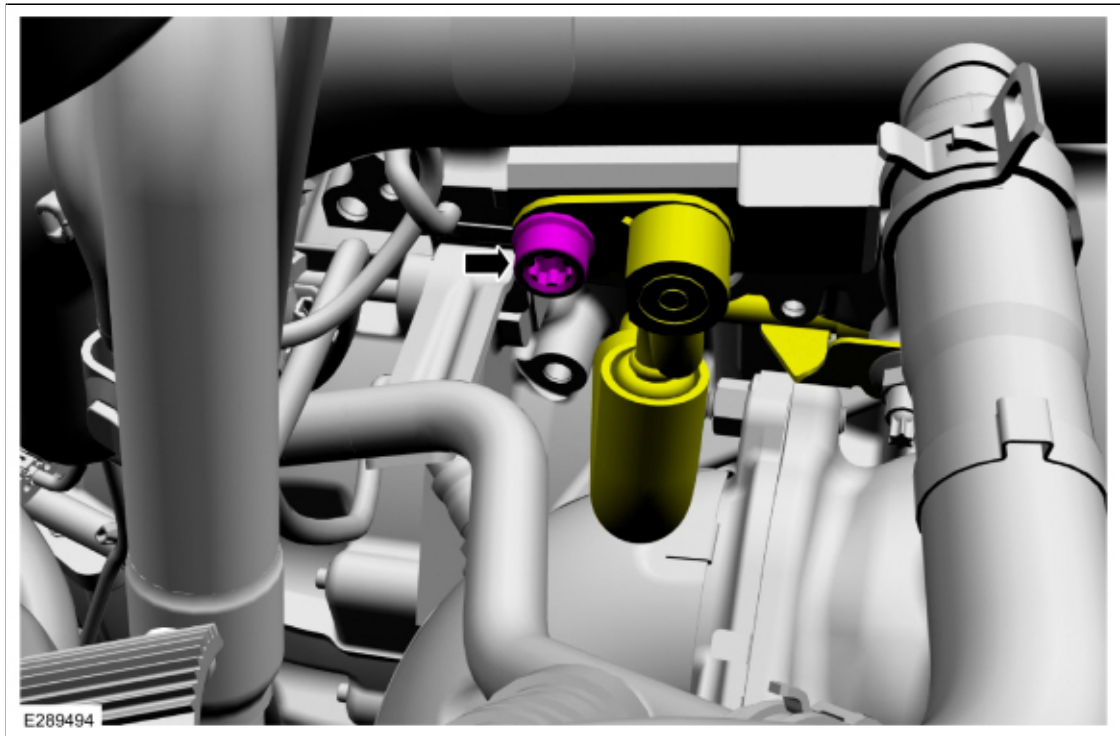
14. **NOTICE:** Do not use a metal brush, damage to sealing area will result in leaks.

- Carefully use a nylon brush to remove the old O-ring residue, use brake cleaner to rinse the O-ring residue out of the turbocharger tube 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. Install the turbocharger coolant return tube, then install and tighten the bolt.  
*Torque:* 97 lb.in (11 Nm)





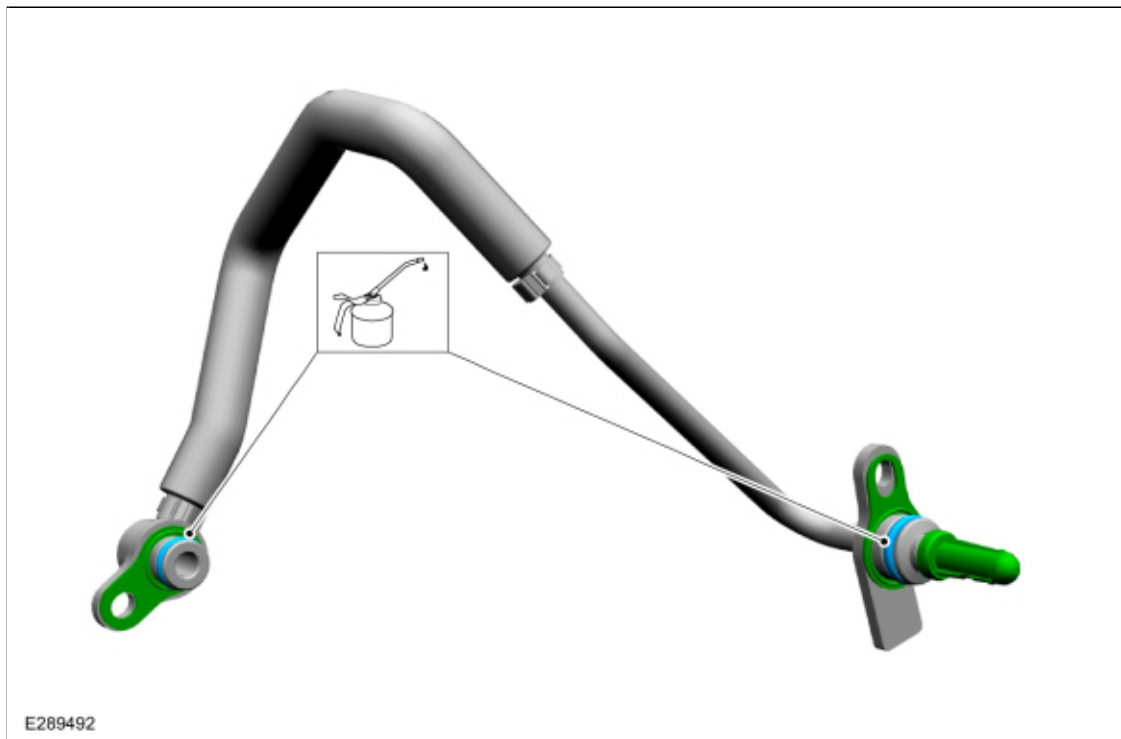
15. **NOTICE:** Do not reuse the turbocharger oil filter, a new turbocharger oil filter must be used.

**NOTICE:** Ensure that new turbocharger oil supply tube O-rings and gaskets are used.

Install the new turbocharger oil supply tube O-rings, gaskets and oil filter if not already installed. Lubricate the O-ring seals with clean engine oil.

Refer to: [Specifications](#) (303-01 Engine - 2.3L EcoBoost (201kW/273PS), Specifications).





16. **NOTE:** *The oil supply tube must be fully seated prior to fastener tightening.*

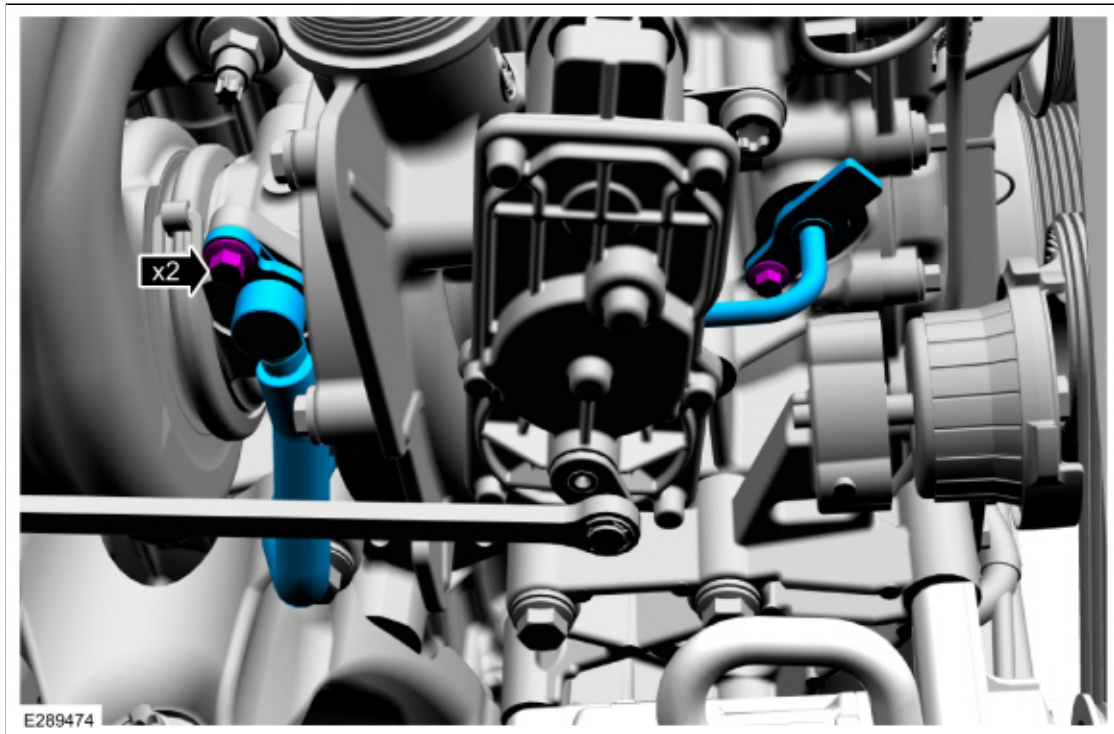
- **NOTICE:** Do not use a metal brush, damage to sealing area will result in leaks.

Carefully use a nylon brush to remove the old O-ring residue, use brake cleaner to rinse the O-ring residue out of the turbocharger and engine O-ring bores. 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. Install and fully seat the turbocharger oil supply tube, then install and tighten the bolts.  
*Torque:* 97 lb.in (11 Nm)

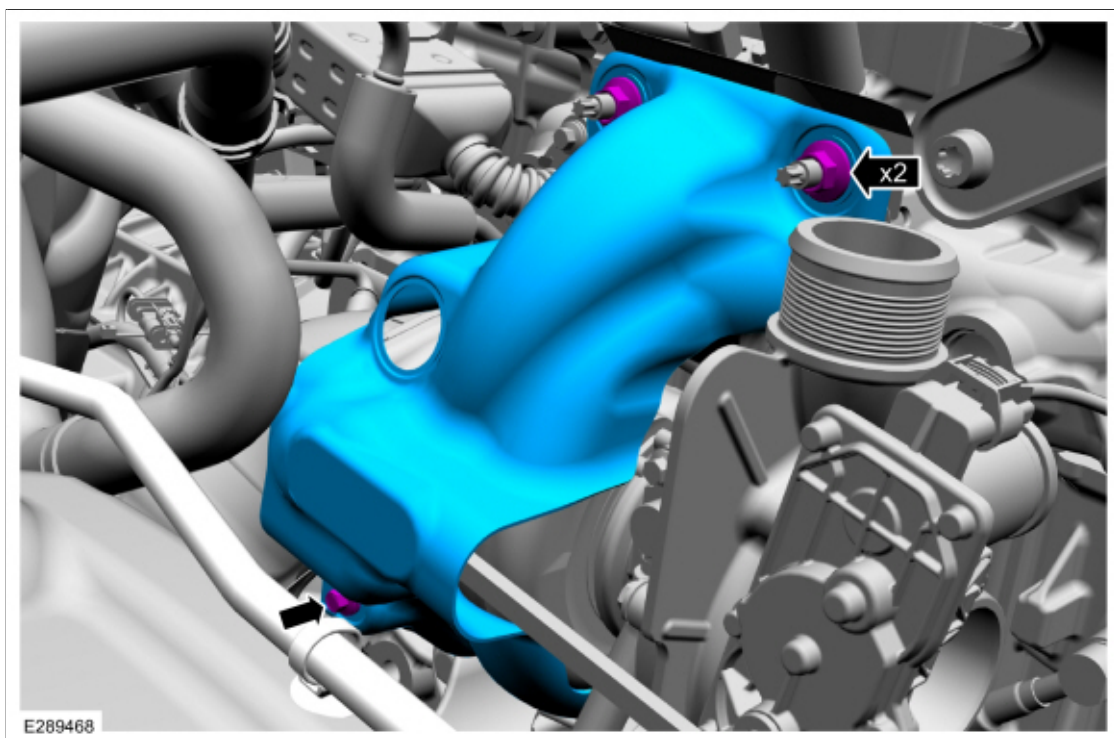




17. Install the turbocharger heat shield, then install and tighten the lower bolt and the upper nuts.

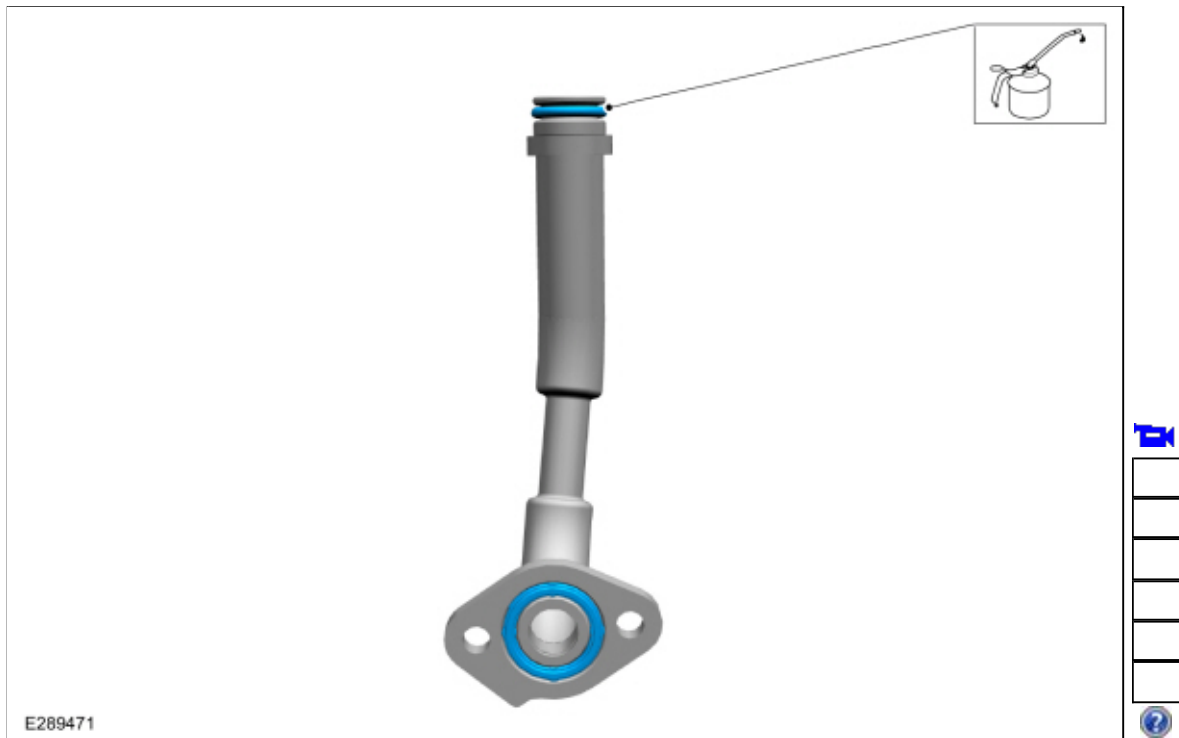
*Torque:*

Nuts : 39 lb.ft (53 Nm)  
Bolt : 97 lb.in (11 Nm)



18. **NOTICE:** Ensure that a new turbocharger oil return tube O-ring and gasket are used.

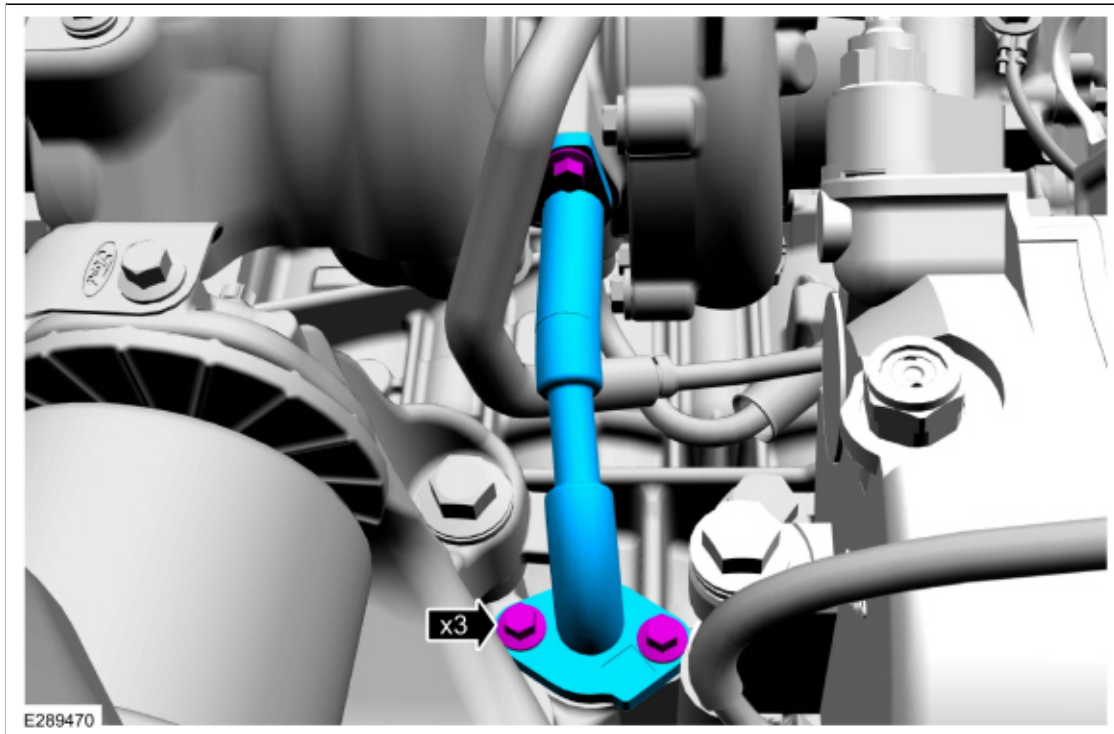
Install a new turbocharger oil return tube O-ring seal and a new turbocharger oil return tube gasket if not already installed. Lubricate the new turbocharger oil return tube O-ring seal with clean engine oil. Refer to: [Specifications](#) (303-01 Engine - 2.3L EcoBoost (201kW/273PS), Specifications).



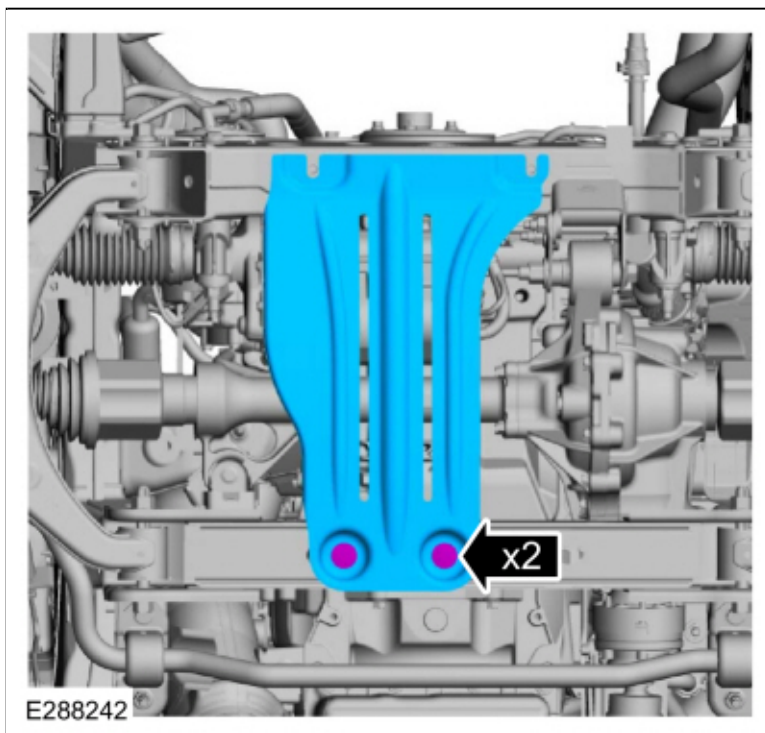
19. **NOTICE:** Do not use a metal brush, damage to sealing area will result in leaks.

**NOTE:** The oil return tube must be fully seated prior to fastener rundown.

- Carefully use a nylon brush to remove the old O-ring residue, use brake cleaner to rinse the O-ring residue out of the turbocharger tube O-ring bore. Inspect the area for deep scratches and gouges. Install new components if needed.
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:** 97 lb.in (11 Nm)

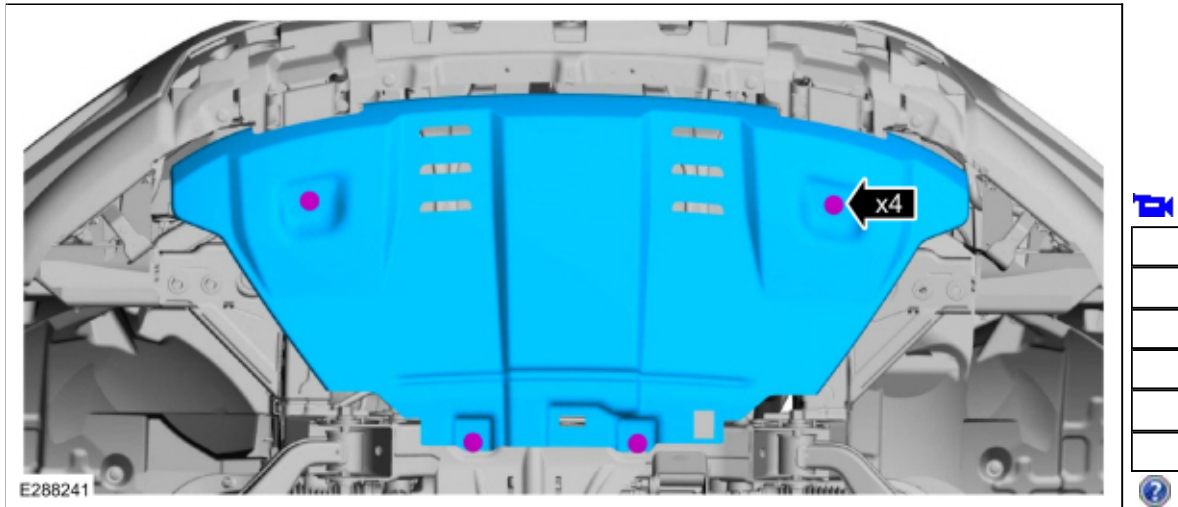


20. Install the rear skid plate and the bolts.  
*Torque: 22 lb.ft (30 Nm)*

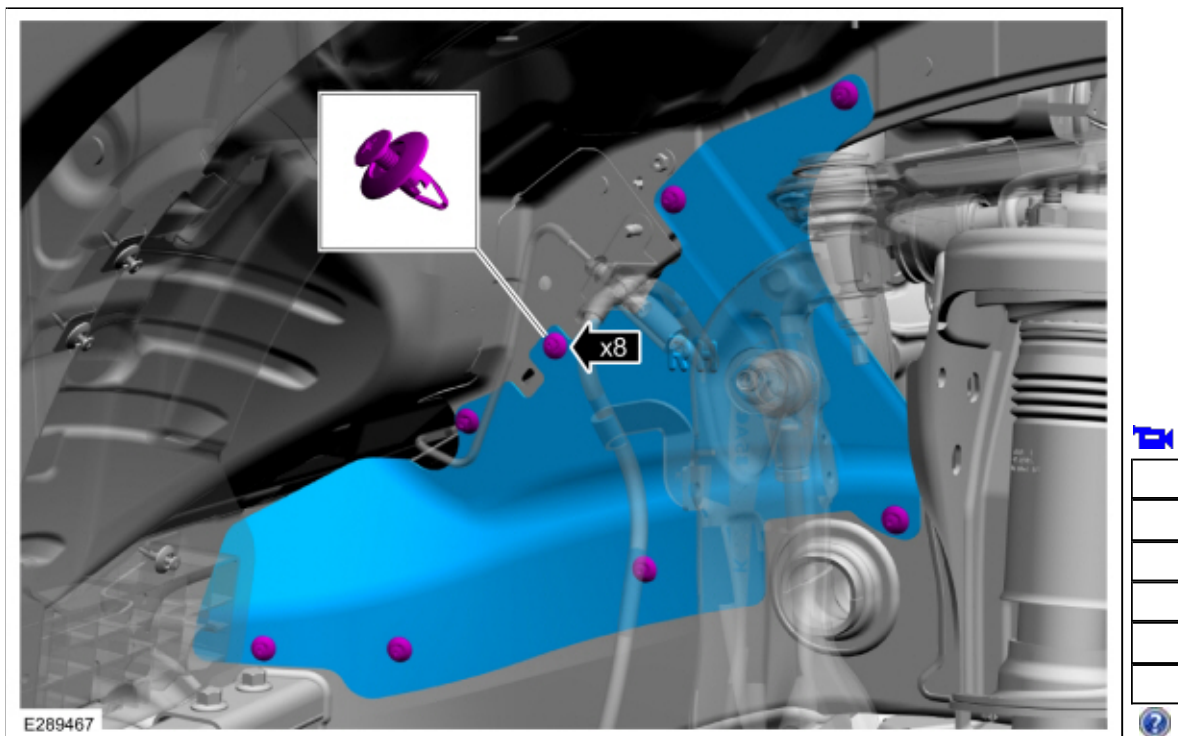


21. **NOTE:** *Off road package shown, others are similar.*

Install the front skid plate and the bolts.  
*Torque: 22 lb.ft (30 Nm)*



22. Install the right fender splash shield and the retainers.



23. Install right front wheel and tire.  
Refer to: [Wheel and Tire](#) (204-04A Wheels and Tires, Removal and Installation).
24. Install the charge air cooler (CAC) intake pipe.  
Refer to: [Charge Air Cooler \(CAC\) Intake Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
25. Install the air cleaner.  
Refer to: [Air Cleaner](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
26. Install the air cleaner outlet pipe.

Refer to: [Air Cleaner Outlet Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).

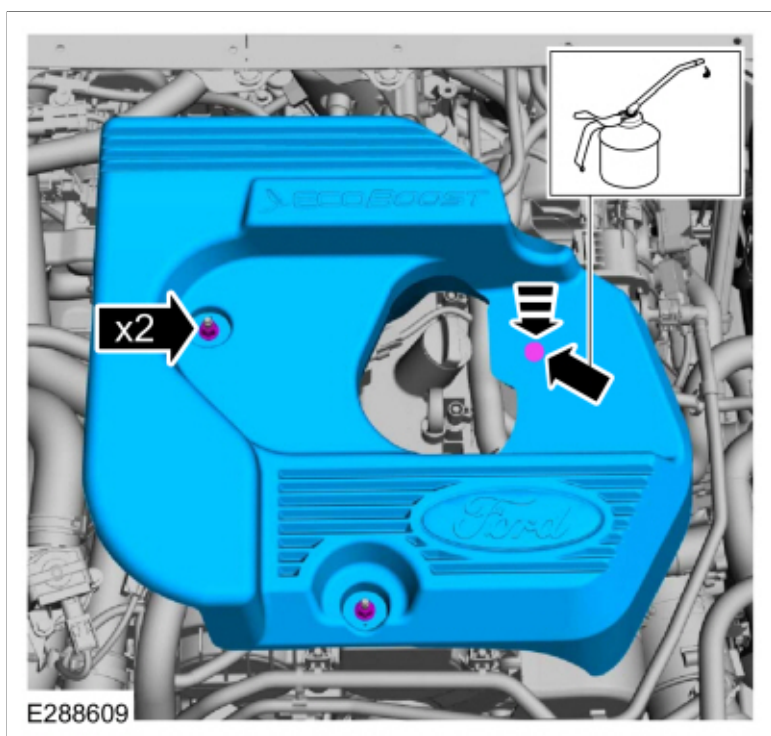
27.

1. **NOTE:** *Lubricating the grommets with silicone grease will aid in the installation of the engine appearance cover, and any future removal and installation of the cover.*

Lubricate each grommet with silicone grease.

**Material:** Motorcraft® Silicone Brake Caliper Grease and Dielectric Compound / XG-3-A (ESE-M1C171-A)

2. Position the engine appearance cover onto engine with the grommet aligned with the studs.
3. Press down on the engine appearance cover at each grommet location to attach the grommets onto the studs and install the nuts.



28. Check the engine oil level and fill as needed.  
Refer to: [Specifications](#) (303-01 Engine - 2.3L EcoBoost (201kW/273PS), Specifications).

29. Check for leaks.

