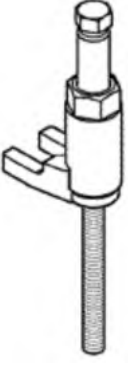


Engine - Enhanced Long Block

Special Tool(s) / General Equipment

 E234289	205-036 (T70P-4067-A) Wrench
	303-050 (T70P-6000) Lifting Bracket, Engine
	303-1518 Bracket, Engine Removal TKIT-2009C-F TKIT-2009C-ROW
	303-214 (T83T-6312-B) Wrench, Fan Clutch Nut
	310-230 Remover, Fuel Injector TKIT-2010FT-F TKIT-2010FT-ROW
Floor Crane	
Hose Clamp Remover/Installer	

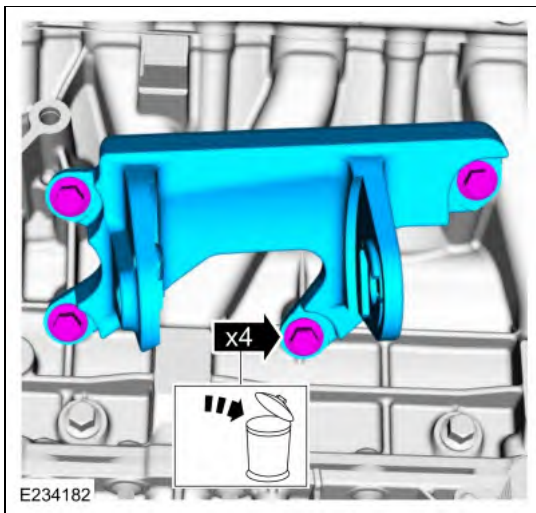
NOTE: This procedure assumes that the engine was removed using the recommended body off engine removal procedure. If it was necessary to remove the engine using the alternate body on engine removal procedure, some of the components in this procedure will have already been removed.

NOTE: During the repair or installation of fuel-related components, cap, tape or otherwise appropriately protect all fuel opening to prevent the ingress of dirt or other contamination. Remove caps, tape and other protective materials prior to installation.

NOTE: For EXPORT ONLY vehicles (outside US/Canada) an Export Supplement is provided and should be referenced to identify differences that can impact service procedures. Vehicles can be identified by referring to the underhood Vehicle Emission Control Information (VECI) label which states, "Not certified for US EPA or CARB Regulations".

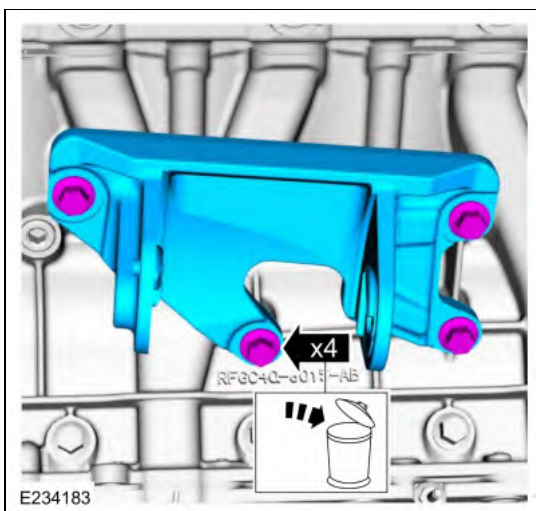
NOTE: Refer to the exploded view under the Engine Component View in the Description and Operation.

1. Remove the engine.
Refer to: Engine - Body Off (303-01B Engine - 6.7L Power Stroke Diesel, Removal).
Refer to: Engine - Body On (303-01B Engine - 6.7L Power Stroke Diesel, Removal).
2.
 - Position the engine on wood blocks as needed. Remove the ratchet strap and the floor crane.
 - Use the General Equipment: Floor Crane
 - Verify that the engine is stable on the wooden blocks.
3. **NOTICE:** Discard the engine mount bracket bolts and install new bolts or damage to the vehicle may occur. They are a torque-to-yield design and cannot be reused.
 - Remove the bolts and the LH engine mount bracket.
 - Discard the bolts.

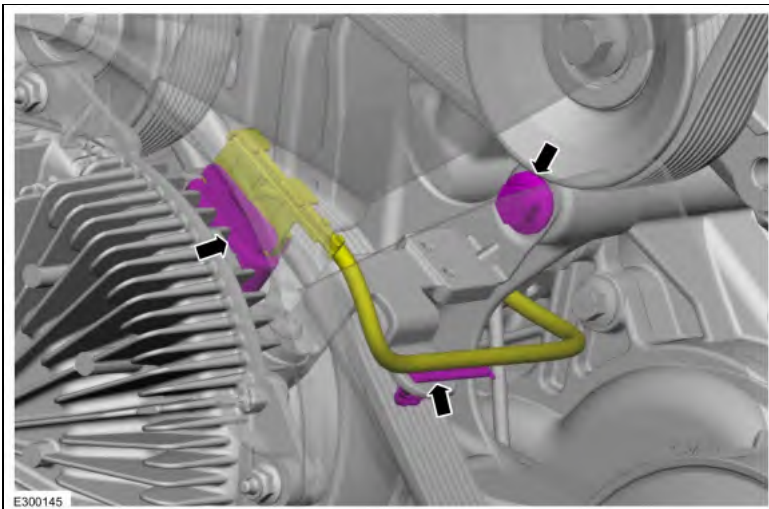


4. **NOTICE:** Discard the engine mount bracket bolts and install new bolts or damage to the vehicle may occur. They are a torque-to-yield design and cannot be reused.

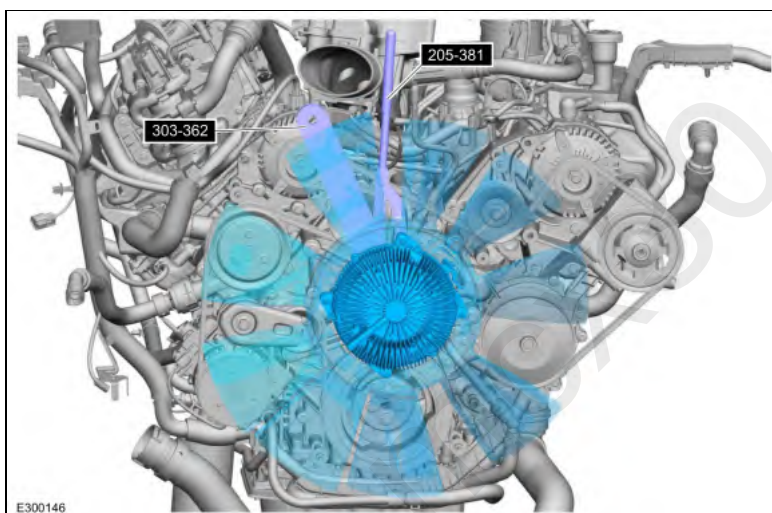
- Remove the bolts and the RH engine mount bracket.
- Discard the bolts.



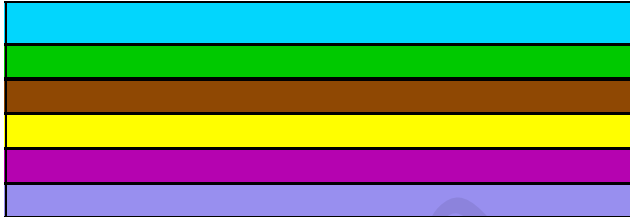
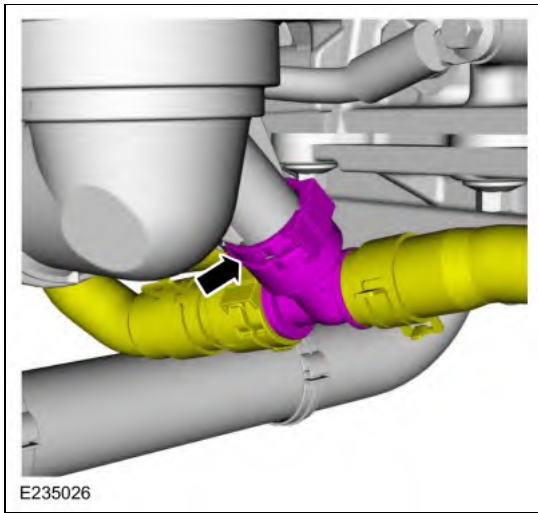
- 5.
- Disconnect the fan clutch electrical connector and the wire retainer.
 - Remove the fan clutch electrical connector bolt.



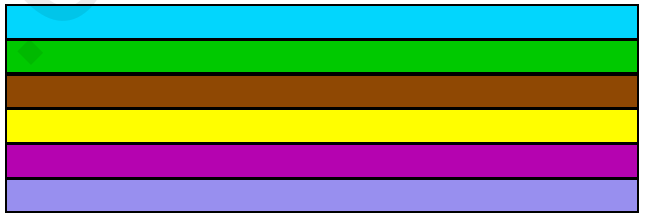
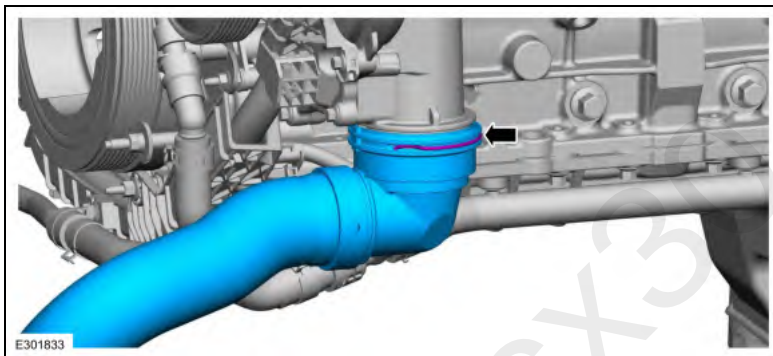
6. Using the special tools, remove the cooling fan assembly.
Use Special Service Tool: 205-036 (T70P-4067-A) Wrench, 303-214 (T83T-6312-B) Wrench, Fan Clutch Nut.



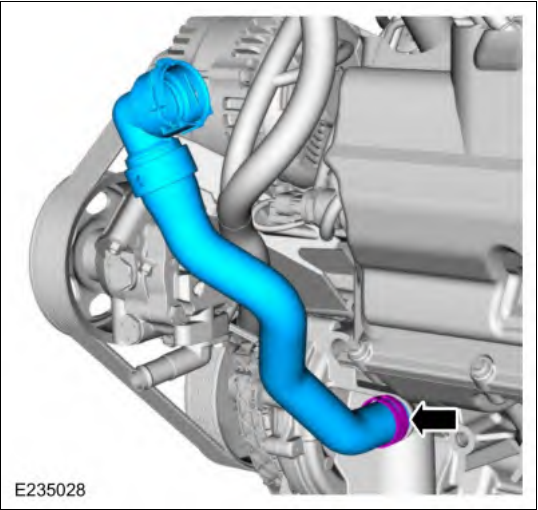
7. Remove the clip and disconnect the coolant hose.



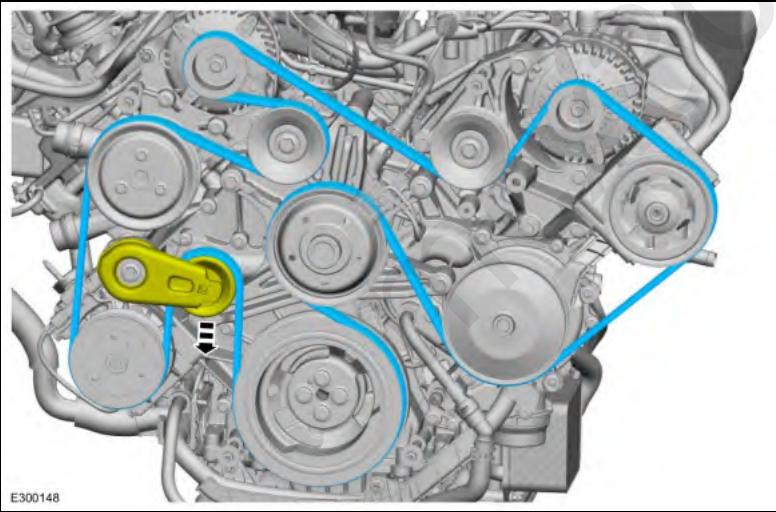
8. Remove the clip and the lower radiator hose.



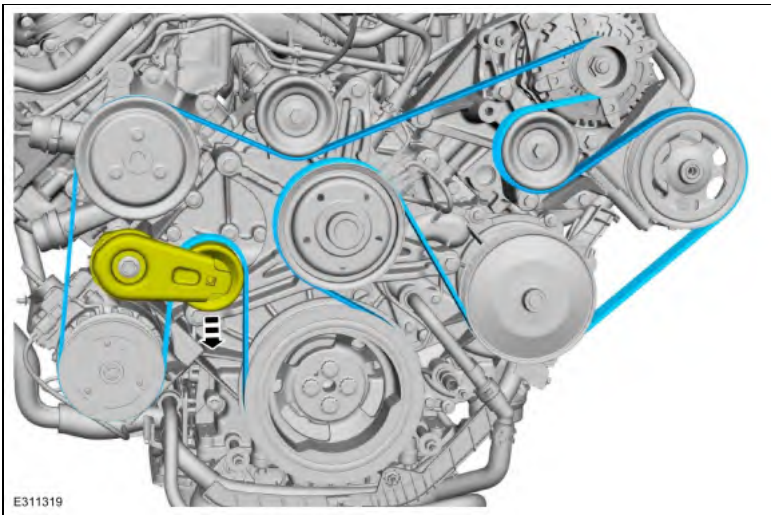
9. Remove the coolant engine fill hose.
Use the General Equipment: Hose Clamp Remover/Installer



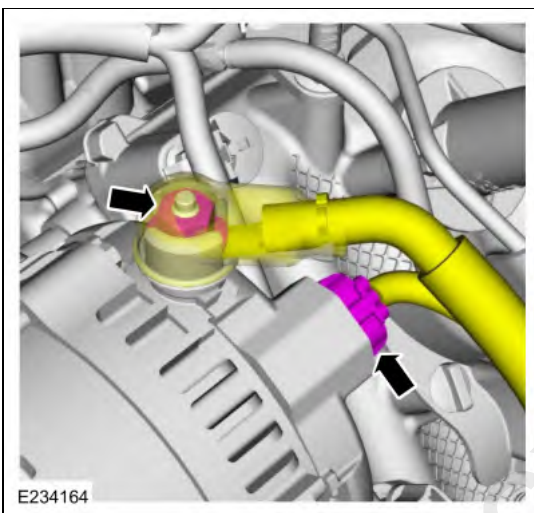
10. If equipped with dual generator, remove the accessory drive belt.



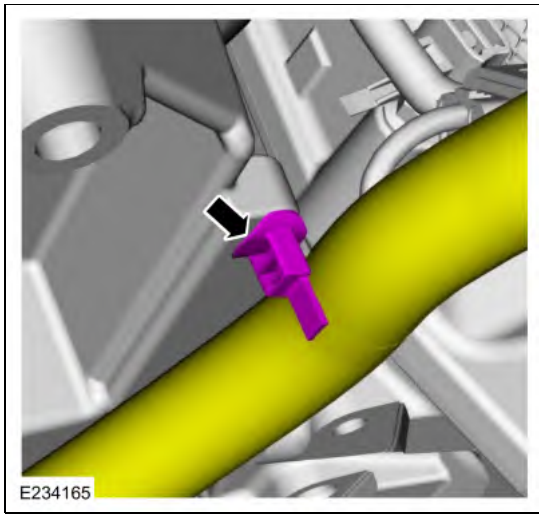
11. If equipped with single generator, remove the accessory drive belt.



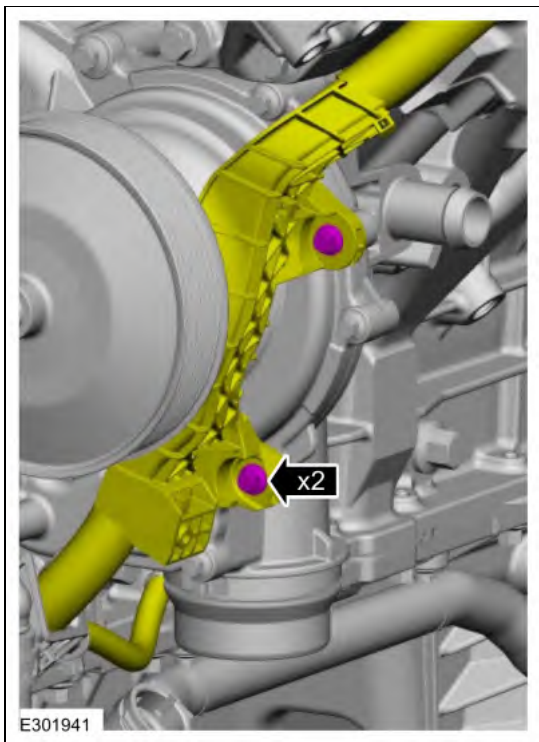
- 12.
- Position back the boot and remove the nut.
 - Disconnect the generator electrical connector.



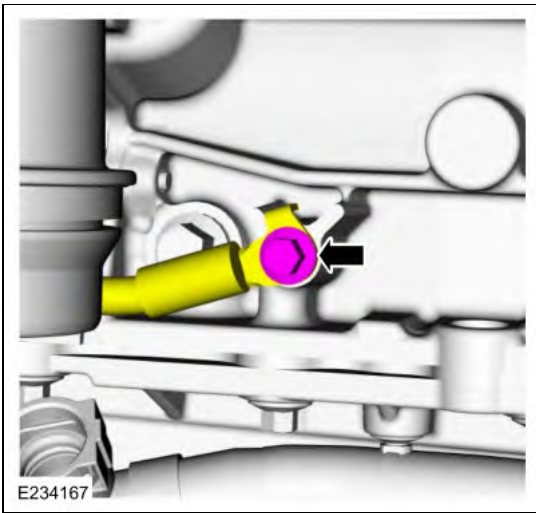
13. Disconnect the battery wire harness retainer from the bracket.



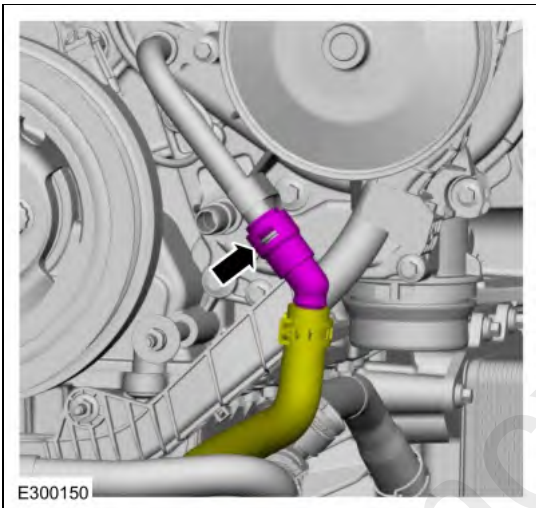
14. Remove the bolts from the battery wire harness.



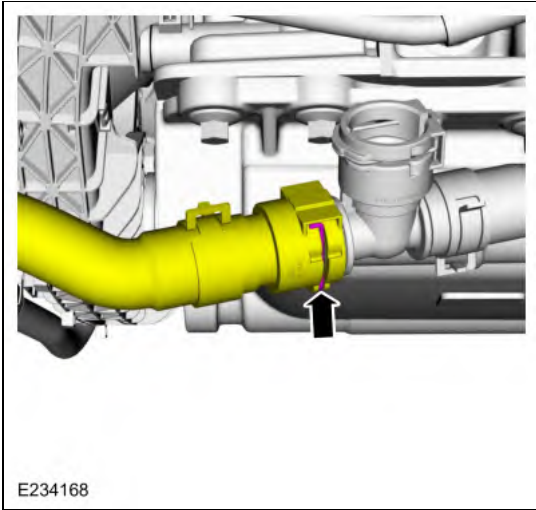
15. Remove the LH ground bolt.



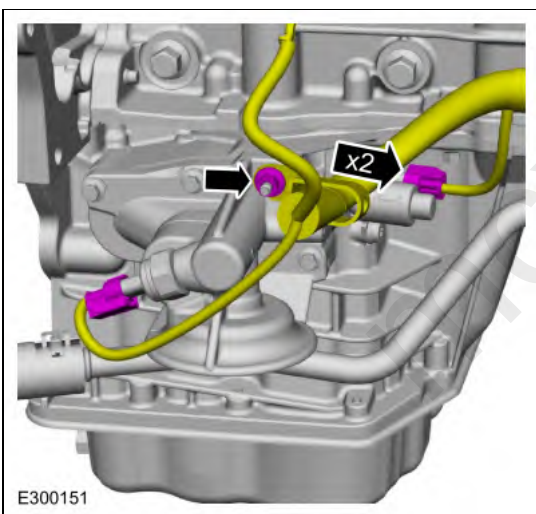
16. Disconnect the transmission oil cooler coolant hose.



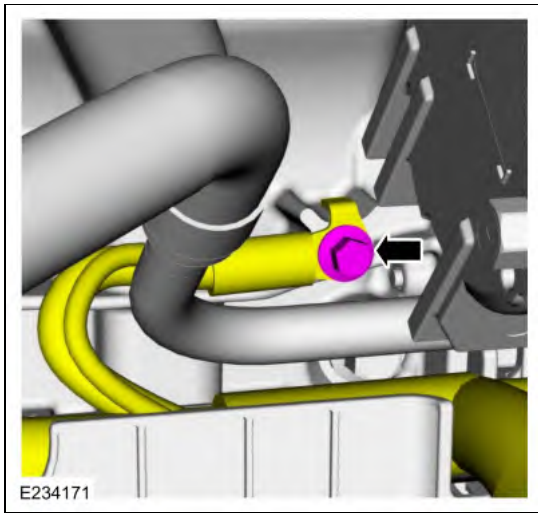
17. Remove the clip and disconnect the heater hose.



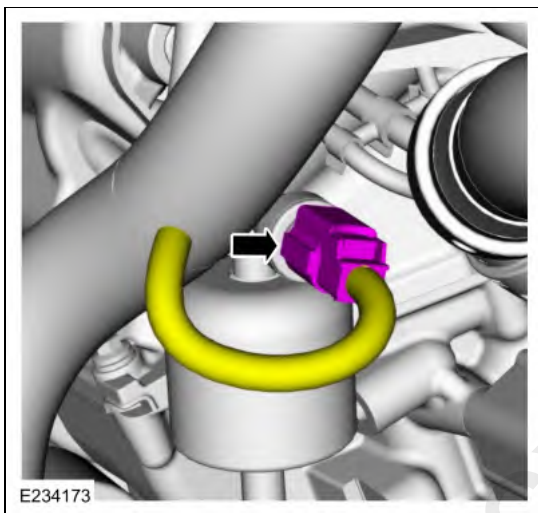
- 18.
- Disconnect the electrical connectors.
 - Remove the nut and position out the battery wire harness.



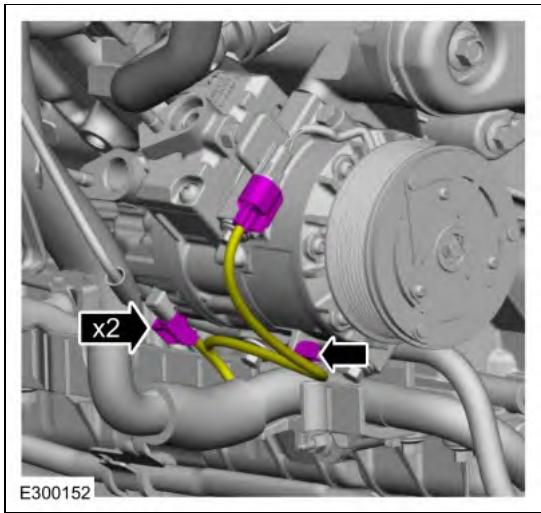
19. Remove the RH ground bolt.



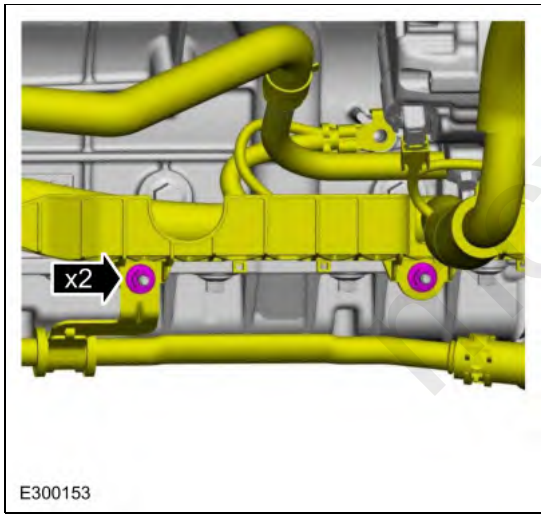
20. Disconnect the A/C pressure switch electrical connector.



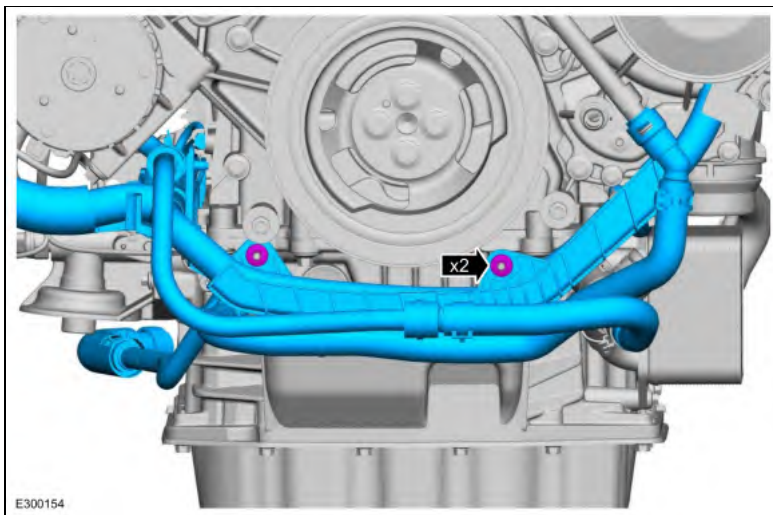
21. Disconnect the A/C electrical connectors and the wire retainer.



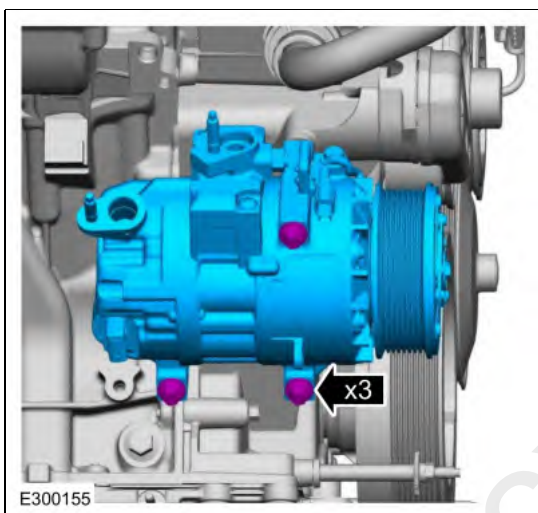
22. Remove the nuts, position out the coolant tube and the battery wire harness.



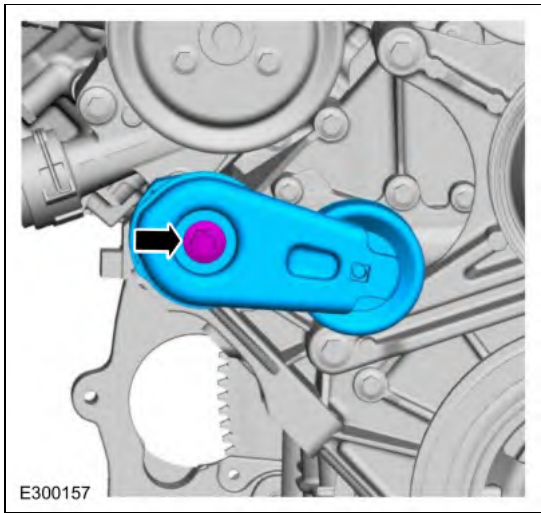
23. Remove the nuts, the coolant hoses and the battery wire harness.



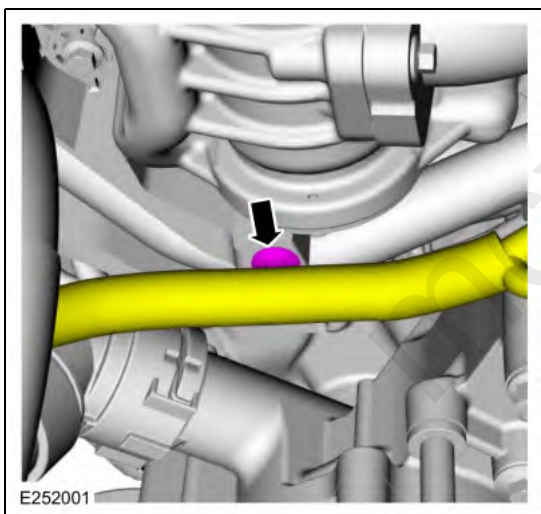
24. Remove the bolts and the A/C compressor.



25. Remove the bolt and the accessory drive belt tensioner.

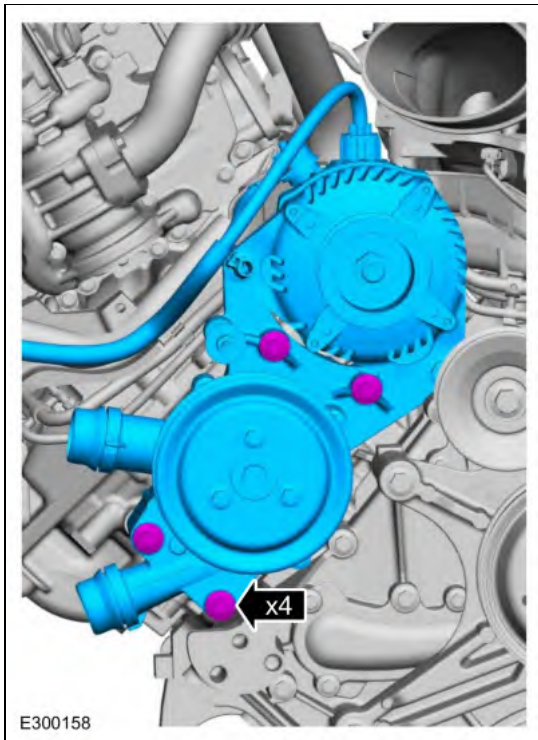


26. If equipped with dual generator, disconnect the wire harness retainer.

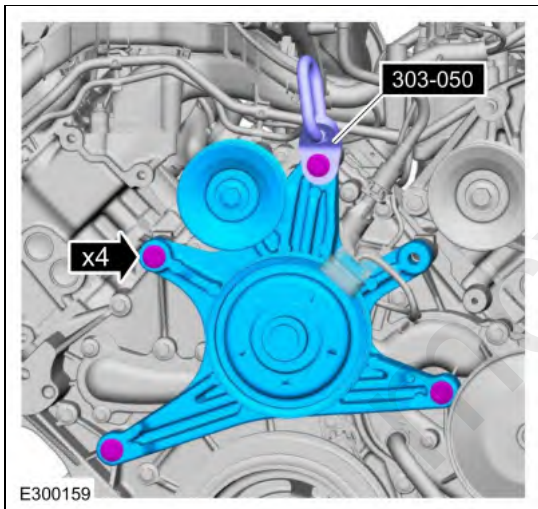


27. **NOTE:** Dual generator shown, single generator similar.

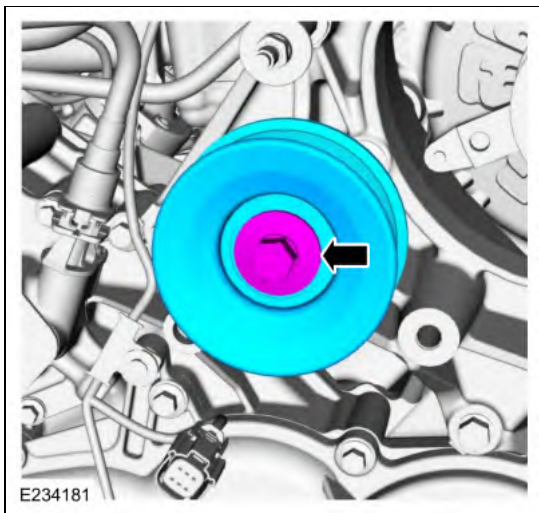
Remove the bolts and the secondary coolant pump.



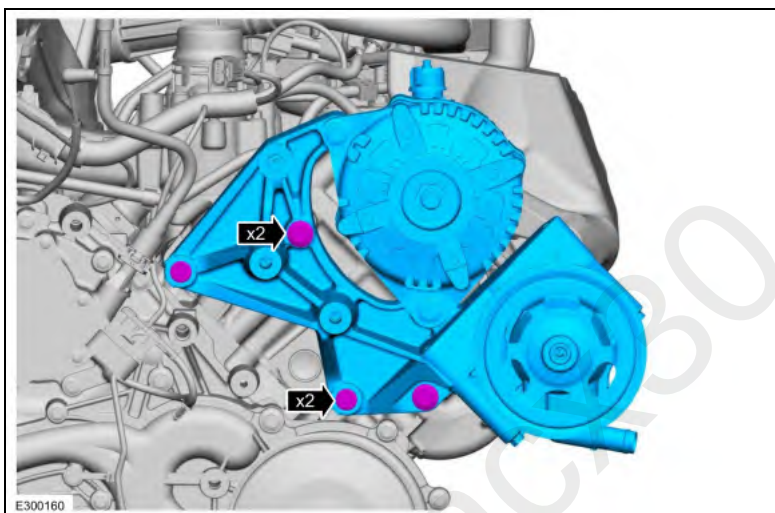
28. Remove the bolts, the engine lifting bracket and the cooling fan drive assembly.
Use Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.



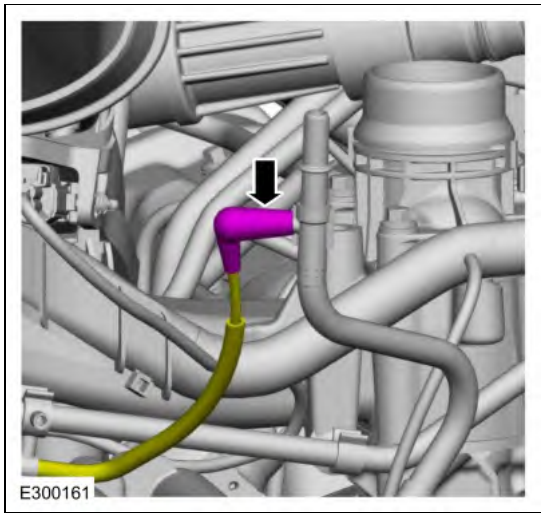
29. If equipped with dual generator, remove the idler pulley.



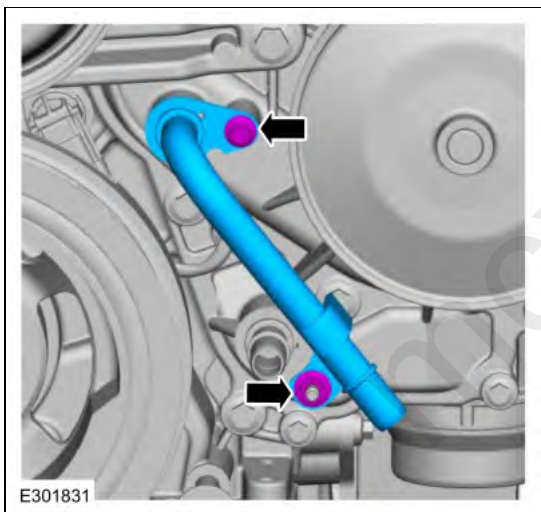
30. Remove the bolts and the power steering pump mounting bracket.



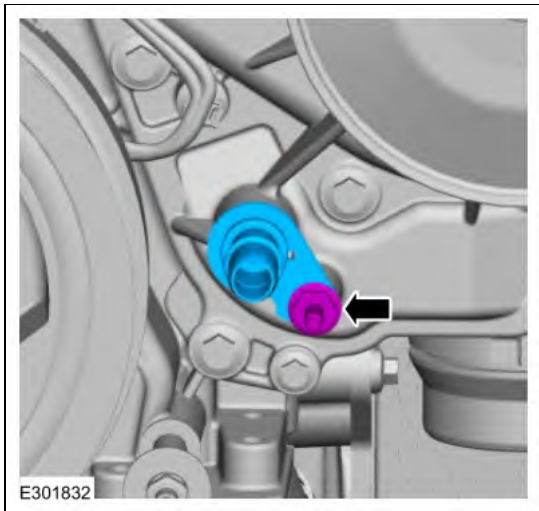
31. Disconnect the engine vacuum hose at the tee.



32. Remove the nut, the bolt and the transmission oil cooler coolant tube.

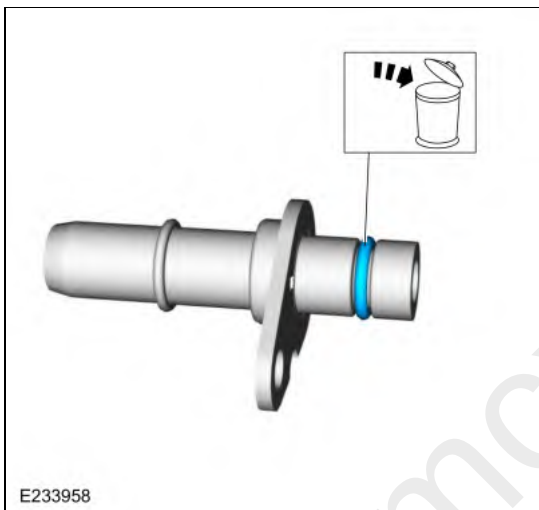


33. Remove the stud bolt and the transmission oil cooler coolant tube.

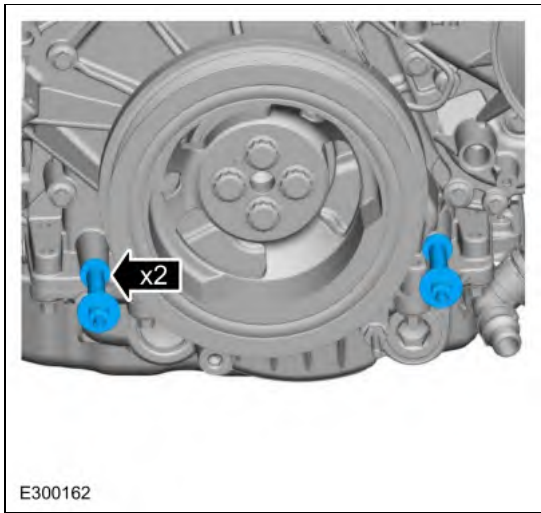


34. **NOTE:** Only one tube shown.

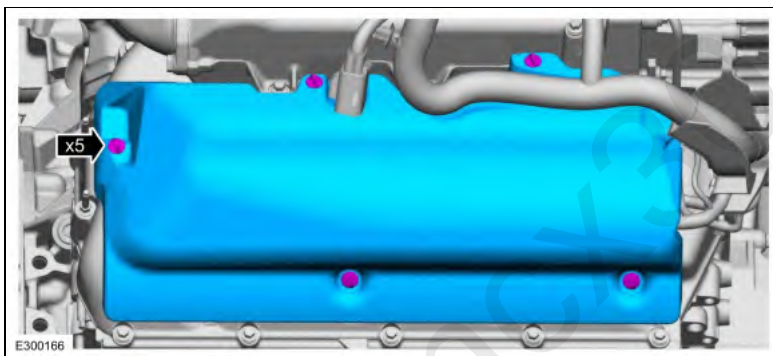
Remove and discard the transmission oil cooler coolant tube O-ring seals.



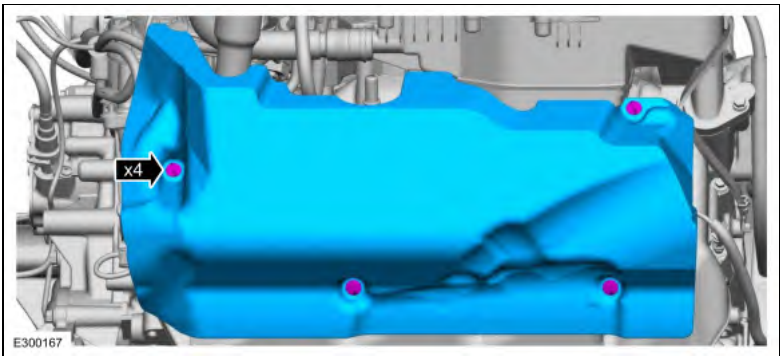
35. Remove the stator standoffs.



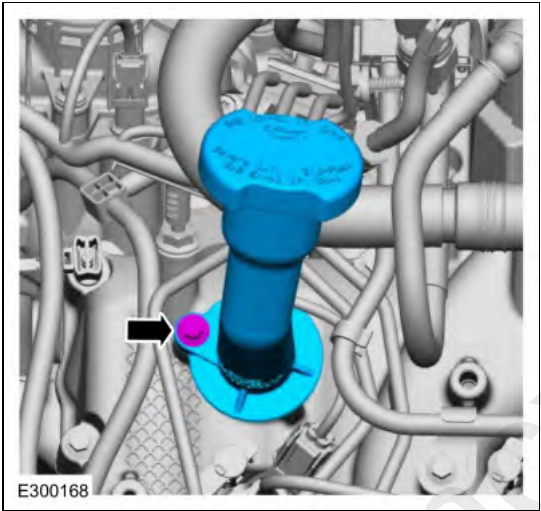
36. If equipped, remove the push pins and the RH sound shield.



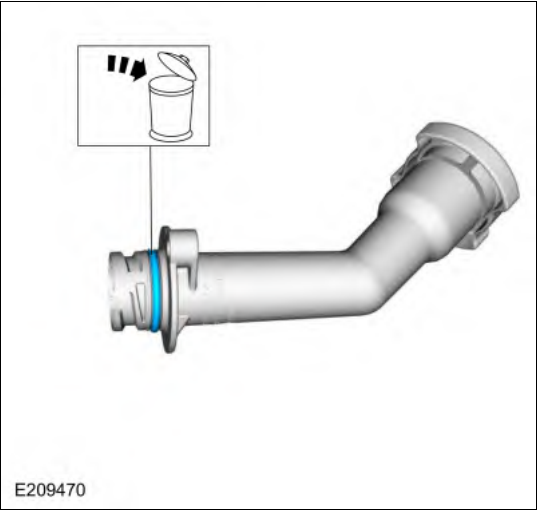
37. If equipped, remove the push pins and the LH sound shield.



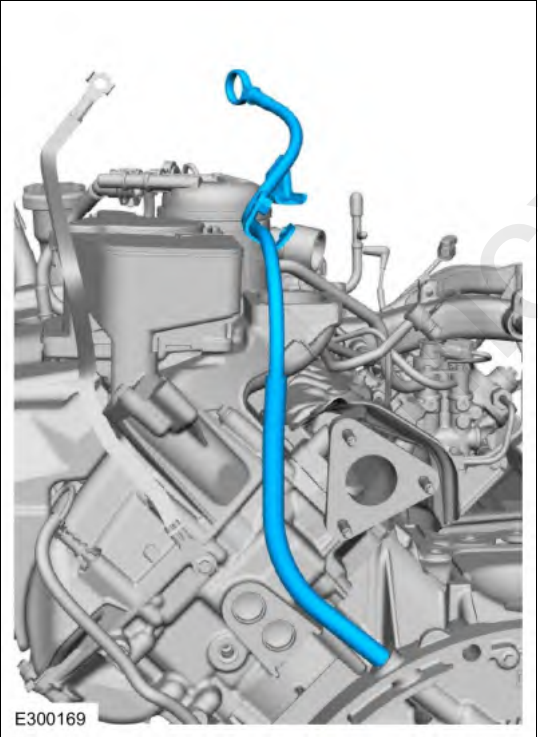
38. Remove the bolt and the oil fill pipe.



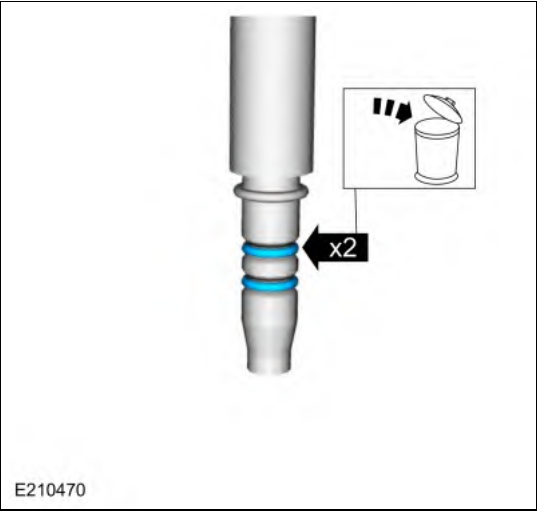
39. Remove and discard the oil fill pipe O-ring seal.



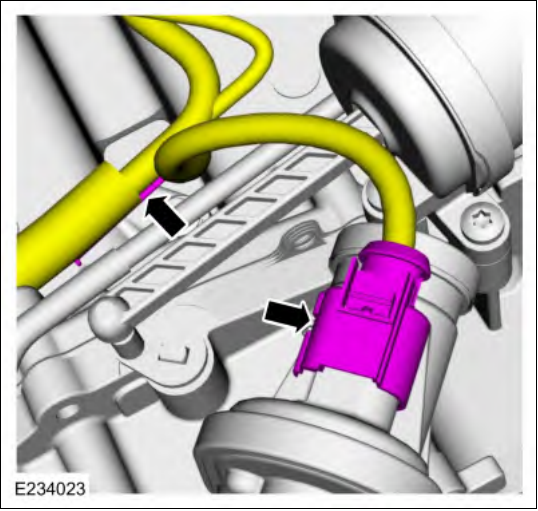
40. Remove the oil level indicator tube.



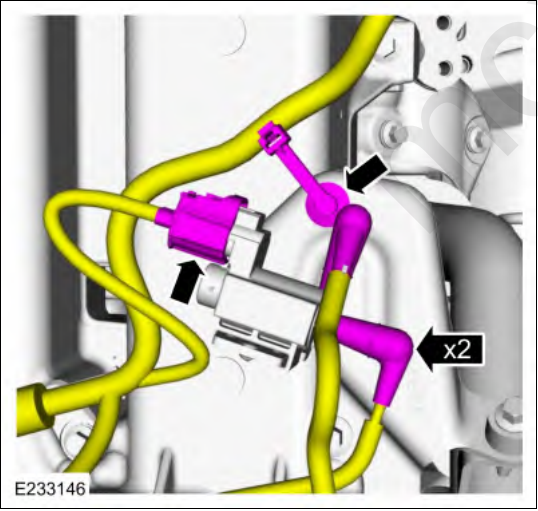
41. Remove and discard the oil level indicator tube O-ring seals.



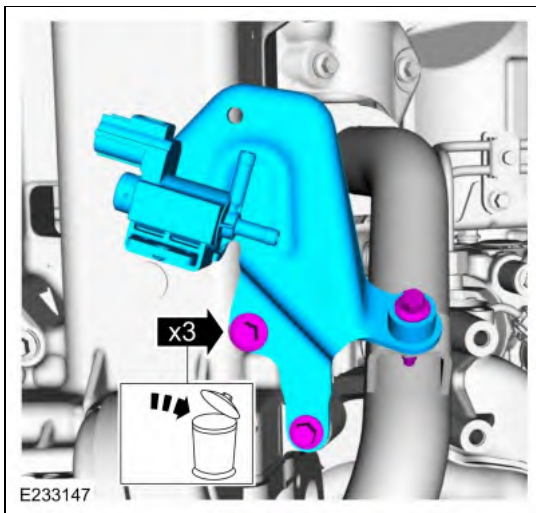
42. Disconnect the EGR valve electrical connector and the wire retainer.



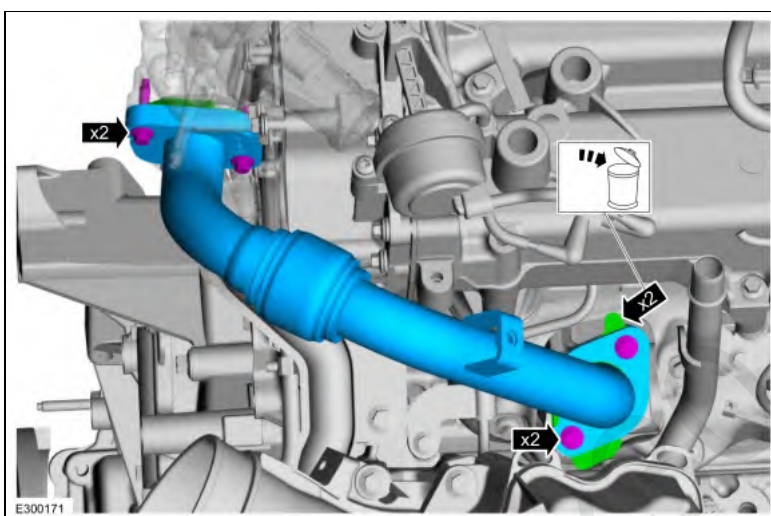
43. Disconnect the electrical connector and the vacuum hoses from the bypass valve solenoid. Detach the wire harness retainer.



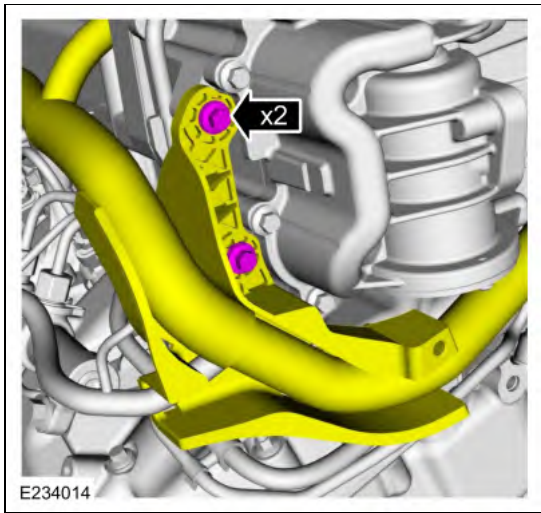
44. Remove the bolts and EGR cooler inlet tube bracket. Discard the bolts.



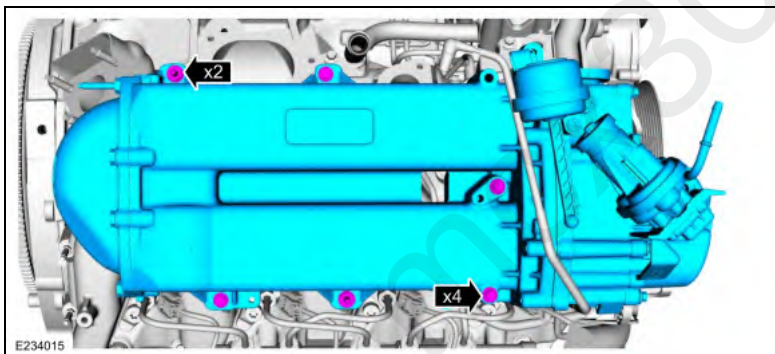
- 45.
- Remove the bolts and the EGR cooler inlet tube.
 - Remove and discard the gaskets.



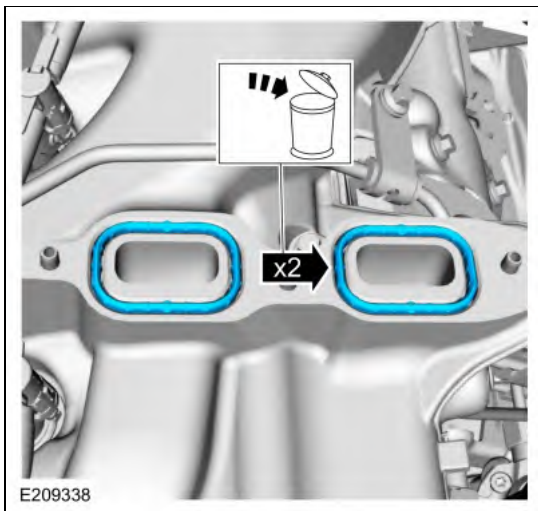
46. Remove the bolts and position aside the engine wire harness.



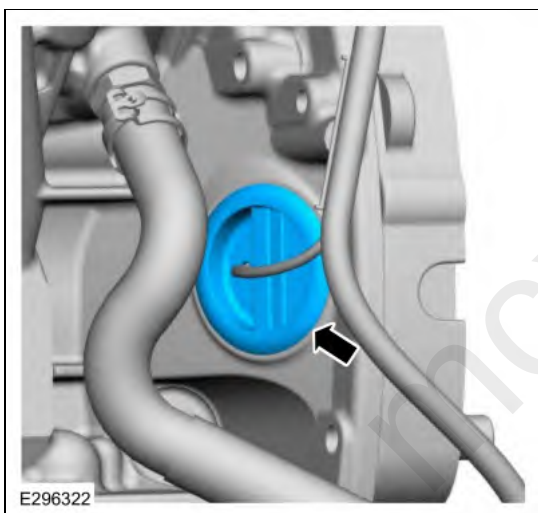
47. Remove the stud bolts, the bolts and the EGR cooler assembly.



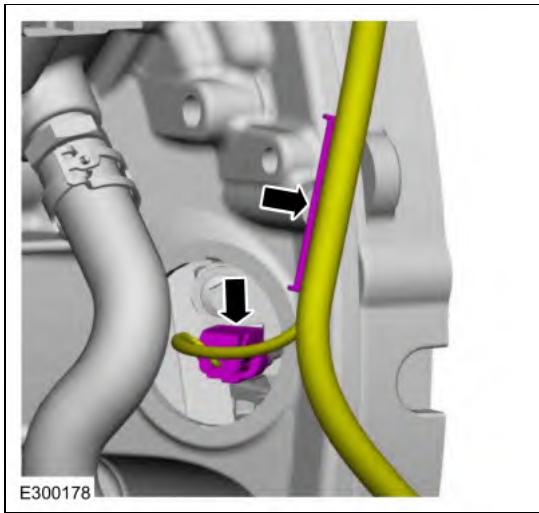
48. Remove and discard the EGR cooler gaskets.



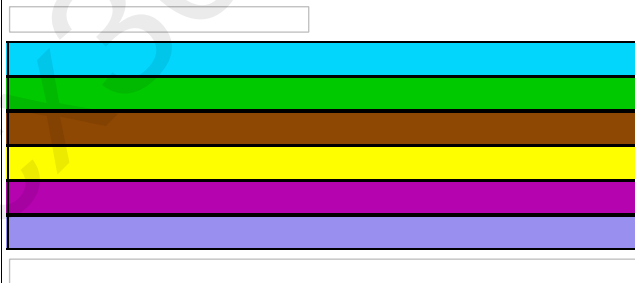
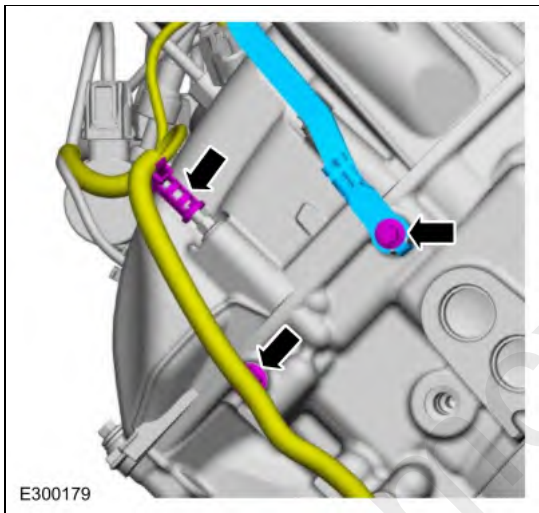
49. Leak test the EGR cooler.
Refer to: Exhaust Gas Recirculation (EGR) Cooler Leak Test (303-08B Engine Emission Control - 6.7L Power Stroke Diesel, General Procedures).
50. Remove the CKP sensor cover.



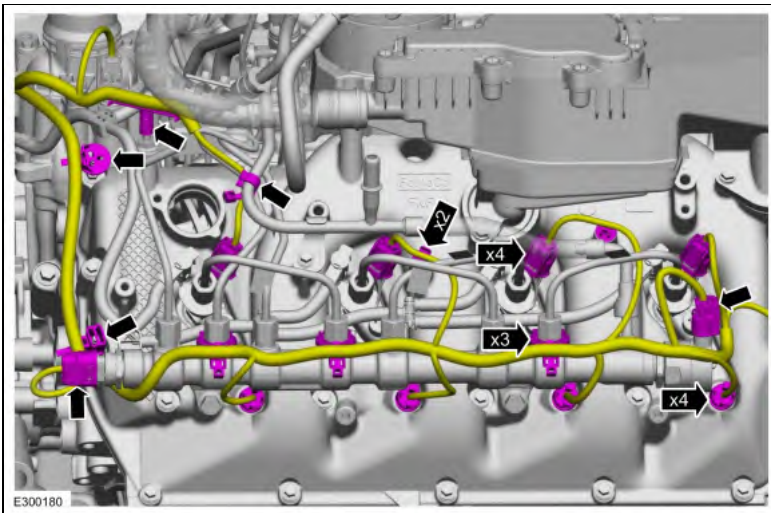
51. Disconnect the CKP sensor electrical connector and the wire retainer.



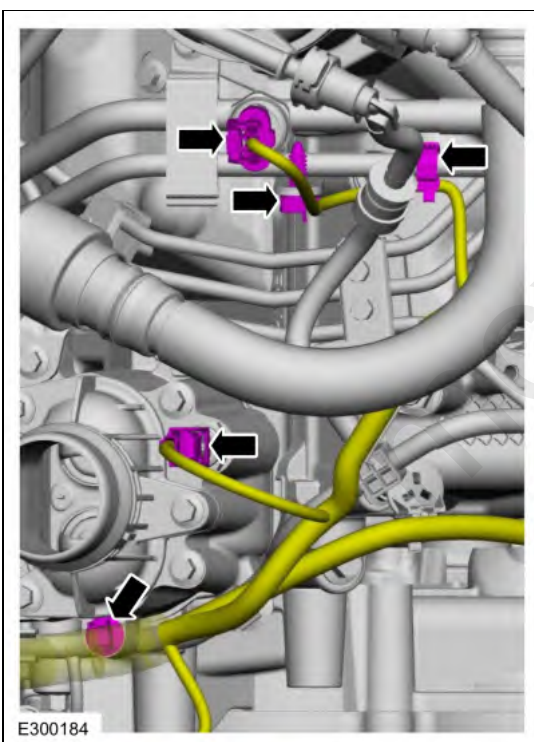
- 52.
- Remove the bolt and the ground strap.
 - Disconnect the wire retainers.



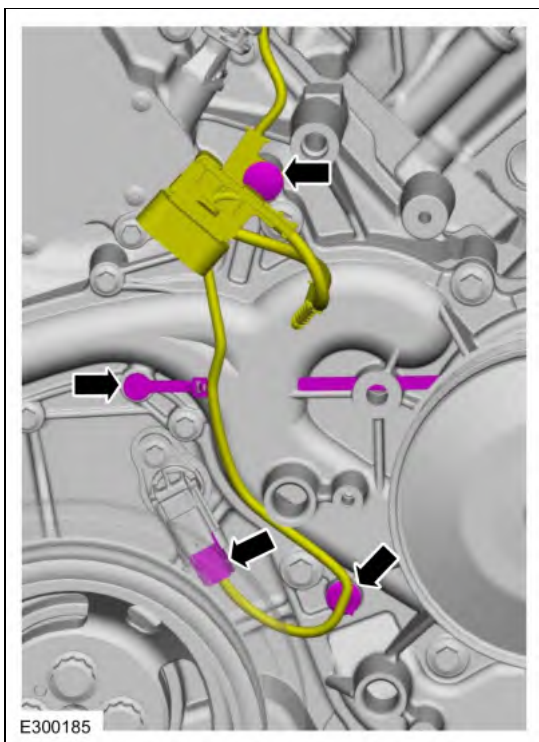
53. Disconnect the LH valve cover wiring.



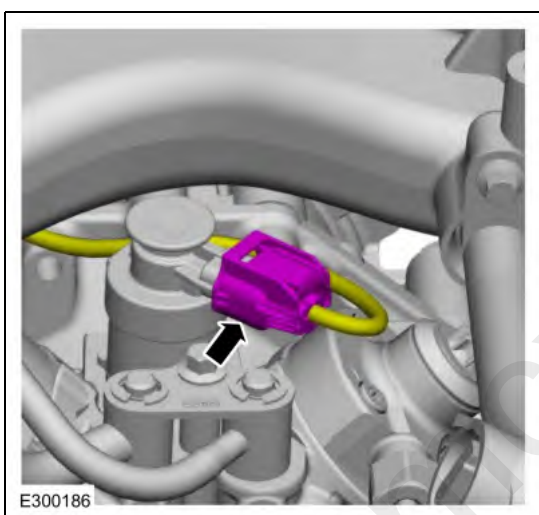
54. Disconnect the fuel pressure and temperature sensor, the ECT sensor electrical connectors and the wire retainers.



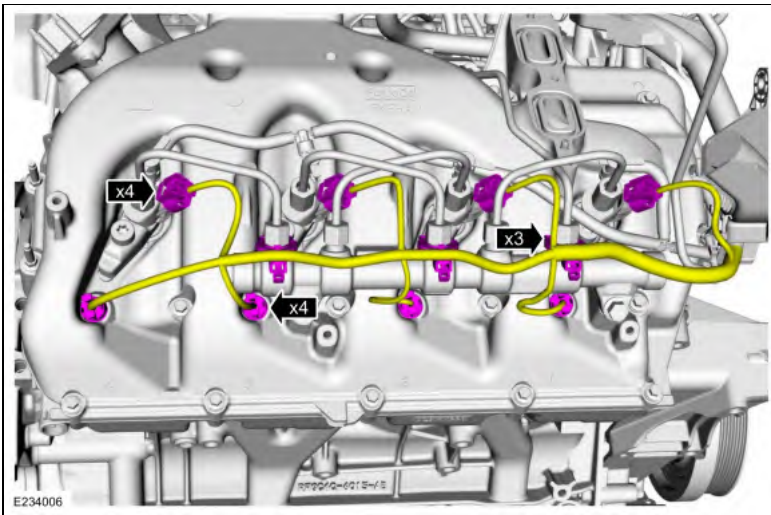
55. Disconnect the CMP sensor electrical connector and the wire retainers.



56. Disconnect the fuel volume control valve electrical connector.

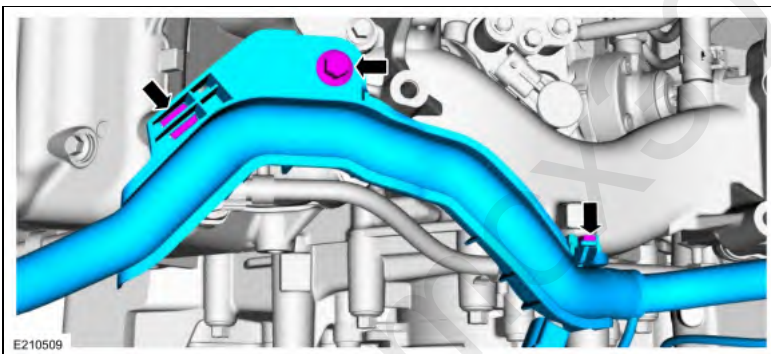


57. Disconnect the RH valve cover wiring.



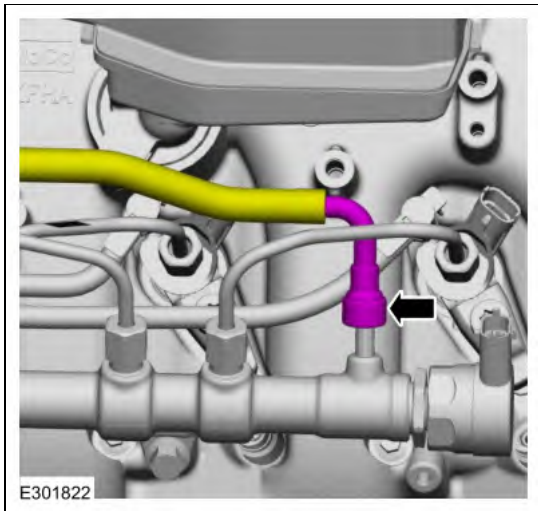
58.

- Remove the bolt and disconnect the engine wire harness retainers.
- Pull forward to disconnect the engine wire harness retainer and then pull up to disconnect the other retainer. Remove the engine wire harness from the engine.

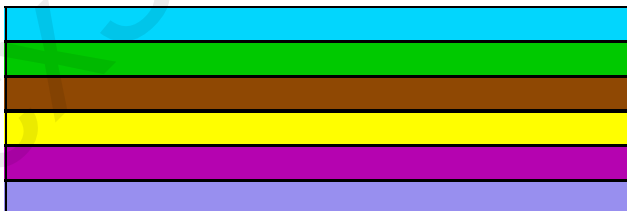
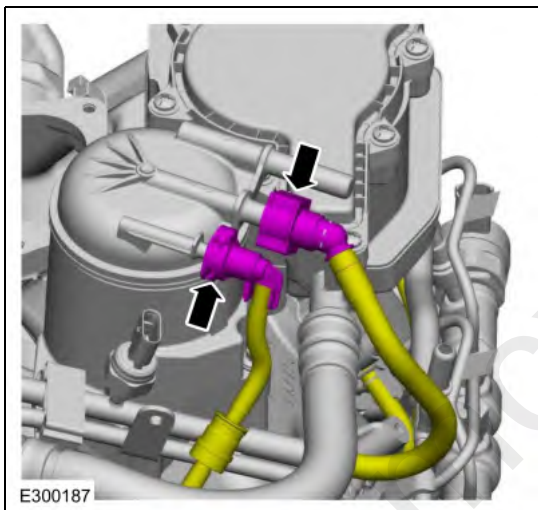


59. Disconnect the fuel injection pump hose from the fuel rail.

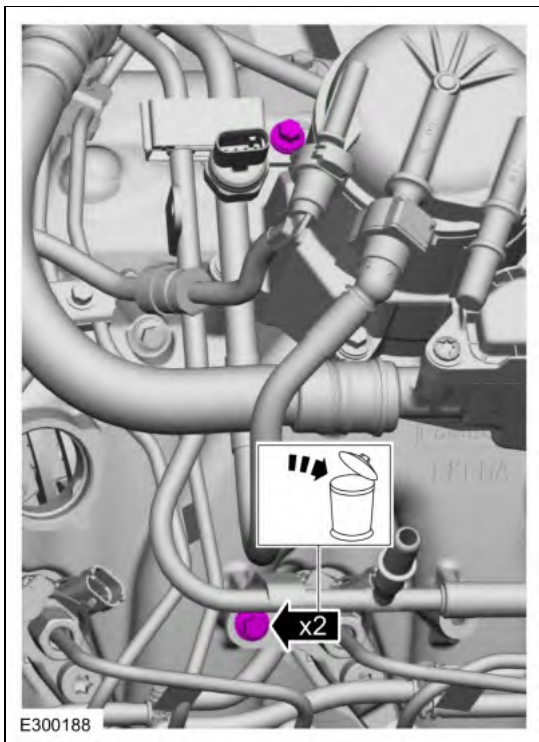
Refer to: Spring Lock Couplings (310-00B Fuel System - General Information - 6.7L Power Stroke Diesel, General Procedures).



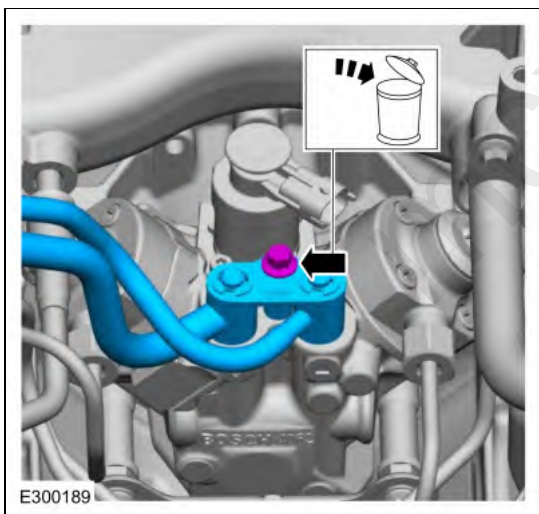
60. Disconnect the fuel injector return hose and the fuel injection pump supply tube.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information - 6.7L Power Stroke Diesel).



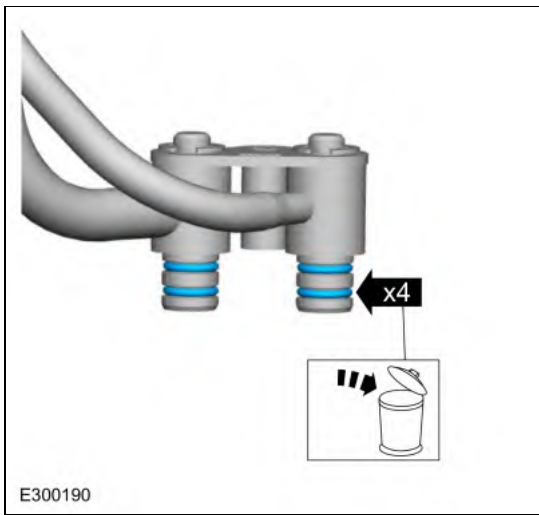
61. Remove and discard the fuel injection pump supply tube assembly bolts.



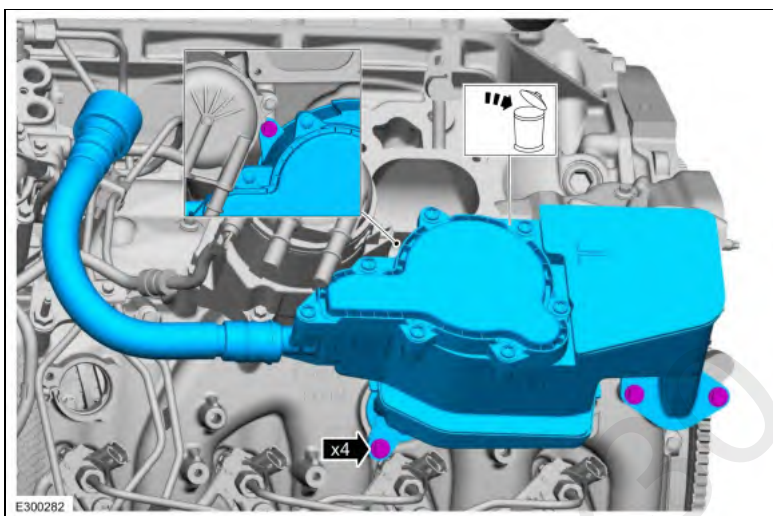
62. Remove the bolt and the fuel injection pump supply tube assembly. Discard the bolt.



63. Remove and discard the fuel injection pump supply tube assembly O-ring seals.

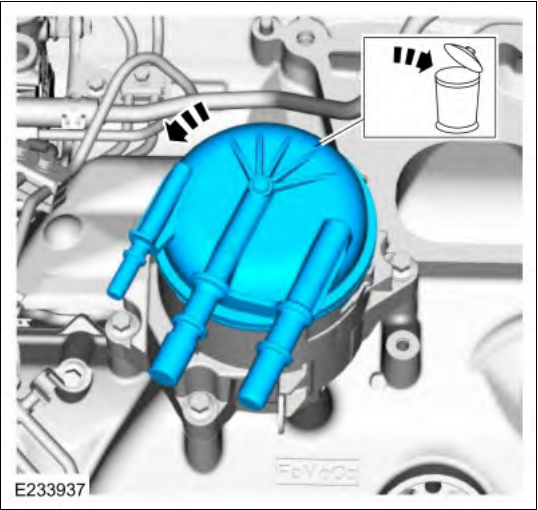


64. Remove the bolts and crankcase vent oil separator. Discard the crankcase vent oil separator.

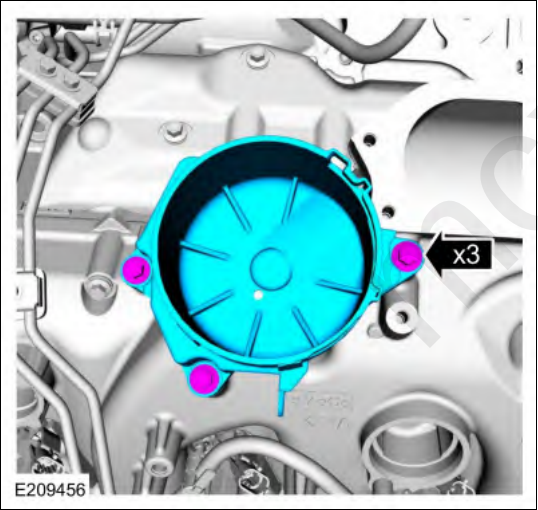


65. **NOTE:** Rotate the fuel filter counter clockwise to remove.

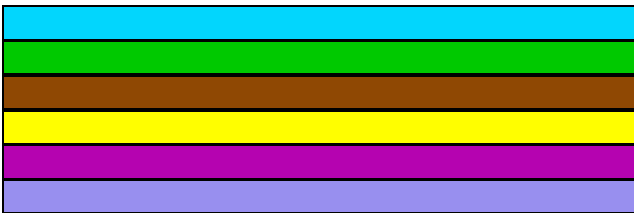
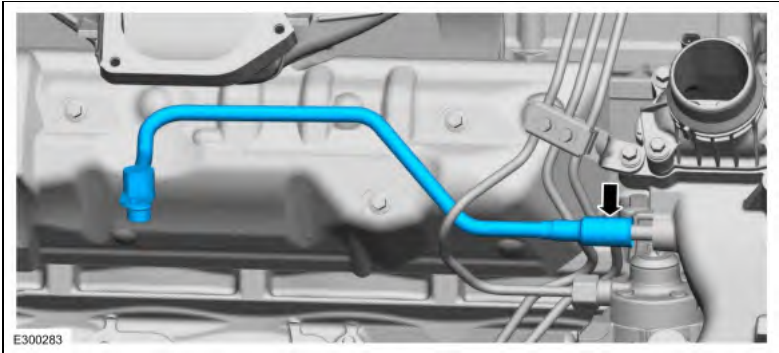
Remove and discard the secondary fuel filter.



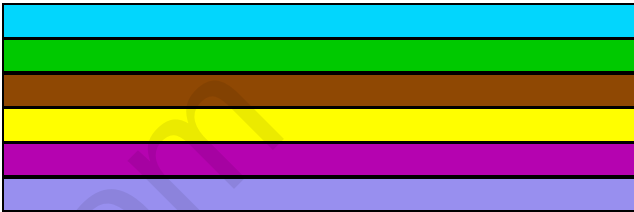
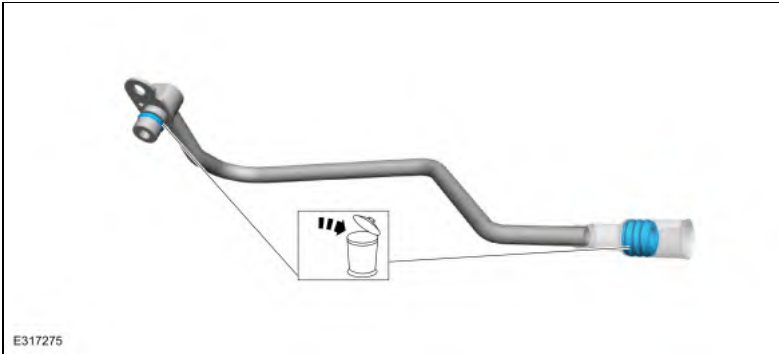
66. Remove the bolts and the secondary fuel filter bracket.



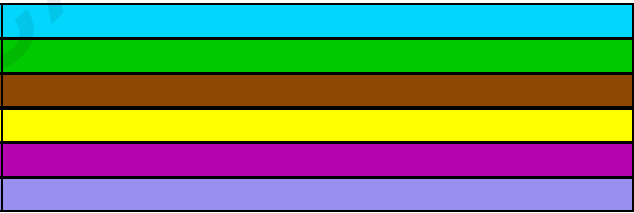
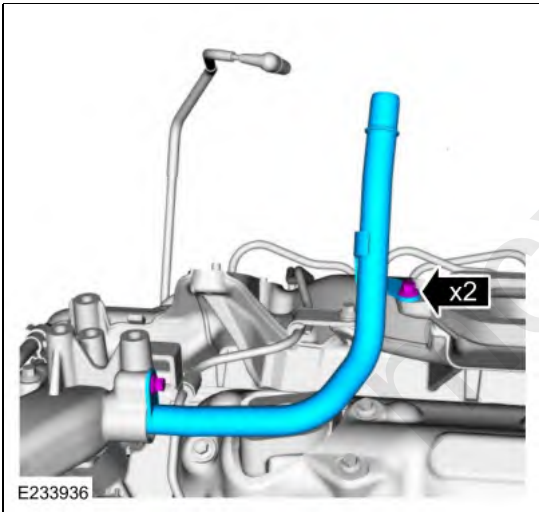
67. Remove the TC coolant tube.



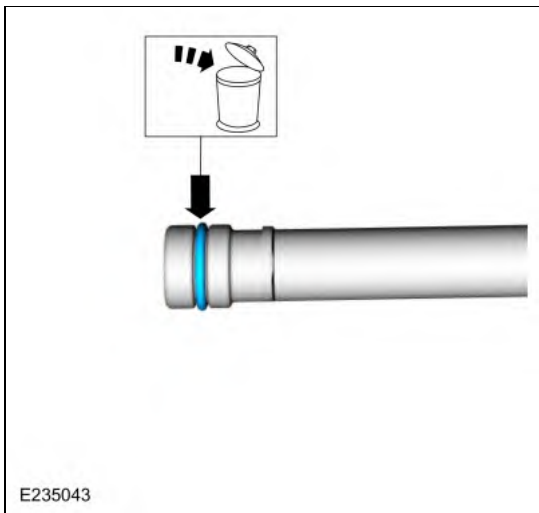
68. Remove and discard the O-ring seal and the grommet.



69. Remove the bolts and heater supply tube.



70. Remove and discard the heater supply tube O-ring seal.

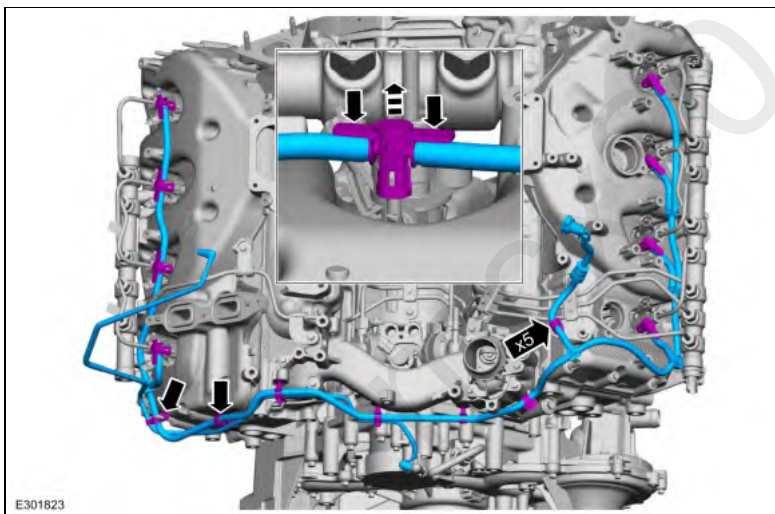


71.

- **NOTICE:** The center lock of the fuel injector return hose connectors must be pulled completely out before the connector can be removed from the fuel injector or damage may occur to the connector.

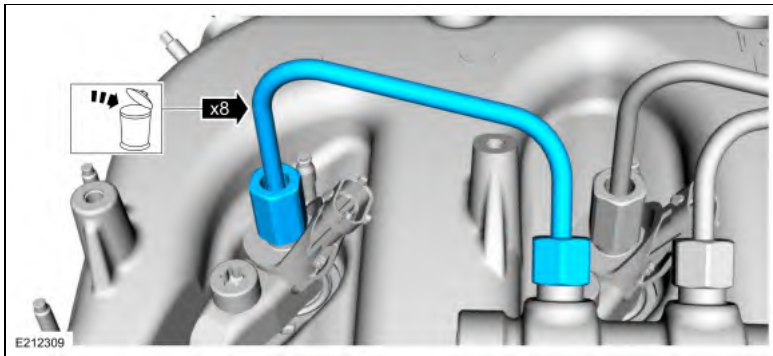
Push down on the tabs and pull up on the center of the fuel injector return hose fitting to unlock the fitting.

- Disconnect the fuel injector return hose fittings from the fuel injectors.
- Disconnect and remove the fuel injector return hose and vacuum hose assembly from the retaining clips.

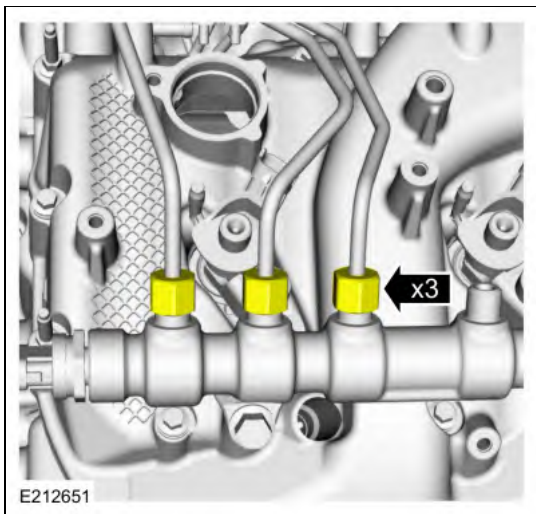


72. **NOTE:** Only one shown.

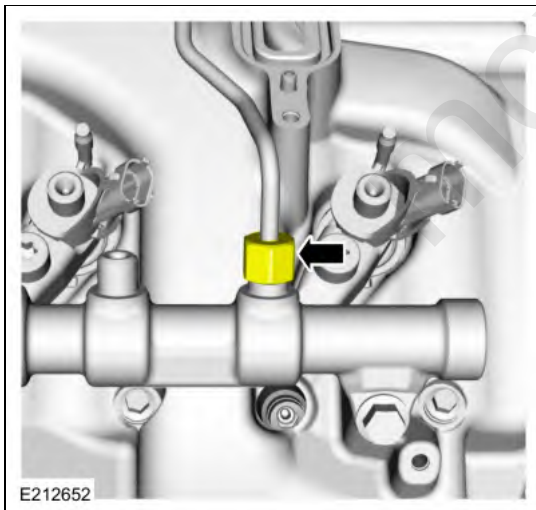
Remove and discard the fuel injector supply tubes.



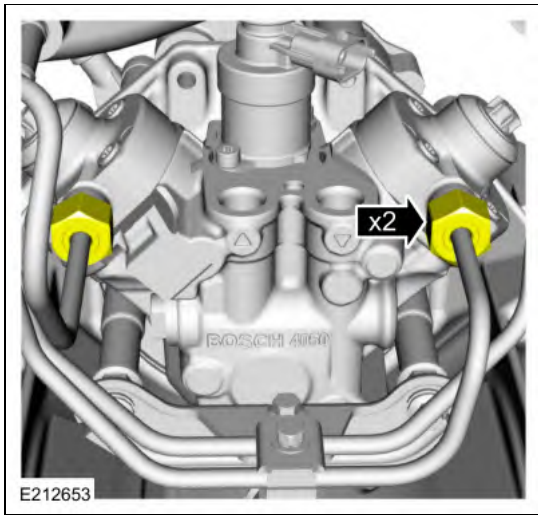
72. Disconnect the fuel rail supply tube assembly from the LH fuel rail.



73. Disconnect the fuel rail supply tube assembly from the RH fuel rail.

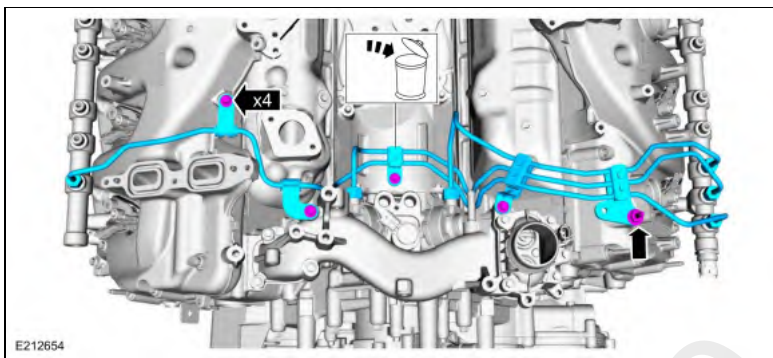


74. Disconnect the fuel rail supply tube assembly at the high-pressure fuel injection pump.

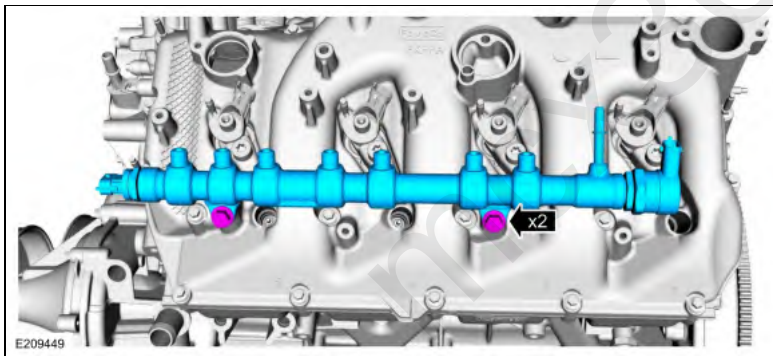


76.

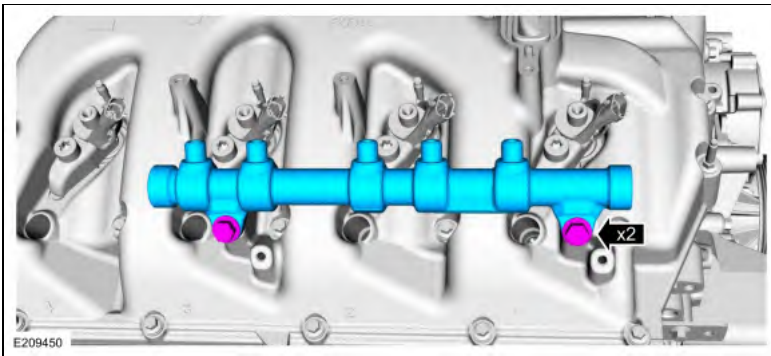
- Remove the bolts for the fuel rail supply tube assembly.
- Remove and discard the fuel rail supply tube assembly.



77. Remove the bolts and the LH fuel rail.

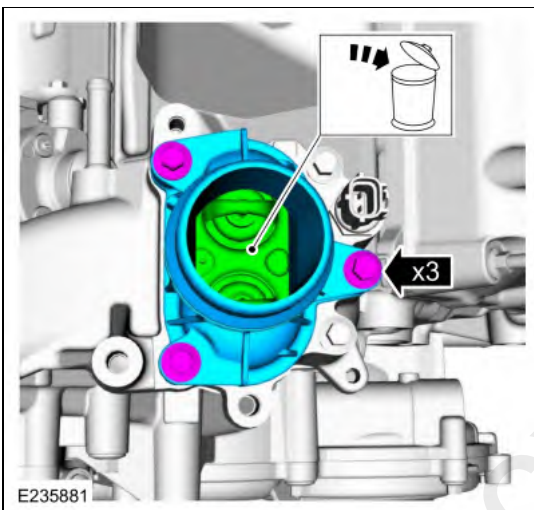


78. Remove the bolts and the RH fuel rail.

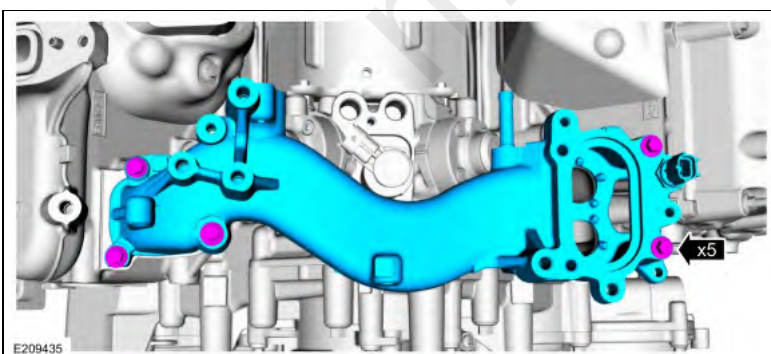


79. **NOTE:** Note the different lengths of the bolts.

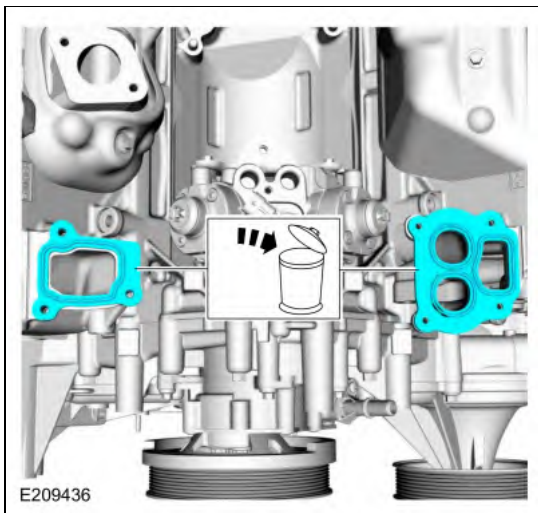
- Remove the bolts and the thermostat housing.
- Remove and discard the thermostat.



80. Remove the bolts and the coolant crossover manifold.



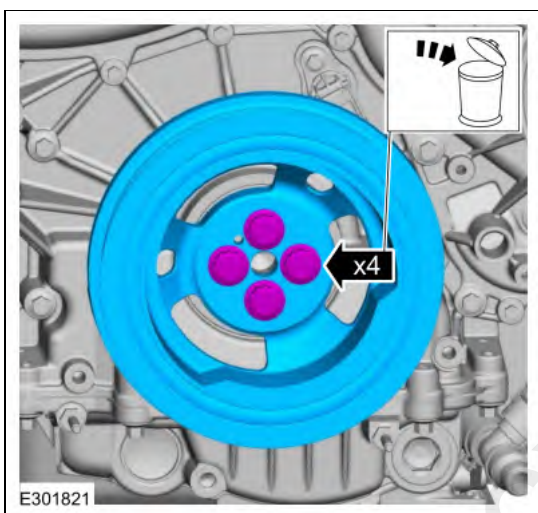
81. Remove and discard the coolant crossover manifold gaskets.



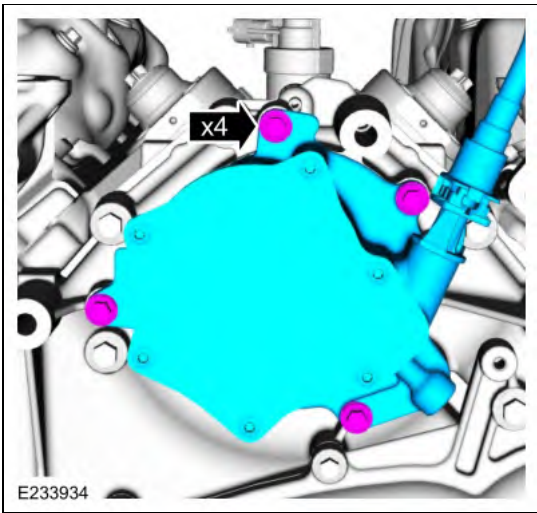
82. **WARNING:** Support the vibration damper during mounting bolt removal. The damper can slide off the nose of the crankshaft. Failure to follow this instruction may result in serious personal injury.

NOTICE: To prevent engine damage, always install new bolts when installing the crankshaft pulley.

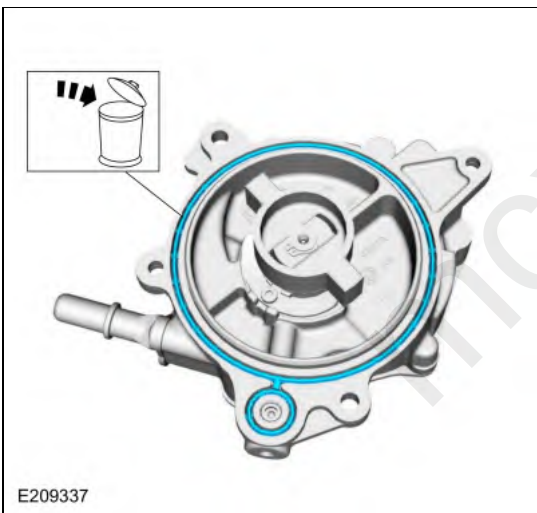
- Remove the bolts and the crankshaft pulley.
- Discard the bolts.



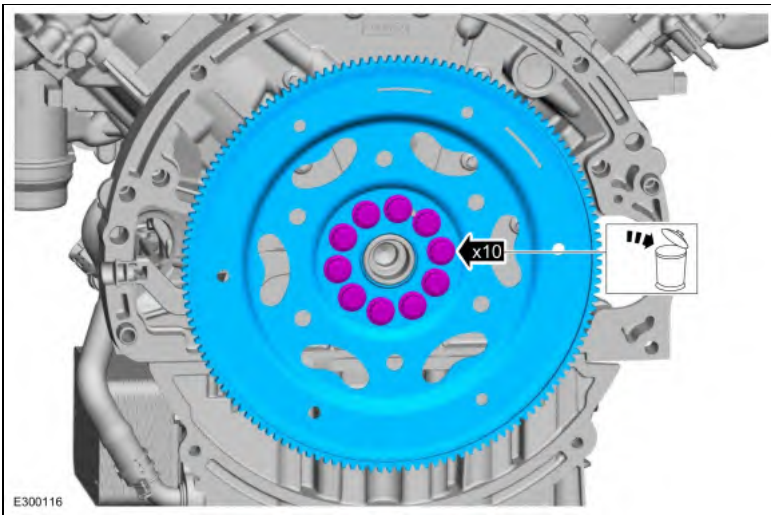
83. Remove the bolts and the vacuum pump.



84. Remove and discard the vacuum pump gasket.

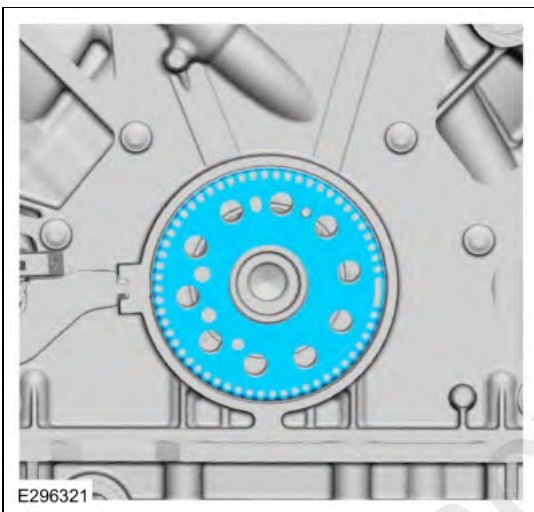


- 85.
- Remove the bolts and the flexplate.
 - Discard the bolts.

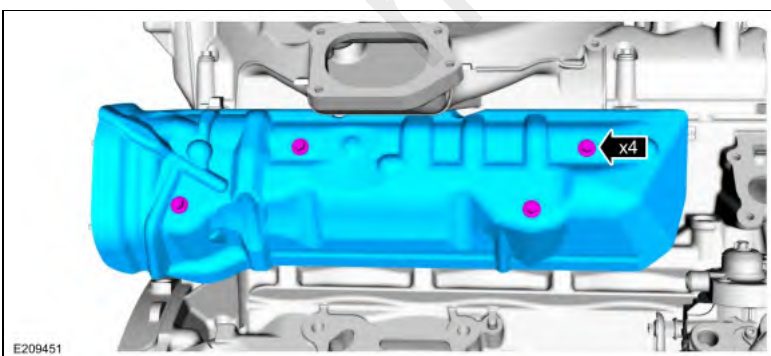


86. **NOTICE:** Do not use magnetic screwdrivers or other magnetic tools around the CKP sensor and the crankshaft sensor pulse ring or damage to the components may occur.

Remove the crankshaft sensor pulse ring.



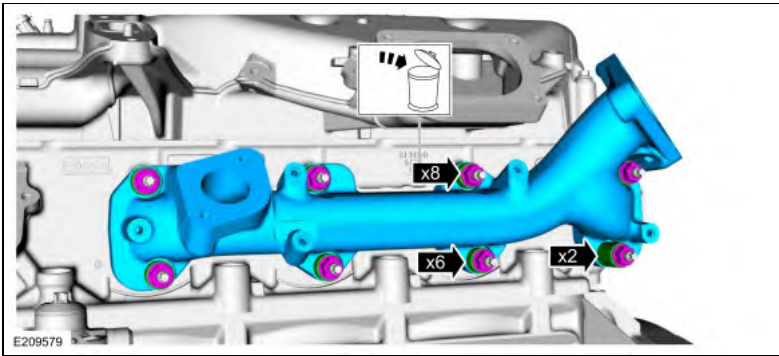
87. Remove the bolts and the LH exhaust manifold heat shield.



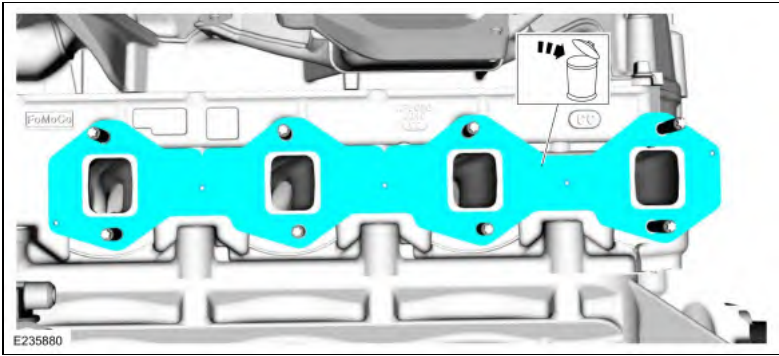
88. Remove the bolts and the RH exhaust manifold heat shield.

92. **NOTE:** Mark the location of the spacers before removal.

- Remove the nuts, the spacers and the RH exhaust manifold.
- Discard the nuts.

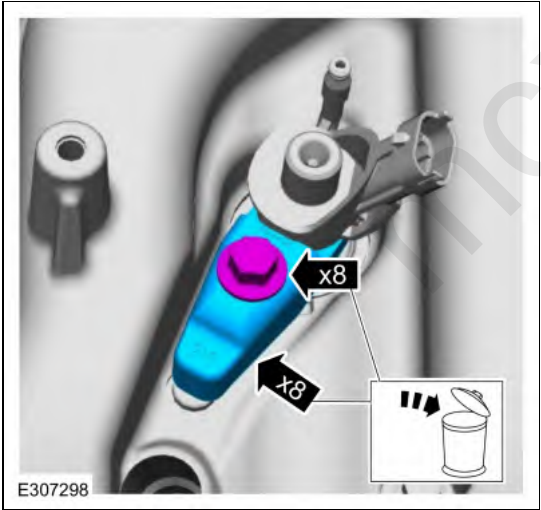


93. Remove and discard the exhaust manifold gasket.



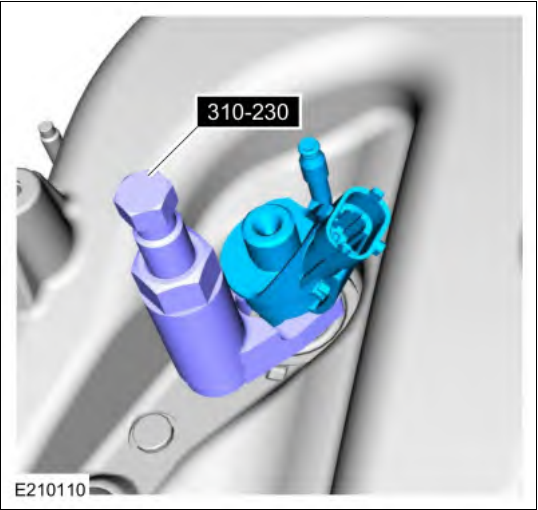
94. **NOTE:** The fuel injector hold-down clamp bolts are torque-to-yield and cannot be reused.

- Remove and discard the fuel injector bolts.
- Remove and discard the fuel injector hold-downs.



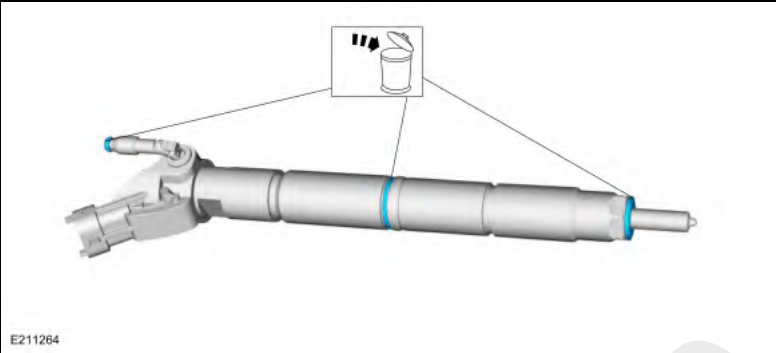
95. **NOTE:** Mark the location of the fuel injector prior to removal.

- Install the special tool to the fuel injector and fully hand-tighten the special tool mounting bolt.
Use Special Service Tool: 310-230 Remover, Fuel Injector.
- Install the push bolt and tighten to remove the fuel injector.
- Remove the special tool mounting bolt and the lower portion of the special tool. Remove the fuel injector.



96. **NOTE:** Only one fuel injector shown.

Remove and discard the O-ring seals and the copper combustion gasket.

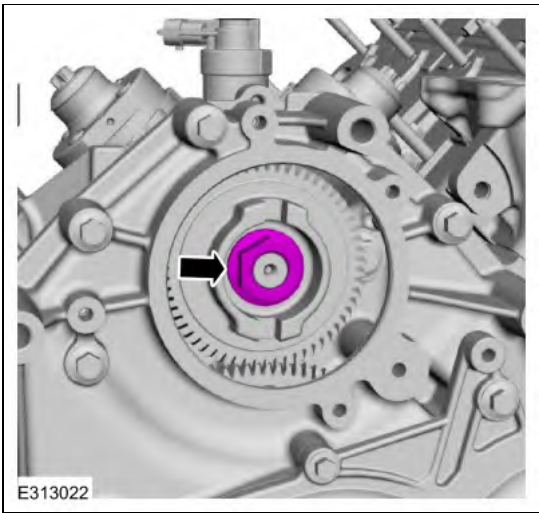


97. **NOTE:** Only one glow plug shown.

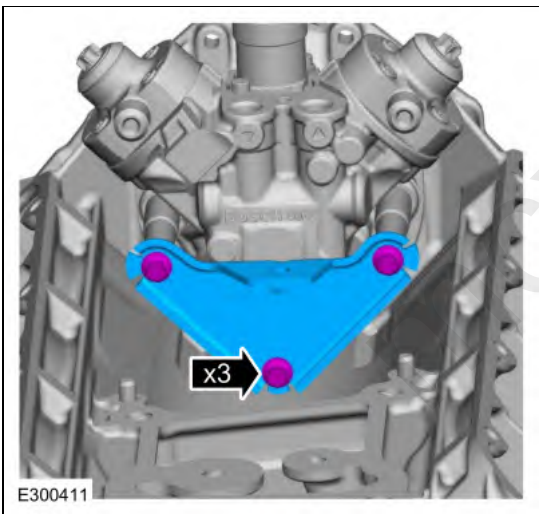
Remove the glow plugs.



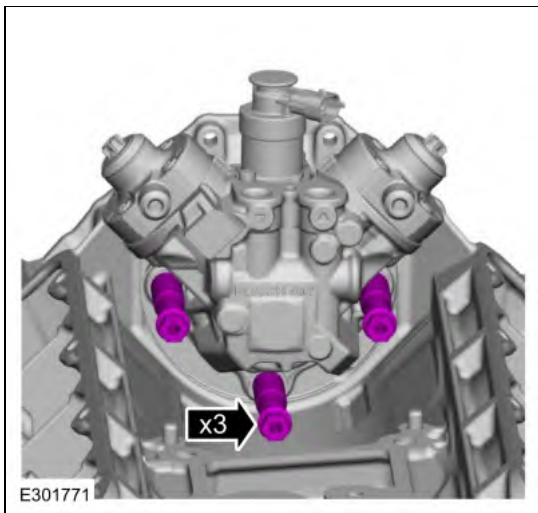
98. Remove the high-pressure fuel injection pump drive gear nut.



99. Remove the bolts and the fuel rail supply tube bracket.



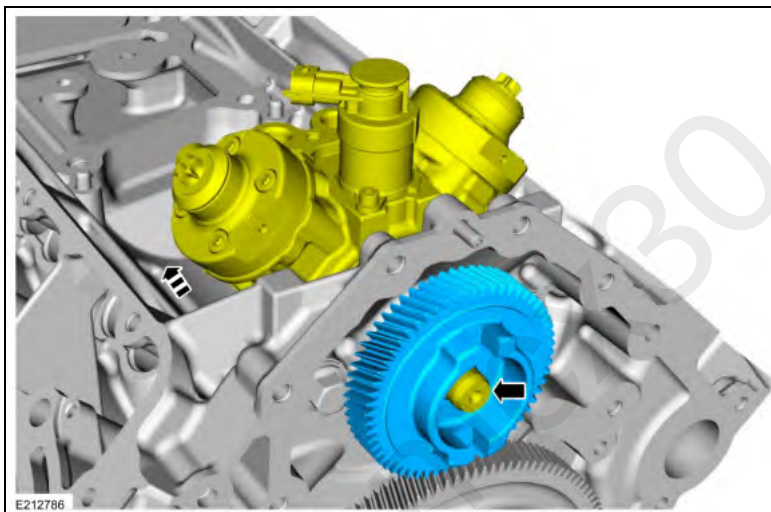
100. Remove the high-pressure fuel injection pump spacers.



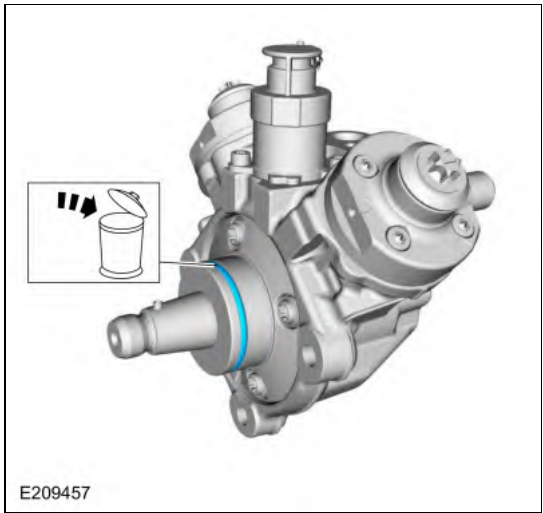
101. **NOTICE:** Do not pry against the mating surface of the high-pressure fuel injection pump or damage to the high-pressure fuel injection pump may occur.

NOTE: Engine front cover removed for clarity.

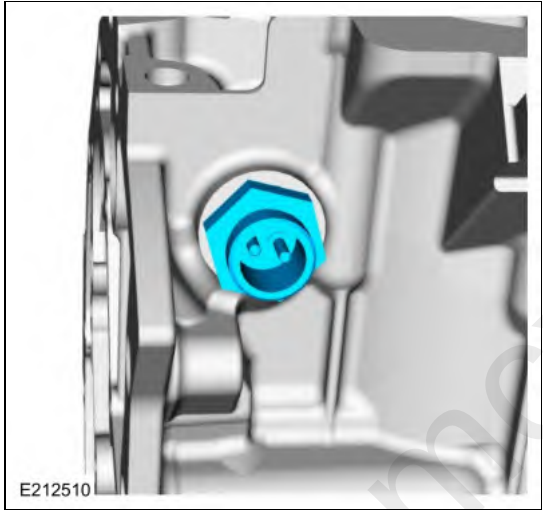
Position the high-pressure fuel injection pump rearward until the gear contacts the cylinder block. Using a mallet, tap the high-pressure fuel injection pump shaft to free the gear from the pump. Remove the high-pressure fuel injection pump and drive gear.



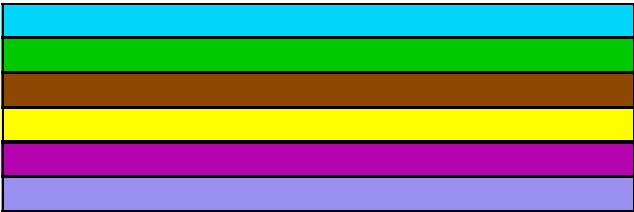
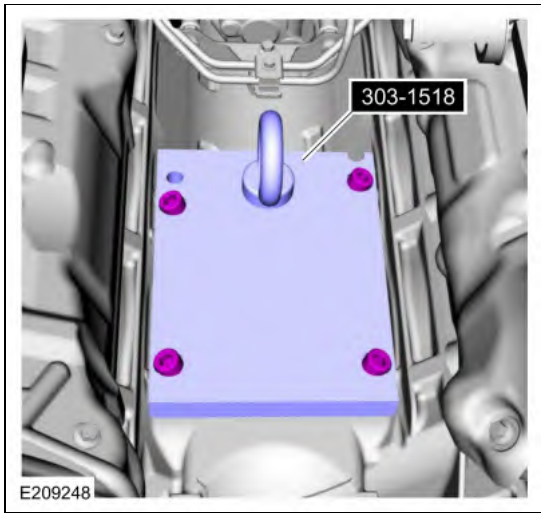
102. Remove and discard the high-pressure fuel injection pump O-ring seal.



103. If equipped, remove the block heater.



104. Using the floor crane, remove the engine from the wooden blocks.
Use the General Equipment: Floor Crane
105. Remove Special Service Tool: 303-1518 Bracket, Engine Removal.



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