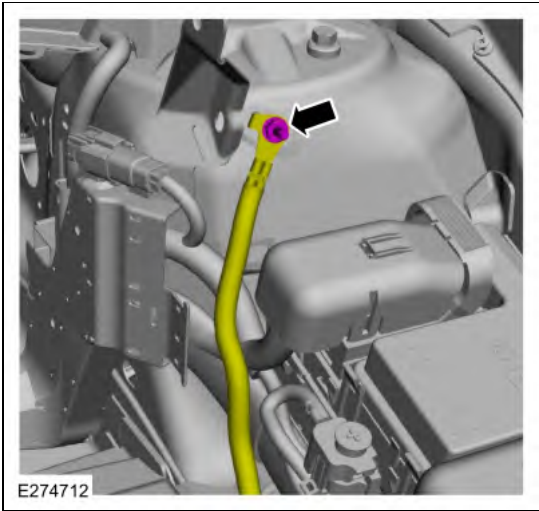
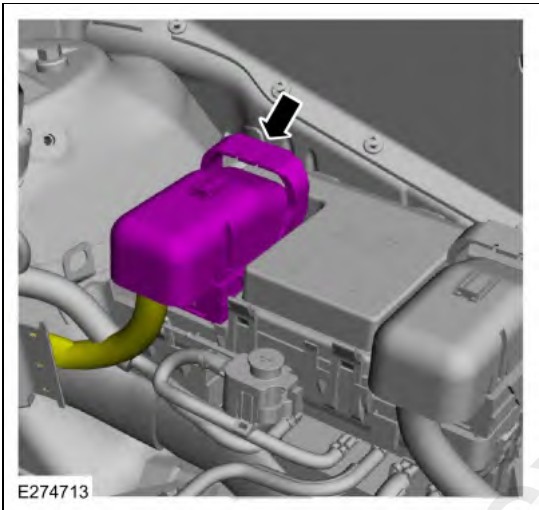


Refer to: Battery Tray (414-01 Battery, Mounting and Cables, Removal and Installation).
5. Remove the EVAP canister purge valve.

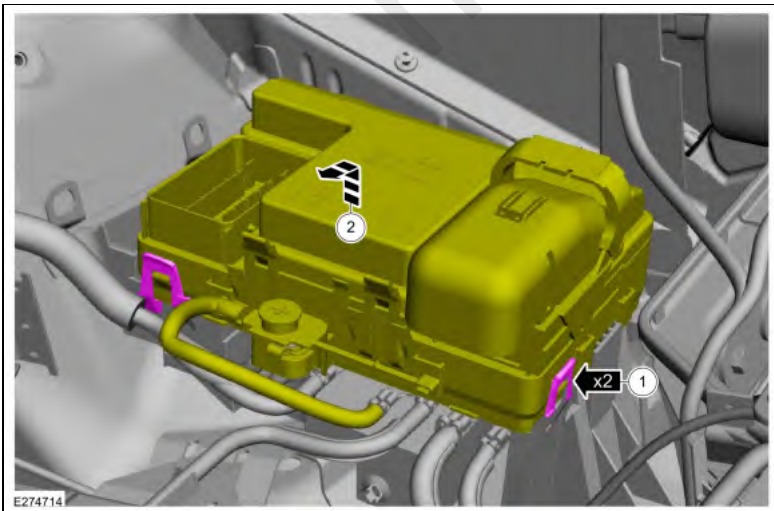
8. Remove the ground cable stud bolt.



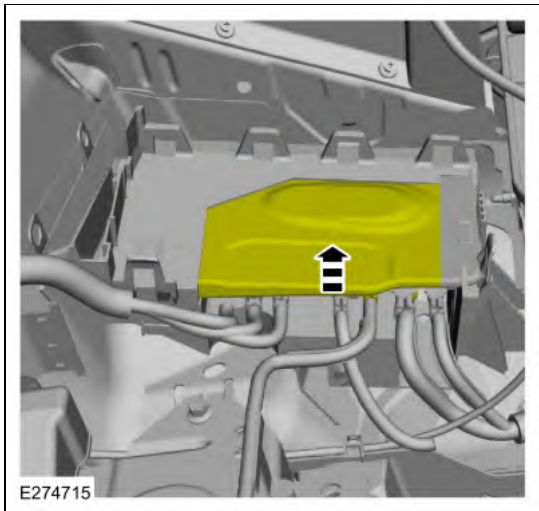
9. Disconnect the junction box electrical connector.



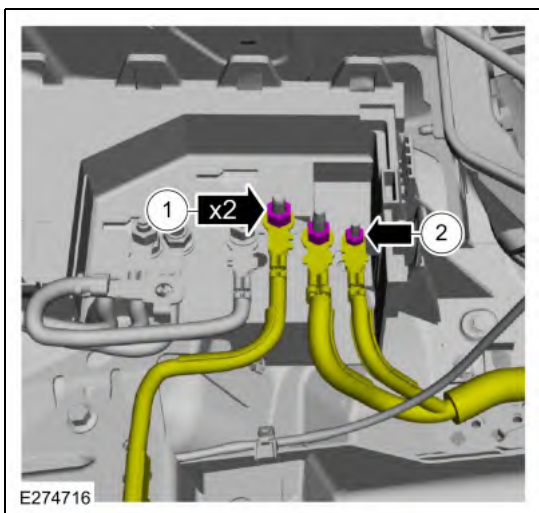
- 10.
1. Release the tabs.
 2. Lift and position top part of junction box aside.



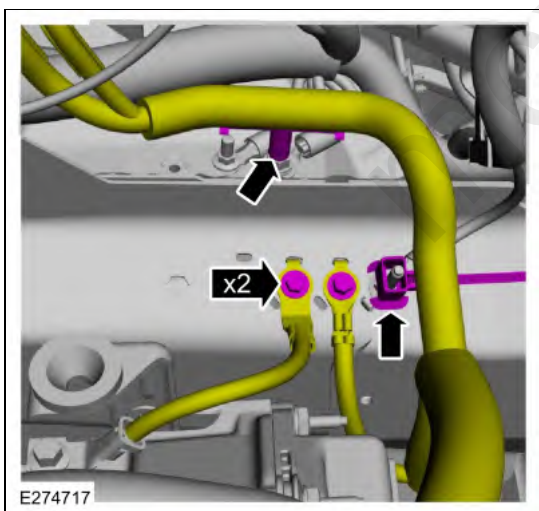
11. Open the junction box cover.



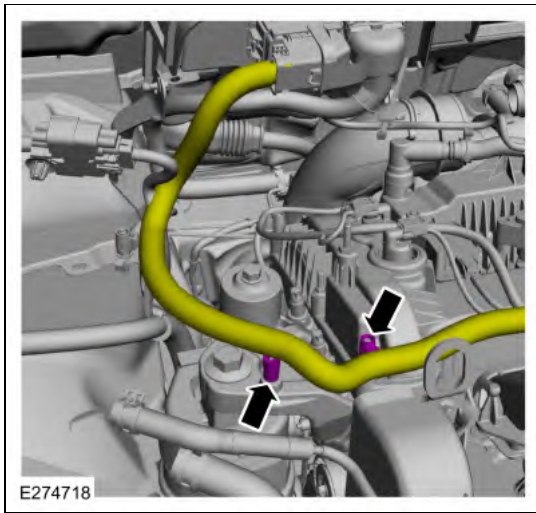
12. Remove the nuts and disconnect the electrical wiring harness.



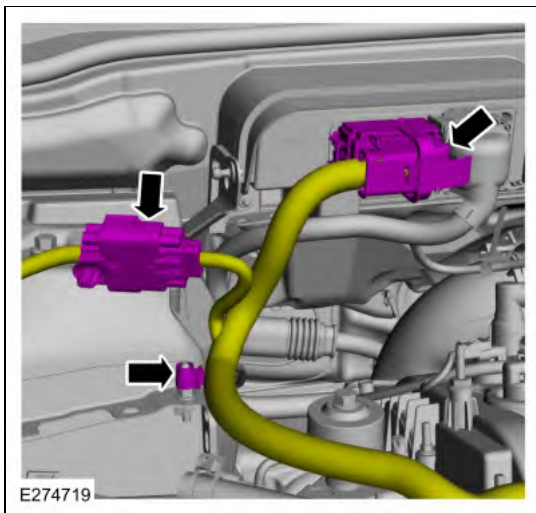
13. Remove the bolts and detach the wiring harness retainers.



14. Detach wire harness retainers from the engine mount and valve cover stud bolt.



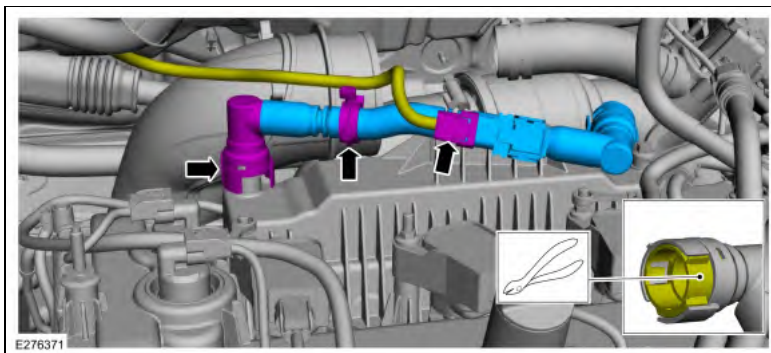
- 15.
- Disconnect the engine harness electrical connector and retainer.
 - Disconnect the PCM electrical connector.



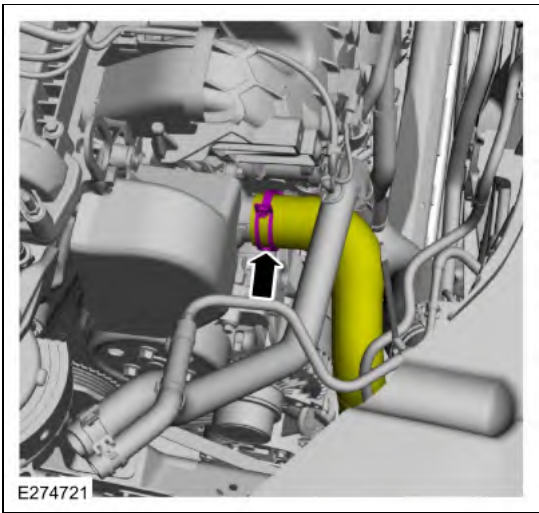
16. **NOTE:** The crankcase vent tube may have either a permanent or quick connect connector at one or both ends. If the tube needs to be removed for any reason, the permanent connector(s) must be cut to remove the tube. The tube will then need to be replaced.

NOTE: If the crankcase vent tube is replaced, the replacement part may not come with a crankcase pressure sensor. If so, the PCM will need to be reprogrammed.

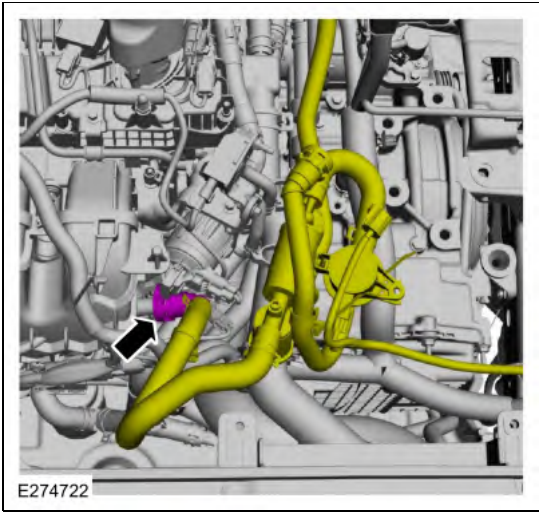
- If equipped, disconnect the wiring harness electrical connector and the retainer.
- If necessary, cut the lock tab.
Use the General Equipment: Side Cutter Pliers
- If either crankcase vent tube connector was cut, remove and discard the crankcase vent tube.



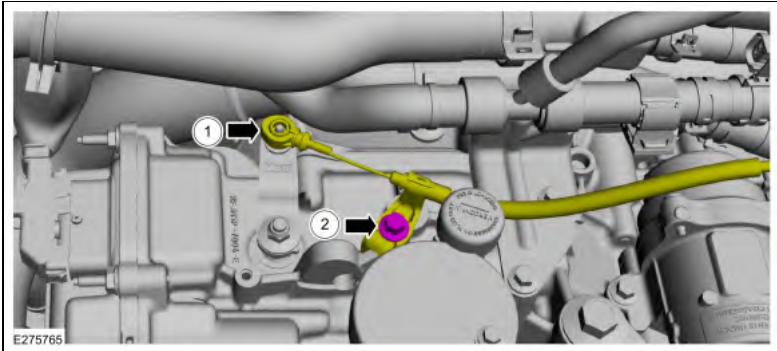
17. Disconnect the lower radiator hose from the thermostat housing.
Use the General Equipment: Hose Clamp Remover/Installer



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

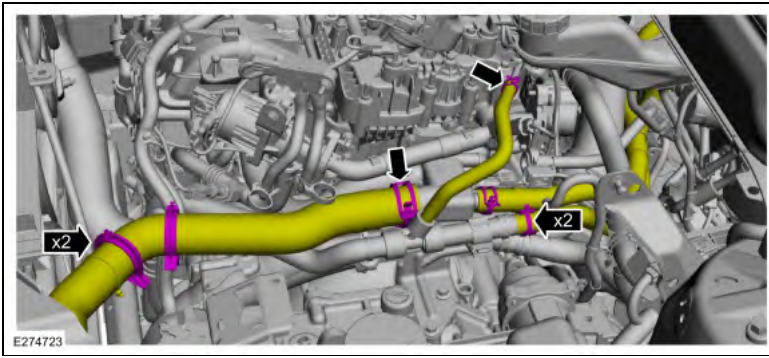


- 19.
1. Disconnect the manual park release cable from the manual control lever.
 2. Remove the bolt and position the manual park release cable aside.

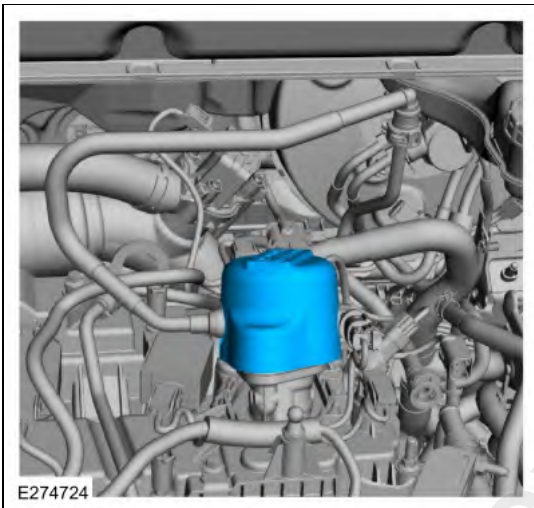


- 20.
- Detach the wiring harness retainers from the upper radiator hose.

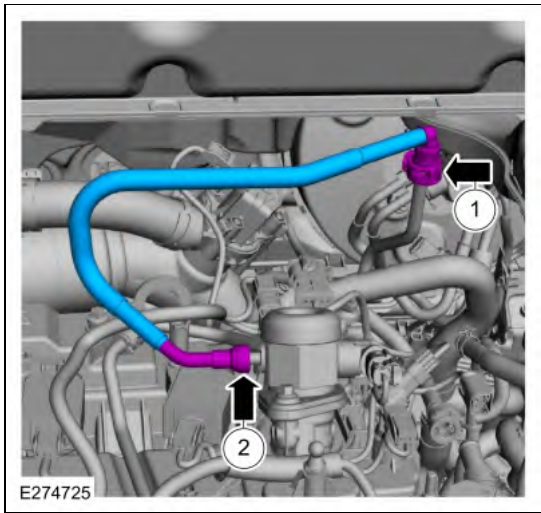
- Disconnect the coolant hoses.
Use the General Equipment: Hose Clamp Remover/Installer



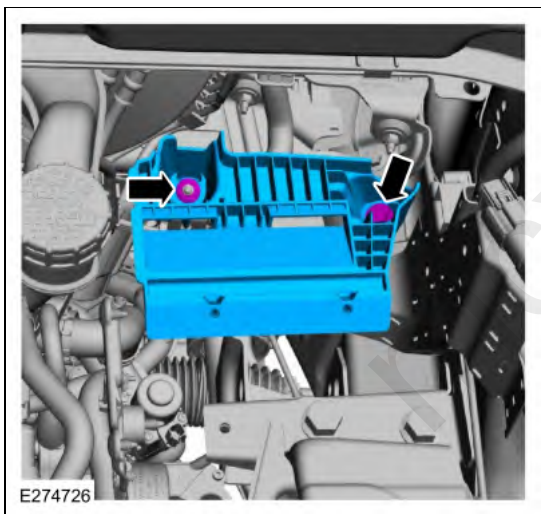
21. Remove the high-pressure fuel pump noise insulator.



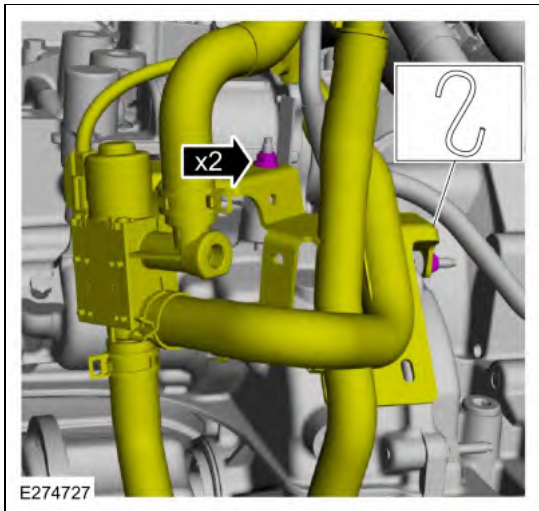
- 22.
1. Disconnect the fuel tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .
 2. Disconnect the fuel tube spring lock coupling.
Refer to: Spring Lock Couplings (310-00A Fuel System - General Information - 2.0L EcoBoost (184kW/250PS) â€™ MI4, General Procedures).



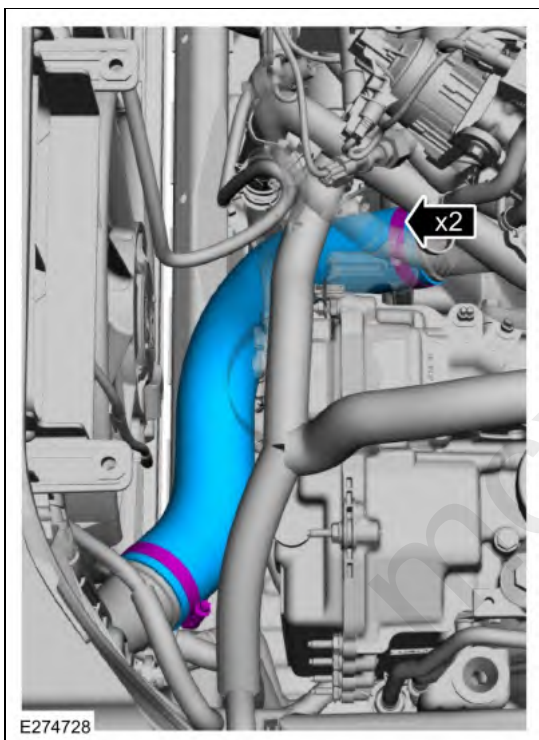
23. Remove the nut, bolt and the battery tray support bracket.



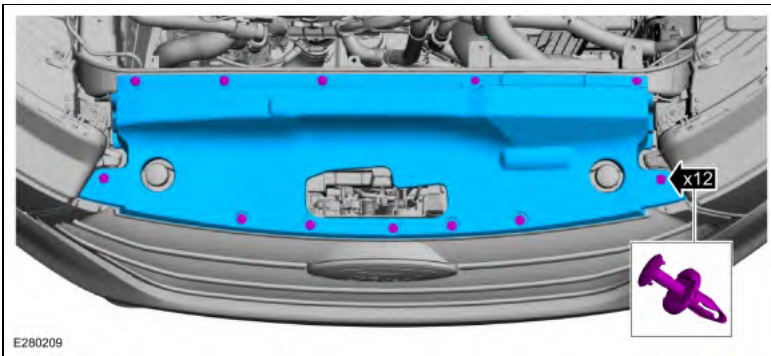
24. Remove the nuts and position the coolant valve and hoses aside and secure.



25. Loosen the clamps and remove the CAC tube.

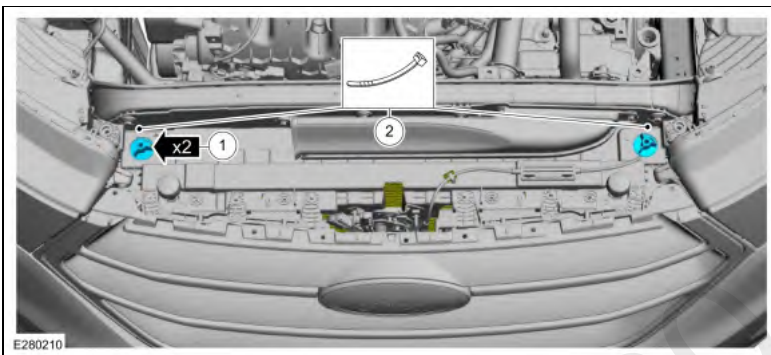


26. Remove the retainers and the upper air deflector.



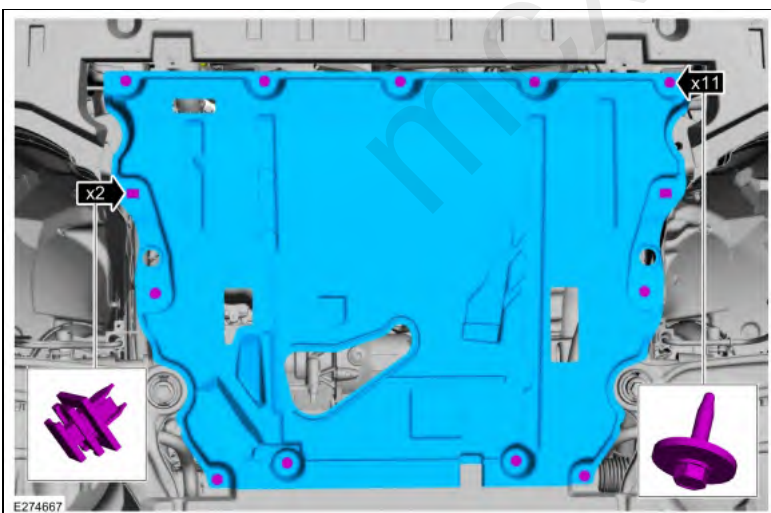
27. **NOTICE:** Make sure the cooling module is secure before removing the bottom cooling module support panel.

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

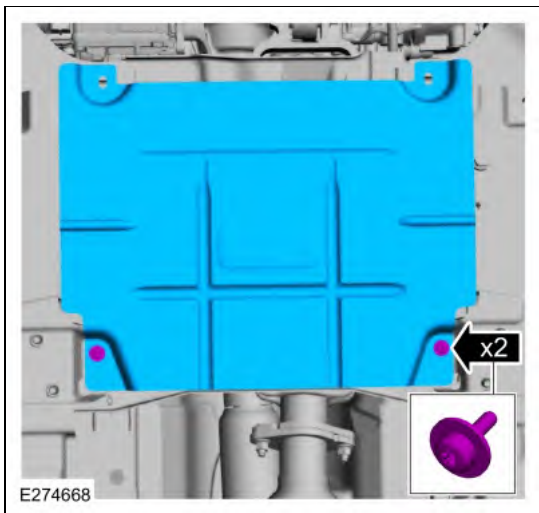


28. Remove the front wheels and tires.
Refer to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).

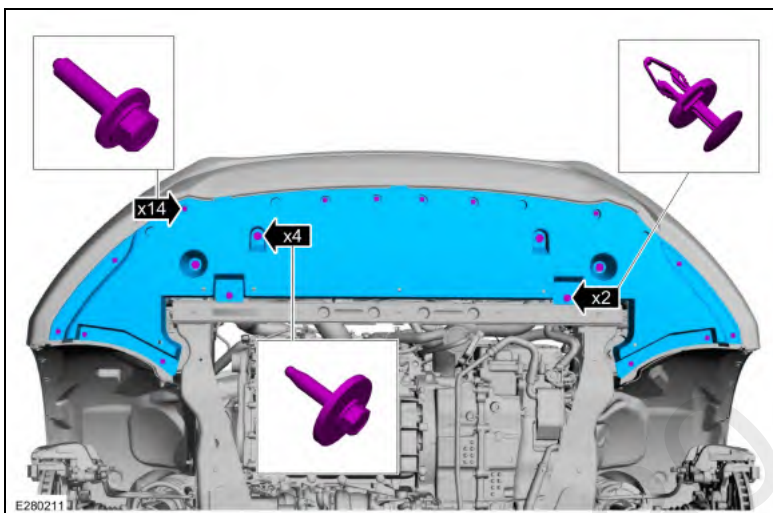
29. Remove the retainers and the underbody shield.



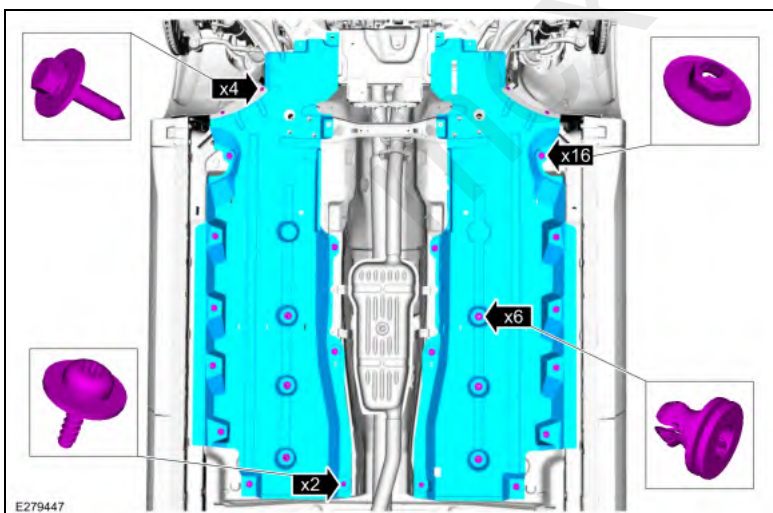
30. Remove the retainers and the underbody shield.



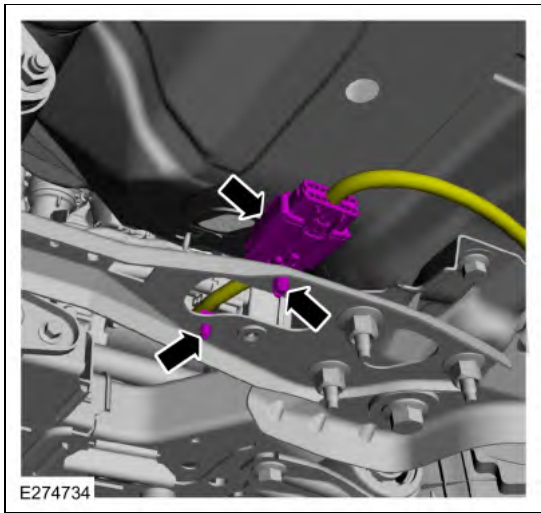
31. Remove the retainers and the front underbody shield.



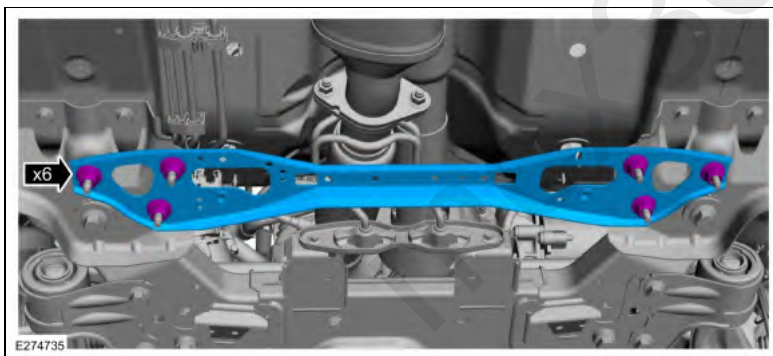
32. Remove the retainers and the underbody shields.



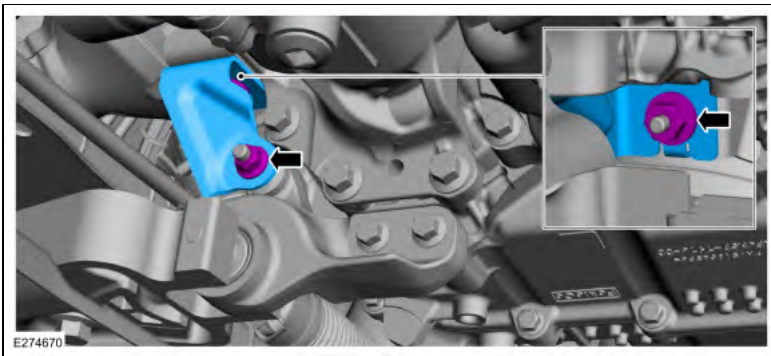
33. If equipped, remove the transmission fluid cooler tube secondary latches.



36. Remove the nuts and the subframe support bracket.

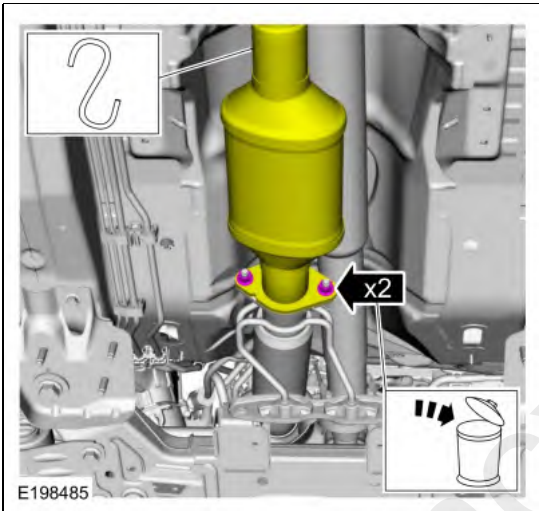


37. Remove the nuts and the catalytic converter support bracket.

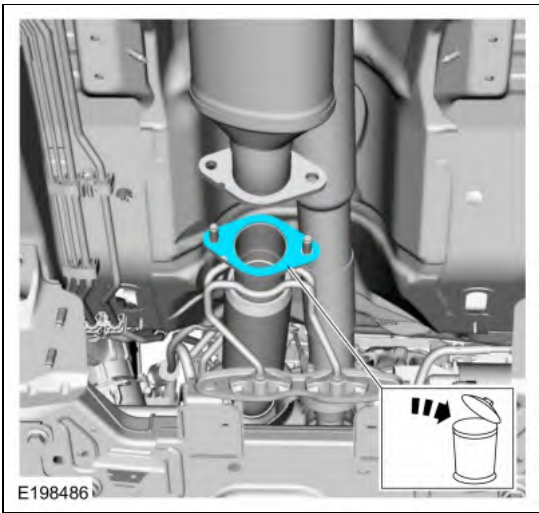


LHD FWD

- 38.
- Remove and discard the nuts.
 - Position the exhaust pipe back and support.



- 39.
- Remove and discard the exhaust gasket.
 - Make sure that the mating faces are clean and free of foreign material.

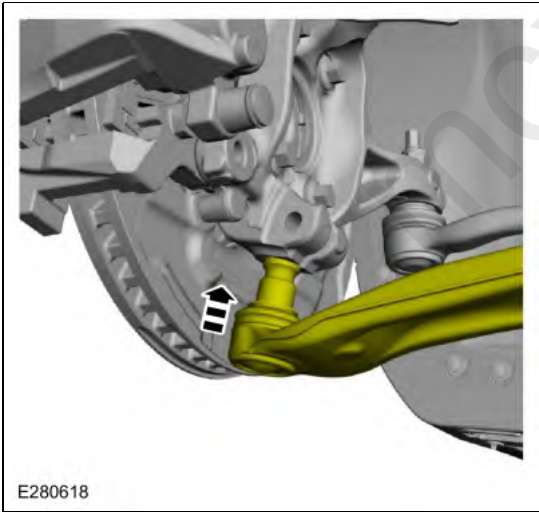


LHD AWD

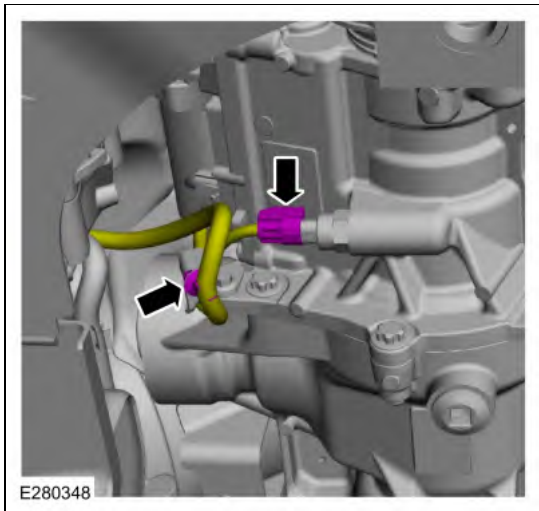
40. Remove the following items:
- 1. Remove the RH halfshaft.
Refer to: Front Halfshaft RH - 2.0L EcoBoost (184kW/250PS) & M14, All-Wheel Drive (AWD) (205-04 Front Drive Halfshafts, Removal and Installation).
 - 2. Remove the rear driveshaft.

41. **NOTE:** Reinstalling the ball joint into the wheel knuckle will keep from damaging the tie rod while on the powertrain jack.

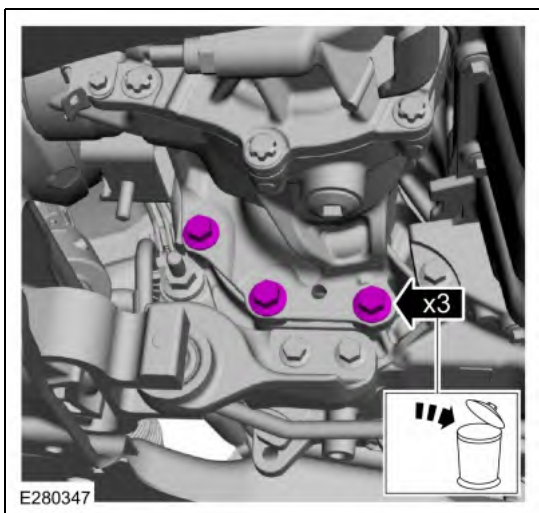
Install the ball joint into the wheel knuckle.



42. Disconnect the lower transfer case wiring harness electrical connector and retainer.

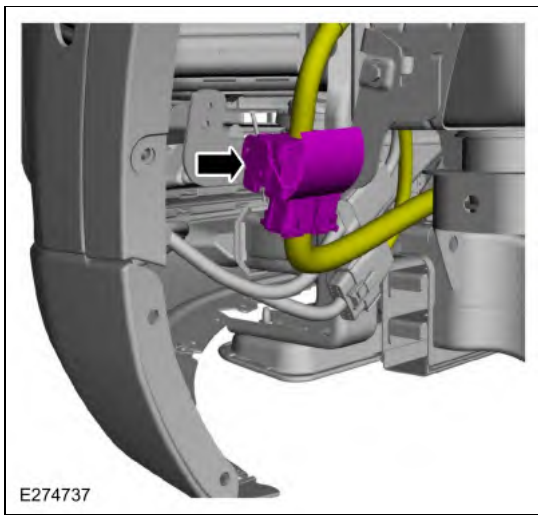


43. Remove and discard the bottom transfer case bolts.



LHD AWD/LHD FWD

44. Remove the RH and LH splash shield.
Refer to: Fender Splash Shield (501-02 Front End Body Panels, Removal and Installation).
45. Disconnect the engine harness electrical connector.

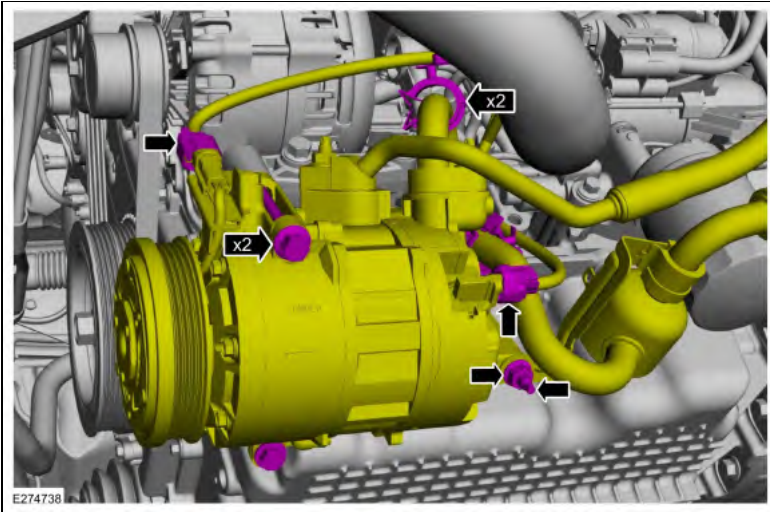


46. Remove the following items:

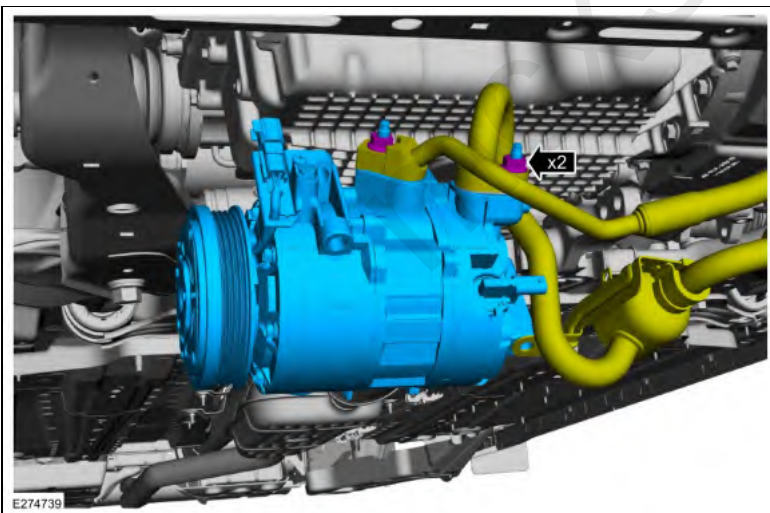
1. Remove the front headlamp leveling sensor.
Refer to: Headlamp Leveling Sensor (417-01 Exterior Lighting, Removal and Installation).
2. Remove the A/C compressor belt.
Refer to: Air Conditioning (A/C) Compressor Belt (303-05A Accessory Drive - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).

47.

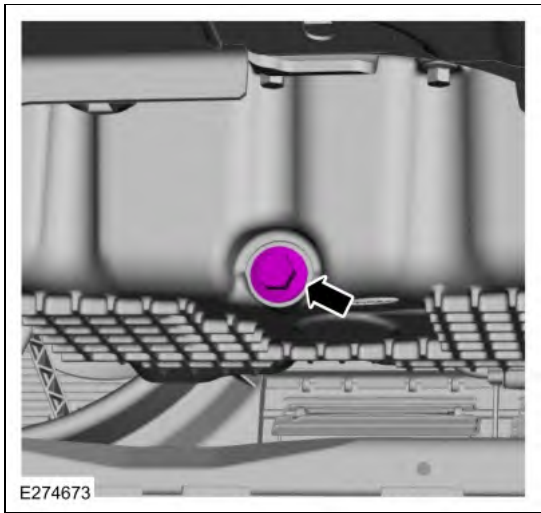
- Disconnect the electrical connectors and wiring retainers.
- Remove the nut and stud.
- Remove the bolts and position the A/C compressor aside.



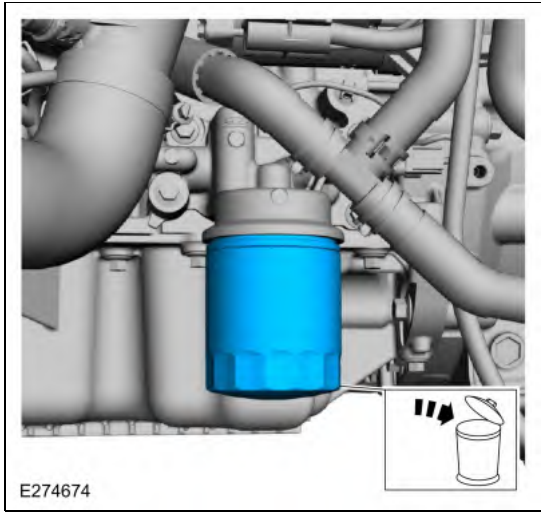
48. **NOTICE:** During the removal of components, cap, tape or otherwise appropriately protect all openings to prevent the ingress of dirt or other contamination. Remove protective materials prior to installation.
- Remove the nuts and disconnect the A/C lines and remove A/C compressor.
 - Discard the O-ring seals and gasket seals.



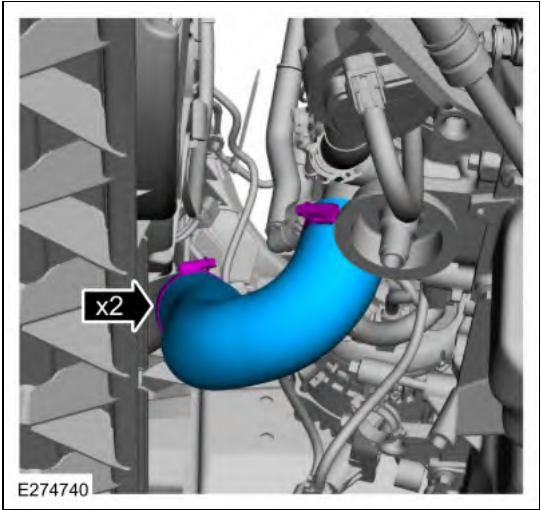
- 49.
- Remove the oil pan drain bolt and drain the engine oil.
Use the General Equipment: Oil Drain Equipment
 - Install the oil pan drain bolt.
Torque: 20 lb.ft (27 Nm)



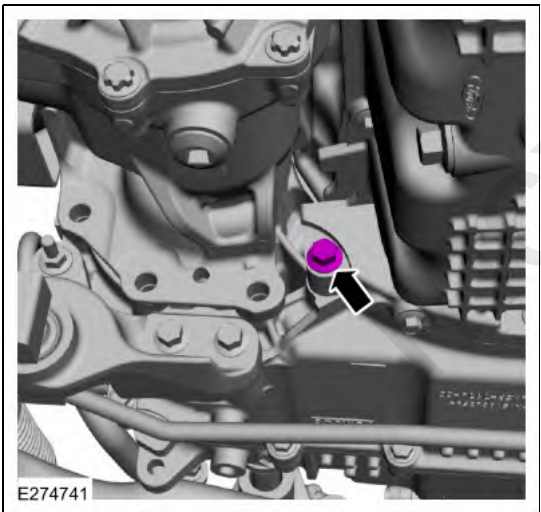
50. Remove and discard the engine oil filter.
Use the General Equipment: Oil Drain Equipment



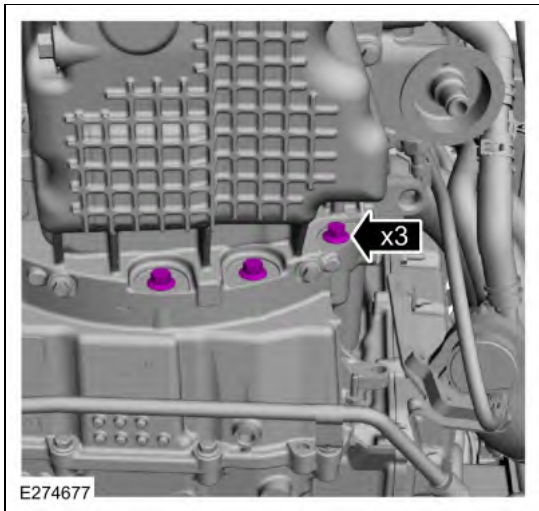
51. Loosen the clamps and remove the CAC tube.



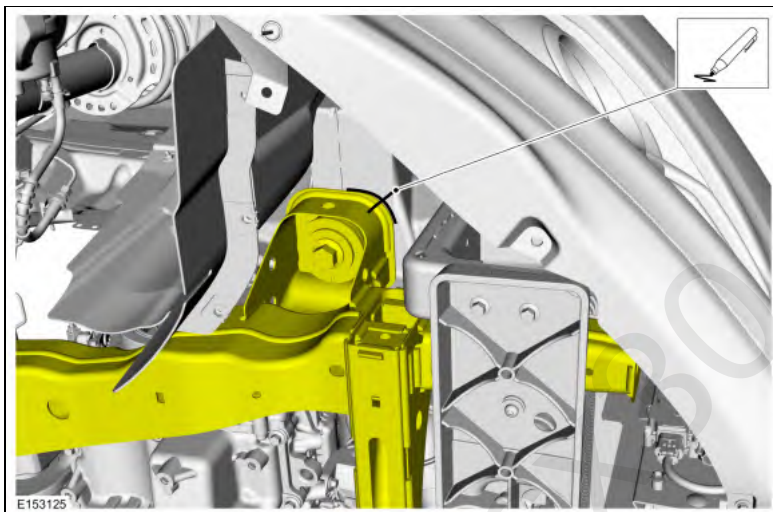
52. Remove the oil pan-to-transmission bolt.



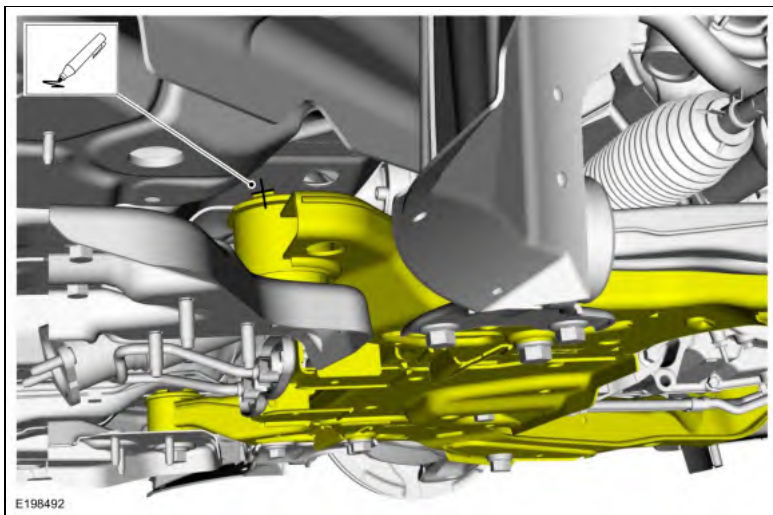
53. Remove the oil pan-to-transmission bolts.



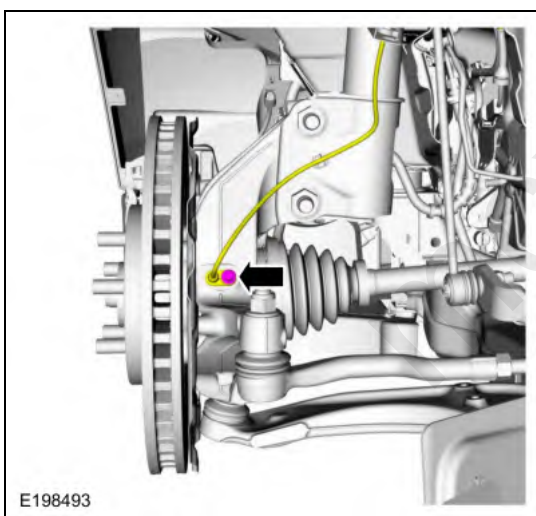
54. Mark the front subframe location.



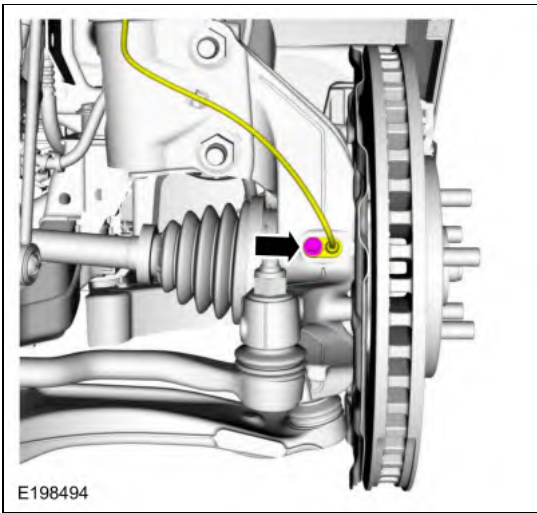
55. Mark the rear subframe location.



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

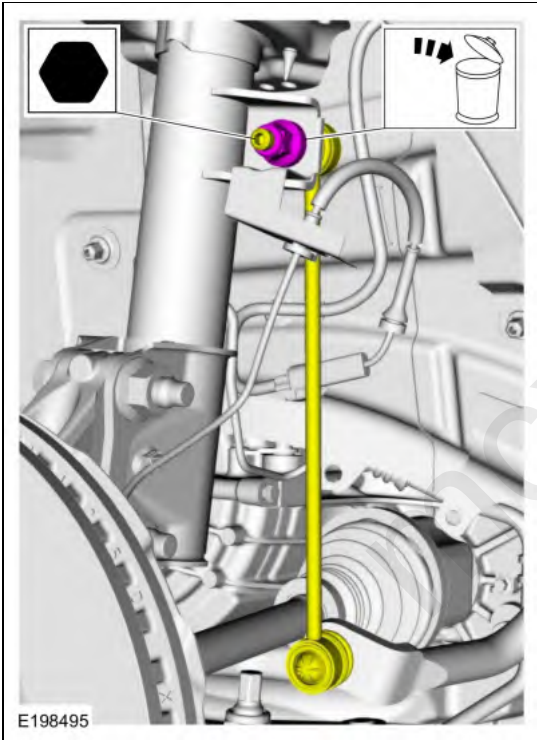


57. Remove the bolt and the RH anti-lock sensor.



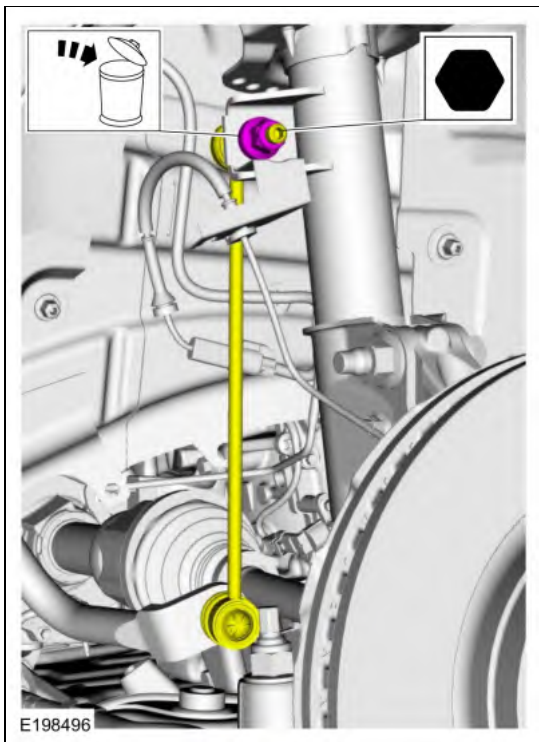
58. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

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



59. **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.



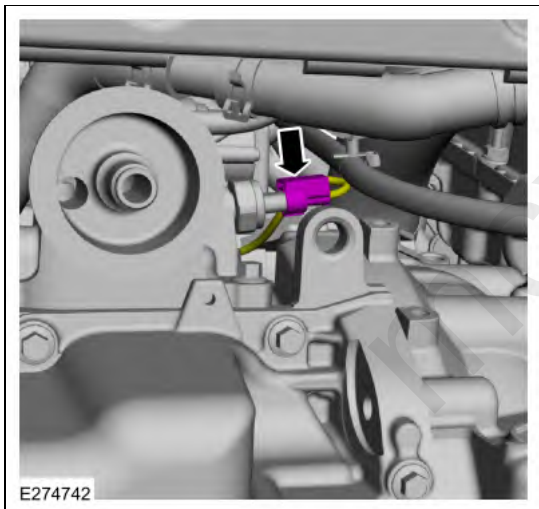
60. **NOTICE:** Do not allow the brake caliper and anchor plate assembly to hang from the brake hose or damage to the hose can occur.

Remove both front brake disc.

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

61. **NOTE:** This will aid in the installation of the adjustable mounting arm.

Disconnect the EOP switch electrical connector.

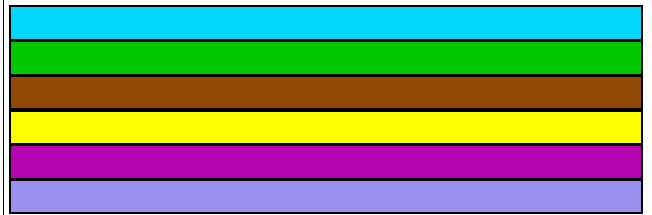
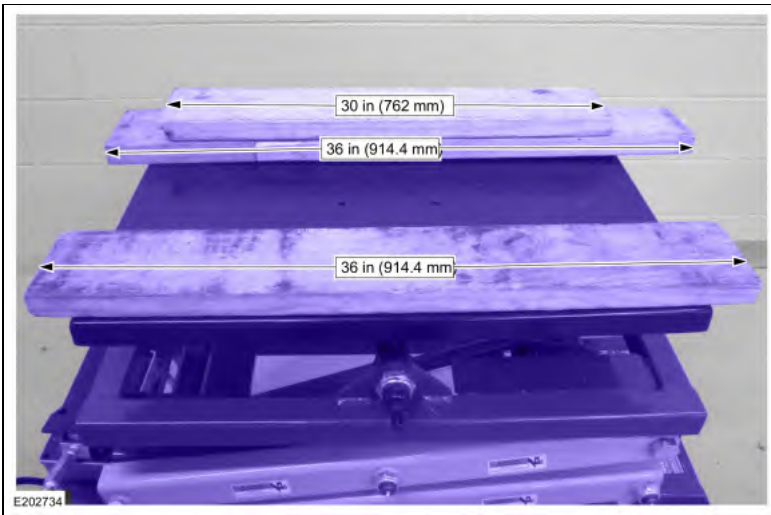


62. **NOTE:** Board configuration may vary between vehicles.

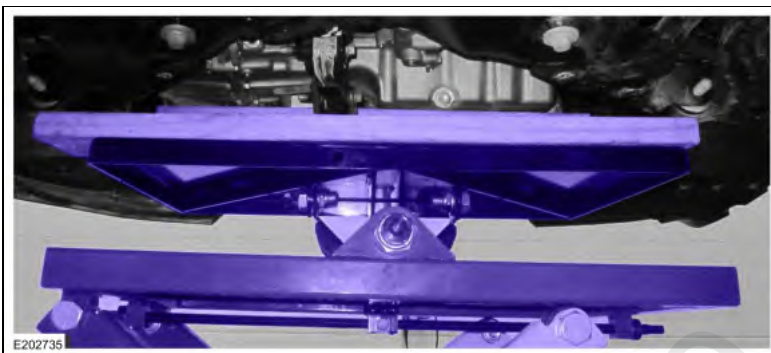
Position a 2 x 8 board, 36 in (914.4 mm) in length, a 2 x 6 board 30 in (762 mm) in length and a 2 x 8 board, 36 in (914.4 mm) in length onto the powertrain jack.

Use the General Equipment: Powertrain Jack

Use the General Equipment: Wooden Block

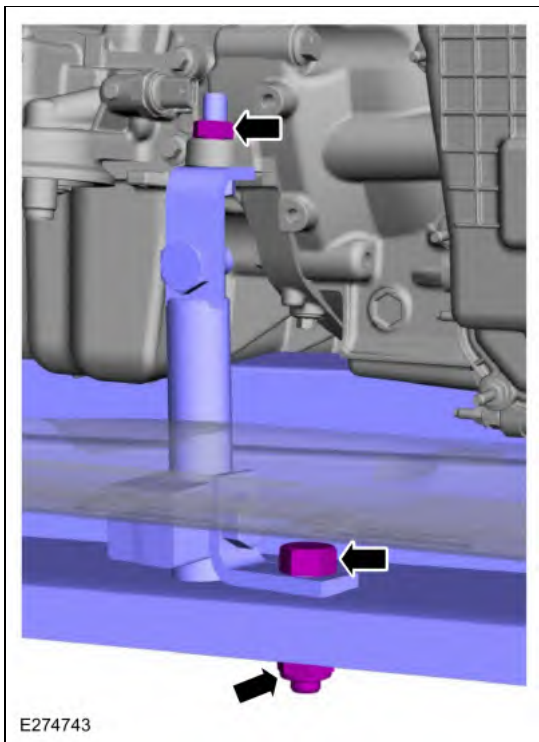


63. Position the powertrain jack and blocks of wood under the powertrain and subframe.
 Use the General Equipment: Powertrain Jack
 Use the General Equipment: Wooden Block



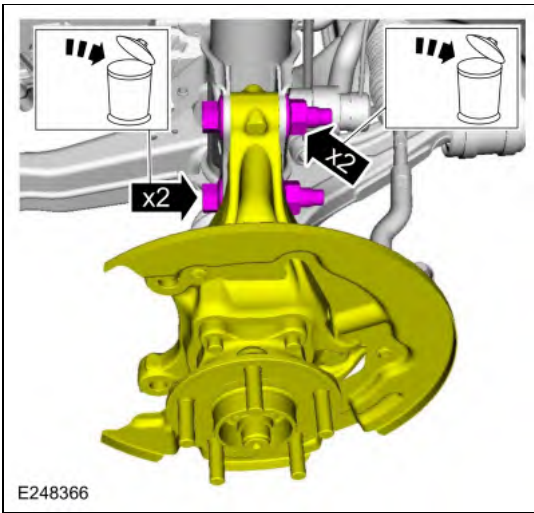
64. **NOTE:** Adjustable mounting arm configuration may vary between vehicles.

Install the adjustable mounting arm.
 Use the General Equipment: Adjustable Mounting Arm

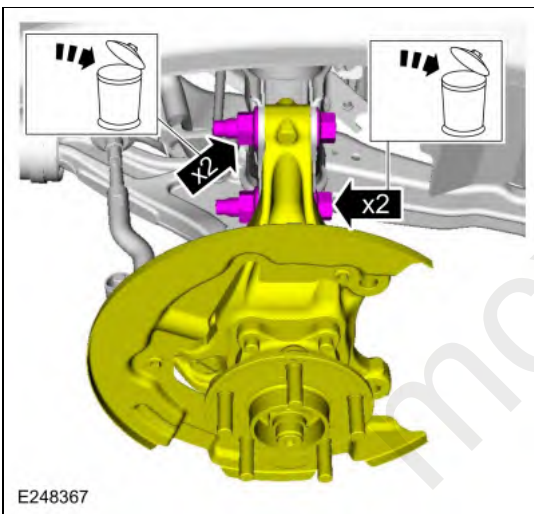


65.

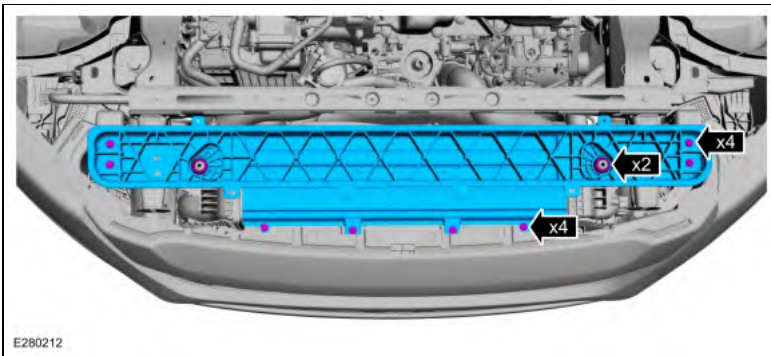
- Remove the nuts and push the bolts out and remove.
- Discard the nuts and the bolts.



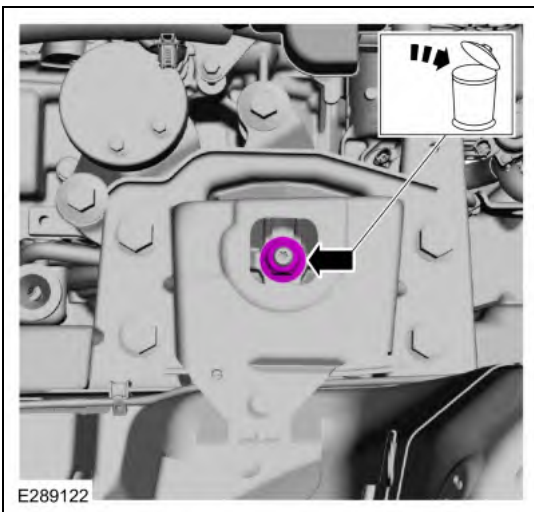
- 66.
- Remove the nuts and push the bolts out and remove.
 - Discard the nuts and the bolts.



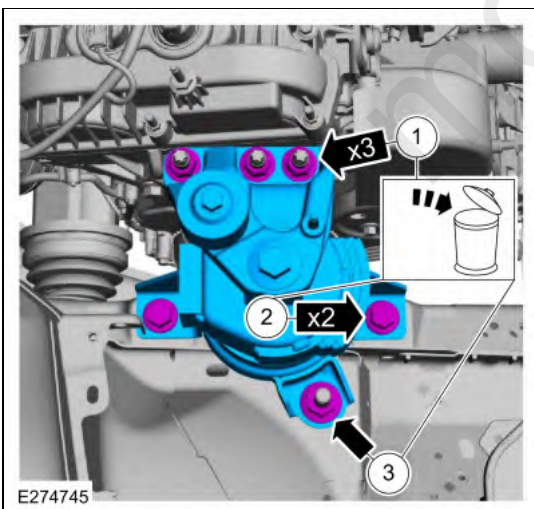
67. **NOTICE: Make sure the cooling module is secure.**
- Remove the pin-type retainers.
 - Remove the bolts and the cooling module support panel.



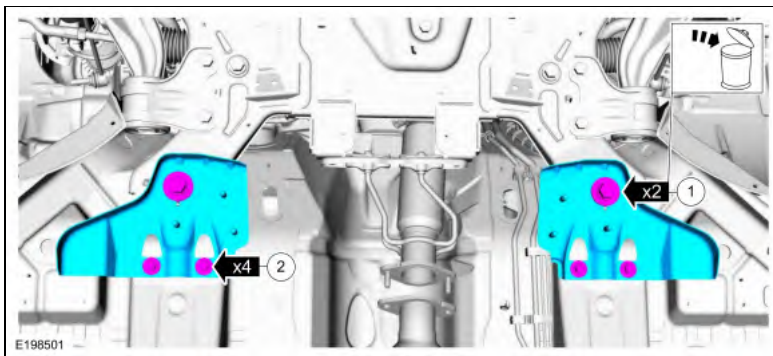
68. Remove and discard the transmission mount nut.



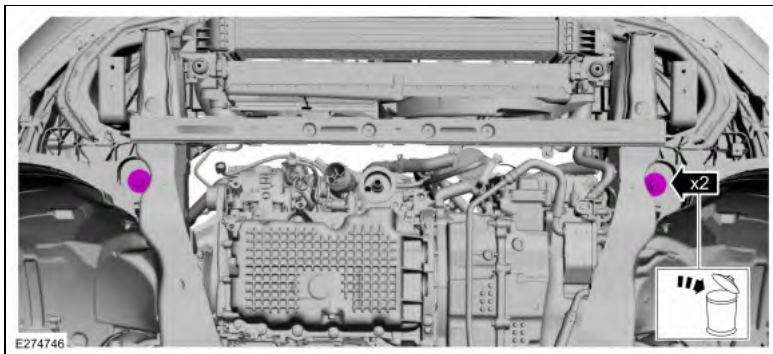
- 69.
- Remove and discard the nuts and bolts.
 - Remove the engine mount.



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

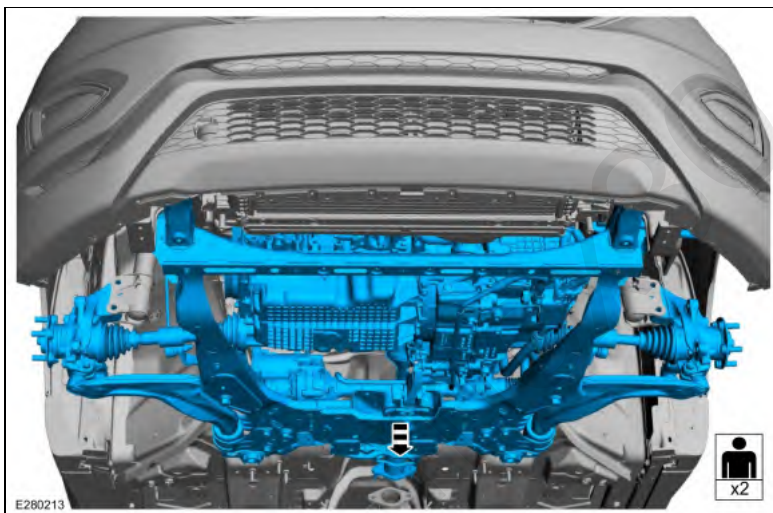


71. Remove and discard the forward subframe bolts.

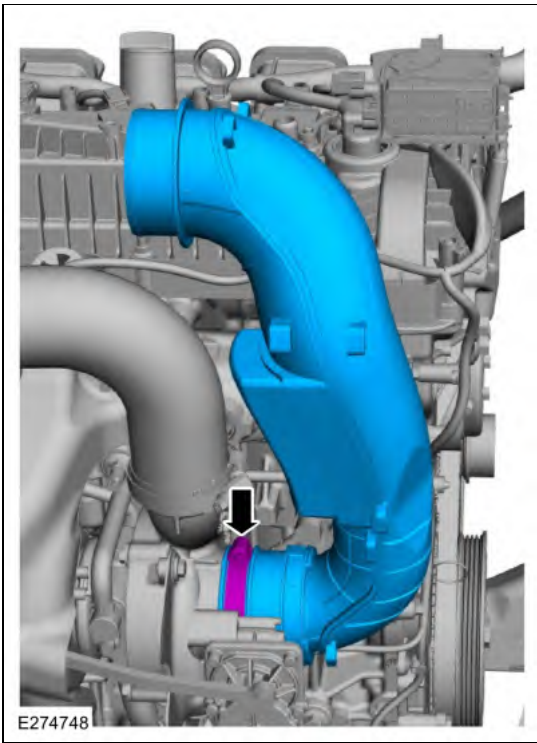


72. **NOTE:** Make sure the struts slide out of the knuckles when lowered.

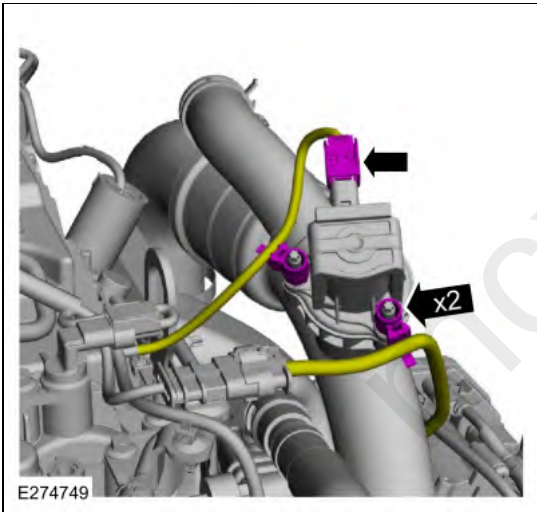
With the aid of an assistant and using the powertrain jack, lower the powertrain and subframe as an assembly.



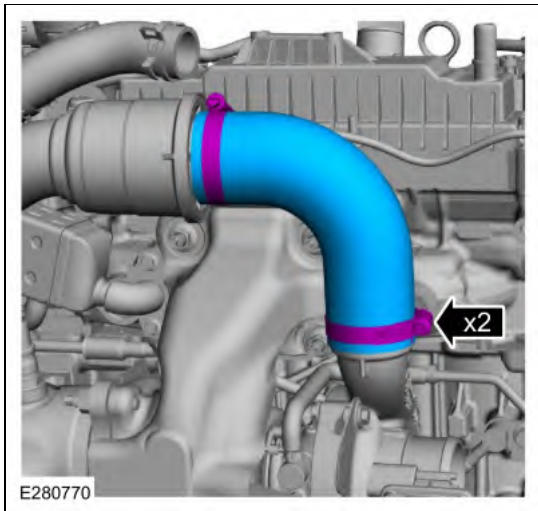
73. Loosen the clamp and remove the CAC tube.



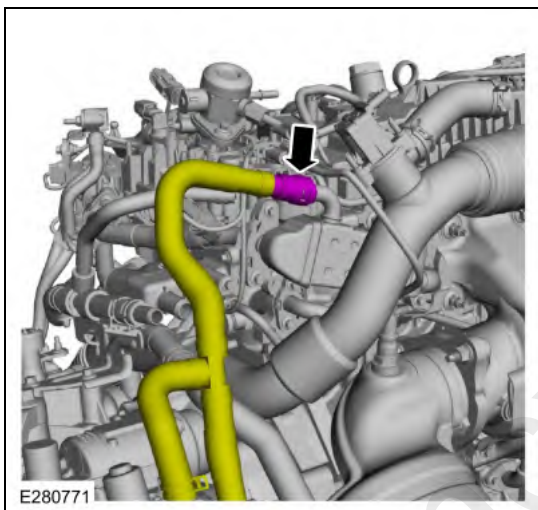
74. Disconnect the CAC tube bypass valve electrical connector and wire retainers.



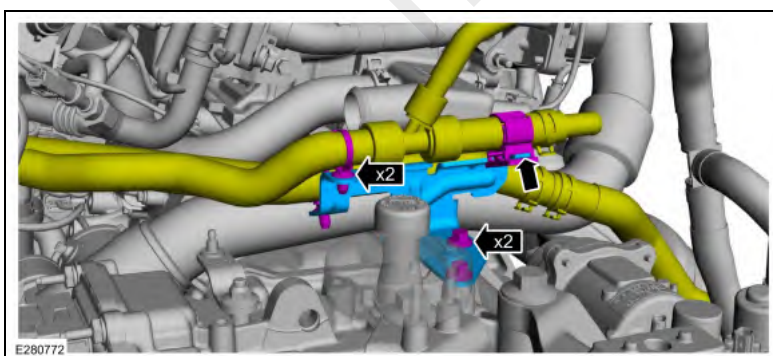
75. Loosen the clamps and remove the CAC tube.



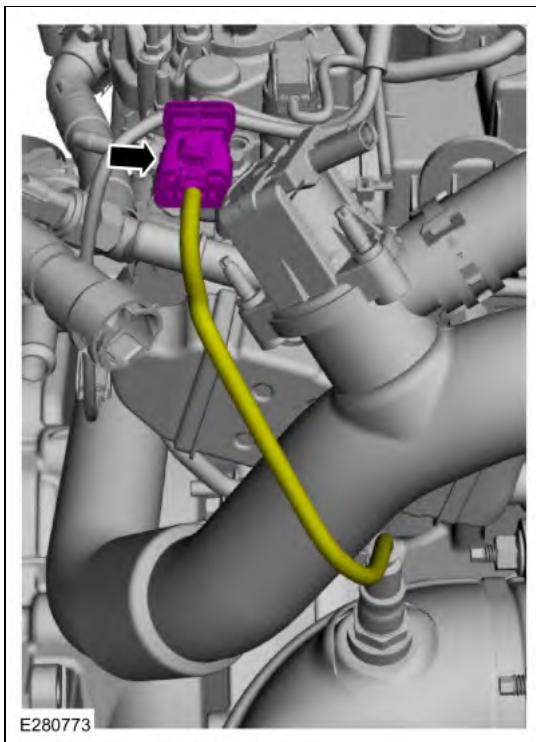
76. Disconnect the coolant hose from the EGR cooler.



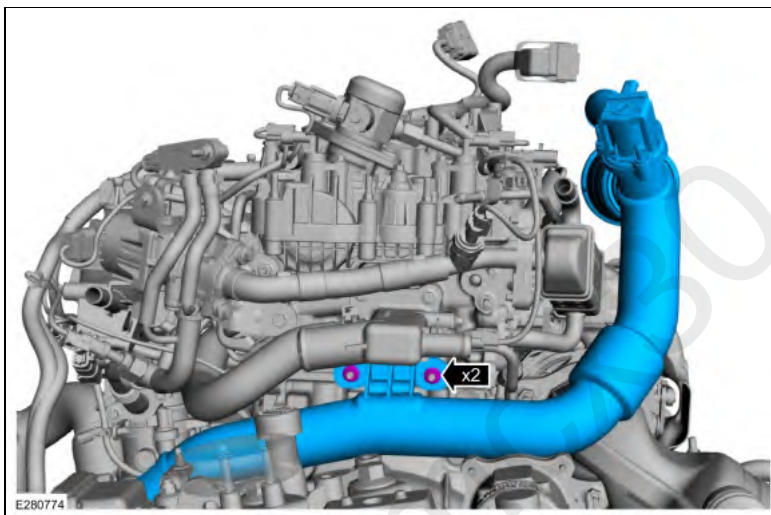
77. Remove the bolts, detach the retainers and remove the coolant hoses bracket.



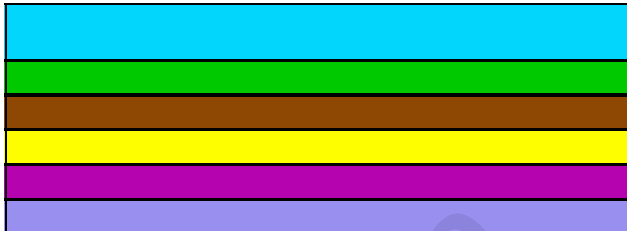
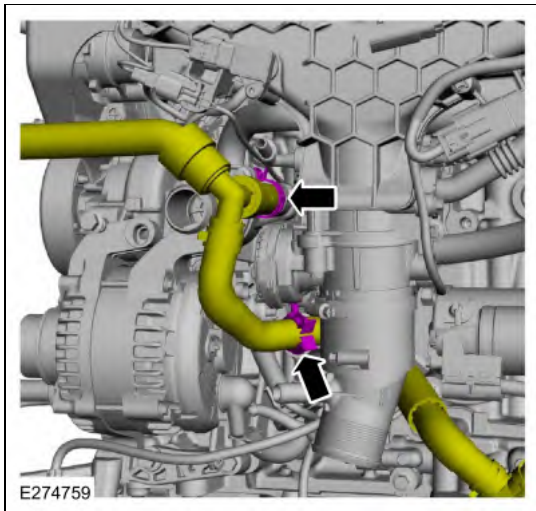
78. Disconnect the HO2S electrical connector.



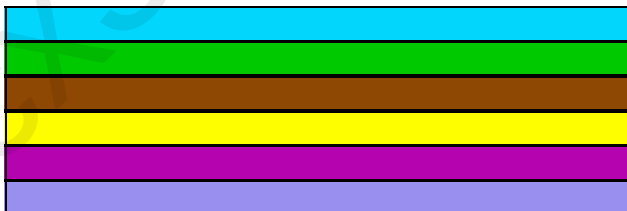
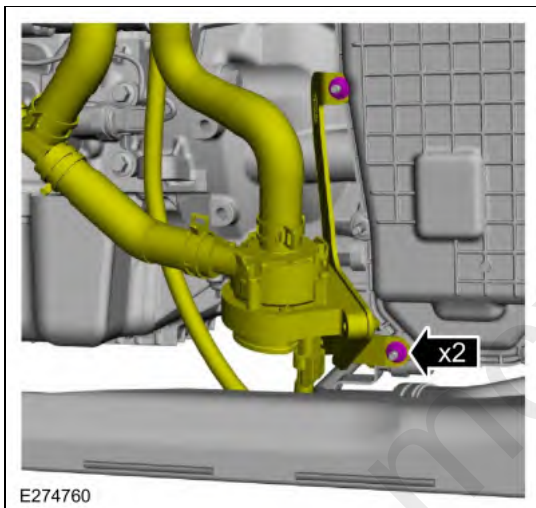
79. Remove the nuts and the CAC tube.



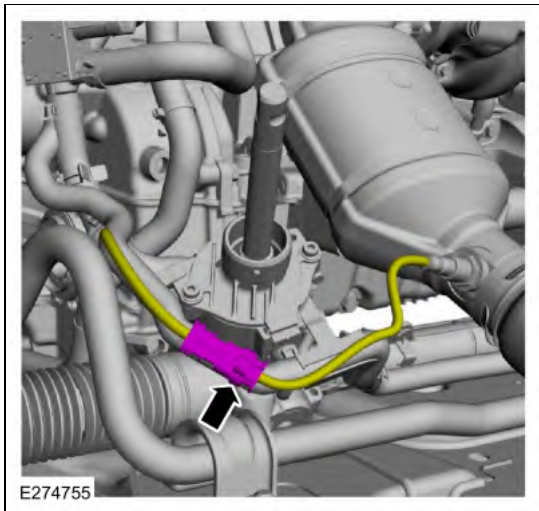
80. Disconnect the coolant hose from the thermostat housing and detach wiring harness retainer.



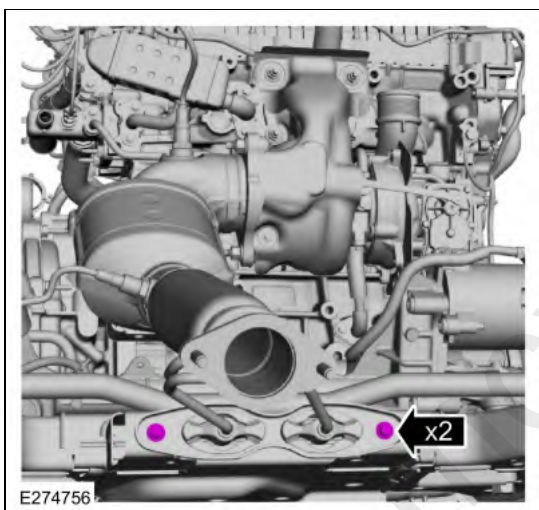
81. Remove the nuts and position the start/stop coolant pump aside.



82. Disconnect the catalyst monitor sensor electrical connector.

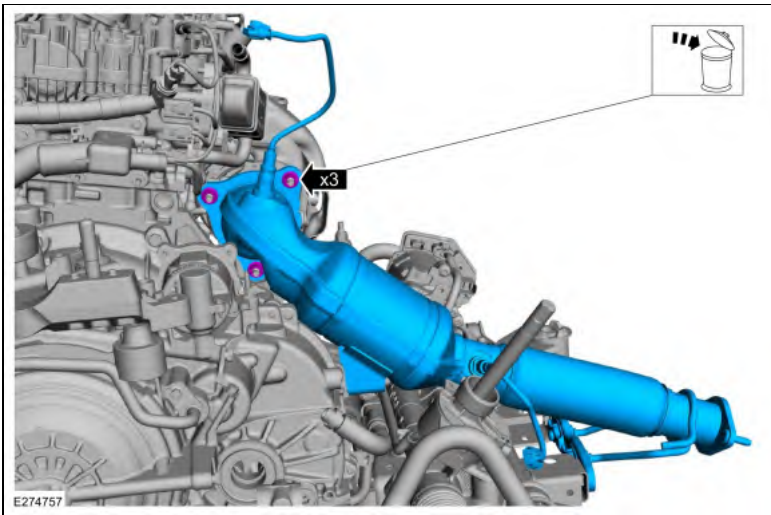


83. Remove the catalytic converter support bracket-to-subframe bolts.

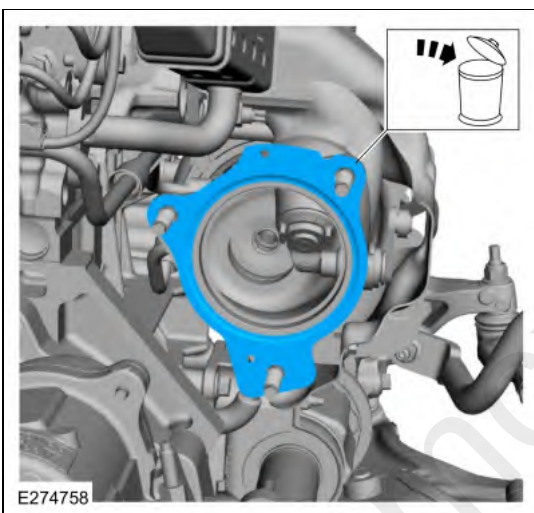


84.

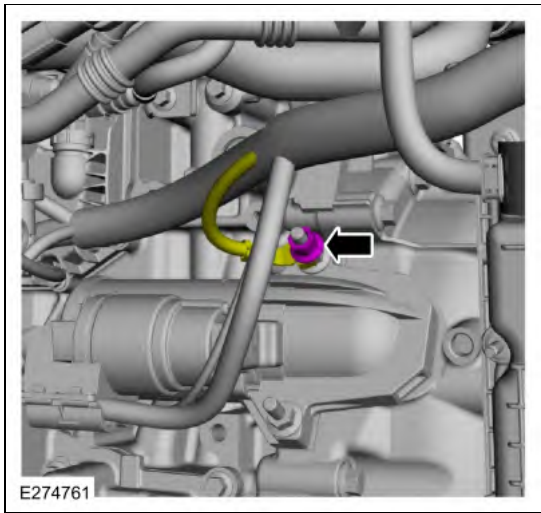
- Remove the nuts and the catalytic converter.
- Discard the nuts.
- Make sure that the mating faces are clean and free of foreign material.



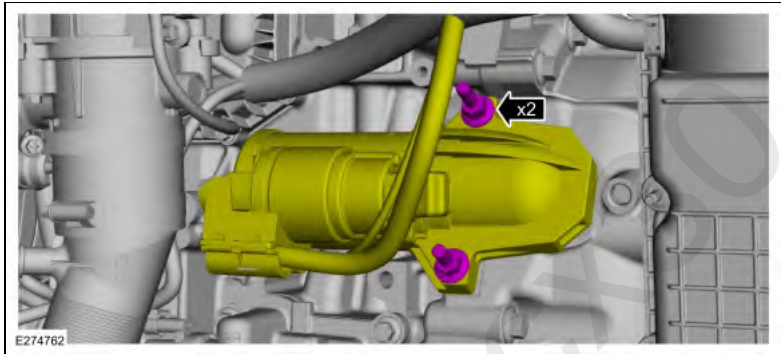
- 85.
- Remove and discard the catalytic converter gasket.
 - Make sure that the mating faces are clean and free of foreign material.



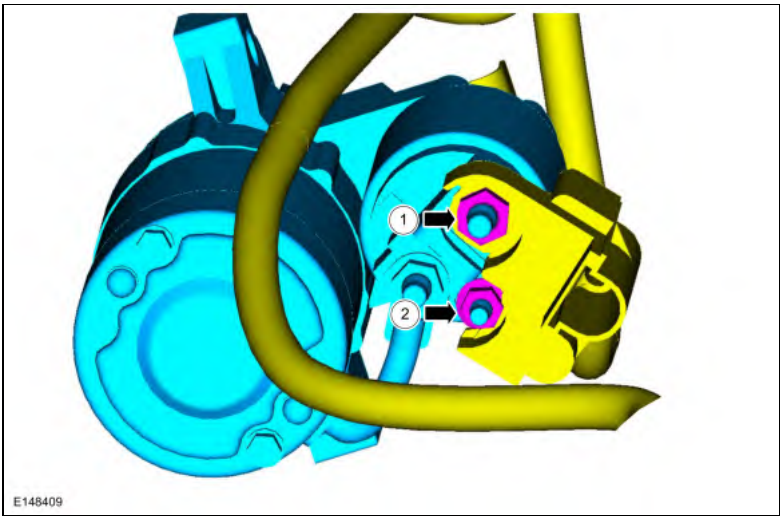
86. Remove the nut and ground wire.



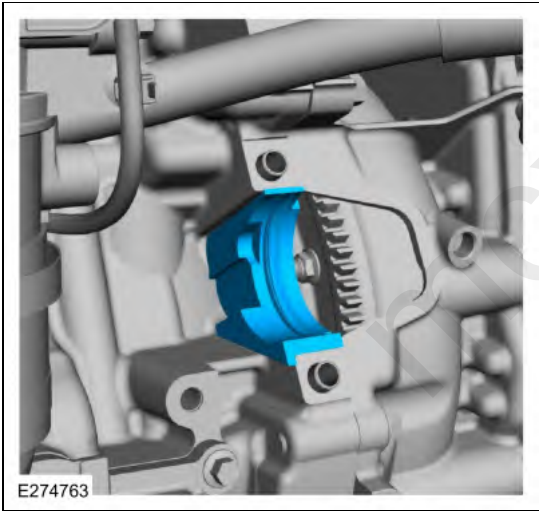
87. Remove the stud bolts and position the starter aside.



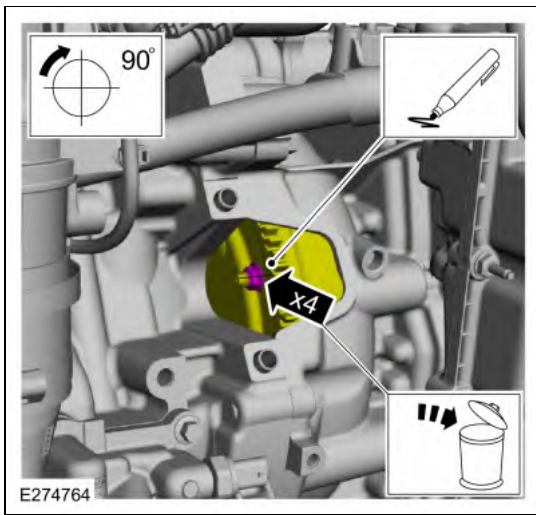
88. Remove the nuts and the battery cable.



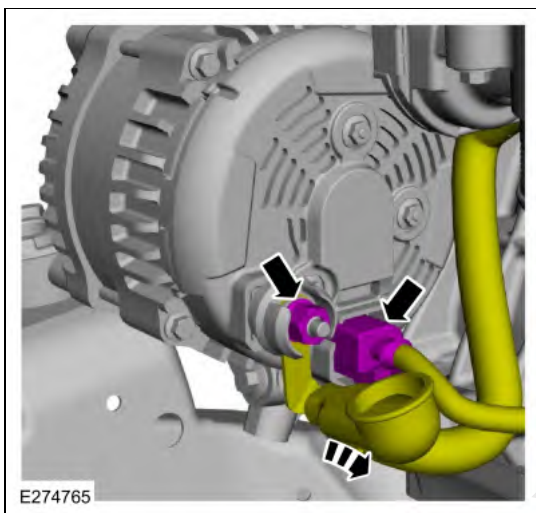
89. Remove the stator motor isolator.



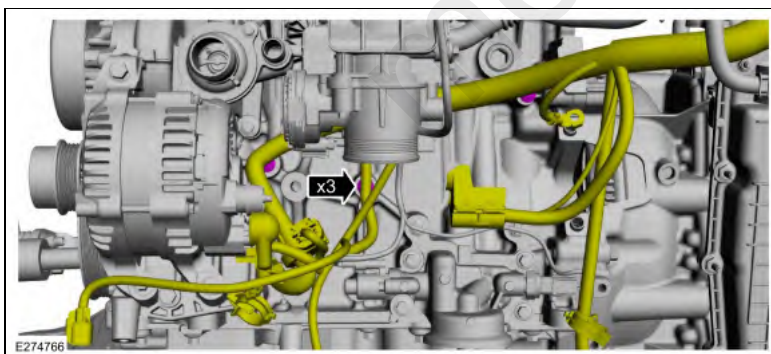
90. **NOTE:** Only rotate the crankshaft in a clockwise direction.
- Index mark one stud and the flexplate for assembly reference.
 - Remove and discard the torque converter nuts.
- Use the General Equipment: Magnetic Socket



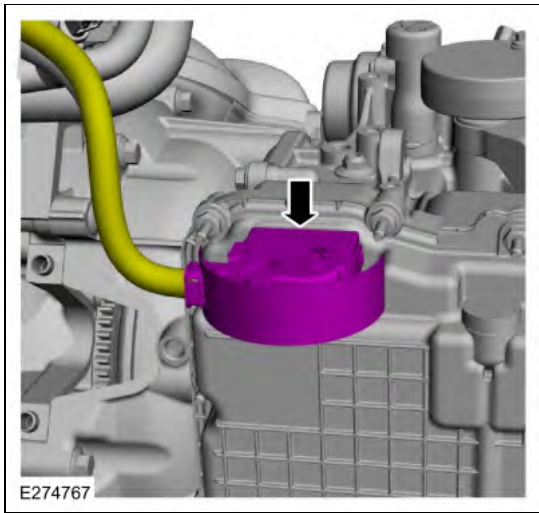
- 91.
- Position the cover aside and remove the nut and the B+ cable.
 - Disconnect the generator electrical connector.



92. Detach the generator and A/C wiring harness retainers and position the harness on the transmission.

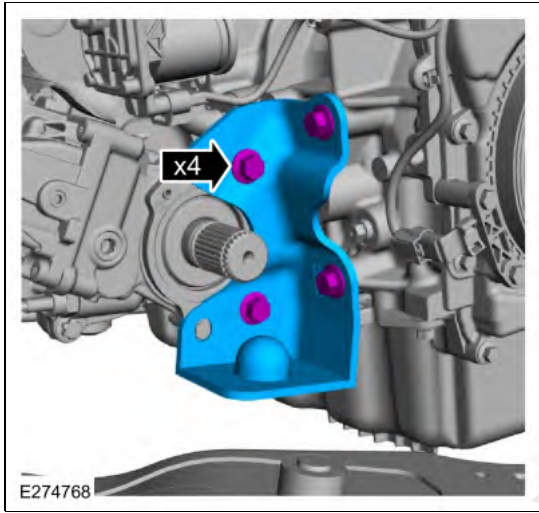


93. Disconnect the transmission wiring harness connector.

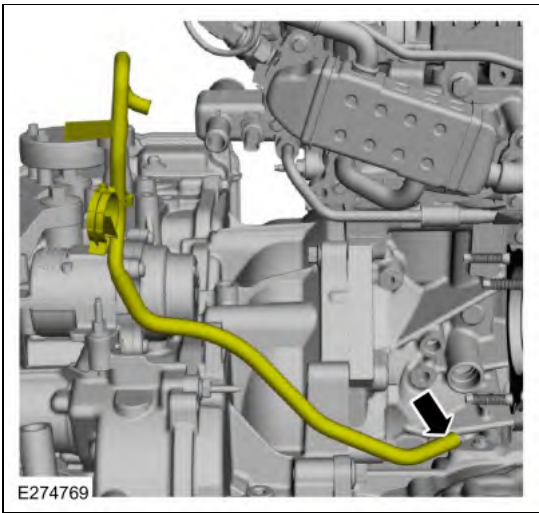


LHD AWD

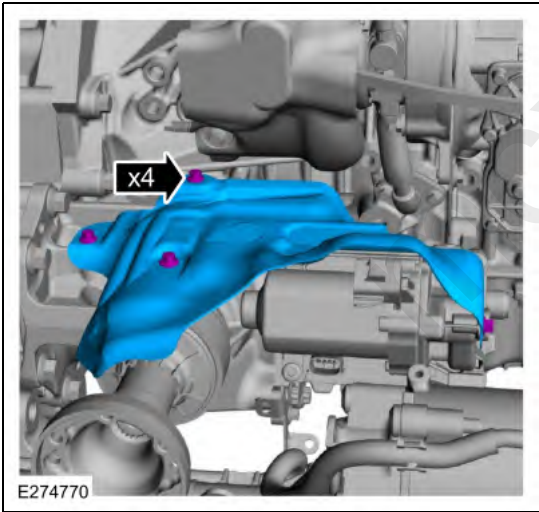
94. Remove the bolts and the transfer case support bracket.



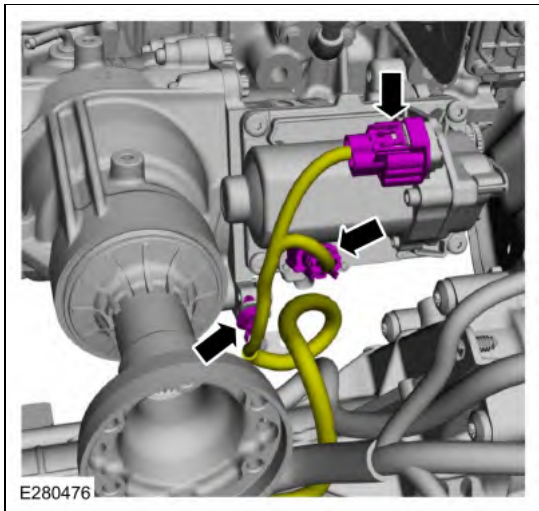
95. Disconnect and position aside the transfer case vent tube.



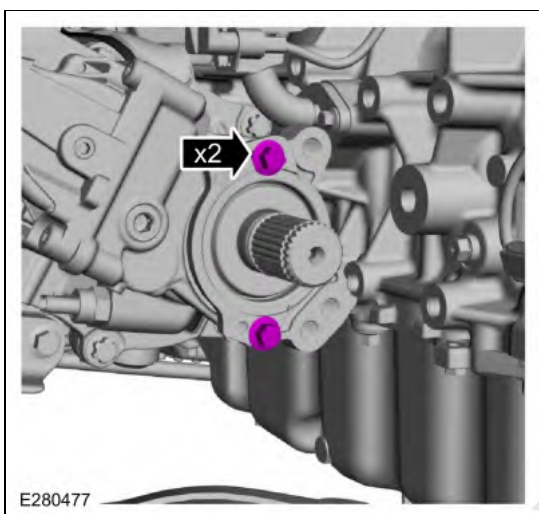
96. Remove the bolts and the transfer case heat shield.



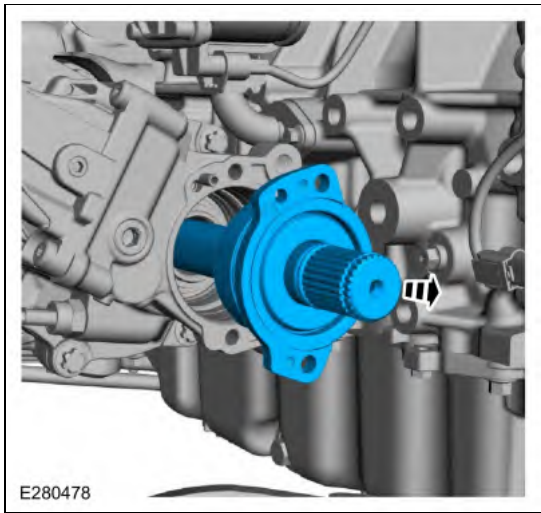
97. Disconnect the upper transfer case wiring harness electrical connectors and retainer.



98. Remove the bolts for the transfer case axle shaft.

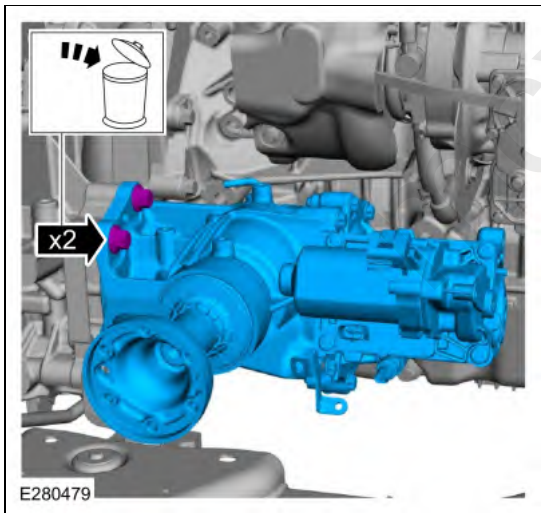


99. Remove the transfer case axle shaft.

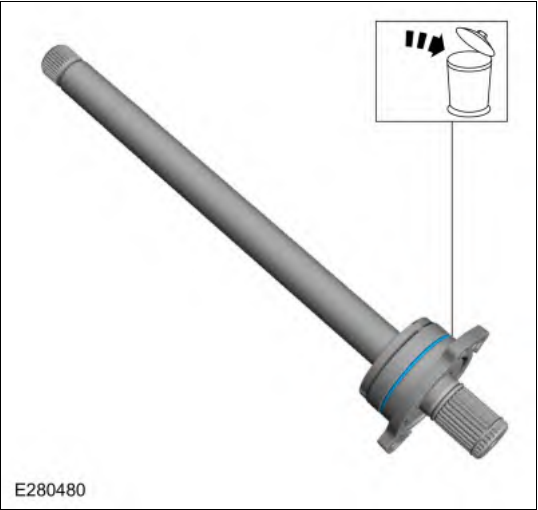


100.

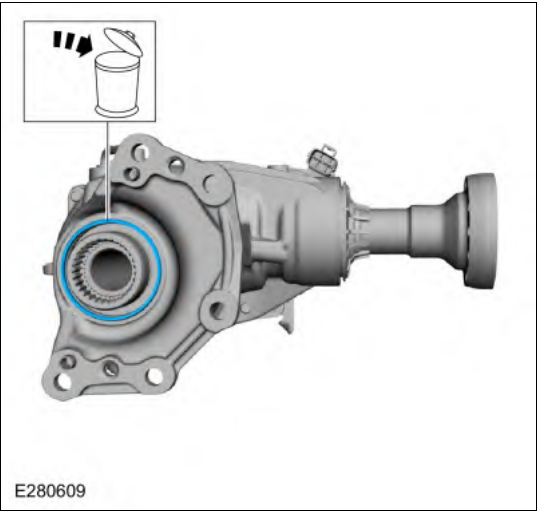
- Remove the bolts and the transfer case.
- Discard the bolts.



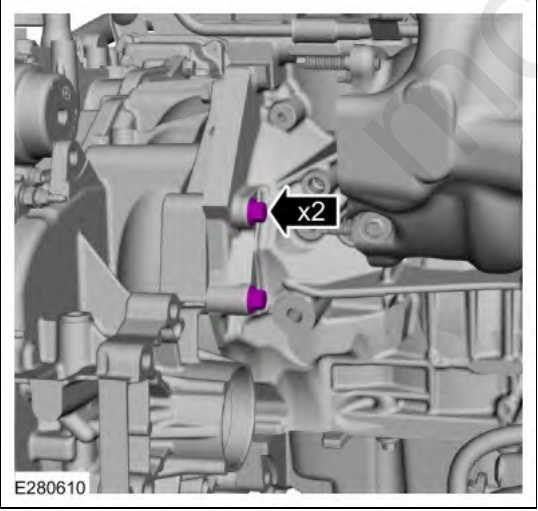
101. Remove and discard the transfer case axle shaft seal.



102. Remove and discard the transfer case compression seal.

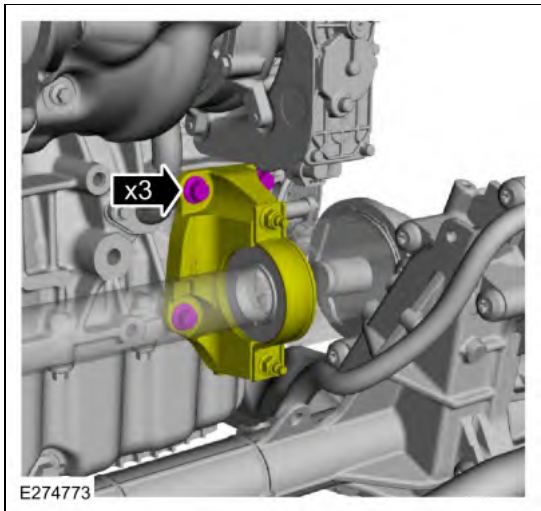


103. Remove the engine-to-transmission bolts.

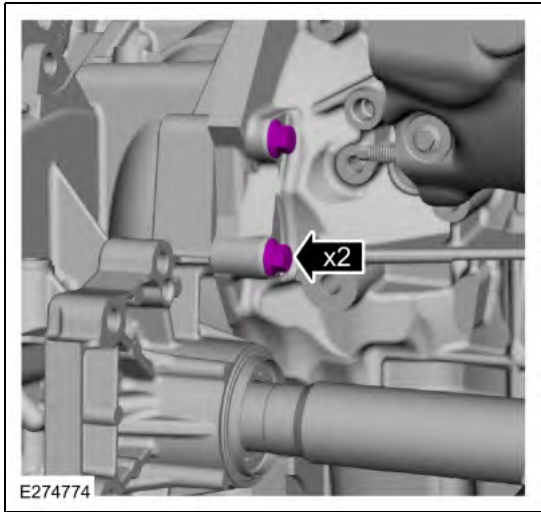


LHD FWD

104. Remove the halfshaft support bracket bolts.

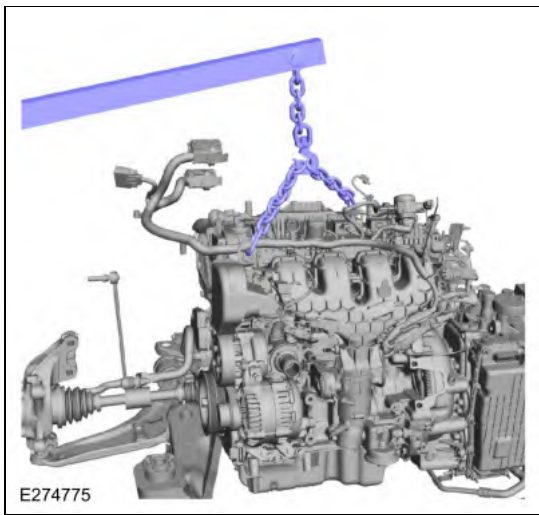


105. Remove the engine-to-transmission bolts.

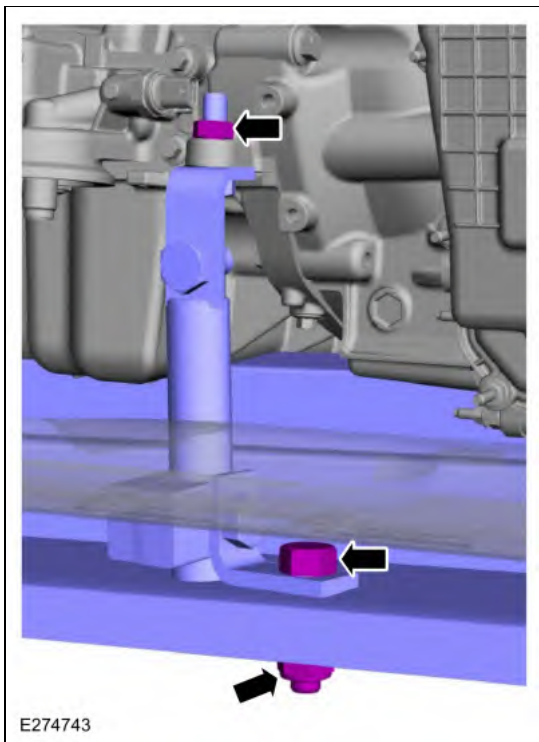


LHD AWD/LHD FWD

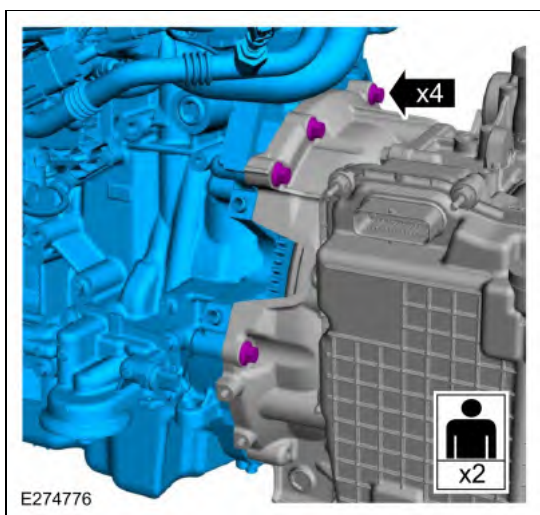
- 106. Install the engine lift equipment.
Use the General Equipment: Floor Crane



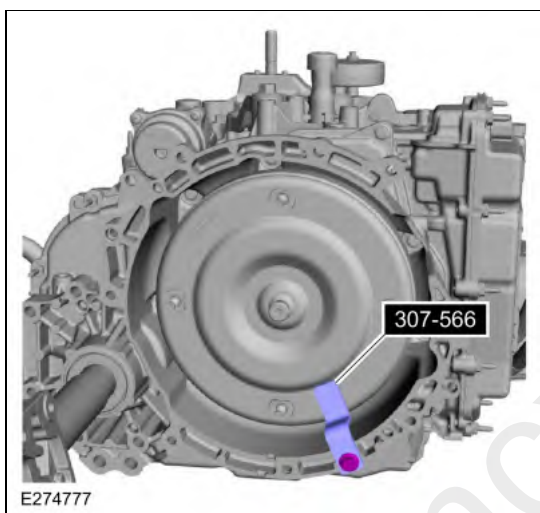
107. Remove the adjustable mounting arm.
Use the General Equipment: Adjustable Mounting Arm



108. Remove the bolts and with the aid of an assistant remove the engine.



109. Install Special Service Tool: 307-566 Retainer, Torque Converter.

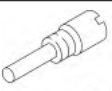


Disassembly

mcx30.com

Engine

Special Tool(s) / General Equipment

 E133913	205-153 (T80T-4000-W) Handle
 E274102	303-1685 Alignment Tool, Camshaft
 E274104	303-1687 Installer, VCT Solenoid Seal
 E274106	303-1689 Holding Tool, Crank Damper
 E134603	303-409 (T92C-6700-CH) Remover, Crankshaft Seal TKIT-1992-FH/FMH/FLMH TKIT-1993-LMH/MH
 P221210	303-507 Timing Peg, Crankshaft TDC TKIT-2001N-FLM TKIT-2001N-ROW
 E222982	307-005 (T59L-100-B) Slide Hammer
 E168032	310-206 Remover, Fuel Injector TKIT-2009A-FLM
Mounting Stand	
Hose Clamp Remover/Installer	

NOTICE: Do not loosen or remove the crankshaft pulley bolt without first installing the special tools as instructed in this procedure. The crankshaft pulley and the crankshaft timing sprocket are not keyed to the crankshaft. The crankshaft, the crankshaft sprocket and the pulley are fitted together by friction. For that reason, the crankshaft sprocket is also unfastened if the pulley bolt is loosened. Before any repair requiring loosening or removal of the crankshaft pulley bolt, the crankshaft and camshafts must be locked in place by the special service tools, otherwise severe engine damage can occur.

NOTICE: During engine repair procedures, cleanliness is extremely important. All parts must be thoroughly cleaned and 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 bolts and the flexplate.
 - Discard the bolts.