



303-01 Engine - 2.3L EcoBoost (201kW/273PS)
Removal and Installation

2019 Ranger
Procedure revision date: 01/4/2019

Valve Cover

Special Tool(s) / General Equipment

 <p>E133913</p>	<p>205-153 (T80T-4000-W) Handle</p>
 <p>E274104</p>	<p>303-1687 Installer, VCT Solenoid Seal</p>

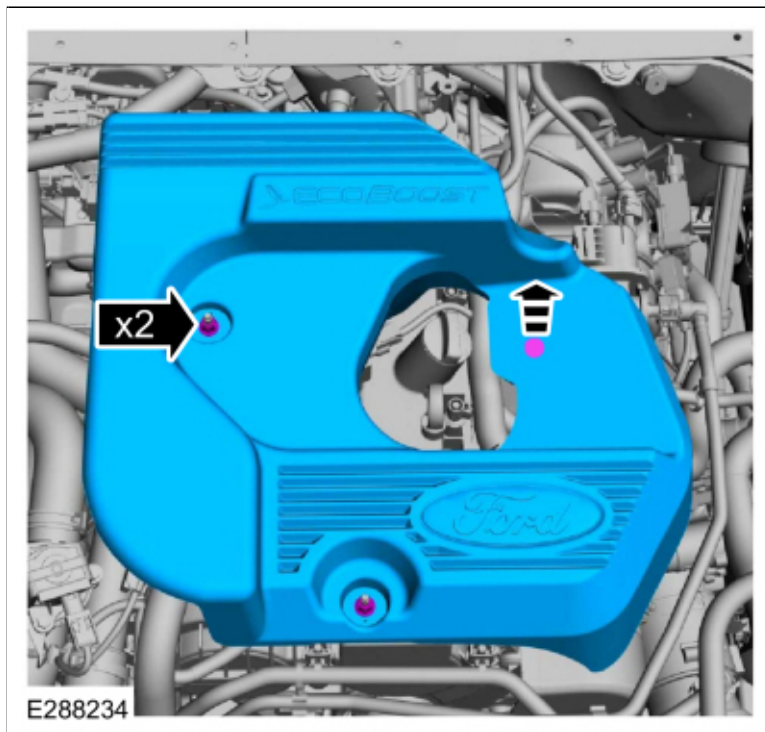
Materials

Name	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6
Motorcraft® Silicone Brake Caliper Grease and Dielectric Compound XG-3-A	ESE-M1C171-A

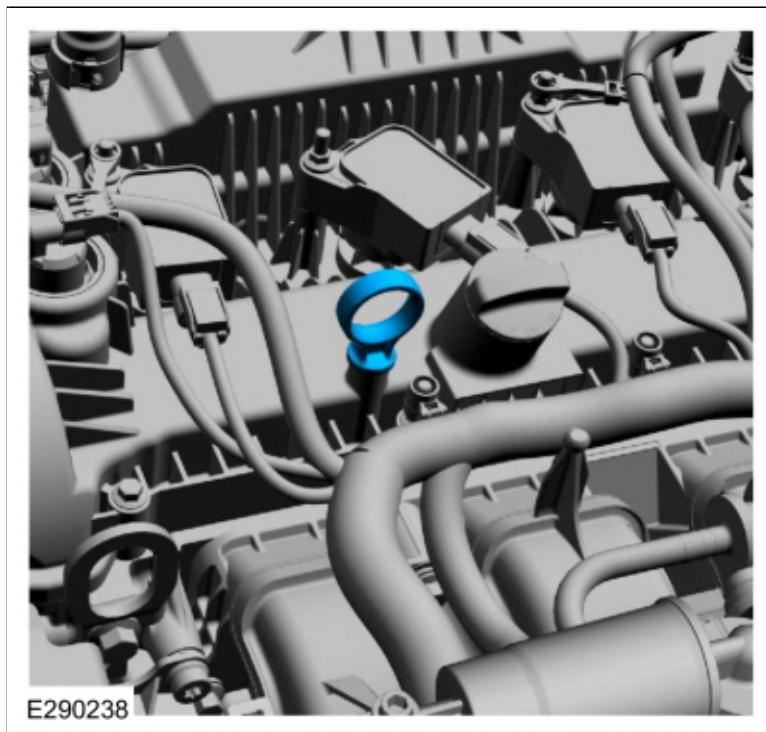
Removal

NOTICE: During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan can cause engine failure.

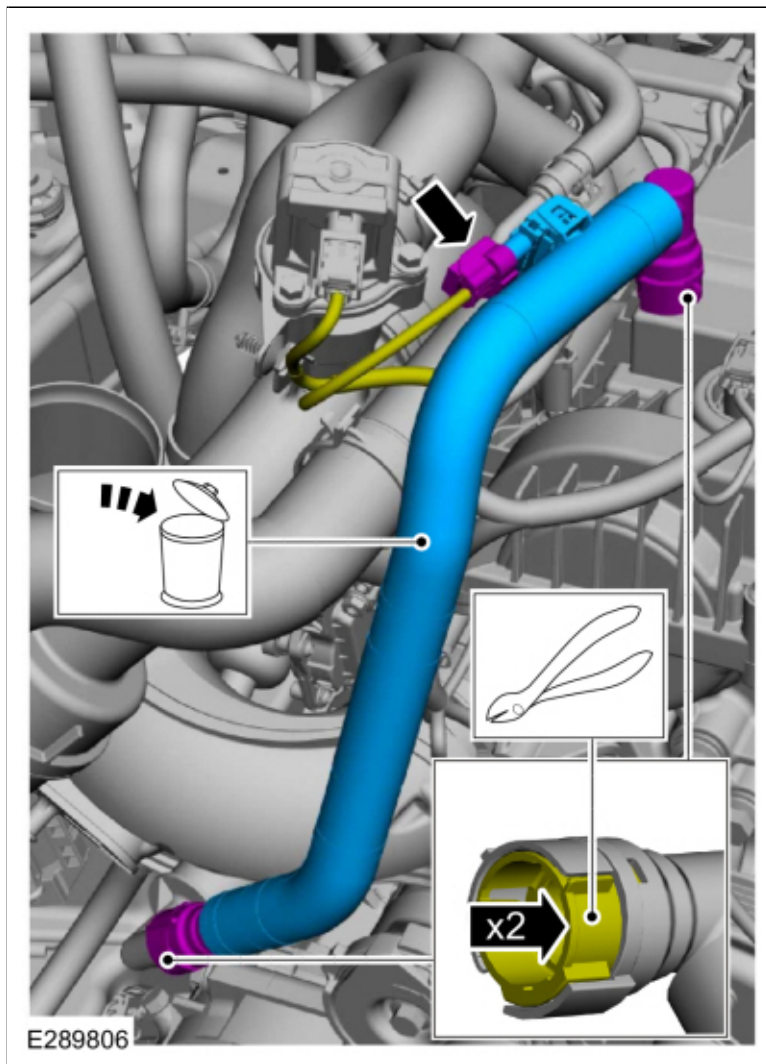
1. With the vehicle in NEUTRAL, position it on a hoist.
Refer to: [Jacking and Lifting](#) (100-02 Jacking and Lifting, Description and Operation).
2. Release the fuel system pressure.
Refer to: [Fuel System Pressure Release](#) (310-00 Fuel System - General Information - 2.3L EcoBoost (201kW/273PS), General Procedures).
3. **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 nuts.
 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.



4. Drain the cooling system.
Refer to: [Cooling System Draining, Vacuum Filling and Bleeding](#) (303-03 Engine Cooling - 2.3L EcoBoost (201kW/273PS), General Procedures).
5. Remove the air cleaner outlet tube.
Refer to: [Air Cleaner Outlet Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
6. Remove the oil level indicator.



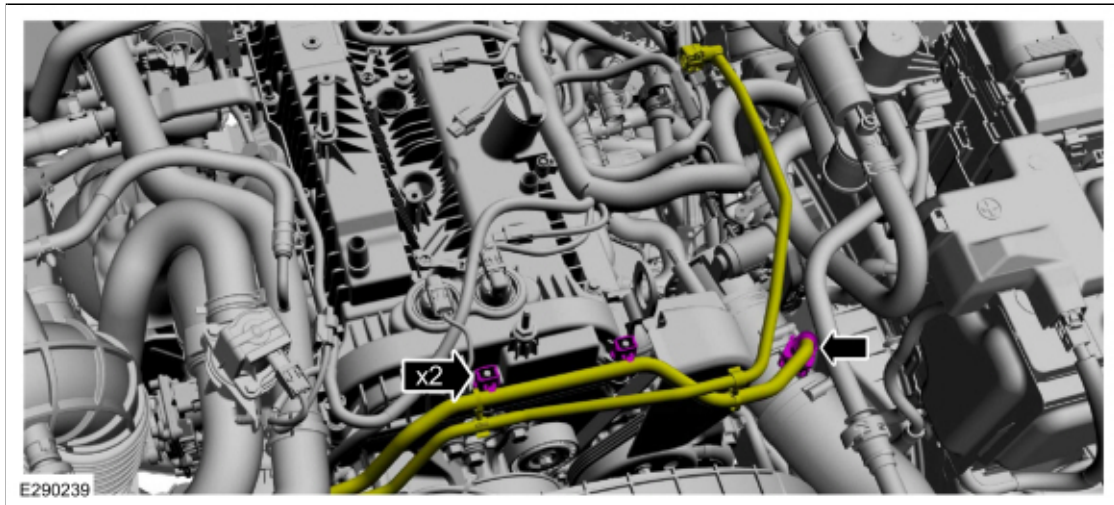
7. Remove the following items:
 1. Remove the high-pressure fuel pump.
Refer to: [High-Pressure Fuel Pump](#) (303-04A Fuel Charging and Controls - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
 2. Remove the ignition coil-on-plugs.
Refer to: [Ignition Coil-On-Plug](#) (303-07 Engine Ignition - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
8. **NOTE:** *The crankcase vent tube has permanent connectors. If it needs to be removed for any reason, the connectors must be cut to get the tube off. This tube will need to be replaced.*
 - Disconnect the wiring harness electrical connector.
 - Cut housing above the lock tab, on both ends.
 - Remove and discard the crankcase vent tube.



9.

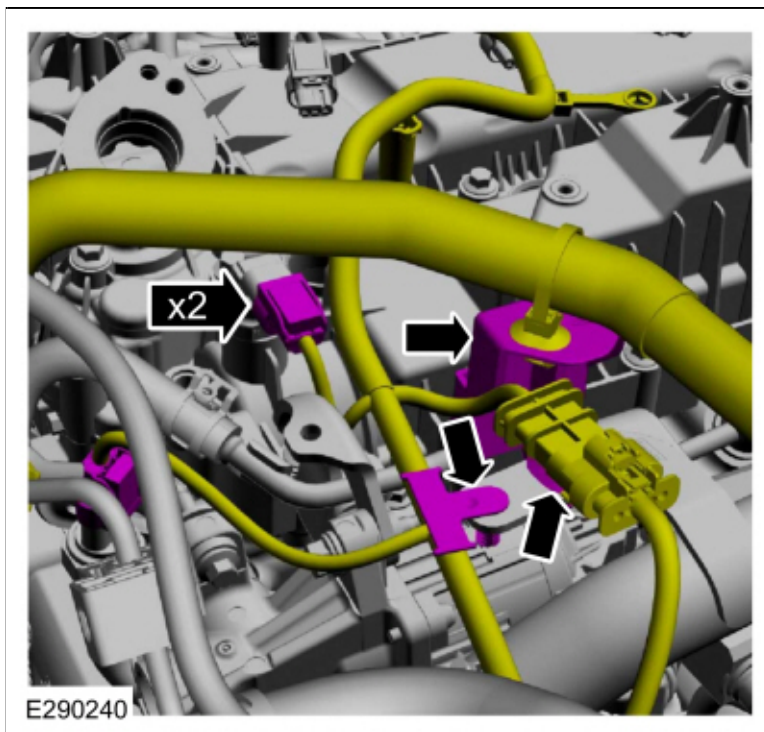
- Disconnect the EVAP canister tube quick release coupling.
Refer to: [Quick Release Coupling](#) (310-00 Fuel System - General Information - 2.3L EcoBoost (201kW/273PS), General Procedures).
- Detach the EVAP canister tube retainers and position aside.





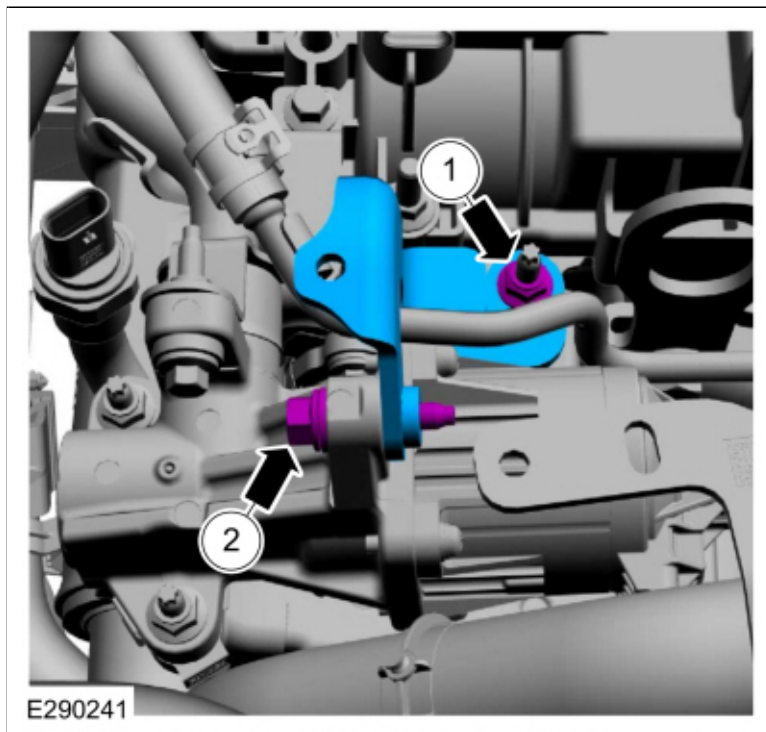
10.

- Position the wiring harness retainer from the rear engine lift eye.
- Disconnect the wiring harness electrical connectors and retainer.
- Detach the HO2S electrical connector from the bracket.

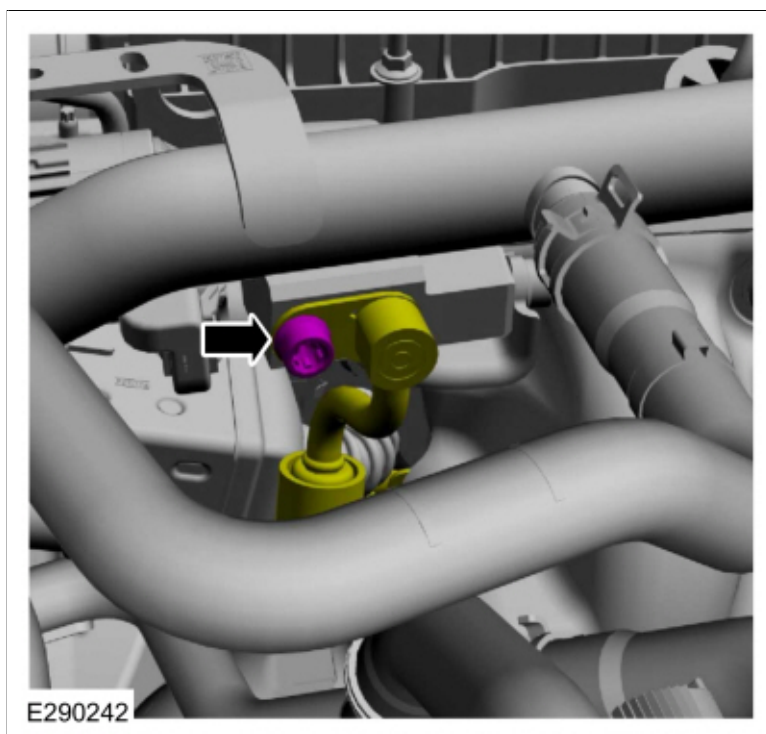


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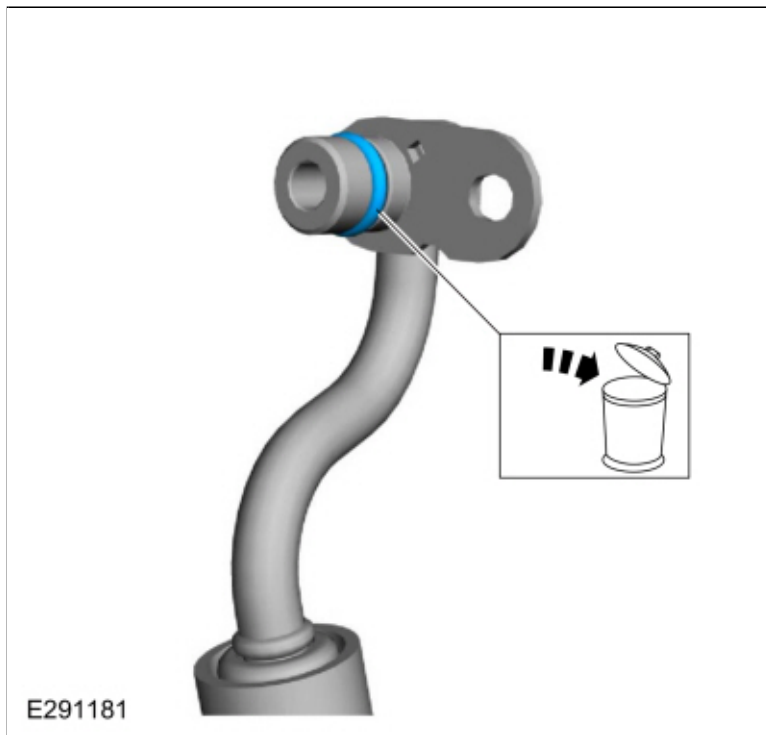
1. Remove the EGR valve bracket nut.
2. Remove the bolt and the EGR valve bracket.



12. Remove the bolt and position the turbocharger coolant tube aside.

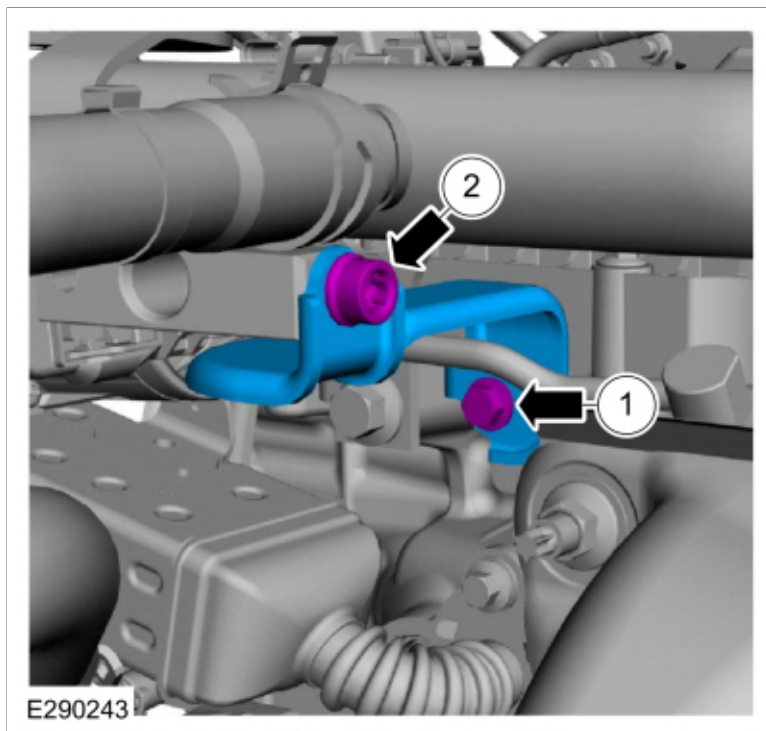


13. Remove and discard the turbocharger coolant tube O-ring seal.

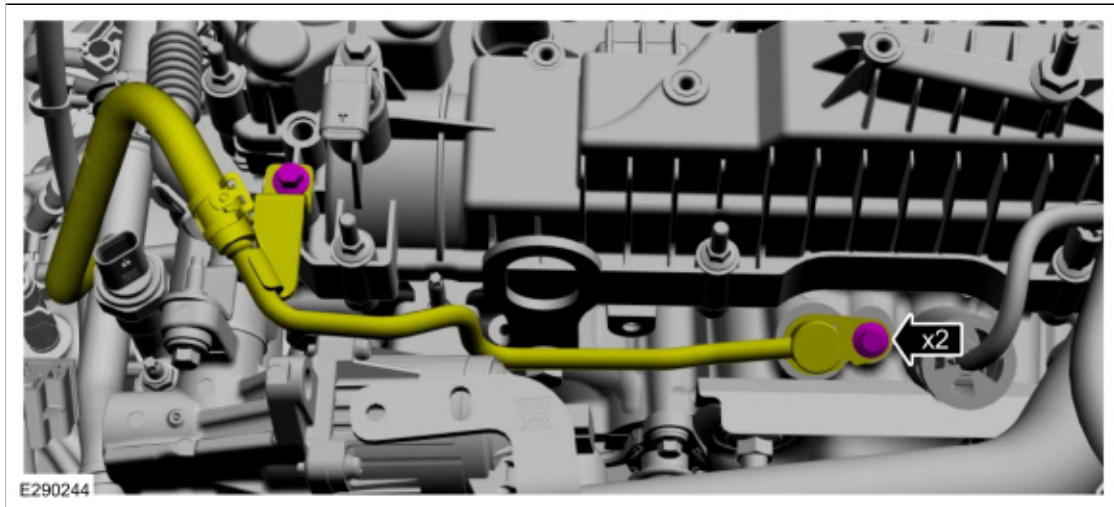


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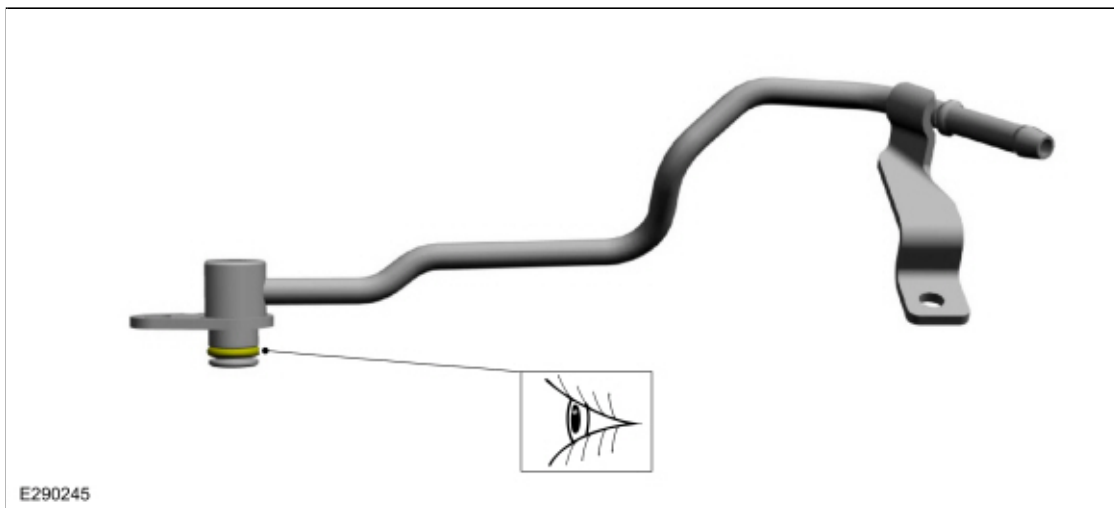
1. Remove the coolant tube support bracket bolt.
2. Remove the bolt and the coolant tube support bracket.



15. Remove the bolts and position the coolant tube aside.

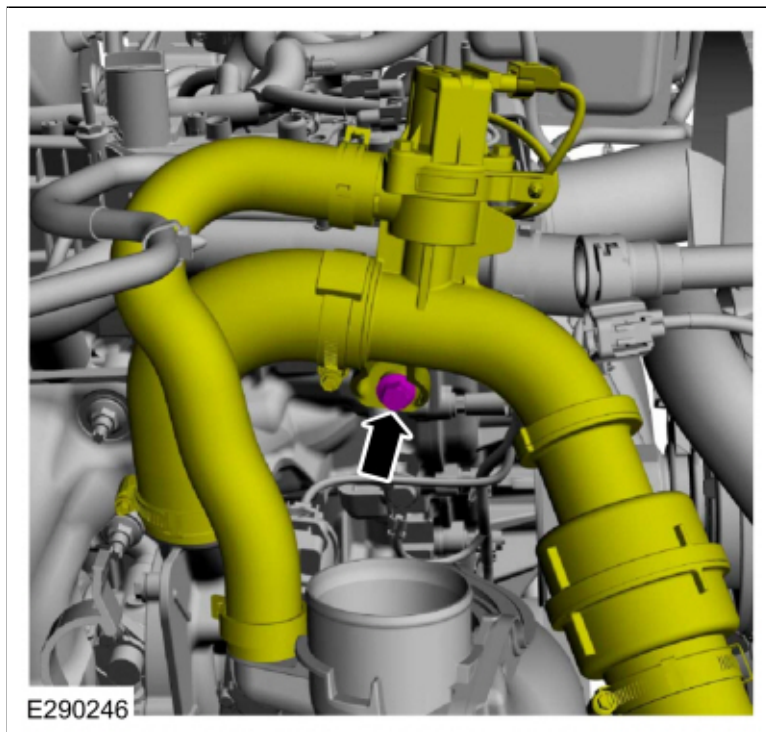


16. Inspect the coolant tube O-ring seal and replace if damaged.

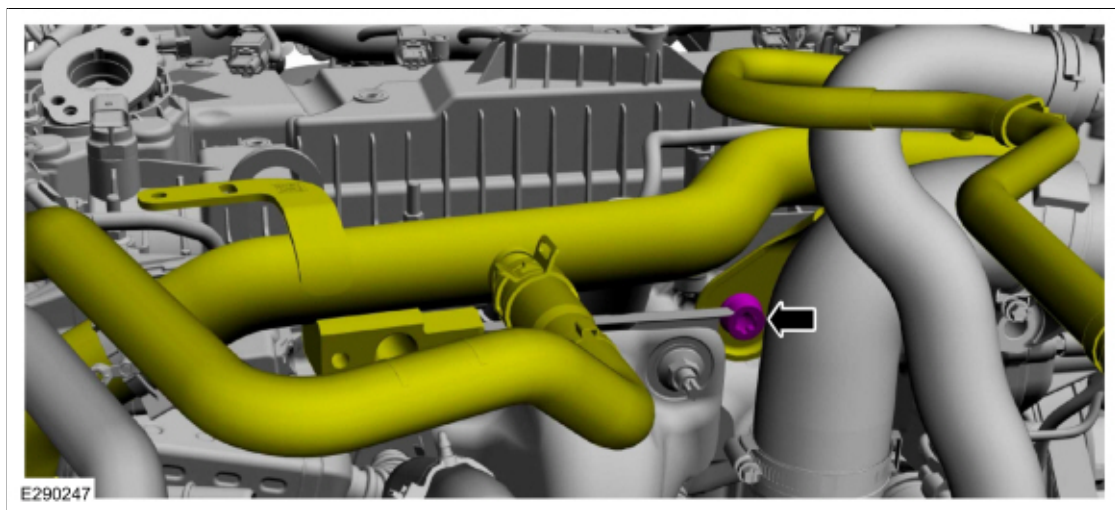


17. Remove the bolt and position CAC tube aside.

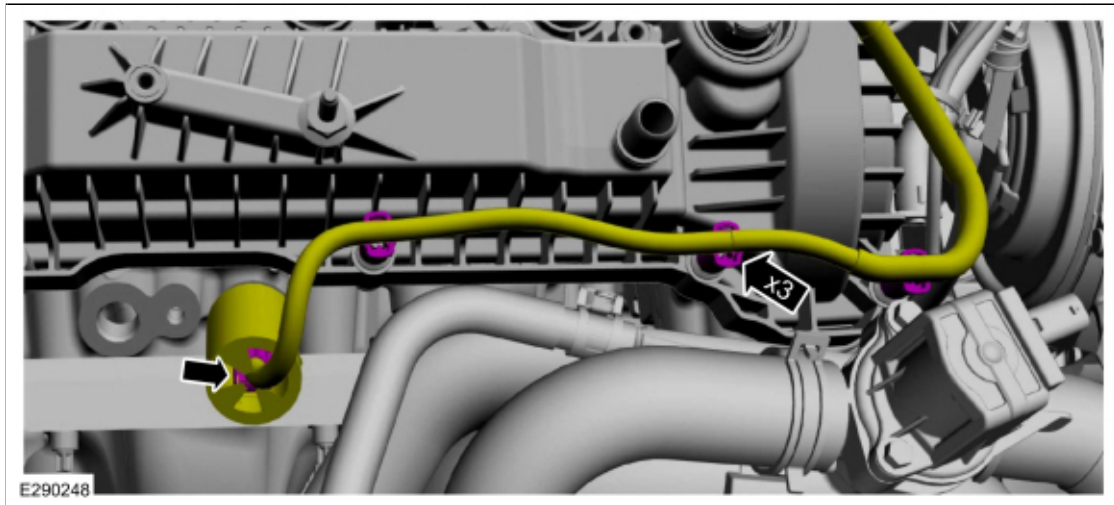




18. Remove the bolt and position the coolant tube aside.

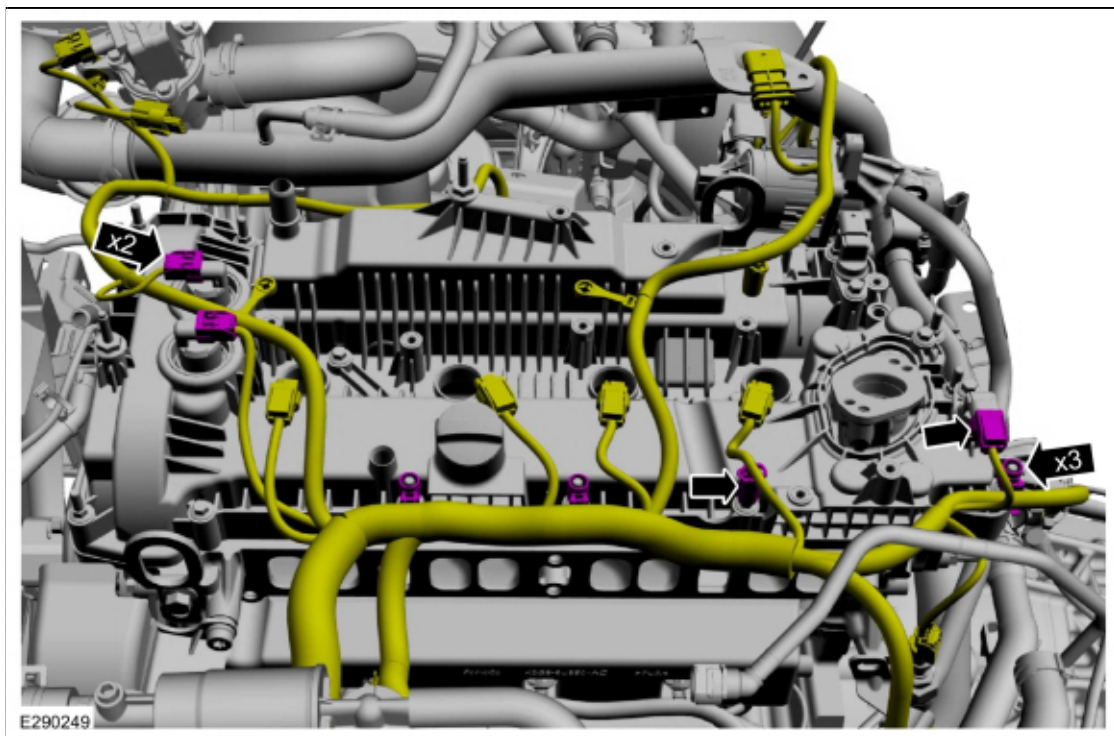


19. Disconnect the CHT sensor wiring harness electrical connector and detach the retainers.

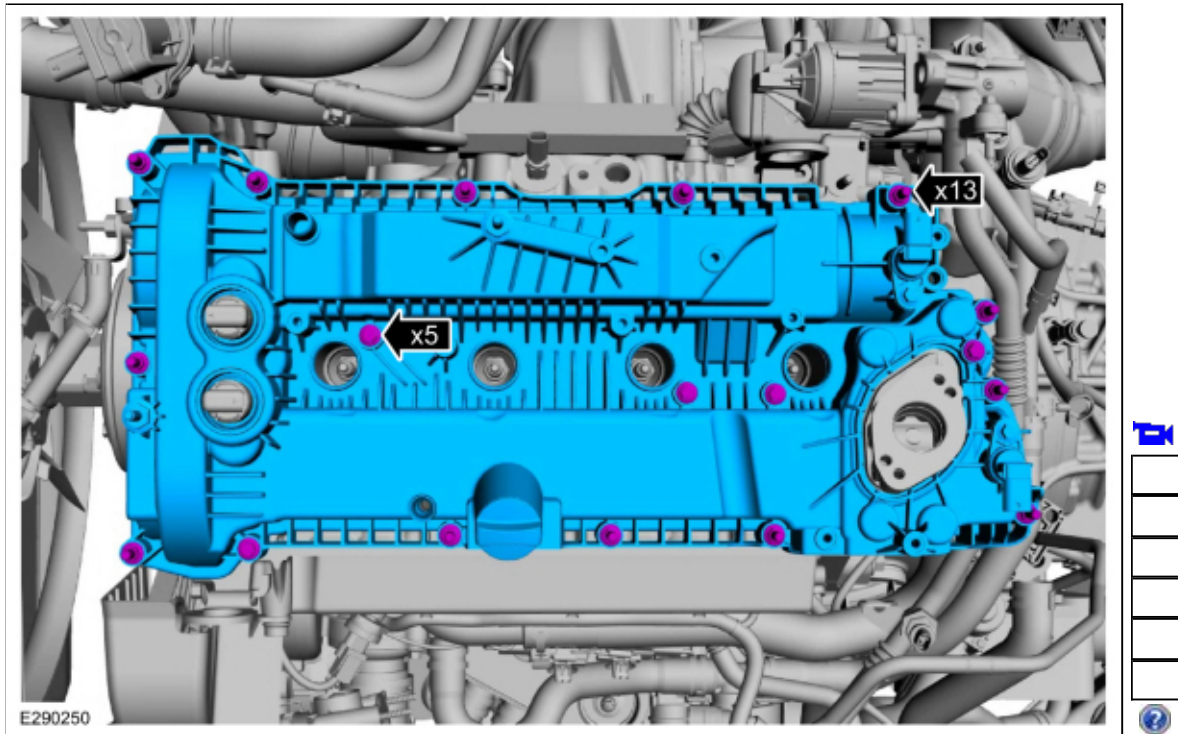


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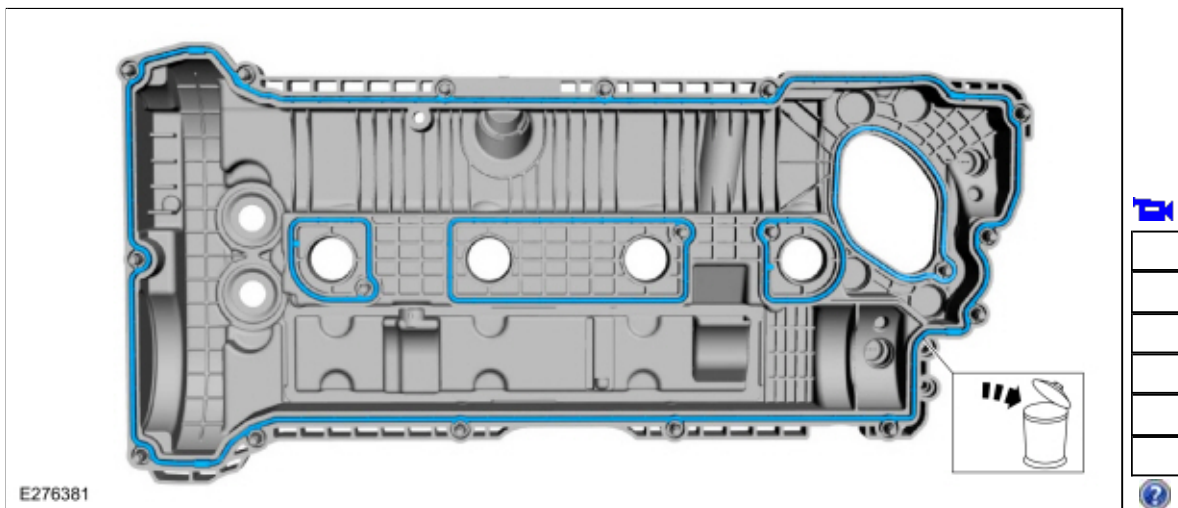
- Disconnect the wiring harness electrical connectors.
- Detach the wiring harness retainers.
- Position the wiring harness aside.



21. Loosen the fasteners and remove the valve cover.

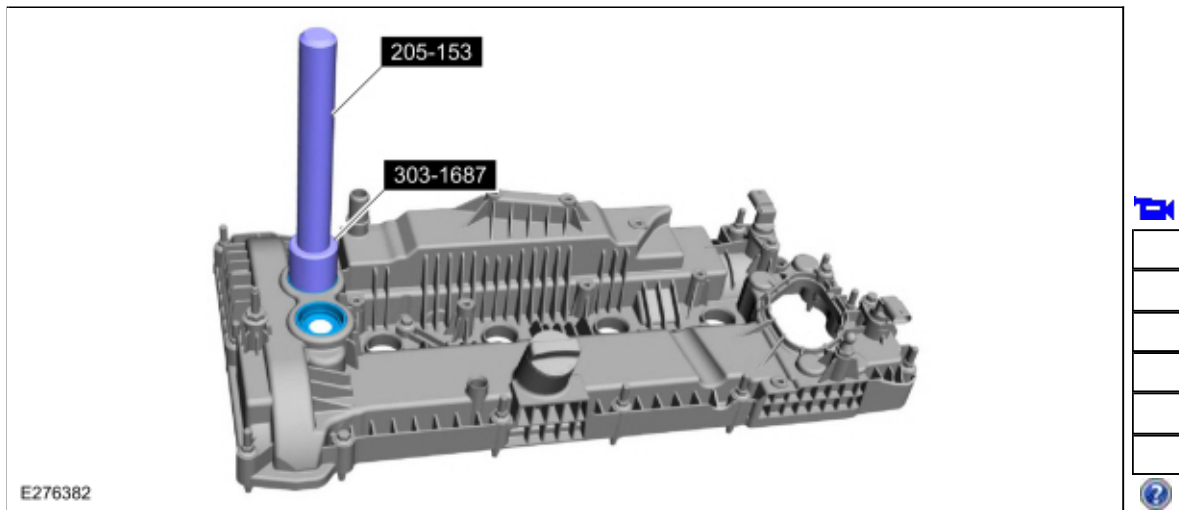


22. Remove and discard the valve cover gaskets.



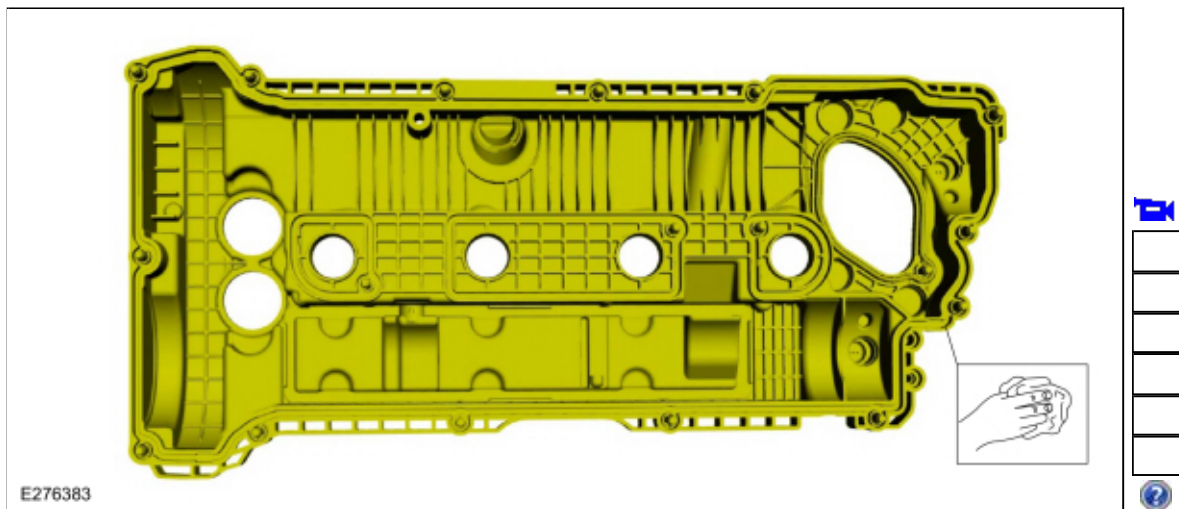
23. **NOTE:** The VCT solenoid seals should only be replaced if they are damaged.

- Inspect the VCT oil control solenoid seals for damage.
- If damaged, using the special tools, remove and discard the VCT oil control solenoid seals.
Use Special Service Tool: [205-153 \(T80T-4000-W\) Handle.](#) , [303-1687 Installer, VCT Solenoid Seal.](#)



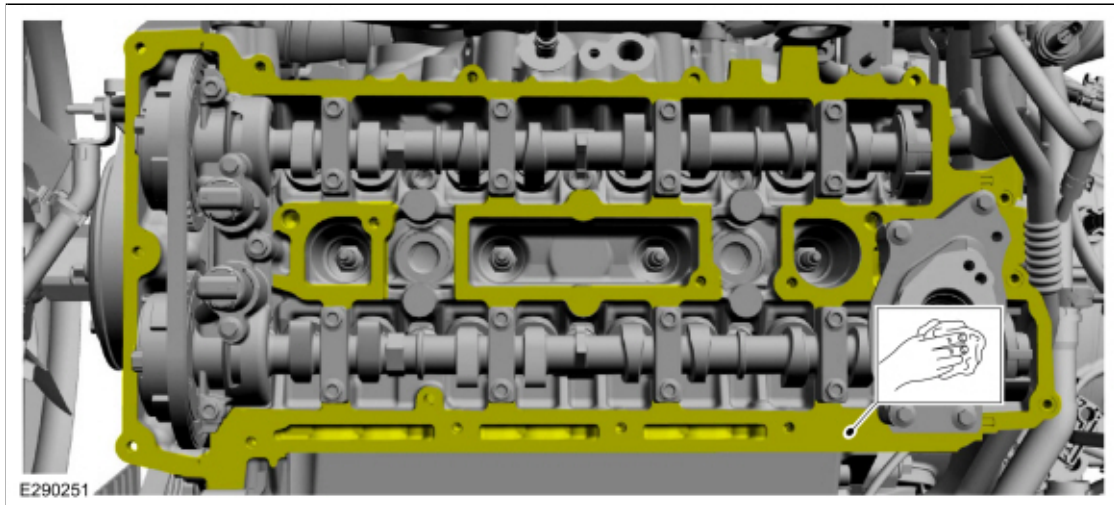
24. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak paths.

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



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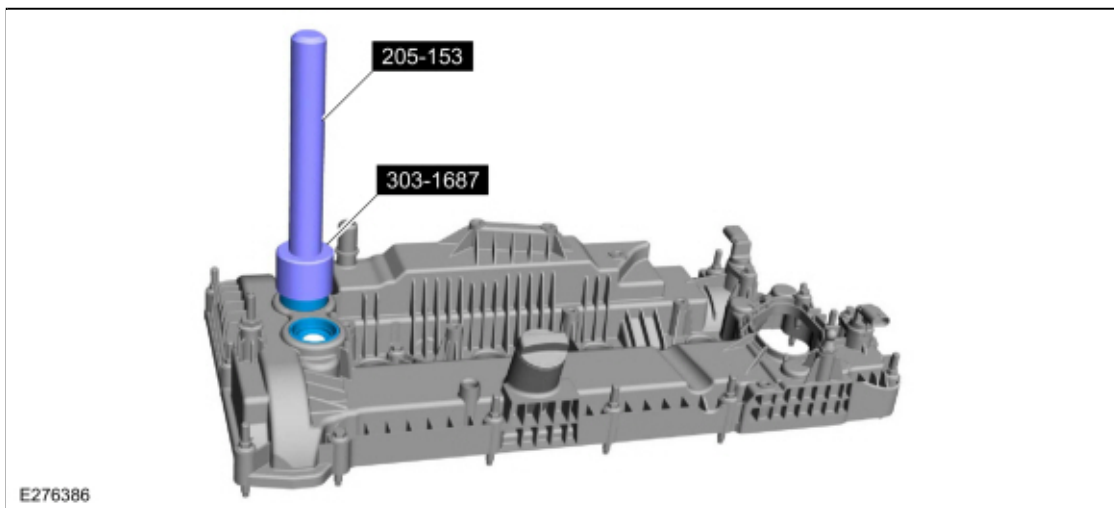


Installation

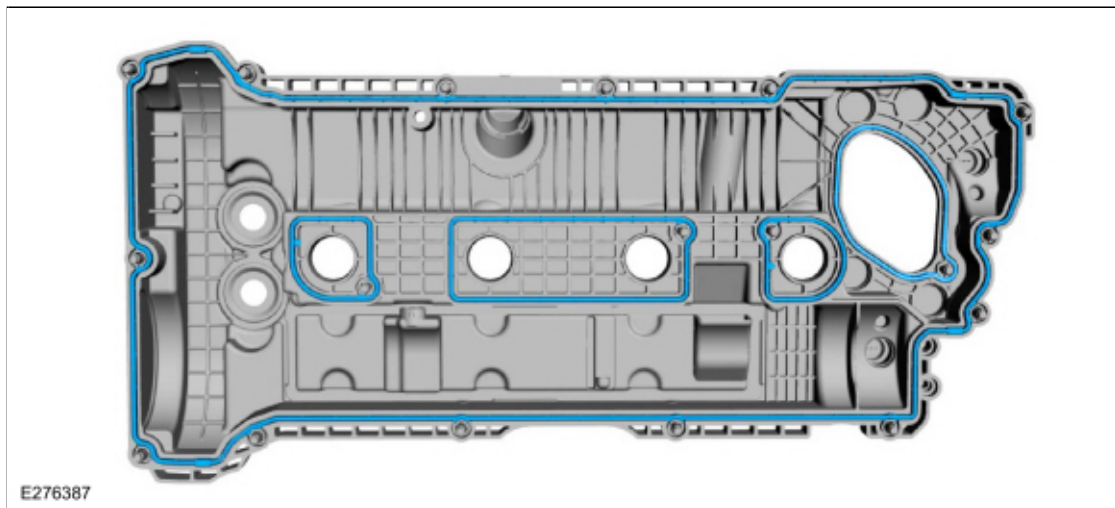
1. **NOTE:** *Installation of new seals is only required if damaged seals were removed during removal.*

If removed, using the special tools, install the VCT oil control solenoid seals.

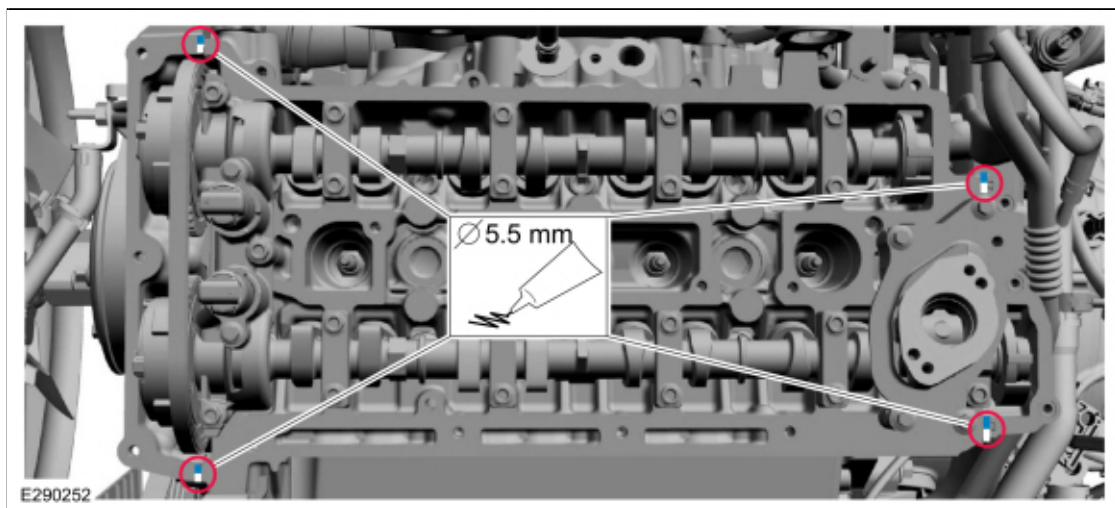
Use Special Service Tool: [205-153 \(T80T-4000-W\) Handle](#) , [303-1687 Installer, VCT Solenoid Seal](#).



2. Install a new valve cover gaskets.



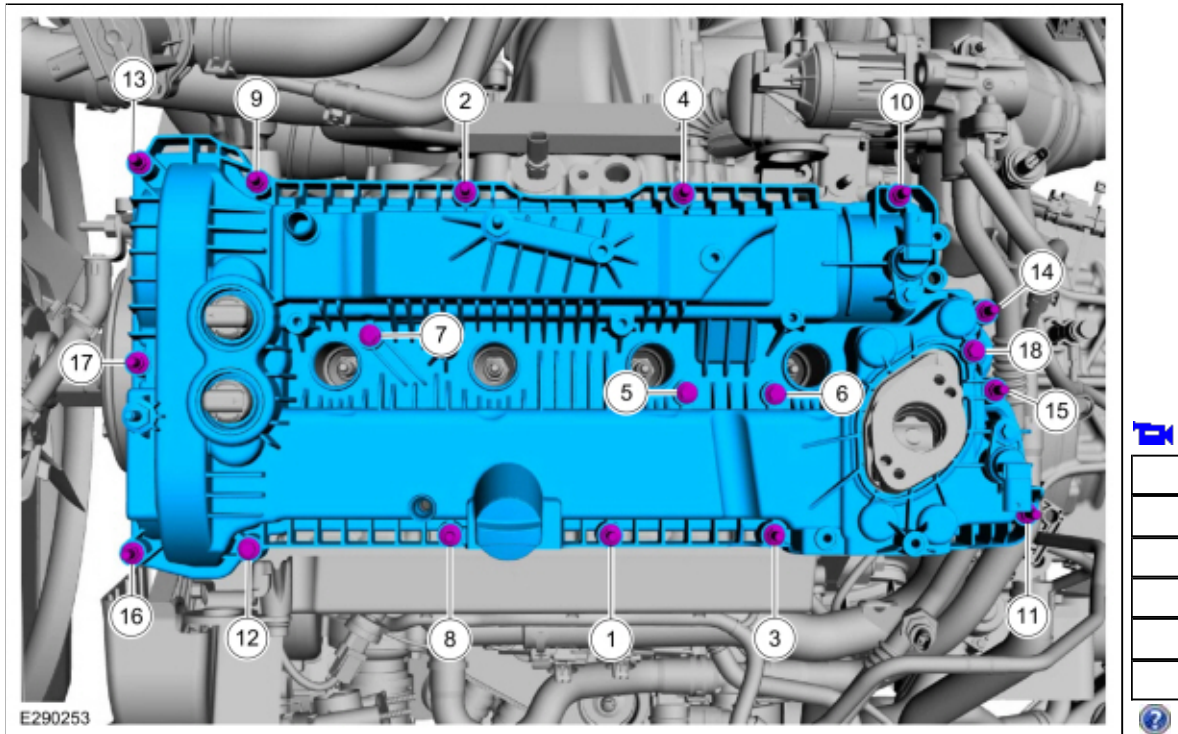
3. Apply a 5.5 mm (0.22 in) bead of silicone sealant in the 4 places shown.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



4. **NOTE:** The valve cover must be secured within 10 minutes of silicone gasket application. If the valve cover is not secured within 10 minutes, the sealant must be removed and the sealing area cleaned.

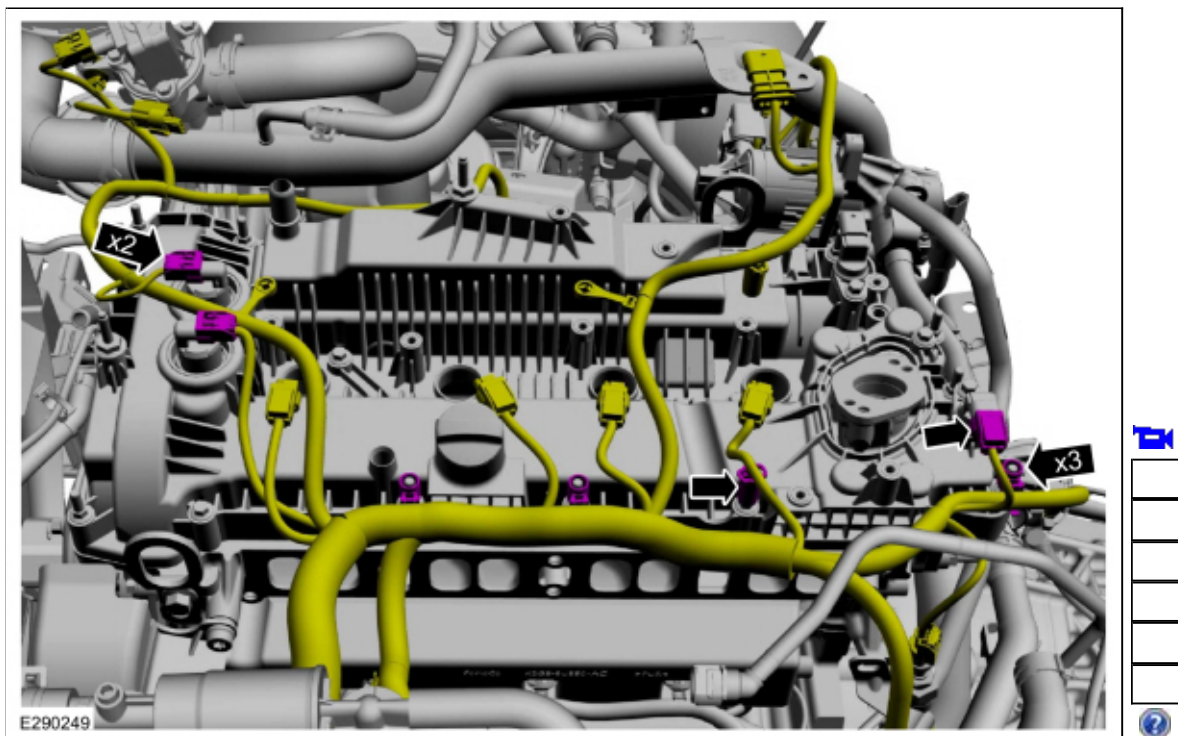
Install the valve cover and tighten the fasteners in sequence shown.

Torque: 97 lb.in (11 Nm)

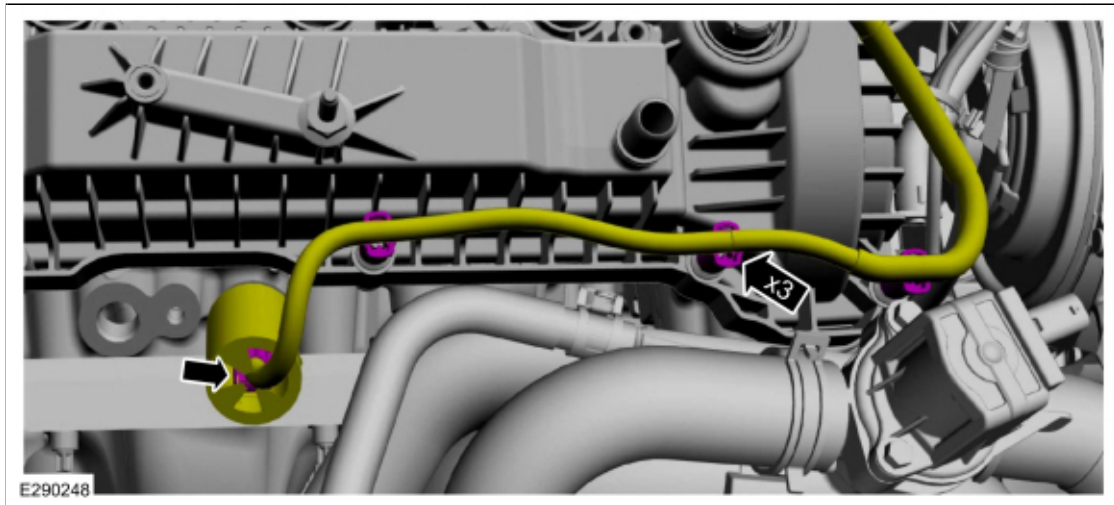


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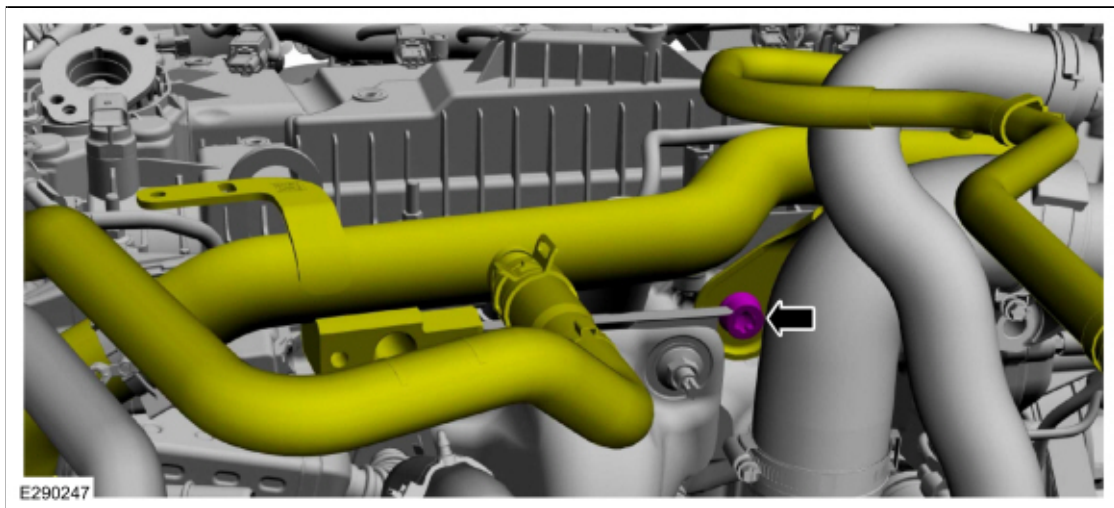
- Position the wiring harness.
- Attach the wiring harness retainers.
- Connect the wiring harness electrical connectors.



6. Connect the CHT sensor wiring harness electrical connector and attach the retainers.

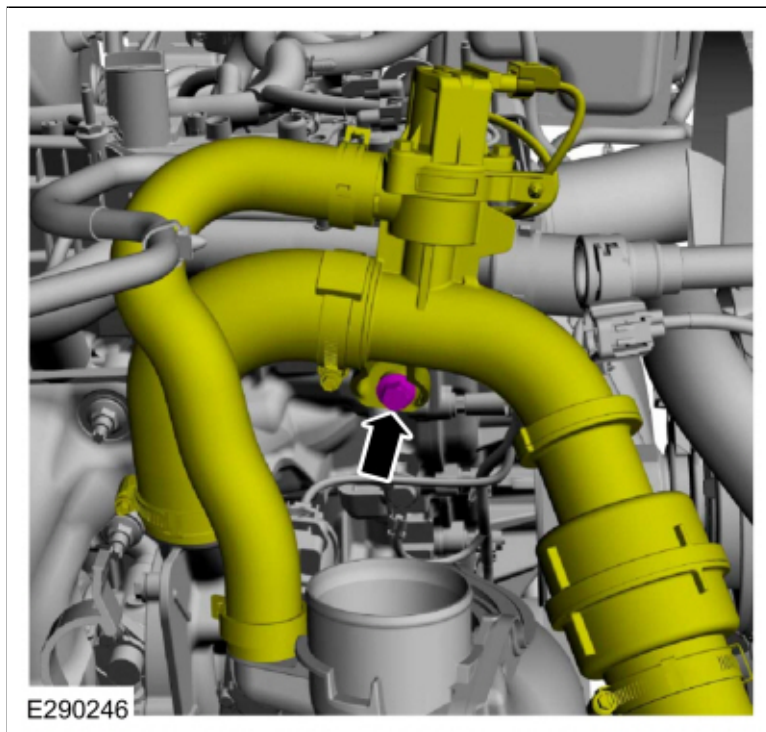


7. Position the coolant tube and install the bolt.
Torque: 35 lb.ft (48 Nm)

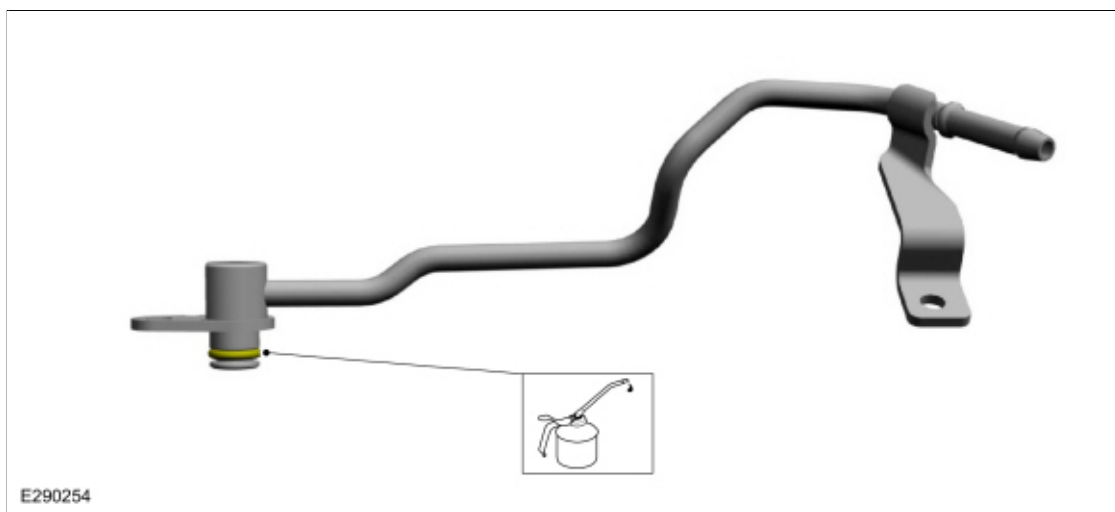


8. Position CAC tube and install the bolt.
Torque: 177 lb.in (20 Nm)

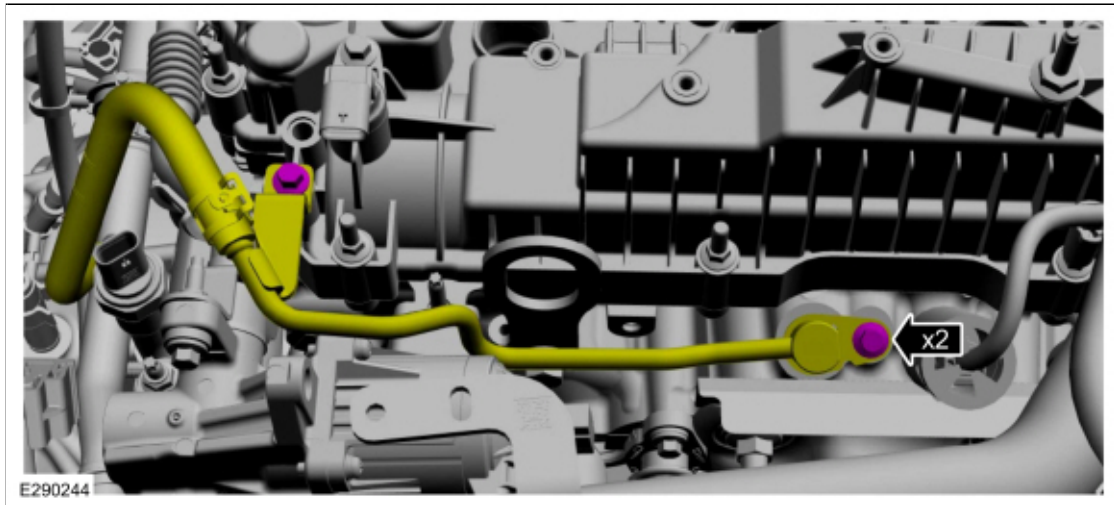




9. Lubricate the coolant tube O-ring seal with clean engine coolant.

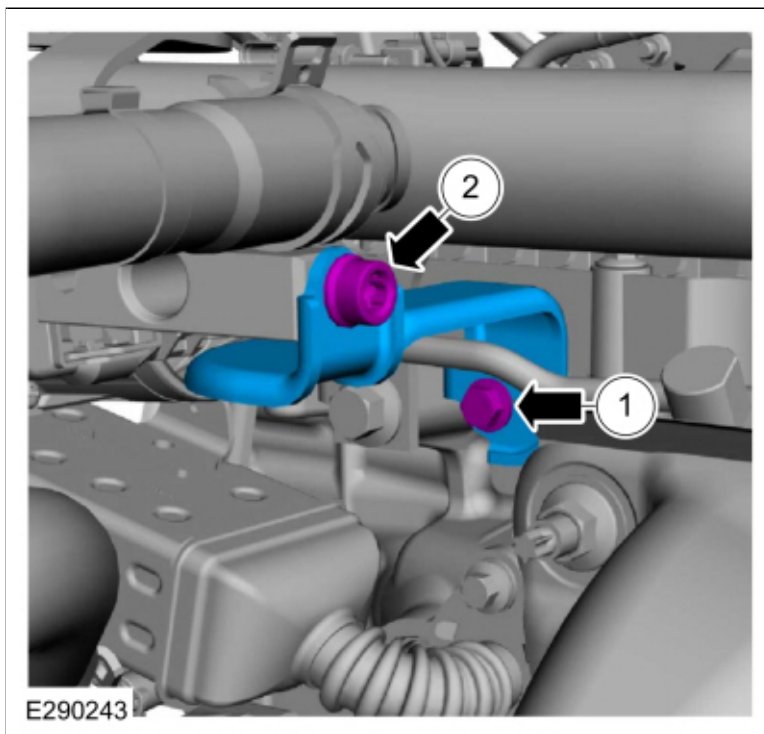


10. Install the coolant tube and the bolts.
Torque: 97 lb.in (11 Nm)

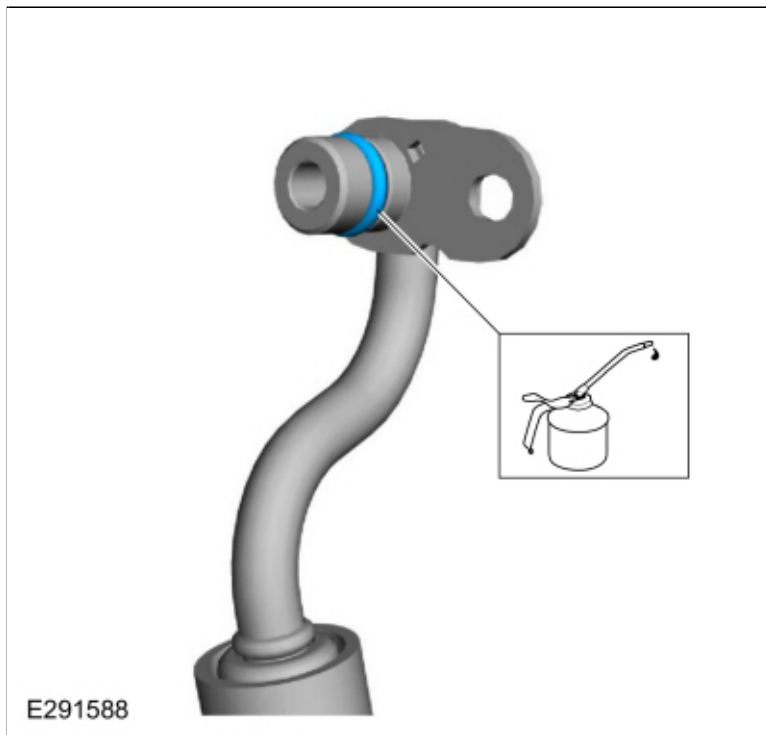


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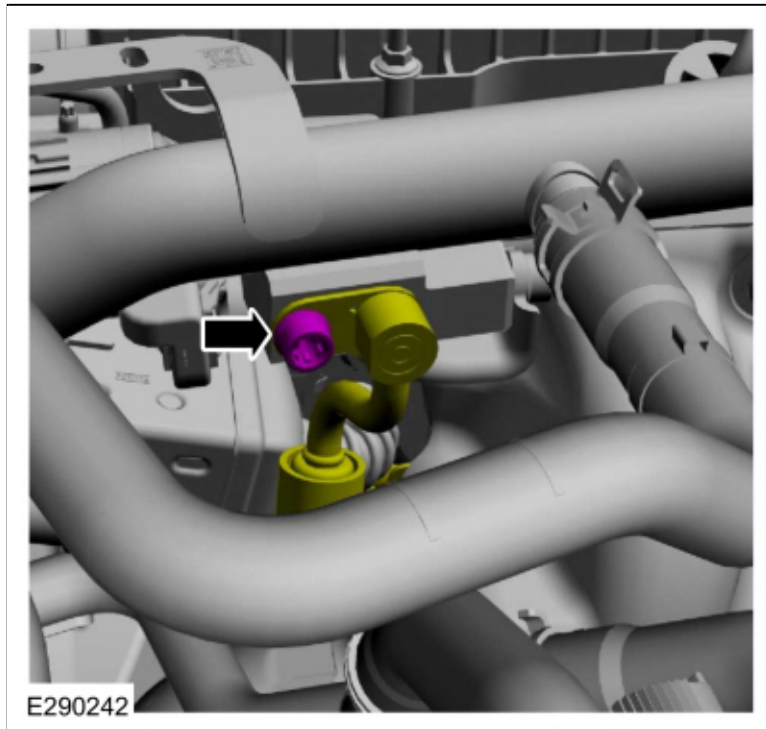
1. Install the coolant tube support bracket and the bolt.
Torque: 97 lb.in (11 Nm)
2. Install the coolant tube support bracket bolt.
Torque: 97 lb.in (11 Nm)



12. Lubricate the turbocharger coolant tube O-ring seal with clean engine coolant.

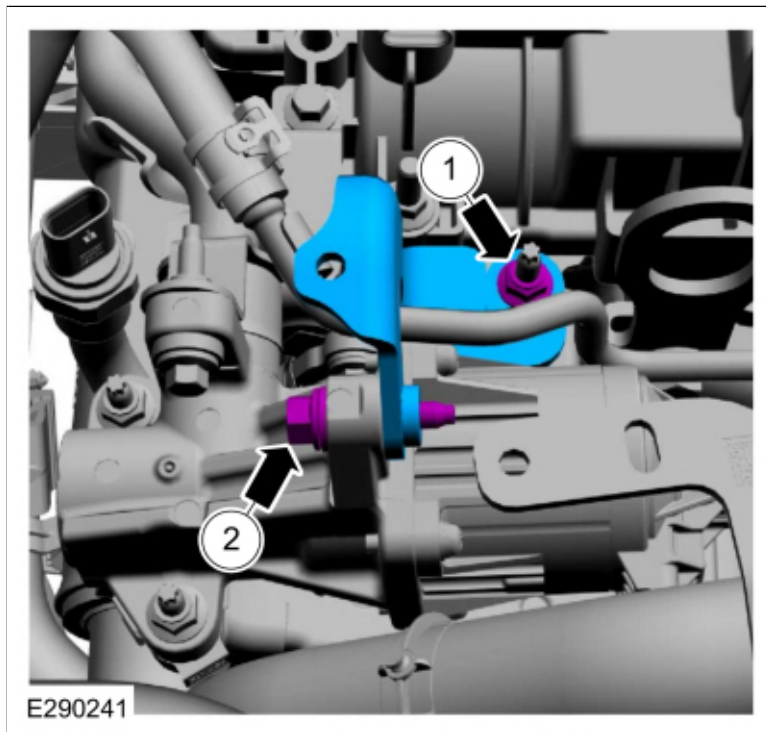


13. Position the turbocharger coolant tube and install the bolt.
Torque: 97 lb.in (11 Nm)



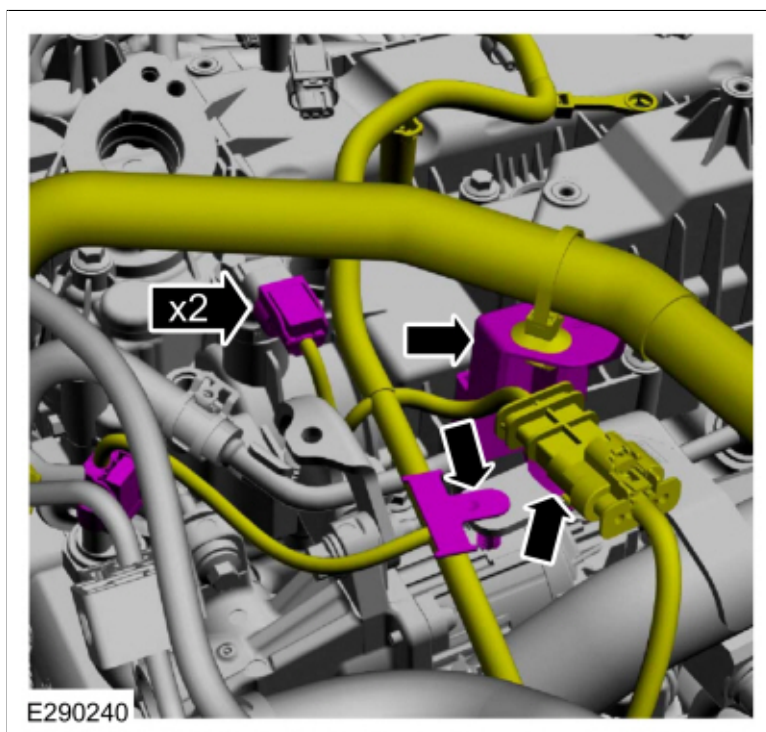
- 14.
1. Install the EGR valve bracket and the bolt.
Torque: 97 lb.in (11 Nm)
 2. Install the EGR valve bracket nut.

Torque: 97 lb.in (11 Nm)



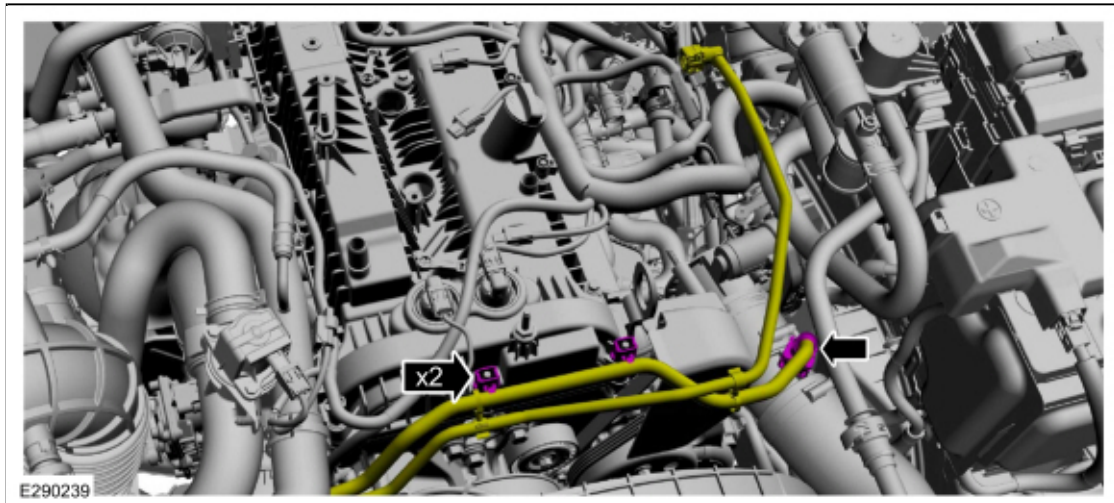
15.

- Attach the HO2S electrical connector to the bracket.
- Connect the wiring harness electrical connectors and retainer.
- Position the wiring harness retainer on the rear engine lift eye.



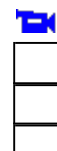
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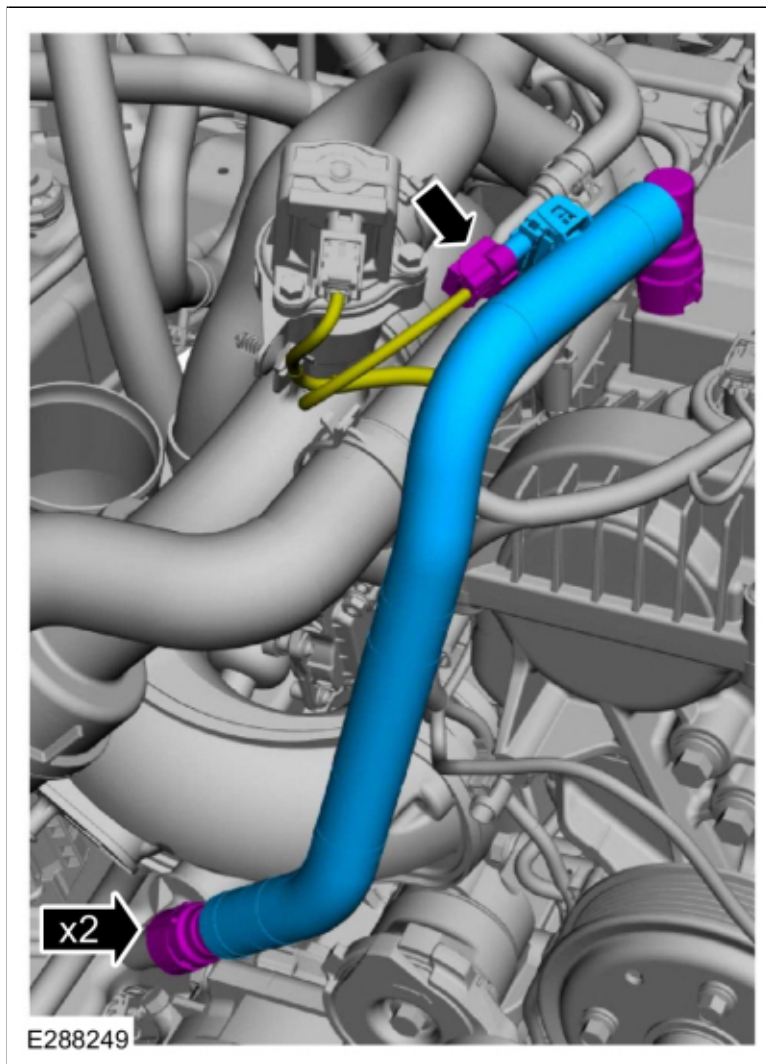
- Position and attach the EVAP canister tube retainers.
- Connect the EVAP canister tube quick release coupling.
Refer to: [Quick Release Coupling](#) (310-00 Fuel System - General Information - 2.3L EcoBoost (201kW/273PS), General Procedures).



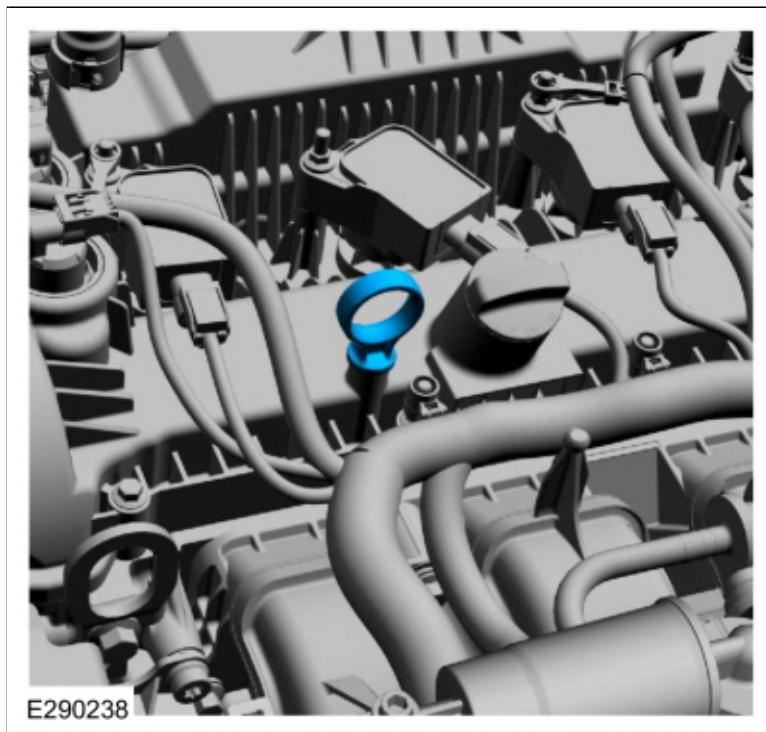
17.

- Install the new crankcase vent tube.
- Connect the wiring harness electrical connector.



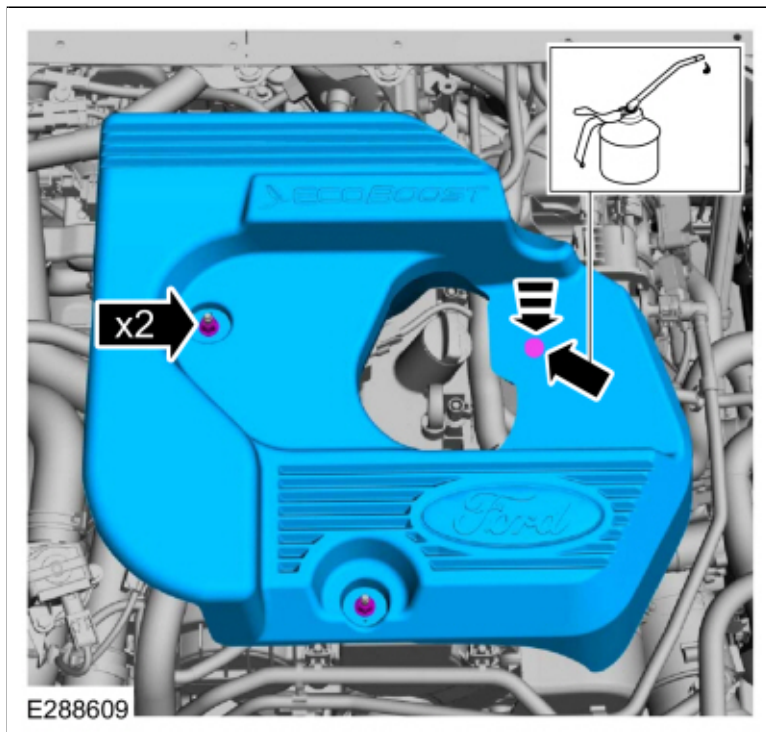


18. Install the following items:
 1. Install the ignition coil-on-plugs.
Refer to: [Ignition Coil-On-Plug](#) (303-07 Engine Ignition - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
 2. Install the high-pressure fuel pump.
Refer to: [High-Pressure Fuel Pump](#) (303-04A Fuel Charging and Controls - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
19. Remove the oil level indicator.



20. Install the air cleaner outlet tube.
Refer to: [Air Cleaner Outlet Pipe](#) (303-12 Intake Air Distribution and Filtering - 2.3L EcoBoost (201kW/273PS), Removal and Installation).
21. Fill the cooling system.
Refer to: [Cooling System Draining, Vacuum Filling and Bleeding](#) (303-03 Engine Cooling - 2.3L EcoBoost (201kW/273PS), General Procedures).
22.
 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.



23. Pressurize the fuel system.
Refer to: [Fuel System Pressure Release](#) (310-00 Fuel System - General Information - 2.3L EcoBoost (201kW/273PS), General Procedures).

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