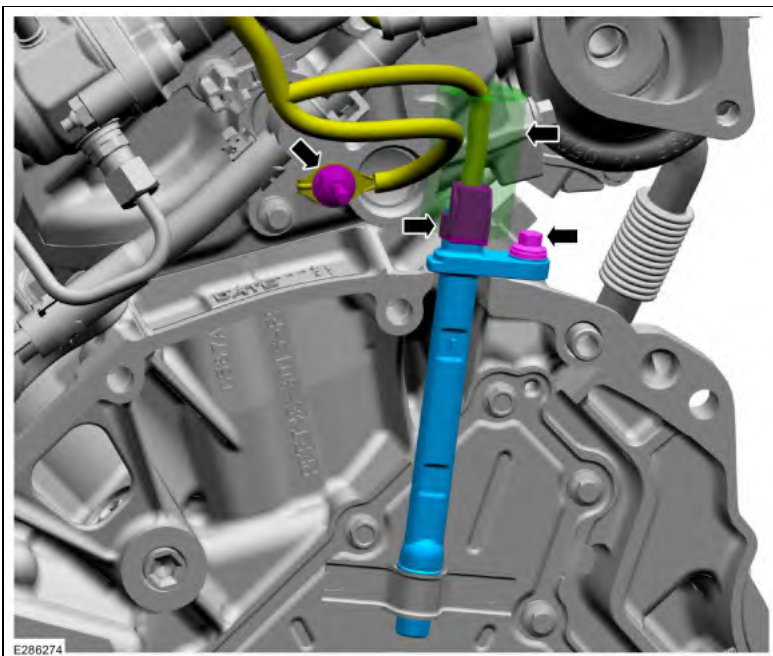
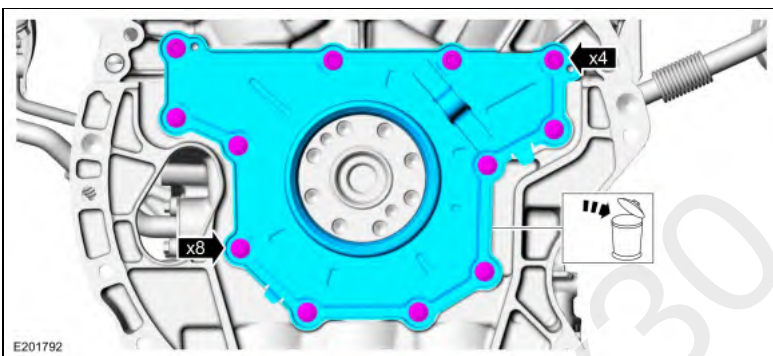
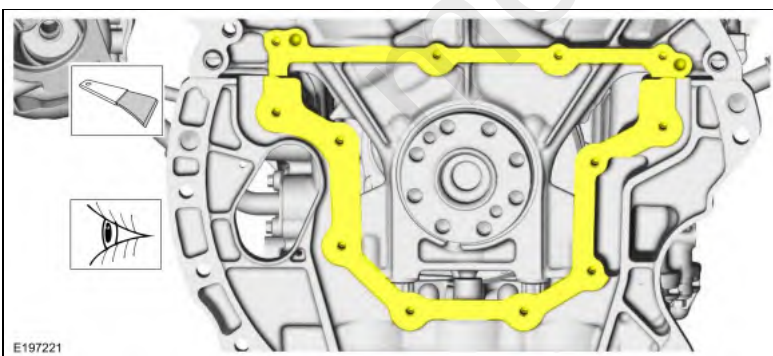




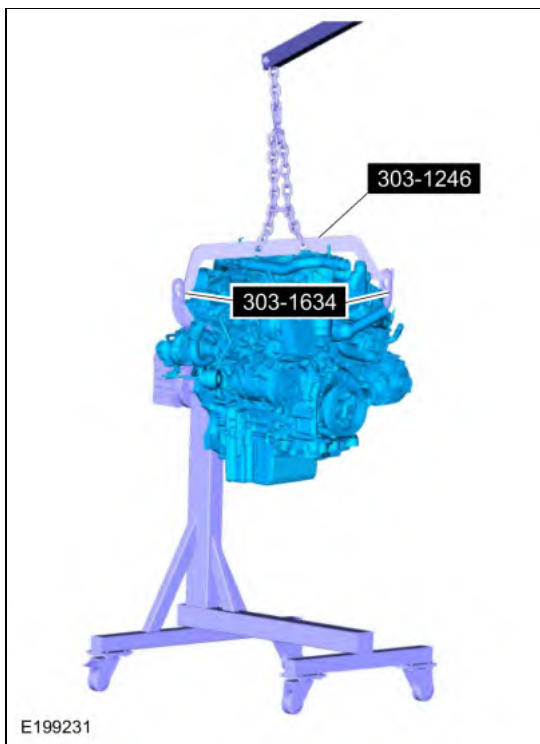
5. Remove the bolts and the crankshaft rear seal and retainer plate.
- Discard the crankshaft rear seal and retainer plate.



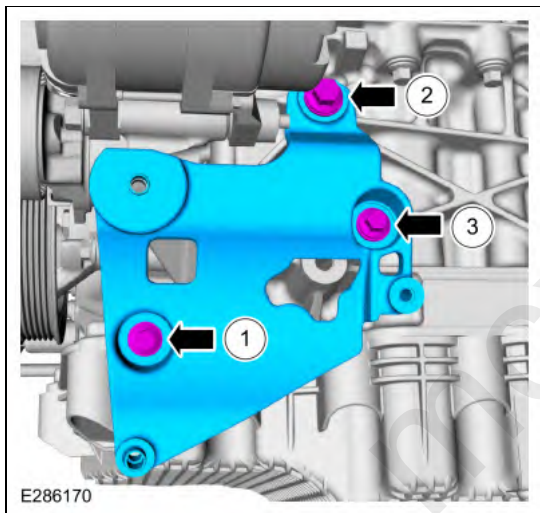
6. Clean and prepare the RTV sealing surface.
- Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
- Use the General Equipment: Plastic Scraper



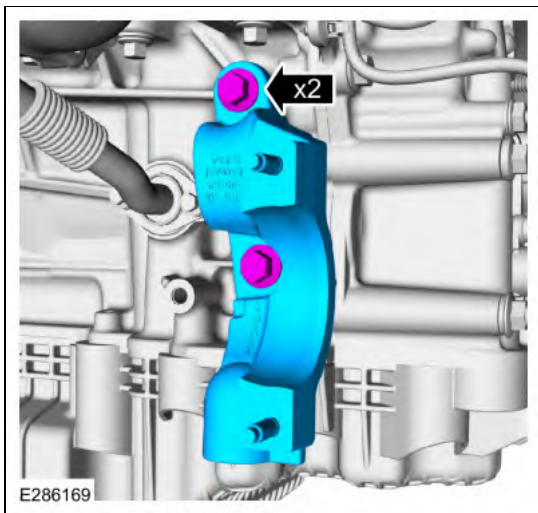
7. Using a floor crane, install the engine on a mounting stand.
- Remove Special Service Tool: 303-1246 Engine Spreader Bar , 303-1634 Lift Eyes (2).
- Use the General Equipment: Floor Crane
- Use the General Equipment: Mounting Stand



8.
 1. Remove the M8 x 50mm bolt.
 2. Remove the M10 x 43mm bolt.
 3. Remove the M8 x 30mm bolt and the A/C compressor mounting bracket.

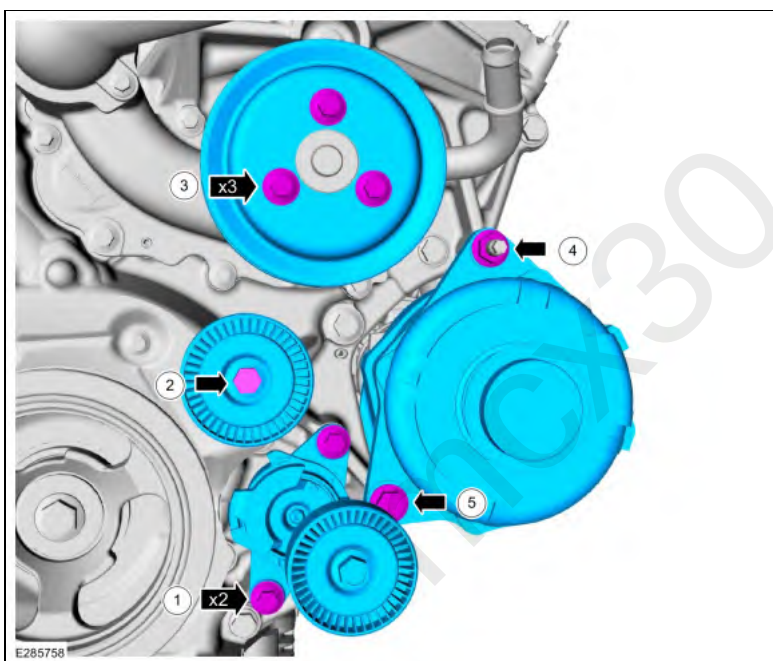


9. **NOTE:** *If equipped.*
- Remove the bolts and the axle shaft bracket.



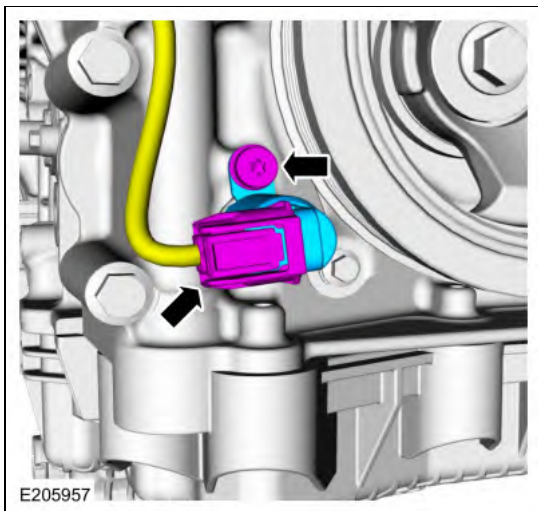
10.

- Remove the bolts and the accessory drive belt tensioner.
- Remove the bolt and the idler pulley.
- Remove the bolts and the coolant pump pulley.
- Remove the generator nut.
- Remove the bolt and the generator.

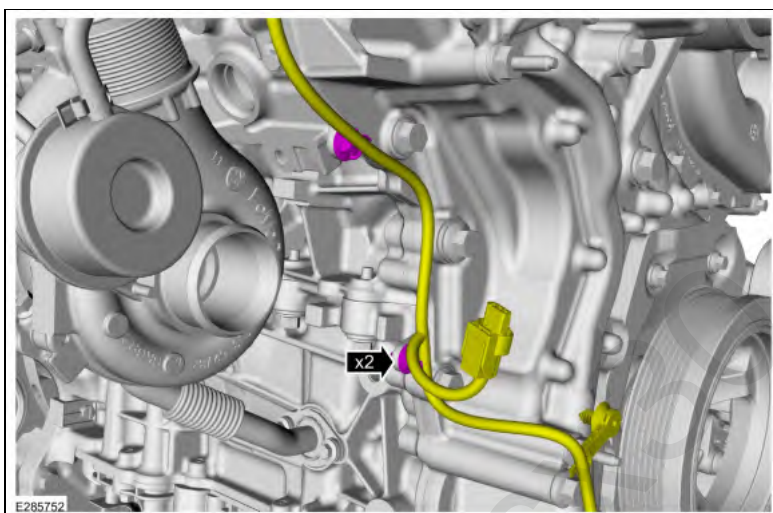


11.

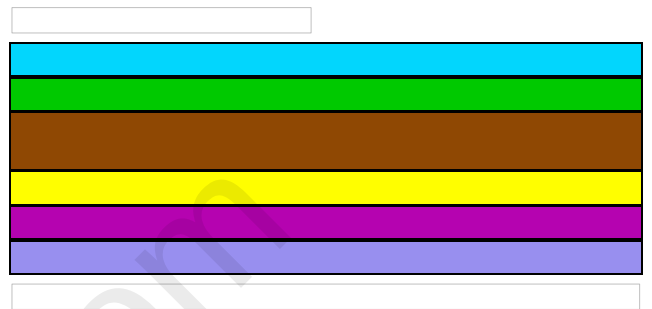
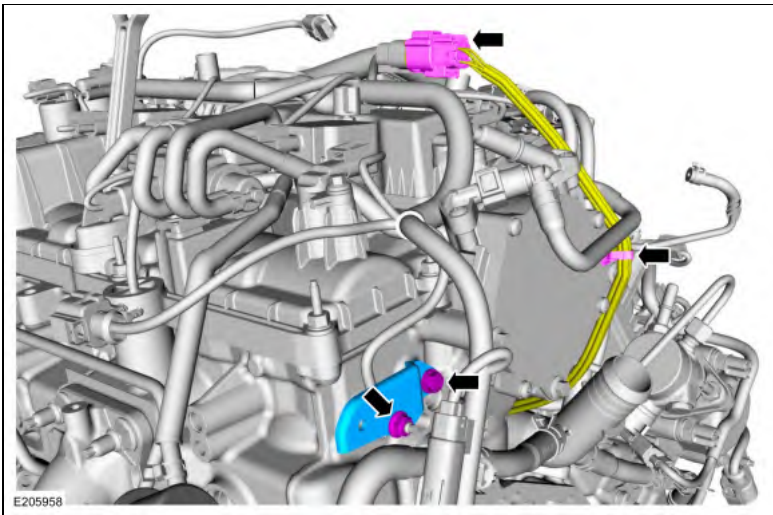
- Disconnect the oil pressure control solenoid electrical connector.
- Remove the retainer and the oil pressure control solenoid.



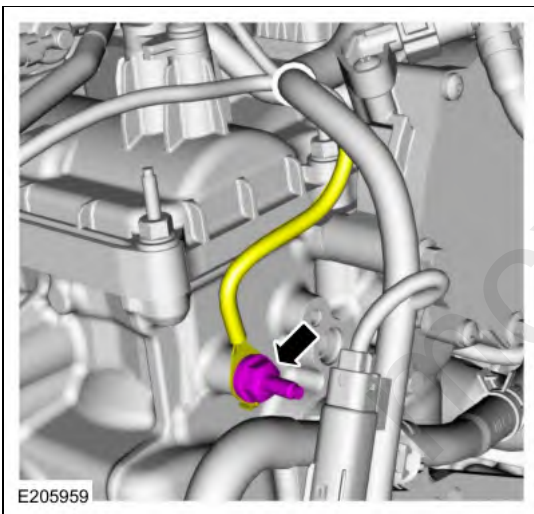
12. Detach the wiring harness retainers.



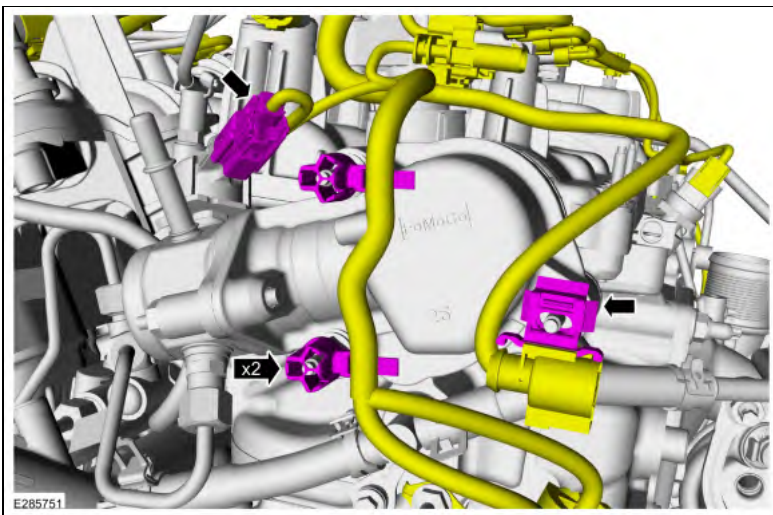
- 13.
- Disconnect the KS electrical connector.
 - Detach the wiring harness retainer.
 - Remove the nut, the bolt and the bracket.



14. Remove the stud bolt and the ground wire.

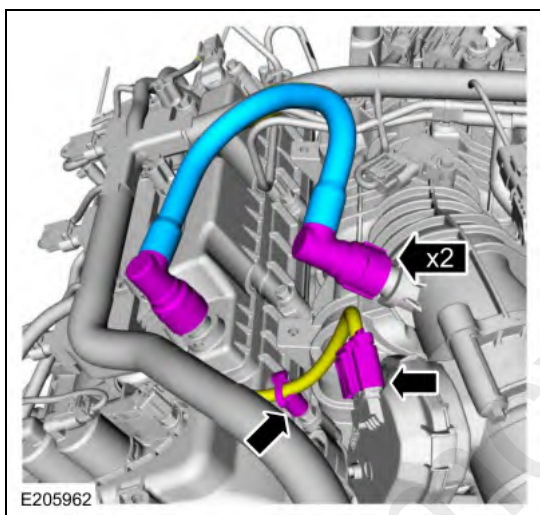


- 15.
- Disconnect the high pressure fuel pump electrical connector.
 - Detach the wiring harness retainers.



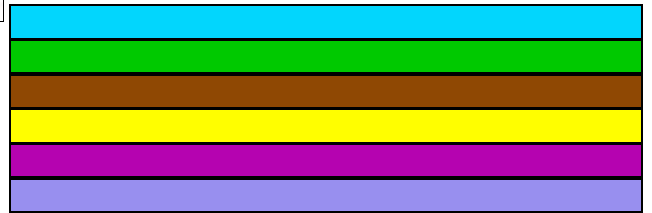
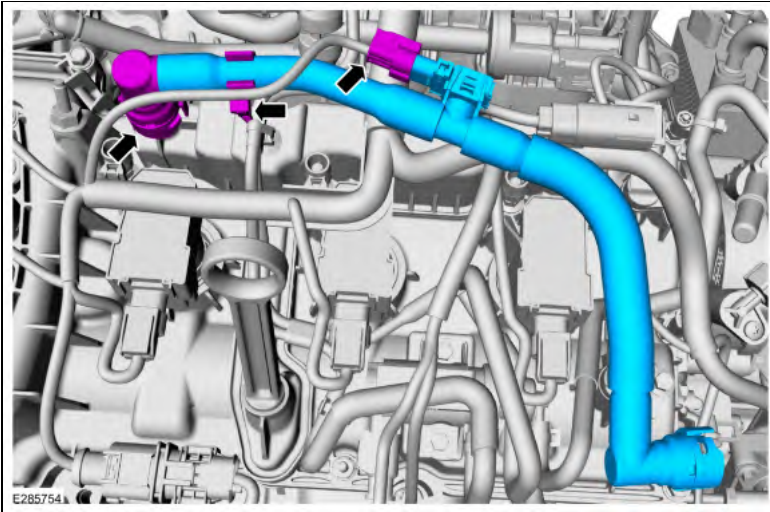
16.

- Disconnect the PCV tube quick release couplings and remove the tube.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information - 2.7L EcoBoost (238kW/324PS)) .
- 1. Disconnect the throttle body electrical connector and detach the wiring harness retainer.



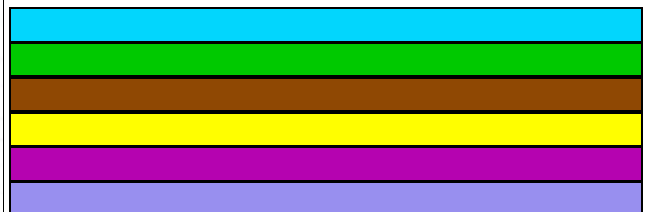
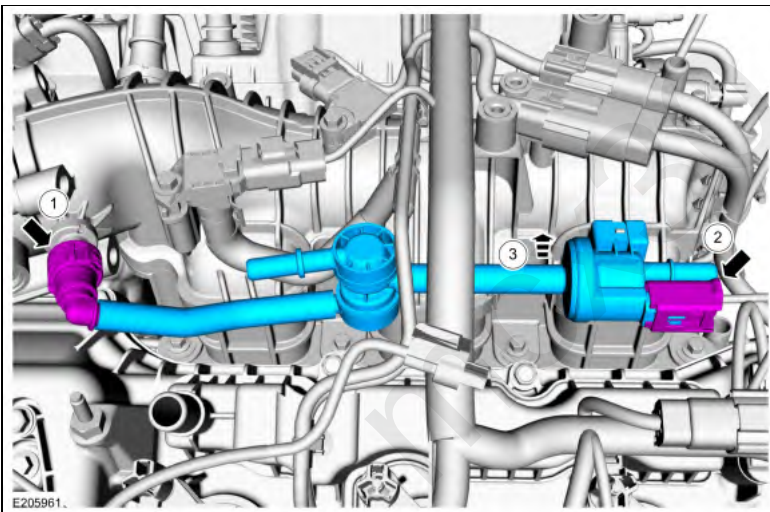
17.

- Disconnect the crankcase pressure sensor electrical connector.
- Detach the PCV tube retainer.
- Disconnect the PCV tube quick release coupling and remove the tube.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information - 2.7L EcoBoost (238kW/324PS)) .

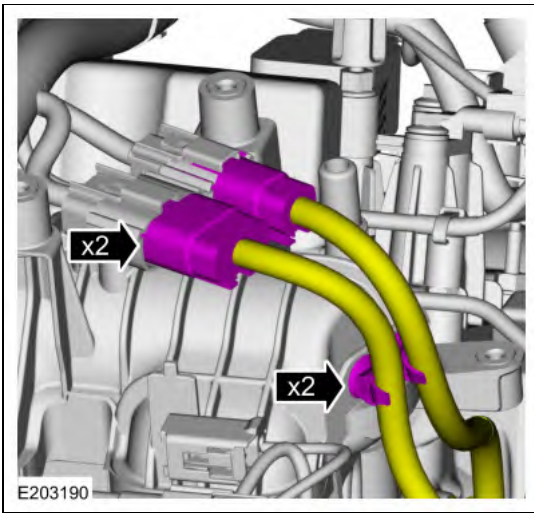


18.

1. Disconnect the EVAP tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information - 2.7L EcoBoost (238kW/324PS)).
2. Disconnect the EVAP purge valve electrical connector.
3. Lift the EVAP purge valve off of the intake manifold mounting tab and remove the valve from the engine.

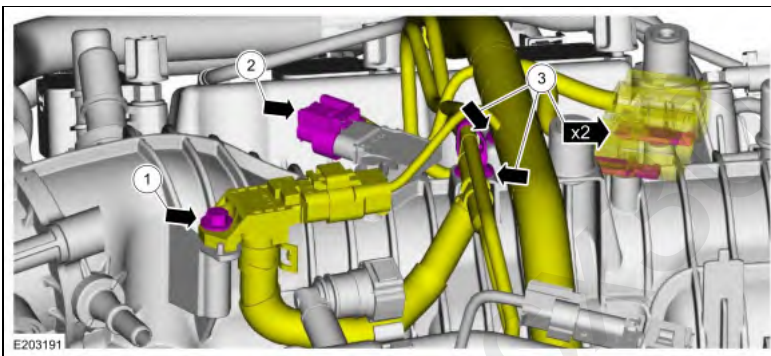


19. Disconnect the engine wiring harness electrical connectors and retainers.



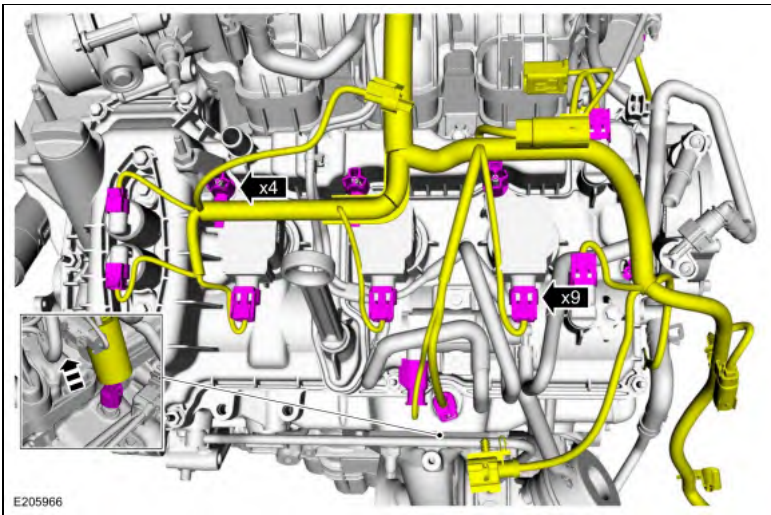
20.

1. Remove the vacuum harness pressure sensor bolt.
2. Disconnect the MAP sensor electrical connector.
3. Detach the wiring harness and vacuum harness retainers.

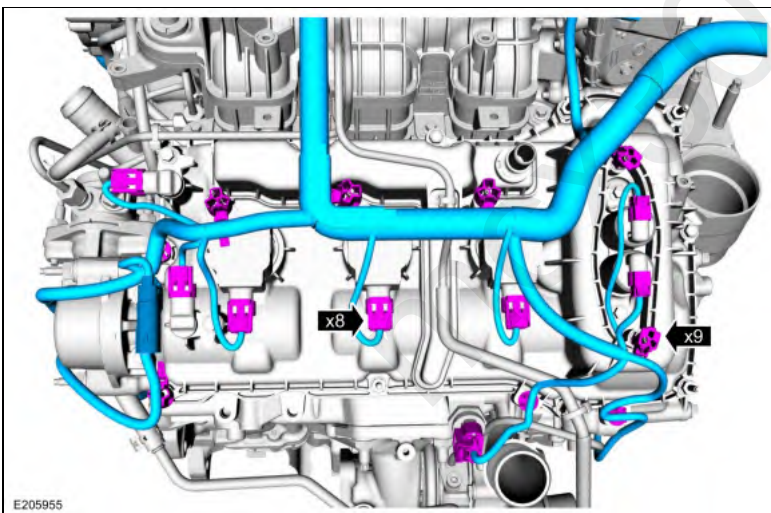


21.

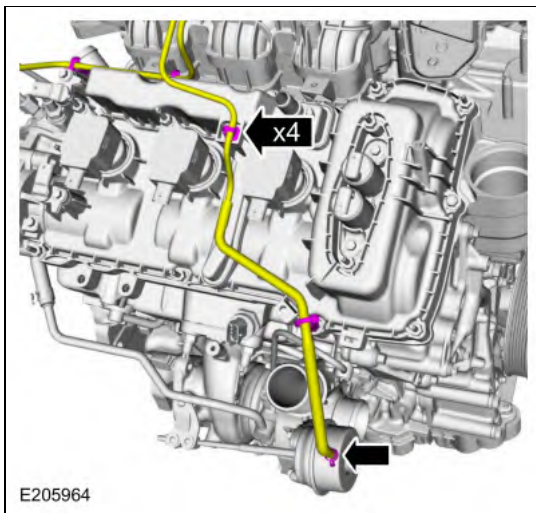
- Slide the insulator up to access the CHT electrical connector.
- Disconnect the engine wiring harness electrical connectors and detach the wiring harness retainers.



- 22.
- Disconnect the engine wiring harness electrical connectors.
 - Detach the wiring harness retainers and remove the harness from the engine.

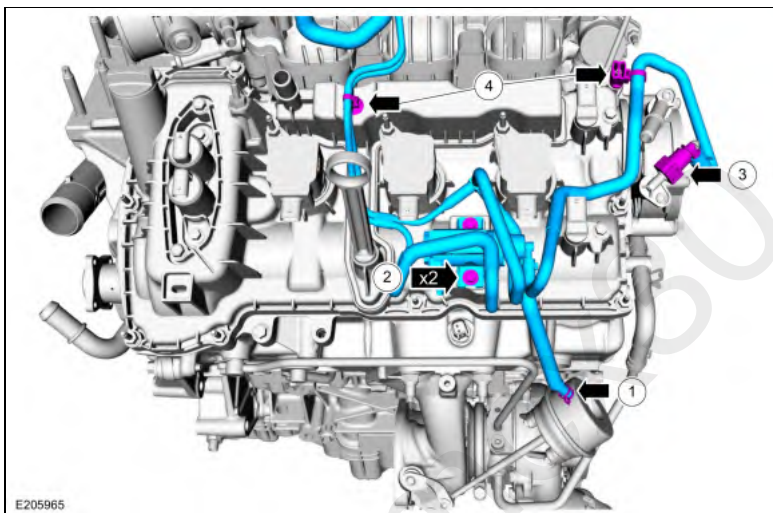


- 23.
- Detach the vacuum hose retainers.
- Release the clamp and disconnect the vacuum hose from the TC.



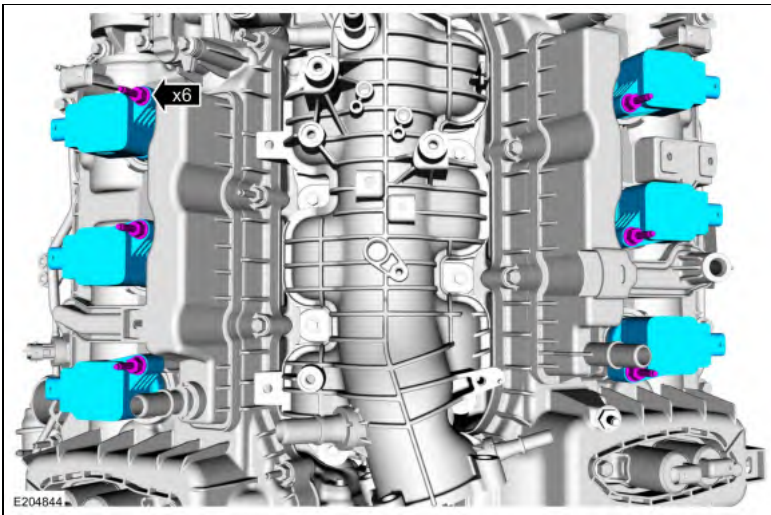
24.

1. Release the clamp and disconnect the vacuum hose from the TC.
2. Remove the vacuum control solenoid bolts.
3. Disconnect the vacuum tube quick release coupling.
Refer to: Quick Release Coupling (310-00 Fuel System - General Information - 2.7L EcoBoost (238kW/324PS)).
4. Detach the retainers and remove the vacuum tube assembly from the engine.

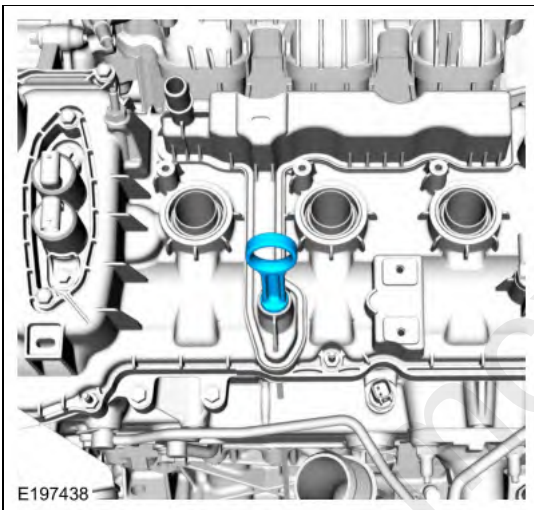


25. **NOTE:** When removing the ignition coil-on-plugs, a slight twisting motion will break the seal and ease removal.

Remove the bolts and the coil-on-plug assemblies.

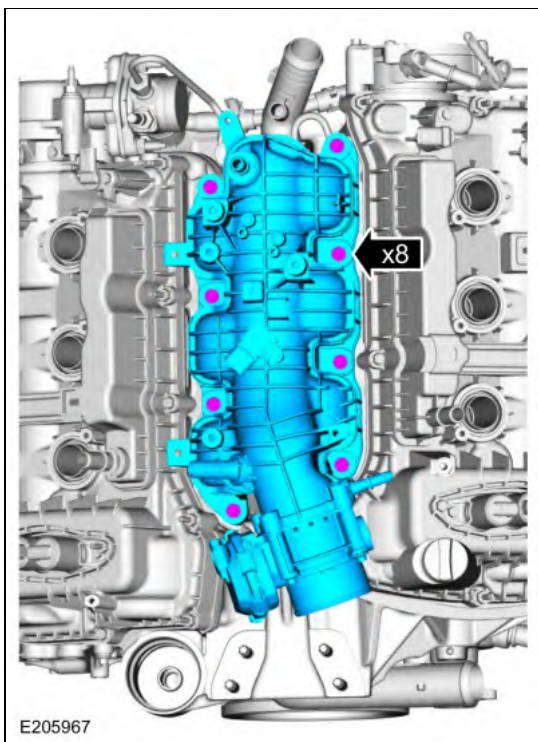


26. Remove the oil level indicator.

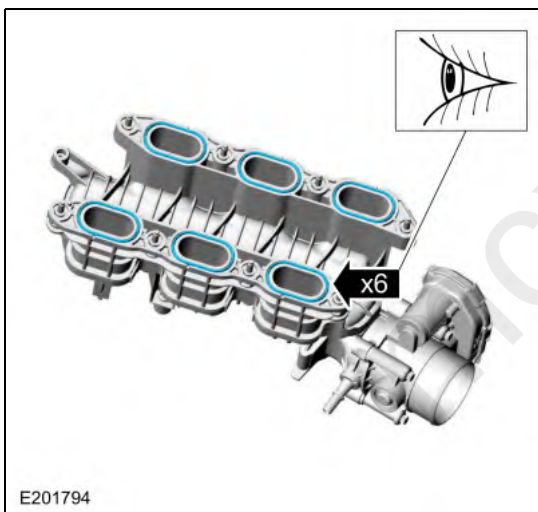


27. **NOTICE:** If the engine is repaired or replaced because of upper engine failure, typically including valve or piston damage, check the intake manifold for metal debris. If metal debris is found, install a new intake manifold. Failure to follow these instructions can result in engine damage.

Loosen the bolts and remove the intake manifold.

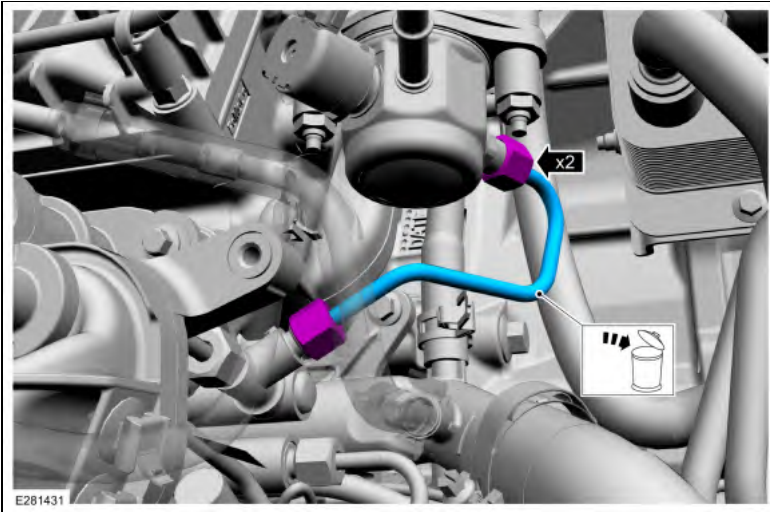


28. Inspect the gaskets and replace as necessary.

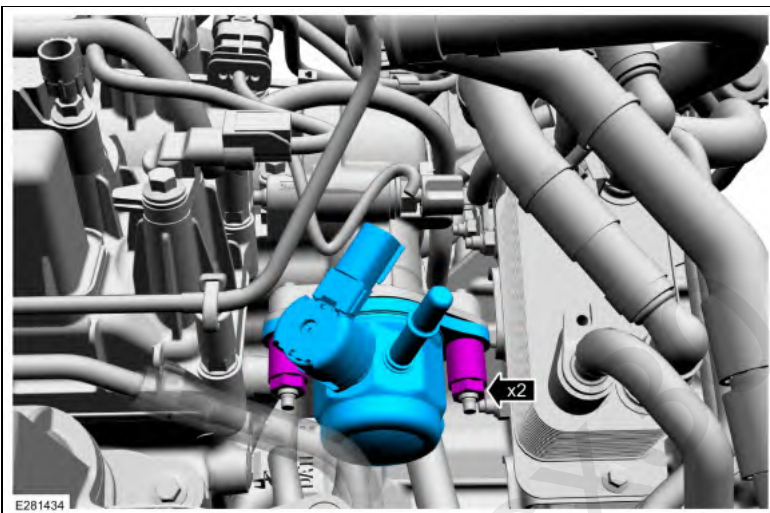


29. **NOTICE:** To release the fuel pressure in the high-pressure fuel tube, wrap the high-pressure fuel tube flare nuts with a shop towel to absorb any residual fuel pressure during the loosening of high-pressure fuel tube flare nuts.

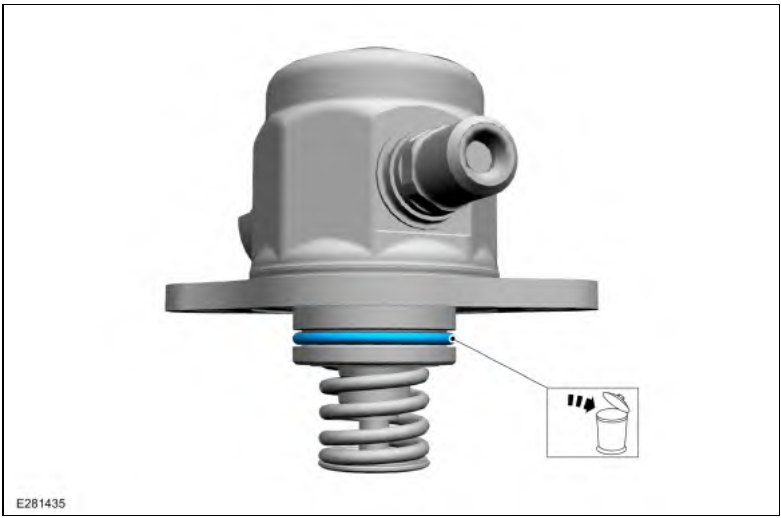
- Loosen the high-pressure fuel pump-to-fuel rail high-pressure fuel tube flare nuts.
- Remove and discard the high-pressure fuel tube.



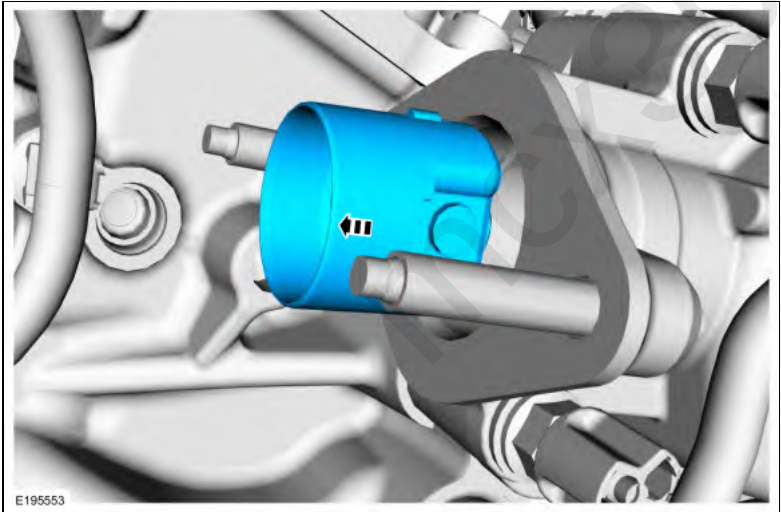
30. **NOTE:** Alternately loosen the high-pressure fuel pump nuts one revolution at a time.
Remove the nuts and the high-pressure fuel pump.



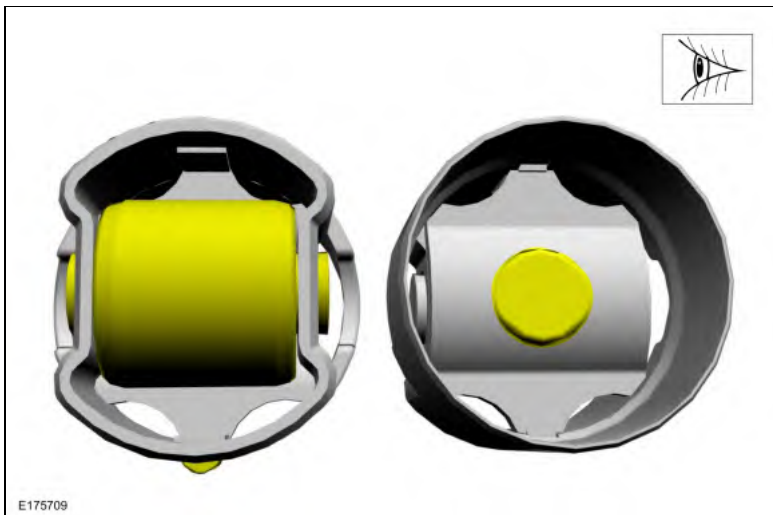
31. Remove and discard the high-pressure fuel pump O-ring seal.



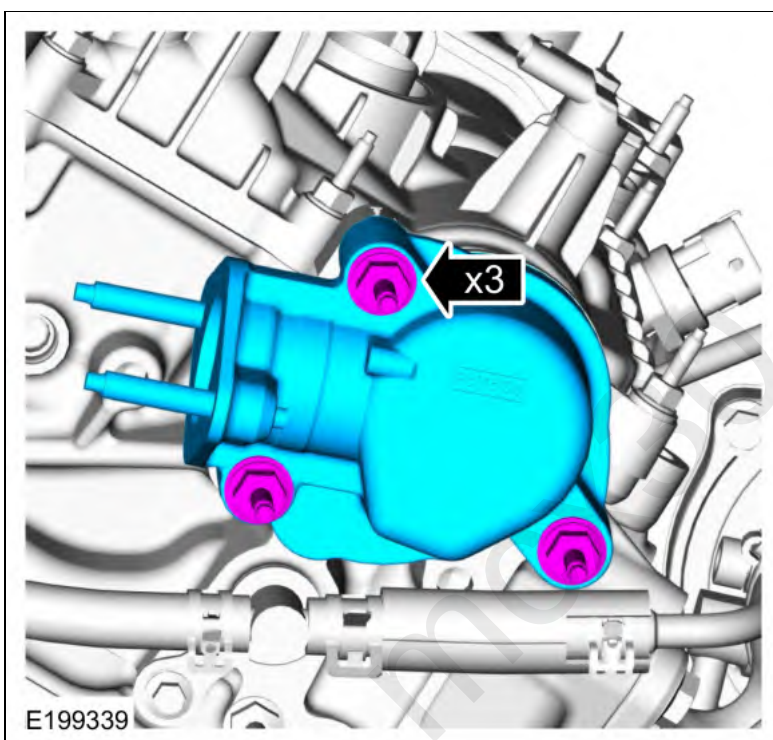
32. Remove the high-pressure fuel pump tappet.



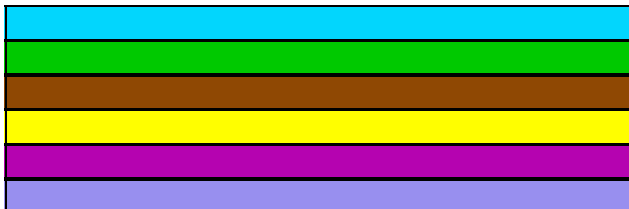
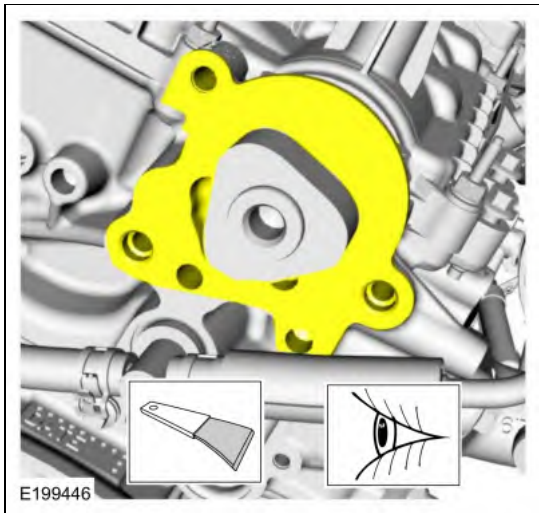
33. Inspect the high-pressure fuel pump roller tappet. If any flat spots or scoring are found, especially in the indicated areas, then inspect the high-pressure fuel pump and the high-pressure fuel pump roller tappet drive lobe. Install new components as necessary.



34. Remove the stud bolts and the high-pressure fuel pump drive unit.

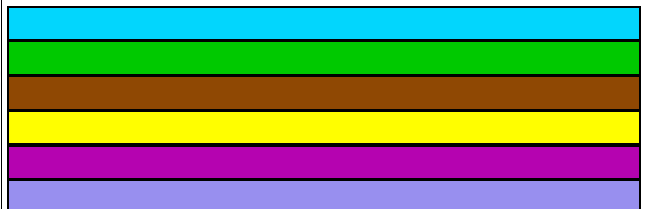
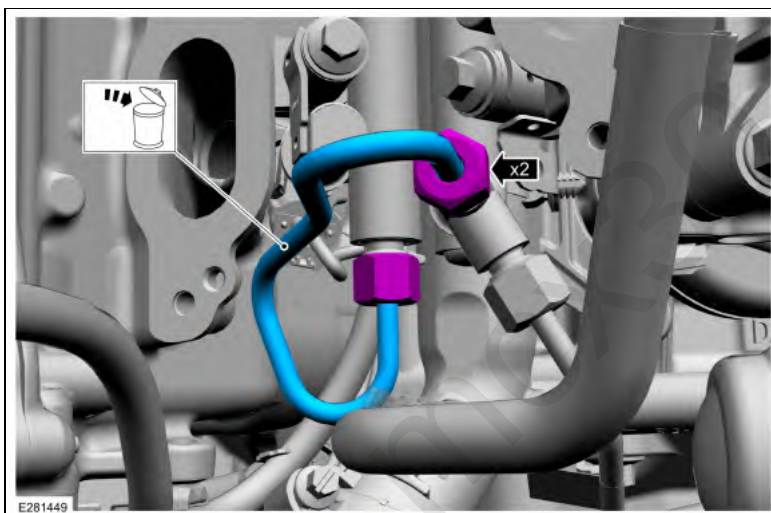


35. Clean and prepare the RTV sealing surface.
 Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
 Use the General Equipment: Plastic Scraper

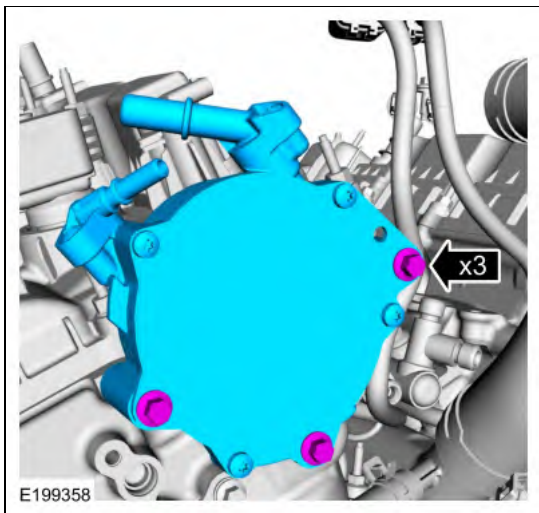


36. **NOTICE:** To release the fuel pressure in the fuel rail to fuel rail high-pressure fuel tube, wrap the fuel rail to fuel rail high-pressure fuel tube flare nuts with a shop towel to absorb any residual fuel pressure during the loosening of the fuel rail to fuel rail high-pressure fuel tube flare nuts.

- Loosen the fuel rail-to-fuel rail high-pressure fuel tube flare nuts.
- Remove and discard the high-pressure fuel tube.

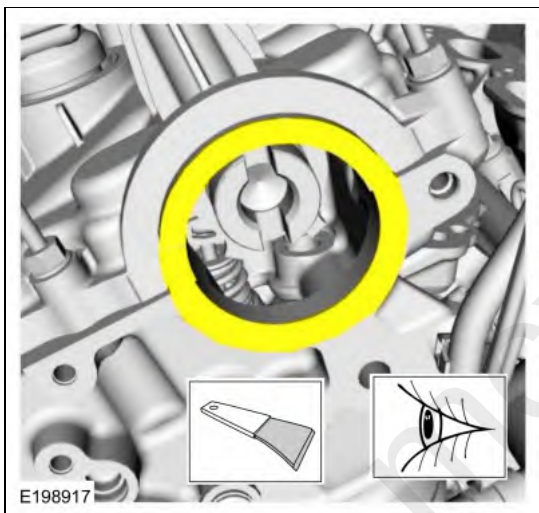


37. Remove the bolts and the brake vacuum pump.



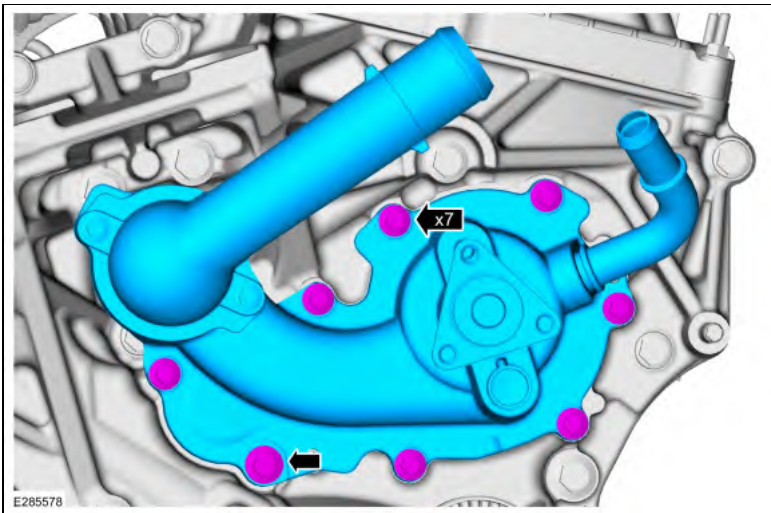


38. Clean and prepare the RTV sealing surface.
 Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
 Use the General Equipment: Plastic Scraper

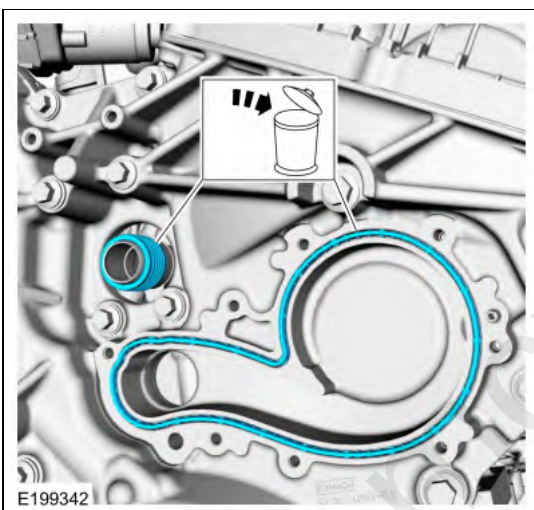




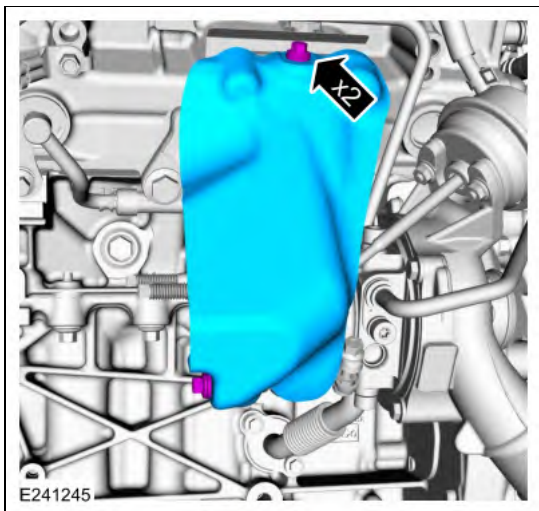
39. Remove the bolts and the coolant pump.



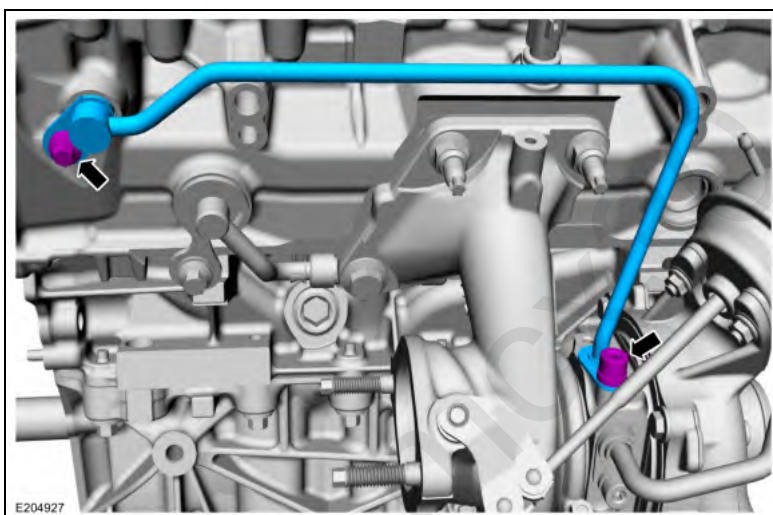
40. Remove and discard the coolant pump gasket and seal.



41. Remove the bolts and the heat shield.

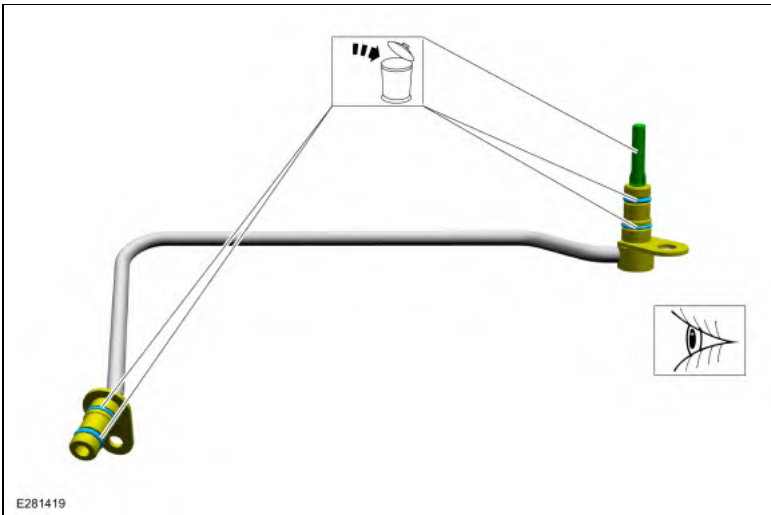


42. Remove the bolts and the TC oil supply tube.

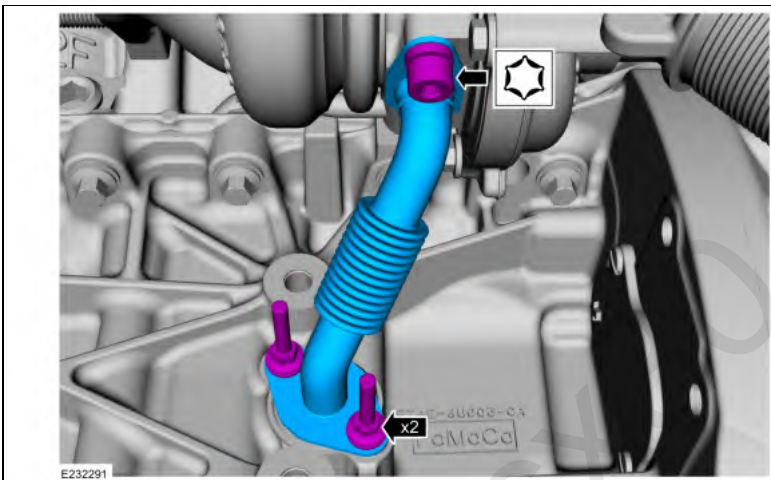


43. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

1. Remove and discard the turbocharger oil supply tube O-ring seals and the turbocharger oil supply tube oil filter.
 2. Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
- Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B*



44. Remove the bolts and the TC oil return tube.

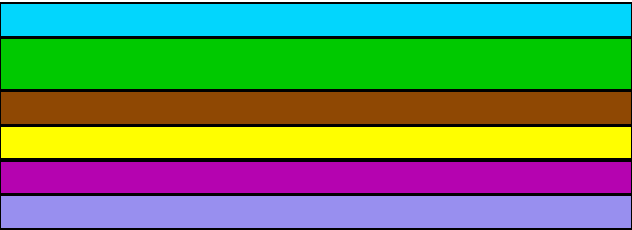
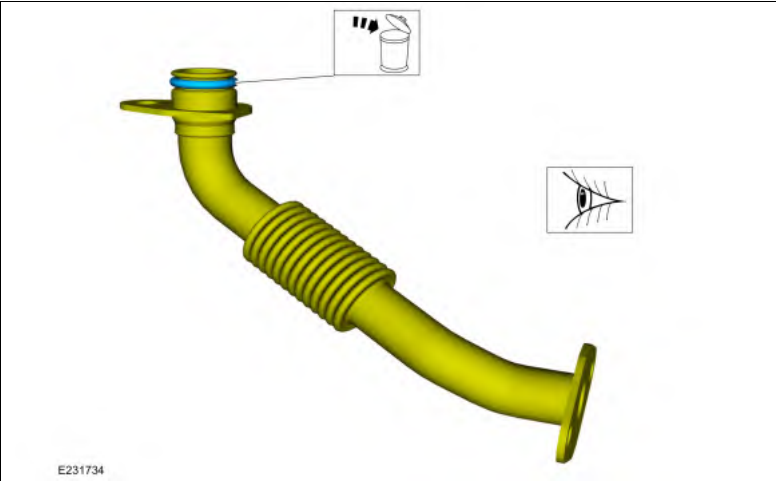


45. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

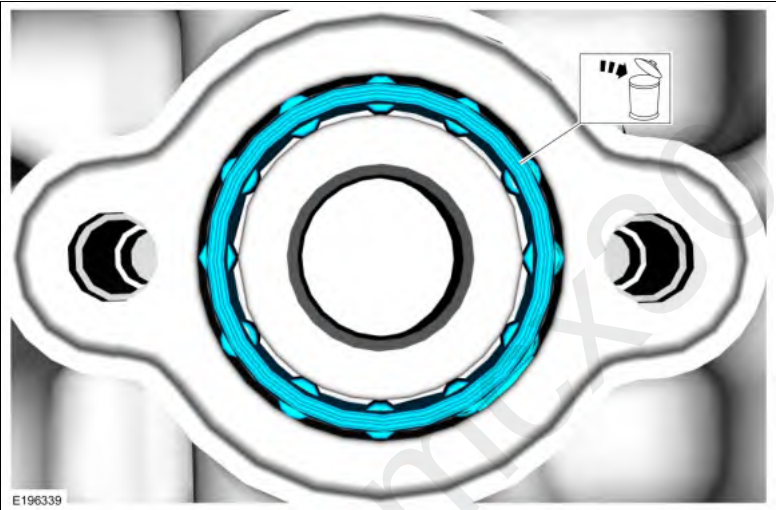
- Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

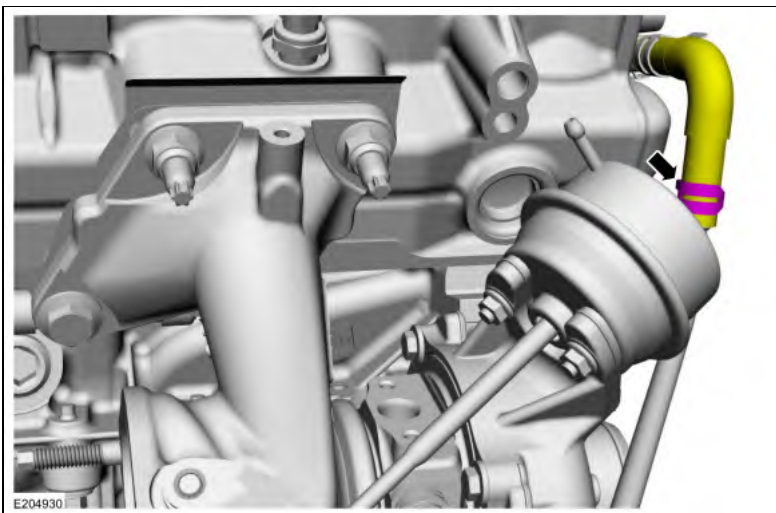
- Remove and discard the turbocharger oil return tube O-ring seal.



46. Remove and discard the TC oil return tube-to-engine block gasket.

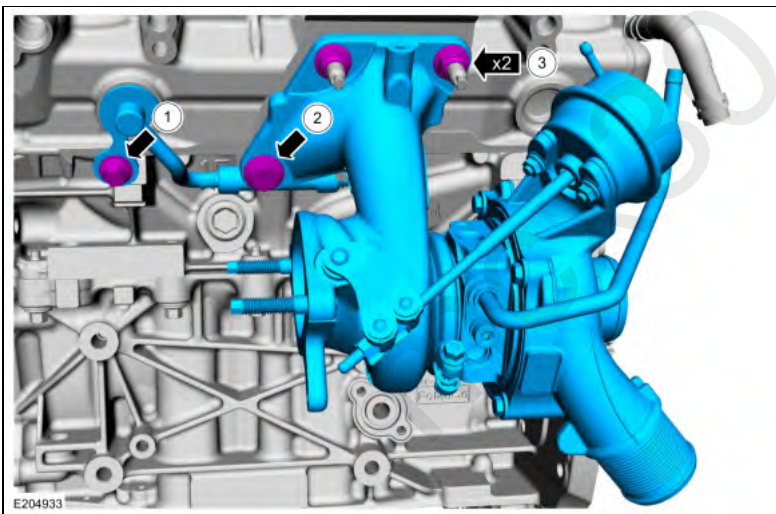


47. Release the clamp and disconnect the TC coolant return hose.
Use the General Equipment: Hose Clamp Remover/Installer



48. **NOTE:** Remove the TC coolant supply tube from the engine block while removing the TC.

- Remove the TC coolant supply tube bolt.
- Remove the TC bolt.
- Remove the nuts and the TC.

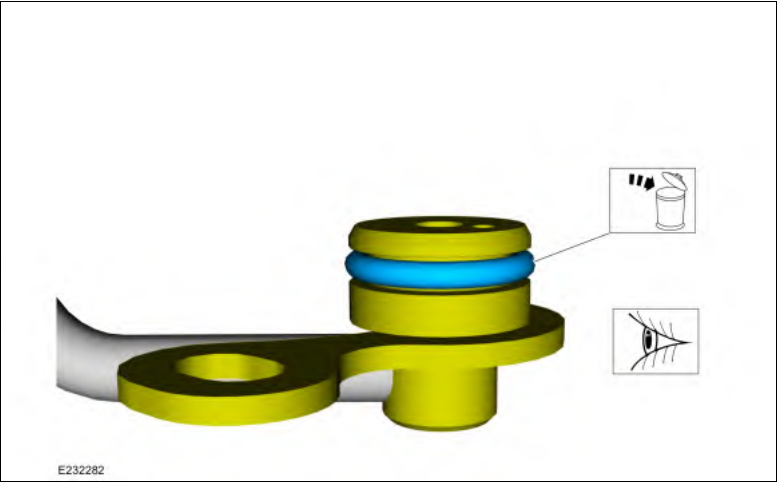


49. **NOTICE:** Do not use a metal brush, damage to sealing area will result in leaks.

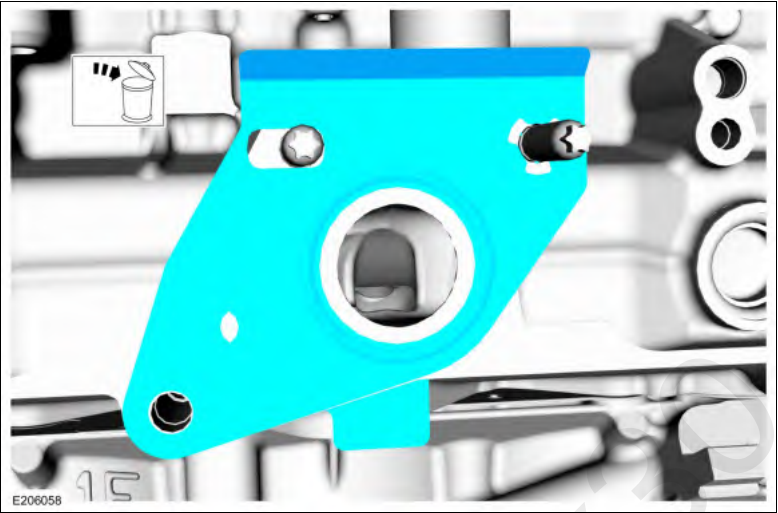
- Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger coolant return tube O-ring seal.



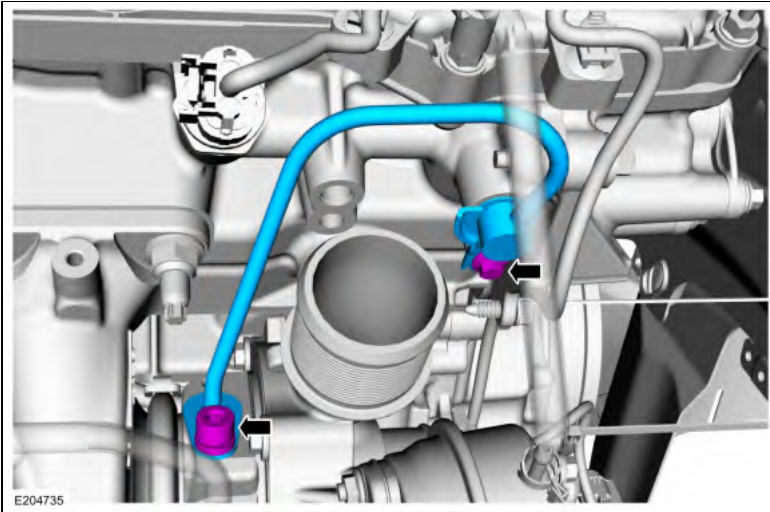
50. Remove and discard the turbocharger gasket.



51. Remove the turbocharger mounting studs if they need to be removed.



52. Remove the bolts and the TC oil supply tube.

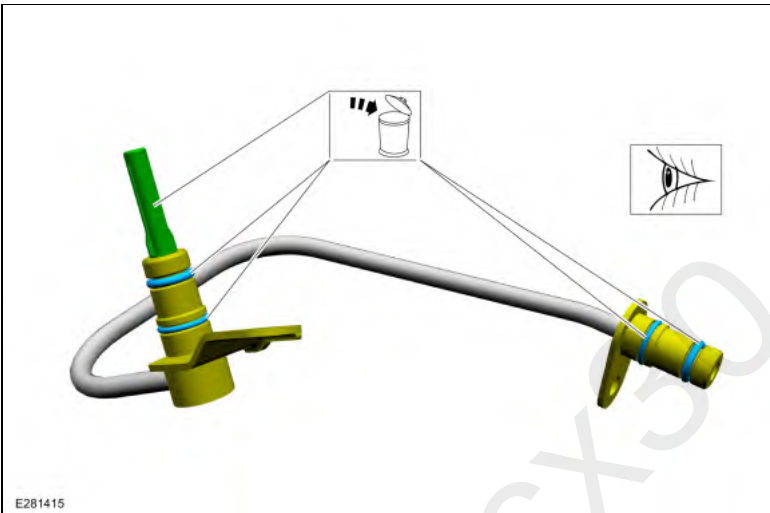


53. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

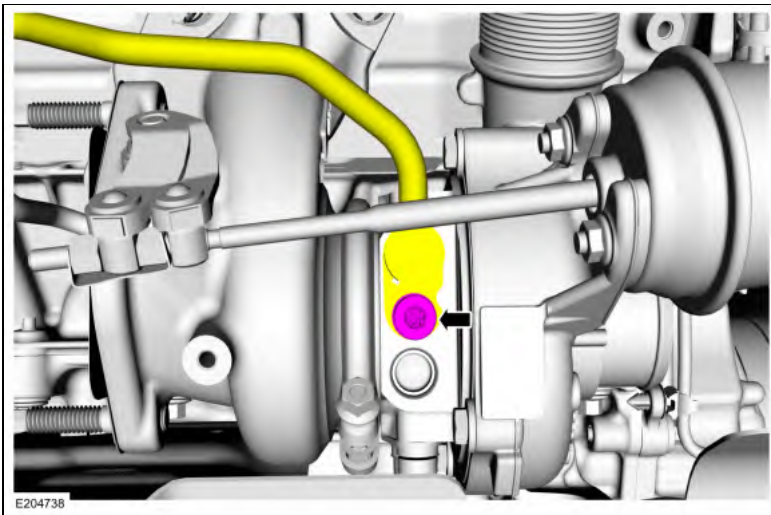
- Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

1. Remove and discard the turbocharger oil supply tube O-ring seals and the turbocharger oil supply tube oil filter.

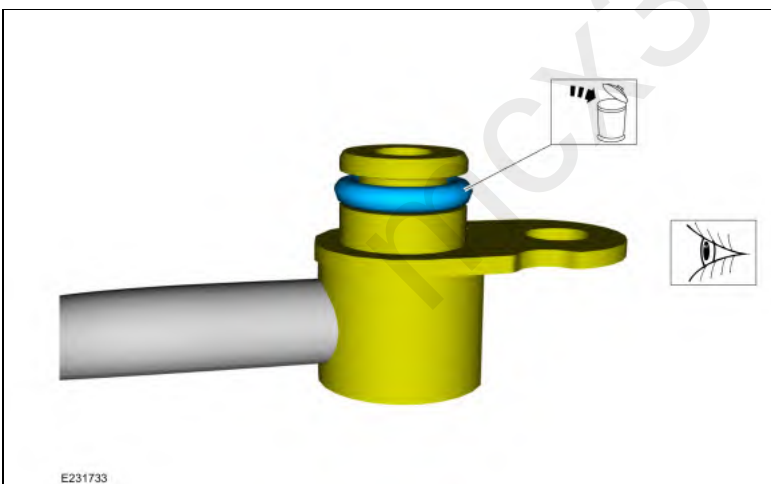


54. Remove the bolt and disconnect the TC coolant return tube.

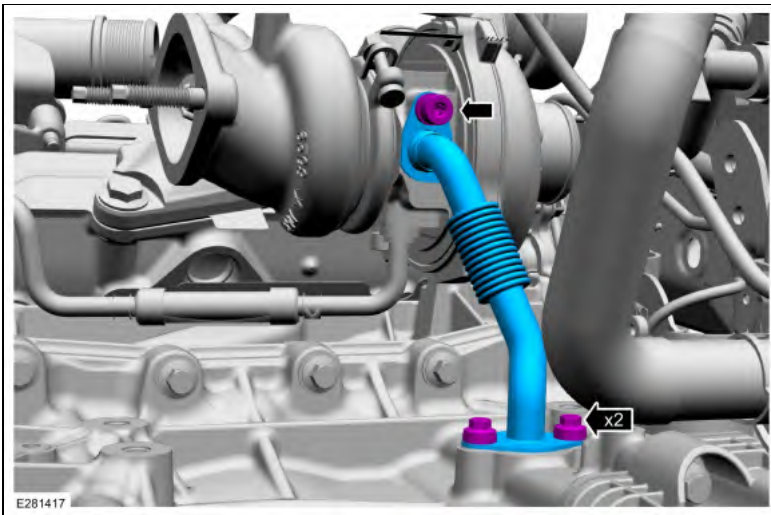


55. **NOTICE: Do not use a metal brush, damage to sealing area will result in leaks.**

- Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
1. Remove and discard the turbocharger coolant return tube O-ring seal.

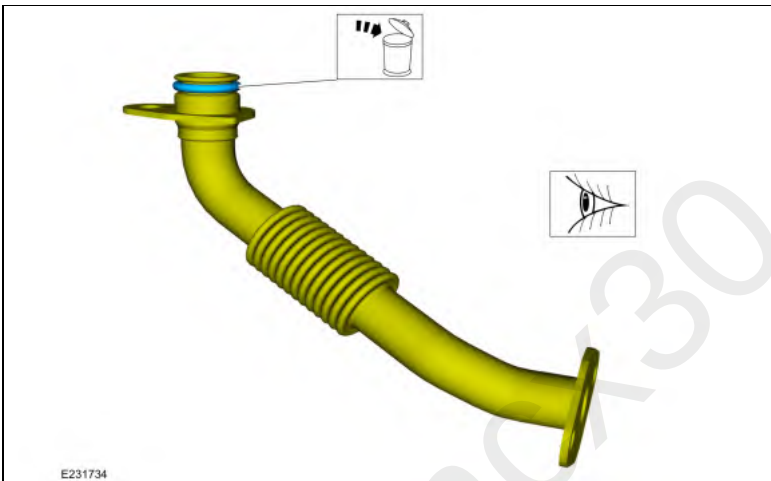


56. Remove the bolts and the TC oil return tube.

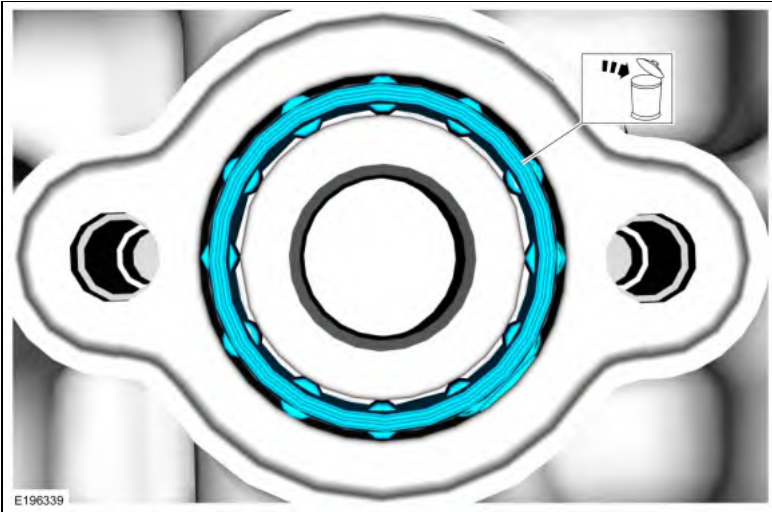


57. **NOTICE:** Do not use a metal brush, damage to sealing area will result in leaks.

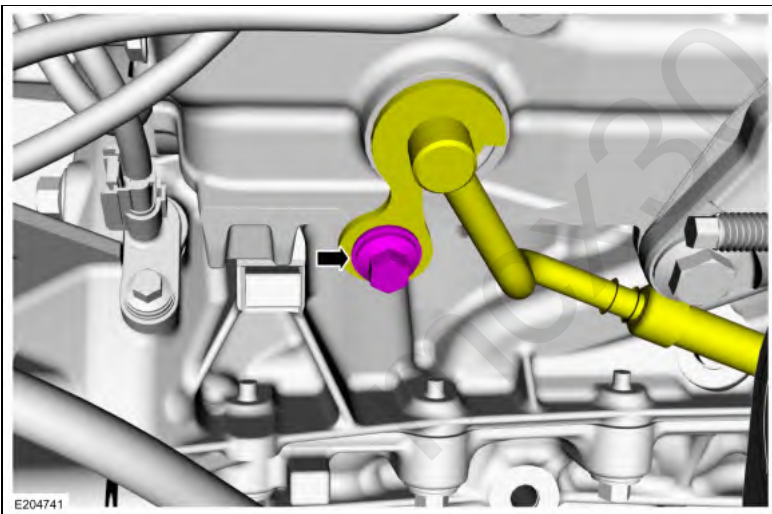
- Inspect for blockage in the turbocharger tube. Check the tube, the sealing surfaces and the flange for flatness and damage. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
- Remove and discard the turbocharger oil return tube O-ring seal.



58. Remove and discard the TC oil return tube-to-engine block gasket.

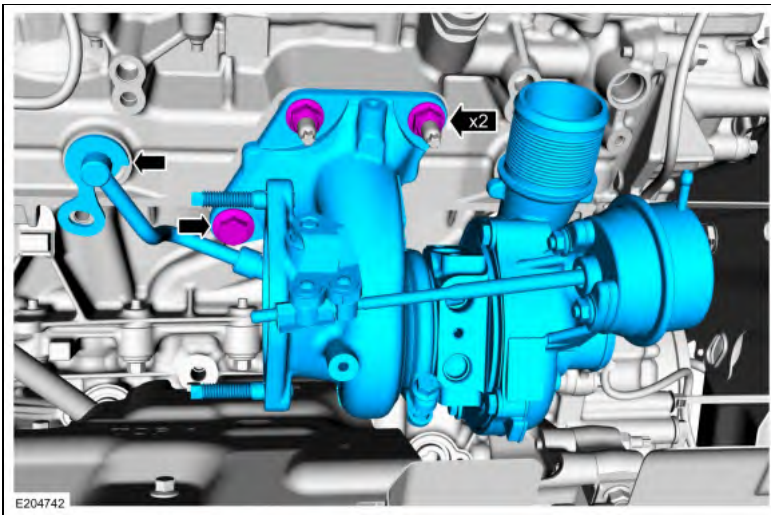


59. Remove the TC coolant supply tube bolt.



60. **NOTE:** Remove the TC coolant supply tube from the engine block while removing the TC.

Remove the retainers and the TC.

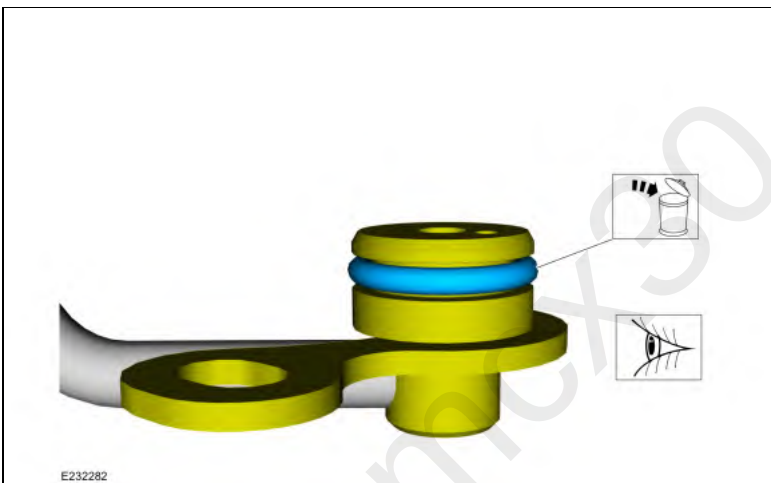


61. **NOTICE: Do- not use a metal brush, damage to sealing area will result in leaks.**

- Inspect the turbocharger tube and the sealing surfaces. Ensure that the retaining bracket is not bent, check for square-ness of the retaining bracket to the O-ring area. Use brake cleaner and a nylon brush to clean. Install new components as needed.

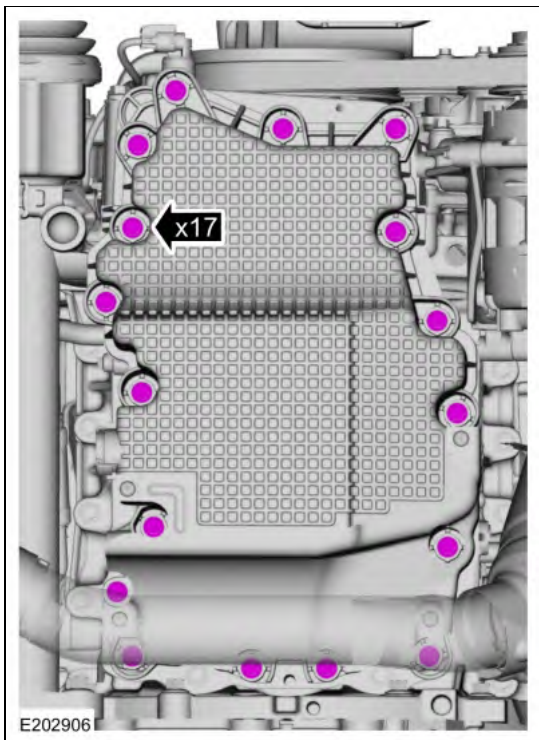
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

- Remove and discard the turbocharger coolant return tube O-ring seal.



62. Remove and discard the TC gasket.

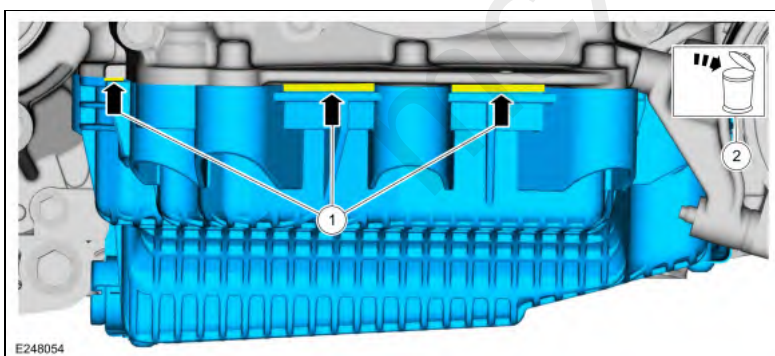




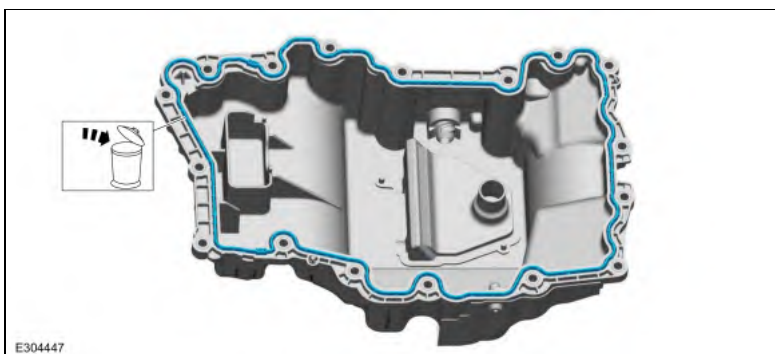
65.

1. Using a large flat-bladed screwdriver and the indicated pry pads, release the sealer and separate the oil pan from the bottom of the engine.
2. **NOTE:** Do not reuse the oil pans sealed by Motorcraft[®] High Performance Engine RTV Silicone. Oil pans sealed by Motorcraft[®] High Performance Engine RTV Silicone are to be removed and discarded. The replacement oil pan will have a press-in-place gasket.

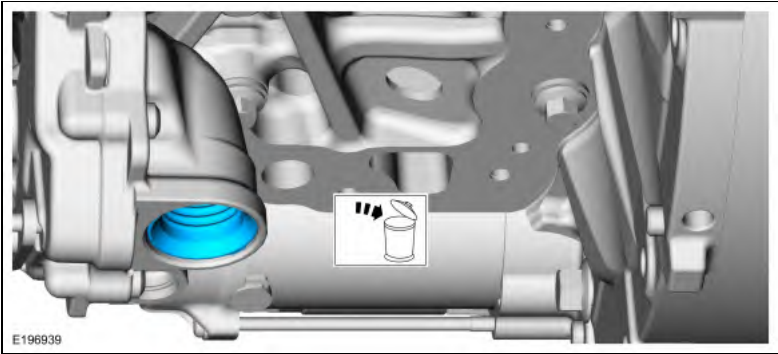
Remove the oil pan. Discard the oil pan if it is sealed with Motorcraft[®] High Performance Engine RTV Silicone.



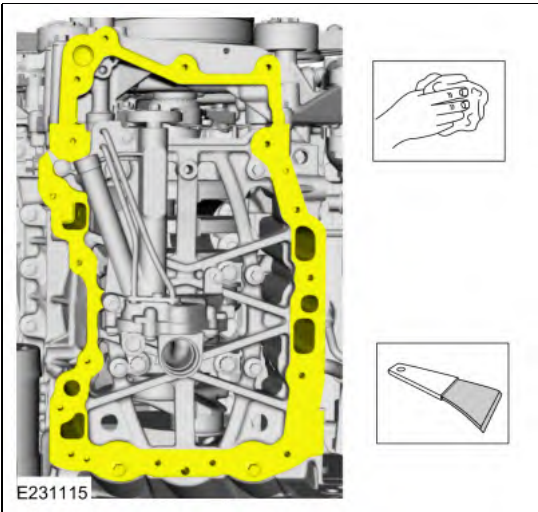
66. If equipped, remove and discard the oil pan press-in-place gasket.



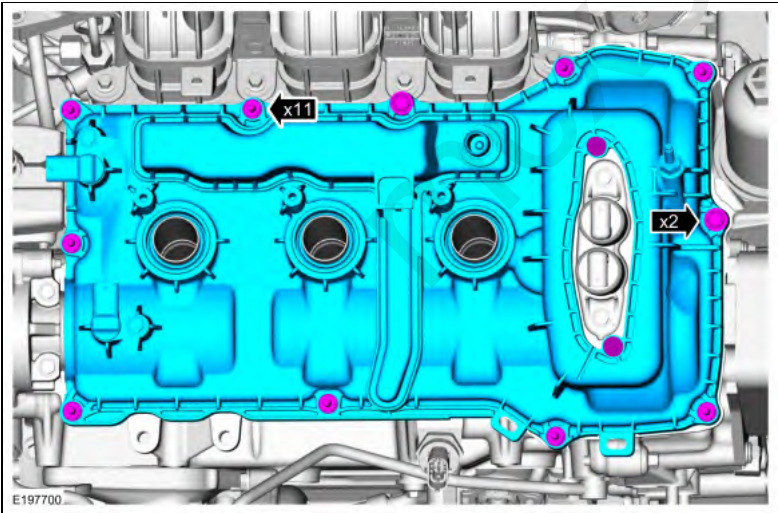
67. Remove and discard the oil pump seal.



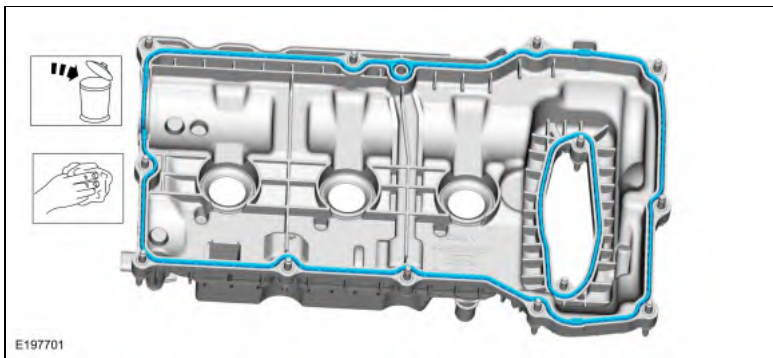
68. Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
Use the General Equipment: Plastic Scraper



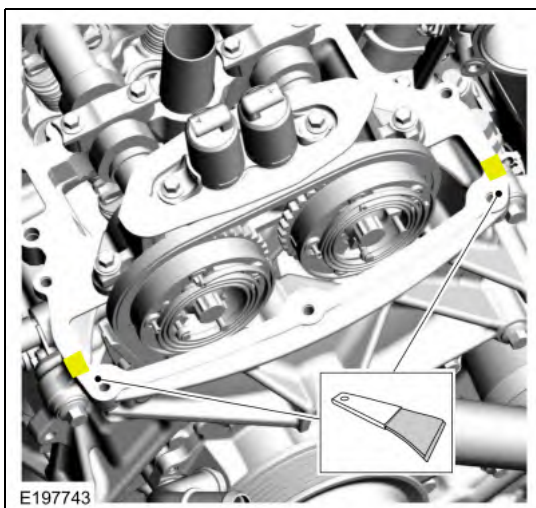
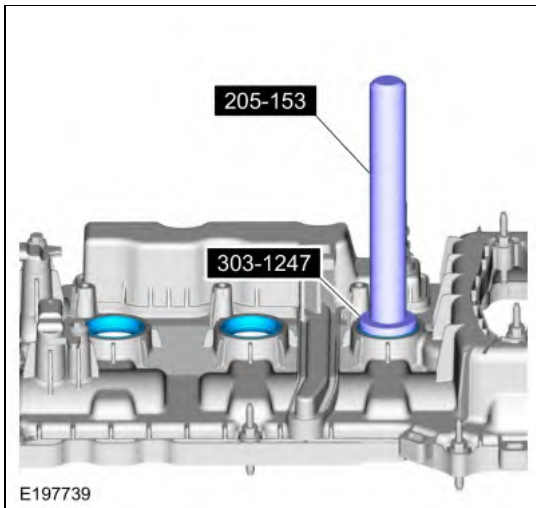
69. Loosen the fasteners and remove the valve cover.



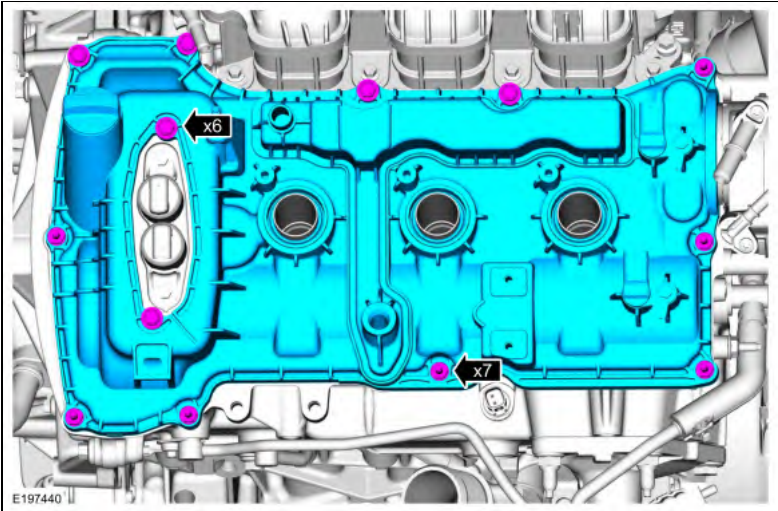
70. Remove and discard the gasket.
• Clean the valve cover gasket groove with soap and water or a suitable solvent.



71. Inspect the spark plug seals. Remove any damaged seals using the special tools.
Use Special Service Tool: 205-153 (T80T-4000-W) Handle. , 303-1247 VCT Spark Plug Tube Seal Remover and Installer.

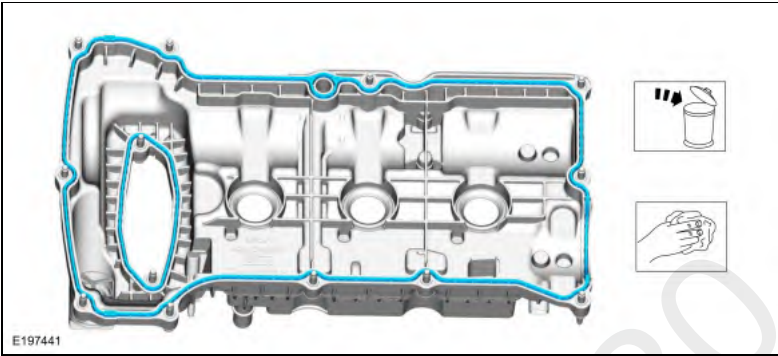


73. Loosen the fasteners and remove the valve cover.

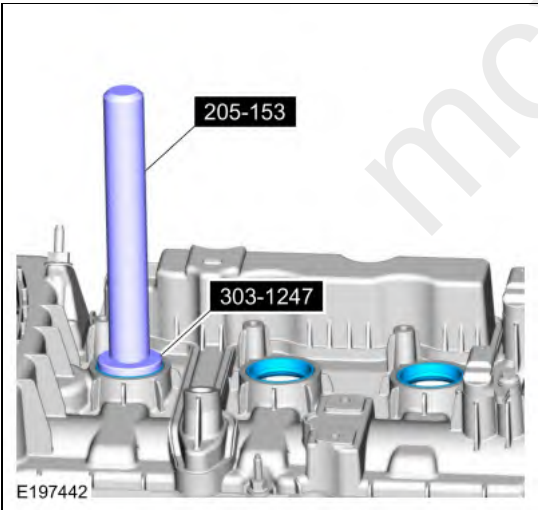


74. Remove and discard the gasket.

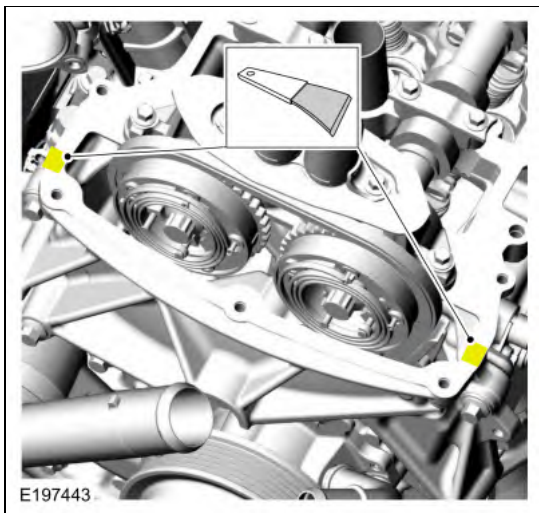
- Clean the valve cover gasket groove with soap and water or a suitable solvent.



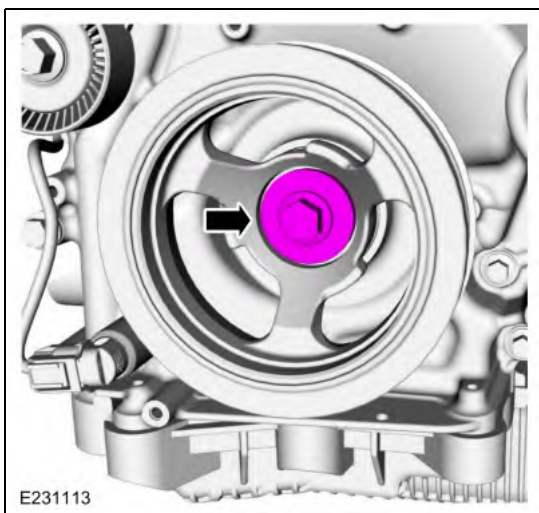
75. Inspect the spark plug seals. Remove any damaged seals using the special tools.
Use Special Service Tool: 205-153 (T80T-4000-W) Handle, 303-1247 VCT Spark Plug Tube Seal Remover and Installer.



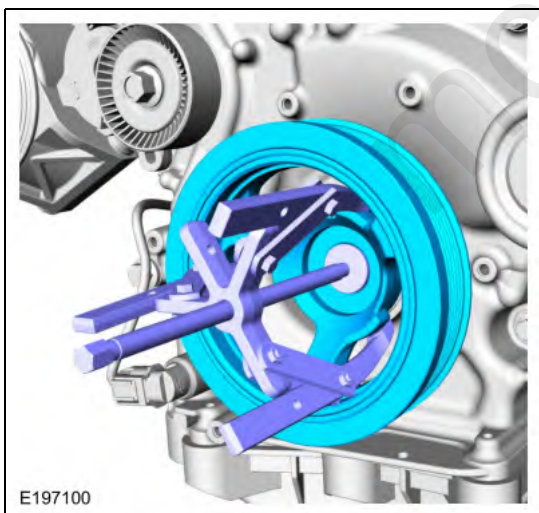
76. Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
Use the General Equipment: Plastic Scraper



77. Remove the crankshaft pulley bolt.

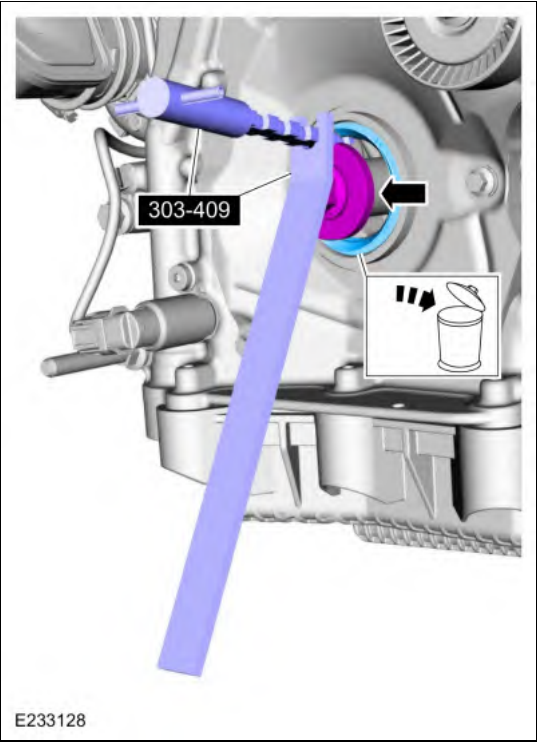


78. Using the 3 Leg Puller and a step plate, remove the crankshaft pulley.
Use the General Equipment: Three Leg Puller



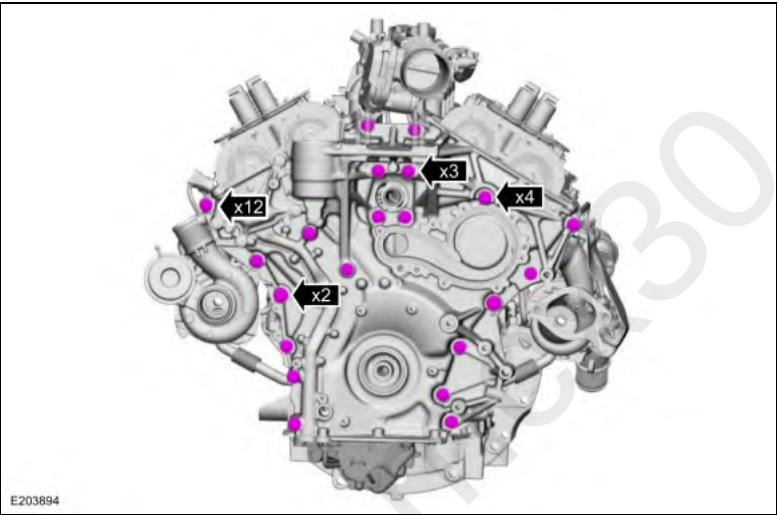
79. **NOTICE:** Use care not to damage the engine front cover or the crankshaft when removing the seal.

1. Install the crankshaft pulley bolt.
2. Using the special tool, remove and discard the crankshaft front oil seal.
Use Special Service Tool: 303-409 (T92C-6700-CH) Remover, Crankshaft Seal.
3. **NOTE:** Retain the original crankshaft pulley bolt for turning the crankshaft while the pulley is removed.
Remove the crankshaft pulley bolt.



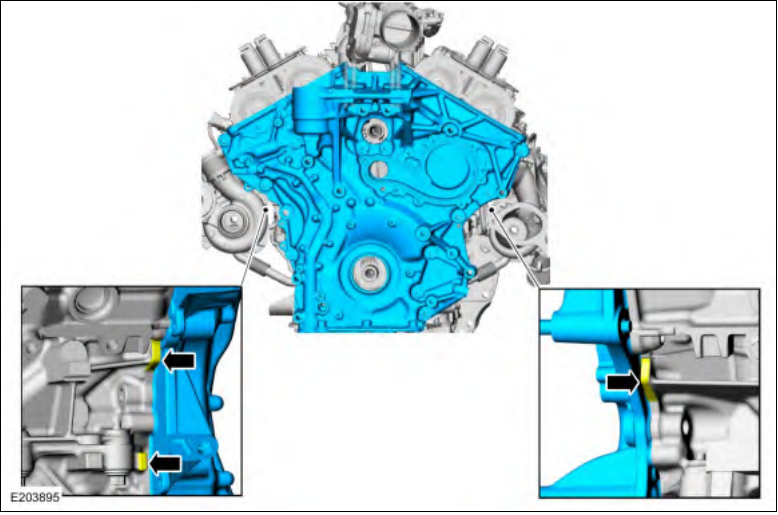
80. **NOTE:** There are 4 different types of fasteners, note location of each fastener for assembly.

Remove the engine front cover fasteners.

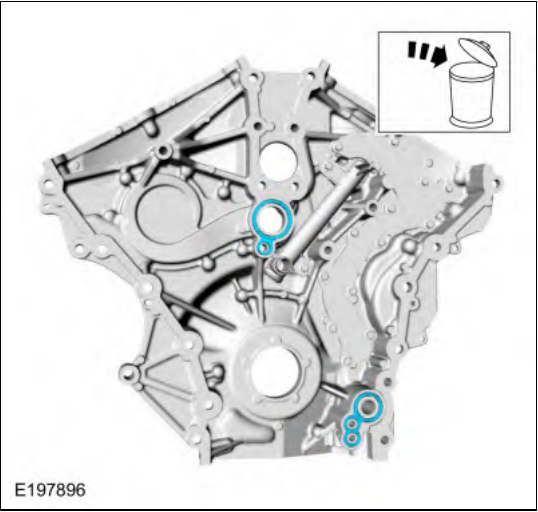


81. Using a large flat-bladed screwdriver and the indicated pry pads, release the sealer and remove the engine front cover.

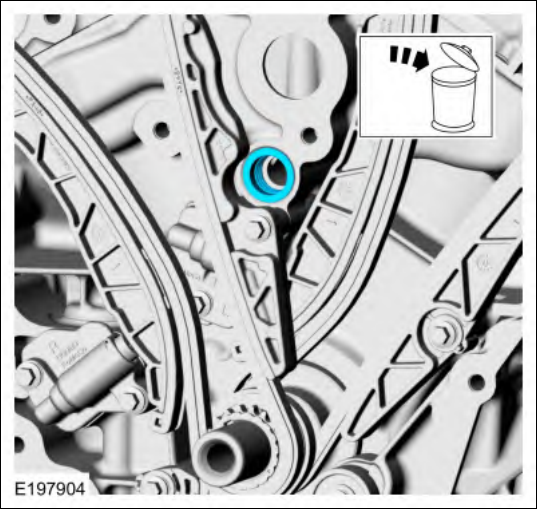
Use the General Equipment: Flat-Bladed Screwdriver



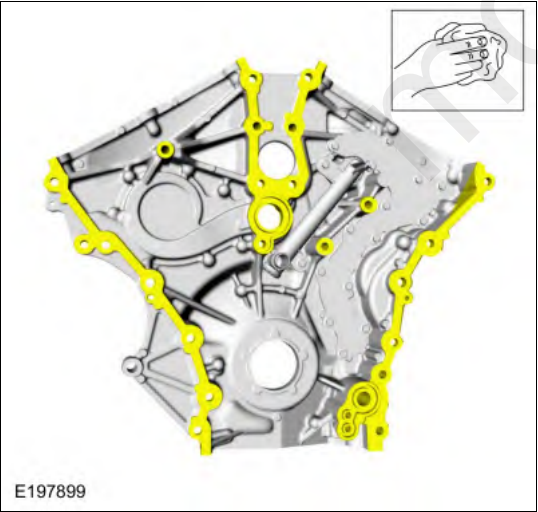
82. Remove and discard the engine front cover gaskets.



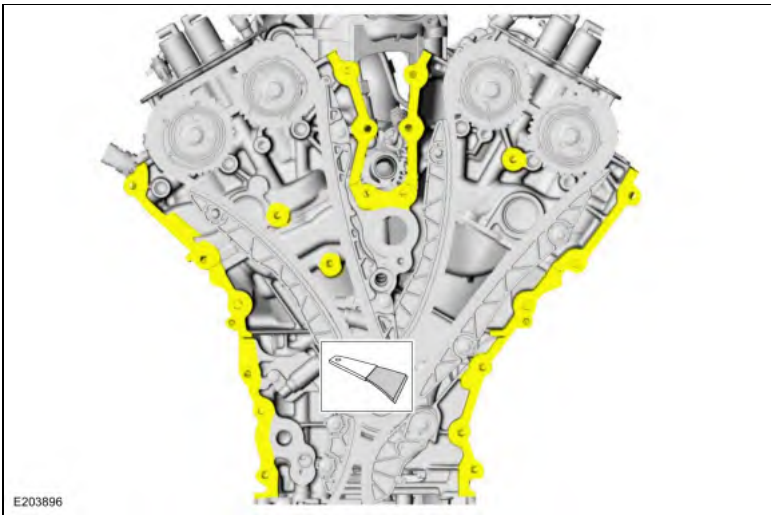
83. Remove and discard the oil gallery seal (6G068).



- 84.
- Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).

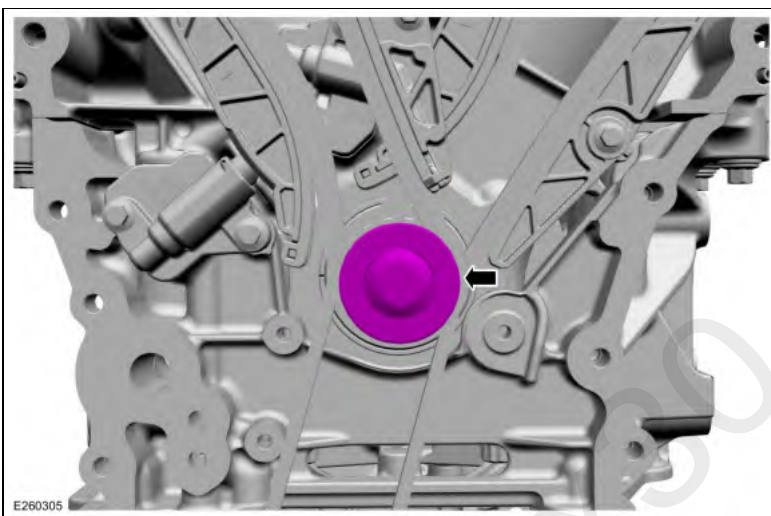


85. Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
Use the General Equipment: Plastic Scraper



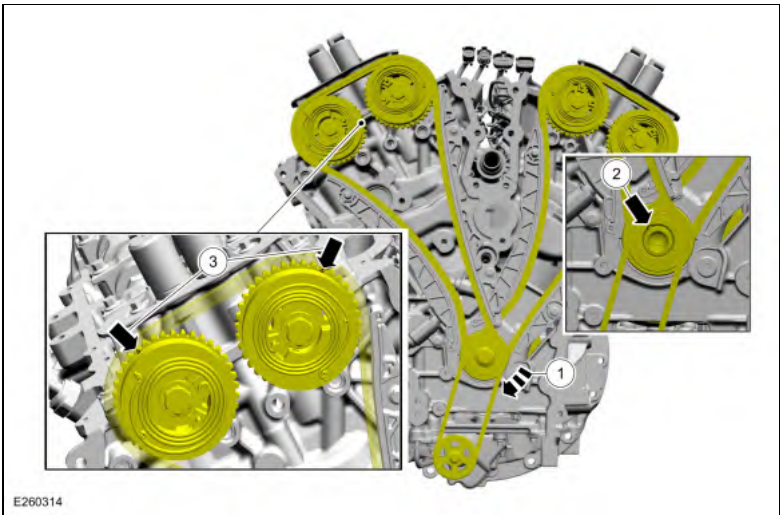
86. **NOTICE:** Rotate the crankshaft utilizing only the original crankshaft pulley bolt. Failure to follow this direction may cause damage to the crankshaft and result in engine failure.

Install the original crankshaft pulley bolt.

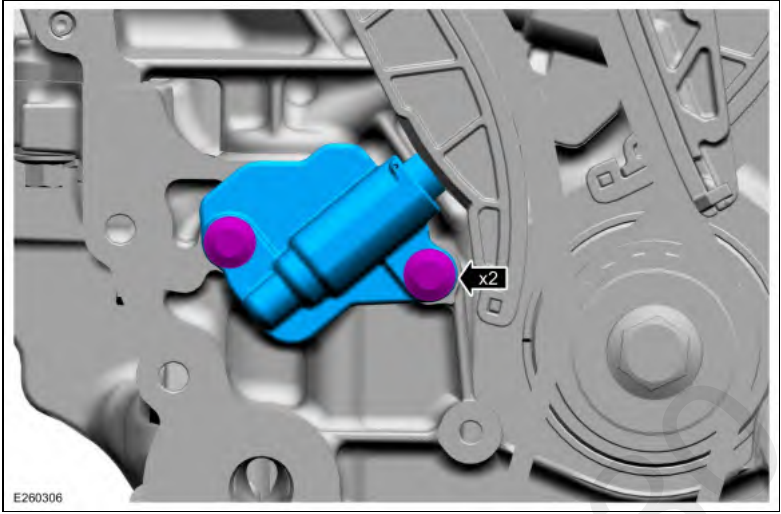


87. **NOTICE:** The VCT units have 2 timing marks on them, a triangle and a circle. For removal and installation of the RH side the triangle marks are used.

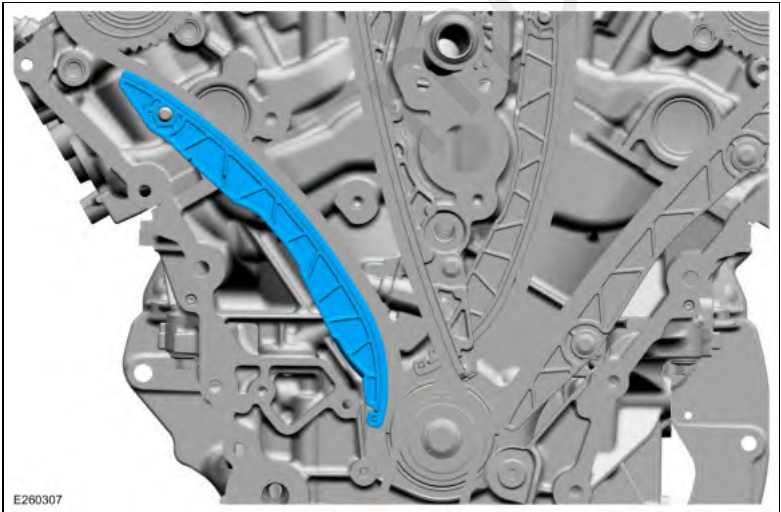
1. Rotate the crankshaft clockwise.
2. Position the crankshaft sprocket keyway at the 11 o'clock position.
3. Verify the **triangle** timing marks on the VCT units are at the 2 o'clock (intake) and 11 o'clock (exhaust) positions. If the **circle** timing marks are at these positions the crankshaft must be turned clockwise one revolution (360 degrees).



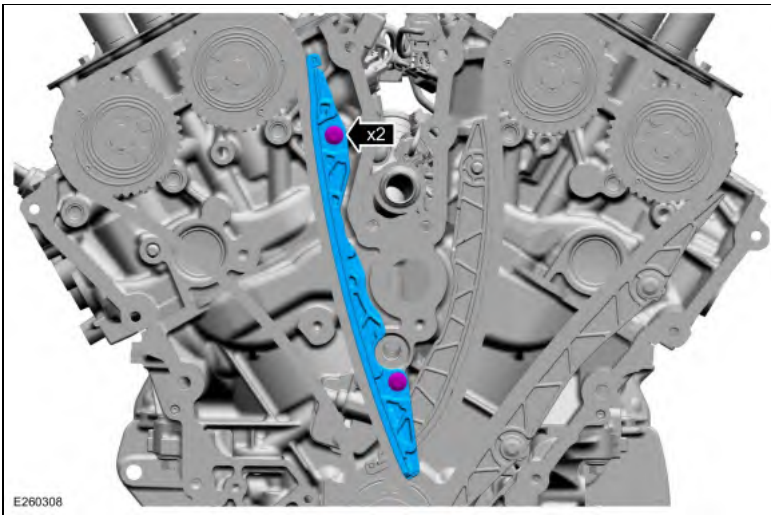
88. Remove the bolts and the RH timing chain tensioner.



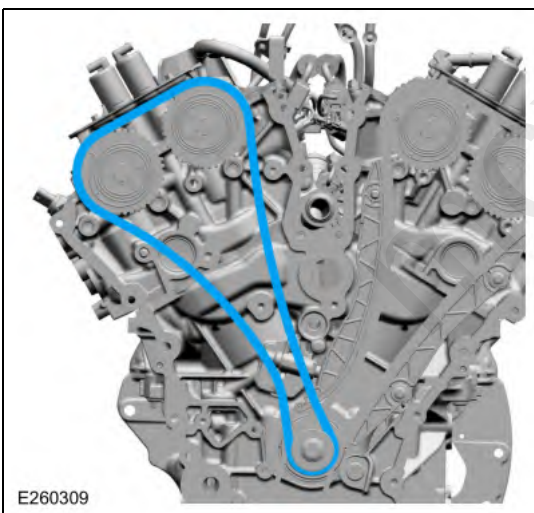
89. Remove the RH timing chain tensioner arm.



90. Remove the bolts and the RH timing chain guide.



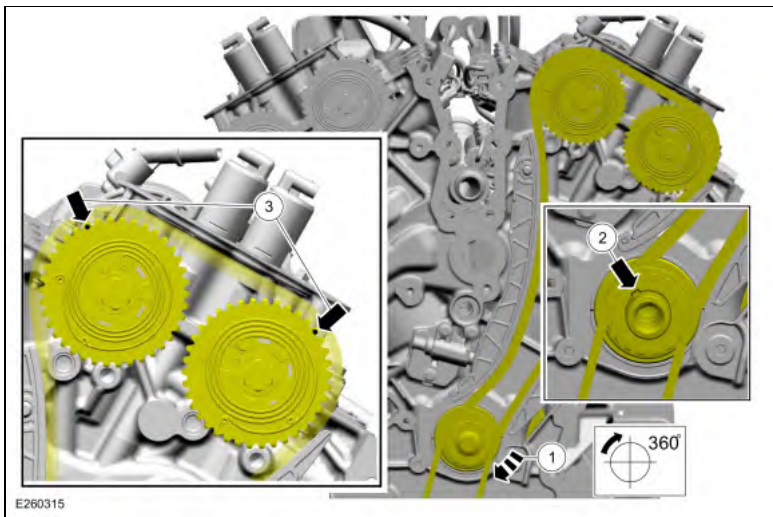
91. Remove the RH timing chain.



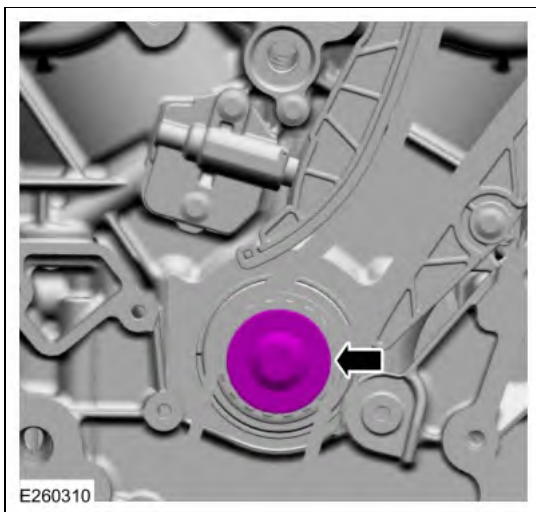
92. **NOTICE:** The crankshaft must be rotated clockwise one revolution (360 degrees). Failure to do so will result in incorrect camshaft timing.

NOTICE: The VCT units have 2 timing marks on them, a triangle and a circle. For removal and installation of the LH side the circle marks are used.

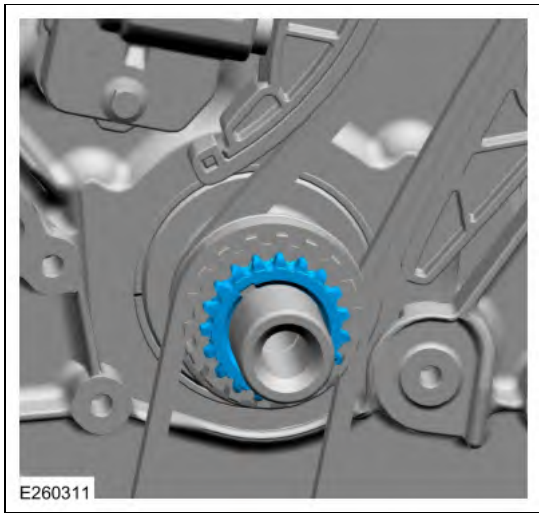
1. Rotate the crankshaft clockwise one revolution (360 degrees).
2. Position the crankshaft sprocket keyway at the 11 o'clock position.
3. The **circle** timing marks on the VCT units will be at the 10 o'clock (intake) and 12:30 (exhaust) positions.



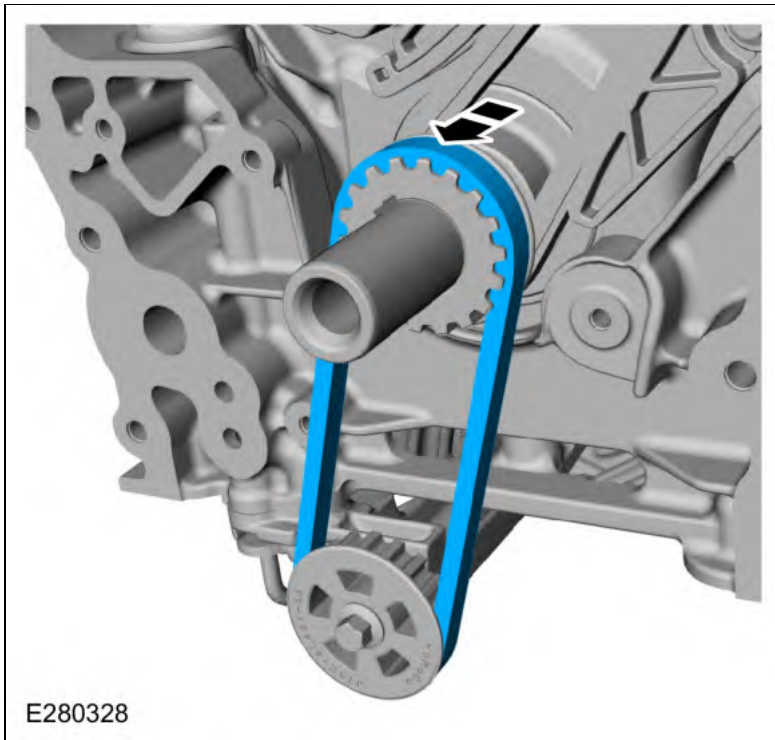
93. Remove the original crankshaft pulley bolt.



94. Remove the timing chain sprocket.



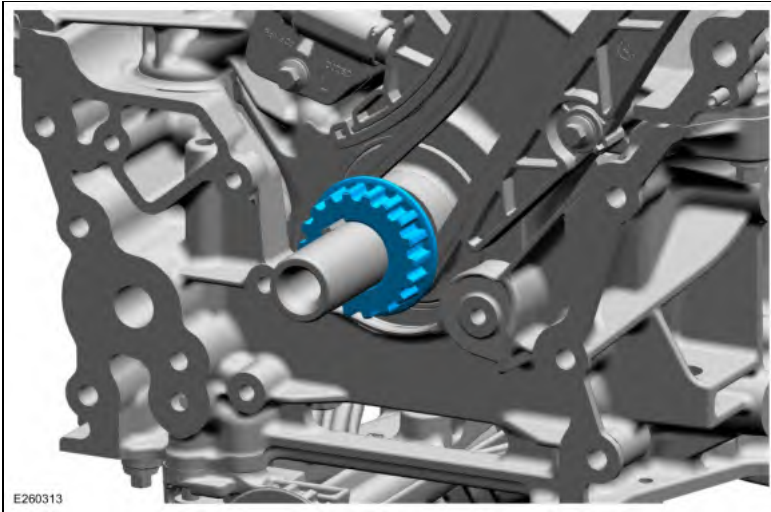
95. Slide the oil pump drive belt off of the crankshaft sprocket and remove the belt.



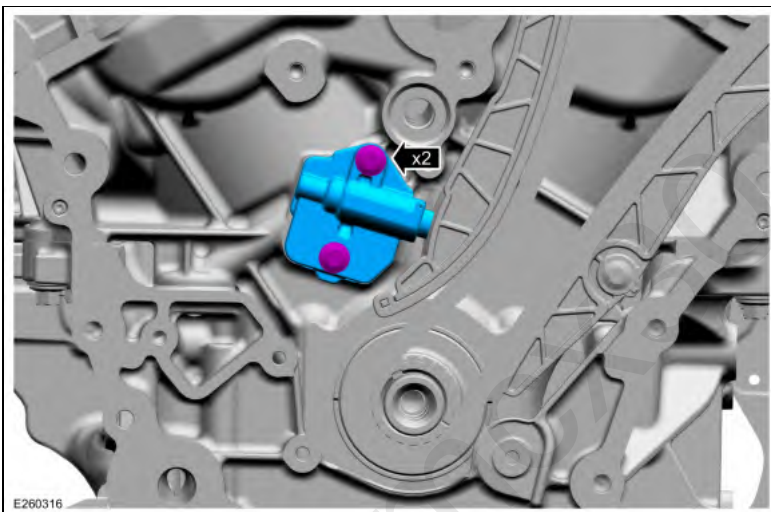
mcx30.com



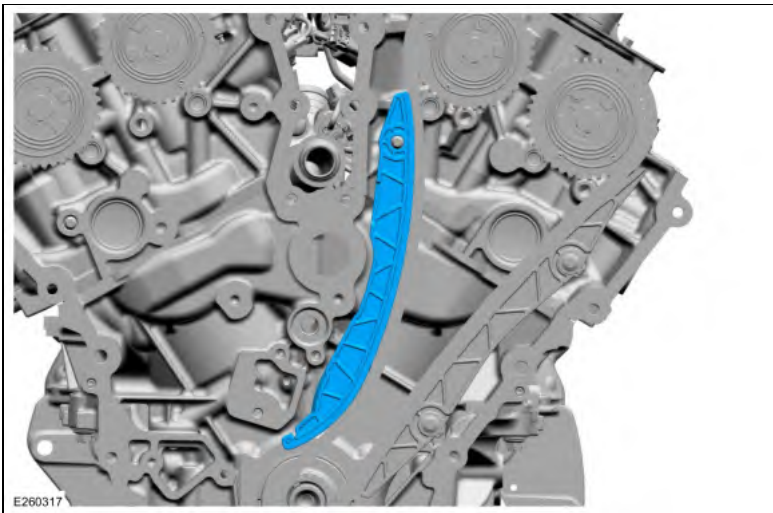
96. Remove the crankshaft sprocket.



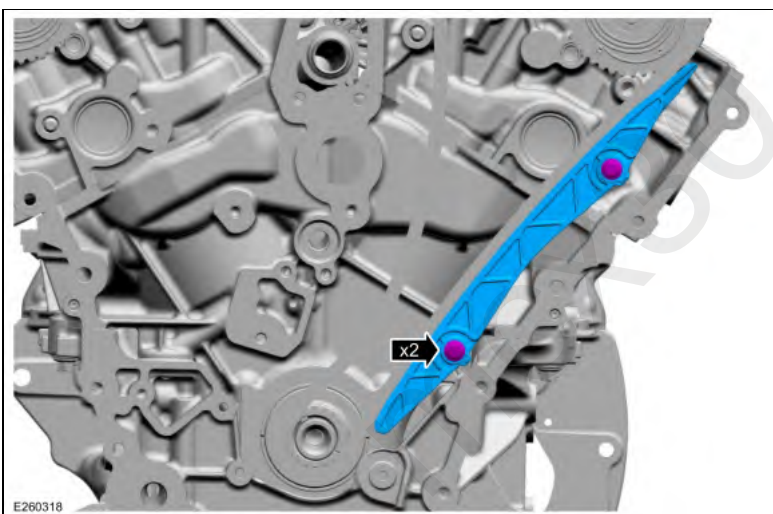
97. Remove the bolts and the LH timing chain tensioner.



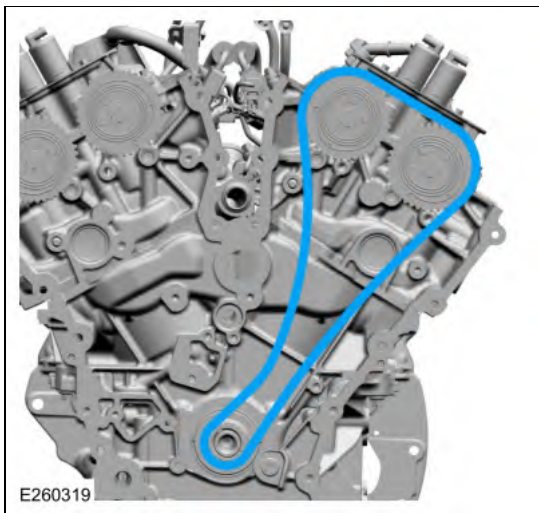
98. Remove the LH timing chain tensioner arm.



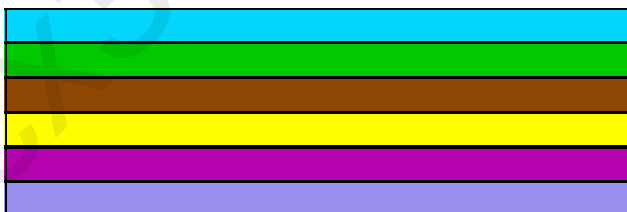
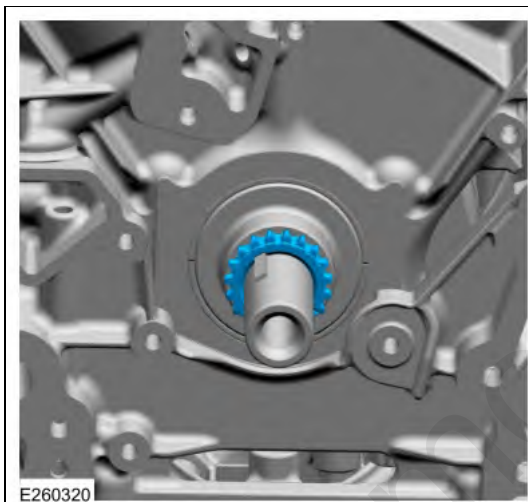
99. Remove the bolts and the LH timing chain guide.



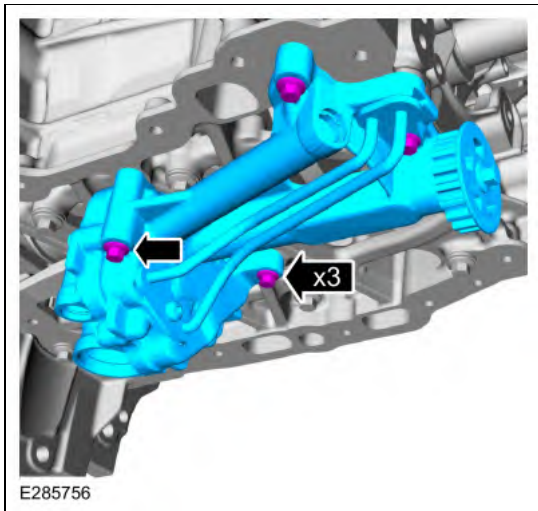
100. Remove the LH timing chain.



101. Remove the timing chain sprocket.
Remove the timing chain sprocket.

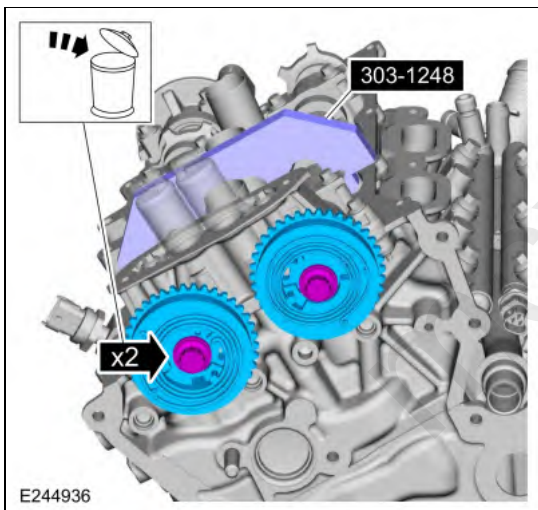


102. Remove the bolts and the oil pump.



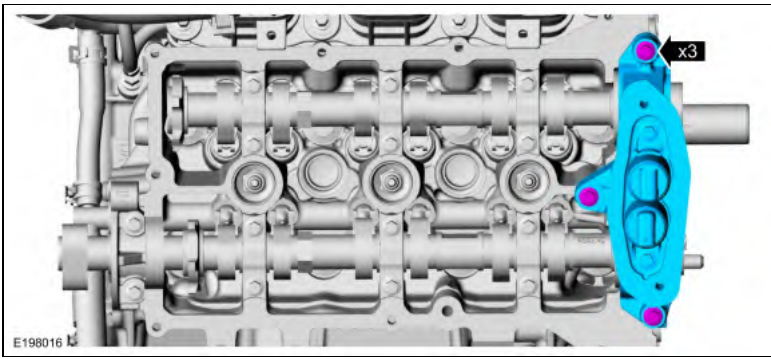
103.

1. Install Special Service Tool: 303-1248 Camshaft holding tools.
2. Remove and discard the VCT unit bolts.
3. Remove the VCT units.

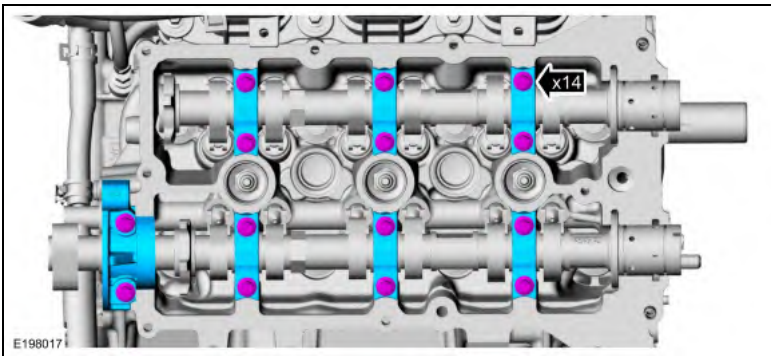


104. **NOTICE:** The front camshaft bearing mega cap must be removed first and then the remaining camshaft bearing caps. Failure to follow this direction may result in damage to the engine.

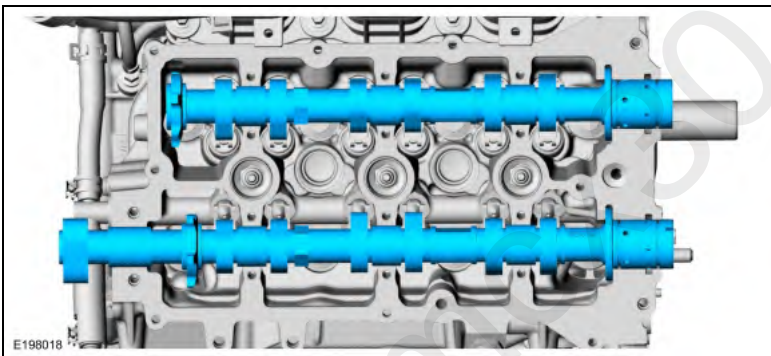
Remove the bolts and the front camshaft bearing mega cap.



105. Remove the bolts and the camshaft bearing caps.

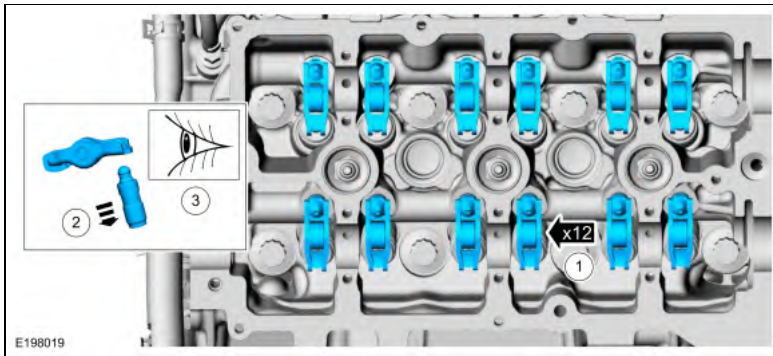


106. Remove the intake and exhaust camshafts.



107.

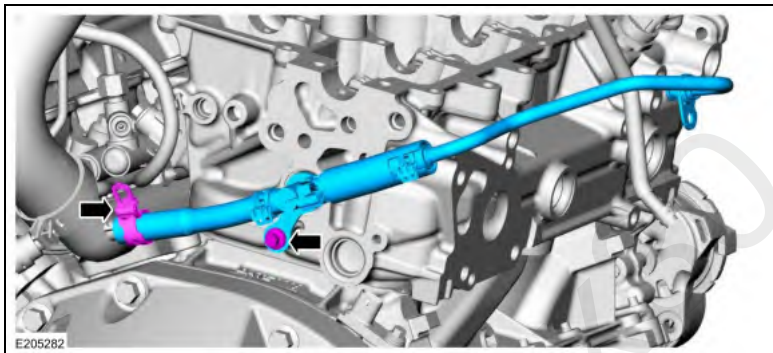
1. Remove the camshaft roller follower and hydraulic lash adjuster assemblies.
2. Separate the hydraulic lash adjusters from the spring clips on the camshaft roller followers.
3. Inspect the hydraulic lash adjuster and roller follower for damage. If any damage is found, inspect the camshaft lobes and valves for damage. Replace damaged components as necessary.



108.

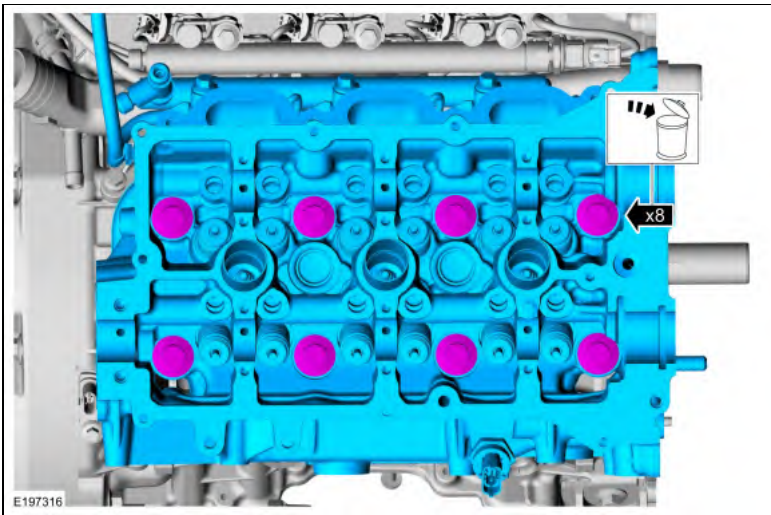
1. Release the clamp and disconnect the coolant hose.
Use the General Equipment: Hose Clamp Remover/Installer
2. **NOTE:** Do not pry the cylinder head to coolant outlet connector behind the bracket. If necessary, use gripping pliers to pull the cylinder head to coolant outlet connector from the cylinder head.

Remove the bolt and the cylinder head to coolant outlet connector hose assembly.

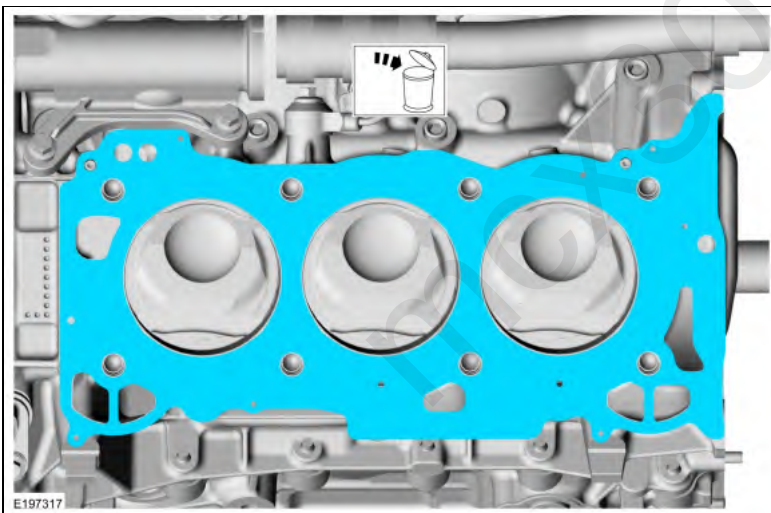


109.

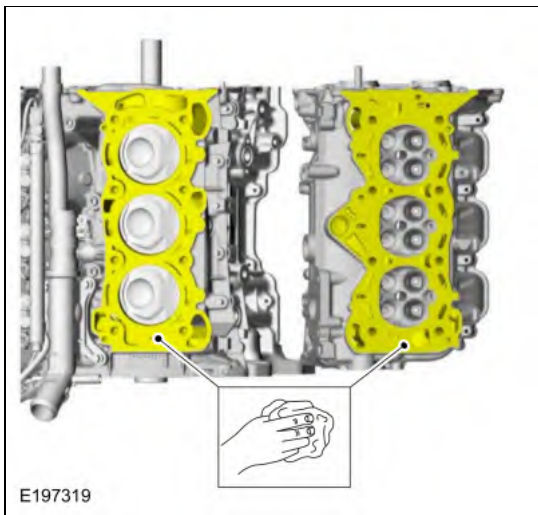
- Remove and discard the cylinder head bolts.
- Remove the cylinder head.



110. Remove and discard the cylinder head gasket.

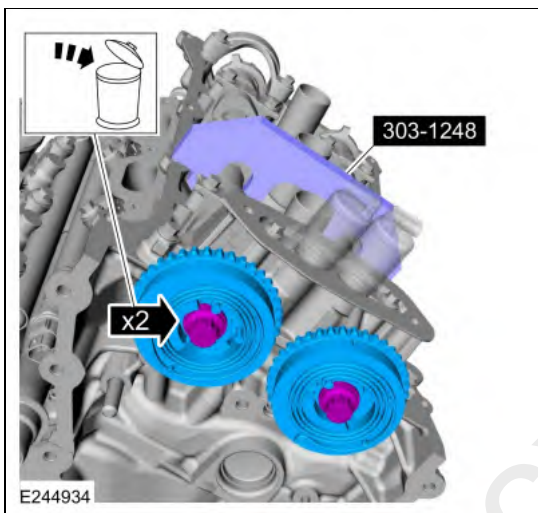


- 111.
- Clean and inspect the cylinder head-to-cylinder block mating surfaces of both the cylinder head and the cylinder block.
 - Refer to: Cylinder Head Distortion (303-00 Engine System - General Information, General Procedures).
 - Refer to: Cylinder Block Distortion (303-00 Engine System - General Information, General Procedures).



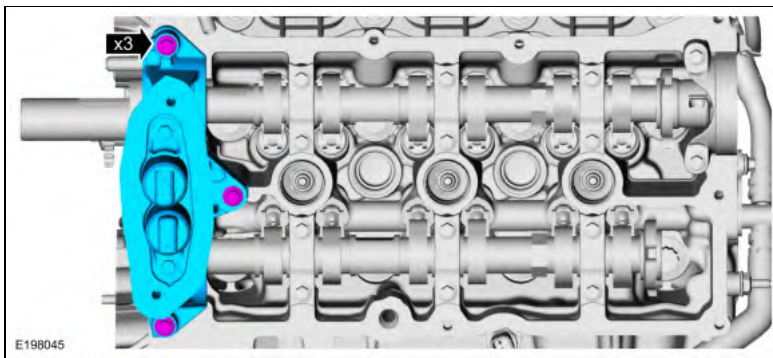
112.

1. Install Special Service Tool: 303-1248 Camshaft holding tools.
2. Remove and discard the VCT unit bolts.
3. Remove the VCT units.

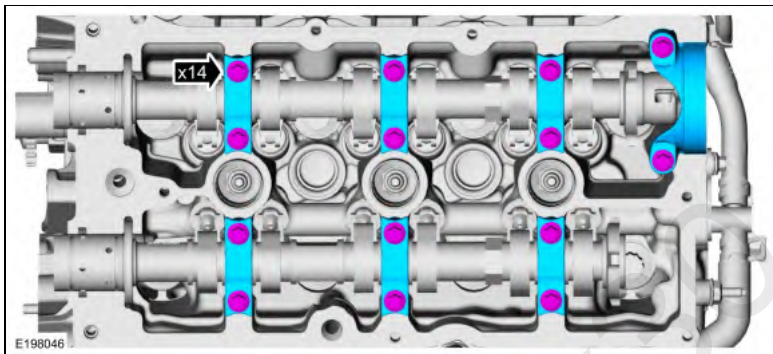


113. **NOTICE:** The front camshaft bearing mega cap must be removed first and then the remaining camshaft bearing caps. Failure to follow this direction may result in damage to the engine.

Remove the bolts and the front camshaft bearing mega cap.

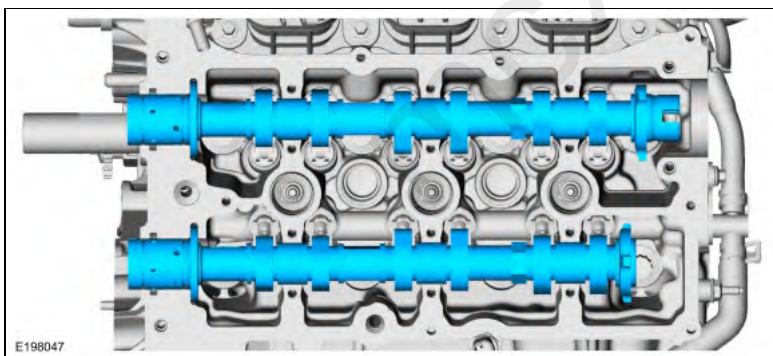


114. Remove the bolts and the camshaft bearing caps.



A horizontal bar chart consisting of six equally sized rectangular segments stacked vertically. From top to bottom, the colors are cyan, green, brown, yellow, purple, and light blue. Each segment has a thin black border.

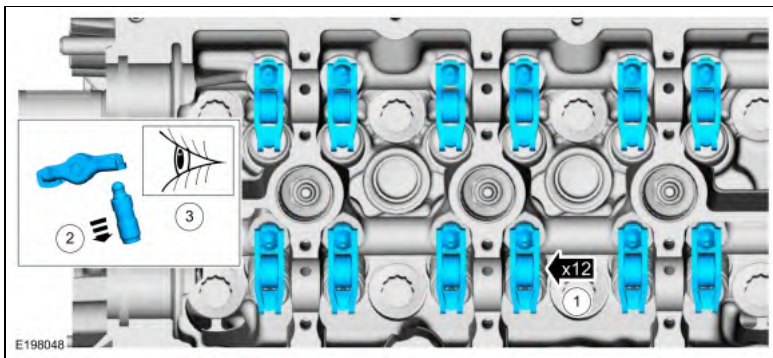
115. Remove the intake and exhaust camshafts.



A horizontal bar chart with six bars of equal length, stacked vertically. The bars are colored cyan, green, brown, yellow, purple, and light blue from top to bottom.

116.

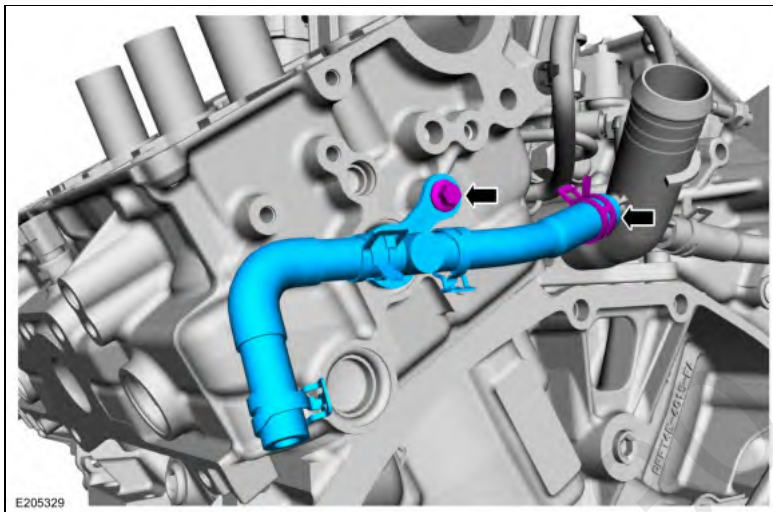
1. Remove the camshaft roller follower and hydraulic lash adjuster assemblies.
2. Separate the hydraulic lash adjusters from the spring clips on the camshaft roller followers.
3. Inspect the hydraulic lash adjuster and roller follower for damage. If any damage is found, inspect the camshaft lobes and valves for damage. Replace damaged components as necessary.



117.

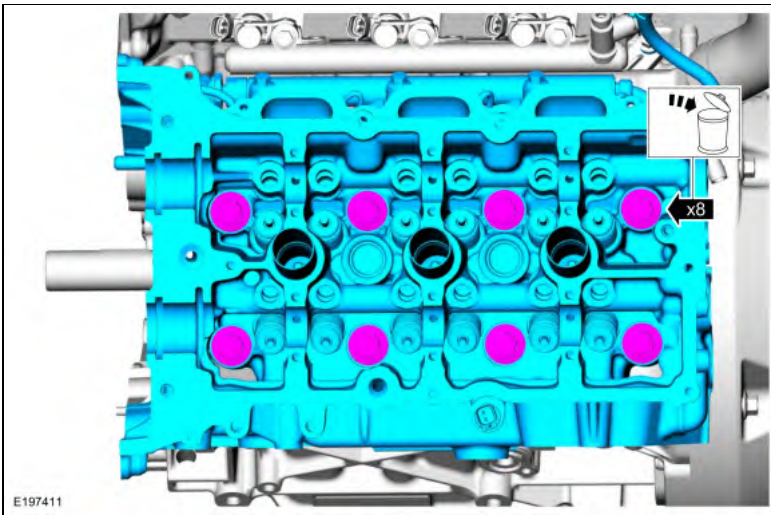
1. Release the clamp and disconnect the coolant hose.
Use the General Equipment: Hose Clamp Remover/Installer
2. **NOTE:** Do not pry the cylinder head to coolant outlet connector behind the bracket. If necessary, use gripping pliers to pull the cylinder head to coolant outlet connector from the cylinder head.

Remove the bolt and the cylinder head to coolant outlet connector hose assembly.

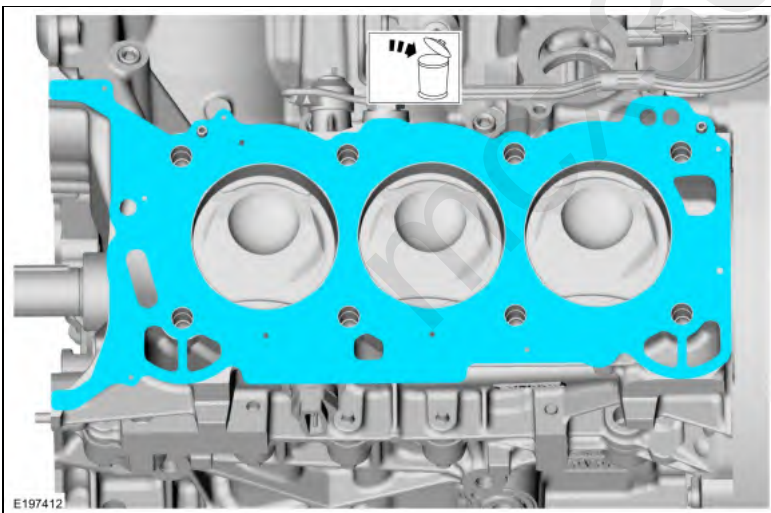


118.

- Remove and discard the cylinder head bolts.
- Remove the cylinder head.

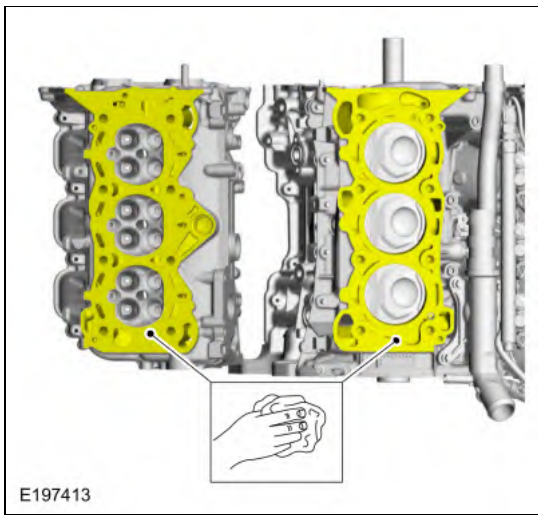


119. Remove and discard the cylinder head gasket.

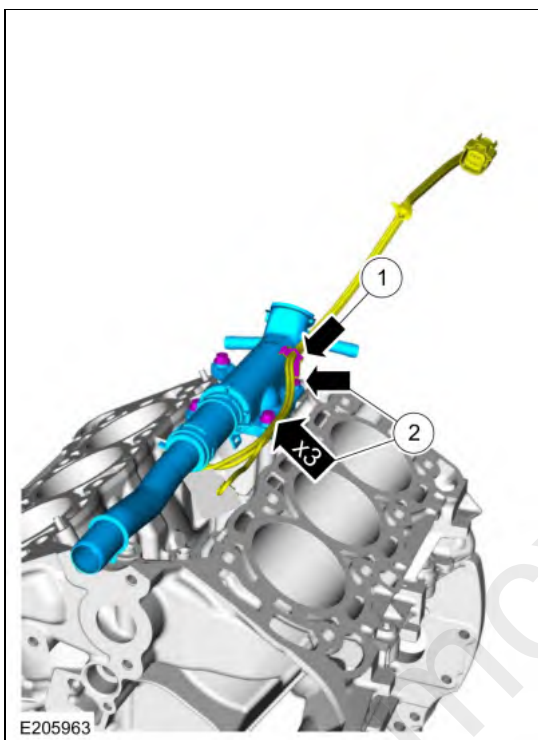


120.

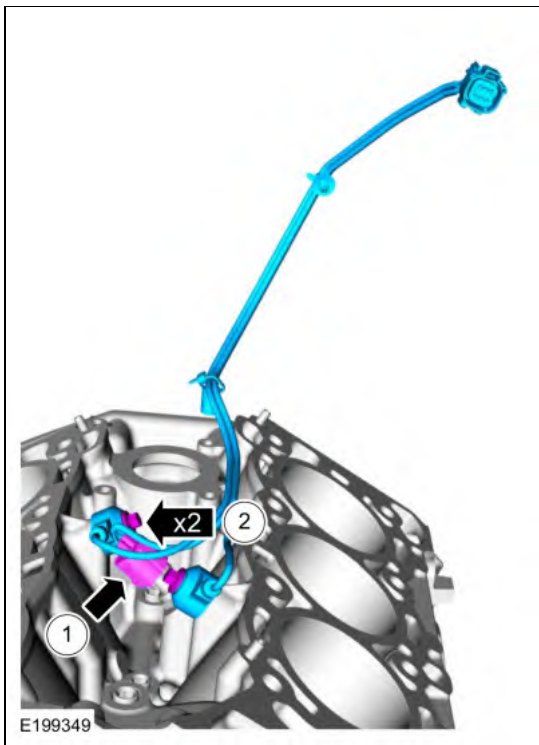
- Clean and inspect the cylinder head-to-cylinder block mating surfaces of both the cylinder head and the cylinder block.
- Refer to: Cylinder Head Distortion (303-00 Engine System - General Information, General Procedures).
- Refer to: Cylinder Block Distortion (303-00 Engine System - General Information, General Procedures).



- 121.
1. Detach the wiring harness retainer from the stud bolt.
 2. Remove the stud bolt, the nuts and the coolant outlet connector pipe.

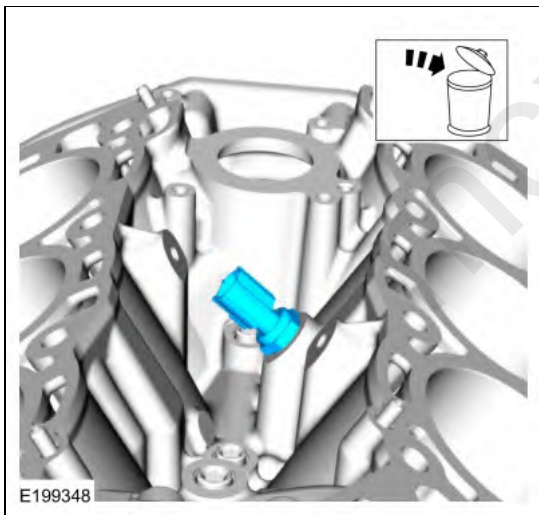


- 122.
1. Disconnect the ECT sensor electrical connector.
 2. Remove the bolts and the KS assembly.

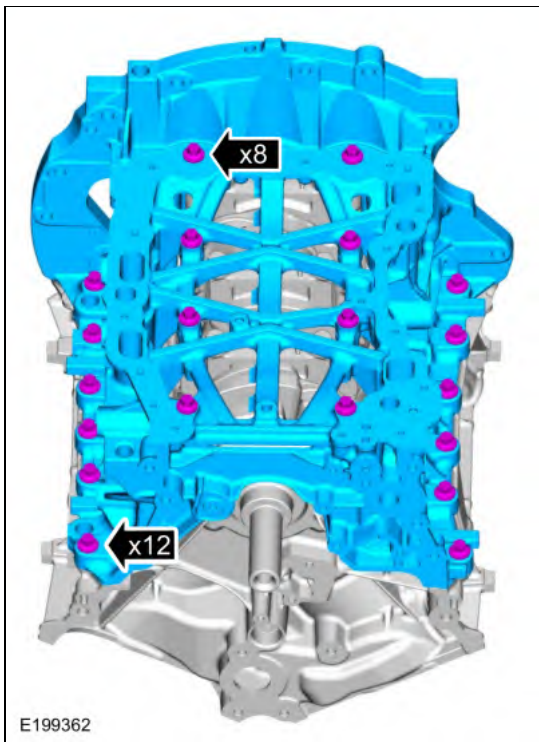


123. **NOTE:** Do not reuse the ECT sensor, install a new sensor.

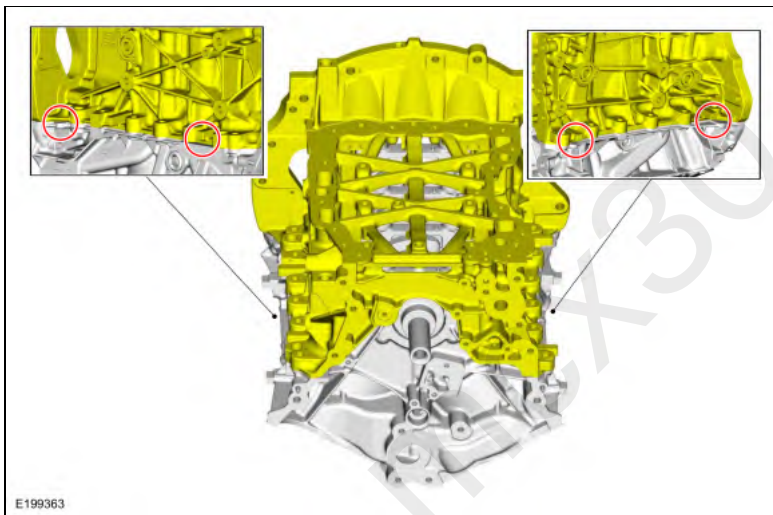
Remove and discard the ECT sensor.



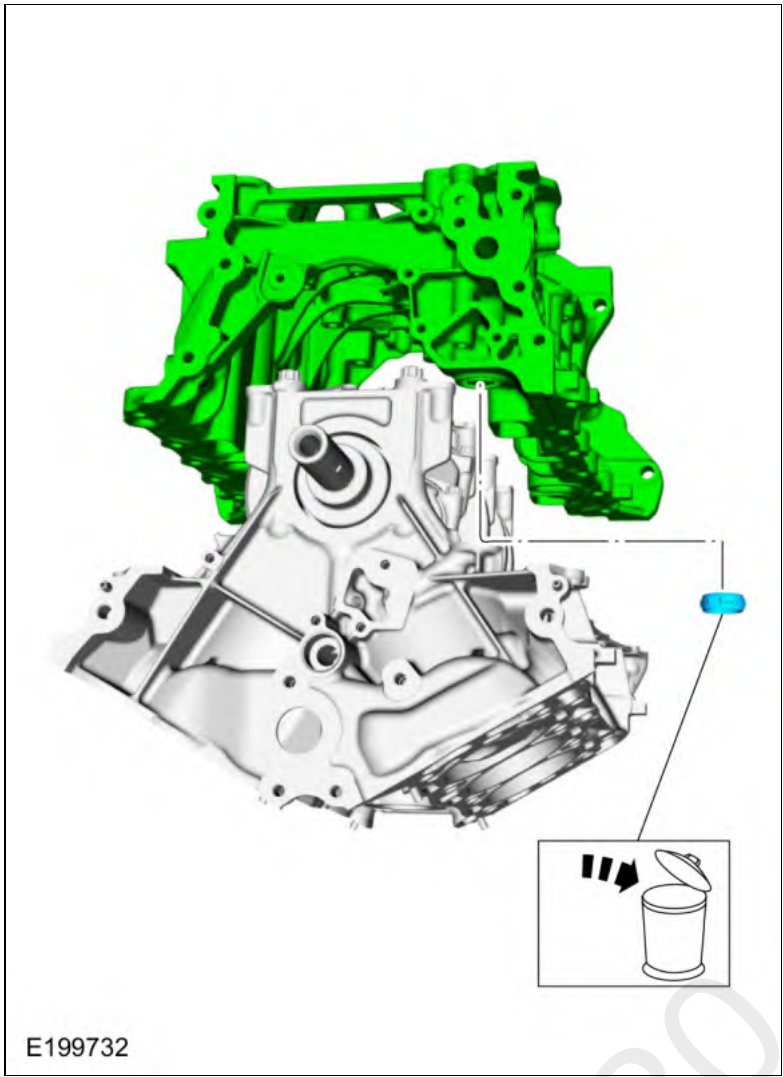
124. Remove the engine block skirt stiffener bolts.



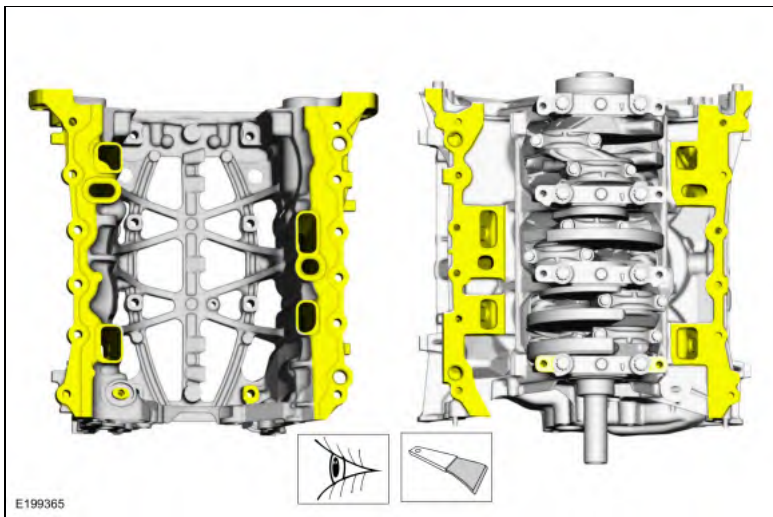
125. Using a suitable pry bar at the 4 pry pad locations, release the engine block skirt stiffener-to-engine block seal.



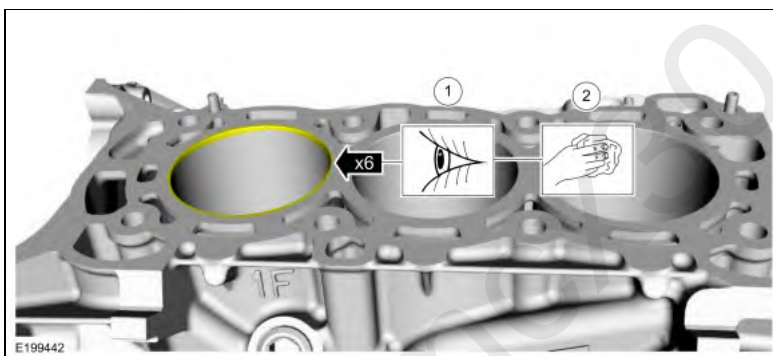
- 126.
- Remove the engine block skirt stiffener.
 - Remove and discard the oil seal.



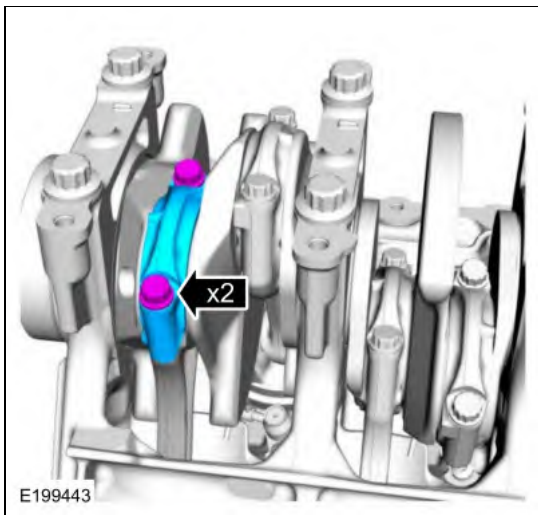
127. Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).
Use the General Equipment: Plastic Scraper



- 128.
- Before removing the pistons, inspect the top of the cylinder bores.
 - If necessary, remove the ridge or carbon deposits from each cylinder using an abrasive pad.

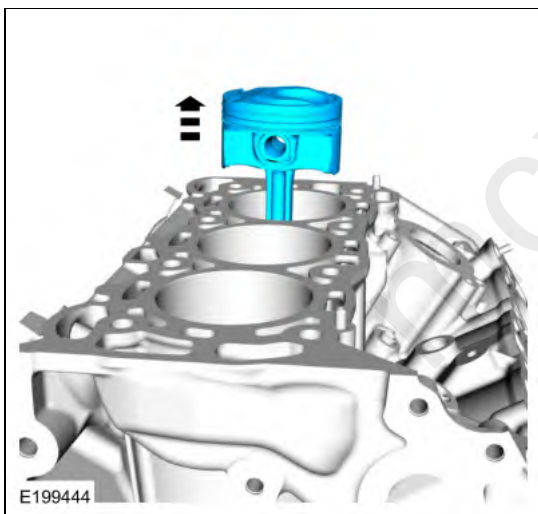


129. Remove the bolts and the connecting rod cap.



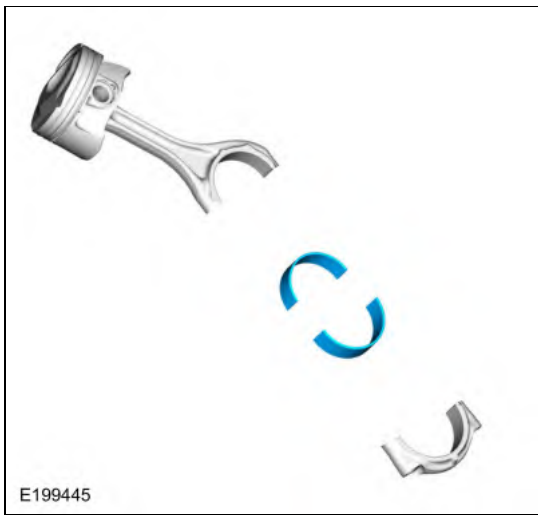
130. **NOTICE:** Position the cylinder bank for the piston serviced in a vertical position. Do not scratch the cylinder walls or crankshaft journals with the connecting rod or engine damage may occur.

- Remove the piston through the top of the cylinder block
- Repeat the steps for each of the remaining pistons.

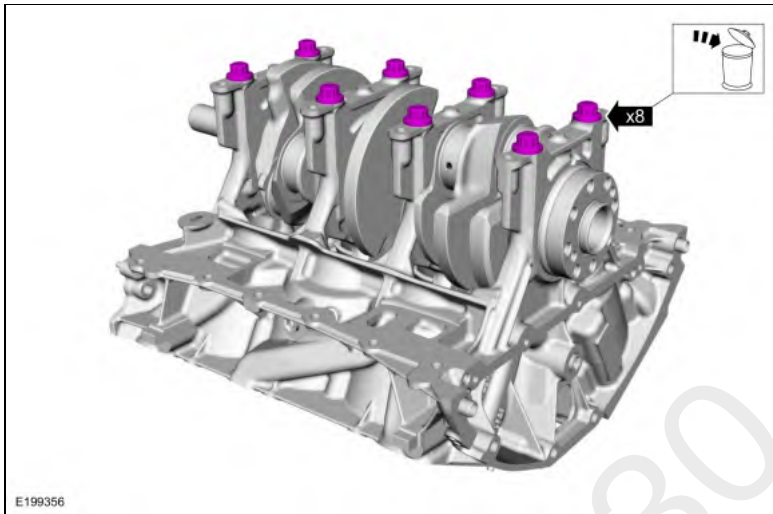


131.

- Remove the connecting rod bearings.
- Disassemble and inspect the pistons.
Refer to: Piston (303-01B Engine - 2.7L EcoBoost (238kW/324PS), Disassembly and Assembly of Subassemblies).
Refer to: Piston Inspection (303-00 Engine System - General Information, General Procedures).

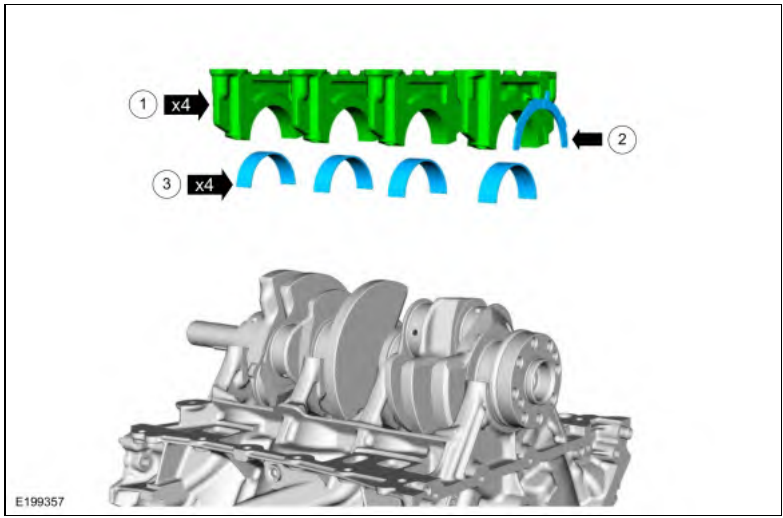


132. Remove and discard the main bearing cap bolts.



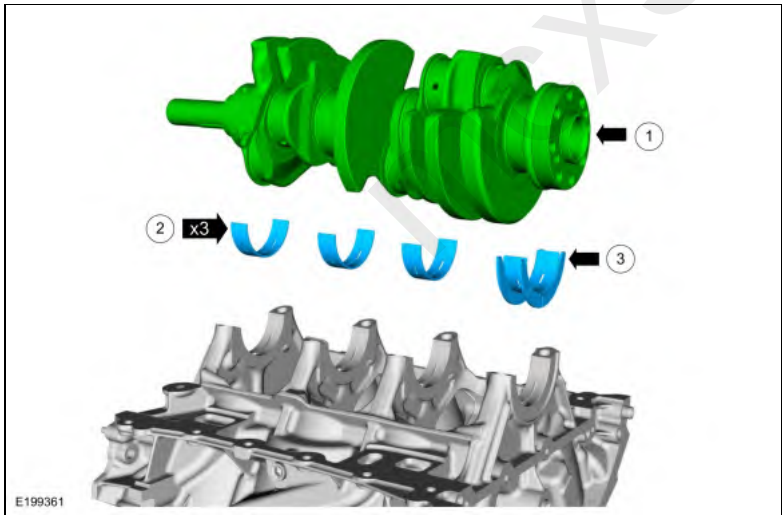
133.

1. Remove the main bearing caps.
2. Remove the lower thrust washer.
3. Remove the lower main bearings.

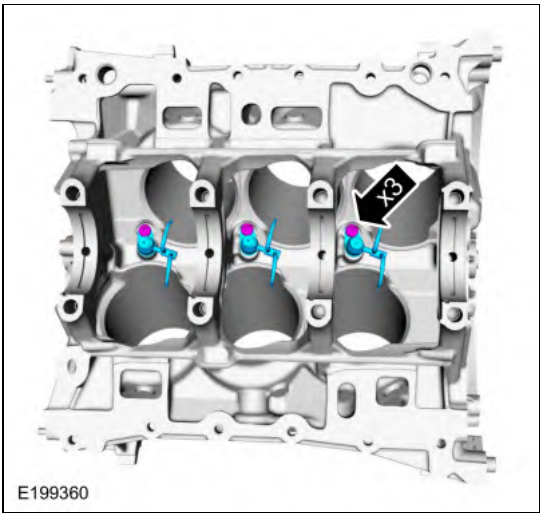


134.

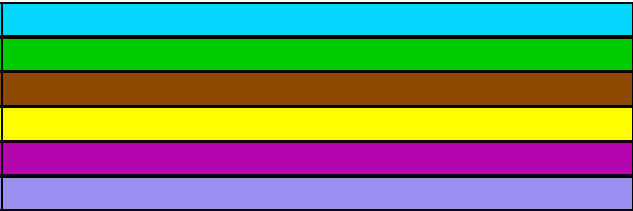
1. Remove the crankshaft.
2. Remove the lower main bearings.
3. Remove the lower thrust bearing.



135. Remove the bolts and the piston cooling jets from the cylinder block.



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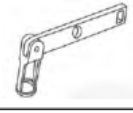
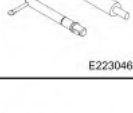


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Disassembly and Assembly of Subassemblies

Cylinder Head

Special Tool(s) / General Equipment

	303-1249 Valve Spring Compressor TKIT-2006UF-FLM TKIT-2006UF-ROW
	303-1418 Compressor, Valve Spring TKIT-2008ET-FLM TKIT-2008ET-ROW
	303-1567 Sizer, Teflon Seal TKIT-2010C-FLM
	303-300 (T87C-6565-A) Set, Valve Spring Compressor TKIT-1988-FESTIVA T88C-1000-ST TKIT-1988-TRACER TKIT-2009TC-F
	303-350 (T89P-6565-A) Compressor, Valve Spring TKIT-1990-LMH TKIT-1989-F TKIT-1989-FM TKIT-1989-FLM
	307-005 (T59L-100-B) Slide Hammer
	310-205 Fuel Injector Brush
	310-206 Remover, Fuel Injector TKIT-2009A-FLM
	310-207 Installer, Fuel Injector Seal Assembly TKIT-2009A-FLM

Materials

Name	Specification
Motorcraft® SAE 5W-30 Synthetic Blend Motor Oil XO-5W30-QSP	WSS-M2C946-A
Motorcraft® Thread Sealant with PTFE TA-24-B	WSK-M2G350-A2

DISASSEMBLY

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.

NOTE: If the components are to be reinstalled, they must be installed in their original locations. Mark the components for installation into their original locations.