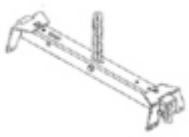



Engine

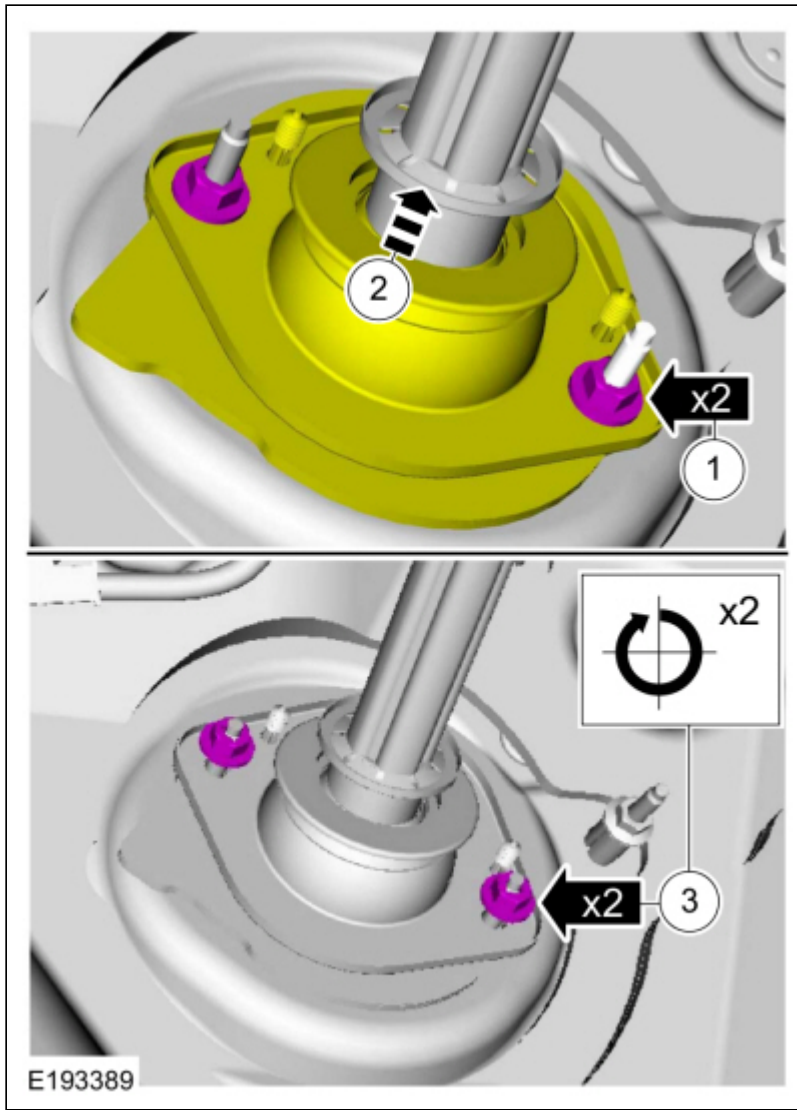
Special Tool(s) / General Equipment

	303-F047 Lifting Bracket, Engine
	303-F070 Support Bar, Engine TKIT-1999A-F/LT TKIT-1999A-FM/FLM
Magnetic Socket	
Floor Crane	
Oil Drain Equipment	
Trolley Jack	
Wooden Block	

All vehicles

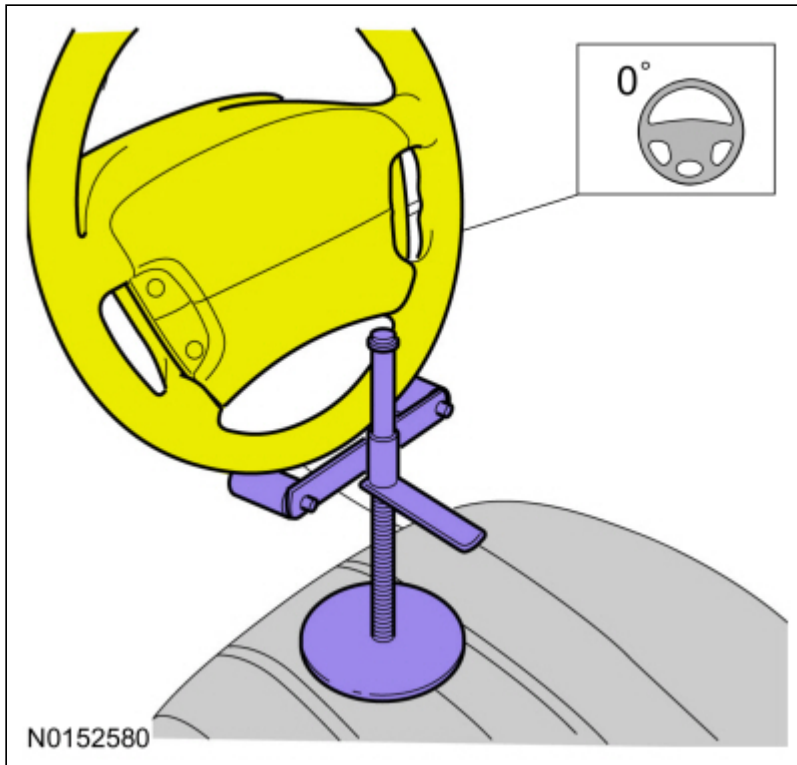
1. With the vehicle in NEUTRAL, position it on a hoist.
Refer to: [Jacking and Lifting - Overview](#) (100-02 Jacking and Lifting, Description and Operation).
2. Release the fuel system pressure.
Refer to: [Fuel System Pressure Release](#) (310-00B Fuel System - General Information - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), General Procedures).
3. Disconnect the battery ground and positive cables.
Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
4. Drain the engine cooling system.
Refer to: [Engine Cooling System Draining, Vacuum Filling and Bleeding](#) (303-03B Engine Cooling - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), General Procedures).
5. **NOTICE: Make sure to minimize damage to sealer foam and avoid pulling apart dash seal brackets from retainer pins. Excessive damage may allow engine noise, fumes, air or water to enter the passenger compartment.**
 1. Remove the steering column dash seal nuts.
 2. Loosen the dash seal.
 3. Hand start the dash seal nuts.





6. Using a holding device, hold the steering wheel in the straight-ahead position.





7. Remove the following items:

1. Hood.

Refer to: [Hood](#) (501-02 Front End Body Panels, Removal and Installation).

2. **NOTE:** *It is not necessary to clamp off the degas bottle hose with the cooling system drained.*

Degas bottle.

Refer to: [Degas Bottle](#) (303-03B Engine Cooling - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

3. **NOTE:** *It is not necessary to separate the air cleaner outlet pipe and the air cleaner, the 2 components can be removed as an assembly.*

Air cleaner outlet pipe.

Refer to: [Air Cleaner Outlet Pipe](#) (303-12B Intake Air Distribution and Filtering - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

4. Air cleaner.

Refer to: [Air Cleaner](#) (303-12B Intake Air Distribution and Filtering - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

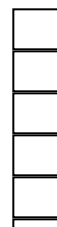
5. Cooling fan motor and shroud.

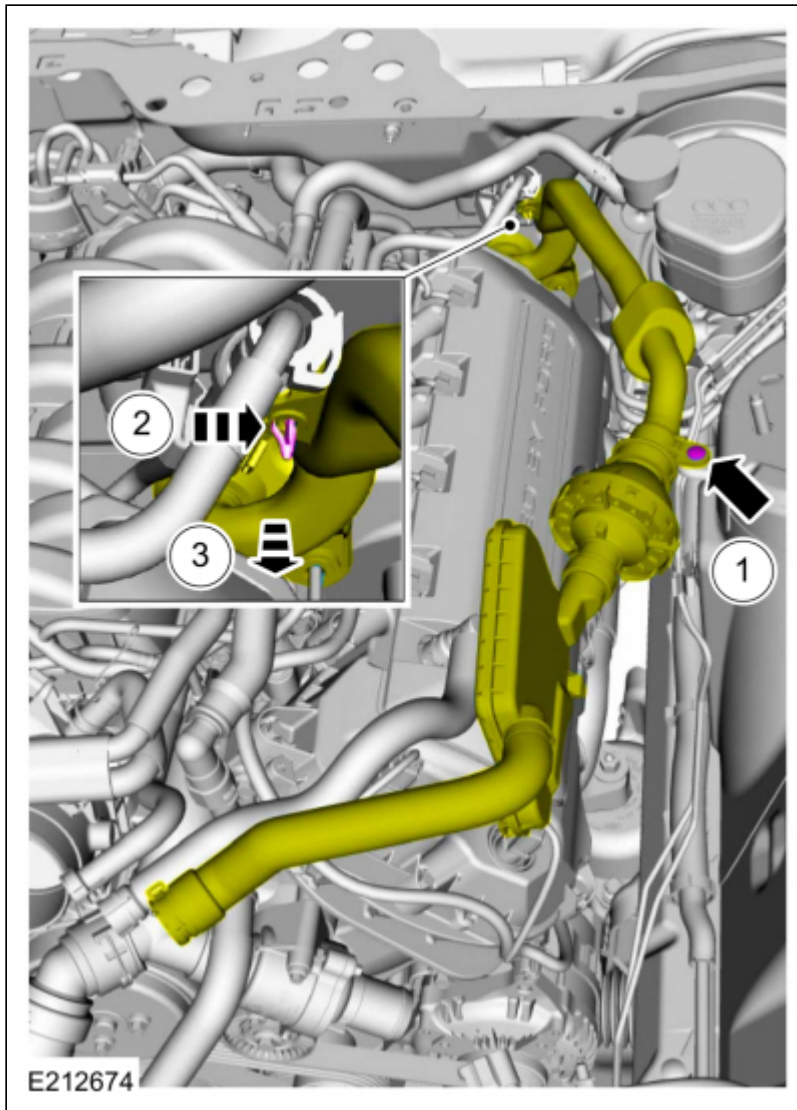
Refer to: [Cooling Fan Motor and Shroud](#) (303-03B Engine Cooling - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

6. A/C compressor belt.

Refer to: [Air Conditioning \(A/C\) Compressor Belt](#) (303-05B Accessory Drive - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

8.
 1. Remove the pin-type retainer.
 2. Depress the retainer.
 3. Position the sound enhancement pipe aside.





9. Remove the following items:

1. Intake manifold.

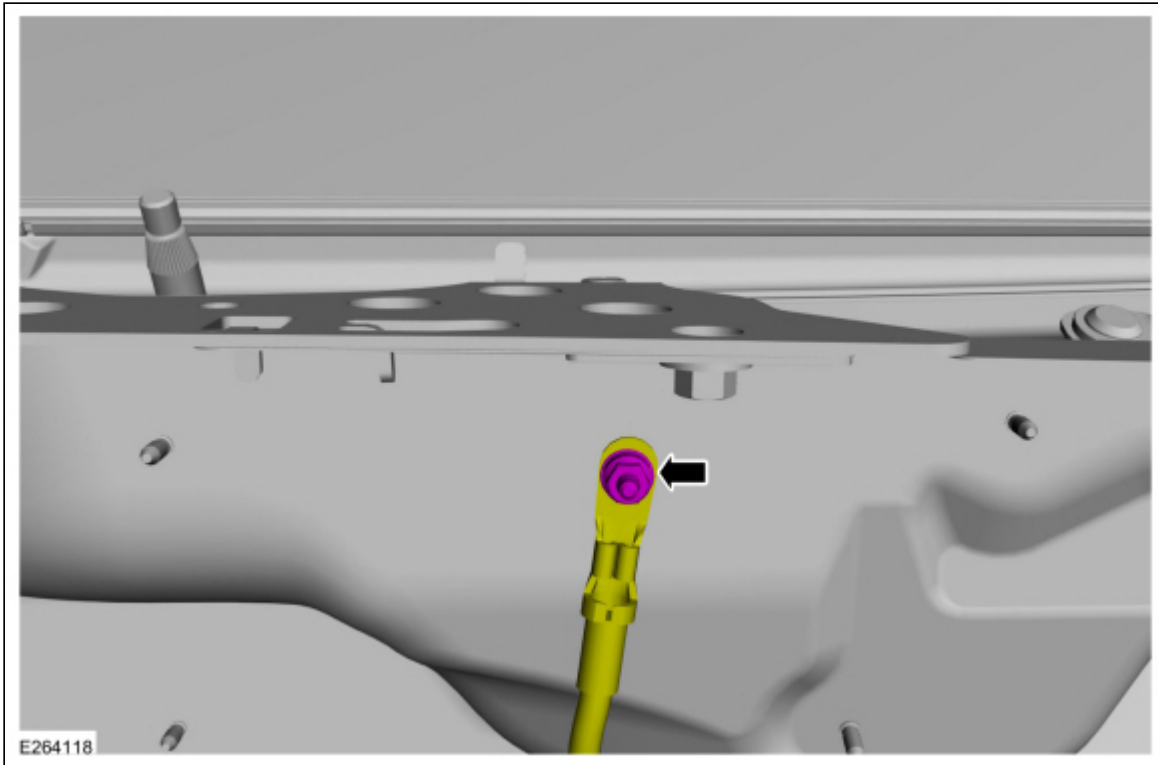
Refer to: [Intake Manifold](#) (303-01B Engine - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

2. Battery tray.

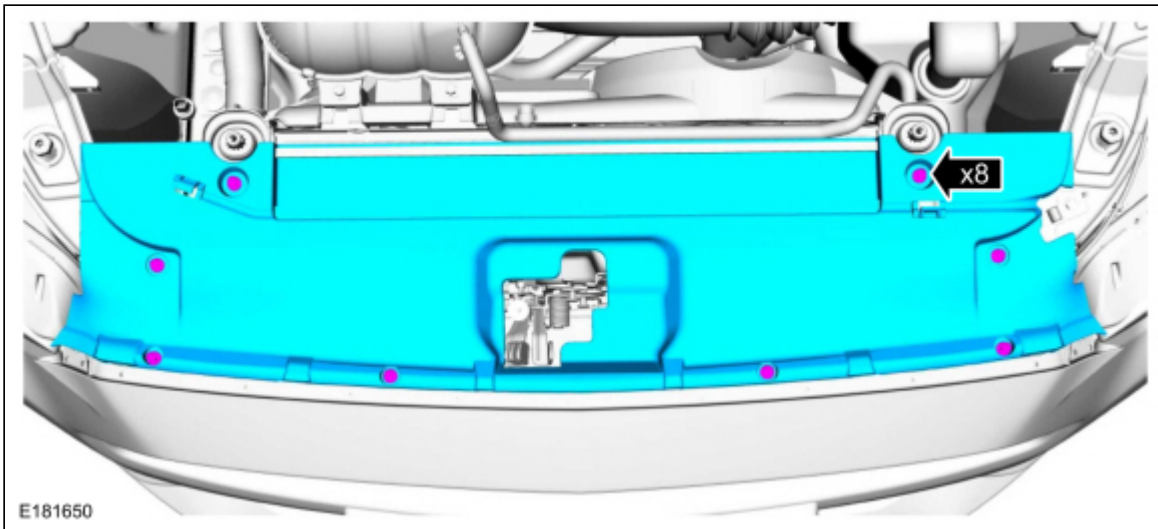
Refer to: [Battery Tray](#) (414-01 Battery, Mounting and Cables, Removal and Installation).

10. Remove the nut and the engine ground wire from the cowl.



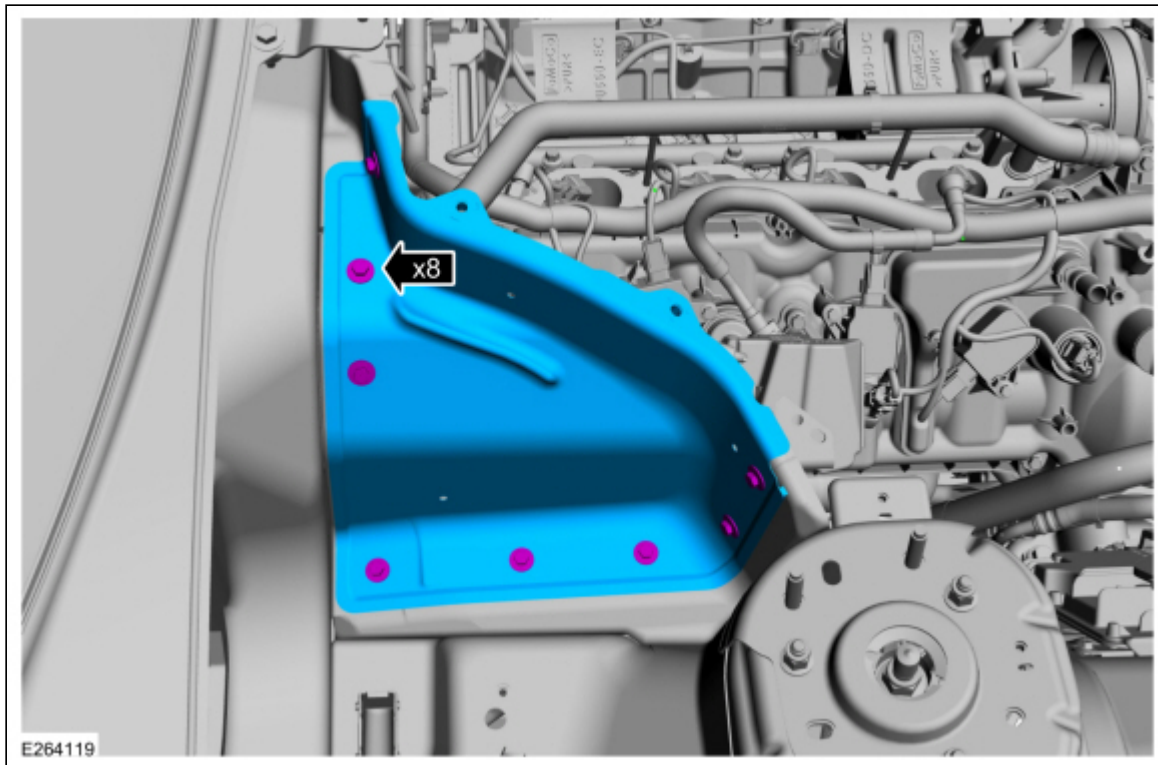


11. Remove the retainers and the radiator top shield.

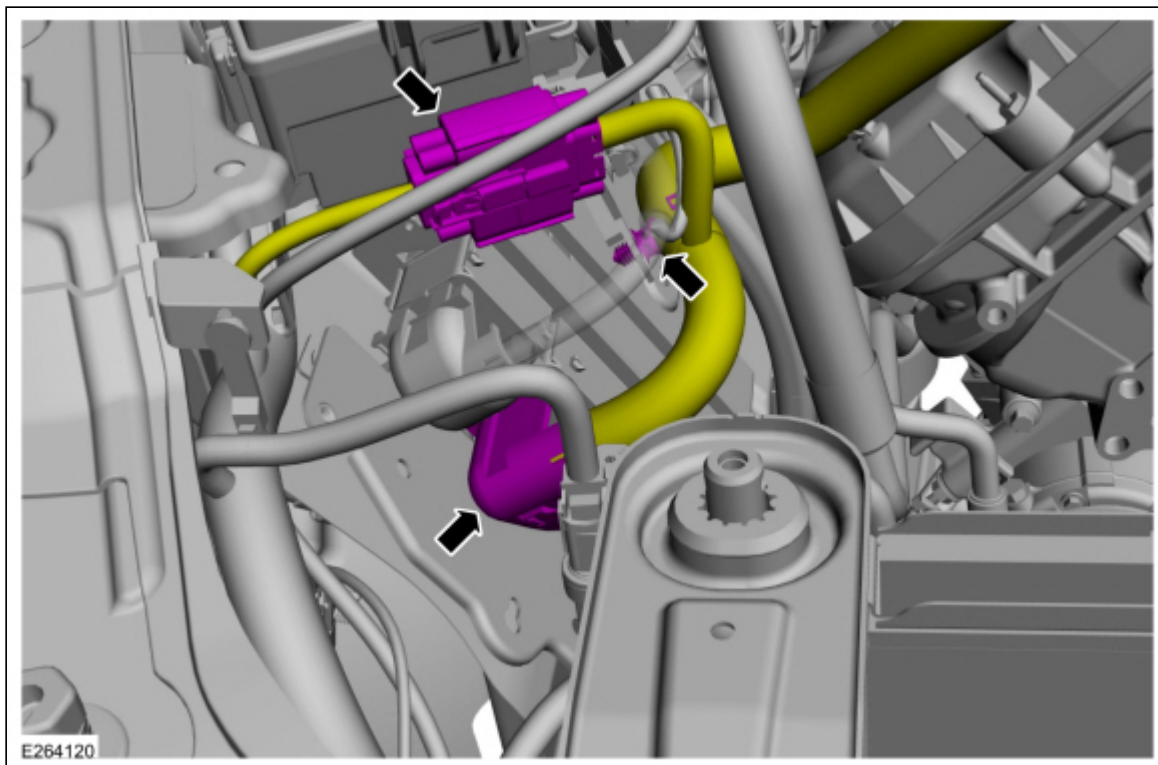


12. Remove the fasteners and the battery heat shield.

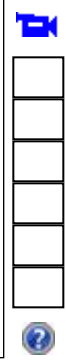


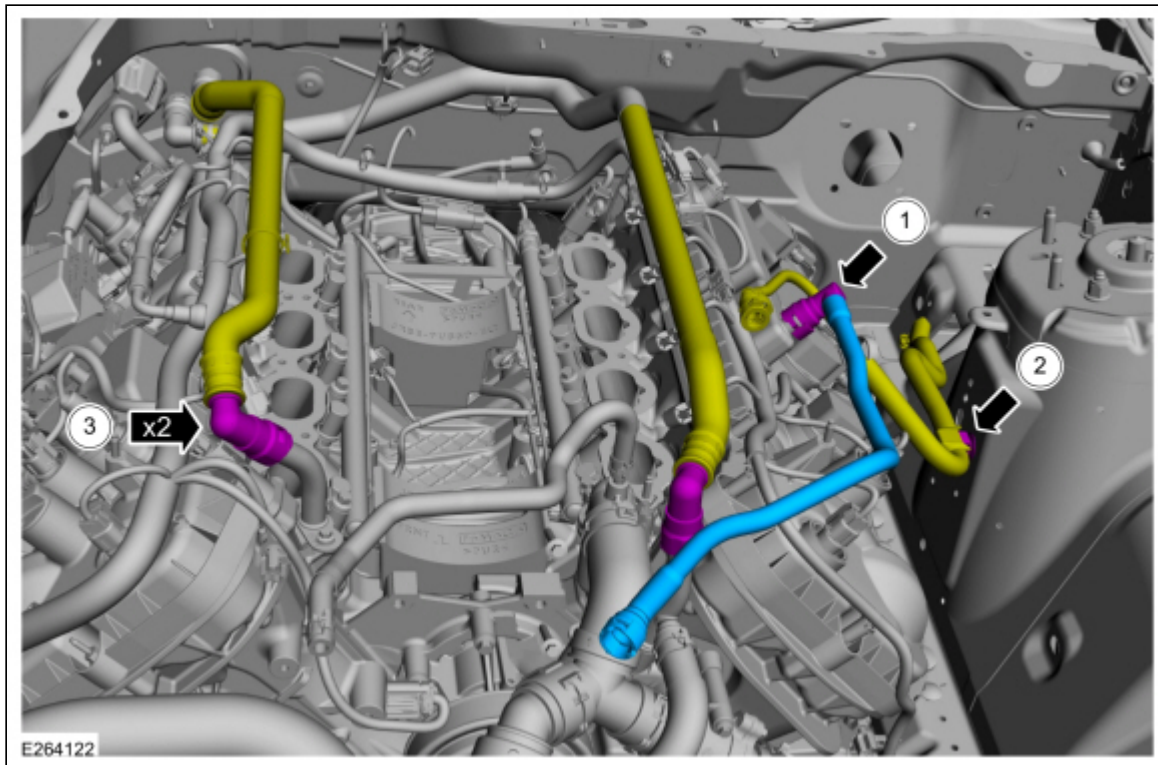


13. Disconnect the PCM electrical connector, the 16 pin electrical connector and detach the wiring harness retainer.

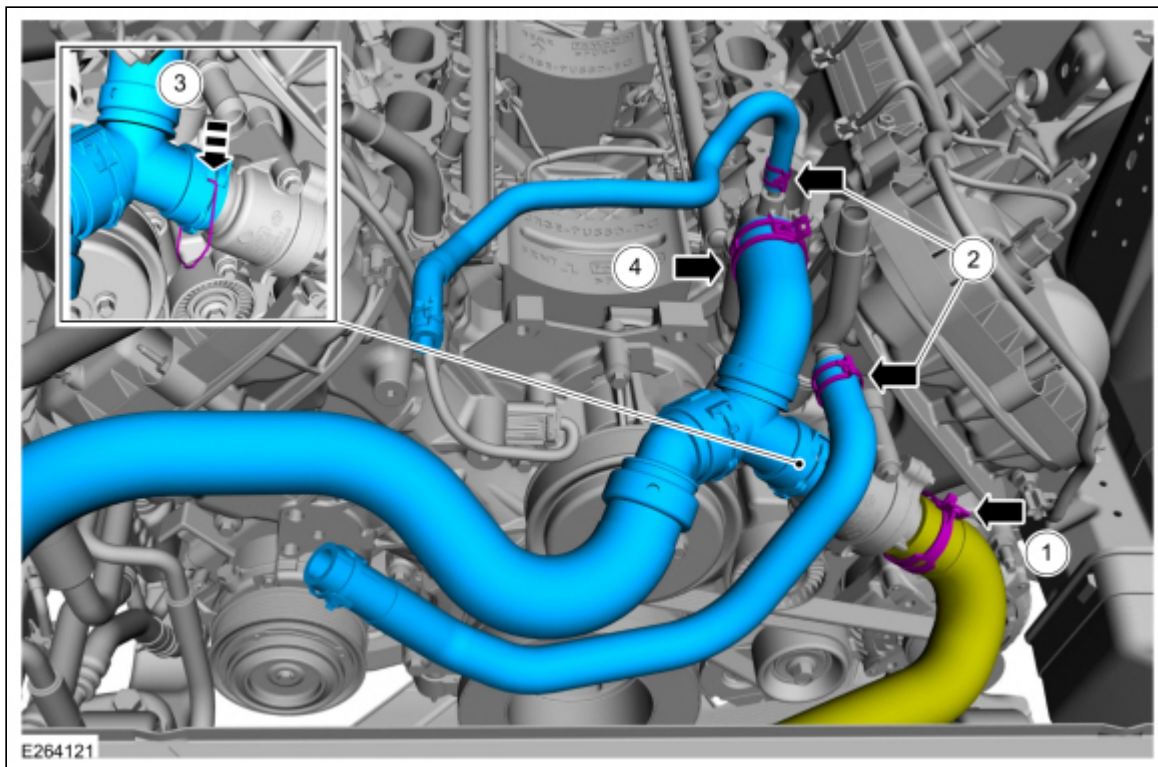


- 14.
1. Disconnect the quick release coupling and remove the crankcase vent tube.
Refer to: [Quick Release Coupling](#) (310-00B Fuel System - General Information - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), General Procedures).
 2. Detach the retainer and position the fuel supply tube aside.
 3. Disconnect the quick release couplings and position the heater hoses aside.



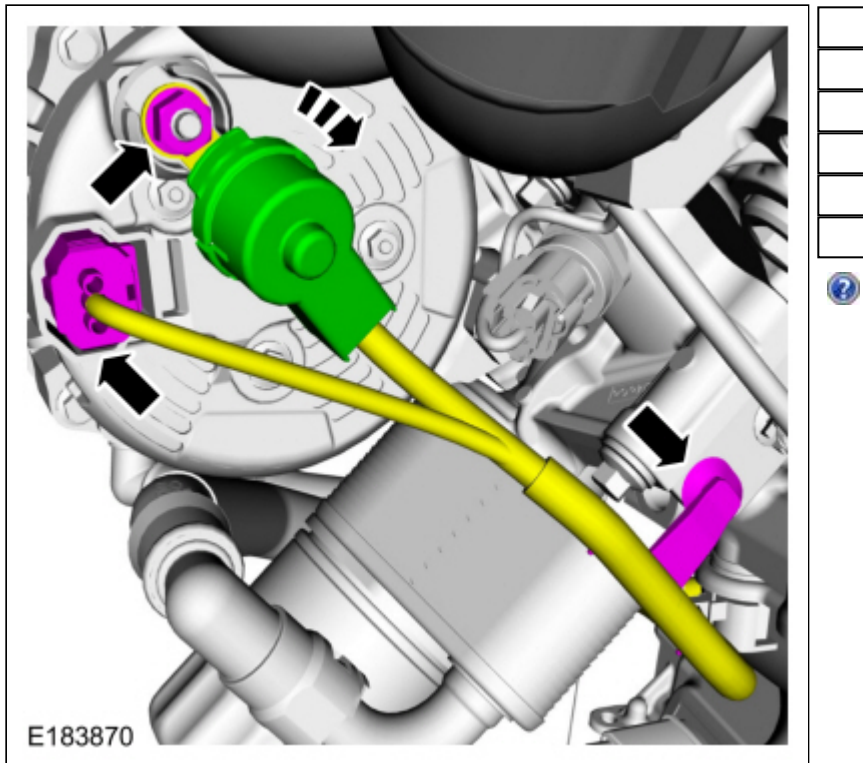


15.
 1. Release the clamp and position the lower radiator hose aside.
 2. Release the clamps and remove the coolant hoses.
 3. Slide the spring clip until it hits the stop on the hose fitting.
 4. Release the clamp and remove the coolant bypass T assembly from the engine.



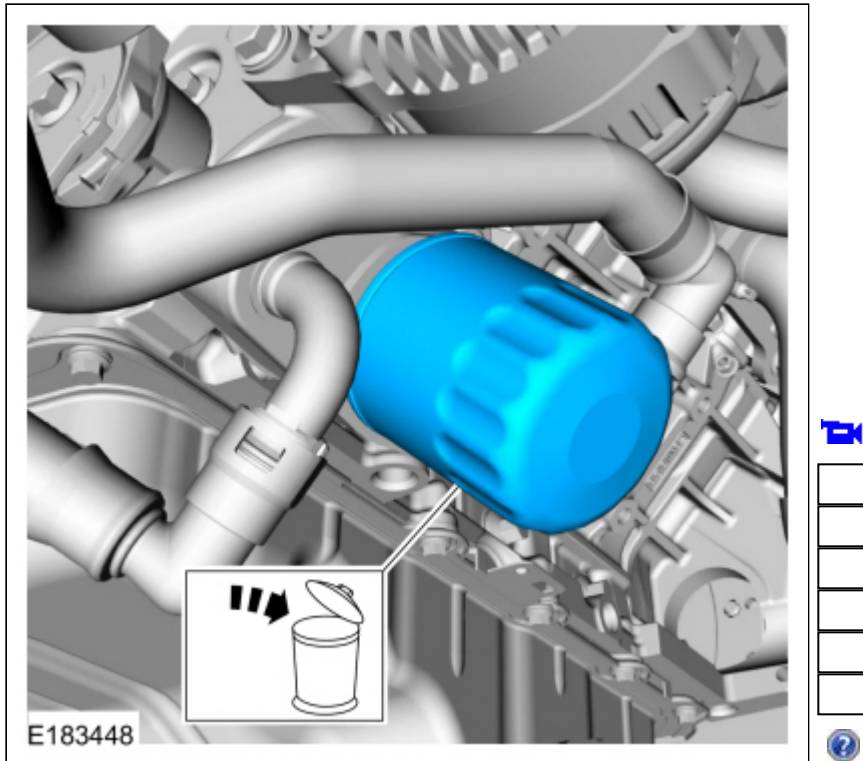
16.
 - Position the cover aside.
 - Remove the nut and disconnect the B+ cable.
 - Disconnect the wiring harness electrical connector.
 - Detach the harness retainer.





17. **NOTE:** GT vehicle shown, Mach 1 similar.

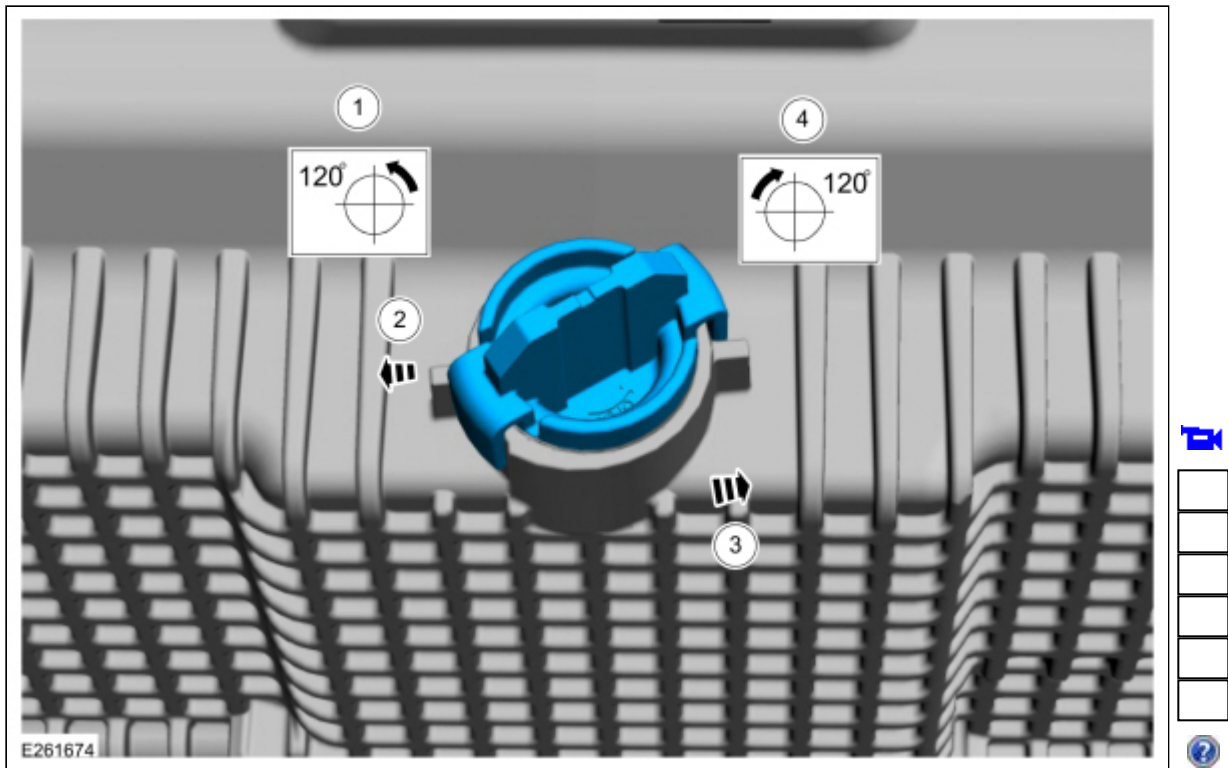
Remove and discard the engine oil filter.



18. **NOTE:** The drain plug should be removed and installed by hand, do not use tools.

1. Turn the oil drain plug by hand counterclockwise 120 degrees.
Use the General Equipment: Oil Drain Equipment
2. Pull the oil drain plug out of the oil pan.
3. After the oil has drained, push the oil drain plug into the oil pan.
4. **NOTICE:** Overtightening will damage the oil drain plug and possibly the oil pan.

Turn the oil drain plug by hand clockwise 120 degrees.



GT

19. **NOTE:** *It is not necessary to clamp off the coolant hoses with the cooling system drained.*

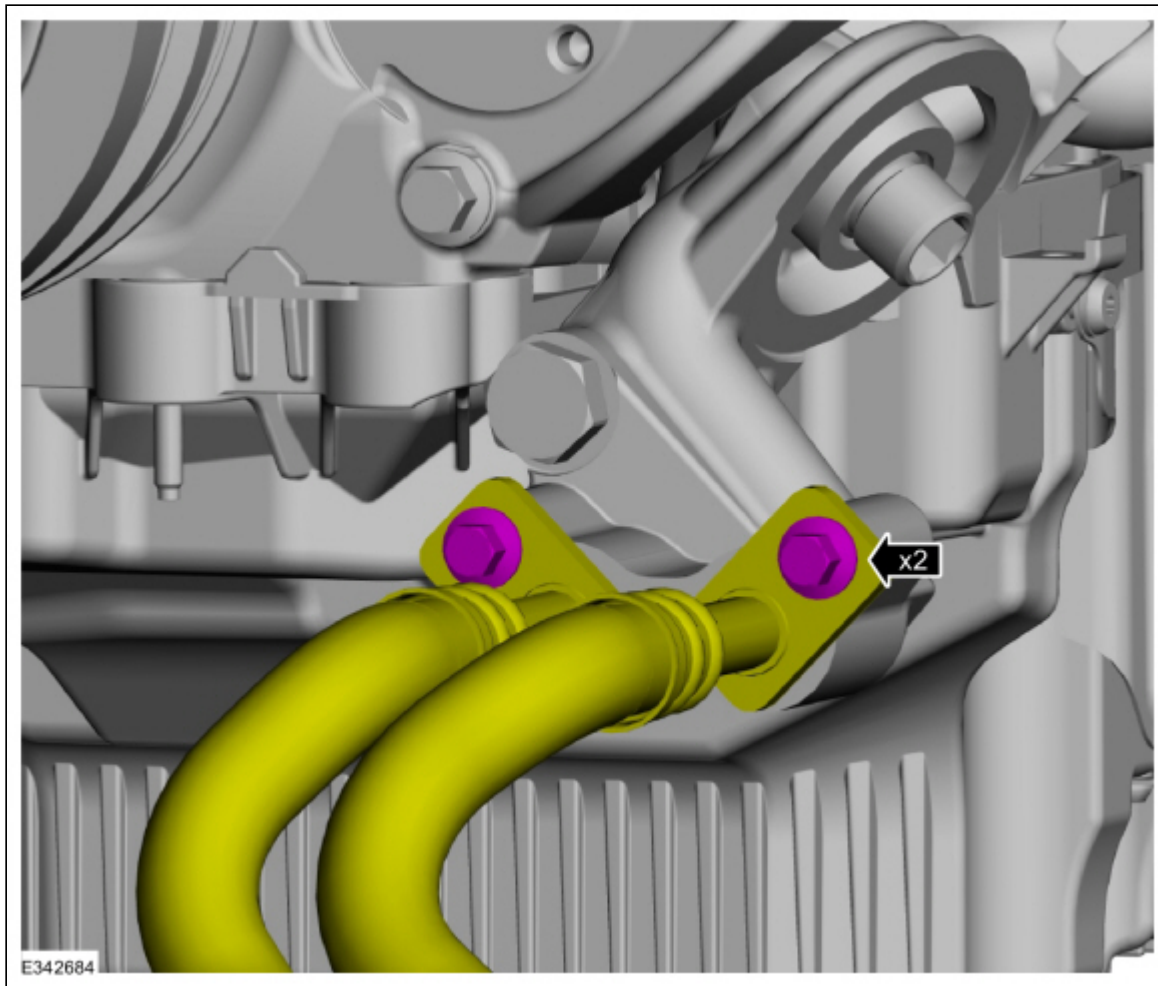
Remove the engine oil cooler.

Refer to: [Oil Cooler](#) (303-01B Engine - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

Mach 1

20. Remove the bolts and disconnect the oil cooler hoses.





All vehicles

21. Remove the following items:

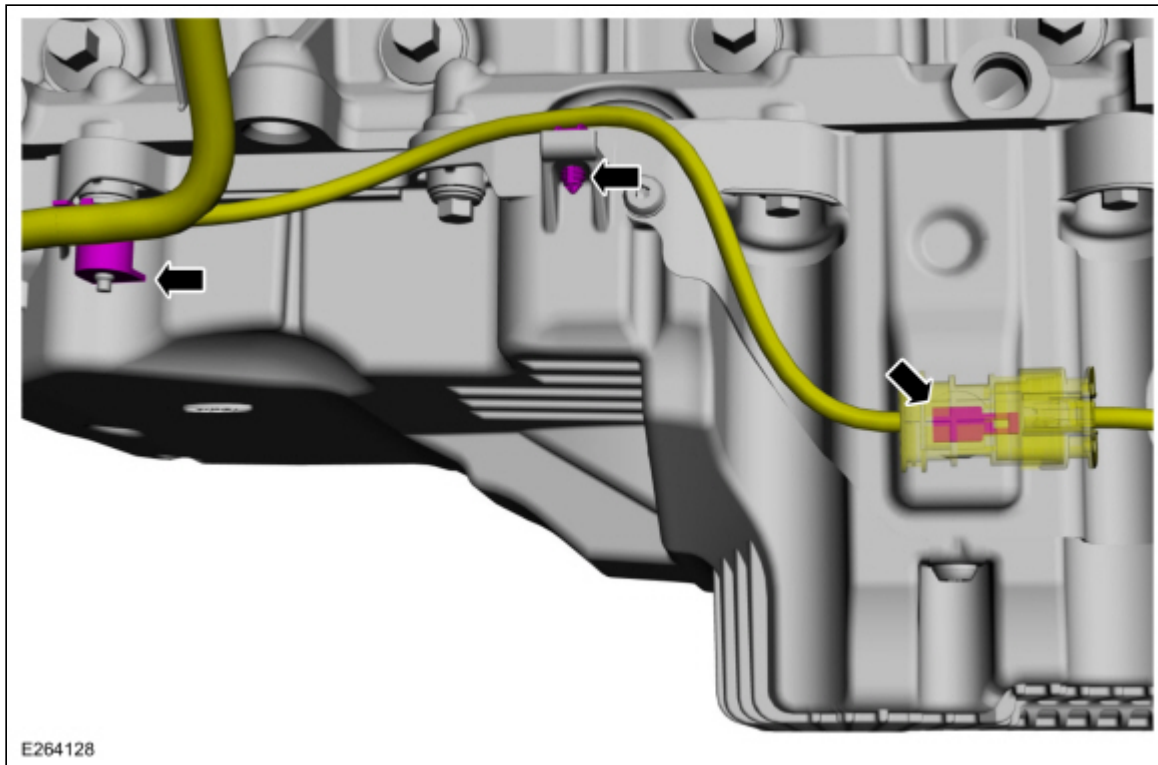
1. RH catalytic converter.

Refer to: [Catalytic Converter RH](#) (309-00B Exhaust System - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

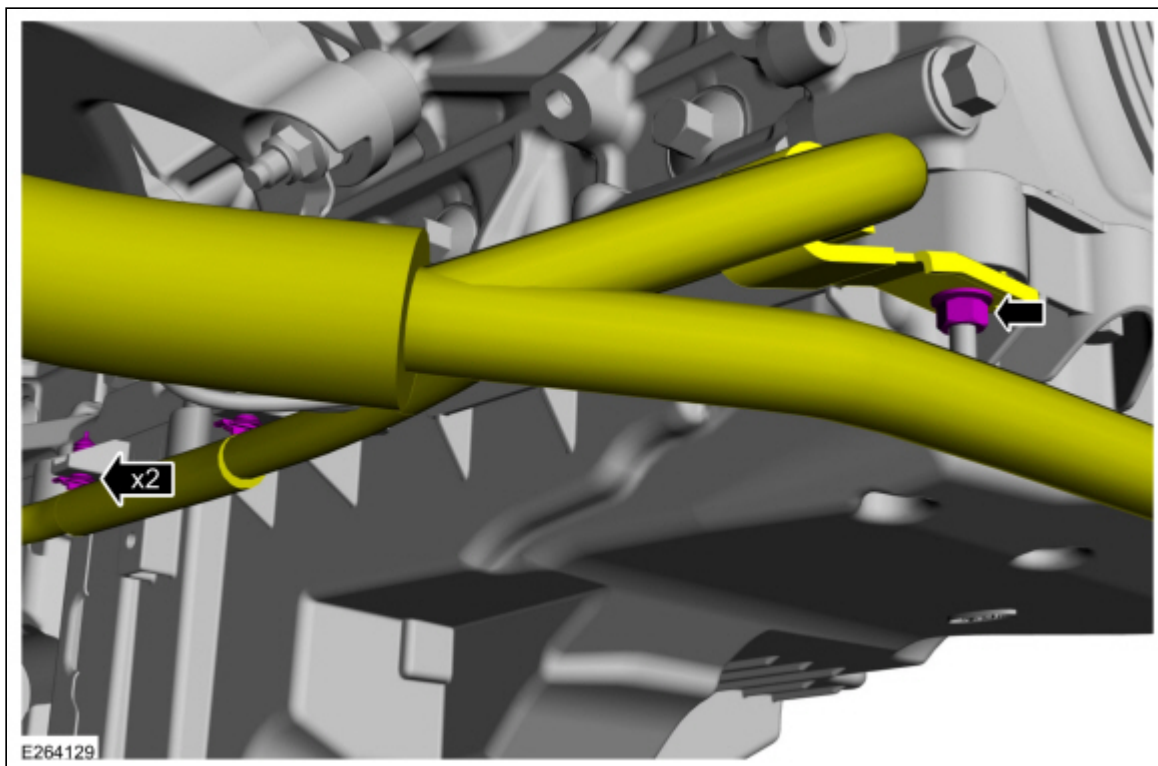
2. Refer to: [Starter Motor](#) (303-06B Starting System - 5.0L 32V Ti-VCT (359kW/486PS) (WU)/5.0L Ti-VCT V8 (343kW/466PS) (MF), Removal and Installation).

22. Detach the wiring harness retainers from the oil pan.





23. 1. Remove the nut and the wiring harness bracket.
2. Detach the wiring harness retainers from the oil pan.



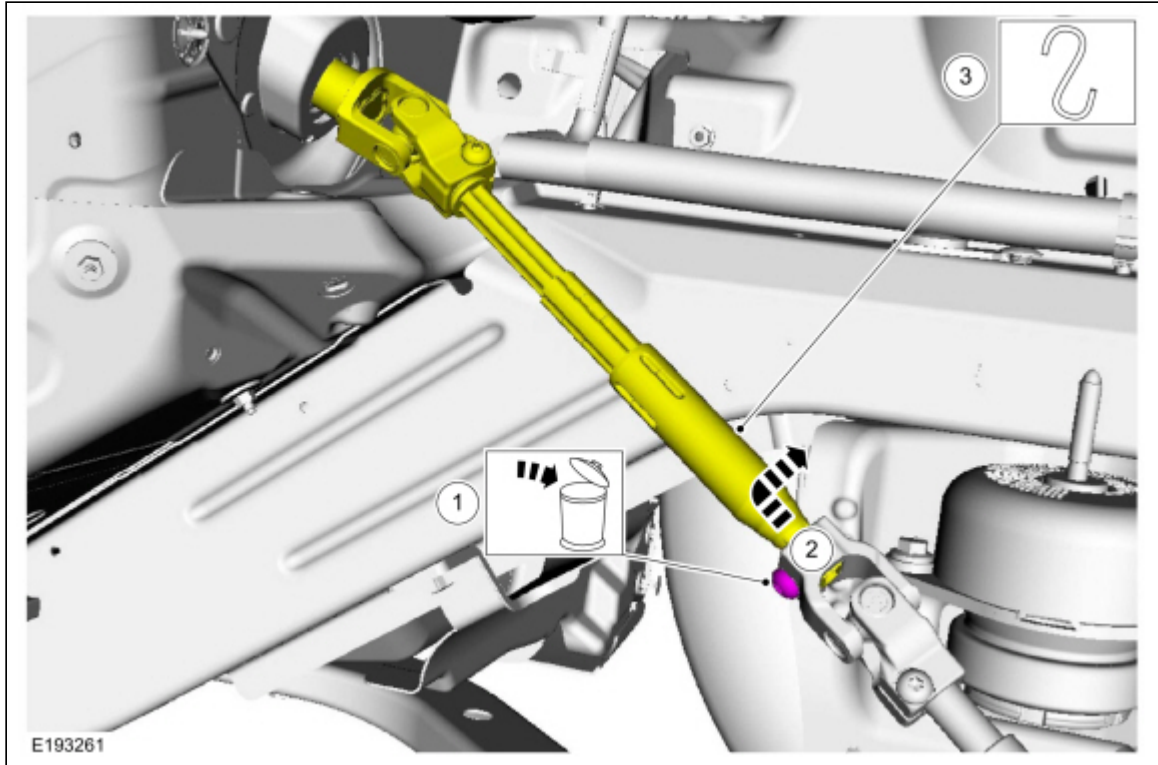
24. **⚠️ WARNING:** Do not reuse steering column shaft bolts. This may result in fastener failure and steering column shaft detachment or loss of steering control. Failure to follow this instruction may result in serious injury to vehicle occupant(s).

⚠️ WARNING: DO NOT hammer, pry or force steering column and column shafts during installation or removal. Failure to follow this instruction may cause damage to steering components that could lead to loss of steering control during vehicle operation and could result in serious personal injury or death.

⚠ WARNING: DO NOT attempt to remove or install the steering column lower u-joint at the steering gear without first loosening the steering column dash seal and fasteners. Failure to follow this instruction may cause damage to steering components that could lead to loss of steering control during vehicle operation and could result in serious personal injury or death.

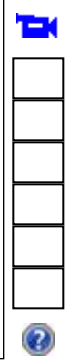
Detach the steering column lower shaft from the lower coupling.

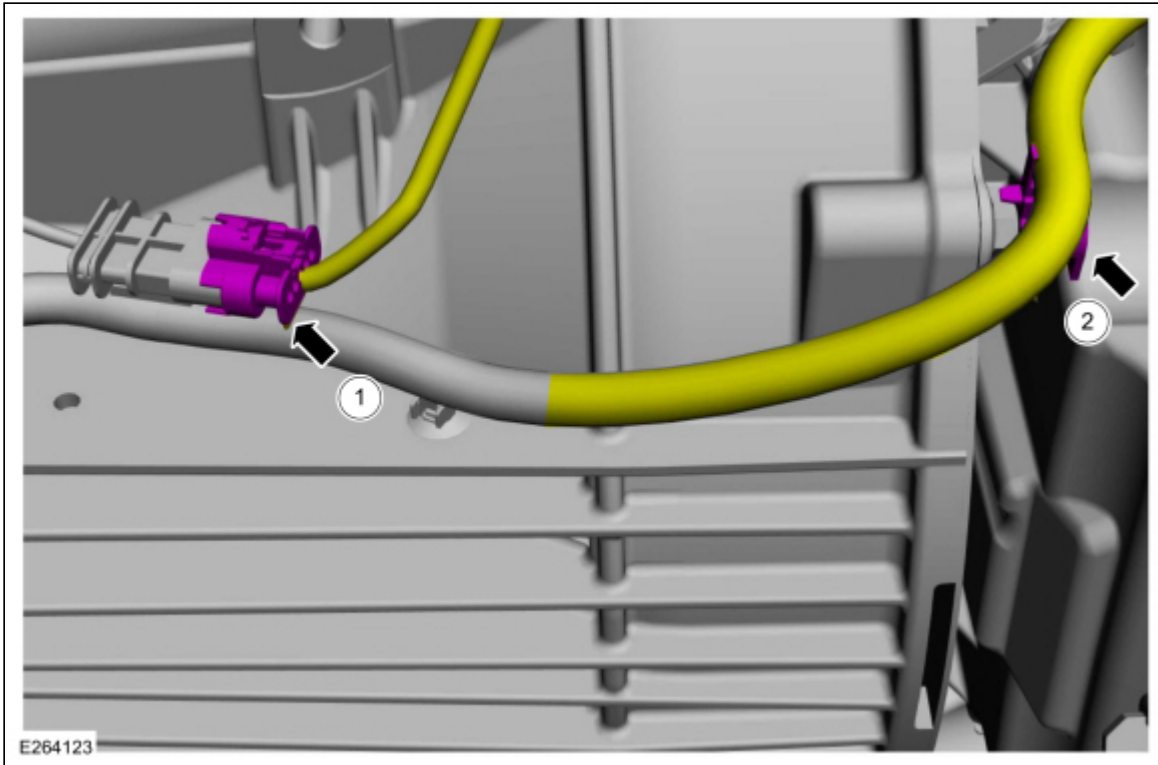
1. Remove and discard the steering column shaft bolt.
2. Pull apart the steering column shaft from the coupling.
3. Secure the lower shaft to the frame rail to avoid damage to the shaft.



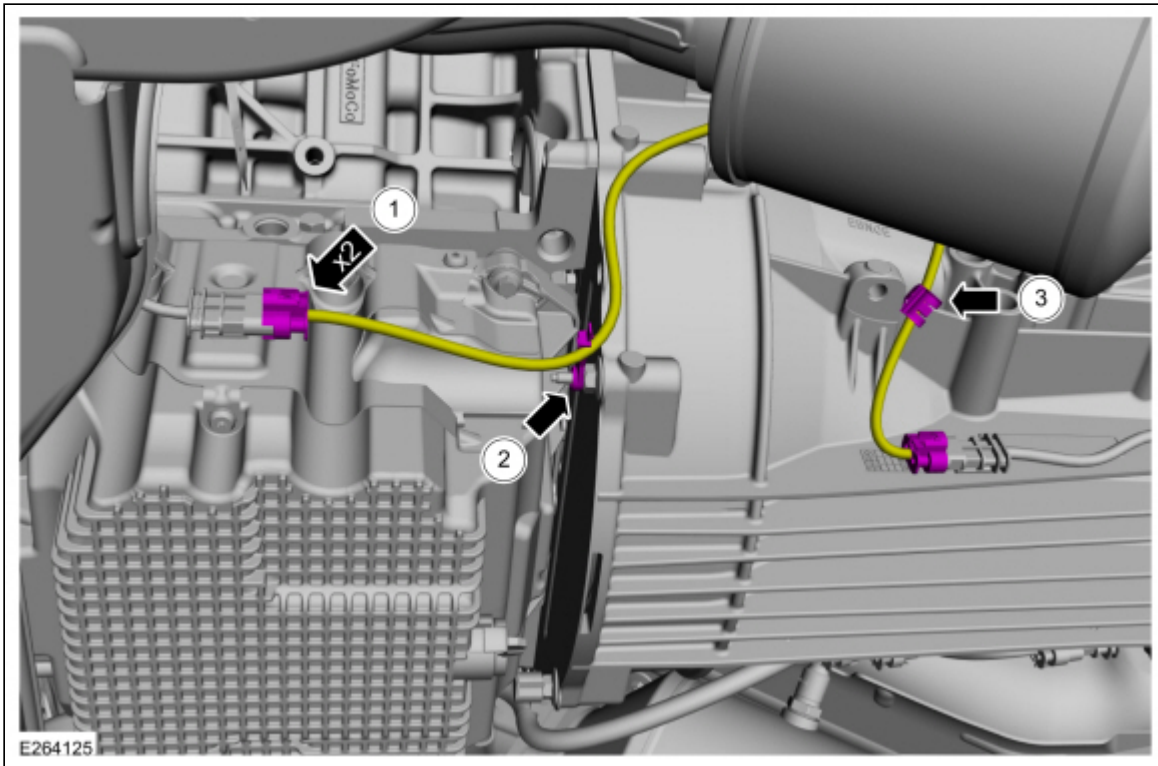
6-Speed Manual Transmission – 3160/6-Speed Manual Transmission – MT82

25. 1. Disconnect the HO2S electrical connector.
2. Detach the retainer and position the wiring harness aside.

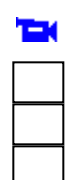
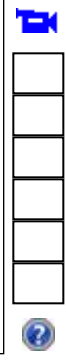


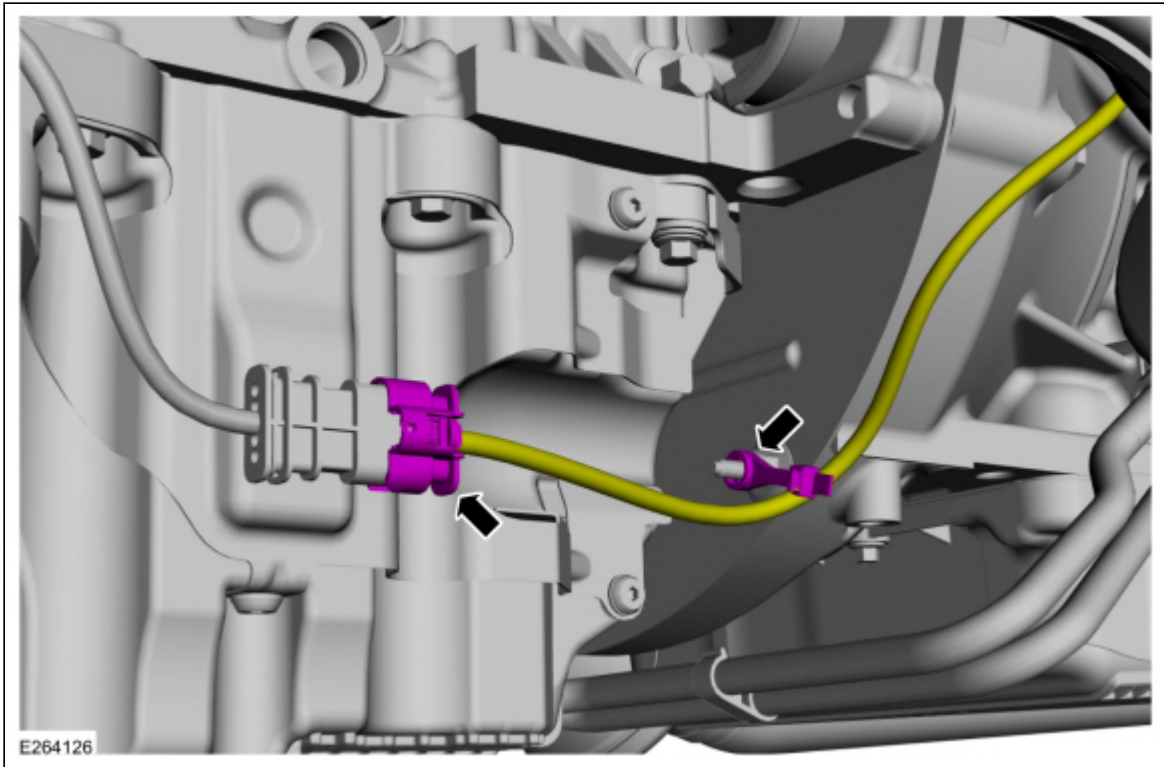


26. 1. Disconnect the 2 wiring harness electrical connectors.
 2. Detach the retainer and position the wiring harness aside.
 3. Detach the retainer and position the wiring harness aside.



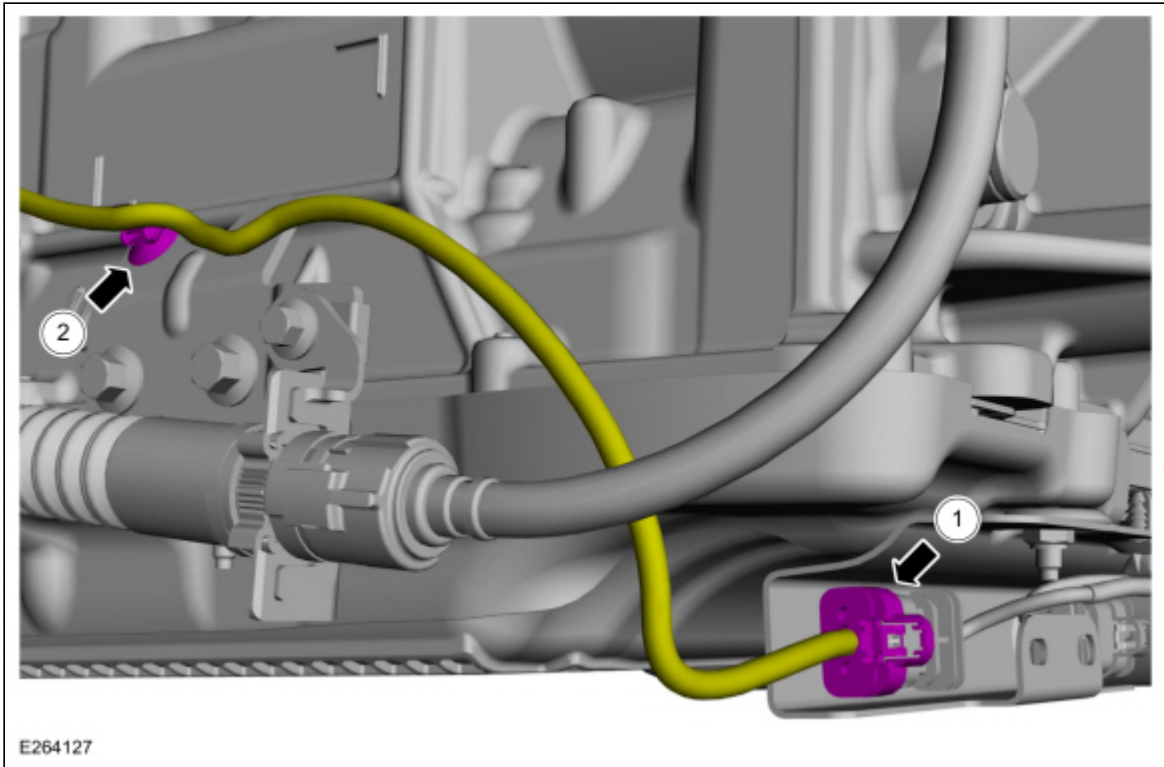
27. Remove the engine rear cover plate stud bolts.







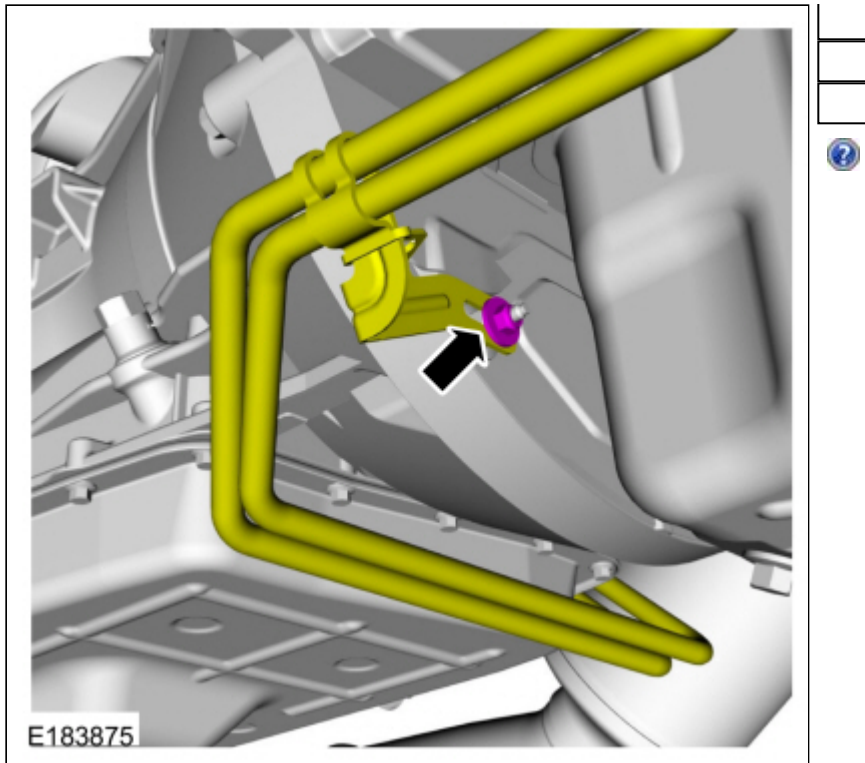
30. 1. Disconnect the HO2S electrical connector.
 2. Detach the retainer and position the wiring harness aside.



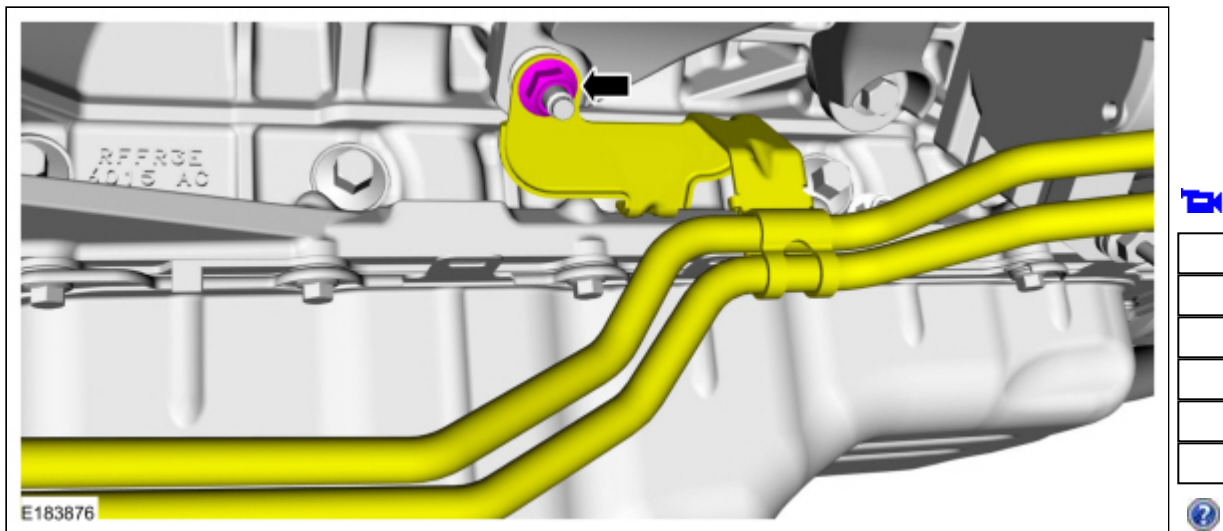


31. Remove the transmission cooling tube nut and bracket from the flexplate inspection cover stud bolt.



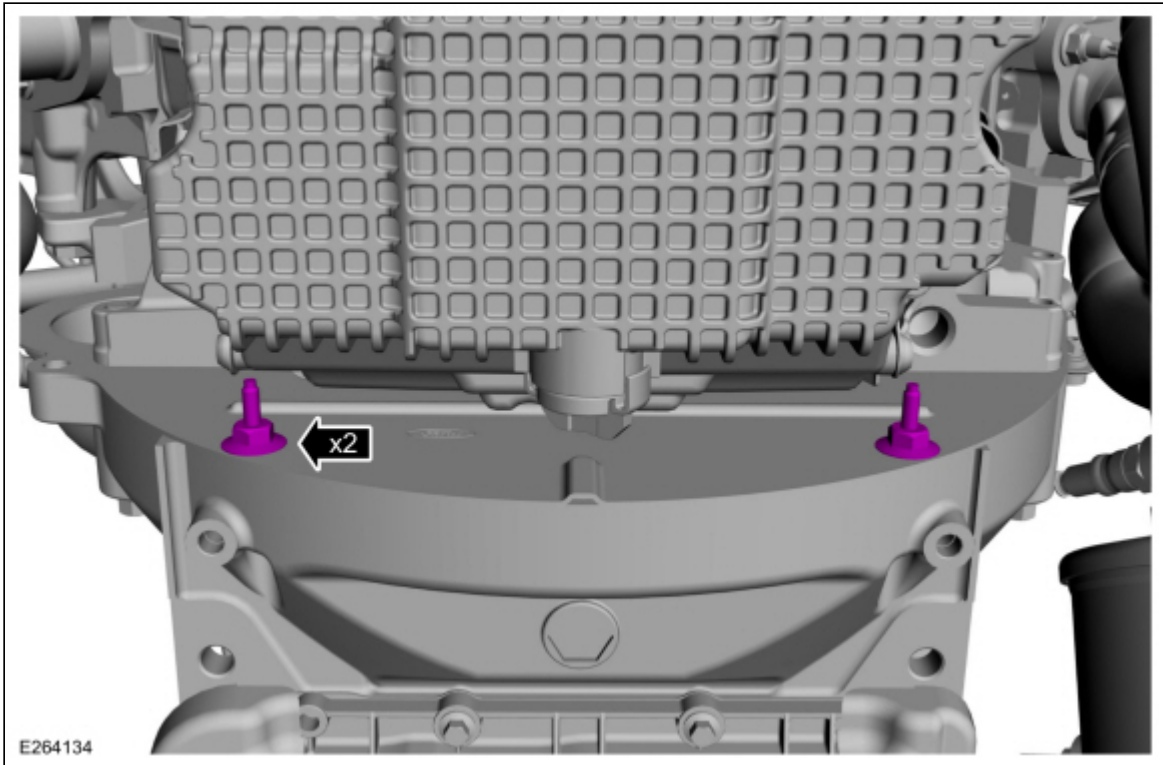


32. Remove the transmission cooling tube bracket nut and position the bracket and tubes aside.

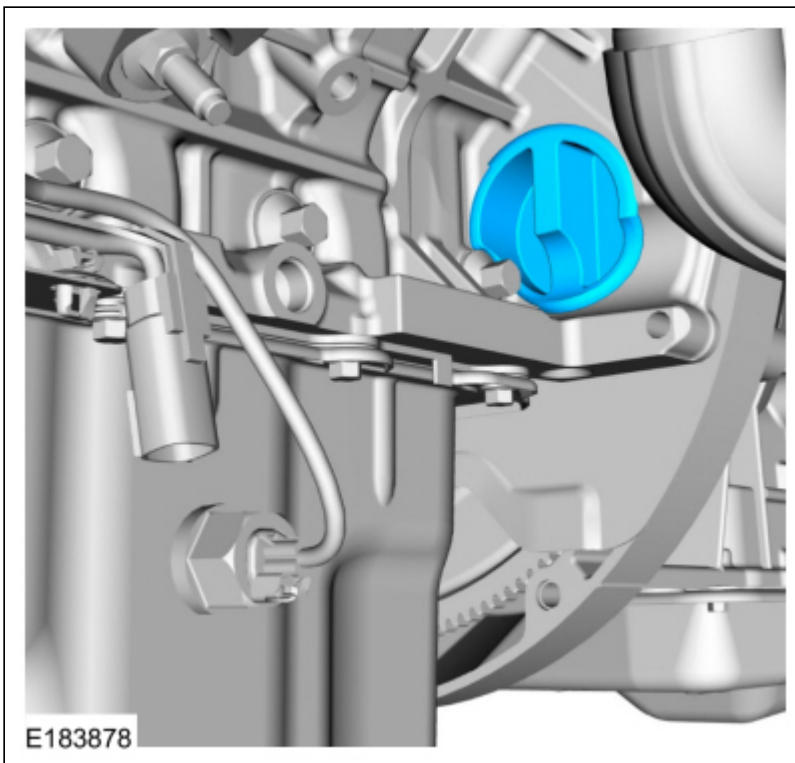


33. Remove the stud bolts.



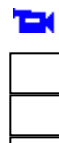


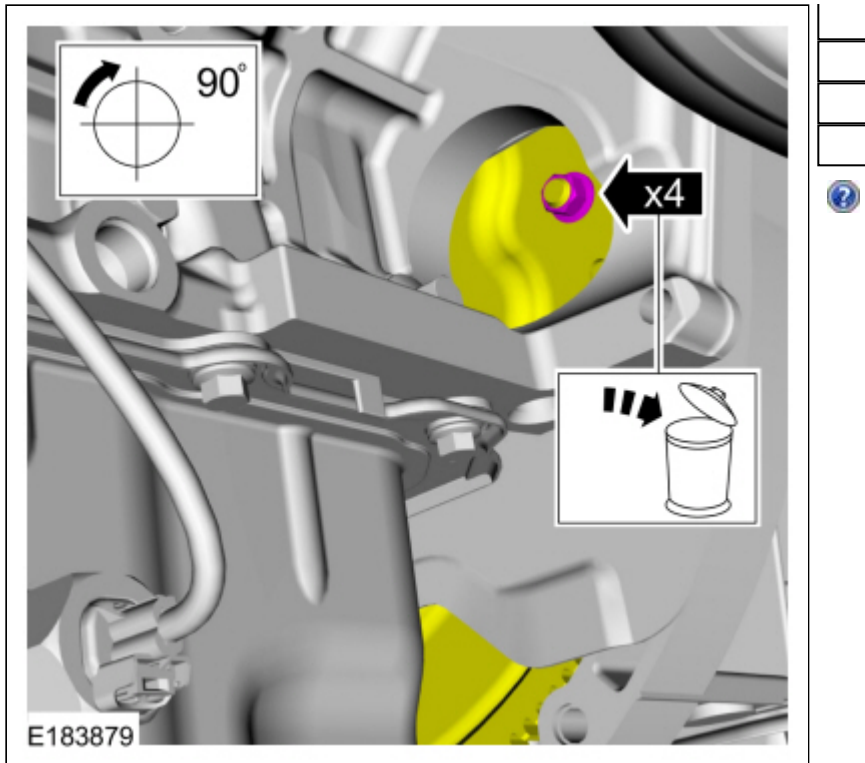
34. Remove the rubber access plug.



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

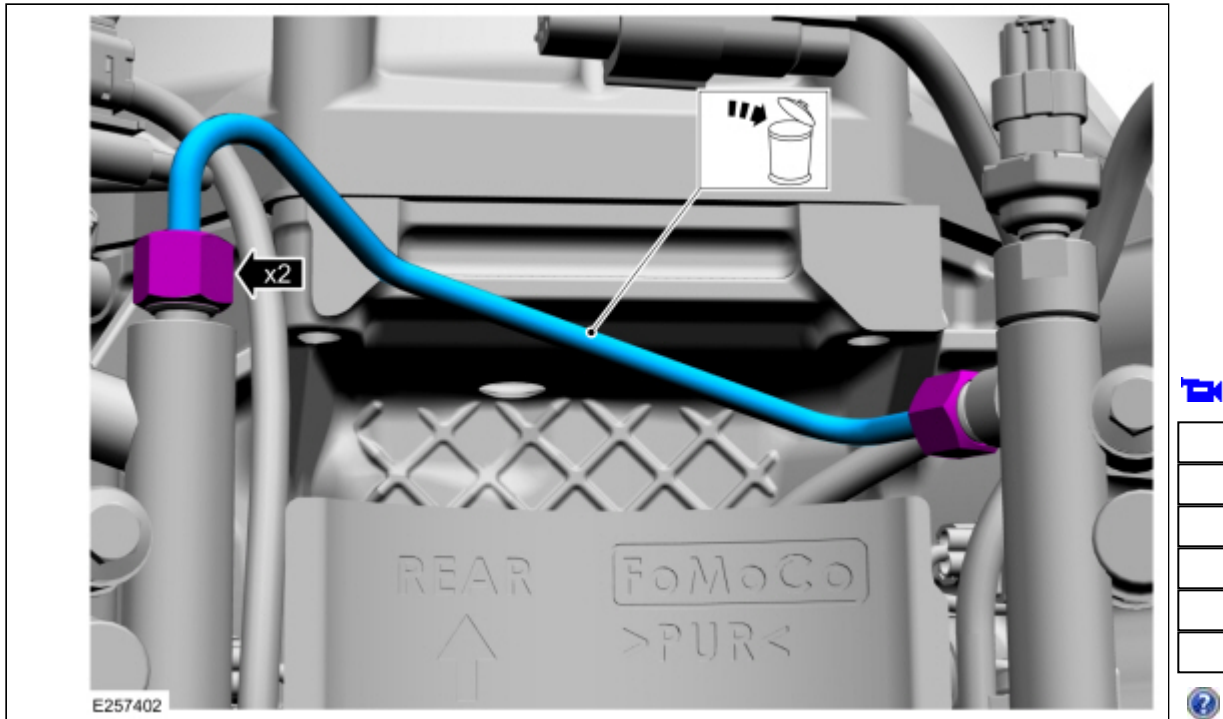
Remove and discard the torque converter nuts.
Use the General Equipment: Magnetic Socket



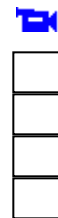


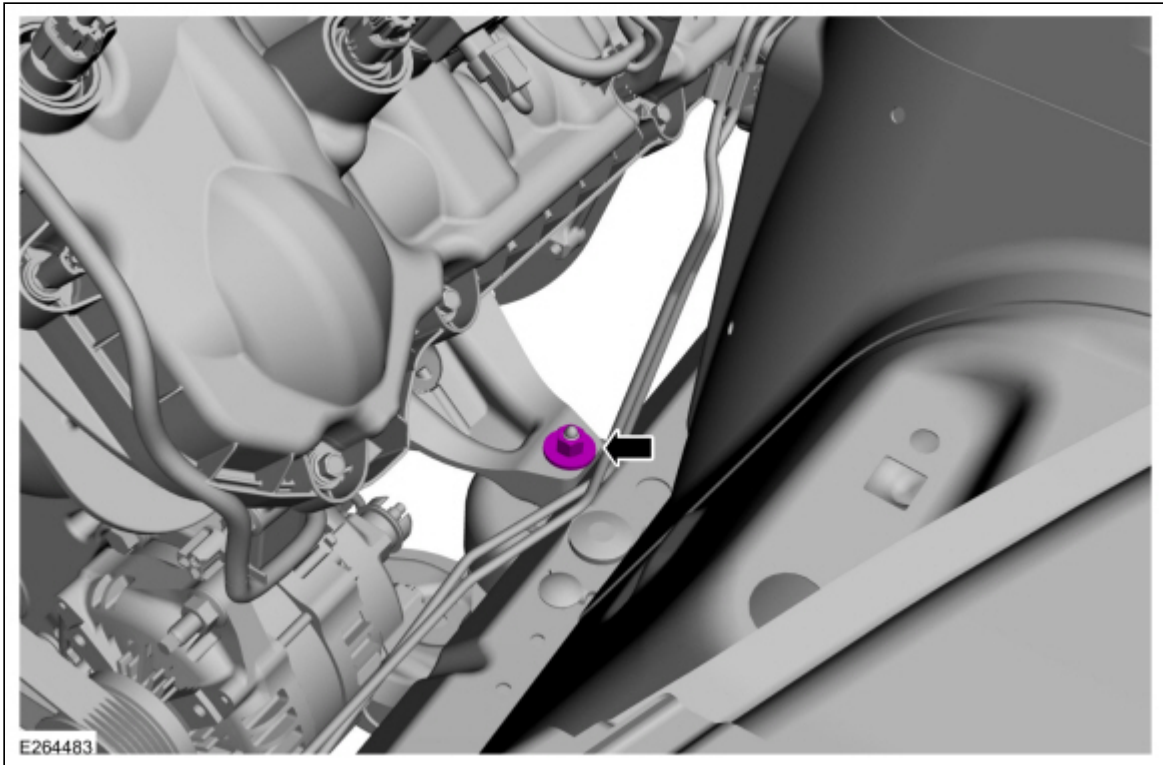
All vehicles

36. Disconnect the high-pressure fuel tube flare nuts, then remove and discard the high-pressure fuel tube.

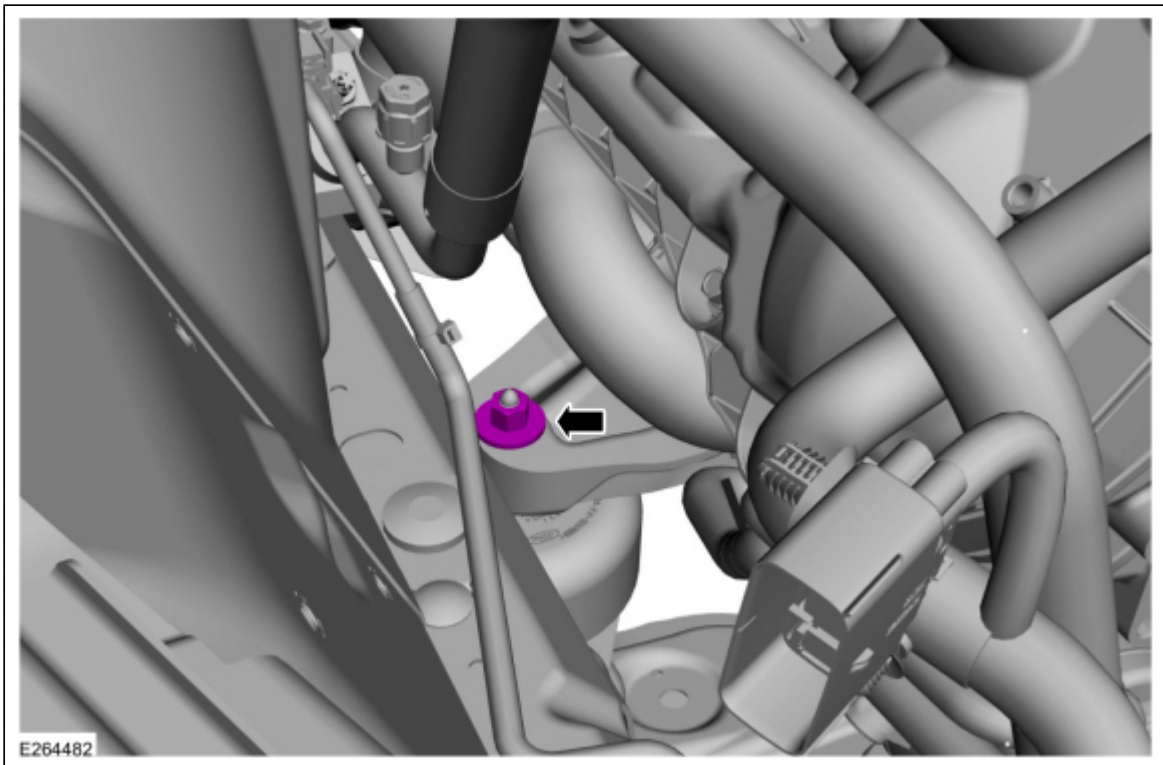


37. Remove the insulators.



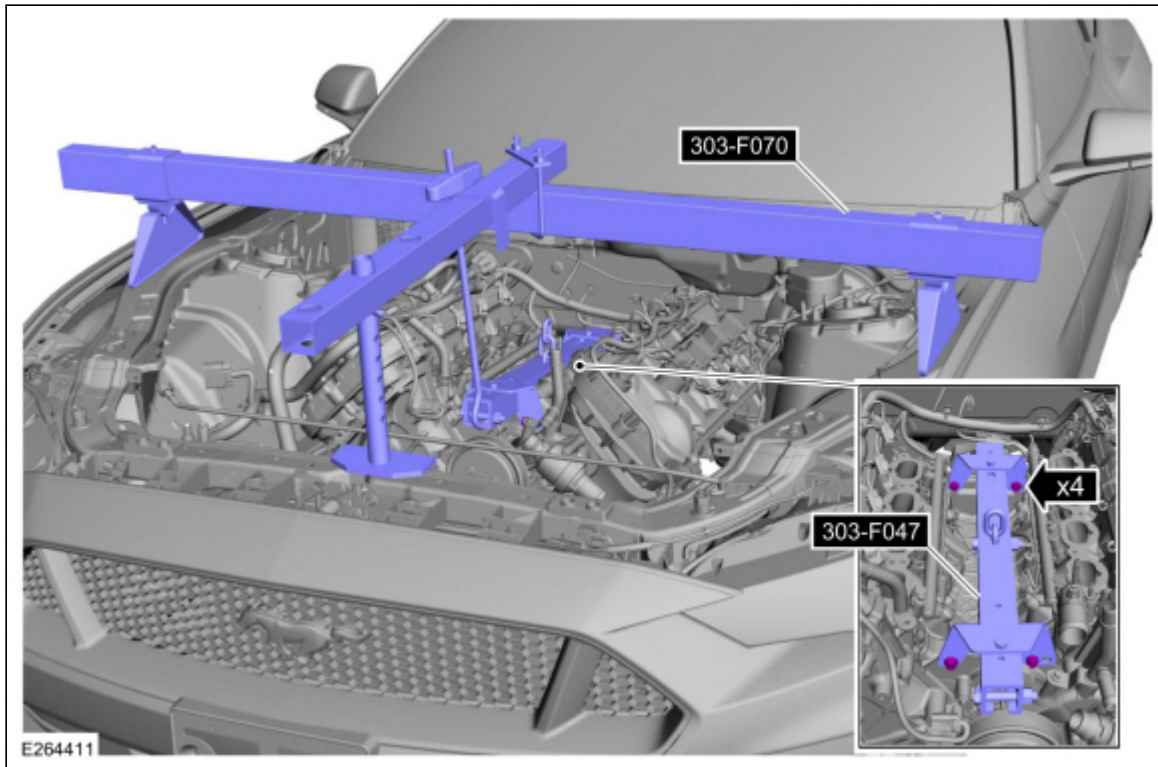


40. Remove the RH engine mount nut.

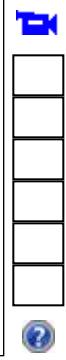
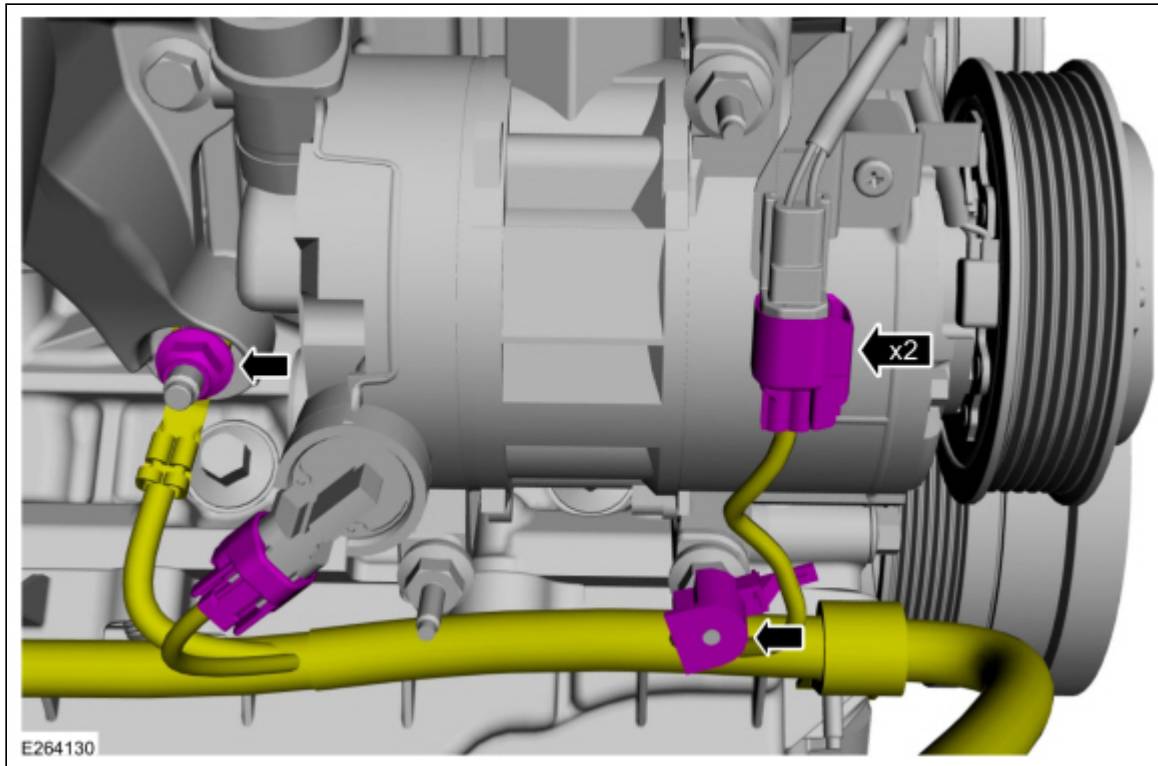


41. **NOTICE:** Do not position the legs of the Engine Support Bar on the fenders. Instead, the legs should be positioned on the body structure. Failure to follow these instructions may result in body damage.

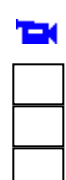
Install the special tools and raise the engine 25 mm (1 inch).
Install Special Service Tool: [303-F070 Support Bar, Engine](#).
Use Special Service Tool: [303-F047 Lifting Bracket, Engine](#).

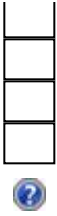
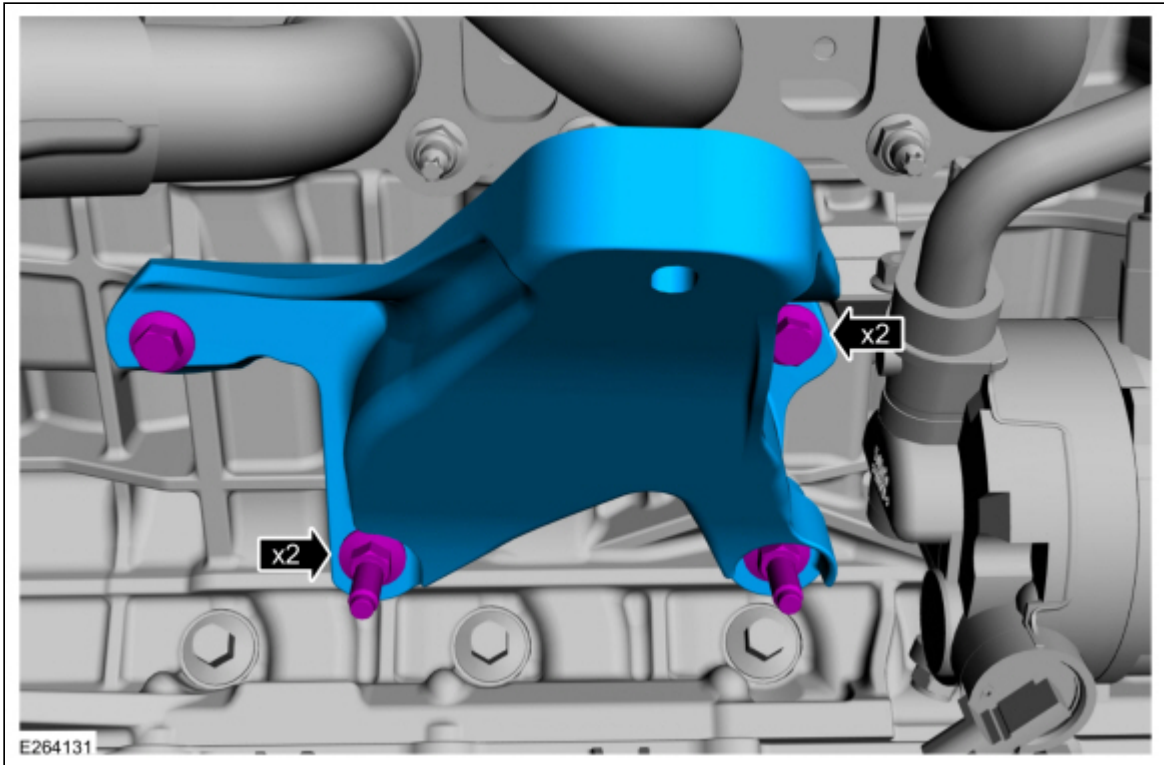


42.
 1. Remove the nut and ground strap from the RH engine mount bracket stud bolt.
 2. Detach the wiring harness retainer.
 3. Disconnect the A/C compressor electrical connectors.

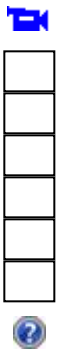
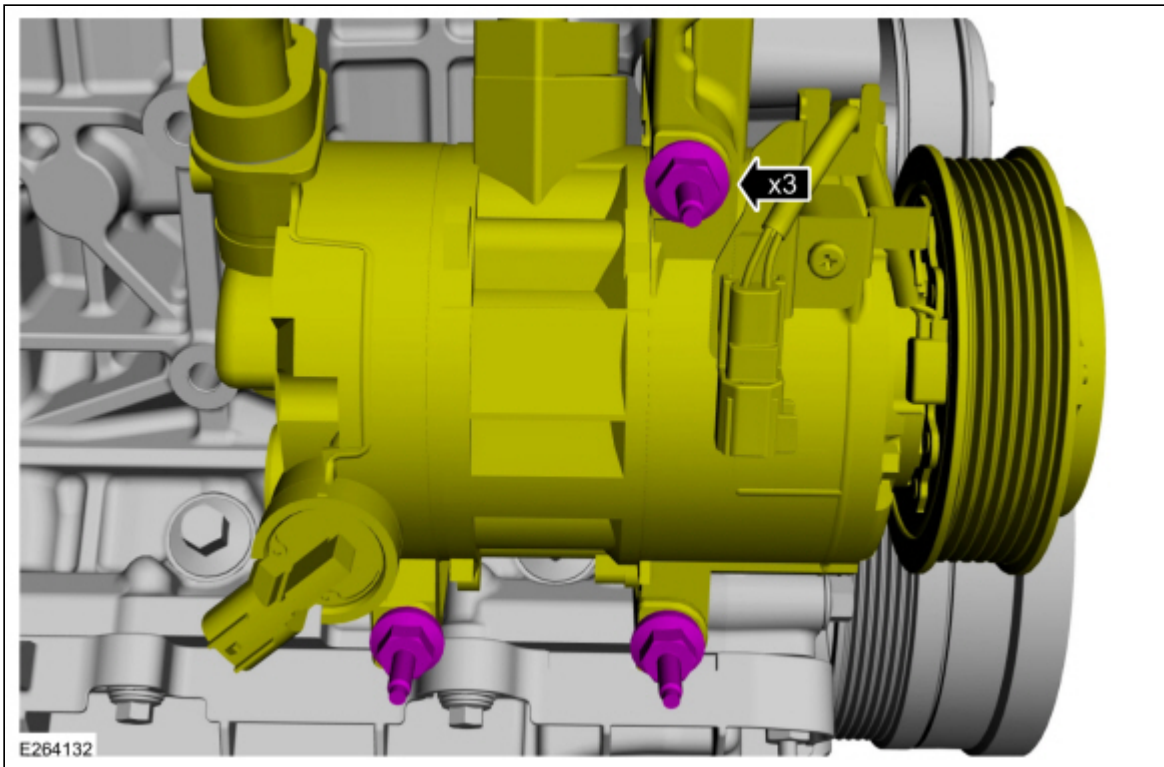


43. Remove the bolts, the stud bolts and the RH engine mount bracket.

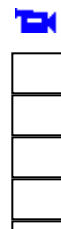


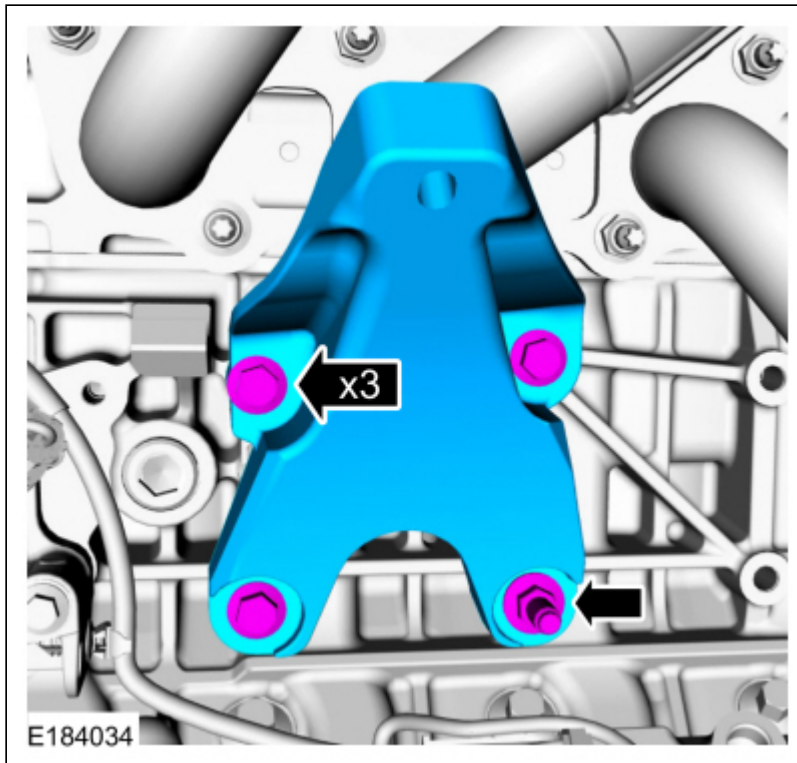


44. Remove the stud bolts and position the A/C compressor aside.

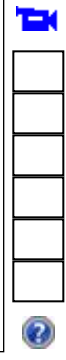
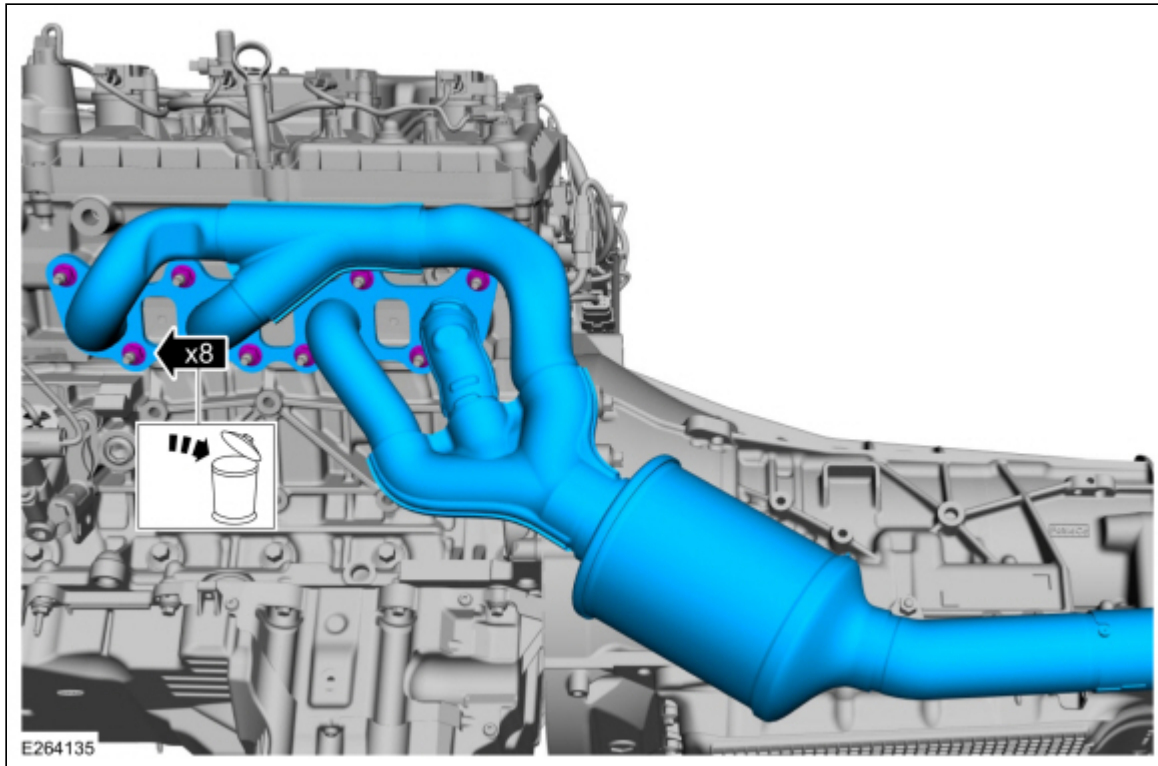


45. Remove the bolts, the stud bolt and the LH engine mount bracket.



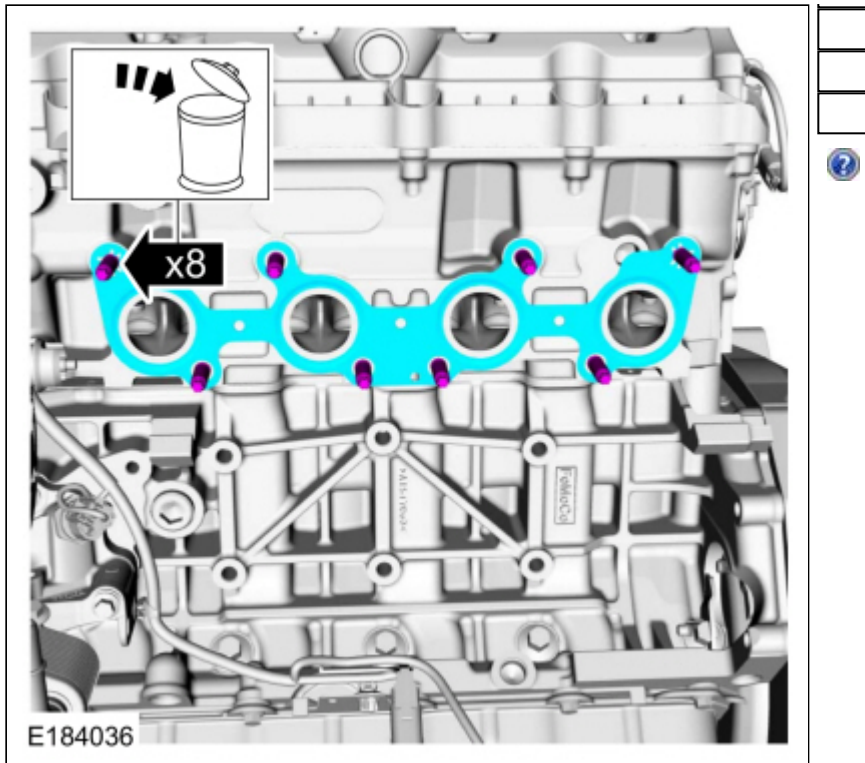


46. Remove and discard the nuts.
- Remove the LH catalytic converter.

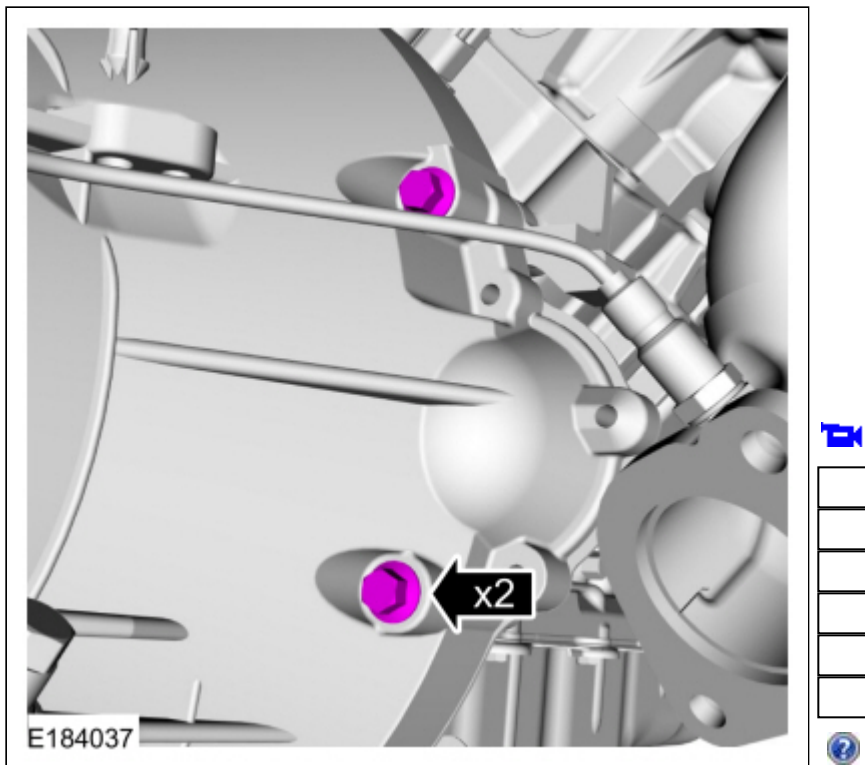


47. Remove and discard the gasket and studs.





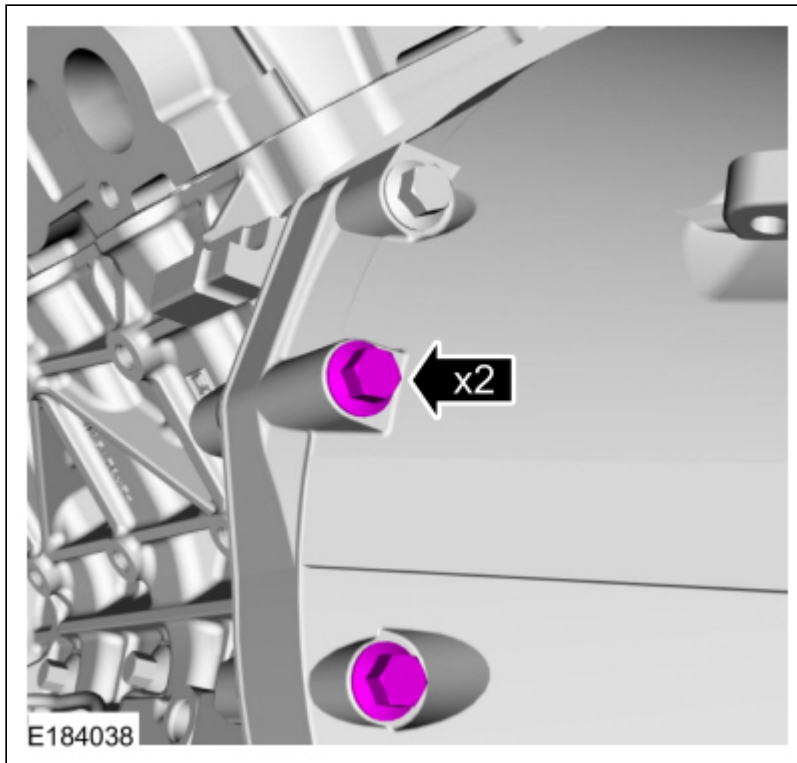
48. Remove RH transmission-to-engine bolts.



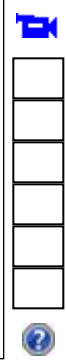
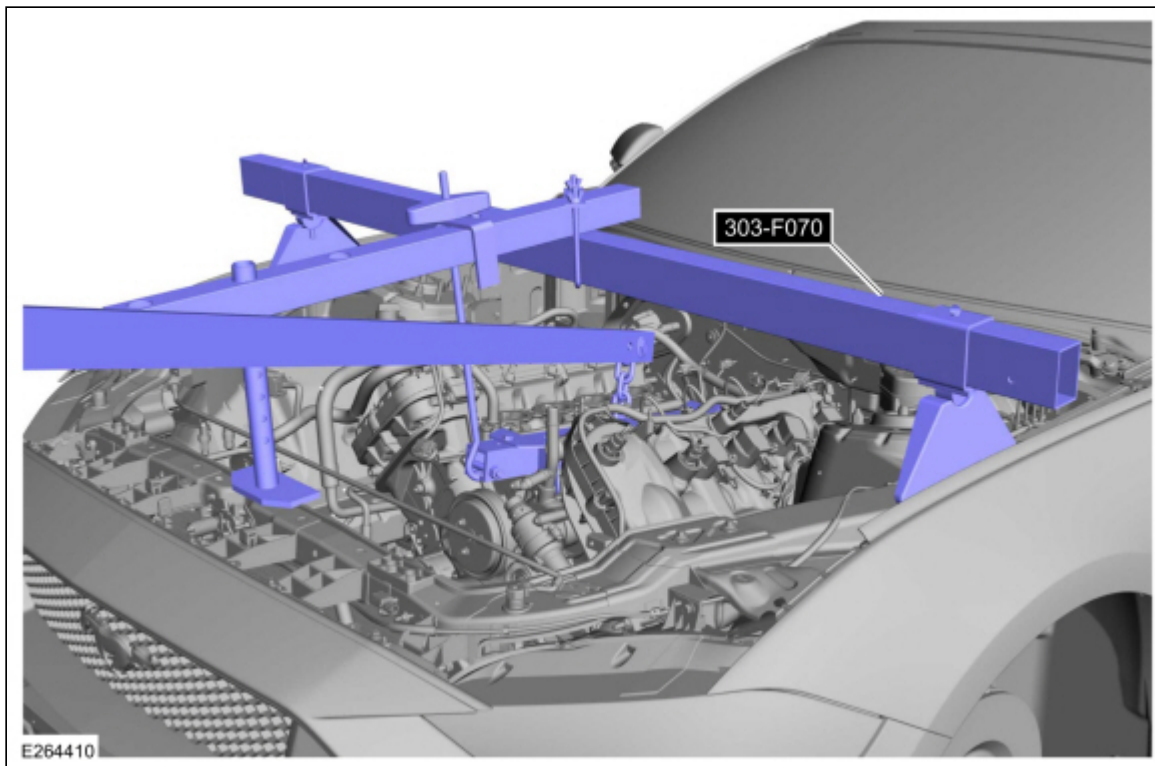
49. Remove LH transmission-to-engine bolts.





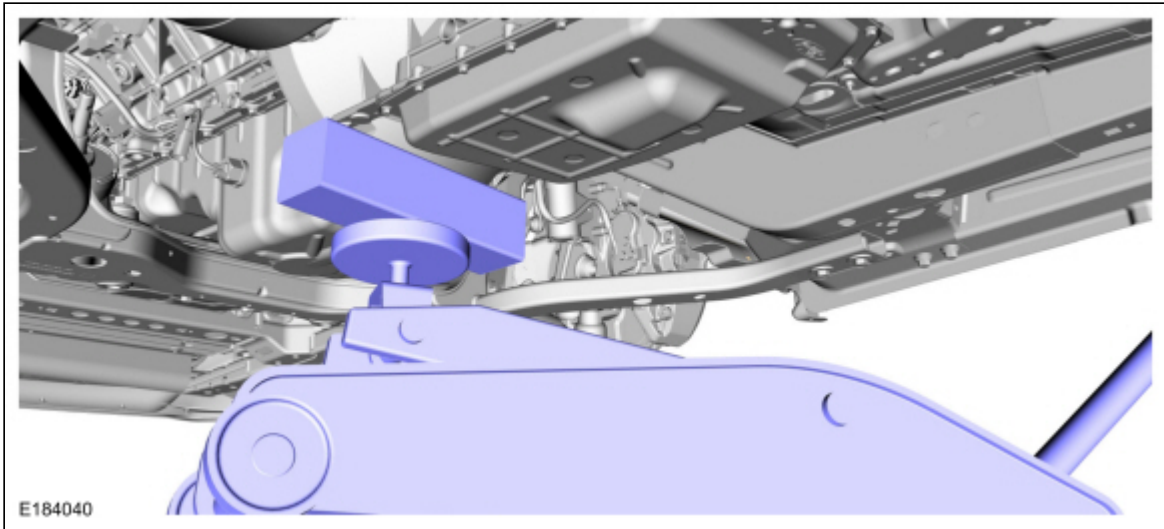


50. 1. Attach the Floor Crane to the Engine Lifting Bracket.
Use the General Equipment: Floor Crane
2. Once the engine is supported by the Floor Crane, remove the special tools.
Install Special Service Tool: [303-F070 Support Bar, Engine](#).

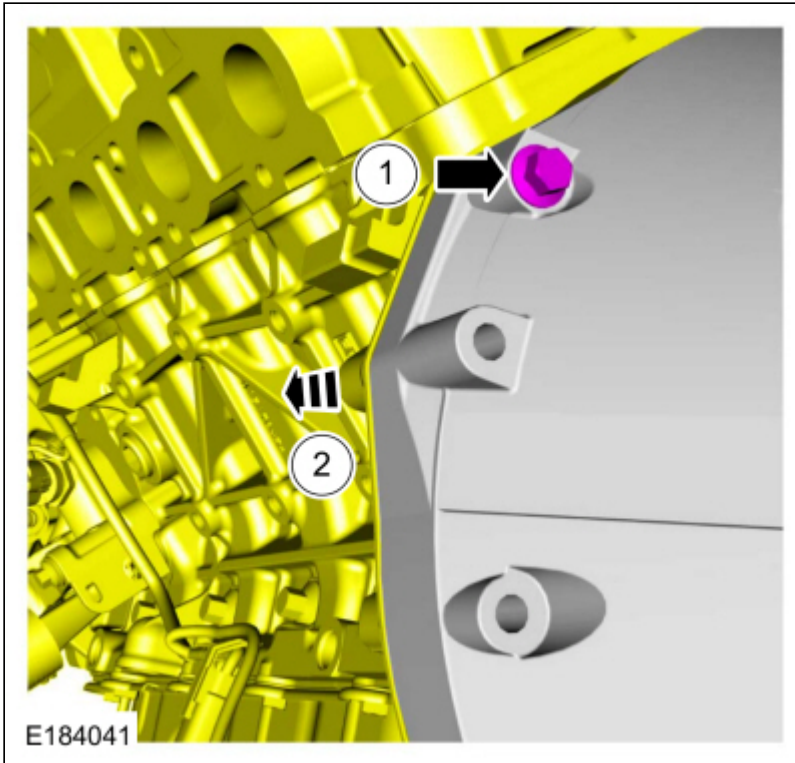


51. NOTICE: Do not support the transmission by the fluid pan, failure to follow this instruction may result in serious damage to the transmission.

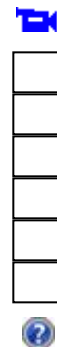
Install a jack and wooden block under the transmission bell housing to support the transmission.
Use the General Equipment: Wooden Block
Use the General Equipment: Trolley Jack

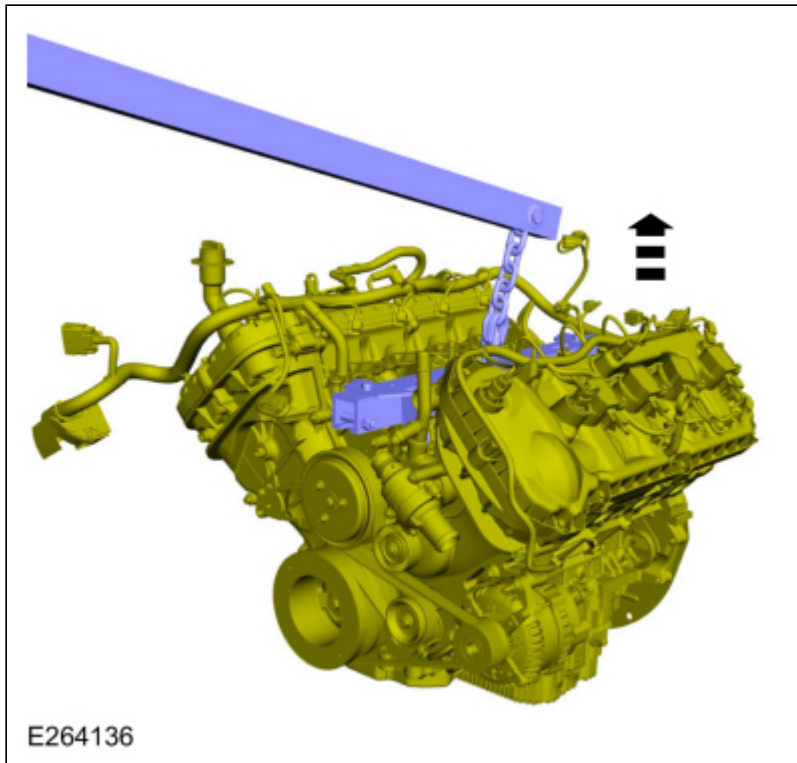


52. 1. Remove the remaining transmission-to-engine bolt.
 2. Separate the engine from the transmission.



53. Using the Floor Crane lift the engine from the vehicle.
 Use the General Equipment: Floor Crane

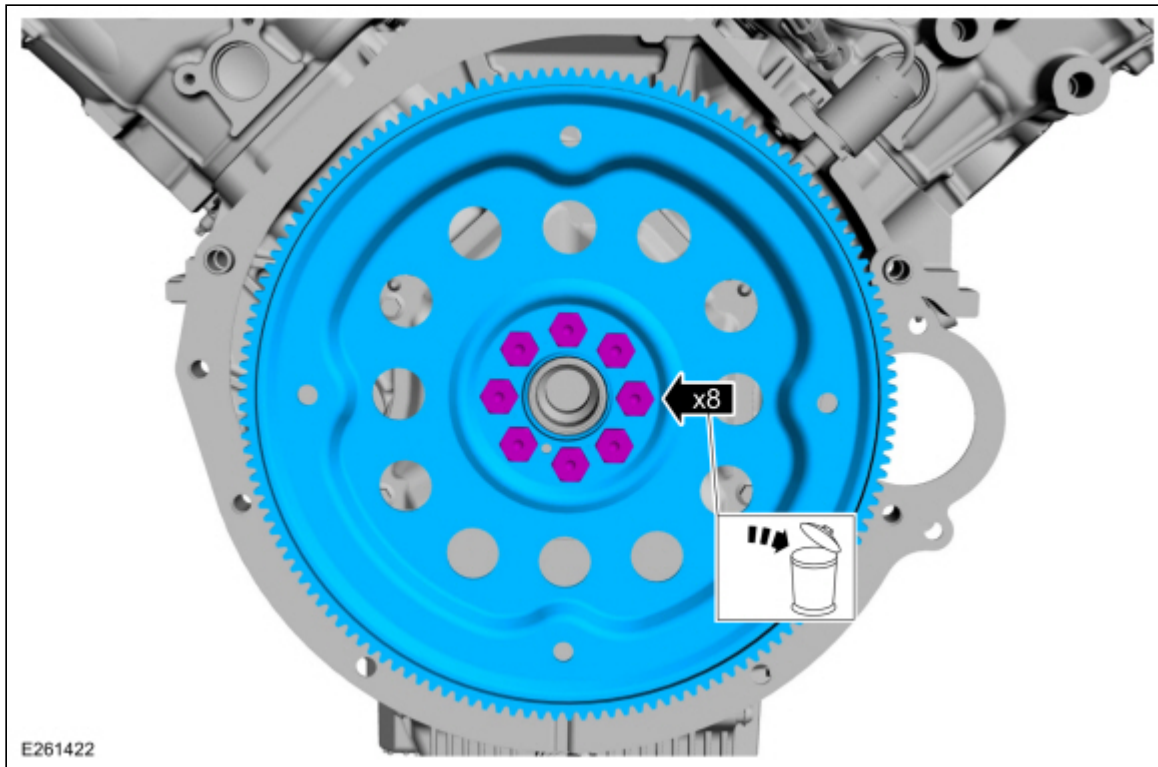




10-Speed Automatic Transmission – 10R80

54. **NOTE:** *The flexplate bolts are torque-to-yield design and are not reusable.*

1. Remove and discard the bolts.
2. Remove the flexplate.



6-Speed Manual Transmission – 3160/6-Speed Manual Transmission – MT82

55. **WARNING:** Do not breathe dust or use compressed air to blow dust from storage containers or friction components. Remove dust using government-approved techniques. Friction component dust may be a

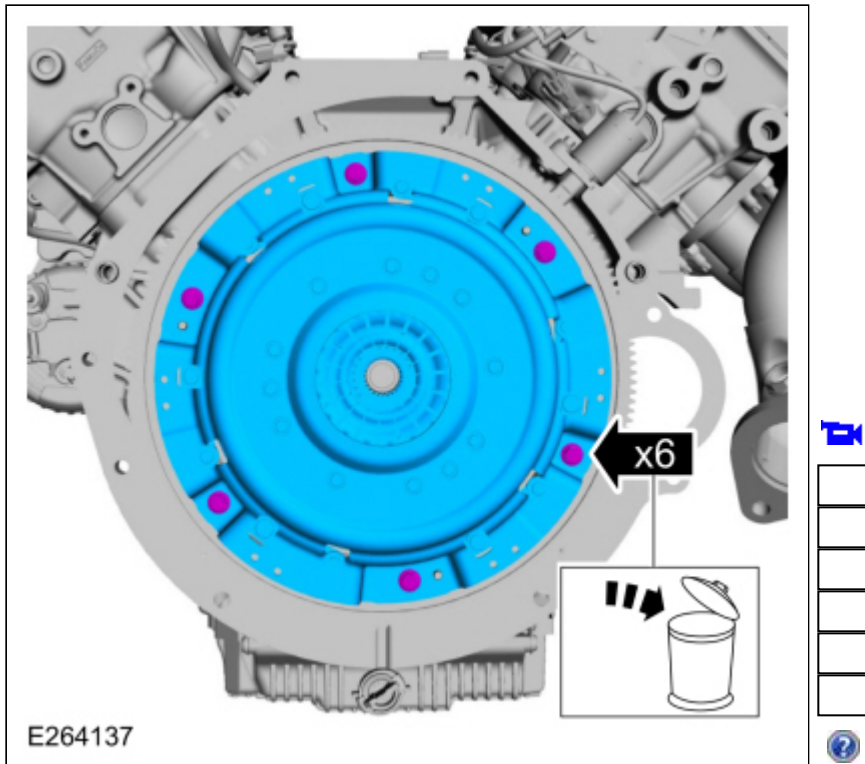
cancer and lung disease hazard. Exposure to potentially hazardous components may occur if dusts are created during repair of friction components, such as brake pads and clutch discs. Exposure may also cause irritation to skin, eyes and respiratory tract, and may cause allergic reactions and/or may lead to other chronic health effects. If irritation persists, seek medical attention or advice. Failure to follow these instructions may result in serious personal injury.

NOTICE: Loosen the bolts evenly to prevent clutch pressure plate damage.

NOTE: *If the parts are to be reused, index-mark the pressure plate to the flywheel.*

Remove and discard the pressure plate bolts.

- Remove the pressure plate and the clutch discs.

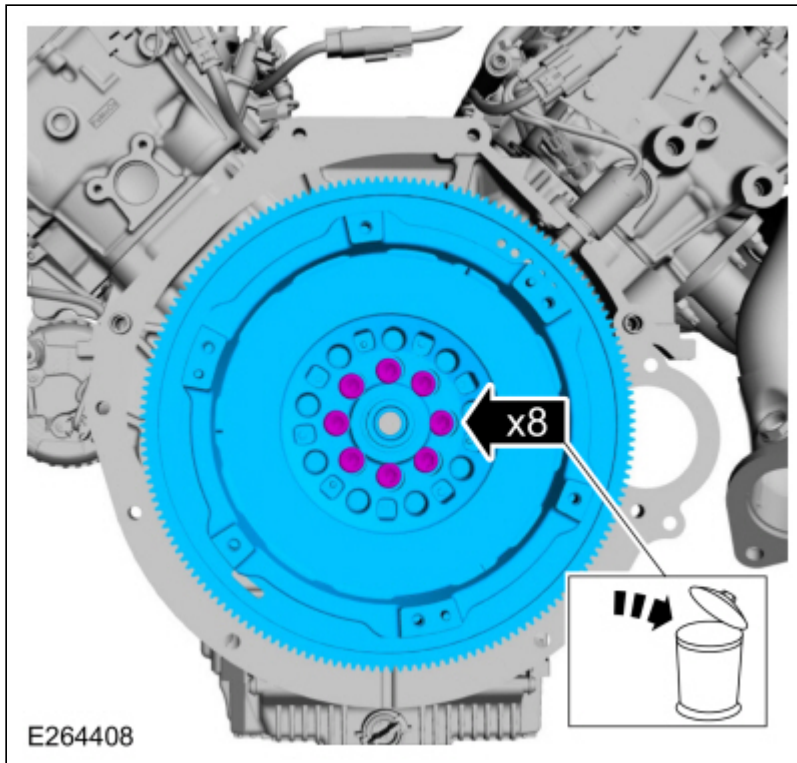


56. **NOTE:** *The flywheel bolts are torque-to-yield design and are not reusable*

Remove and discard the flywheel bolts.

- Remove the flywheel.

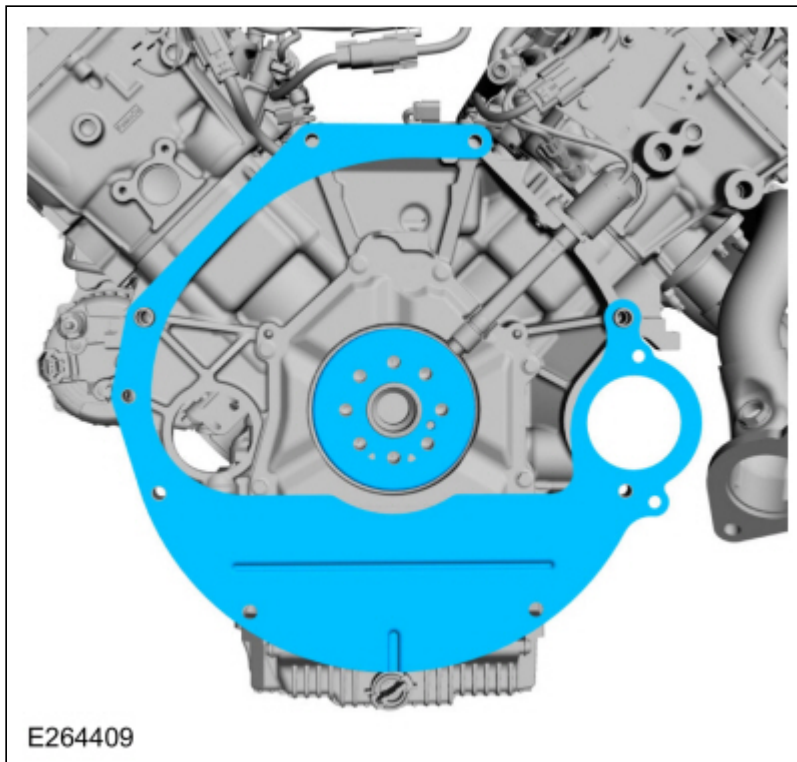




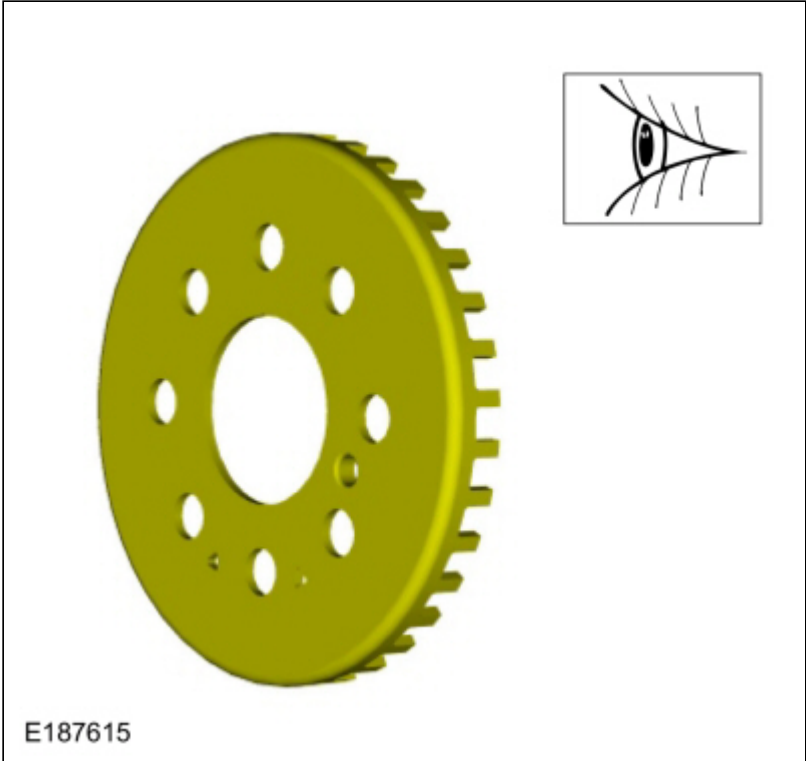
All vehicles

57. **NOTE:** Engine equipped with manual transmission shown, automatic transmission engine similar.

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



58. Inspect the crankshaft sensor ring for damage. If the crankshaft sensor ring has been dropped or has any visual damage, it must be replaced.





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