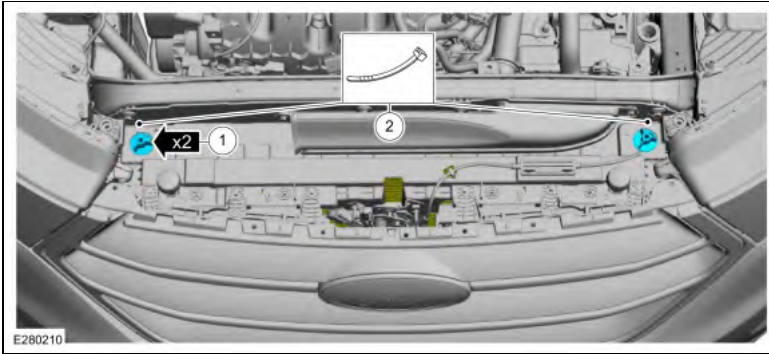


7. **NOTICE:** Make sure the cooling module is secure before removing the bottom cooling module support panel.

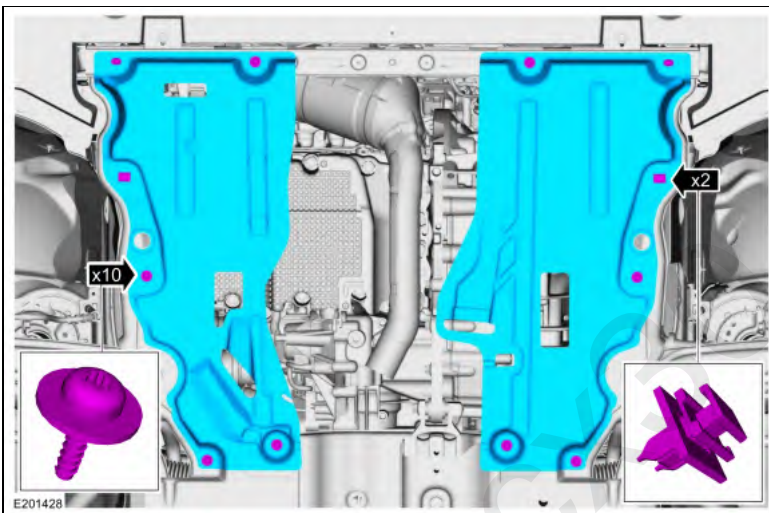
1. Remove the upper cooling module support brackets.
2. Using cable ties or mechanics wire through the upper location holes, to support the cooling module.
Use the General Equipment: Cable Ties



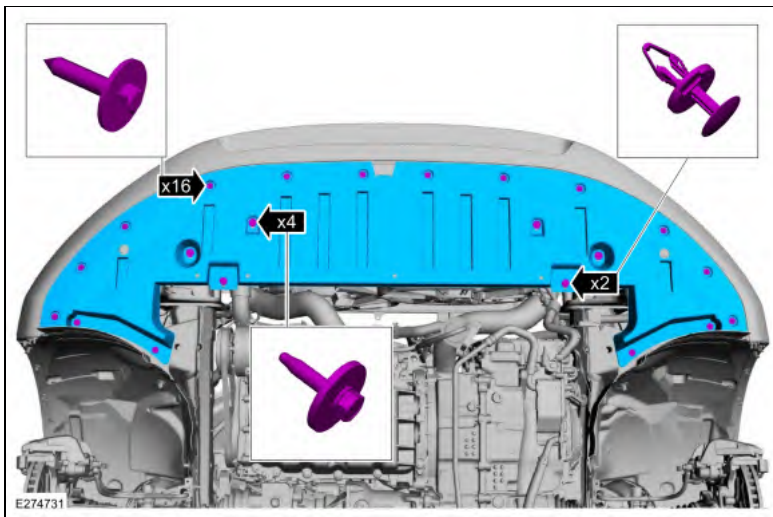
8. Remove the following items:

1. Front fender splash shields.
Refer to: Fender Splash Shield (501-02 Front End Body Panels, Removal and Installation).
2. Front headlamp leveling sensor.
Refer to: Headlamp Leveling Sensor (417-01 Exterior Lighting, Removal and Installation).

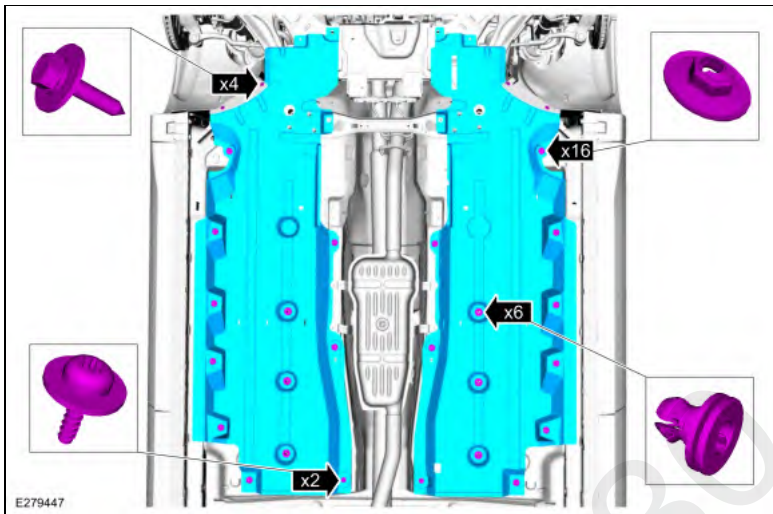
9. Remove the retainers and the underbody shield.



10. Remove the retainers and the front underbody shield.



11. Remove the retainers and the underbody shields.

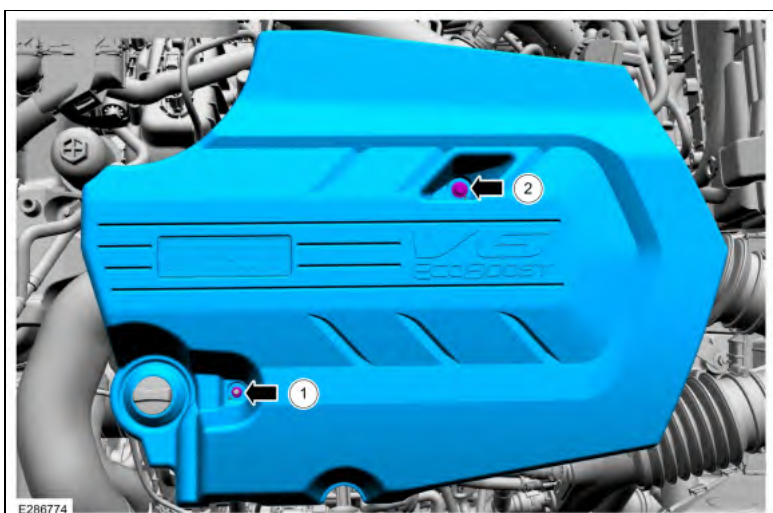


12. Drain the engine cooling system.

Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03B Engine Cooling - 2.7L EcoBoost (238kW/324PS), General Procedures).

13.

1. Remove the nut.
2. Remove the bolt.
- Remove the engine appearance cover.
- If the engine appearance cover stud bolt is loosened or removed, it must be installed/tightened.
Torque: 62 lb.in (7 Nm)



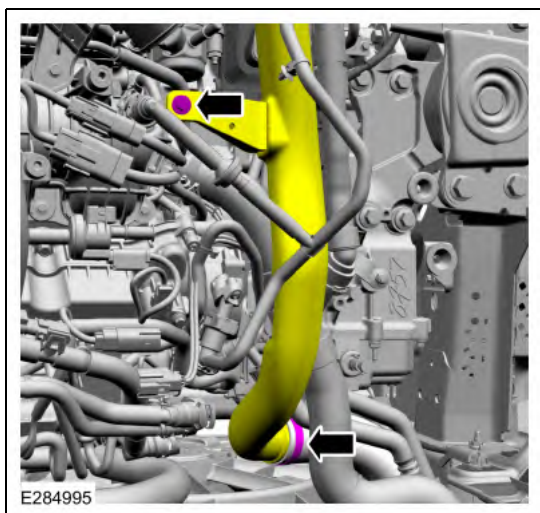
14. Remove the following items:

1. Degas bottle.
Refer to: Degas Bottle (303-03B Engine Cooling - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
2. Air cleaner.
Refer to: Air Cleaner (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).
3. LH air cleaner outlet pipe.
Refer to: Air Cleaner Outlet Pipe LH (303-12B Intake Air Distribution and Filtering - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
4. Upper RH air cleaner outlet pipe.

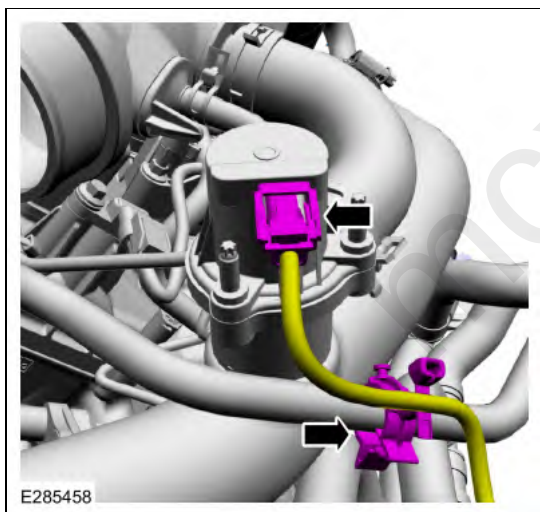
Refer to: Air Cleaner Outlet Pipe RH (303-12B Intake Air Distribution and Filtering - 2.7L EcoBoost (238kW/324PS), Removal and Installation).

15. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

1. Loosen the clamp, remove the bolt and disconnect the CAC inlet pipe.
 - Cover all open ports.

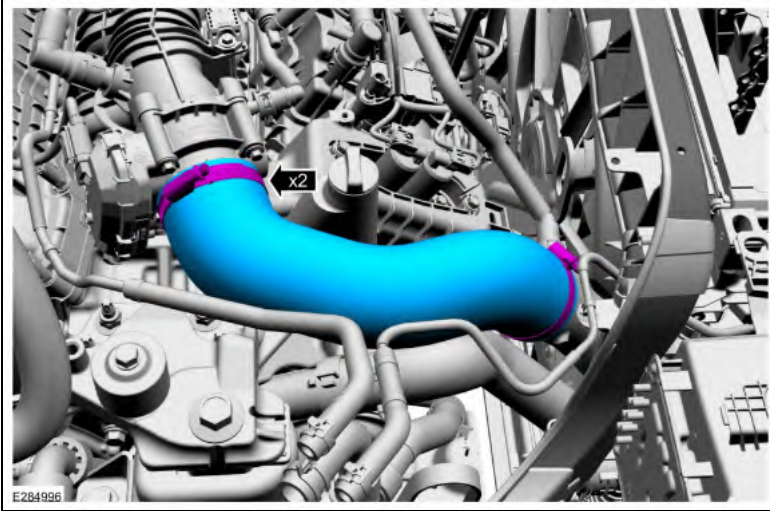


16. Disconnect the wiring harness electrical connector and detach the retainer.



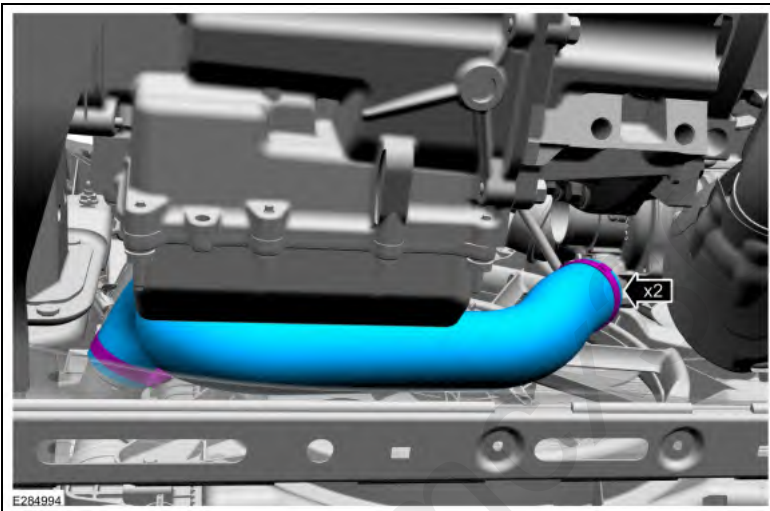
17. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

1. Loosen the clamps and remove the CAC outlet pipe.
 - Cover all open ports.

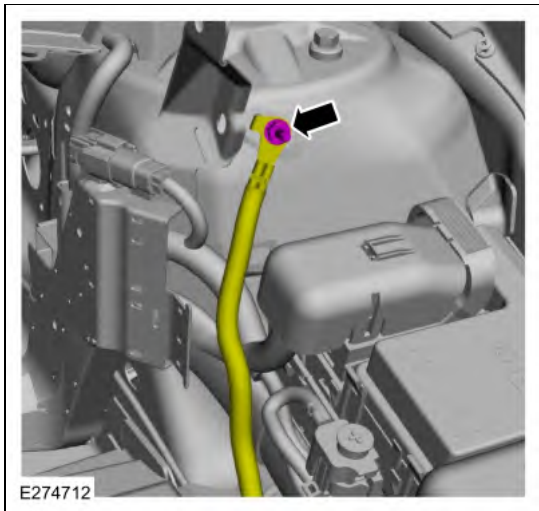


18. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

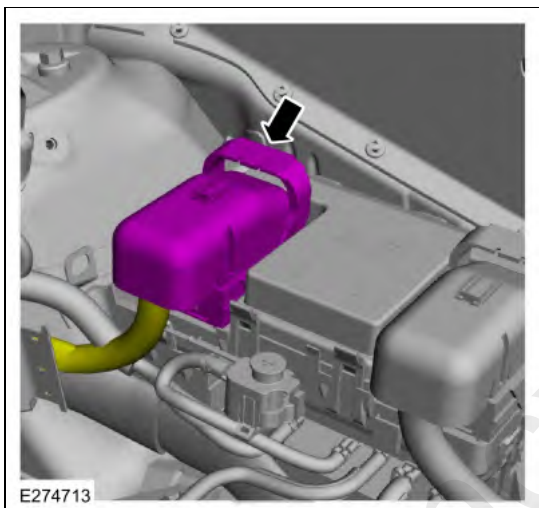
1. Loosen the clamps and remove the CAC inlet pipe.
 - Cover all open ports.



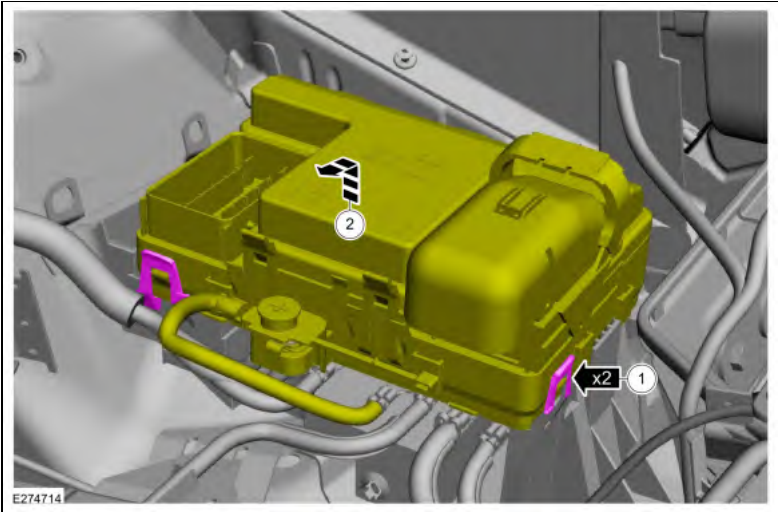
19. Remove the following items:
 1. Accessory drive belt.
Refer to: Accessory Drive Belt (303-05A Accessory Drive - 2.0L EcoBoost (184kW/250PS) â€™ MI4, Removal and Installation).
 2. Battery tray.
Refer to: Battery Tray (414-01 Battery, Mounting and Cables, Removal and Installation).
20. Remove the stud bolt and position aside the ground cable.



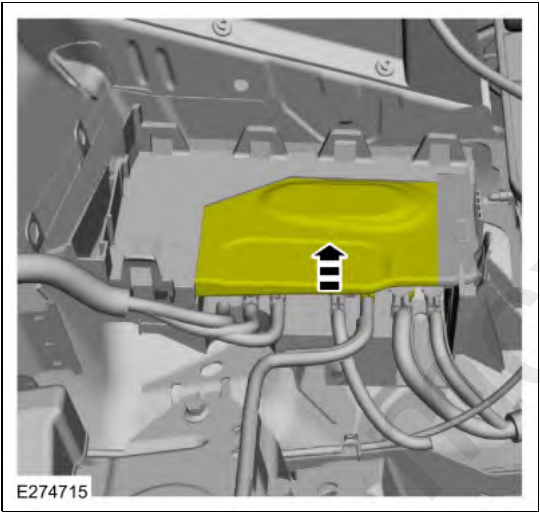
21. Disconnect the junction box electrical connector.



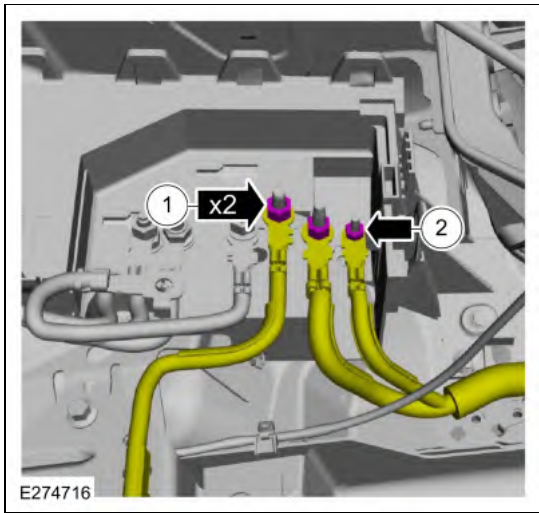
- 22.
1. Release the tabs.
 2. Lift and position top part of junction box aside.



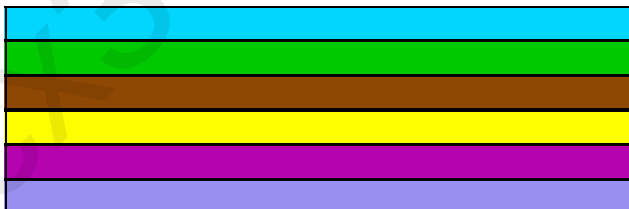
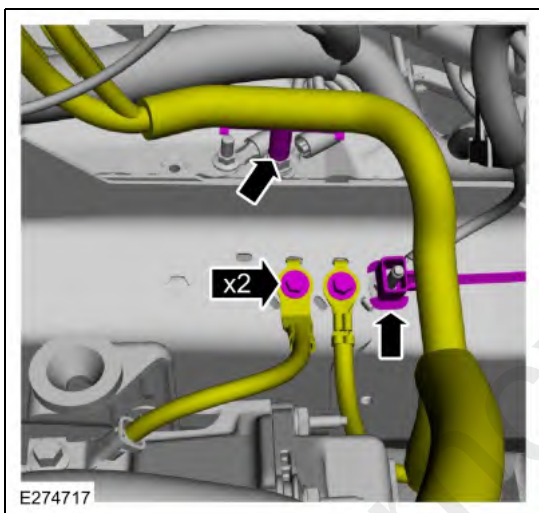
23. Open the junction box cover.



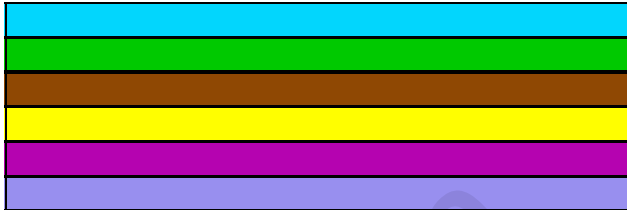
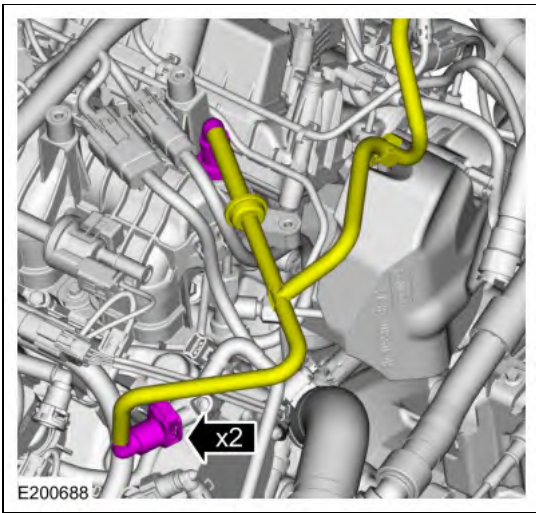
24. Remove the nuts and disconnect the electrical wiring harness.



25. Remove the bolts and detach the wiring harness retainers.

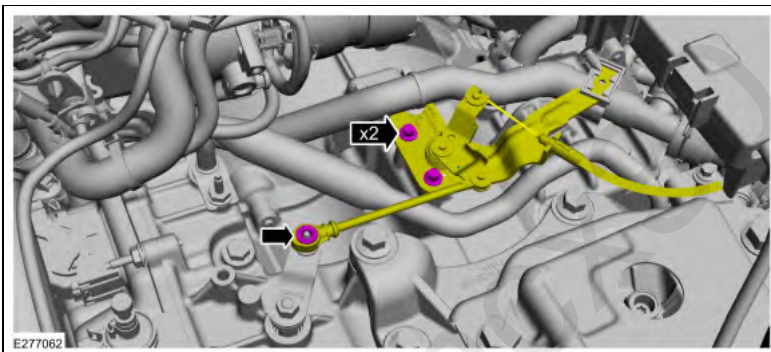


26. Disconnect the vacuum tube quick release couplings and position the tube aside.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .

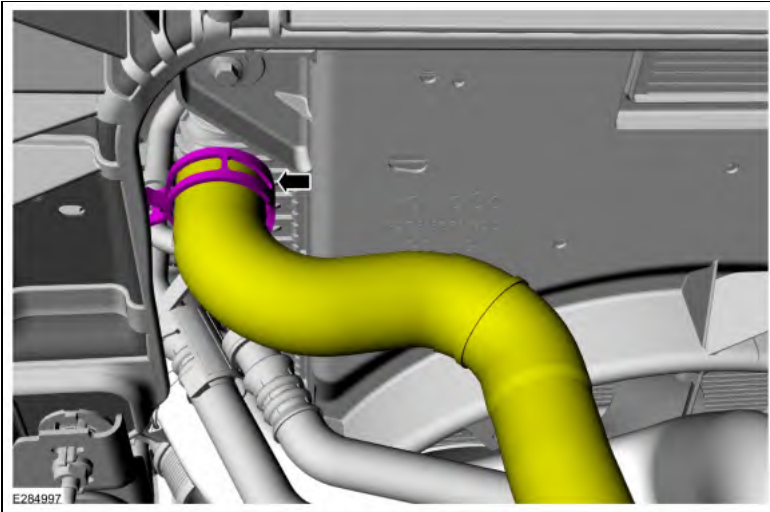


27.

1. Detach the cable from the manual control lever.
2. Remove the bolts and position the cable aside.

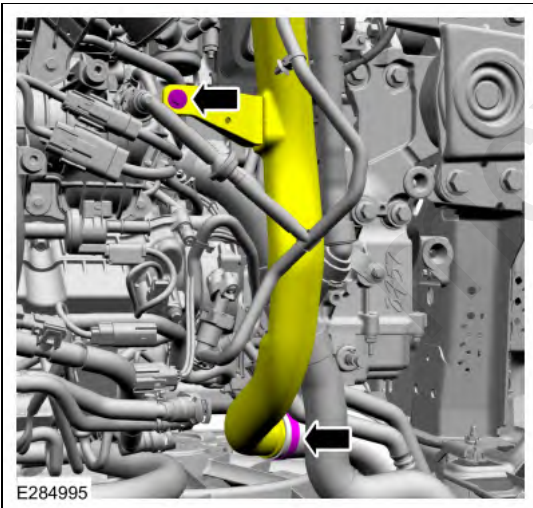


28. Loosen the clamp and disconnect the upper radiator hose.
Use the General Equipment: Hose Clamp Remover/Installer

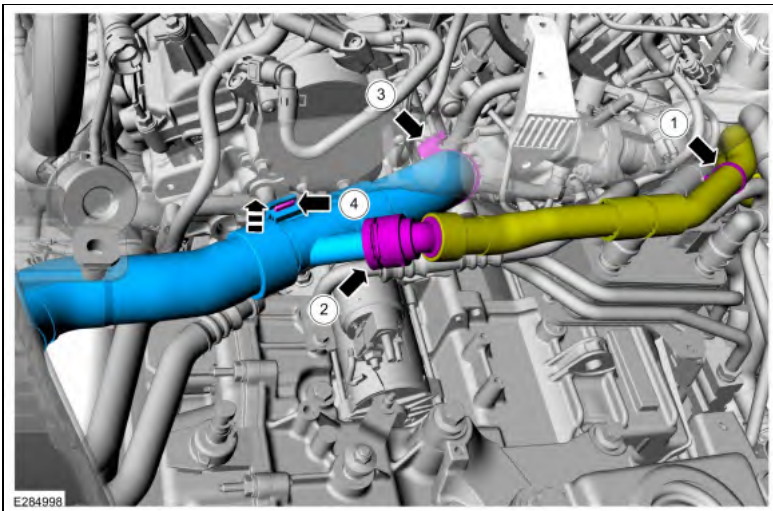


29. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

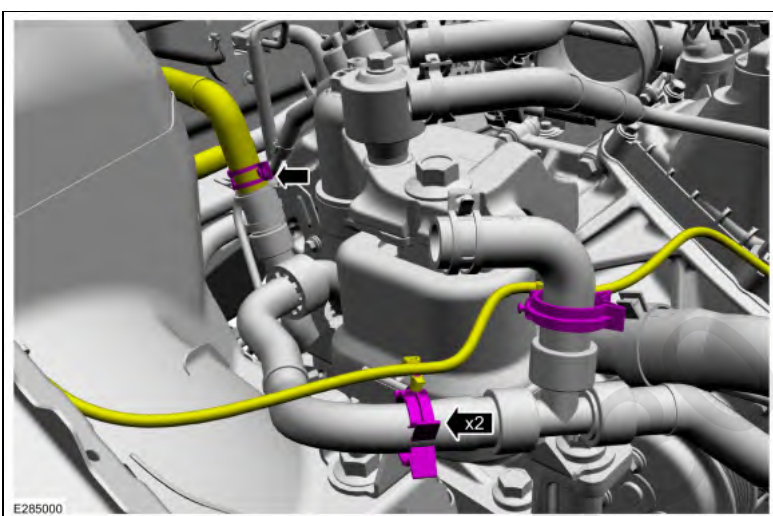
1. Loosen the clamp, remove the bolt and disconnect the CAC inlet pipe.
 - Cover all open ports.



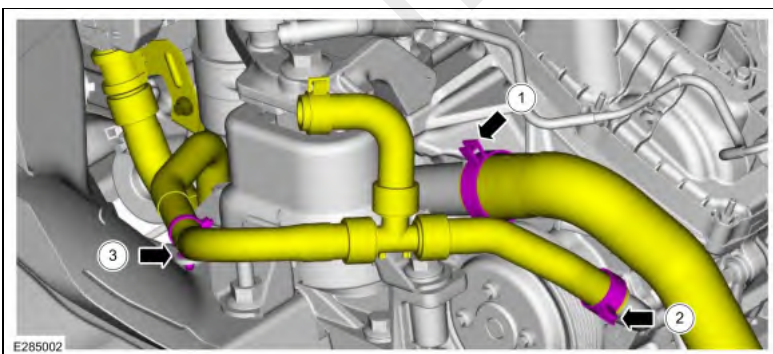
- 30.
1. Detach the heater hose retainer.
 2. Disconnect the heater hose coupling.
 3. Loosen the radiator hose clamp.
 4. Remove the radiator hose off of the retaining tab.



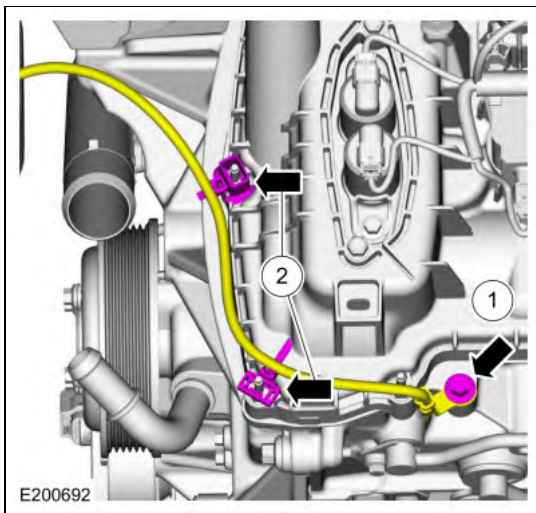
- 31.
1. Release the clamp and disconnect the heater hose.
Use the General Equipment: Hose Clamp Remover/Installer
 2. Detach the wiring harness retainers.



- 32.
1. Release the clamp and disconnect the lower radiator hose.
Use the General Equipment: Hose Clamp Remover/Installer
 2. Release the clamp and disconnect the heater hose.
 3. Detach the heater hose retainer.

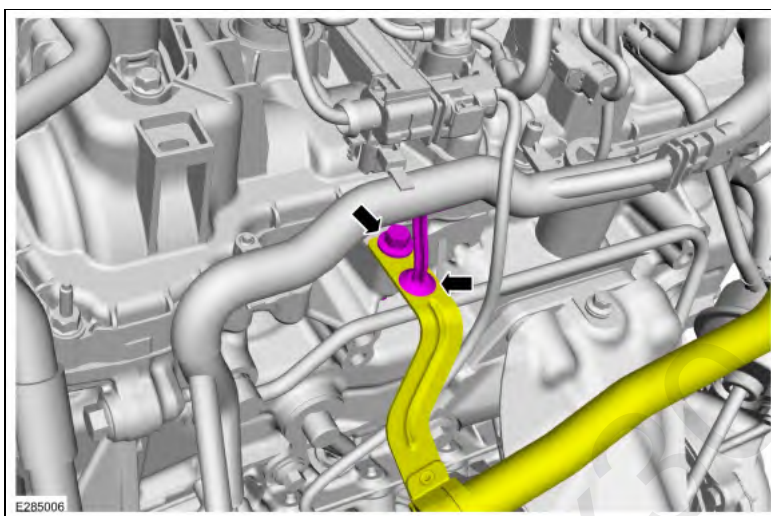


- 33.
1. Remove the ground wire bolt.
 2. Detach the retainers and position the ground wire aside.



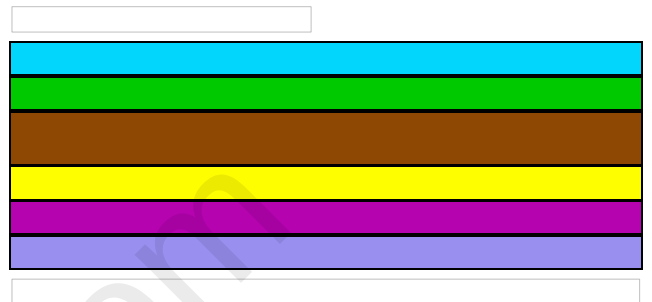
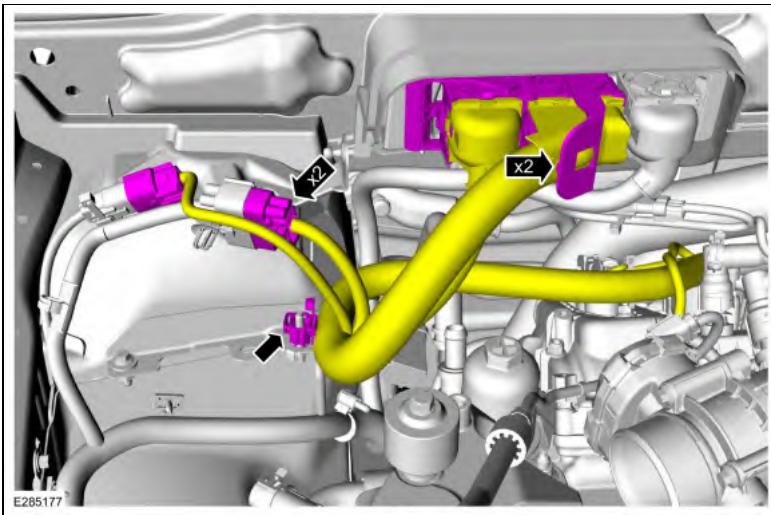
34.

- Detach the wiring harness retainer.
- Remove the bolt and position the bracket aside.



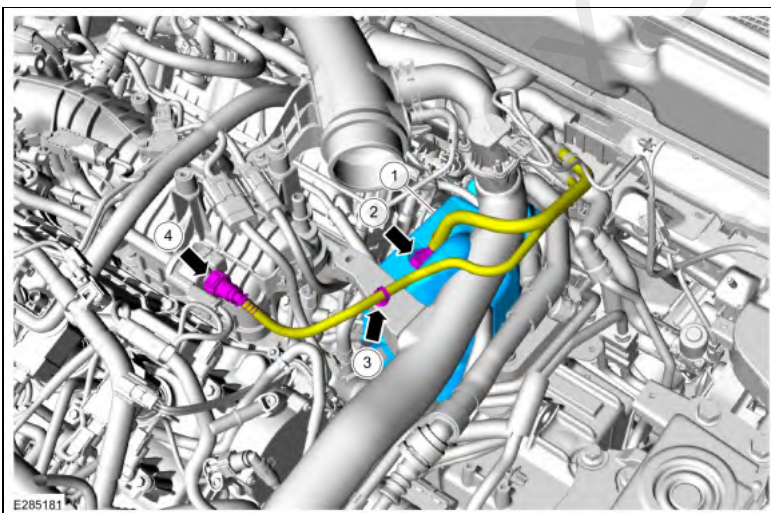
35.

- Disconnect the PCM electrical connectors.
- Disconnect the engine harness electrical connectors and detach the retainer.

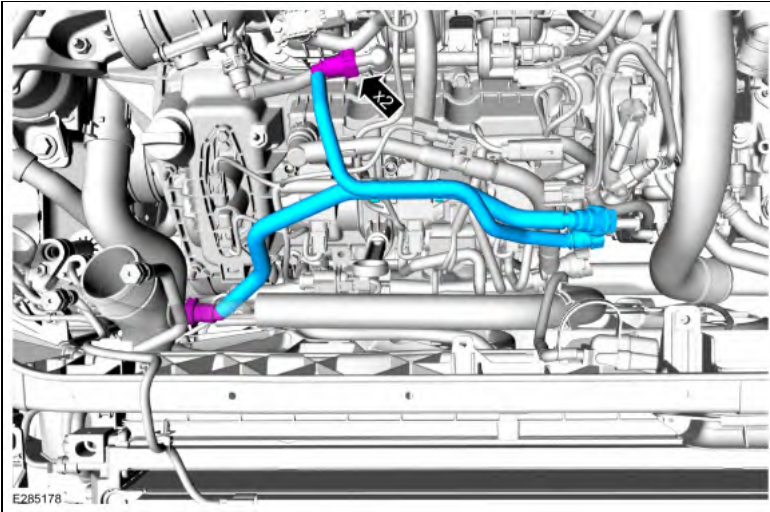


36.

1. Remove the high-pressure fuel pump insulator.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .
2. Disconnect the high-pressure fuel pump fuel supply tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .
3. Detach the EVAP tube retainer.
4. Disconnect the EVAP tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .

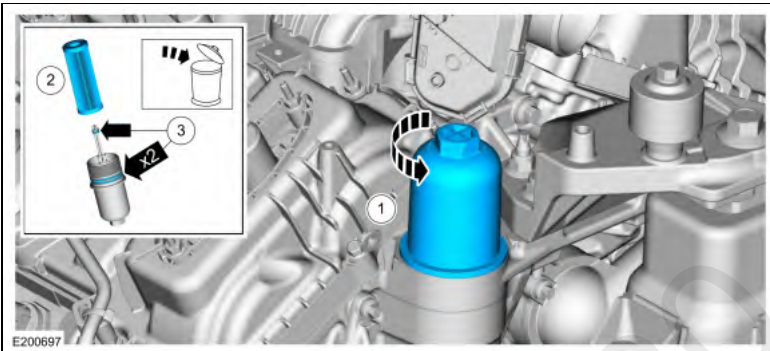


37. Disconnect and remove the EVAP tube.

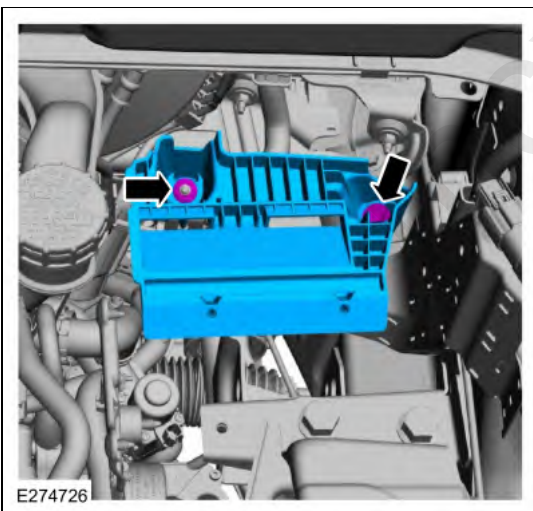


38. **NOTE:** Use a shop towel when removing the oil filter housing to prevent oil from spilling on the engine or accessory drive belt.

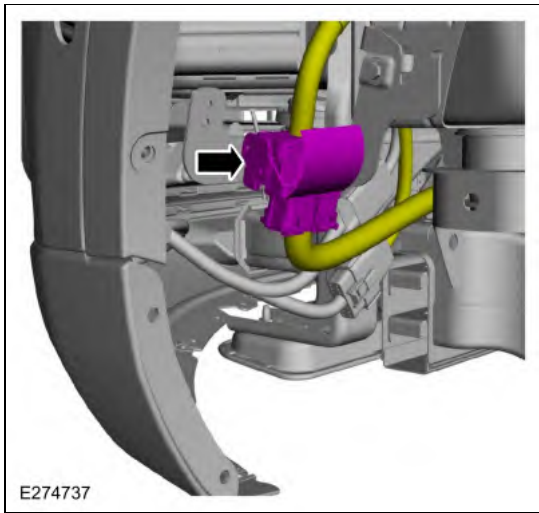
1. Loosen the oil filter housing and allow the oil to drain out of the housing and down into the engine.
2. Remove the oil filter housing and discard the oil filter element.
3. Remove and discard the O-ring seals.



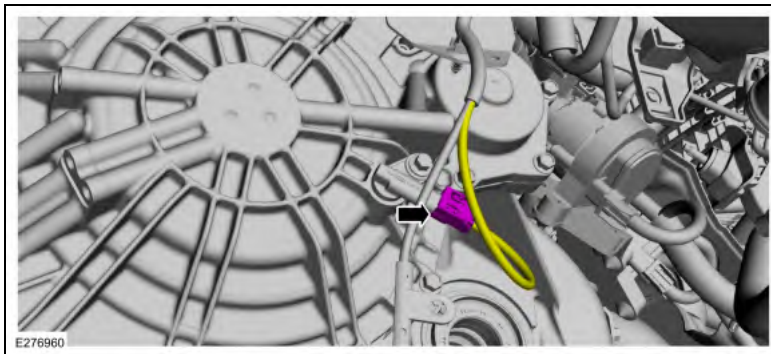
39. Remove the nut, bolt and the battery tray support bracket.



40. Disconnect the coolant tube couplings.

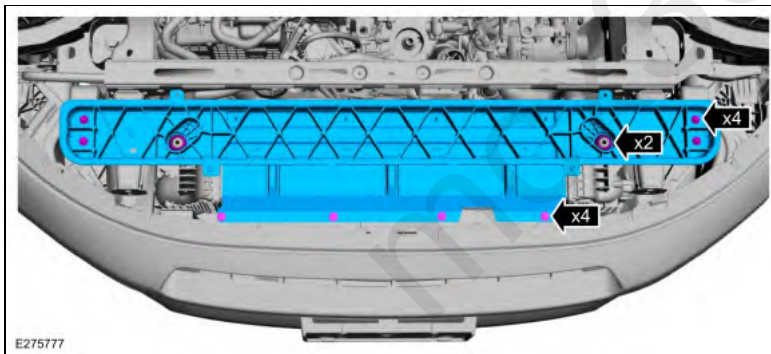


44. Disconnect the TSS sensor.

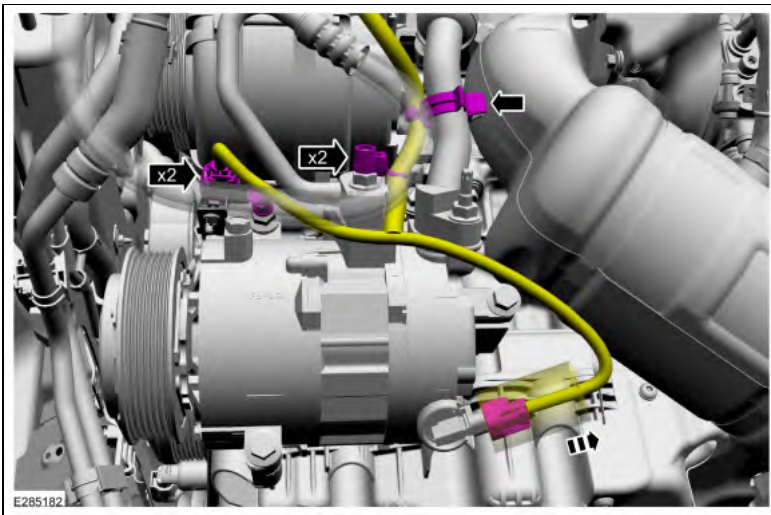


45. **NOTICE: Make sure the cooling module is secure.**

- Remove the pin-type retainers.
- Remove the bolts and the cooling module support panel.

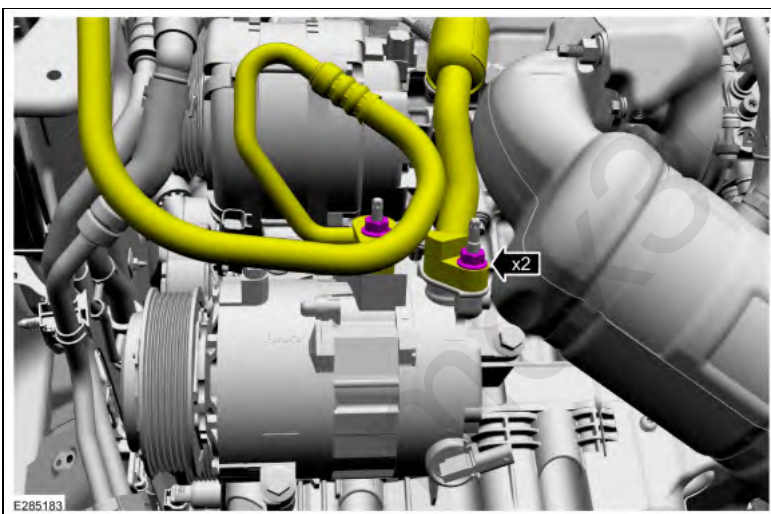


46. Detach the wiring harness retainers, slide up the insulator and disconnect the electrical connectors.

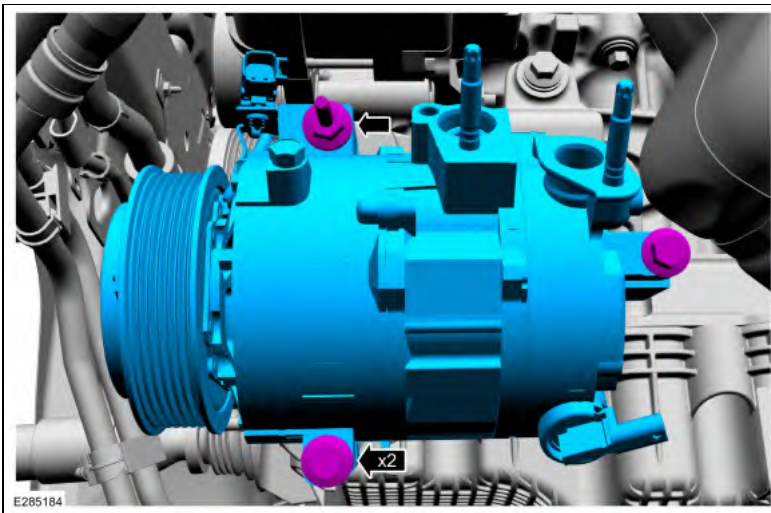


47. **NOTICE:** During the removal of components, cap, tape or otherwise appropriately protect all openings to prevent the ingress of dirt or other contamination. Remove protective materials prior to installation.

- Remove the A/C compressor inlet and outlet line nuts and disconnect the fittings.
- Discard the O-ring seals and gaskets.
 - Make sure to cover any open ports to prevent debris from entering the system.



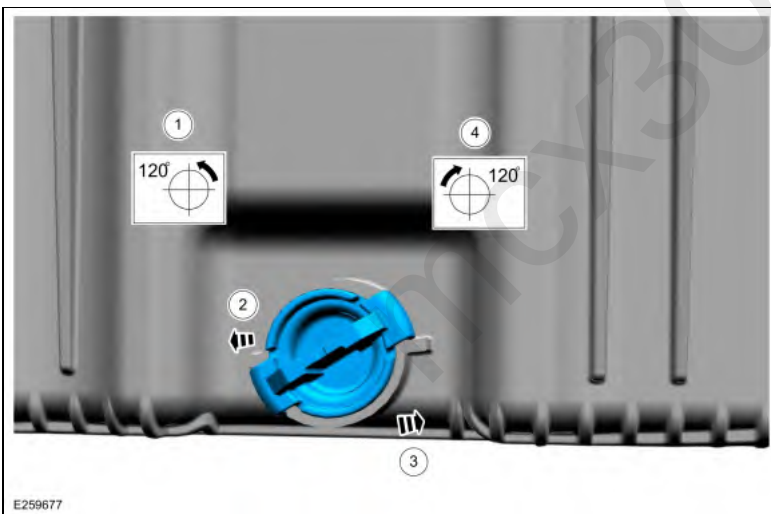
48. Remove the bolts, stud bolt and the A/C compressor.



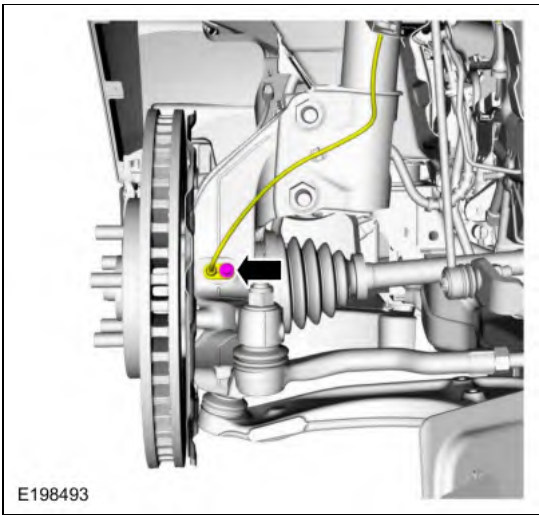
49.

1. Turn the oil drain plug 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.**

Turn the oil drain plug clockwise 120 degrees.

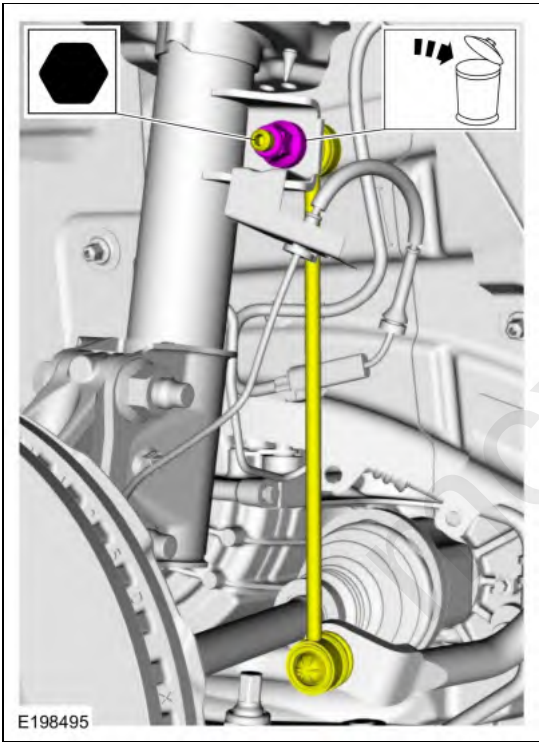


50. Remove the bolt and the LH anti-lock sensor.



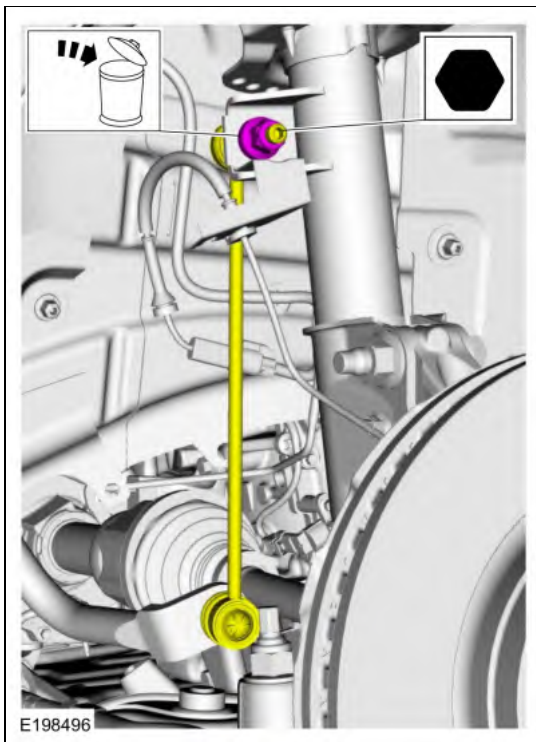
51. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

Remove the nut and position the LH sway bar link aside.



52. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

Remove the nut and position the RH sway bar link aside.

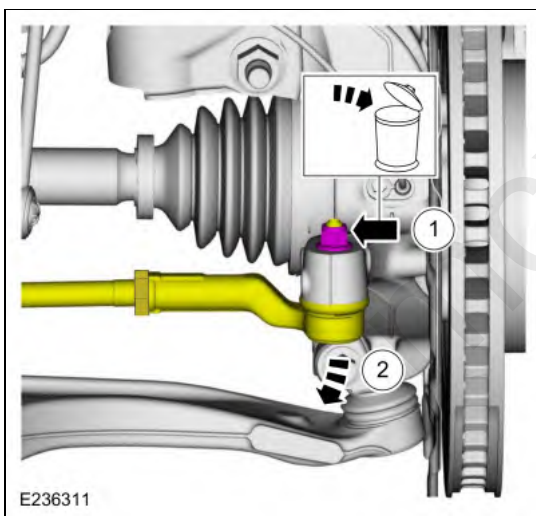


53.

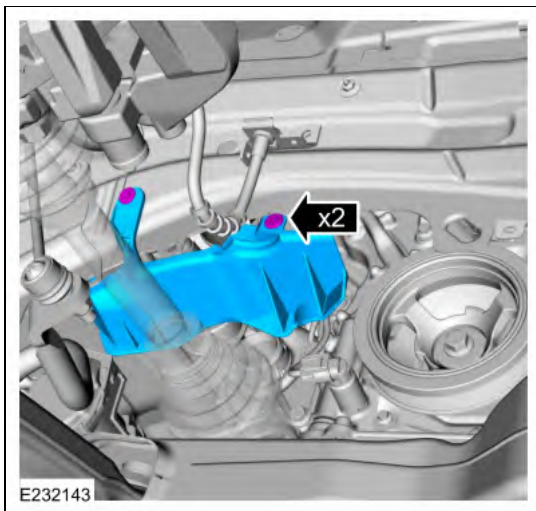
1. Remove and discard the RH outer tie rod end nut.
2. **NOTICE: Do not use a hammer to separate the outer tie-rod end from the wheel spindle or damage to the wheel spindle may result.**

NOTICE: Use care when installing the tie rod end remover or damage to the outer tie-rod end boot may occur.

Separate the outer tie rod end from the wheel knuckle.
Use the General Equipment: Tie Rod End Remover



54. Remove the retainers and the shield.



55. Remove the following items:

1. RH front halfshaft.

Refer to: Front Halfshaft RH - 2.0L EcoBoost (184kW/250PS) â€“ MI4, All-Wheel Drive (AWD) (205-04 Front Drive Halfshafts, Removal and Installation).

Refer to: Front Halfshaft RH - 2.0L EcoBoost (184kW/250PS) â€“ MI4, All-Wheel Drive (AWD) (205-04 Front Drive Halfshafts, Removal and Installation).

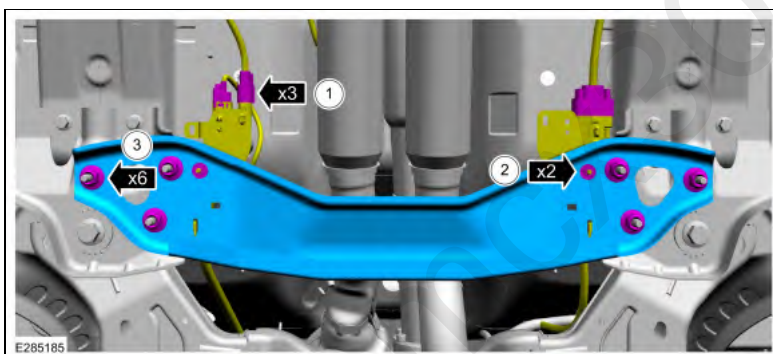
2. **NOTICE: Do not allow the brake caliper and anchor plate assembly to hang from the brake hose or damage to the hose can occur.**

Remove the LH brake disc.

Refer to: Brake Disc (206-03 Front Disc Brake, Removal and Installation).

56.

1. If equipped, disconnect the wiring harness electrical connectors.
2. If equipped, remove the nuts and position the wiring harness support bracket(s) aside.
3. Remove the nuts and the subframe support bracket.



57. Remove the following items:

1. Exhaust flexible pipes.

Refer to: Exhaust Flexible Pipe (309-00B Exhaust System - 2.7L EcoBoost (238kW/324PS), Removal and Installation).

2. LH catalytic convertor.

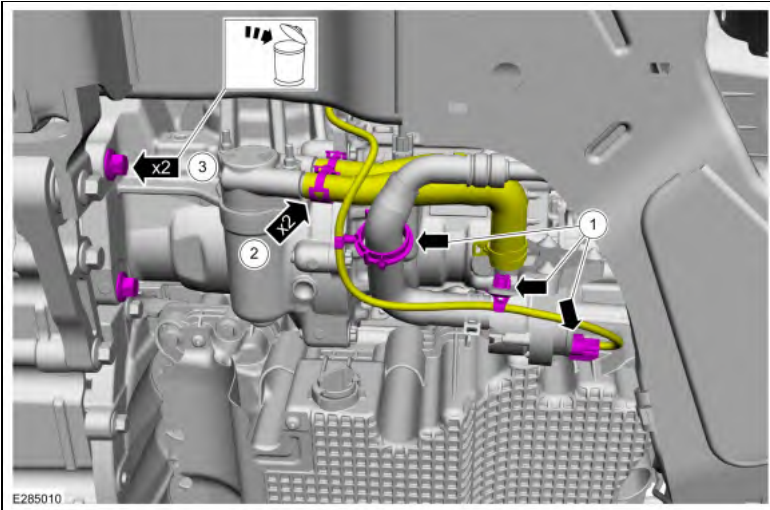
Refer to: Catalytic Converter LH (309-00B Exhaust System - 2.7L EcoBoost (238kW/324PS), Removal and Installation).

LHD AWD

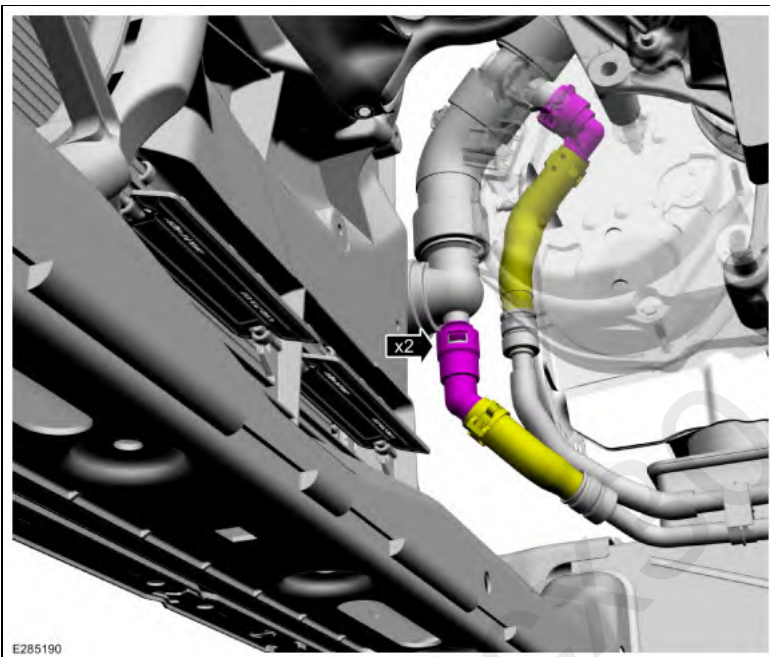
58. Remove the driveshaft.

59.

1. Disconnect the coolant pump electrical connector and detach the wiring harness retainers.
2. Loosen the clamps and disconnect the coolant hoses.
Use the General Equipment: Hose Clamp Remover/Installer
3. Remove and discard the lower transfer case bolts.

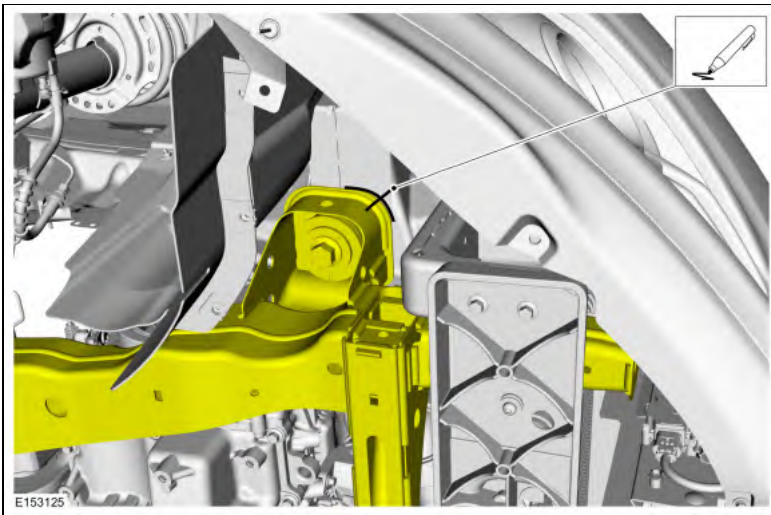


60. Disconnect the transfer case coolant hose quick connect couplings.

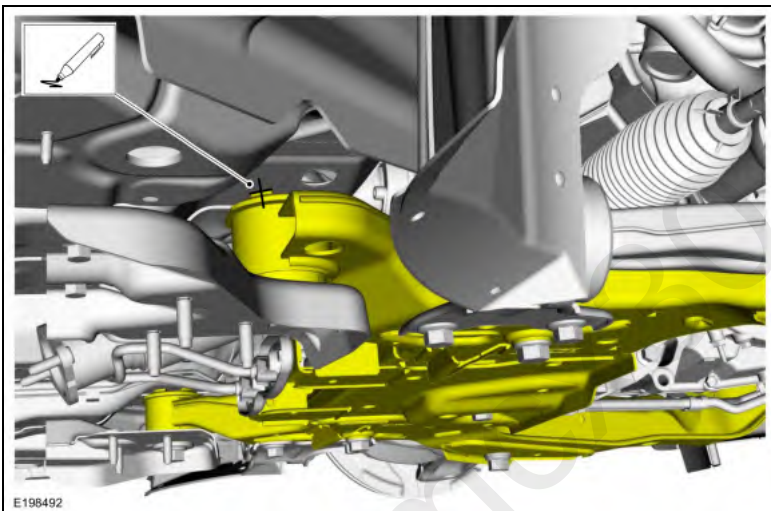


LHD AWD/LHD FWD

61. Mark the subframe location.



62. Mark the subframe location.

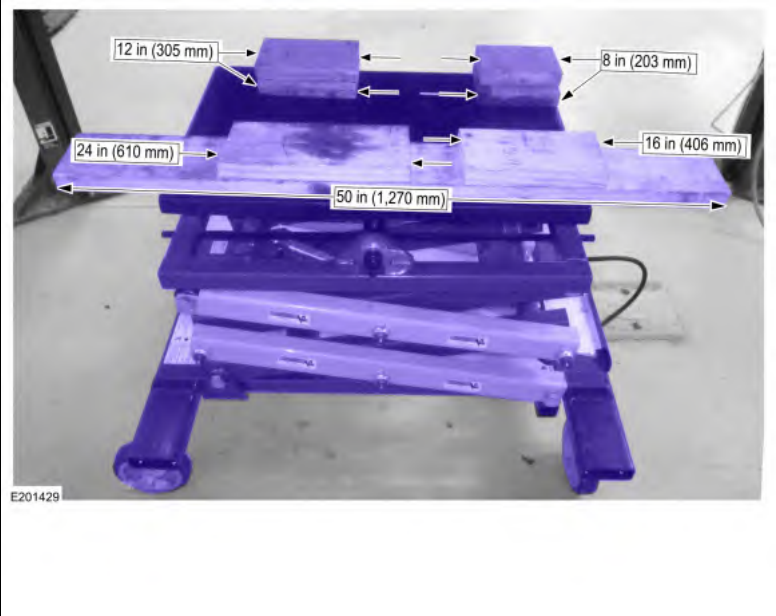


63. **NOTICE:** The boards must be positioned to properly support the engine, transmission and subframe, and allow clearance between the powertain jack and the exhaust components to prevent damage.

Position lengths of 2 x 6 boards on the powertrain jack to support the oil pan, transmission and subframe.

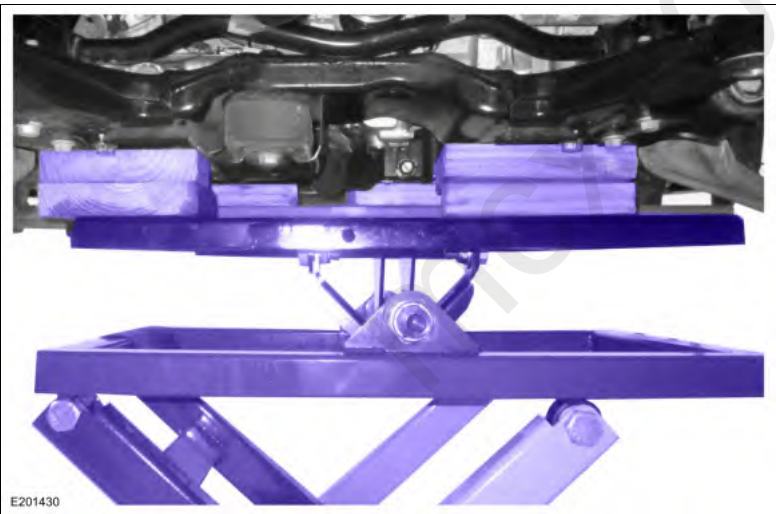
Use the General Equipment: Powertrain Jack

Use the General Equipment: Wooden Block

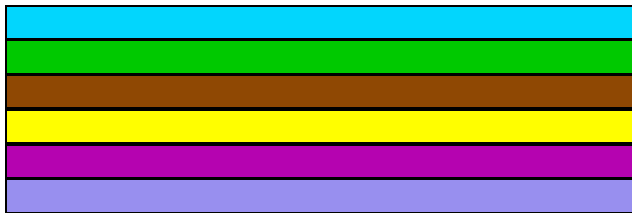
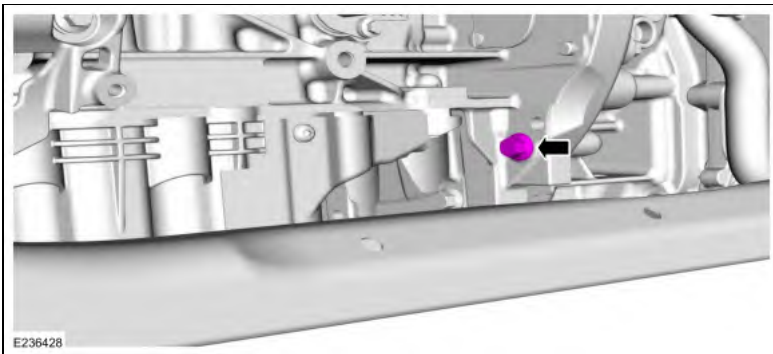


64. **NOTE:** View from rear of vehicle.

Position the powertain jack and boards under the engine, transmission and subframe.
Use the General Equipment: Powertrain Jack
Use the General Equipment: Wooden Block

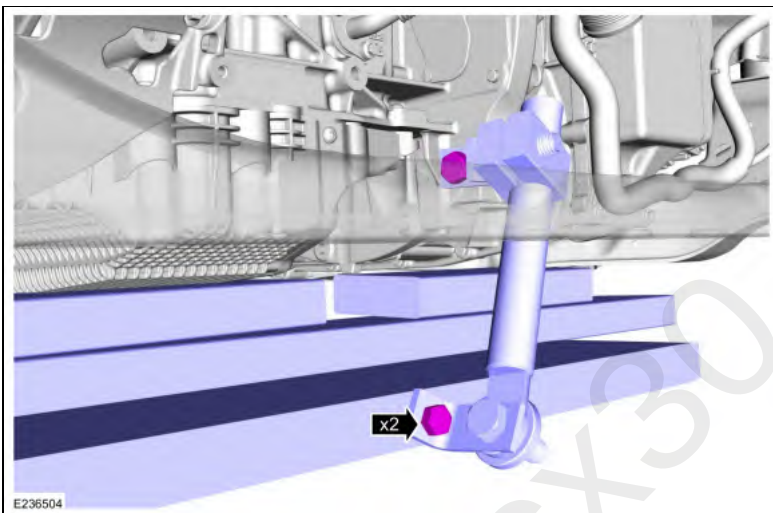


65. Remove the engine-to-transmission bolt.



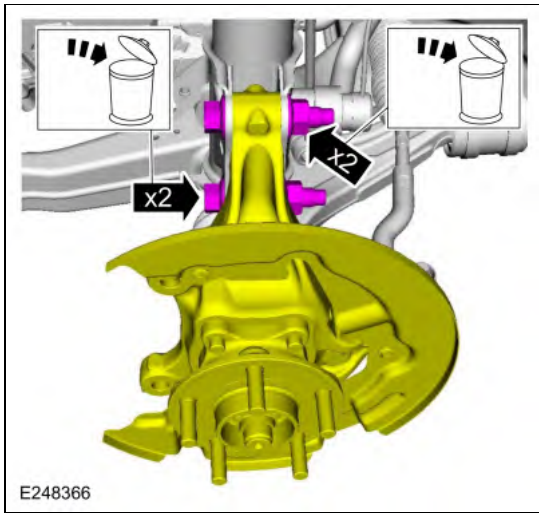
66.

1. Position the powertrain jack and boards under the powertrain and subframe.
Use the General Equipment: Powertrain Jack
Use the General Equipment: Wooden Block
2. Install.
Use the General Equipment: Adjustable Mounting Arm



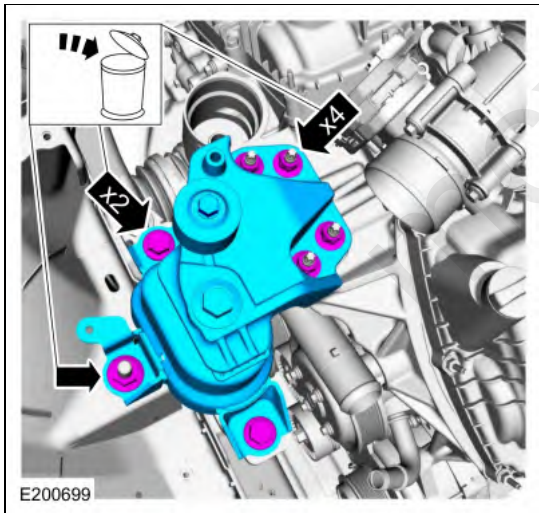
67.

- Remove and discard the nuts and the bolts.
- Separate the LH knuckle from the strut.

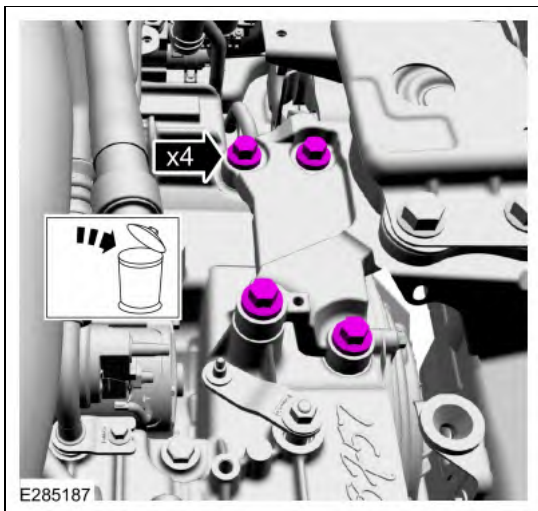


68. **NOTICE:** The engine mount and bracket are serviced as an assembly. Do not remove the engine mount bracket-to-engine mount bolt, this fastener is not serviceable.

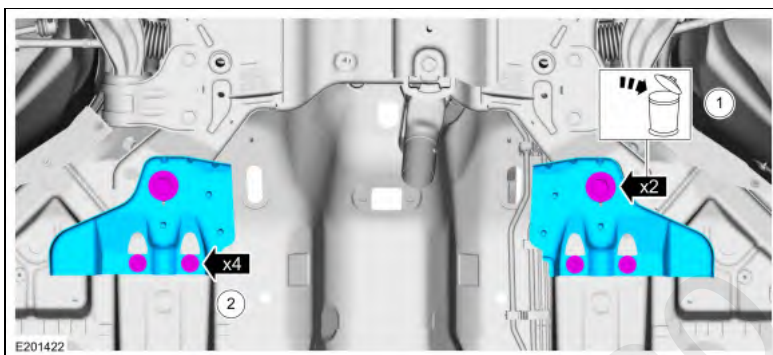
- Remove and discard the nuts and bolts.
- Remove the engine mount and bracket assembly.



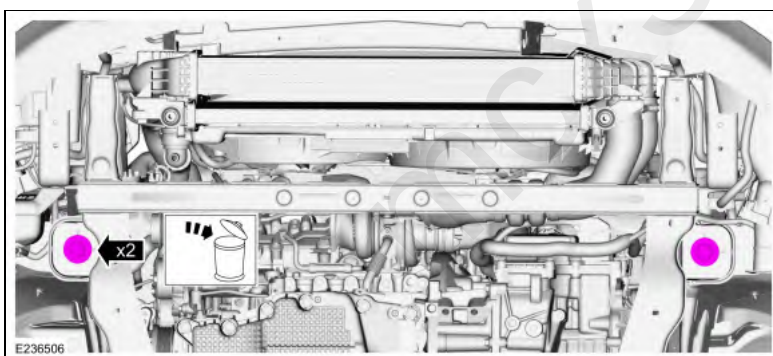
69. Remove and discard the transmission mount bolts.



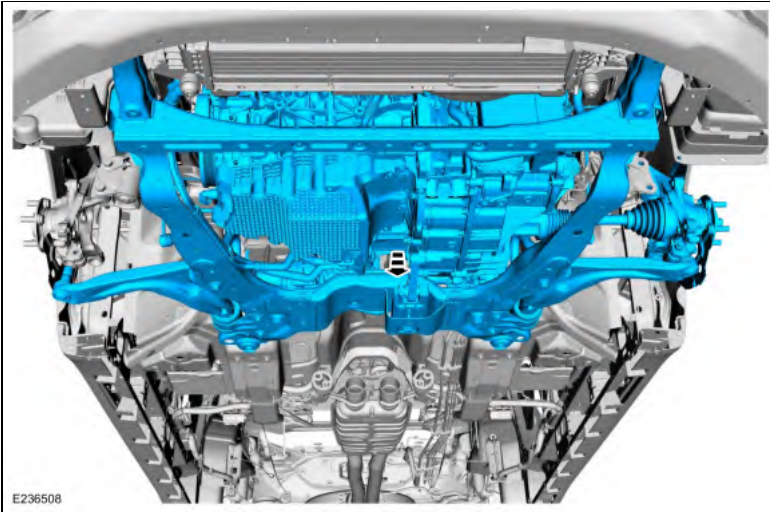
- 70.
1. Remove and discard the subframe bolts.
 2. Remove the bolts and the subframe brackets.



71. Remove and discard the subframe bolts.

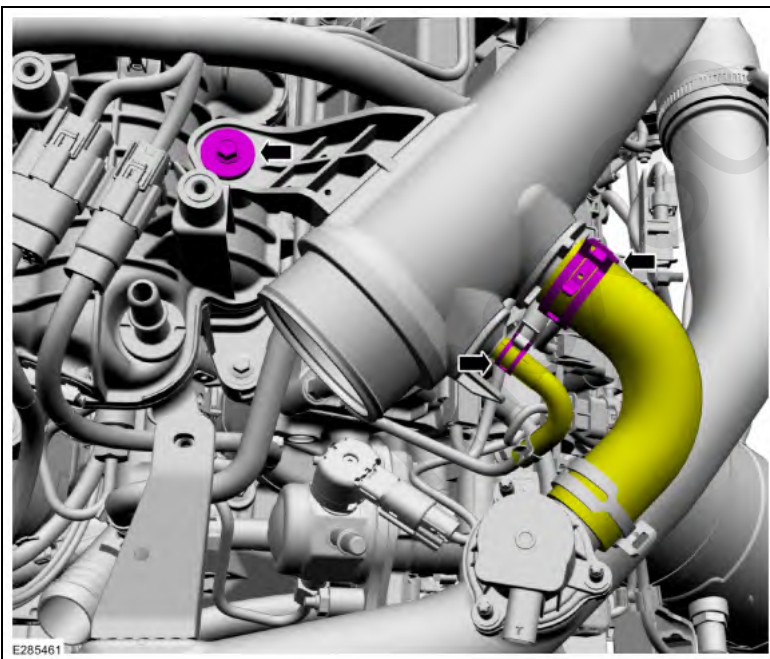


72. Using the powertrain jack, lower the powertrain and subframe as an assembly.
Use the General Equipment: Powertrain Jack



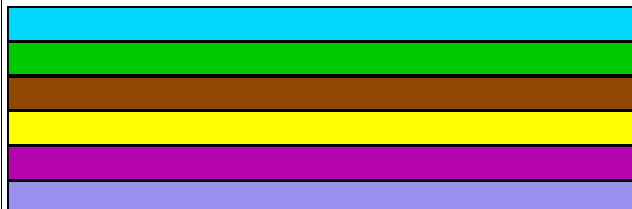
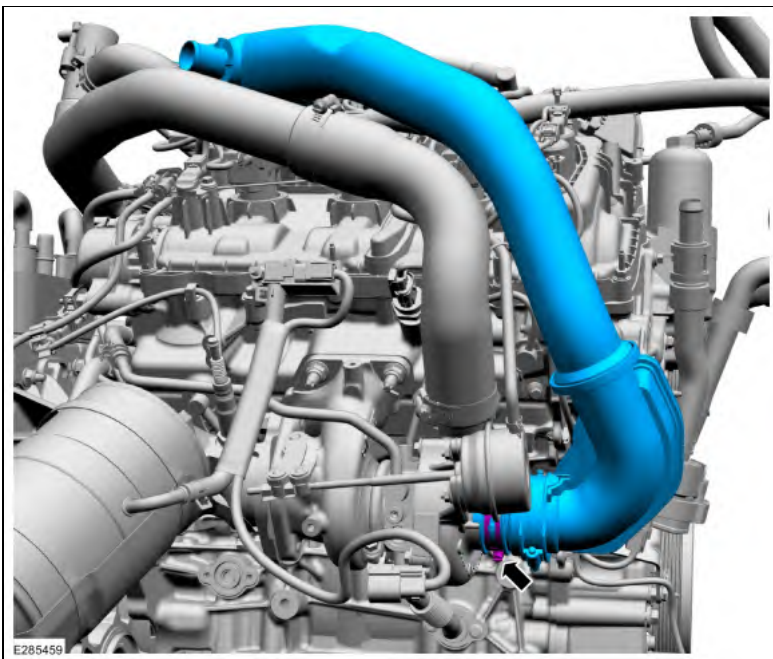
73. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

1. Remove the bolt.
 2. Release the clamps and disconnect the hoses.
- Use the General Equipment: Hose Clamp Remover/Installer
- Cover all open ports.



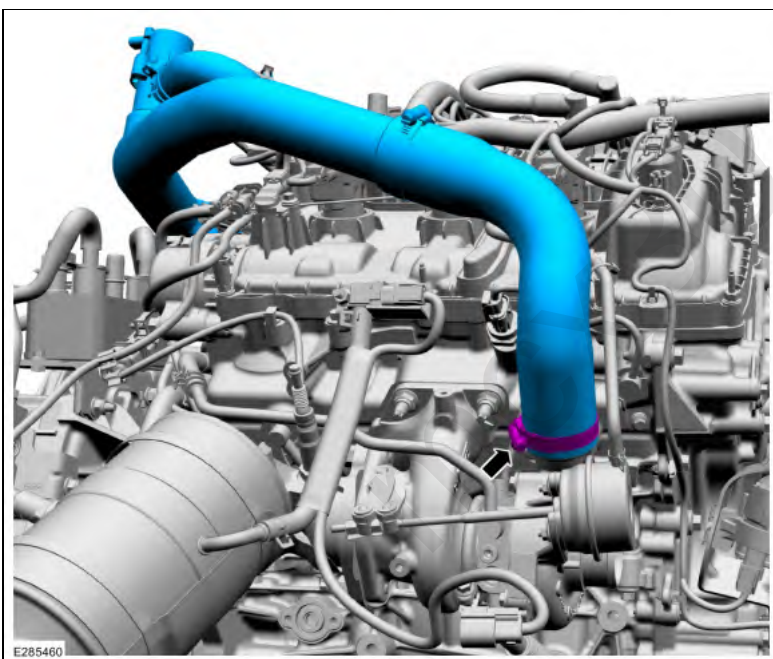
74. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

1. Loosen the clamp and remove the turbocharger intake pipe.
- Cover all open ports.

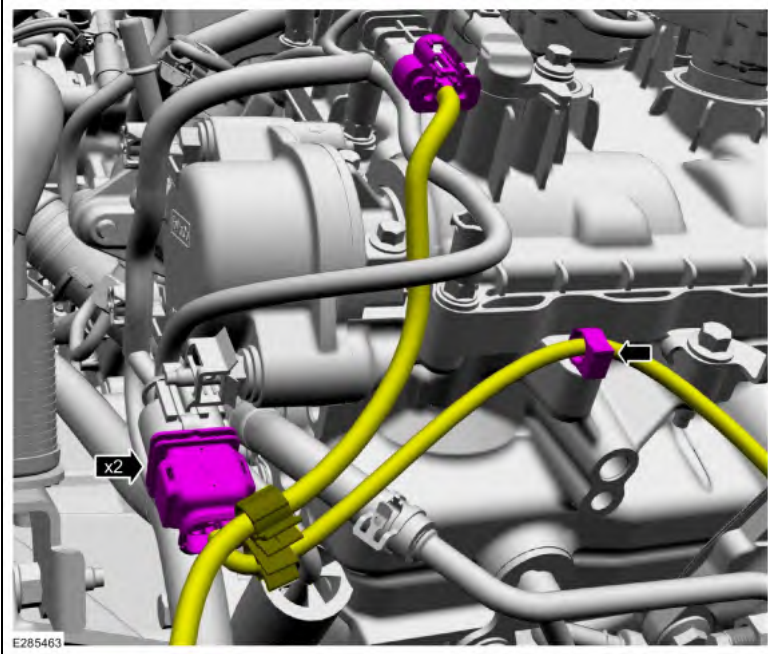


75. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

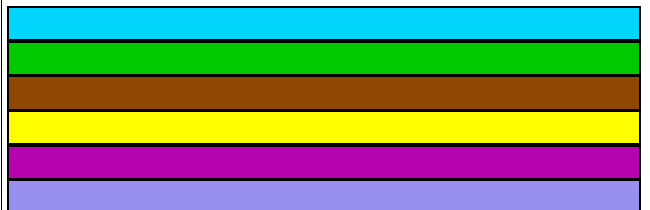
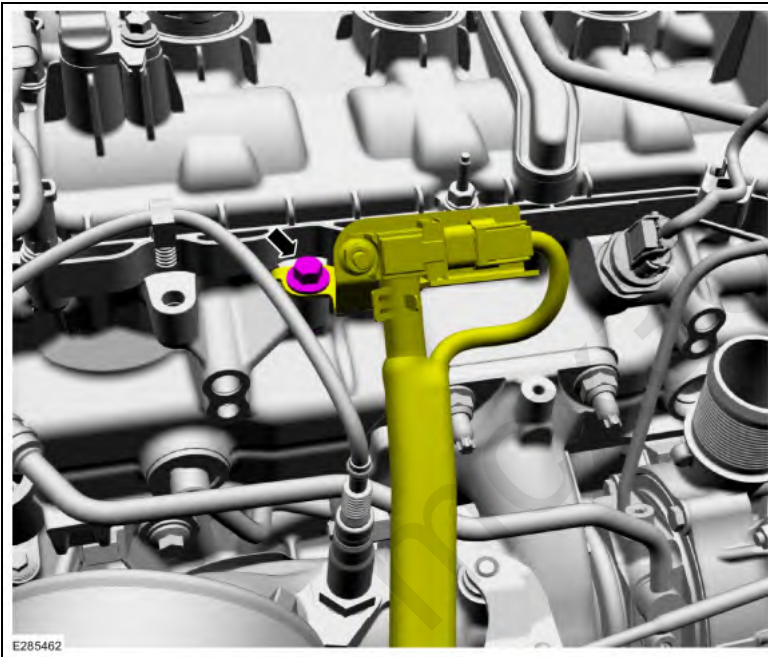
1. Loosen the clamp and remove the turbocharger outlet pipe.
 - Cover all open ports.



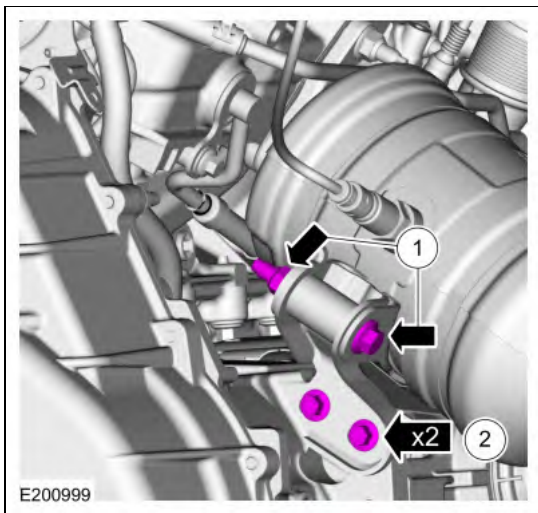
- 76.
- Disconnect the HO2S and the catalyst monitor sensor electrical connectors.
 - Detach the wiring harness retainer.



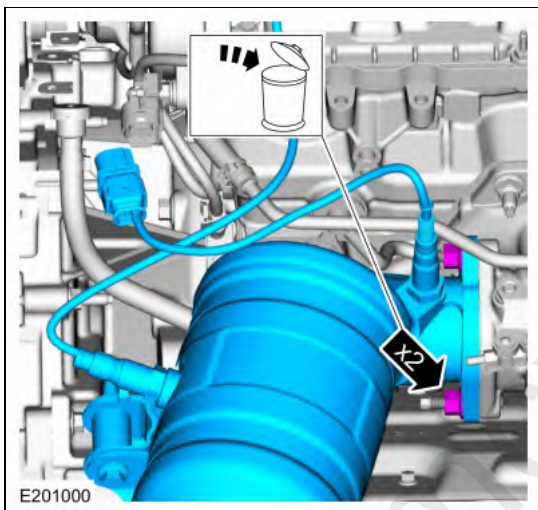
77. If equipped, remove the bolt and position the transducer aside.



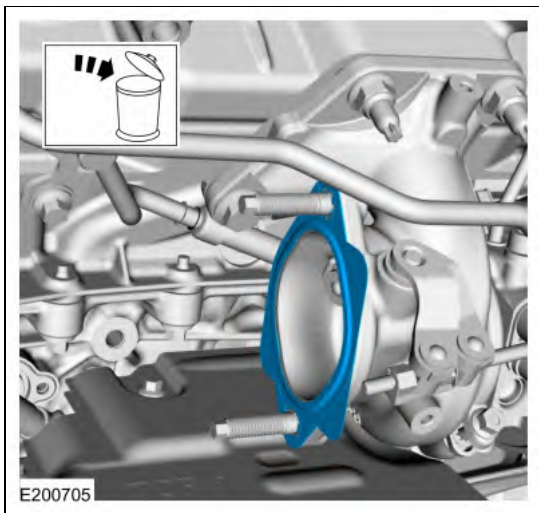
- 78.
1. Loosen.
 2. Remove.



- 79.
1. Remove and discard the RH catalytic converter nuts.
 2. Remove the RH catalytic converter.

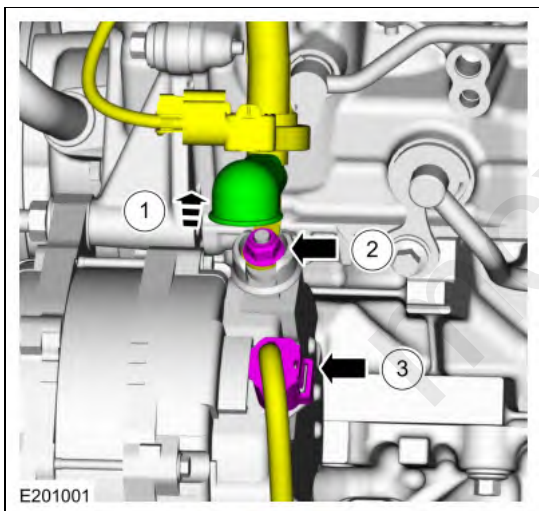


80. Remove and discard the RH catalytic converter gasket.



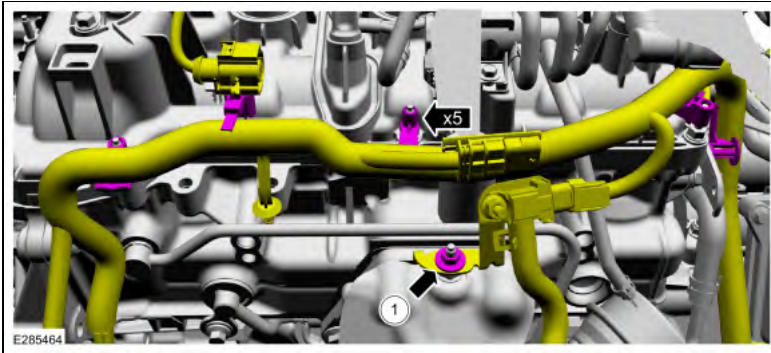
81.

1. Lift up the generator cable protective cover.
2. Remove the nut and disconnect the generator cable.
3. Disconnect the generator electrical connector.



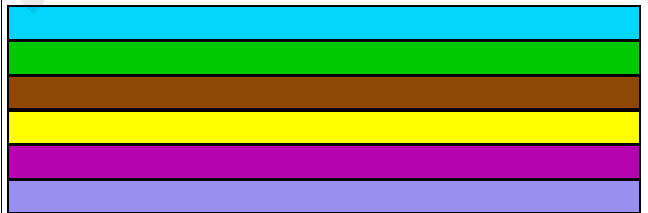
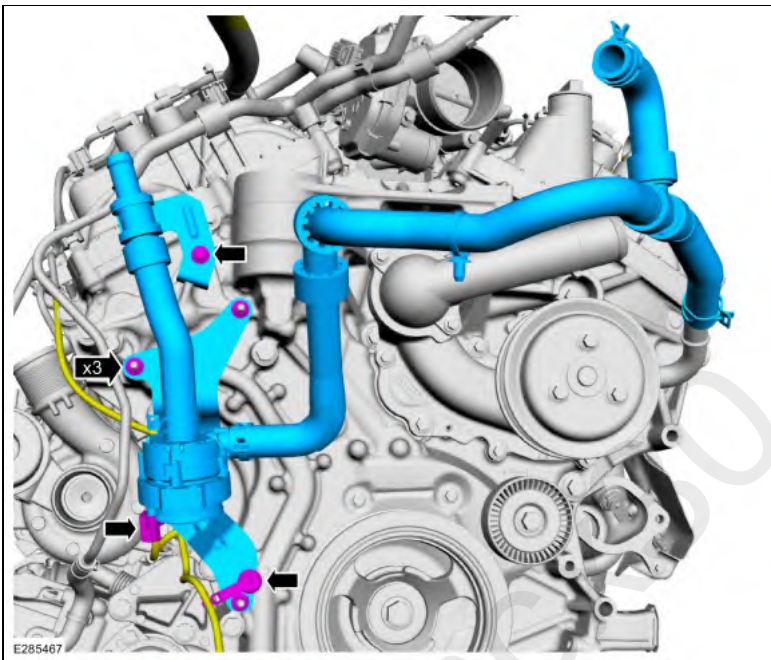
82.

1. If equipped, remove the nut and position the transducer aside.
 - Detach the retainers and position the battery cable aside.

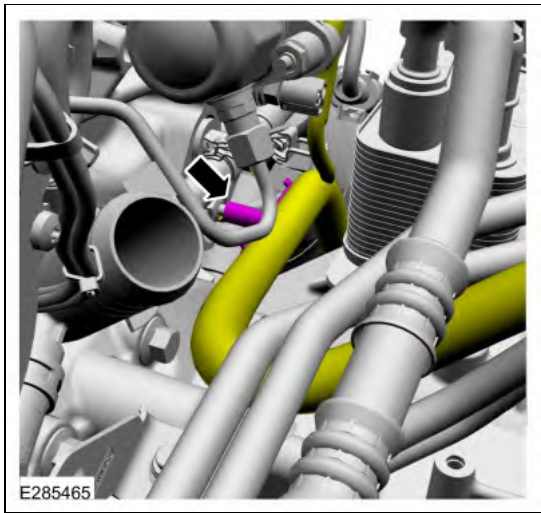


83.

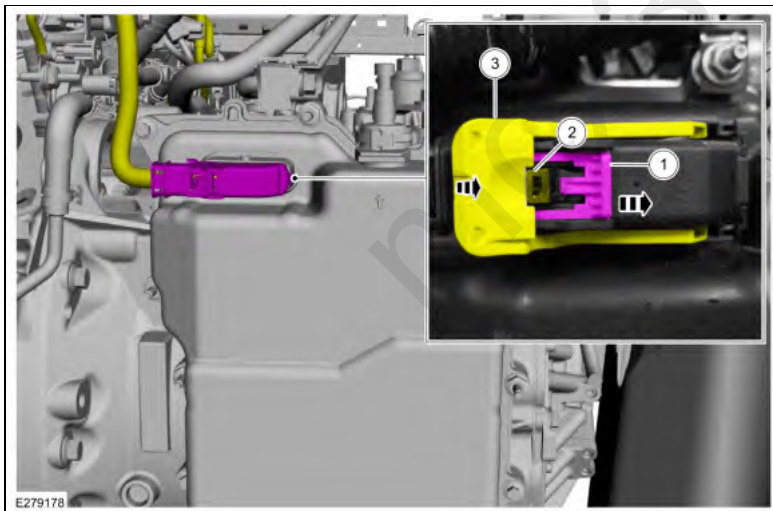
- Disconnect the coolant pump electrical connector.
- Detach the wiring harness retainer.
- Remove the nuts, bolt and the coolant pump and hose assembly.



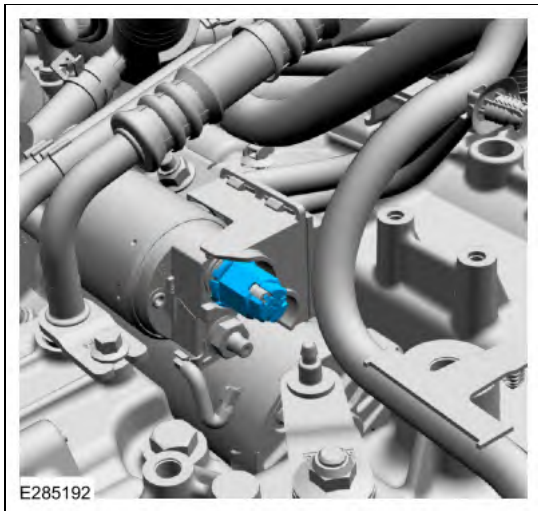
84. Detach the wiring harness retainer.



85. Disconnect the transmission electrical connector.
1. Slide the locking clip.
 2. Press the tab
 3. While pressing the tab, rotate the connector latch.

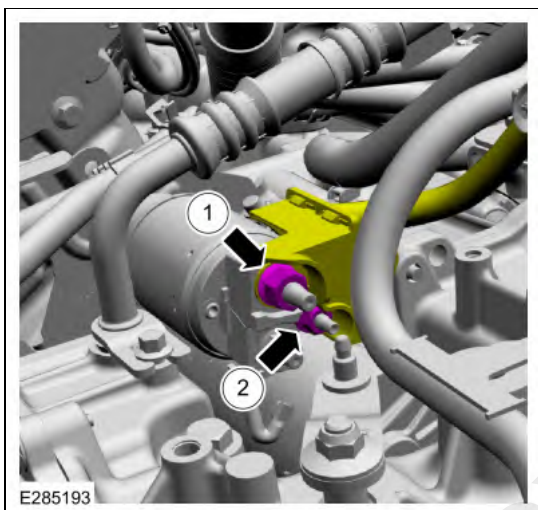


86. Remove the starter cable protective cover.



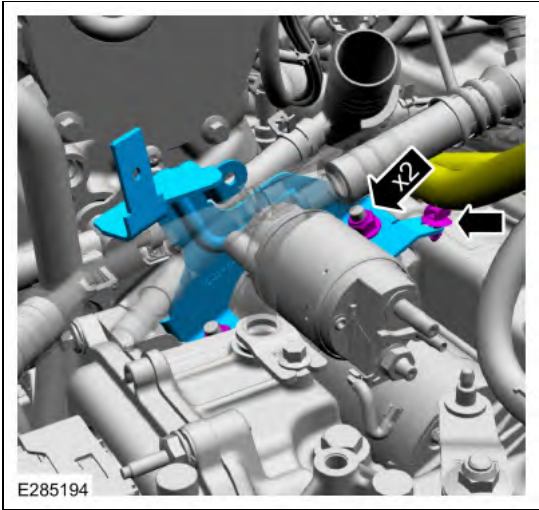
87.

1. Remove the nut.
2. Remove the nut and position the starter cable aside.

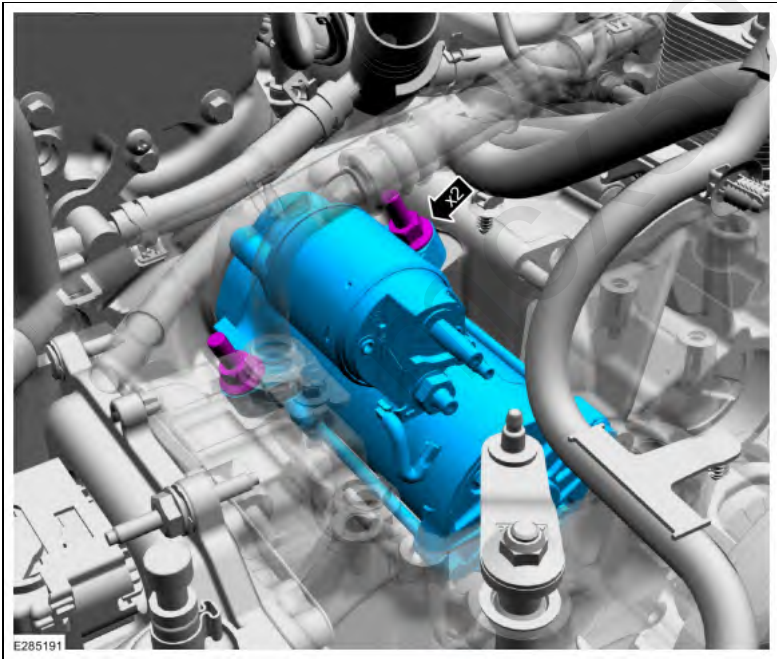


88.

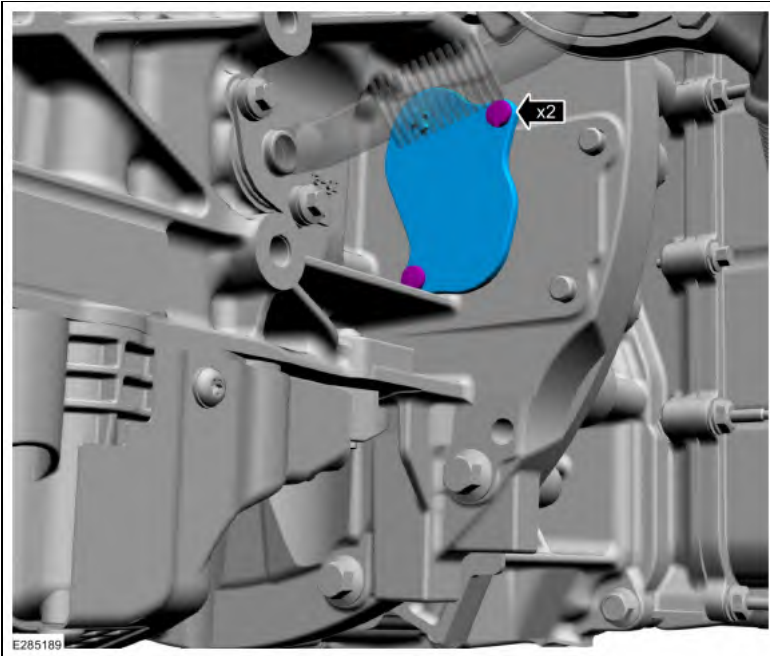
1. Detach the retainer position the wiring harness aside.
2. Remove the nuts and the bracket.



89. Remove the stud bolts and the starter.

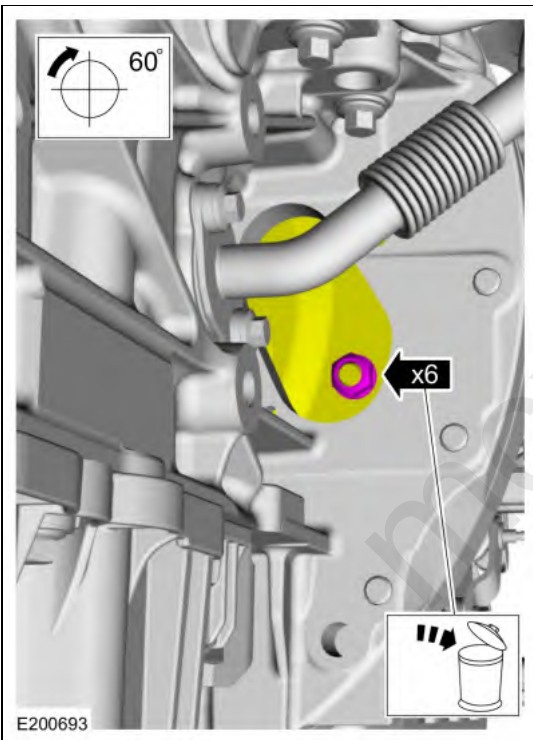


90. Remove the retainers and the access cover.



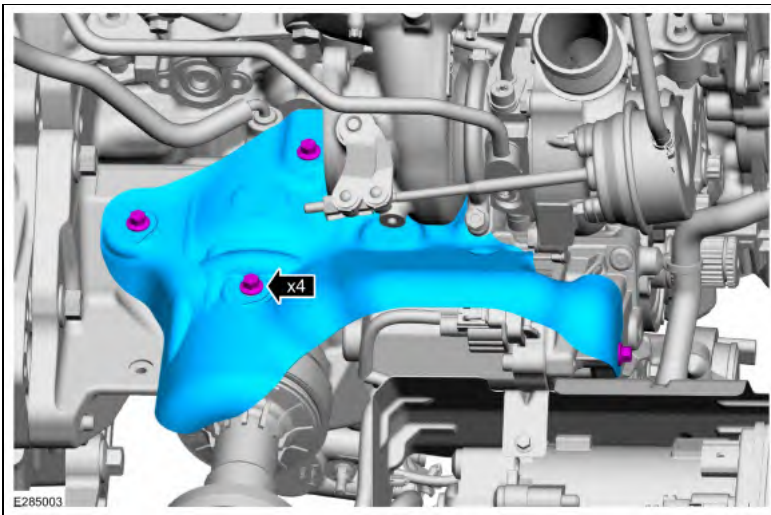
91. **NOTE:** Using the crankshaft pulley bolt, turn the engine clockwise.

Remove and discard the torque converter nuts.

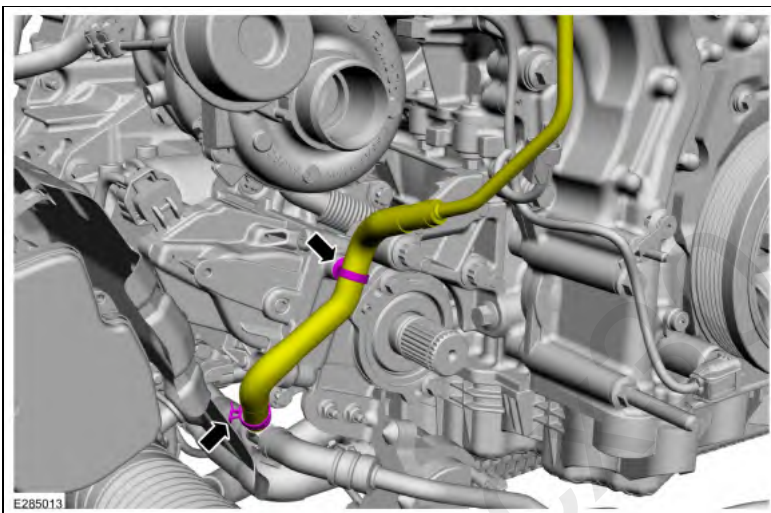


LHD AWD

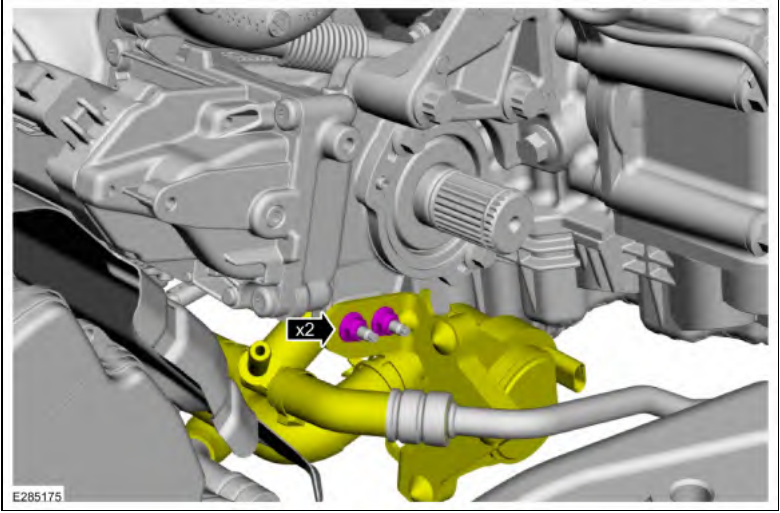
92. Remove the bolts and the heat shield.



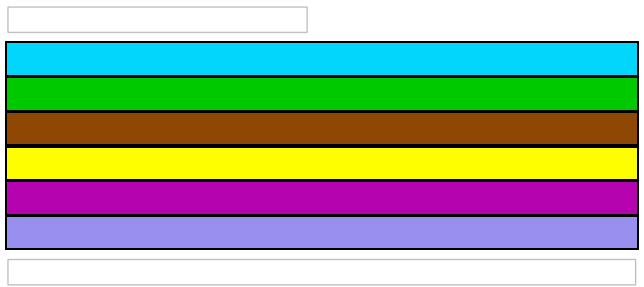
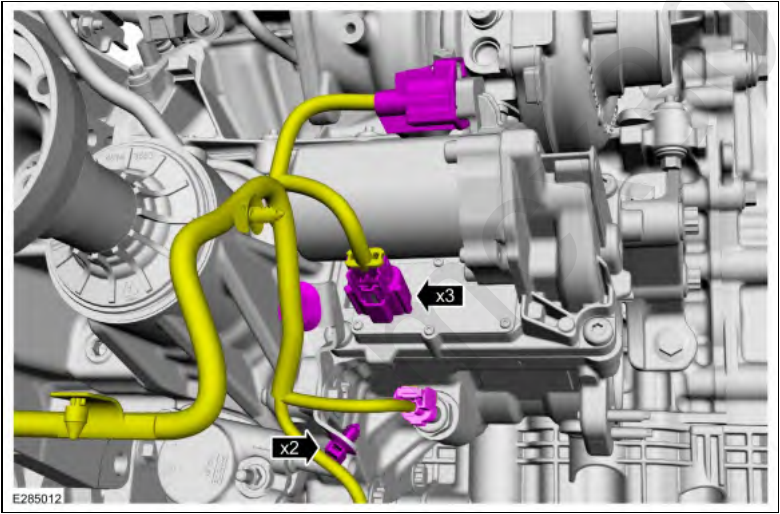
- 93.
- Release the clamp and disconnect the coolant hose.
Use the General Equipment: Hose Clamp Remover/Installer
 - Detach the coolant hose retainer.



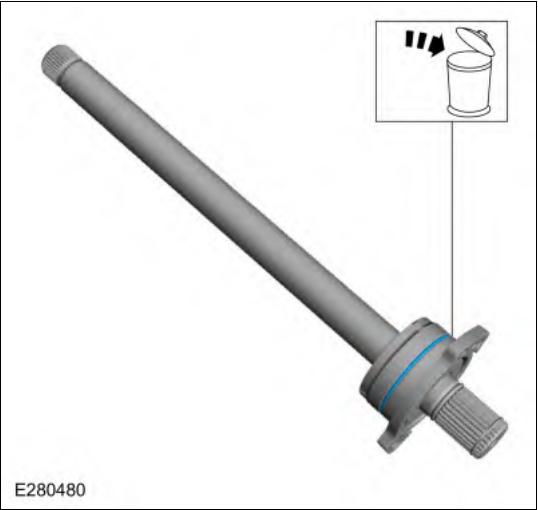
94. Remove the nuts and position the coolant pump aside.



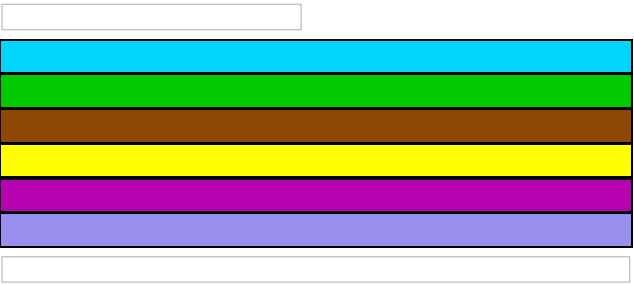
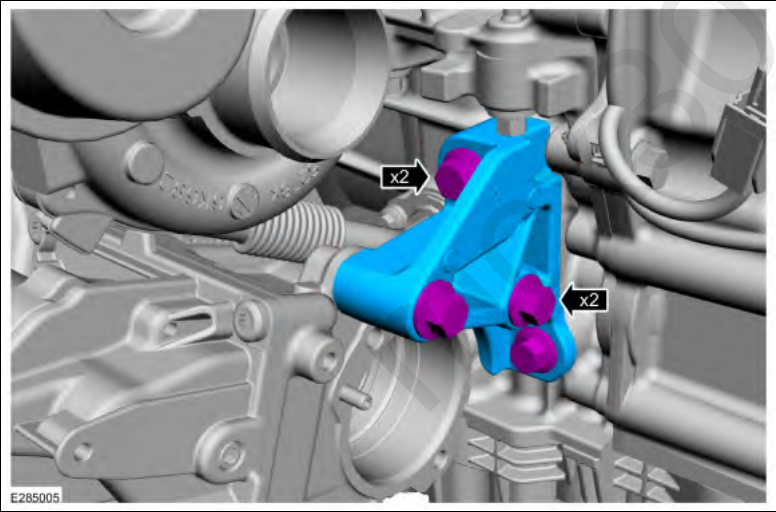
95. Disconnect the transfer case electrical connectors and detach the wiring harness retainers.



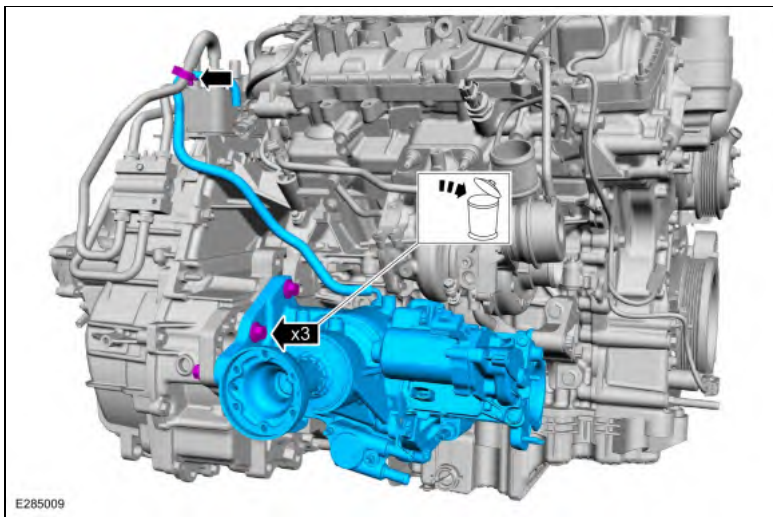
96. Remove the transfer case shaft bolts.



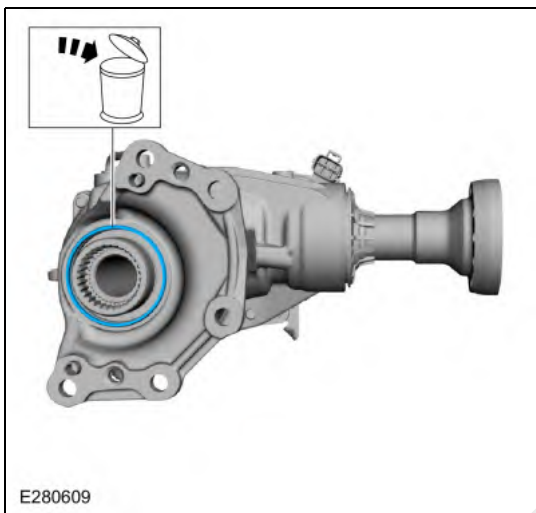
99. Remove the bolts and the bracket.



- 100.
- 1. Detach the vent hose retainer.
 - 2. Remove and discard the bolts.
 - 3. Remove the transfer case.



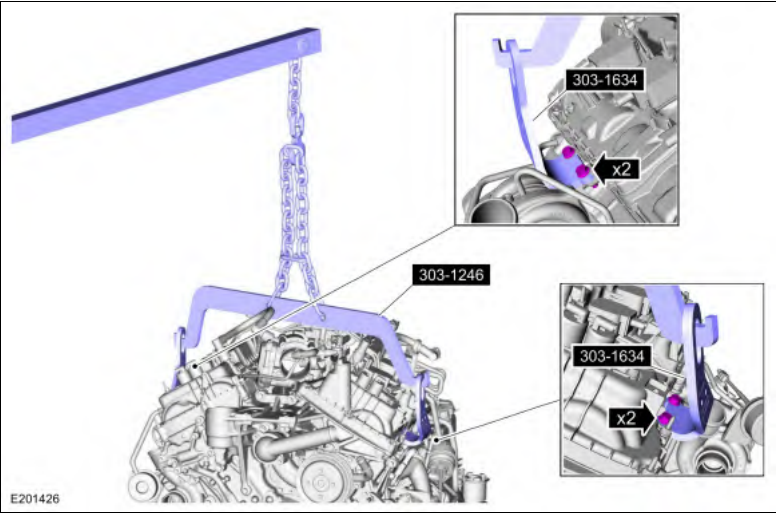
101. Remove and discard the transfer case compression seal.



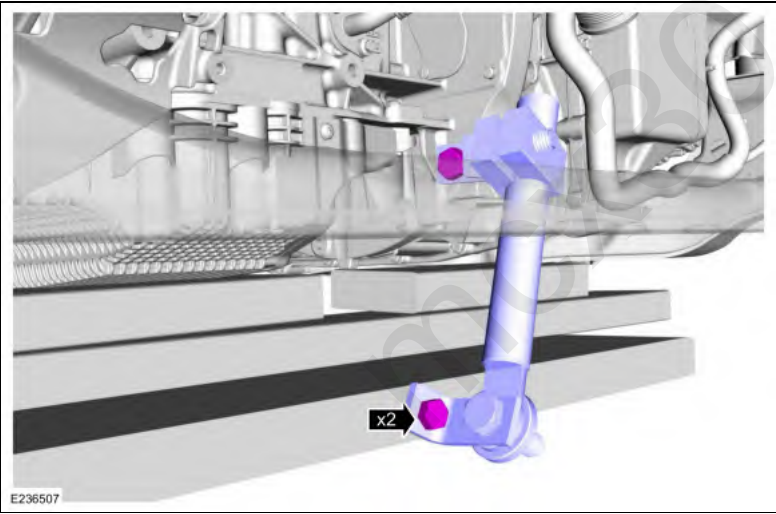
LHD AWD/LHD FWD

102.

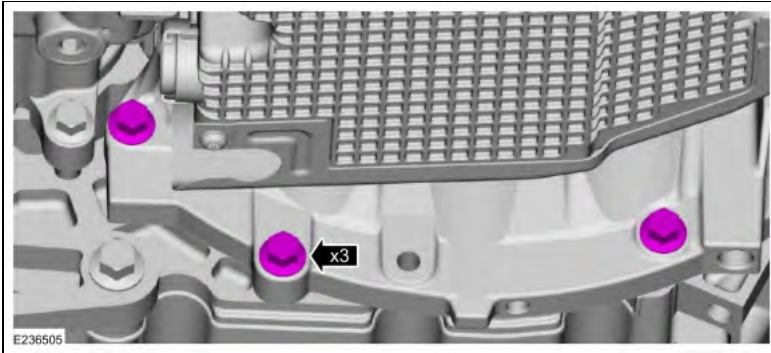
1. Install Special Service Tool: 303-1634 Lift Eyes (2), , 303-1246 Engine Spreader Bar.
2. Support the engine using the floor crane and length of chain with connecting links.
Use the General Equipment: Floor Crane



103. Remove.
Use the General Equipment: Adjustable Mounting Arm

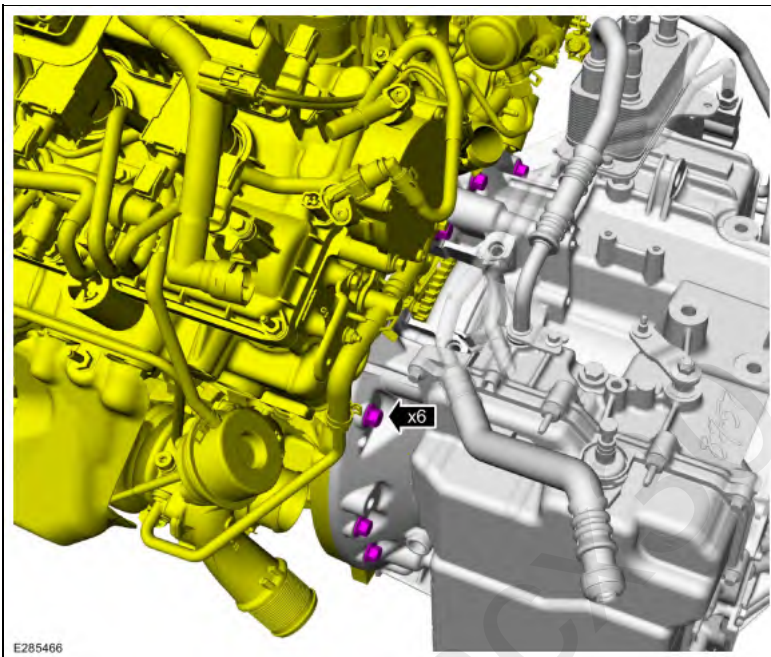


104. **NOTE:** AWD shown, FWD similar.
Remove the transmission bellhousing bolts.

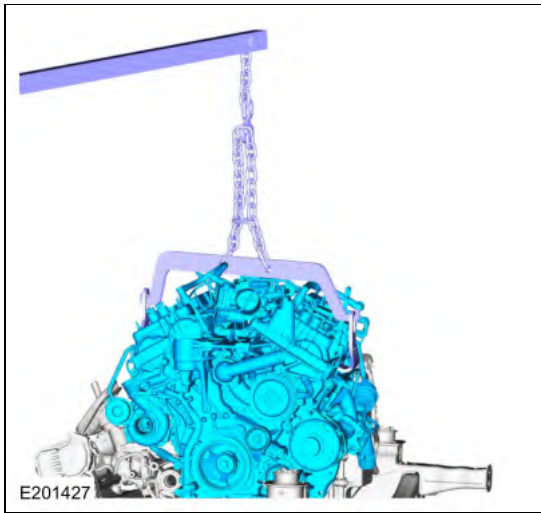


105.

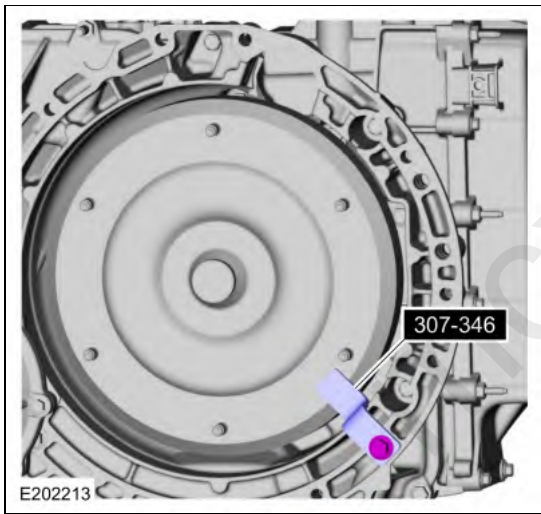
1. Remove the bellhousing bolts.
2. Separate the engine from the transmission.



106. Remove the engine from the transmission and subframe assembly.
Use the General Equipment: Floor Crane



107. Install Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



Engine Block Skirt Stiffener

Special Tool(s) / General Equipment

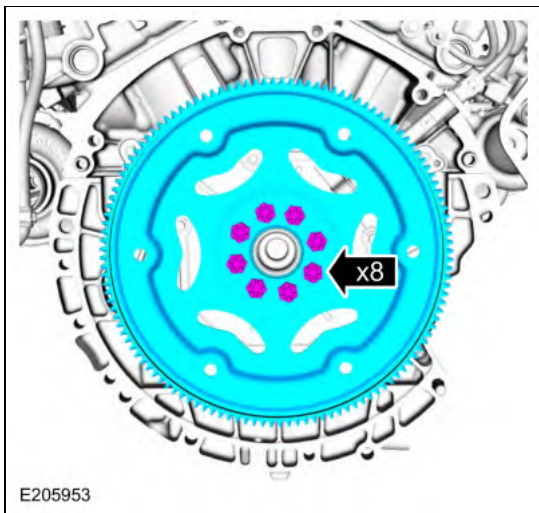
 E133913	205-153 (T80T-4000-W) Handle
	303-1246 Engine Spreader Bar TKIT-2006UF-FLM TKIT-2006UF-ROW
 E175042	303-1247 VCT Spark Plug Tube Seal Remover and Installer TKIT-2006UF-FLM TKIT-2006UF-ROW
 E188625	303-1634 Lift Eyes (2) TKIT-2014D-ROW3 TKIT-2014D-FL_ROW
 E134603	303-409 (T92C-6700-CH) Remover, Crankshaft Seal TKIT-1992-FH/FMH/FLMH TKIT-1993-LMH/MH
Floor Crane	
Three Leg Puller	
Mounting Stand	
Plastic Scraper	
Flat-Bladed Screwdriver	

Materials

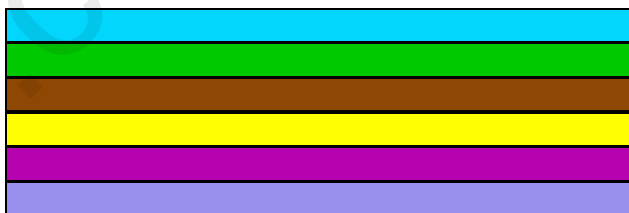
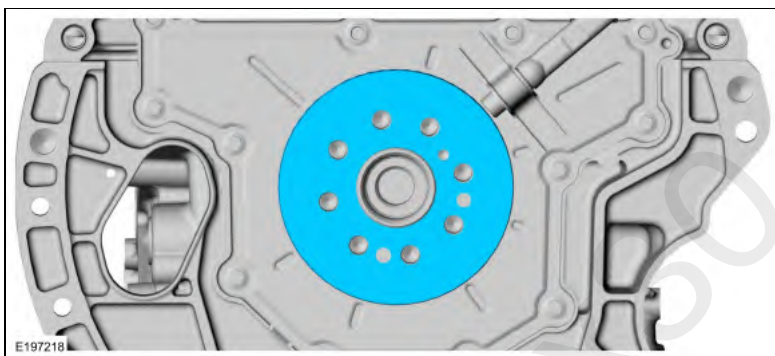
Name	Specification
Motorcraft® Metal Brake Parts Cleaner PM-4-A, PM-4-B	-

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. Remove the engine from the vehicle.
Refer to: Engine (303-01B Engine - 2.7L EcoBoost (238kW/324PS), Removal).
2. Remove the bolts and the flexplate.



3. Remove the crankshaft sensor ring.



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