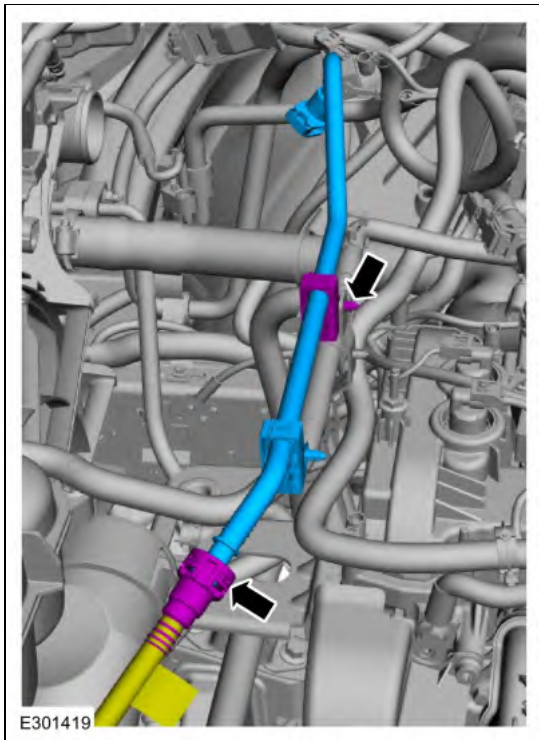
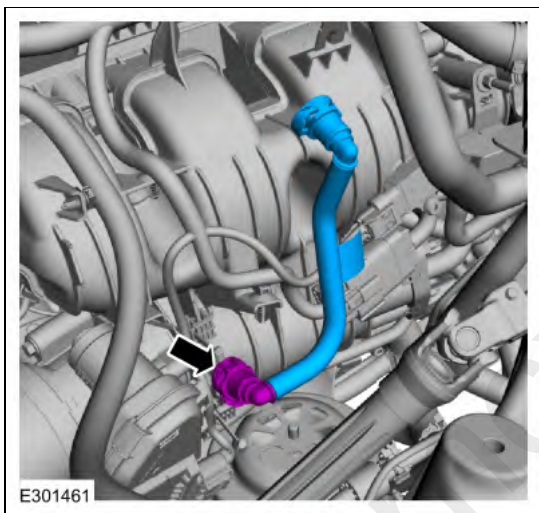
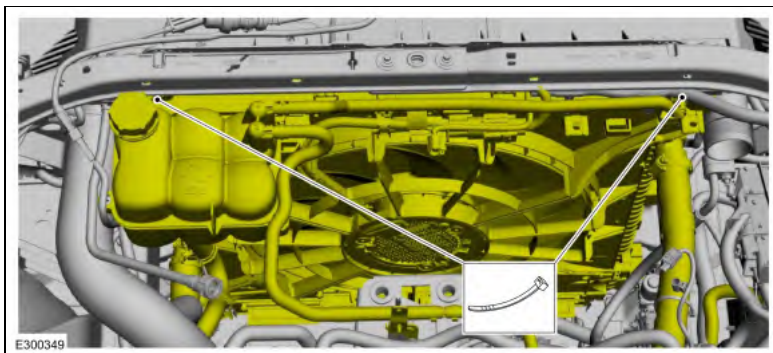




11. Disconnect the EVAP canister tube quick release coupling and remove from the intake manifold.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .



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

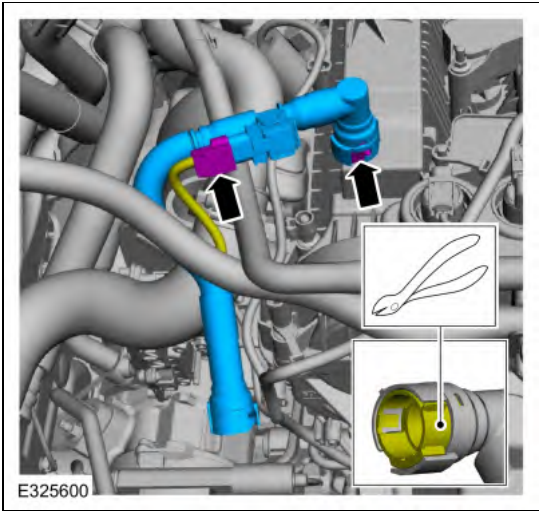


13. **NOTE:** The crankcase vent tube may have either a permanent or quick connect connector at one or both ends. If the tube needs to be removed for any

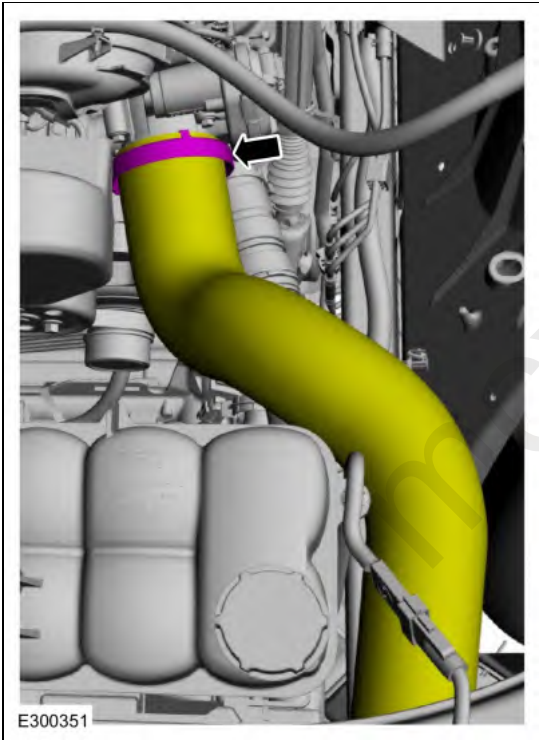
reason, the permanent connector(s) must be cut to remove the tube. The tube will then need to be replaced.

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.

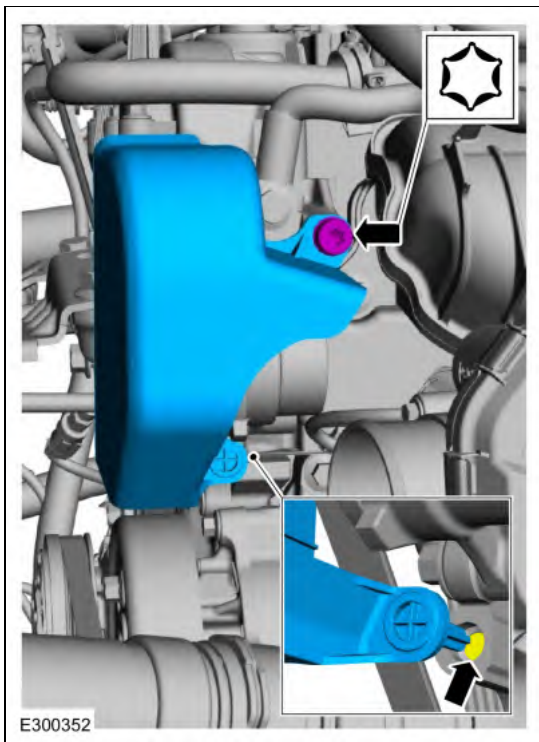
- If equipped, disconnect the wiring harness electrical connector.
- If necessary, cut the lock tab.
Use the General Equipment: Side Cutter Pliers
- If either crankcase vent tube connector was cut, remove and discard the crankcase vent tube.



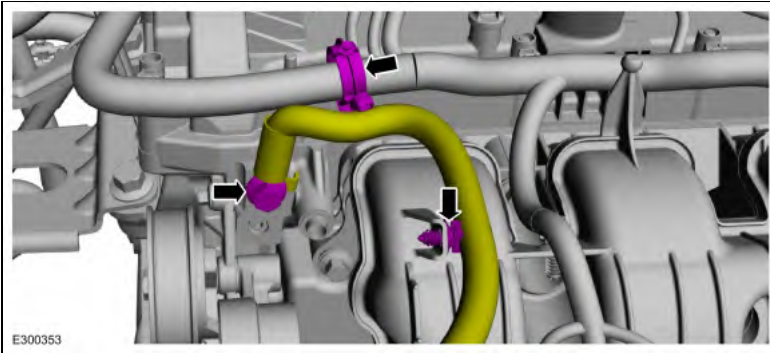
14. Loosen the CAC tube clamp and position aside.



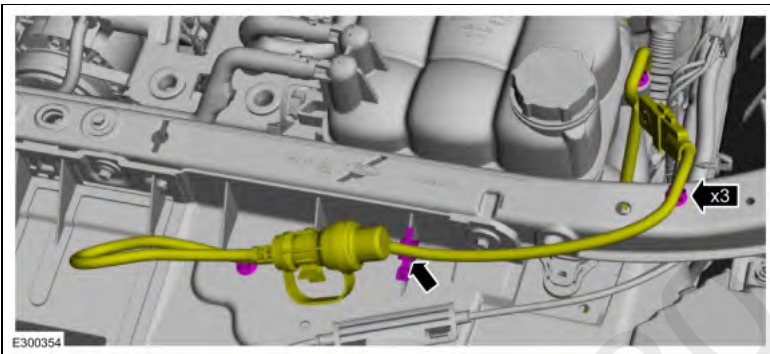
15. Remove the bolt (Enhanced Hexalobular or TORX PLUS Â® Acument Intellectual Properties, LLC as the owner) and the shield.



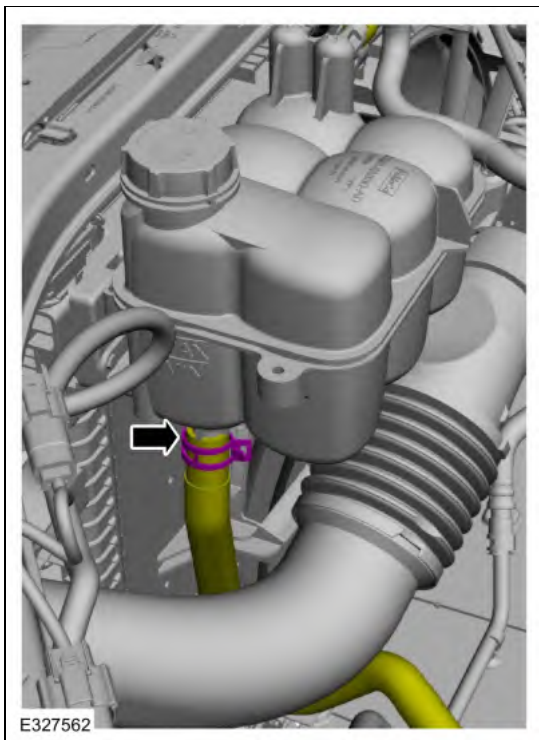
16. Detach the retainers, remove the bolt and position the ground wire aside.



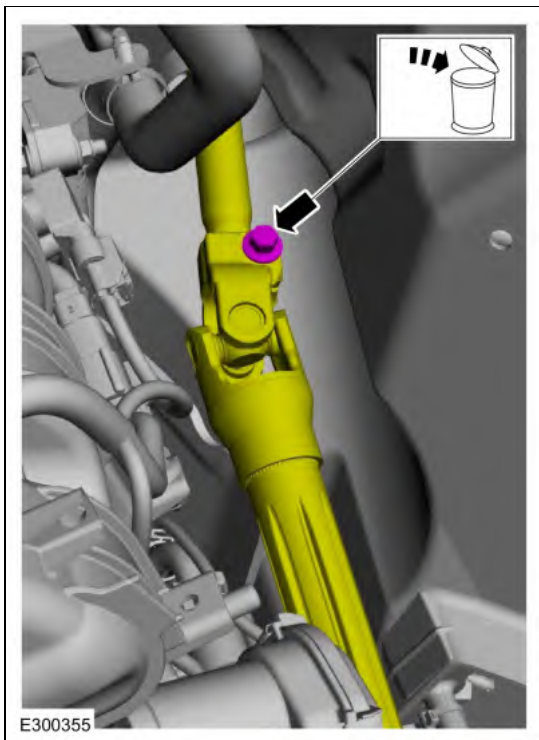
17. If equipped, detach the block heater electrical wiring harness retainers and position the wiring harness on the engine.



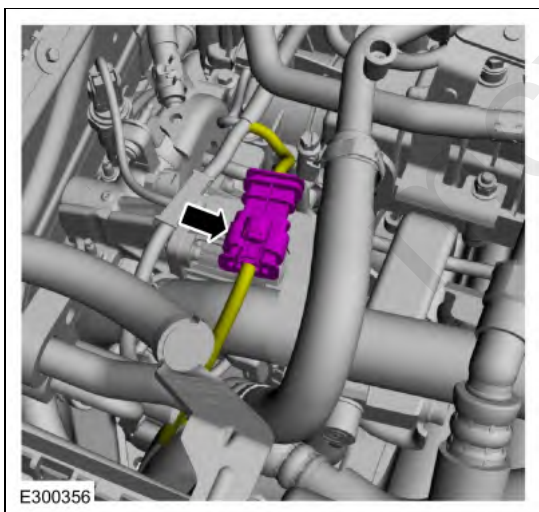
18. Release the clamp and position the coolant hose on engine.
Use the General Equipment: Hose Clamp Remover/Installer



- 19.
- Remove the bolt and disconnect the steering shaft.
 - Discard the bolt.

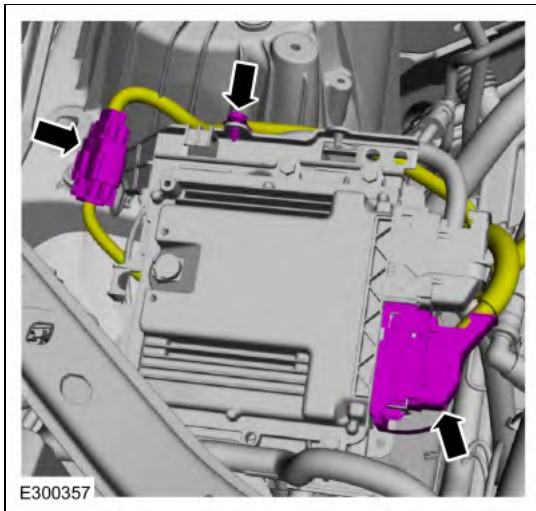


20. Disconnect the HO2S sensor electrical connector.

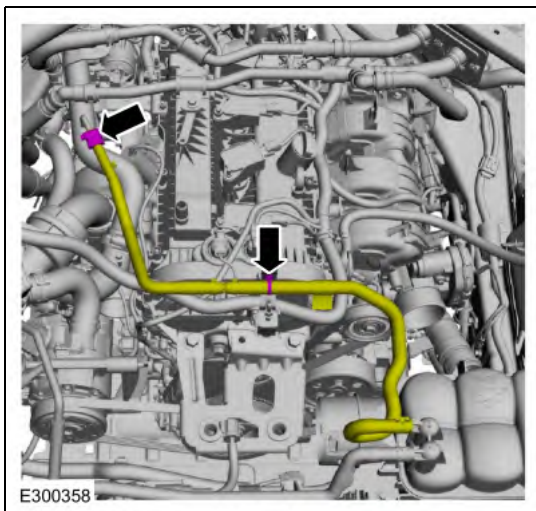


21.

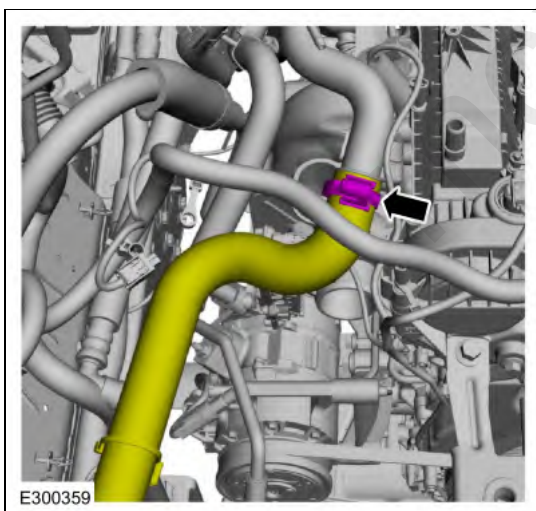
- Disconnect the PCM electrical connector.
- Disconnect the engine harness electrical connector, retainer and position the engine wiring harness on the engine.



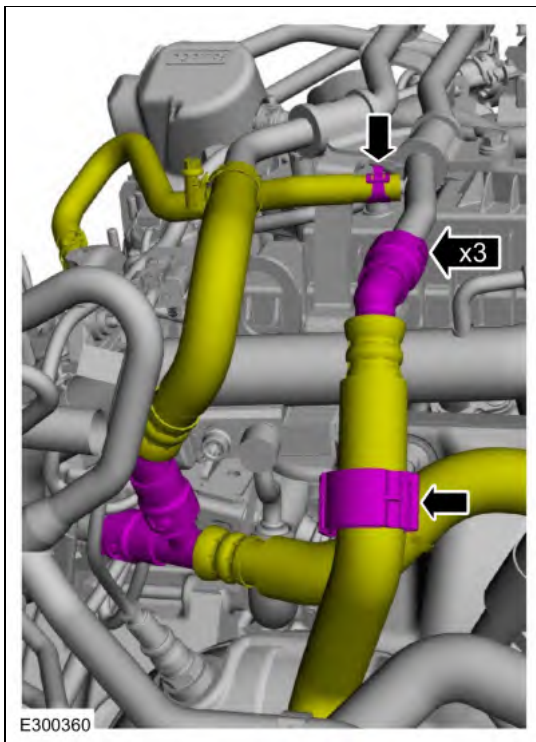
22. Loosen the clamp and detach the coolant hose retainer and position the degas bottle coolant hose aside.



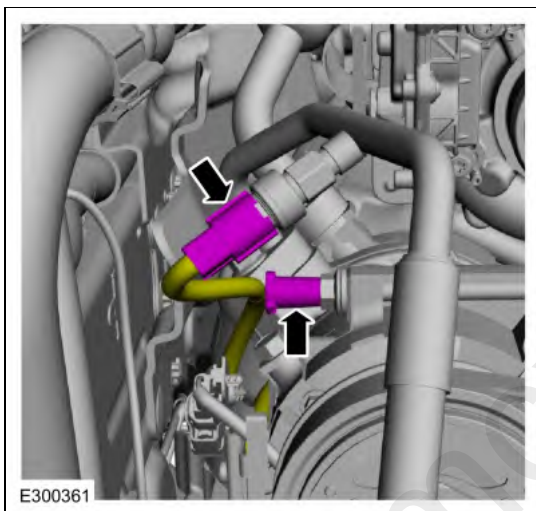
23. Loosen the upper radiator hose clamp and position the hose aside.



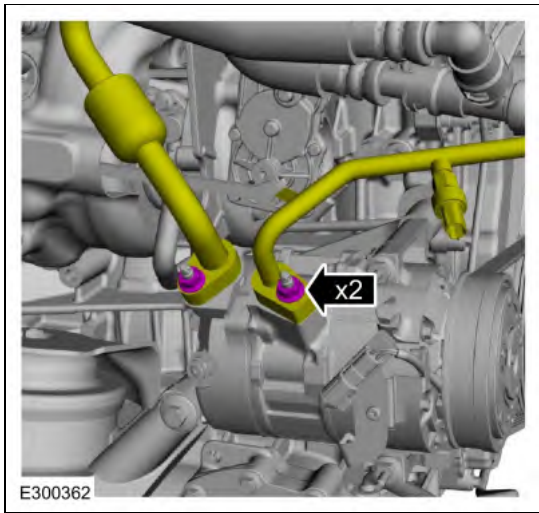
- 24.
- Release the clamp and position the coolant hose aside.
Use the General Equipment: Hose Clamp Remover/Installer
 - Disconnect the coolant hose quick connect couplings and position the coolant tubes aside.



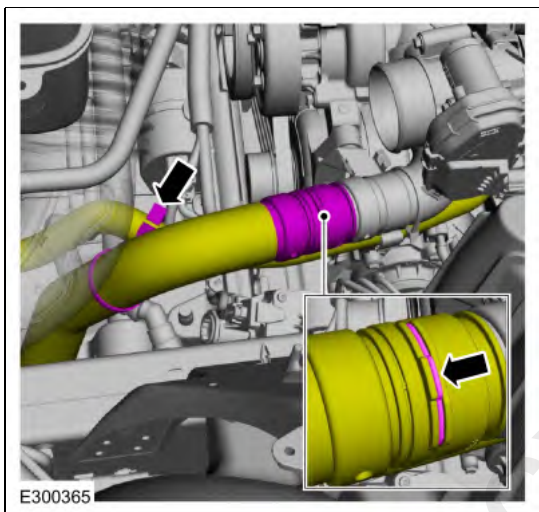
25. Disconnect the A/C pressure switch and detach the wiring harness retainer.



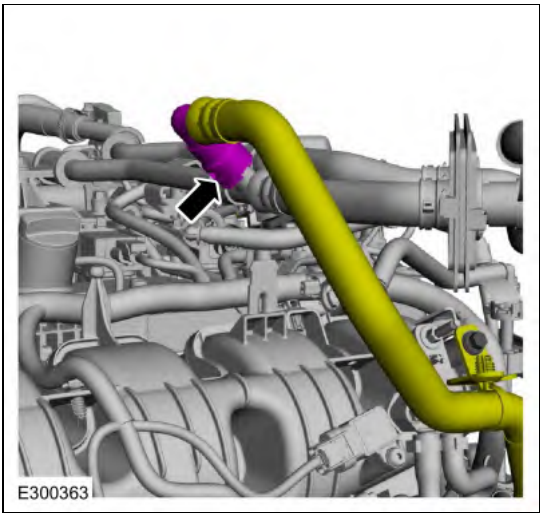
- 26.
- Remove the nuts and the A/C lines from A/C compressor.
 - Discard the O-ring seal.
 - Make sure that all openings are sealed.



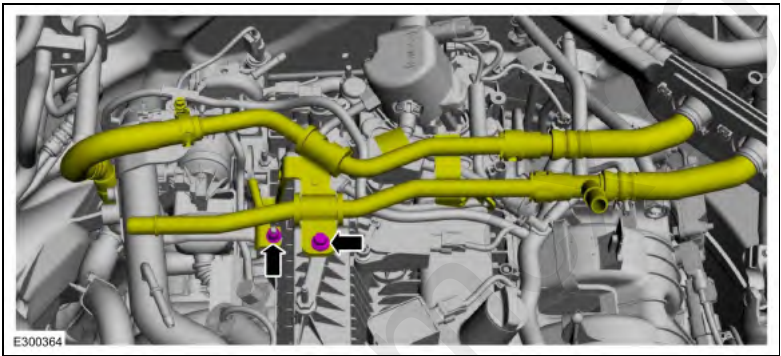
27. Release the clip, retainer and position the lower coolant hose aside.



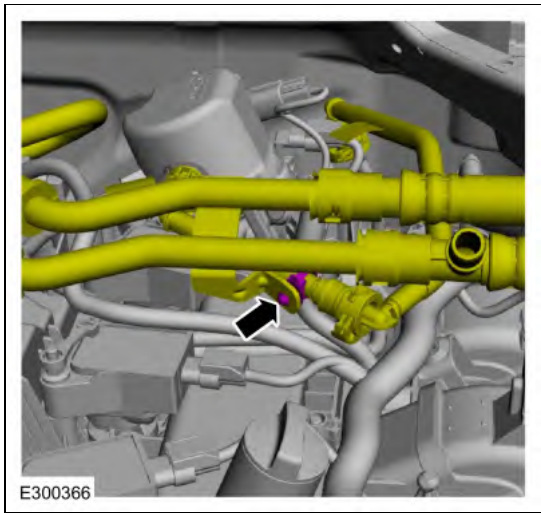
28. Disconnect the coolant tube from the coolant hoses that are over engine.



29. Remove the nut, bolt for the coolant tubes.

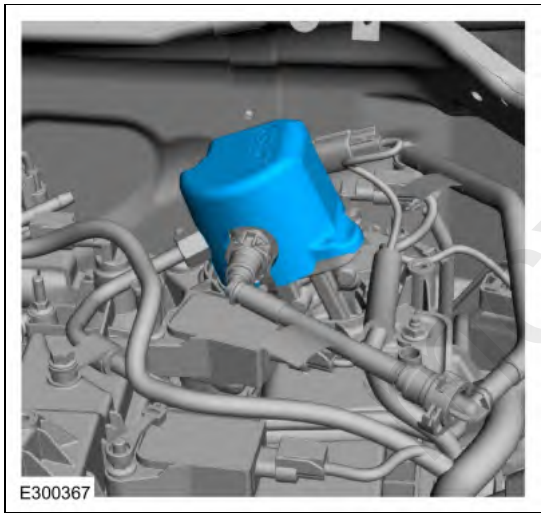


30. Detach the fuel tube retainer and position the coolant tubes aside.



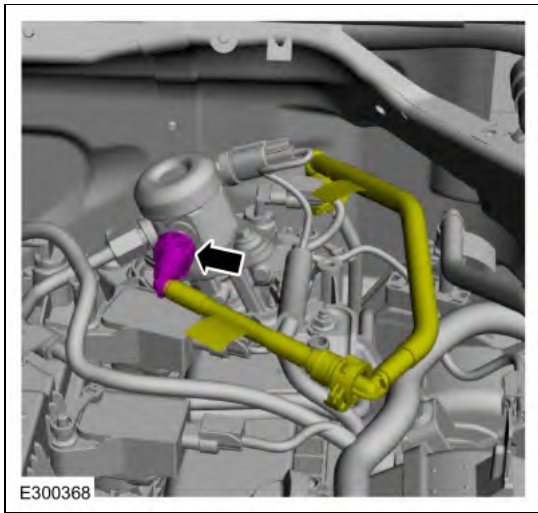
31. **NOTE:** When removing the high-pressure fuel pump noise insulator, spreading the openings will reduce the risk of damage.

Remove the high-pressure fuel pump noise insulator.

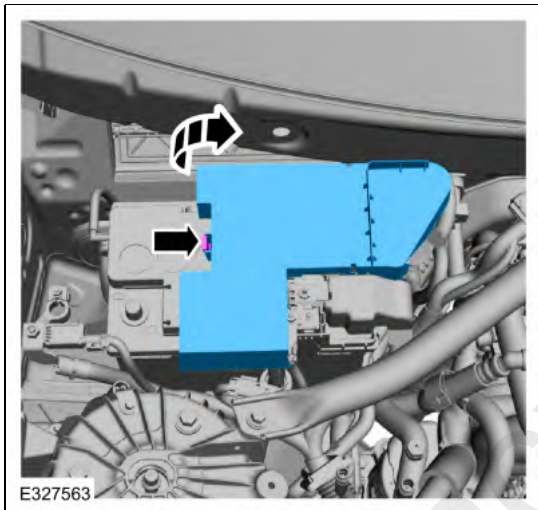


32. Disconnect the fuel tube quick release coupling and position aside.

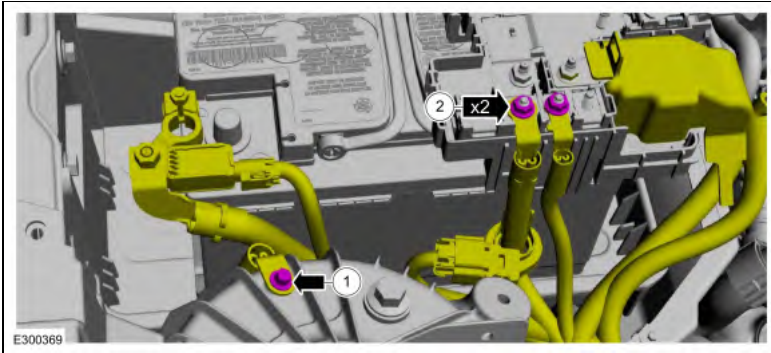
Refer to: Quick Release Coupling (310-00 Fuel System - General Information) .



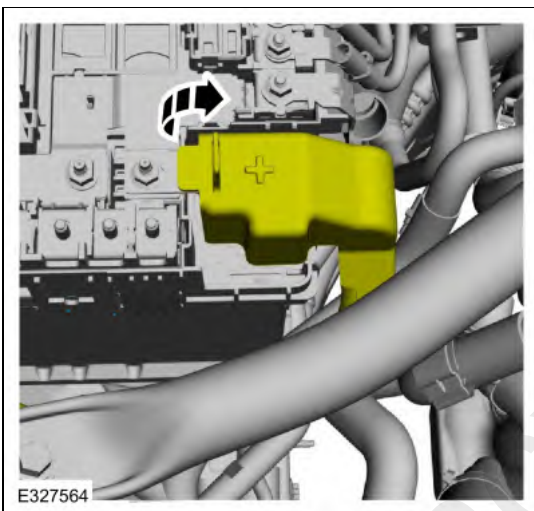
33. Release the tab and remove the cover.



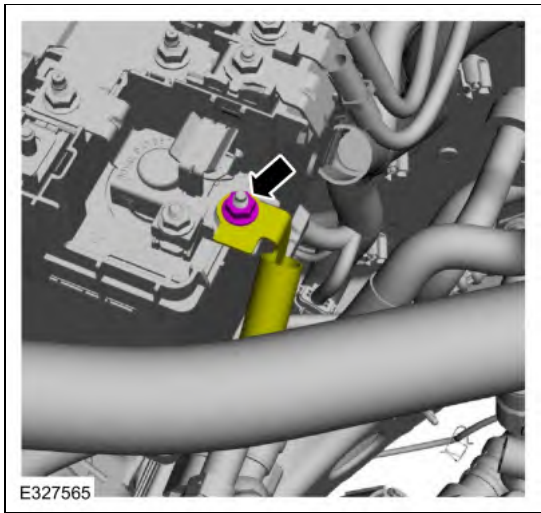
- 34.
1. Remove the bolt and position the ground aside.
 2. Remove the nuts and position the B+ battery cables aside.



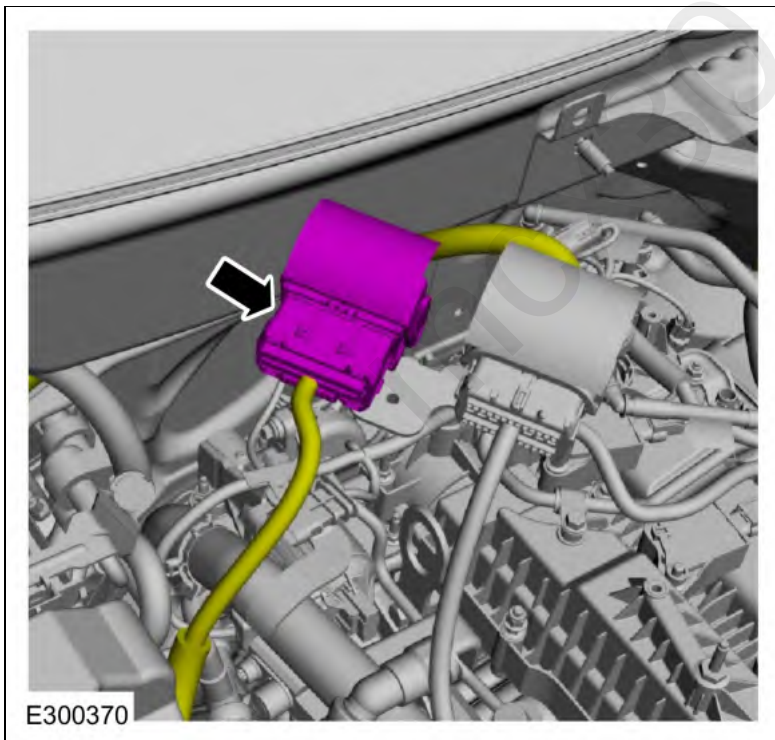
35. Position the battery cable cover aside.



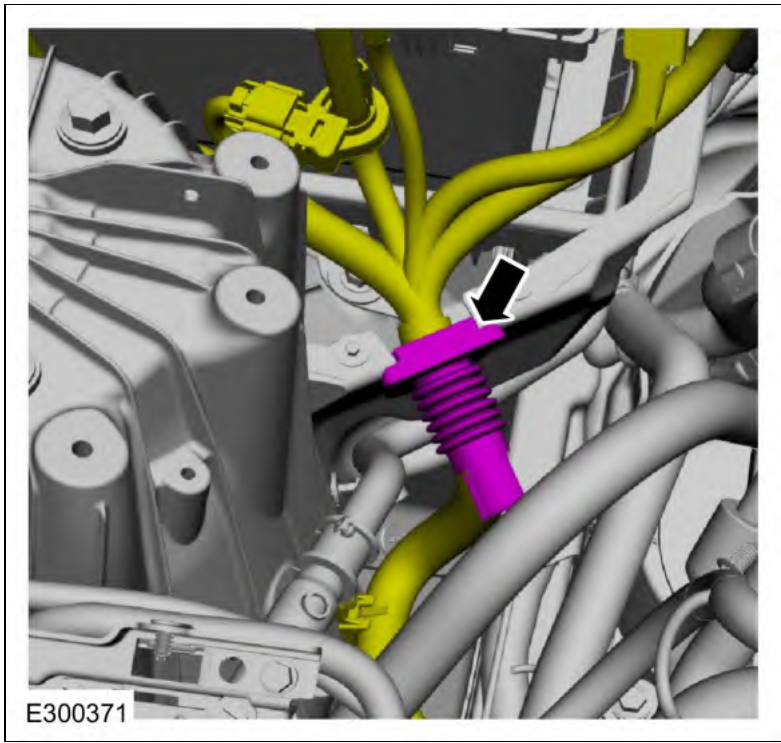
36. Remove the nut and position the battery wiring harness aside.



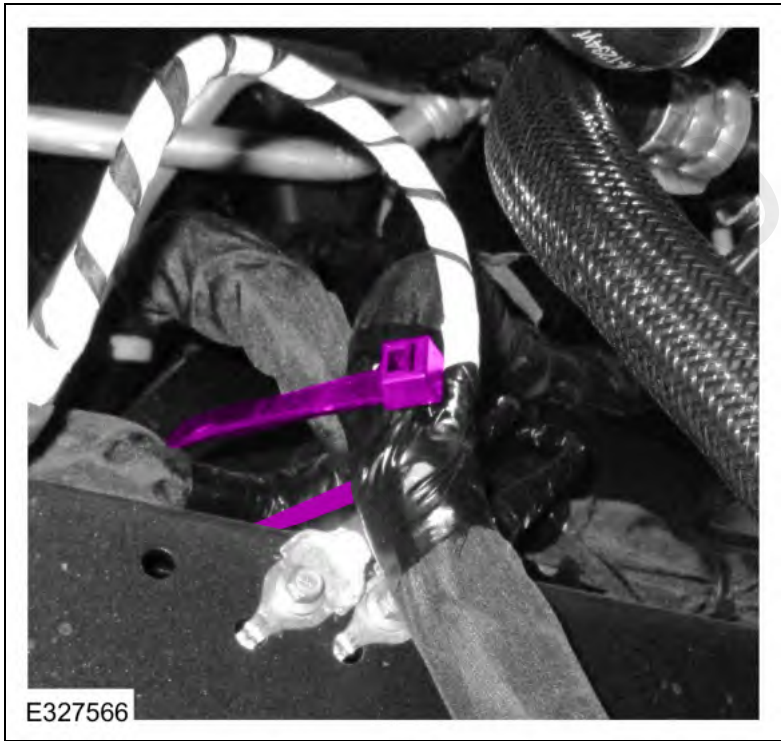
37. Disconnect the wiring harness electrical connector.



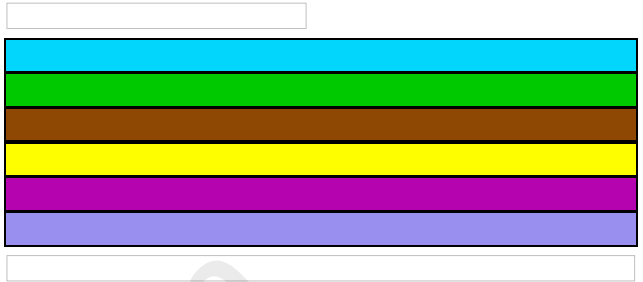
38. Position the wiring harness electrical grommet aside.

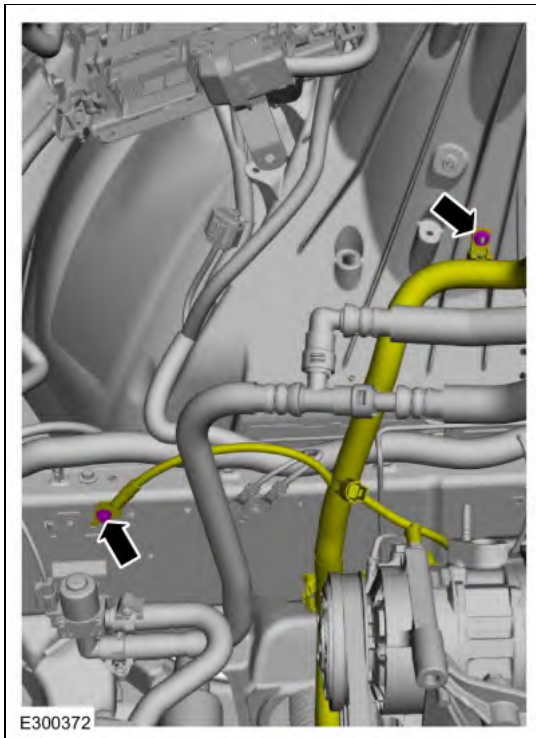


39. Cut the wiring harness cable tie.
Use the General Equipment: Cable Ties

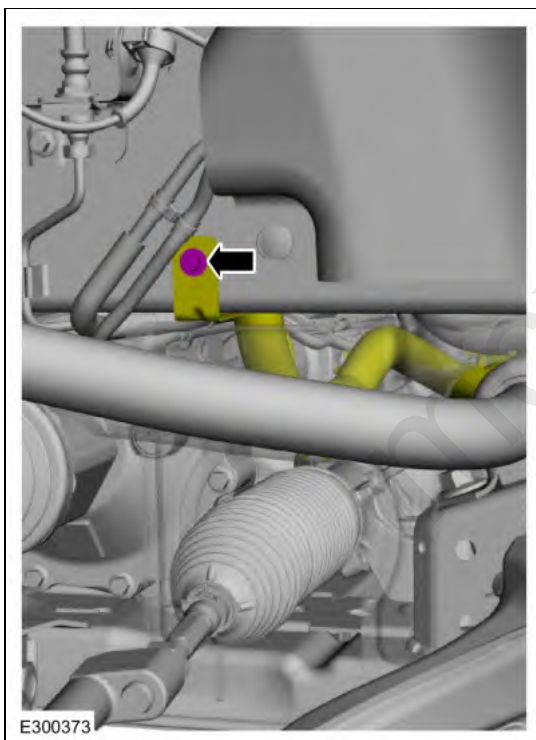


- 40.
- Remove the bolt and position the ground wire aside.
 - Remove the wiring harness retainer nut and position the wiring harness aside.

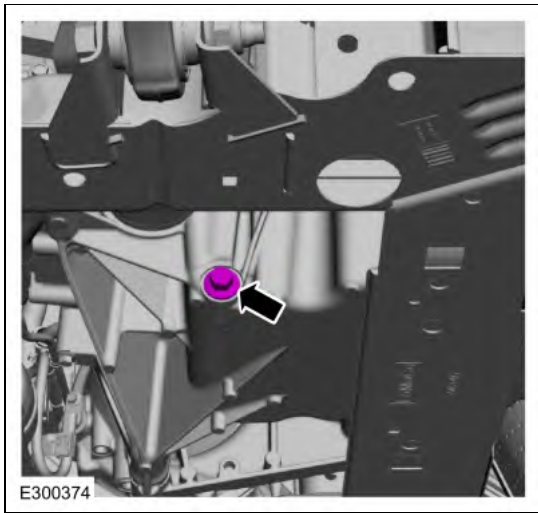




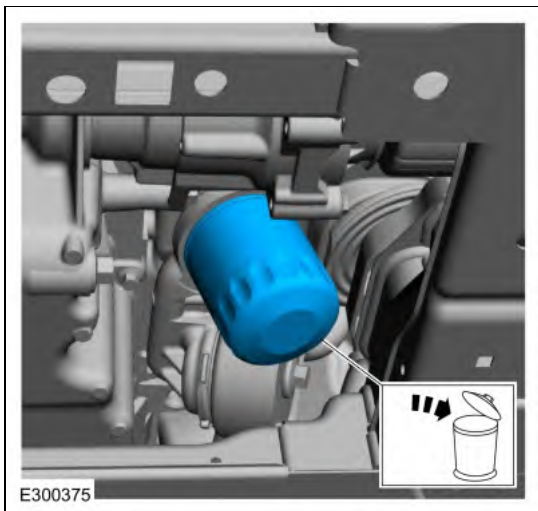
41. Remove the LH and RH front wheels and tires.
Refer to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).
42. Remove the wiring harness retainer bolt from the frame rail.



43. Remove the engine rear undershield.
Refer to: Engine Rear Undershield (501-02 Front End Body Panels, Removal and Installation).
44.
 - 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)



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

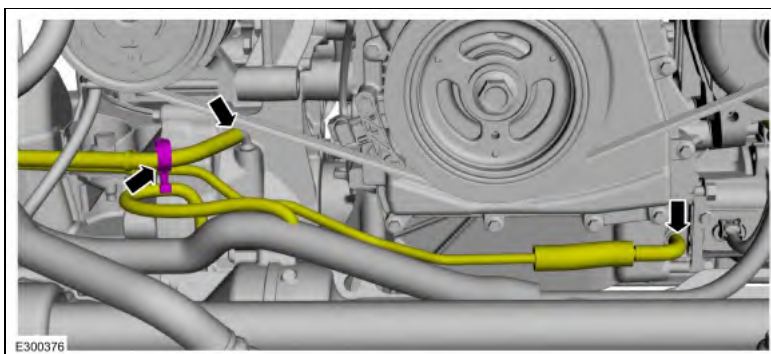


46. **NOTICE: Do not allow the brake caliper and anchor plate assembly to hang from the brake hose or damage to the hose can occur.**

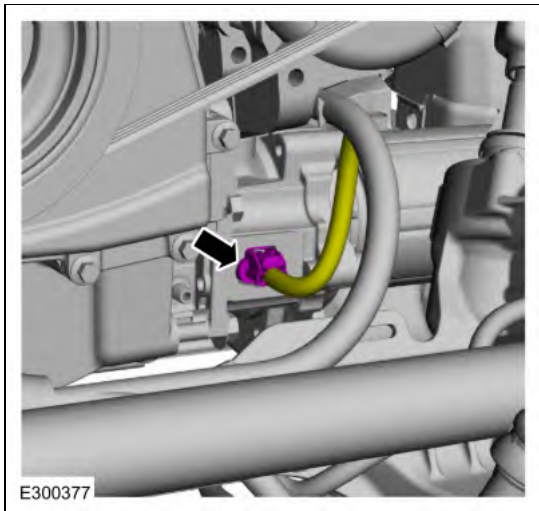
Remove both front brake disc.
Refer to: Brake Disc (206-03 Front Disc Brake, Removal and Installation).

LHD AWD

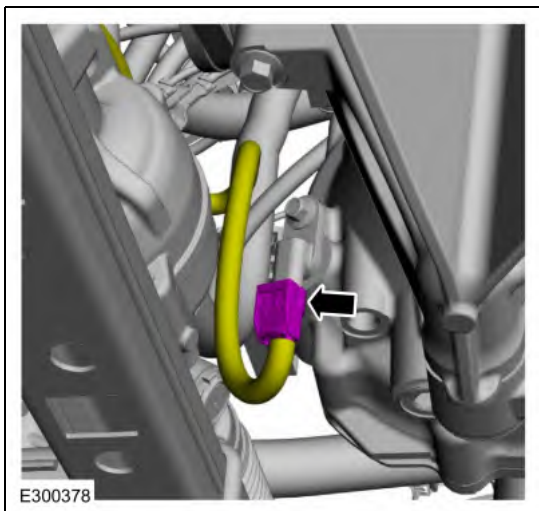
47. Remove the RH and LH halfshafts.
Refer to: Halfshaft (205-04 Front Drive Halfshafts, Removal and Installation).
- 48.
- Disconnect the vent hose from the LH axle connector.
 - Detach the wiring harness retainer from the vent tubes.
 - Disconnect the vent hose from the front axle assembly and position the vent tubes aside.



49. Disconnect the wiring harness electrical connector from the LH axle connector.



50. Disconnect the wiring harness electrical connector from the front axle assembly.



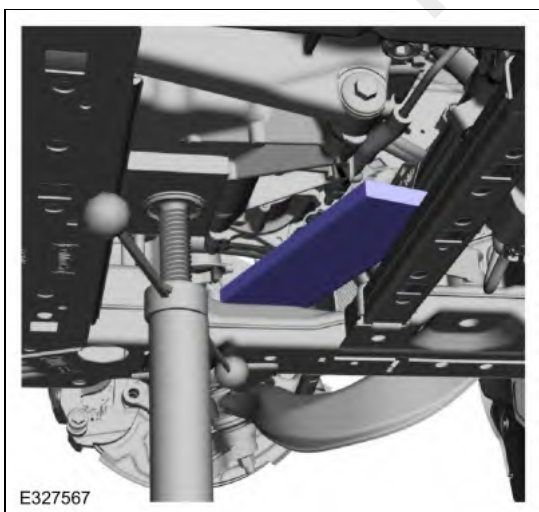
LHD AWD/LHD RWD

51. Remove the transmission.

Refer to: Transmission - 2.3L EcoBoost (201kW/273PS) (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission & 10R60, Removal and Installation).

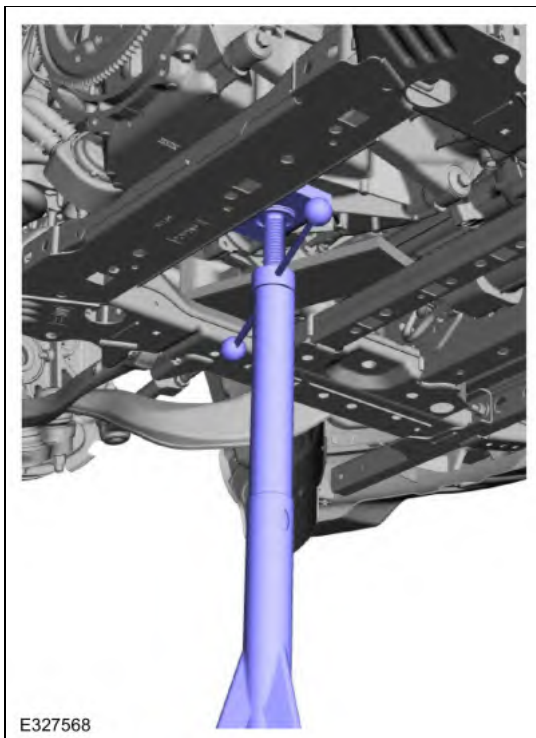
52. **NOTE:** AWD shown, RWD similar.

Position a 1 x 6 board, 13 in (330.2 mm) in length on the subframe as shown to support the engine from moving forward after the stand is removed.
Use the General Equipment: Wooden Block



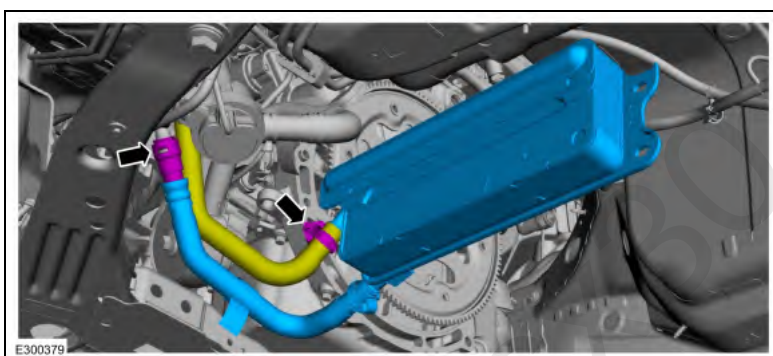
53. Remove the stand.

Use the General Equipment: Vehicle/Axle Stands



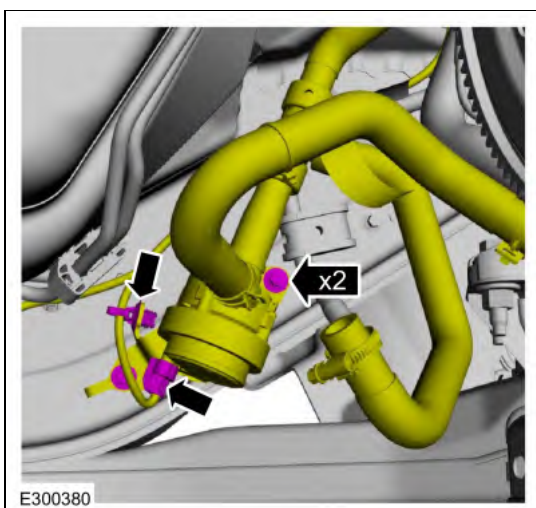
54.

- Loosen the clamp and position the transmission cooler coolant tube aside.
- Disconnect the coolant tube and remove the transmission cooler.

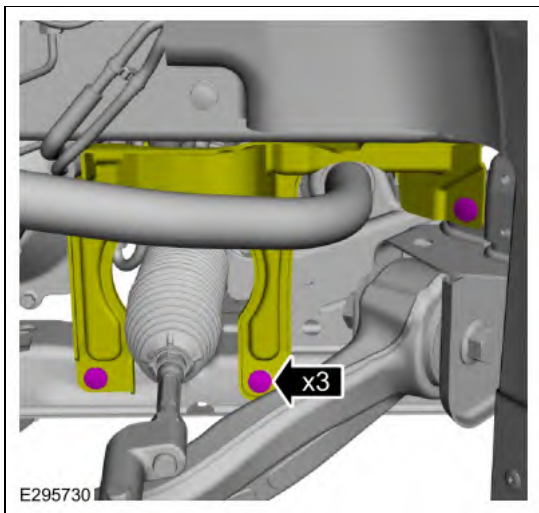


55.

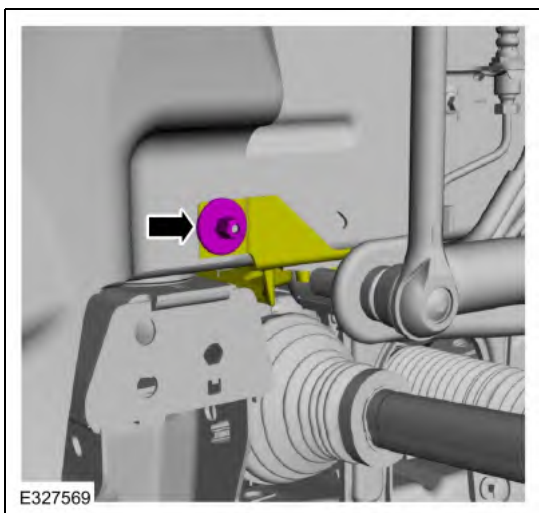
- Disconnect the auxiliary coolant pump wiring harness electrical connector and the retainer.
- Remove the bolts and position the auxiliary coolant pump aside.



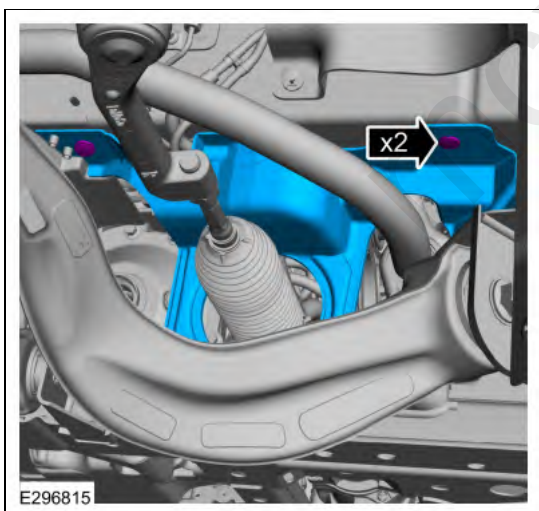
56. If equipped, remove the steering shield pin-type retainers from the RH subframe.



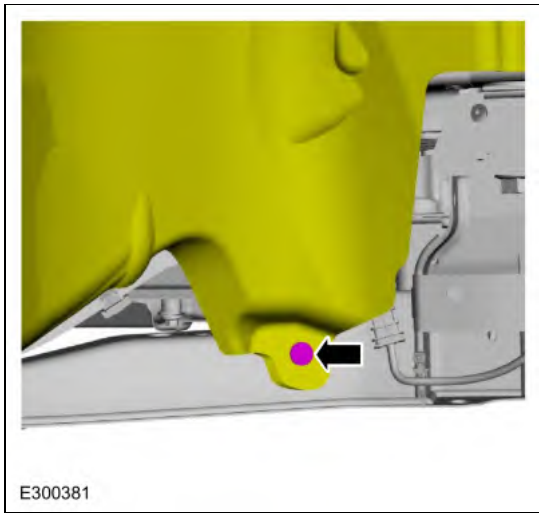
57. If equipped with AWD, remove the RH fender splash shield nut.



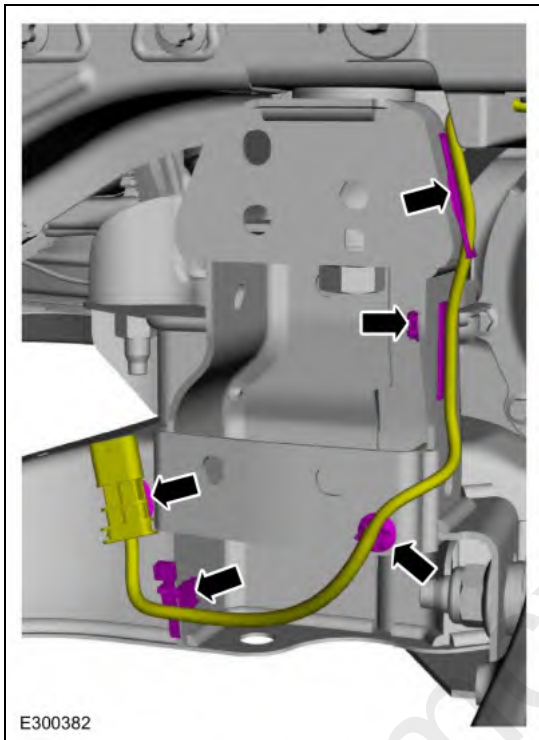
58. If equipped, remove the pin-type retainers and the steering shield from the RH subframe.



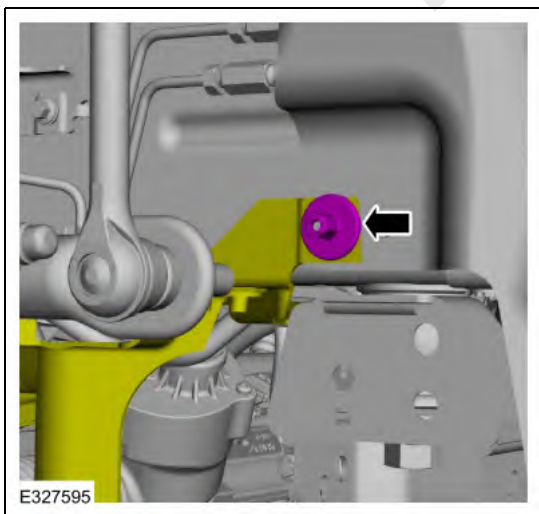
59. Remove the splash shield pin-type retainer from the RH subframe.



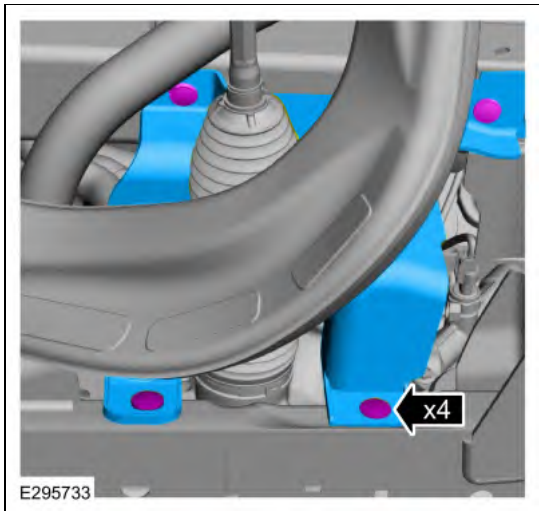
60. Detach the HO2S wiring harness retainers from the RH subframe.



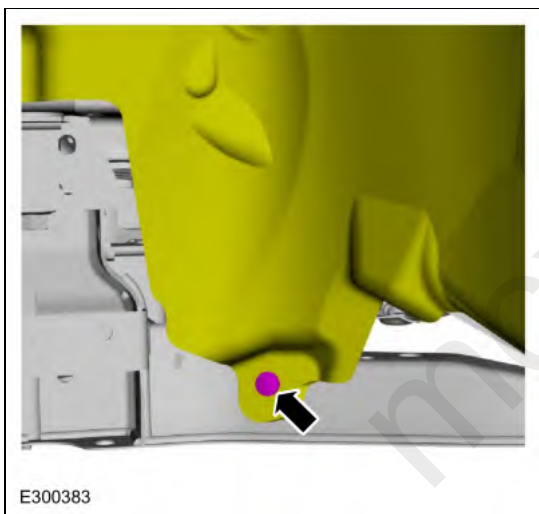
61. If equipped with AWD, remove the LH fender splash shield nut.



62. If equipped, remove the pin-type retainers and the steering shield from the LH subframe.

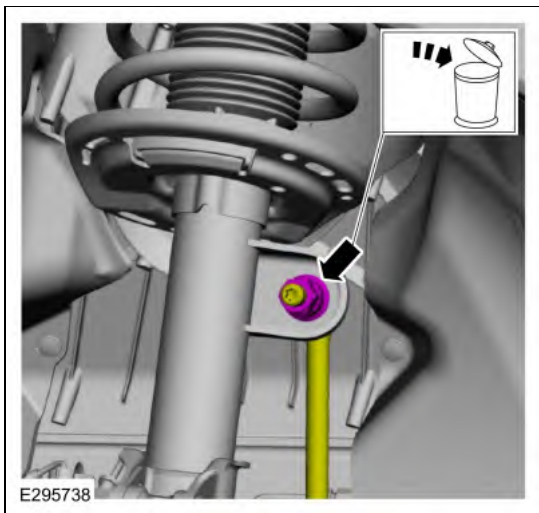


63. Remove the splash shield pin-type retainer from the LH subframe.



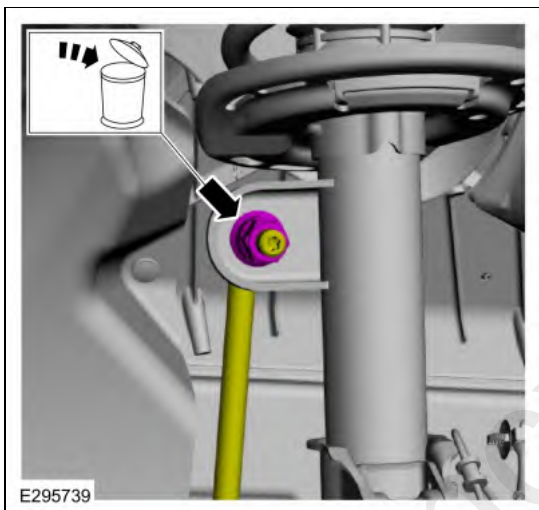
64. **NOTICE:** Use the internal or external hex-holding feature to prevent the ball and stud from turning while removing or installing the stabilizer bar link nuts. The link boot seal must not be allowed to twist while tightening the link nuts or damage to the boot seal will occur.

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



65. **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.

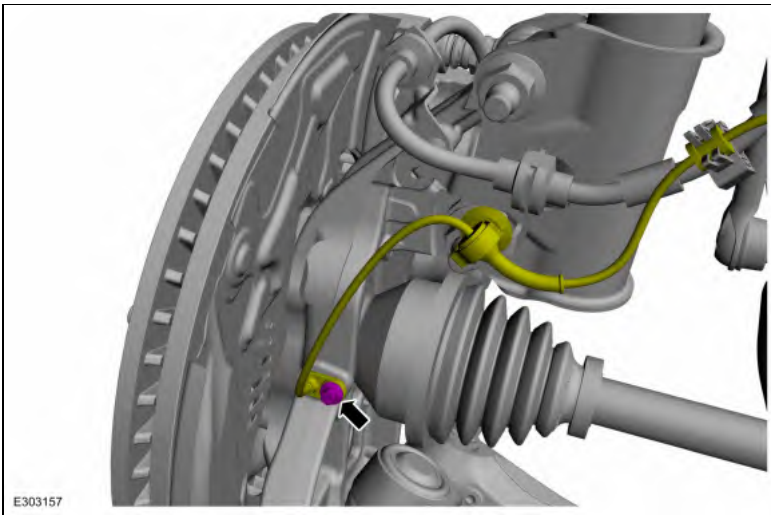
Remove the nut and position the RH sway bar link aside.



LHD RWD

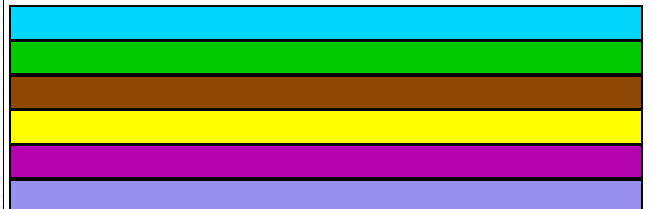
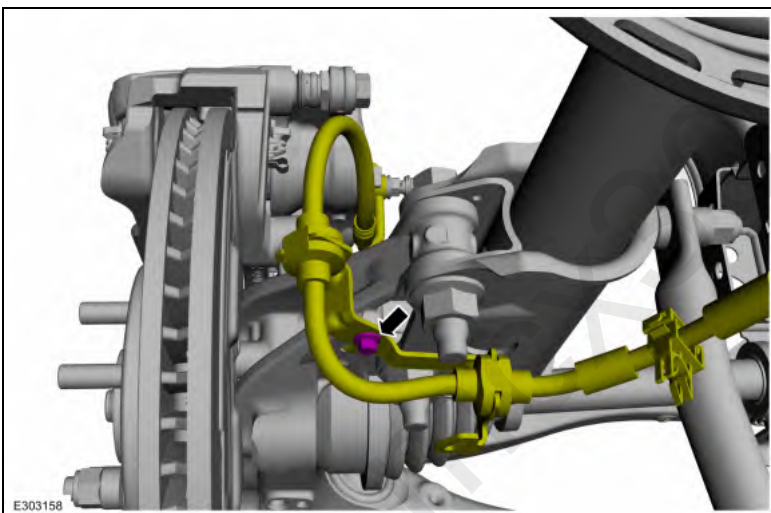
66. **NOTE:** LH side shown, RH side similar.

On both sides, remove the wheel speed sensor bolt on the wheel knuckle and position aside.



67. **NOTE:** LH side shown, RH side similar.

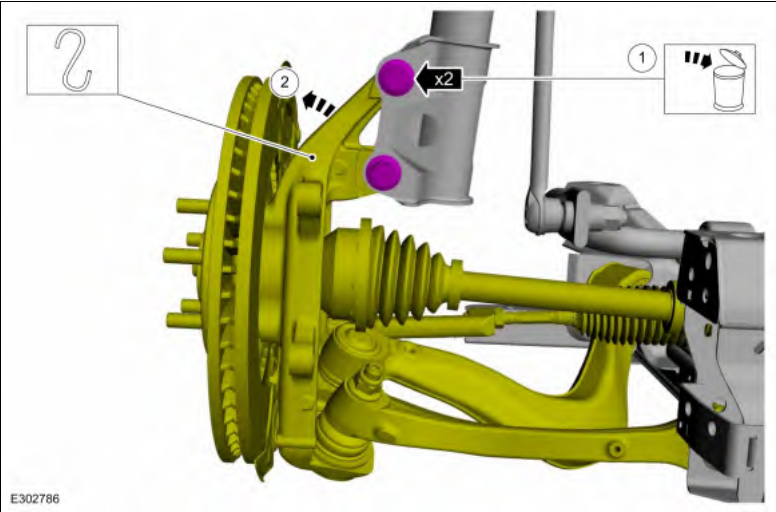
On both sides, remove bolt and position the front brake hose aside.



68. **NOTE:** Two different styles of lower strut-to-wheel knuckle bolts are available: with and without splines. Bolts without splines are used to adjust camber and should be installed when the strut, knuckle, or subframe have been replaced or if the subframe or either lower arm to subframe bolts have been loosened.

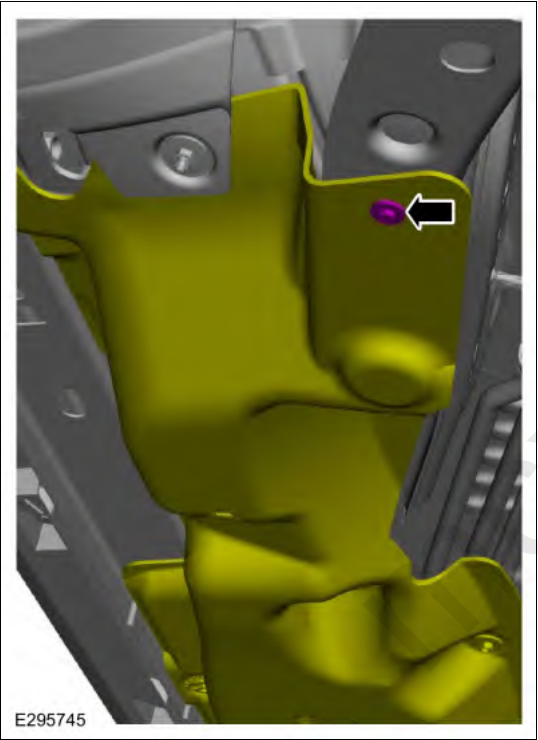
NOTE: LH side shown, RH side similar.

1. On both sides, remove and discard the lower strut-to-wheel knuckle nuts and bolts.
2. Separate the wheel knuckle from the front strut and spring assembly.



LHD AWD/LHD RWD

69. Remove the bolt and position the RH underbody shield aside.

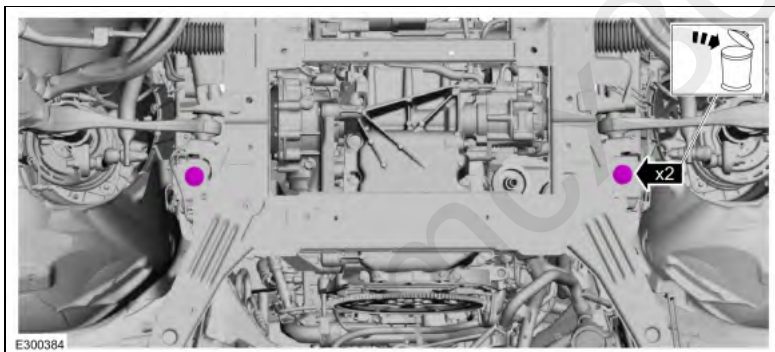


70. Remove the bolt and position the LH underbody shield aside.



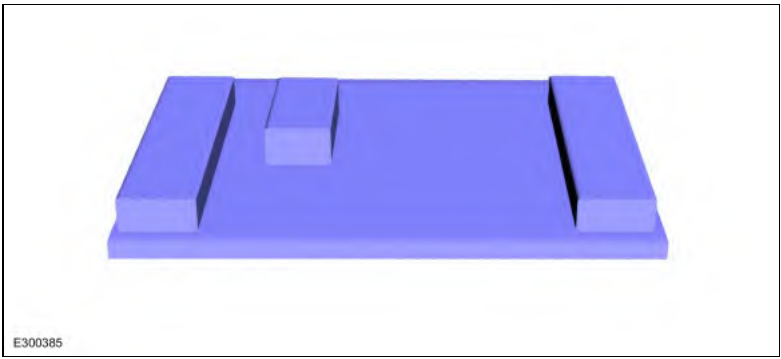
71.

- Remove the middle subframe bolts.
- Discard the bolts.

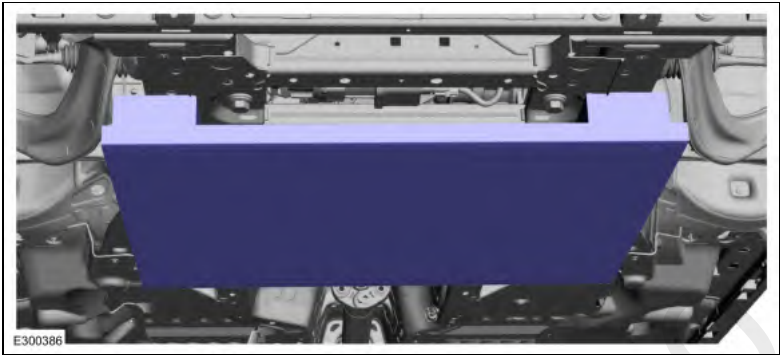


72. **NOTE:** The middle board will help keep the engine aligned in a even position.

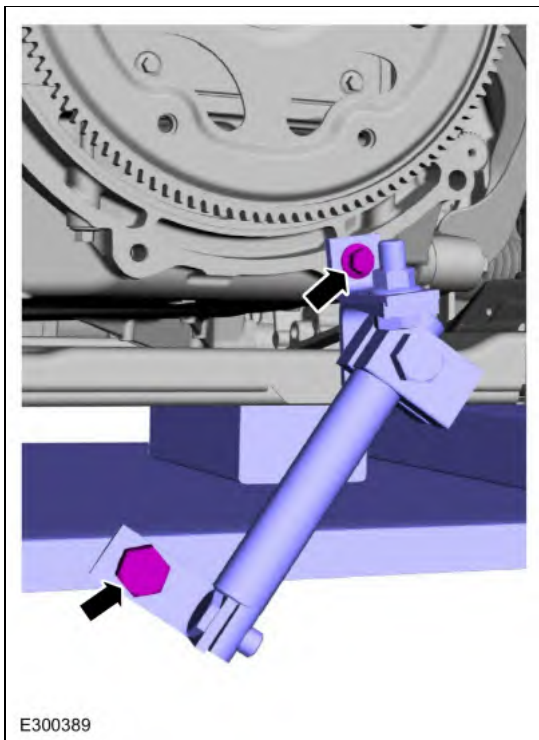
Position three boards onto the powertrain jack as shown.



73. 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



74. Install, adjust and tighten the adjustable mounting arm bolts.
Use the General Equipment: Adjustable Mounting Arm



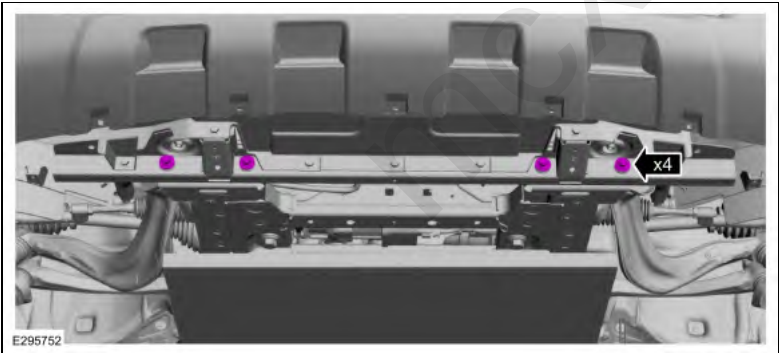
75. Mark the front subframe location.



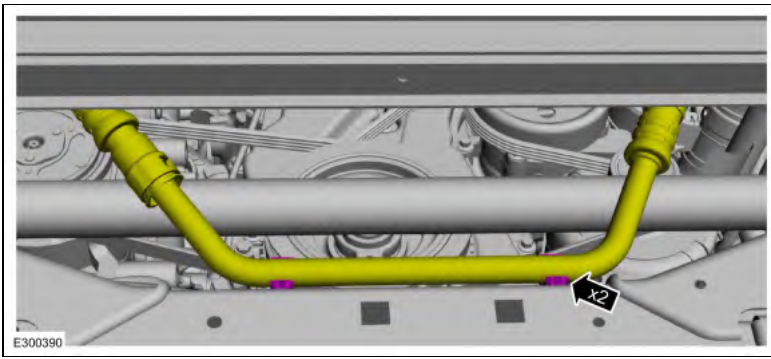
76. Mark the rear subframe location.



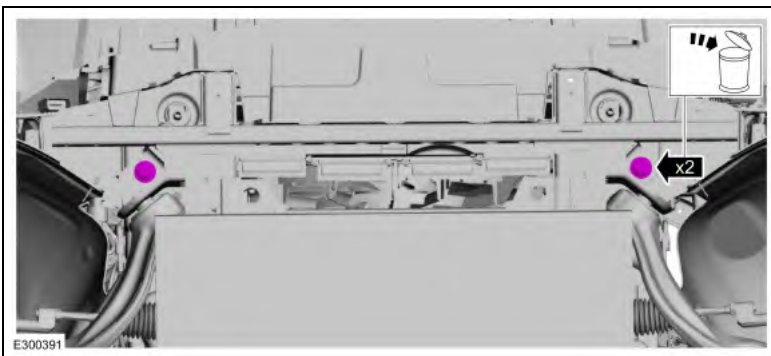
77. Remove the front radiator support bar bolts.



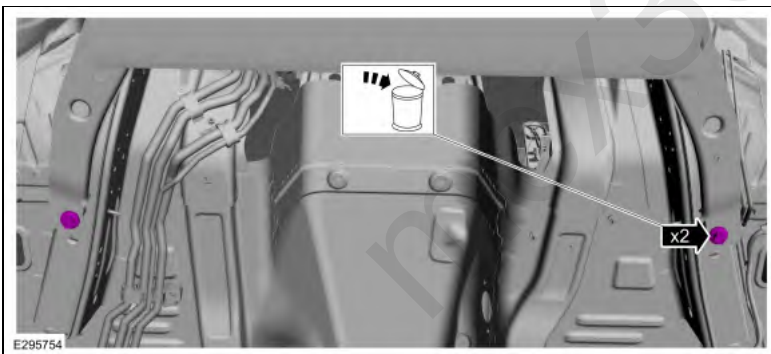
78. Detach the coolant tube retainers from the front of the subframe.



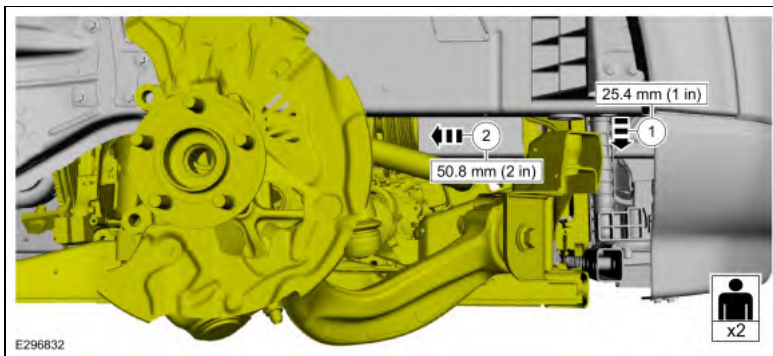
- 79.
- Remove the front subframe bolts.
 - Discard the bolts.



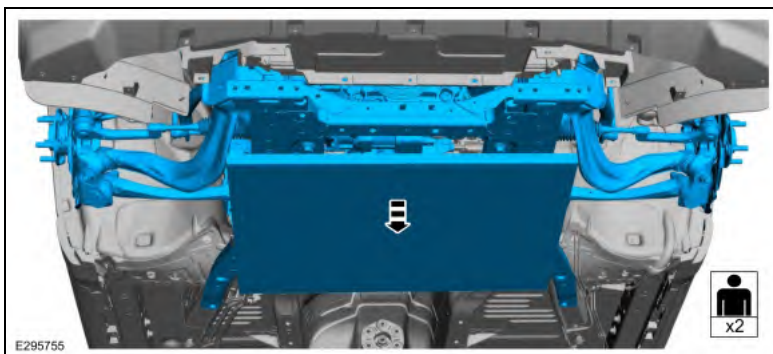
- 80.
- Remove the rear subframe bolts.
 - Discard the bolts.



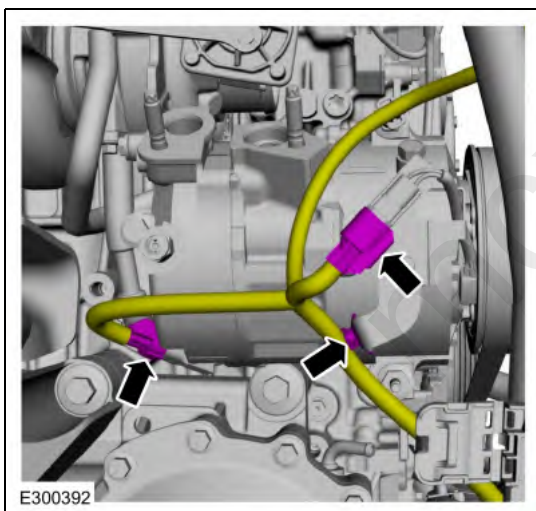
- 81.
1. With the aid of an assistant and using the powertrain jack, lower the powertrain and subframe 25.4 mm (1 in).
 2. With the aid of an assistant and using the powertrain jack, position the powertrain and subframe rearwards 50.8 mm (2 in).



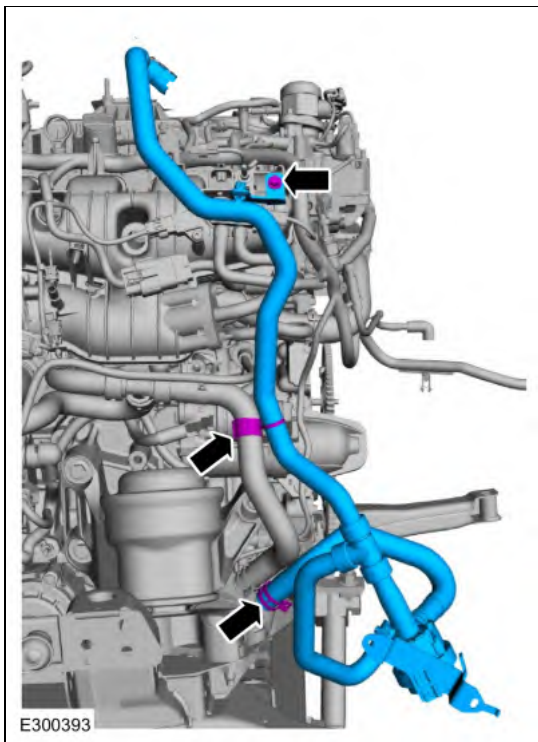
82. With the aid of an assistant and using the powertrain jack, lower the powertrain and subframe as an assembly.



83. Disconnect the A/C compressor electrical connectors and the wiring harness retainer.

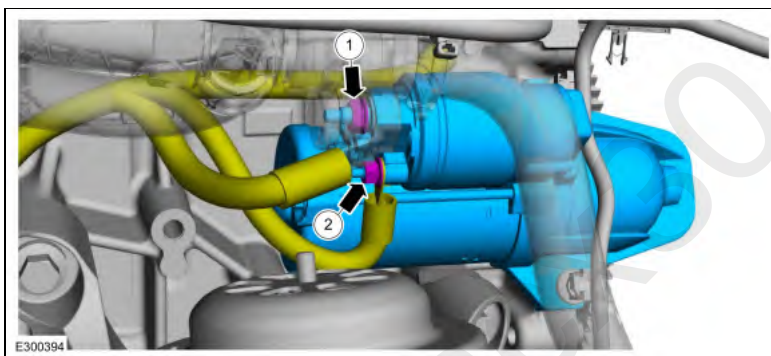


- 84.
- Release the coolant hose clamp and retainer.
Use the General Equipment: Hose Clamp Remover/Installer
 - Remove the bolt and the auxiliary coolant pump and hoses.

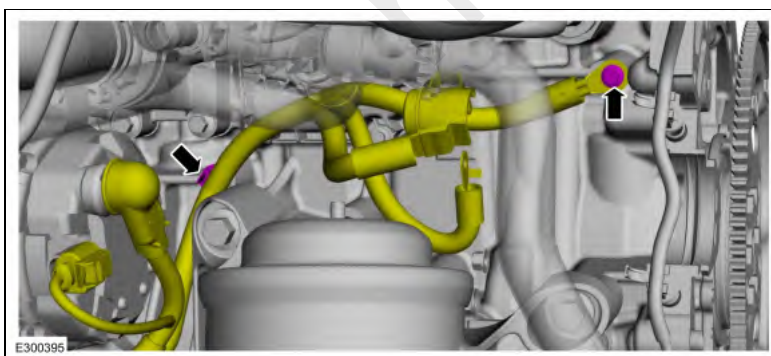


85.

1. Remove the nut and disconnect the battery positive cable from the starter motor.
2. Remove the nut and the starter motor control wire from the starter motor and remove the starter motor.

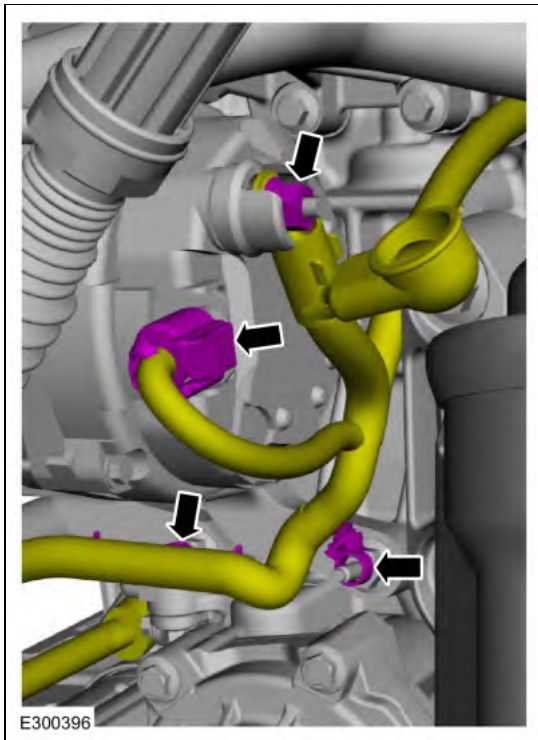


86. Remove the bolt, detach the wiring harness retainer and position the wiring harness aside.

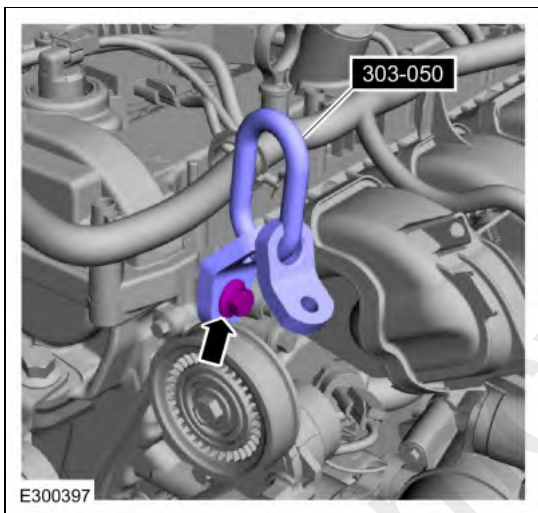


87.

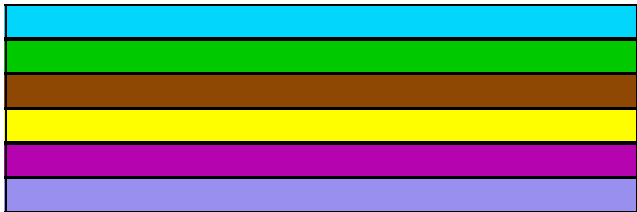
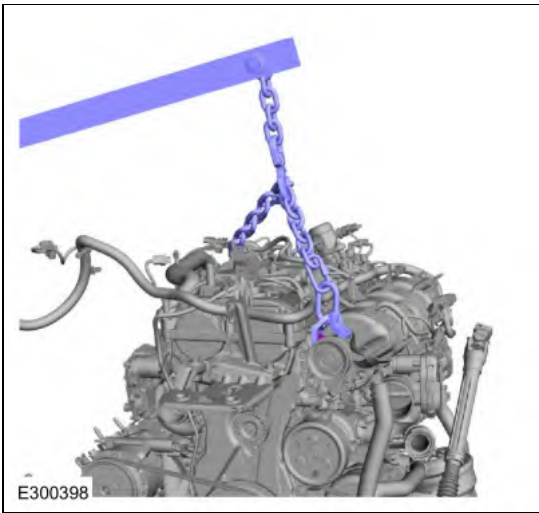
- Position the B+ wire protective cover, remove the nut and position the B+ wire.
- Disconnect the generator electrical connector.
- Detach the wiring harness retainers.



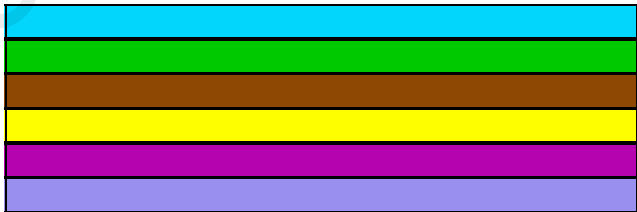
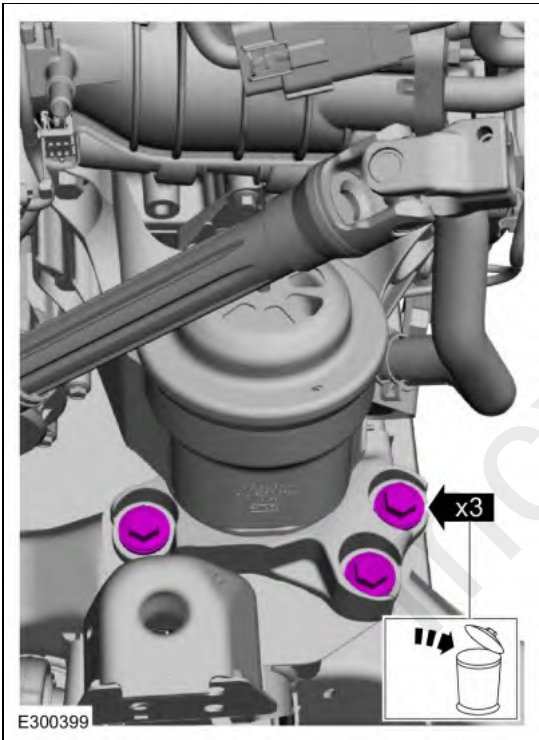
88. Using the ground wire bolt, install the special tool.
Install Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.



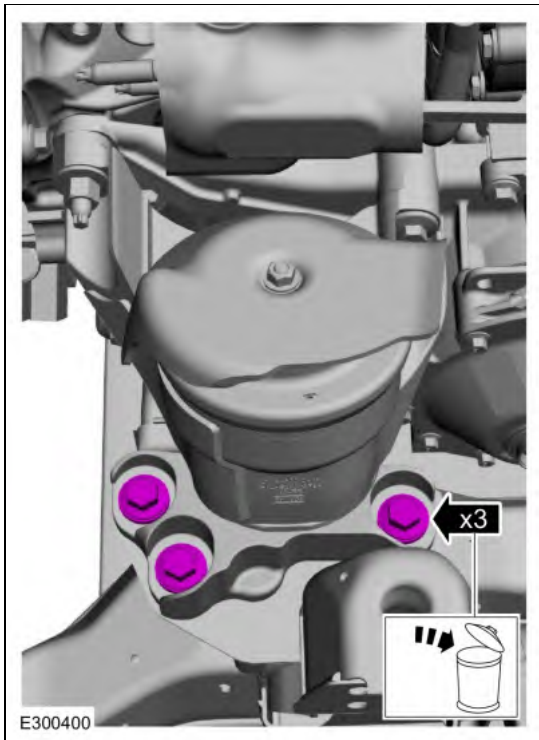
89. Install the floor crane and chain.



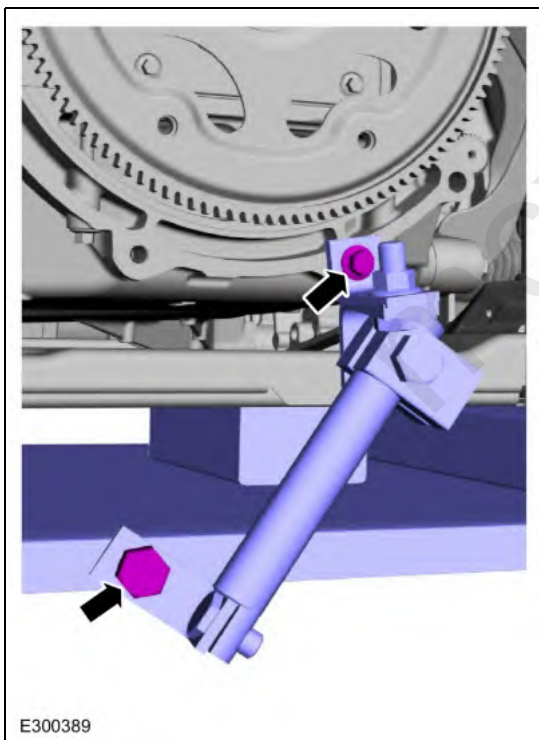
90. Remove the LH motor mount bolts.



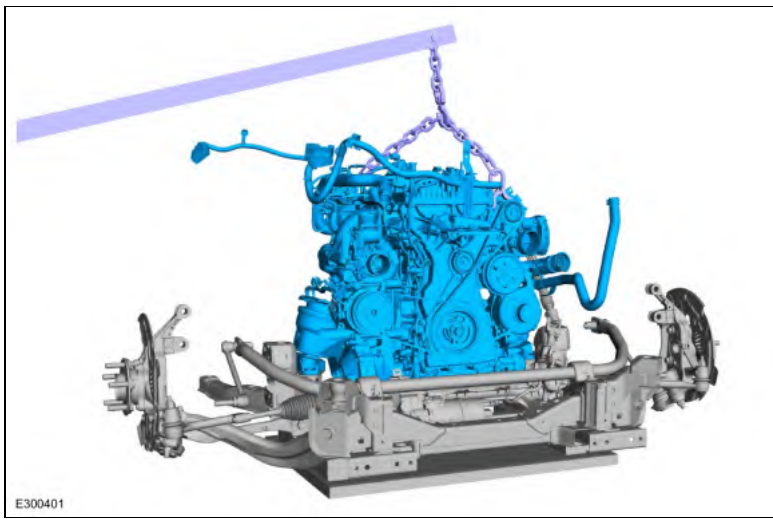
91. Remove the RH motor mount bolts.



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



93. Using the floor crane and chain, remove the engine from subframe.



Disassembly

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Engine

Special Tool(s) / General Equipment

 E133913	205-153 (T80T-4000-W) Handle
	303-050 (T70P-6000) Lifting Bracket, Engine
 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
 PZ21210	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	
Plastic Scraper	
Hose Clamp Remover/Installer	

Materials

Name	Specification
Motorcraft® Silicone Gasket Remover ZC-30-A	-
Motorcraft® Metal Surface Prep Wipes ZC-31-B	-
Motorcraft® Metal Brake Parts Cleaner PM-4-A, PM-4-B	-

LHD AWD/LHD RWD

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.