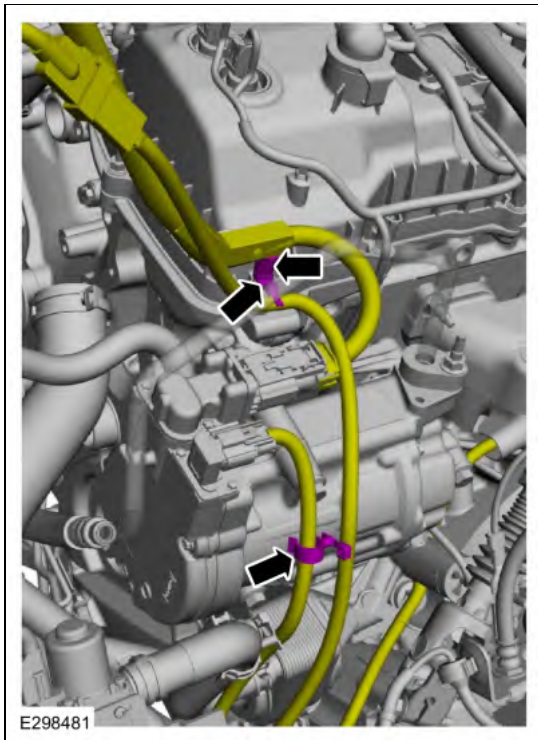
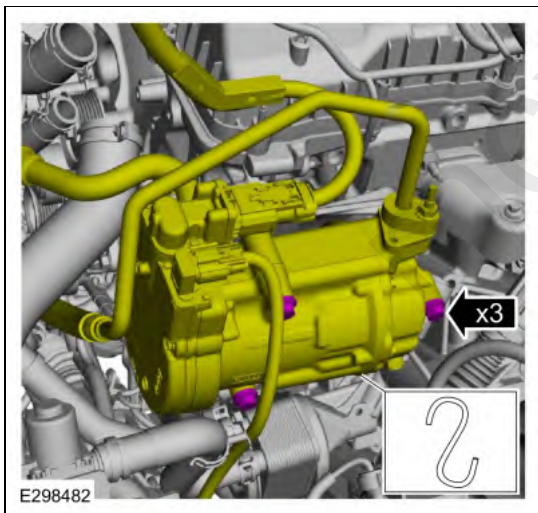
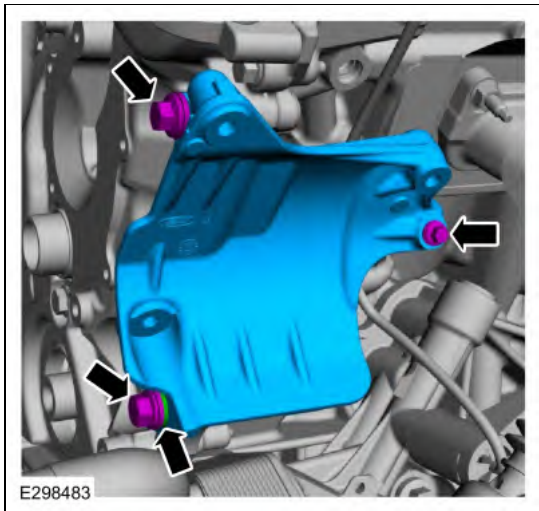




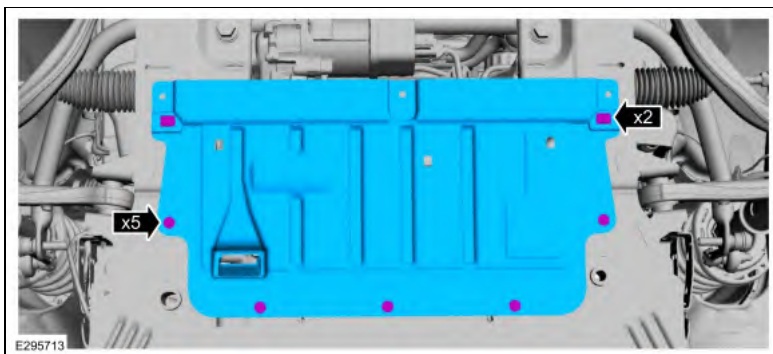
8. Remove the bolts and position aside the A/C compressor and support.



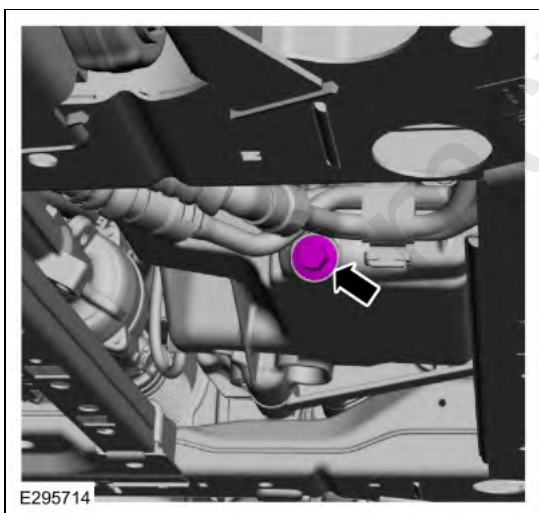
- 9.
- Remove the bolts and the A/C compressor bracket.
 - Remove the bottom bolt bushing.



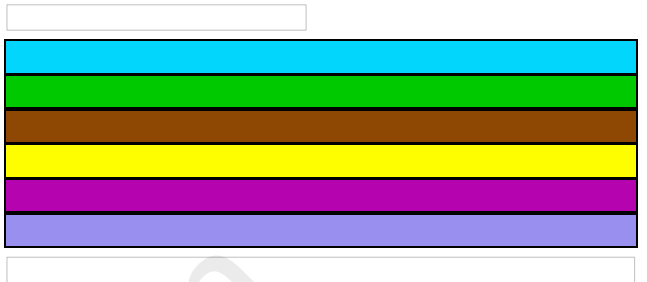
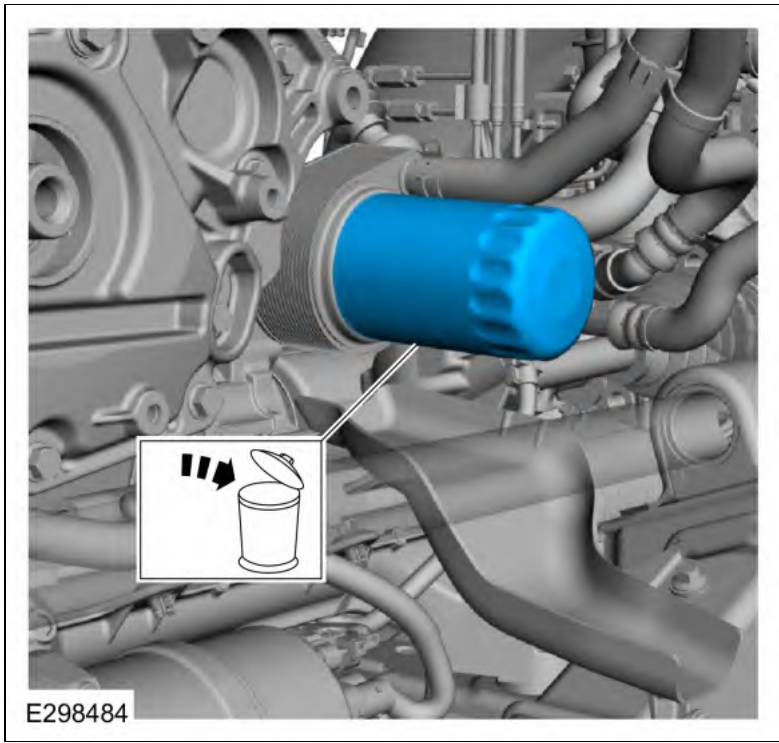
10. Remove the retainer, bolts and the rear underbody shield.



- 11.
- Remove the oil pan drain plug and drain the engine oil.
Use the General Equipment: Oil Drain Equipment
 - Install the oil drain plug.
Torque: 19 lb.ft (26 Nm)

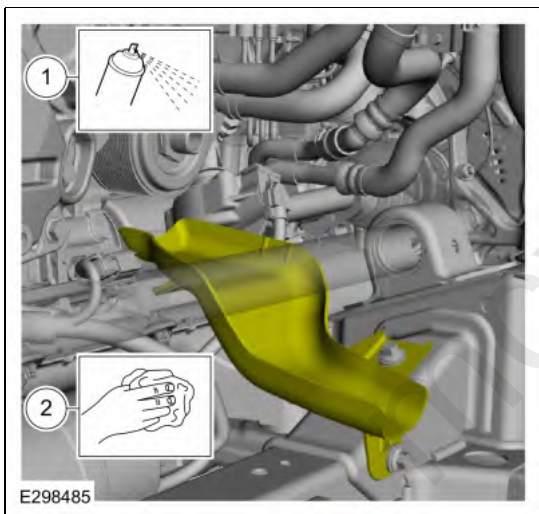


12. Remove and discard the engine oil filter.
Use the General Equipment: Oil Drain Equipment

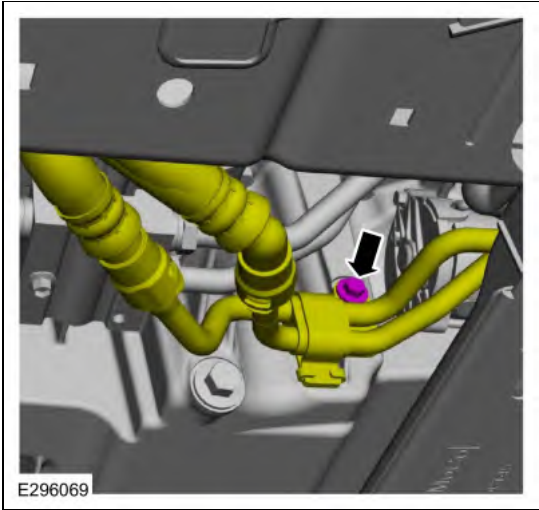


13.

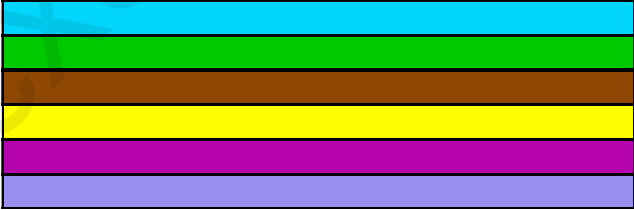
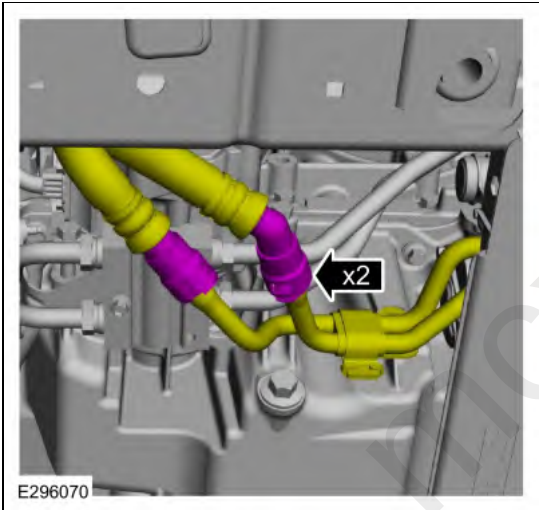
1. Using brake cleaner, clean the drain trough.
Use the General Equipment: Oil Drain Equipment
Material: Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B
2. Wipe the drain trough clean.



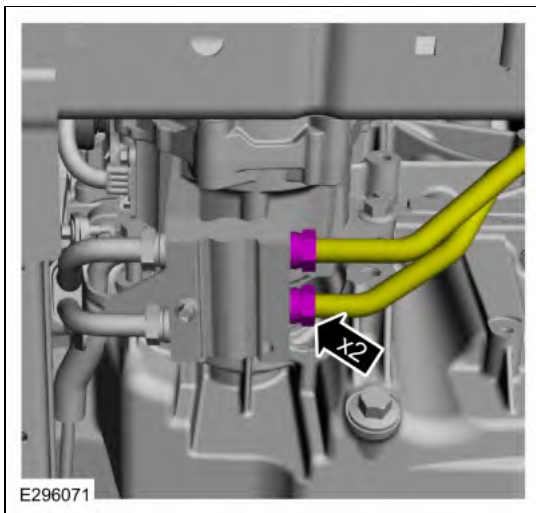
14. Remove the bolt for transmission cooling tubes from oil pan.



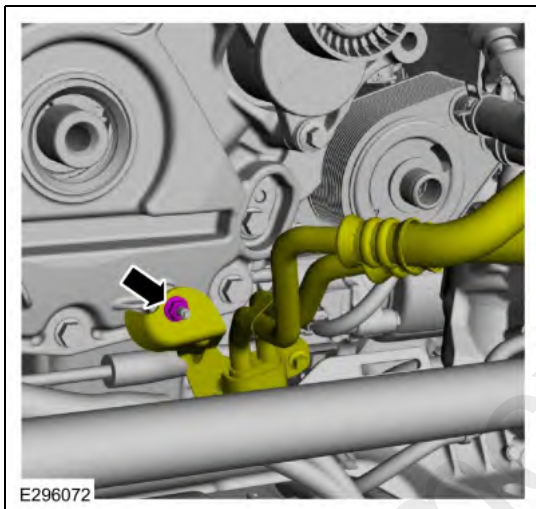
15. **NOTE:** *Be prepared to collect escaping fluid.*
If equipped, disconnect the transmission cooling tubes.
Use the General Equipment: Oil Drain Equipment



16. **NOTE:** *Be prepared to collect escaping fluid.*
If equipped, remove the transmission cooling tubes from the cooler bypass valve.

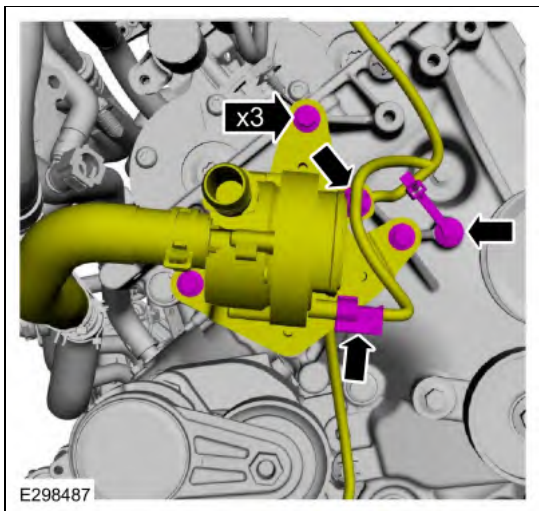


17. If equipped, remove the nut and position the transmission cooling tubes and bracket aside.

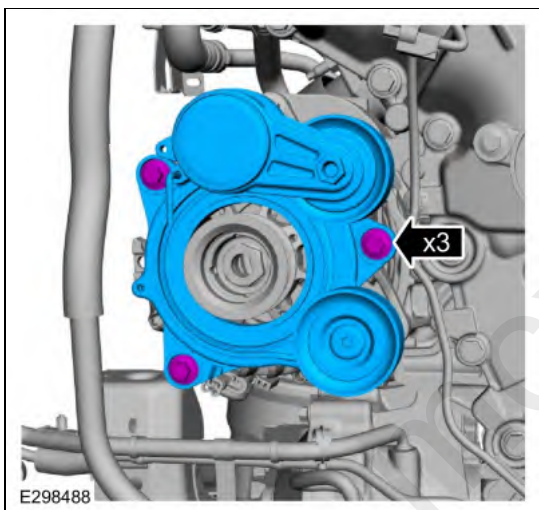


18.

- Disconnect the cabin heater coolant pump wiring harness electrical connector and the retainers.
- Remove the bolts and position the cabin heater coolant pump aside.

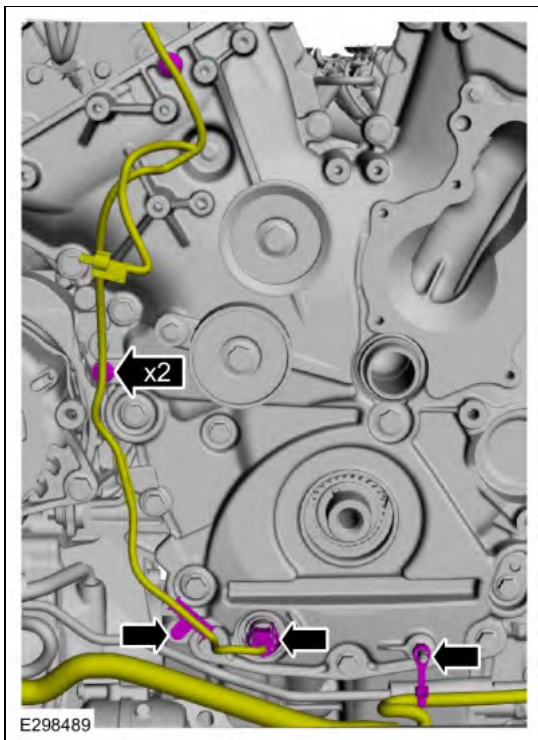


19. Remove the bolts and the accessory drive belt tensioner assembly.

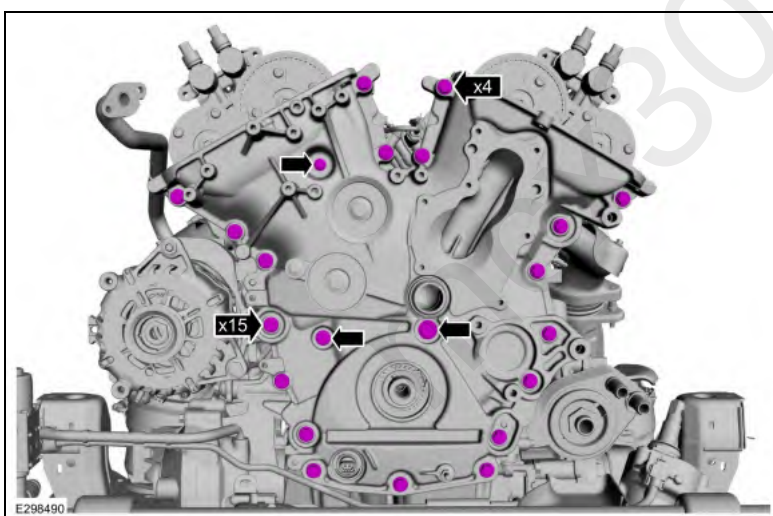


20.

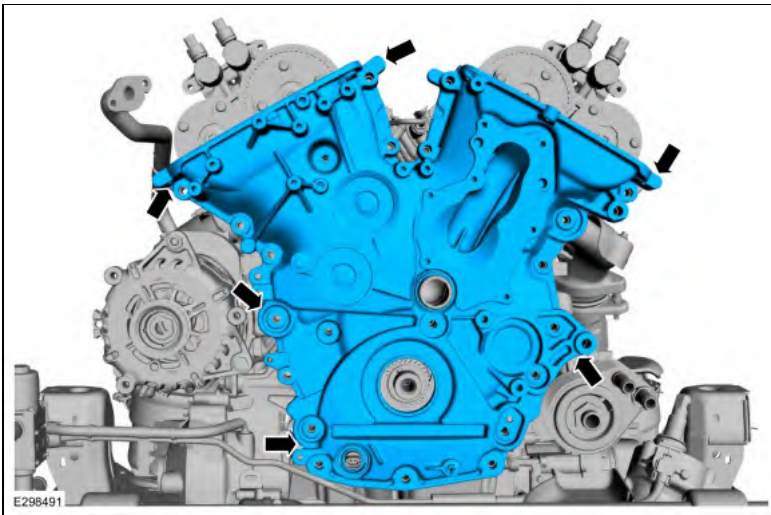
- Detach the wiring harness retainers from the engine front cover.
- Disconnect the oil pressure control solenoid wiring harness electrical connector.
- If equipped, detach the AWD vent hose retainer from the engine front cover stud bolt.



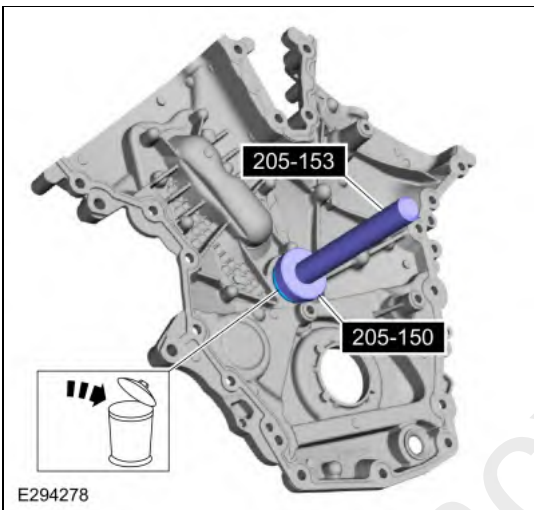
21. Remove the engine front cover bolts.



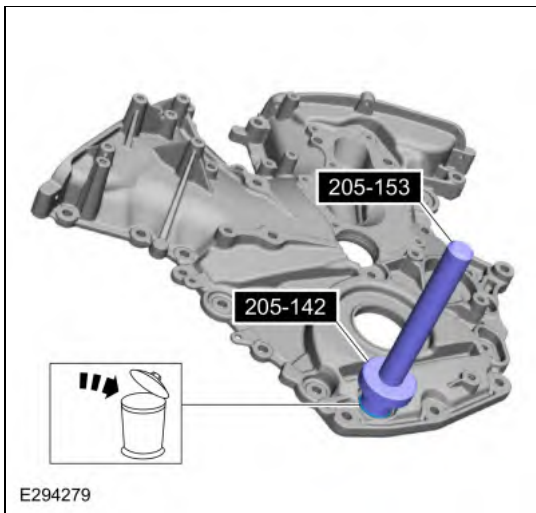
22. Using a pry tool, locate the pry pads shown and pry the engine front cover loose and remove.



23. Using the special tools, remove and discard the engine front cover to coolant pipe seal.
 Use Special Service Tool: 205-150 (T80T-4000-S) Installer, Spindle Bearing , 205-153 (T80T-4000-W) Handle.



24. **NOTICE: Do not install the oil pump electrical connector seal until the front cover is installed on the engine or damage to the seal may occur.**
 Using the special tools, remove and discard the oil pump electrical connector seal.
 Use Special Service Tool: 205-142 (T80T-4000-J) Installer, Differential Bearing Cone. , 205-153 (T80T-4000-W) Handle.



25. **NOTICE:** Only use a 3M[®],[®] Roloc[®] Bristle Disk (2-in white, part number 07528) to clean the engine front cover. Do not use metal scrapers, wire brushes or any other power abrasive disk to clean front cover.

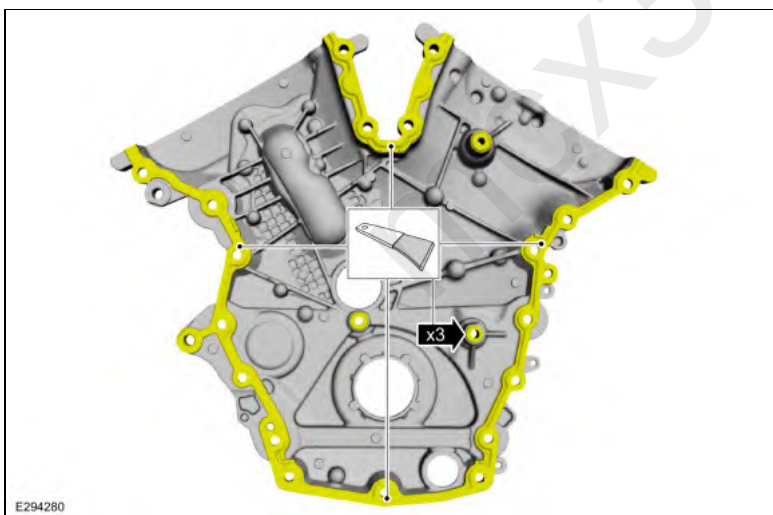
- Clean the engine front cover using a 3M[®],[®] Roloc[®] Bristle Disk (2-in white, part number 07528) in a suitable tool turning at the recommended speed of 15,000 rpm.
- Thoroughly wash the engine front cover to remove any foreign material, including any abrasive particles created during the cleaning process.

Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).

Material: Motorcraft[®] Silicone Gasket Remover / ZC-30-A

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

Material: Motorcraft[®] Metal Surface Prep Wipes / ZC-31-B



26. **NOTICE:** Place clean, lint-free shop towels over exposed engine cavities. Carefully remove the towels so foreign material is not dropped into the engine. Any foreign material (including any material created while cleaning gasket surfaces) that enters the oil passages or the oil pan, may cause engine failure.

NOTICE: Do not use wire brushes, power abrasive discs or 3M[®],[®] Roloc[®] Bristle Disk (2-in white part number 07528) to clean the sealing surfaces. These tools cause scratches and gouges that make leak paths. They also cause contamination that will cause premature engine failure. Remove all traces of the gasket.

Make sure that the mating faces of the engine block and oil pan are clean and free of foreign material.

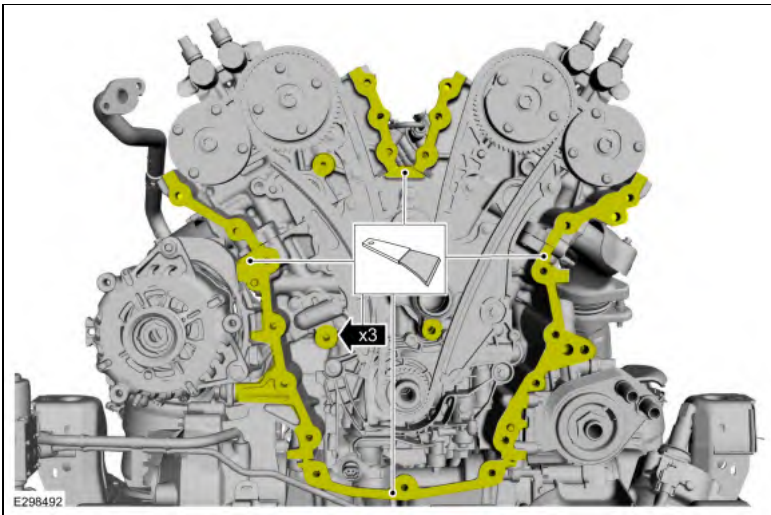
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).

Use the General Equipment: Plastic Scraper

Material: Motorcraft[®] Silicone Gasket Remover / ZC-30-A

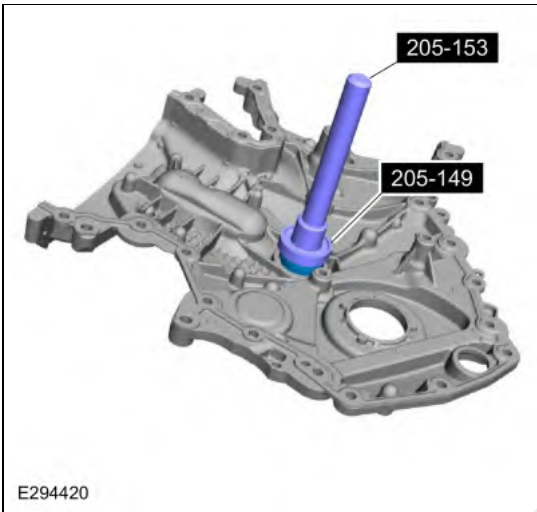
Material: Motorcraft[®] Metal Brake Parts Cleaner / PM-4-A, PM-4-B

Material: Motorcraft[®] Metal Surface Prep Wipes / ZC-31-B

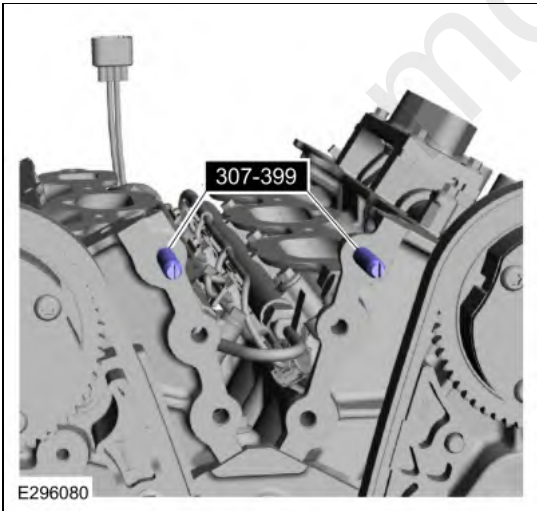


Installation

- Using the special tools, install the engine front cover to coolant pipe seal.
 Use Special Service Tool: 205-149 (T80T-4000-R) Installer, Spindle Bearing , 205-153 (T80T-4000-W) Handle.



- Install Special Service Tool: 307-399 Alignment Pins, Transmission Fluid Pump.



- NOTICE:** Failure to use Motorcraft® High Performance Engine RTV Silicone may cause the engine oil to foam excessively and result in serious engine damage.

NOTE: The engine front cover and the 6 bolts must be installed within 4 minutes of the initial sealant application. The remainder of the engine front cover bolts must be installed and tightened within 10 minutes of the initial sealant application. If the time limits are exceeded, the sealant must be removed, the sealing area cleaned and sealant reapplied. Failure to follow this procedure can cause future oil leakage.

Apply a 3 mm (0.12 in) bead of Motorcraft® High Performance Engine RTV Silicone to the engine front cover inner bolt bosses.

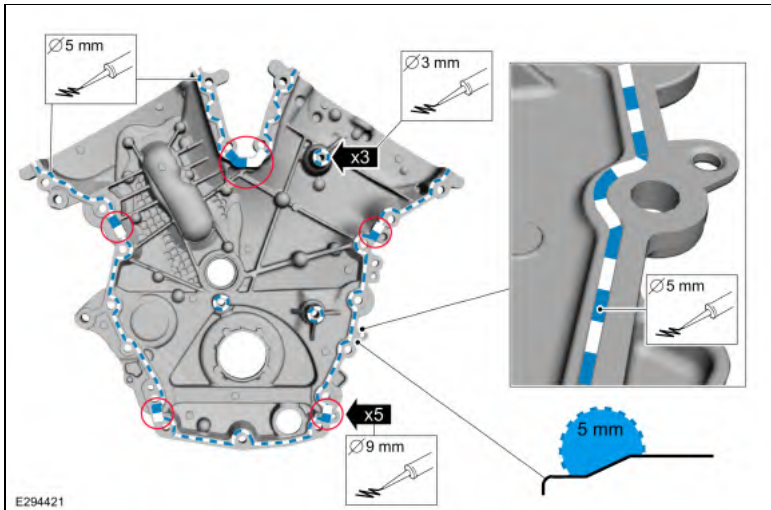
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)

- Apply a 5 mm (0.19 in) bead of Motorcraft® High Performance Engine RTV Silicone on the chamfer, as shown.

Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)

- Apply a 9 mm (0.35 in) bead of Motorcraft® High Performance Engine RTV Silicone to the oil pan-to-cylinder block joint and the cylinder head-to-cylinder block joint areas of the engine front cover in places as indicated.

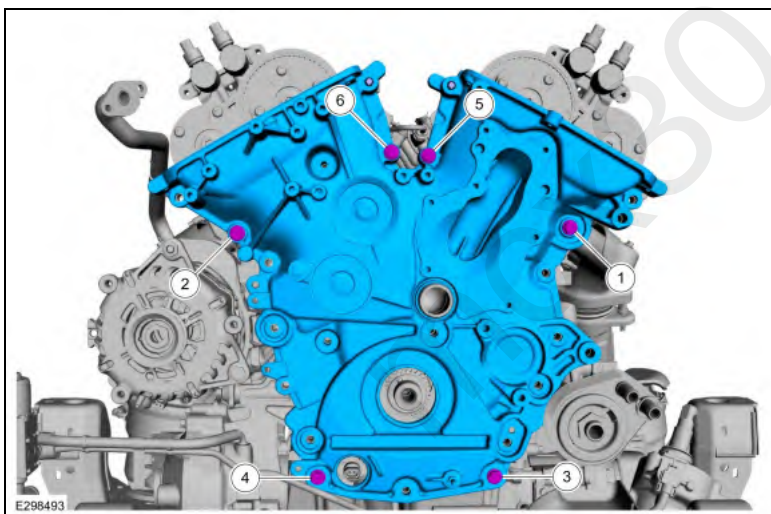
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



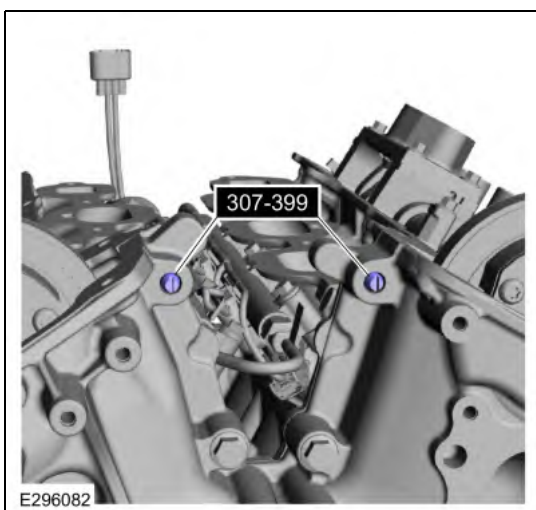
- NOTE:** Make sure the 2 locating dowel pins are seated correctly in the cylinder block.

Install the engine front cover and the bolts.

Torque: 27 lb.in (3 Nm)



- Remove Special Service Tool: 307-399 Alignment Pins, Transmission Fluid Pump.



6. **NOTE:** The engine front cover bolts must be installed and tightened within 10 minutes of the initial sealant application.

Install the remaining engine front cover bolts.

Torque:

Stage 1: Tighten bolts 1 through 20 to: 89 lb.in (10 Nm)

Stage 2: Tighten bolts 1 through 19 and 22 to: 177 lb.in (20 Nm)

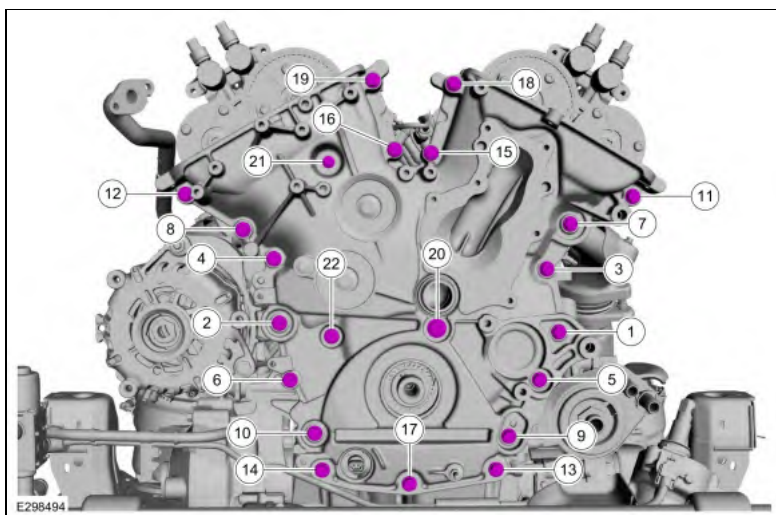
Stage 3: Tighten bolts 1 through 19 and 22 an additional: 45°

Stage 4: Tighten bolt 20 to: 177 lb.in (20 Nm)

Stage 5: Tighten bolt 20 an additional: 90°

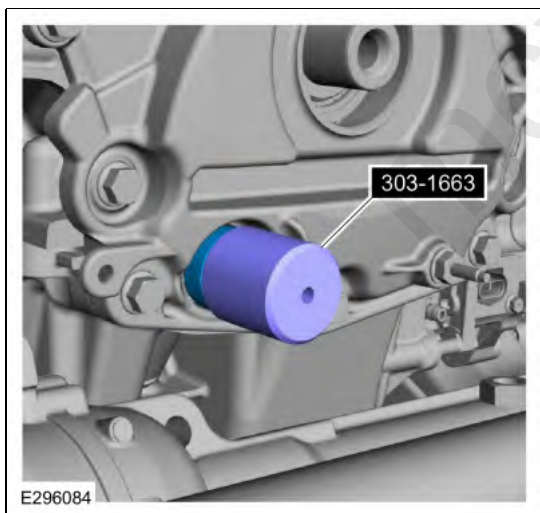
Stage 6: Tighten bolt 21 to: 89 lb.in (10 Nm)

Stage 7: Tighten bolt 21 an additional: 45°

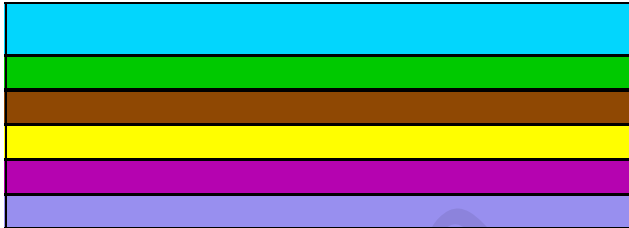
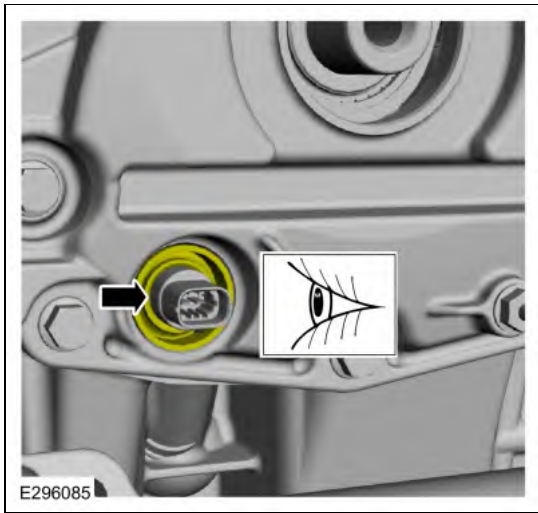


7. Using the special tool and a hammer, install the oil pump electrical connector seal.

Use Special Service Tool: 303-1663 Installer, VDOP Seal.

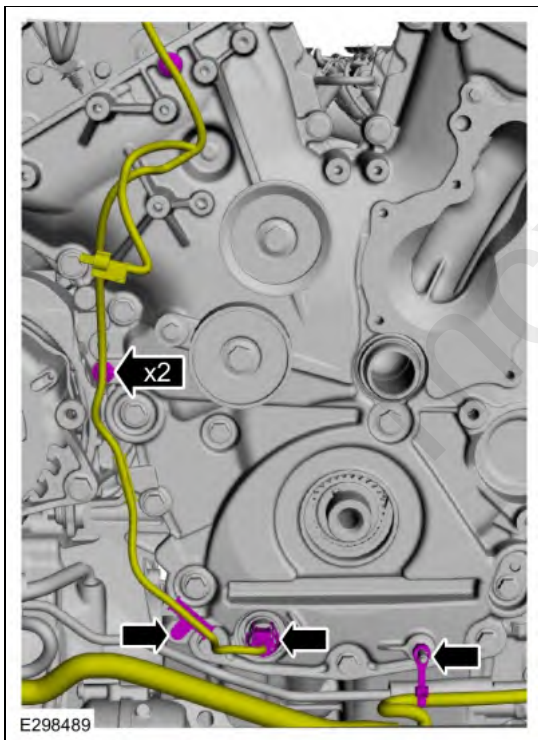


8. Make sure the oil pump electrical connector seal is below the top of the oil pump electrical connector or the oil pump electrical connector seal may leak oil.

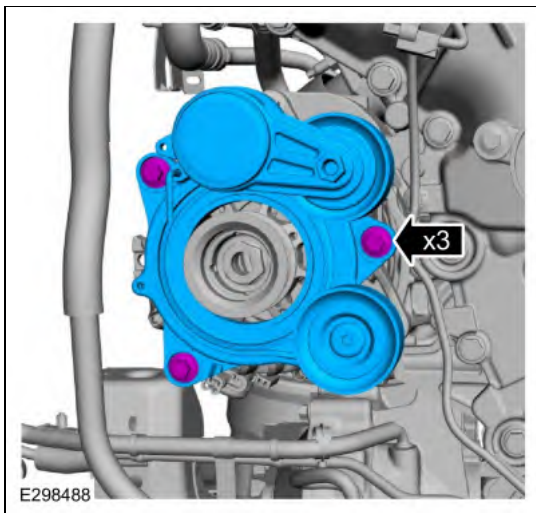


9.

- If equipped, attach the AWD vent hose retainer to the engine front cover stud bolt.
- Connect the oil pressure control solenoid wiring harness electrical connector.
- Attach the wiring harness retainers to the engine front cover.

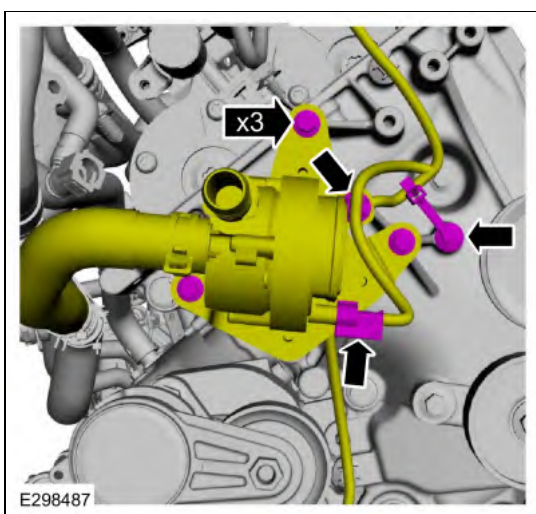


10. Install the accessory drive belt tensioner assembly and the bolts.
Torque: 18 lb.ft (25 Nm)

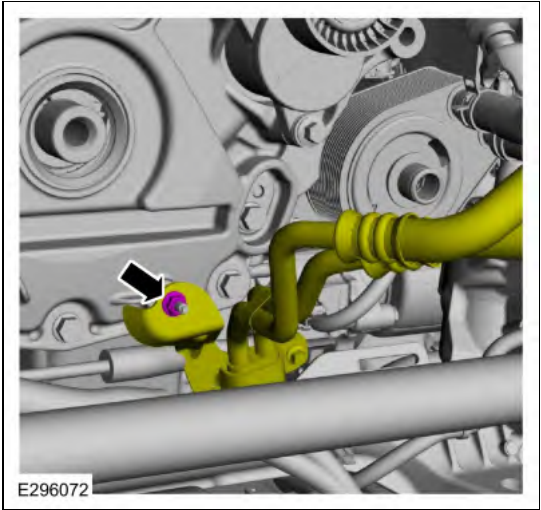


11.

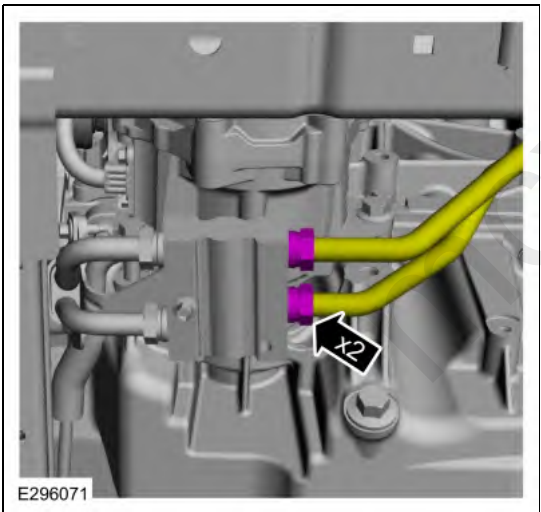
- Position the cabin heater coolant pump and install the bolts.
Torque: 80 lb.in (9 Nm)
- Connect the cabin heater coolant pump wiring harness electrical connector and the retainers.



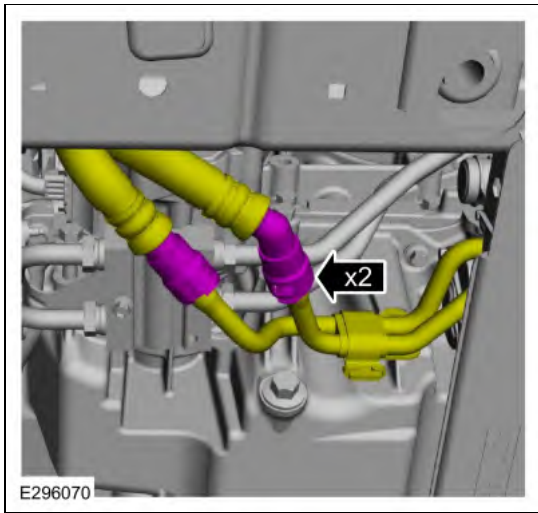
12. If equipped, position the transmission cooling tubes and bracket and install the nut.
Torque: 97 lb.in (11 Nm)



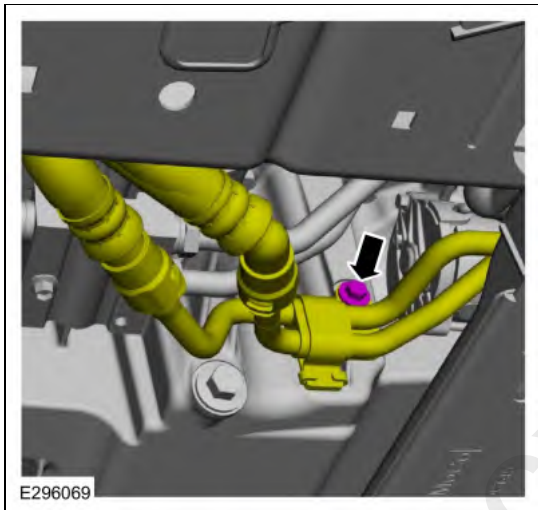
13. If equipped, install the transmission cooling tubes to the cooler bypass valve.
Torque: 22 lb.ft (30 Nm)



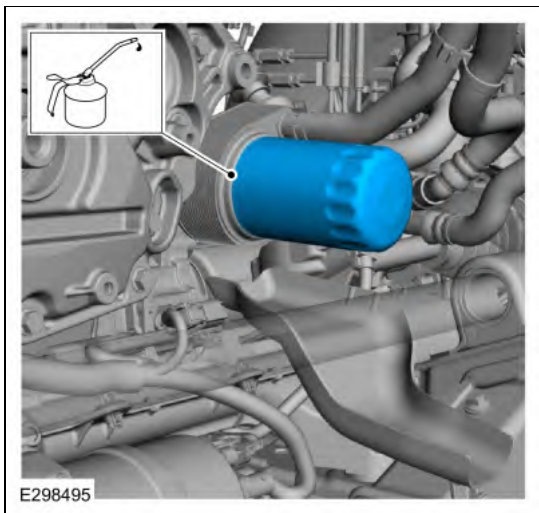
14. If equipped, connect the transmission cooling tubes.



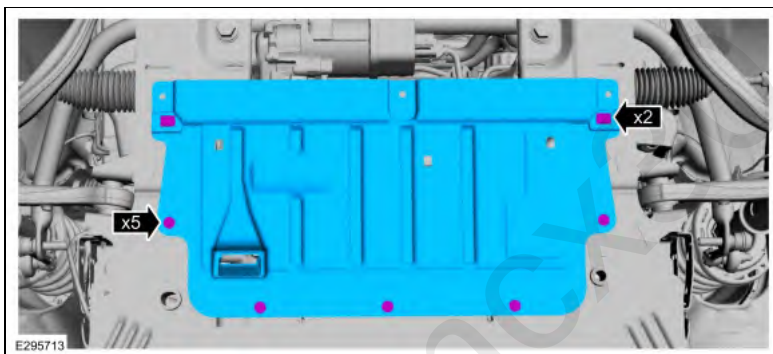
15. Position the coolant tubes and install the bolt in the oil pan.
Torque: 80 lb.in (9 Nm)



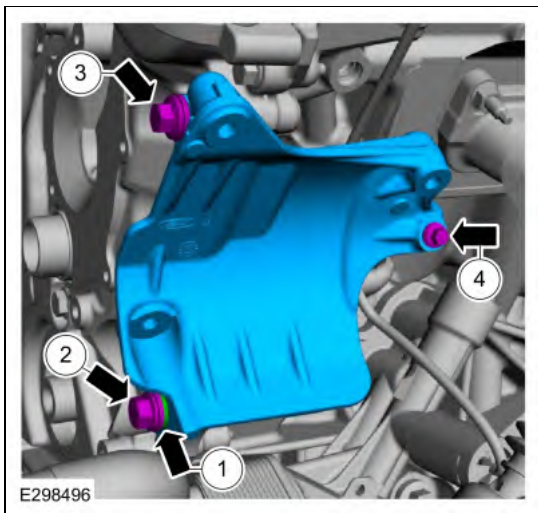
- 16.
- Lubricate the oil filter seal with clean engine oil and install and tighten in 2 stages.
 - Stage 1: Install to initial gasket contact.
 - Stage 2: Tighten 3/4 to 1 turn.



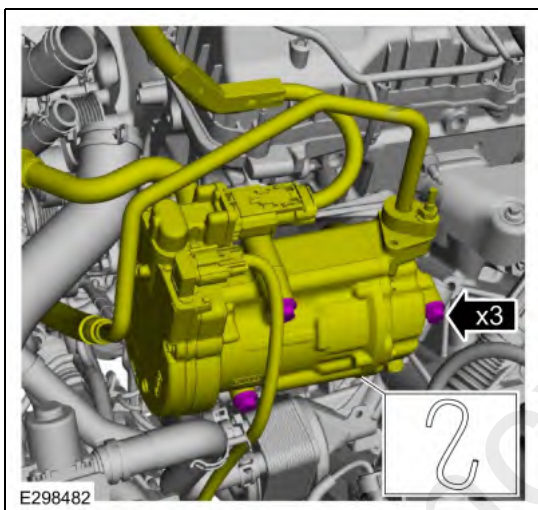
17. Install the rear underbody shield, bolts and retainers.
Torque: 22 lb.in (2.5 Nm)



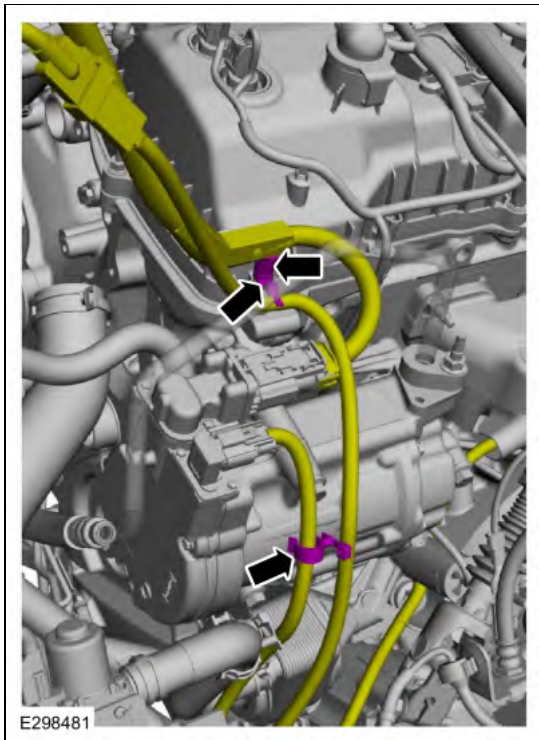
18. Install the A/C compressor bracket, the bottom bolt bushing and the bolts finger tight.
1. Position the bottom bolt bushing.
 2. Tighten the M10 bolt.
Torque: 22 lb.ft (30 Nm)
 3. Tighten the M10 bolt.
Torque: 22 lb.ft (30 Nm)
 4. Tighten the M6 bolt.
Torque: 97 lb.in (11 Nm)



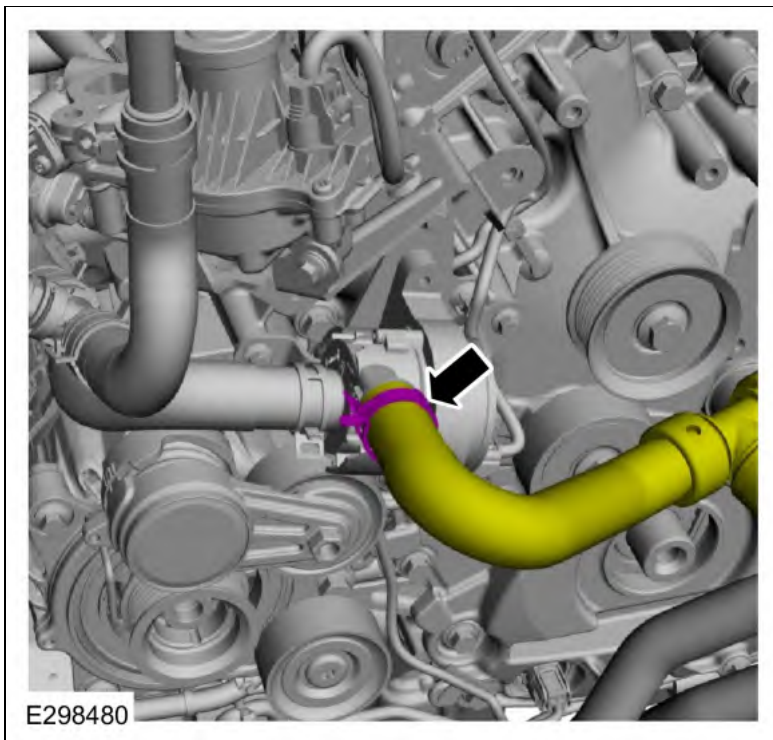
19. Position the A/C compressor and install the bolts.
Torque: 18 lb.ft (25 Nm)



- 20.
- If equipped with block heater, attach the wiring harness retainers.
 - Attach the A/C compressor high-voltage cable wiring retainer.



21. Install the coolant hose aside.
Use the General Equipment: Hose Clamp Remover/Installer



22. Remove the following items:

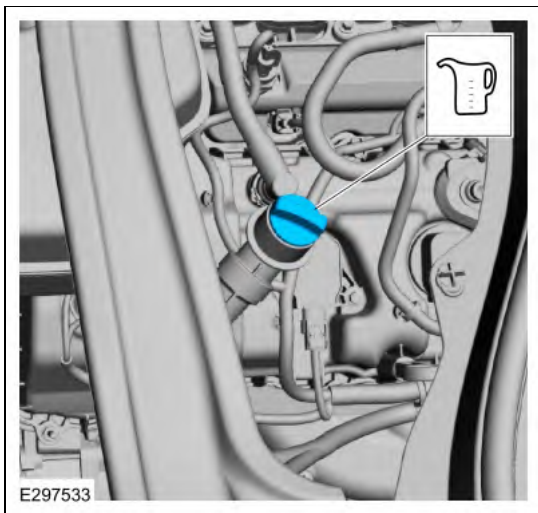
1. Install the crankshaft front seal.
Refer to: Crankshaft Front Seal (303-01D Engine - 3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
2. Install the coolant pump.
Refer to: Coolant Pump (303-03D Engine Cooling - 3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
3. Install the RH valve cover.
Refer to: Valve Cover RH (303-01D Engine - 3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
4. Install the LH valve cover.
Refer to: Valve Cover LH (303-01D Engine - 3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).

23. Connect the battery ground cable.

Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

24. Fill the engine with clean engine oil.

Refer to: Specifications (303-01D Engine - 3.3L Duratec-V6 â€“ Hybrid (BP), Specifications).



25. Fill the cooling system.
Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03D Engine Cooling - 3.3L Duratec-V6 â€“ Hybrid (BP), General Procedures).
 26. Check the transmission fluid level.
Refer to: Transmission Fluid Level Check (307-01C Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R80 MHT, General Procedures).
 27. Pressurize the fuel system pressure.
Refer to: Fuel System Pressure Release (310-00C Fuel System - General Information - 3.3L Duratec-V6, General Procedures).
 28. Use the Powertrain Control Module (PCM) Misfire Monitor Profile Correction routine in the diagnostic scan tool.
-

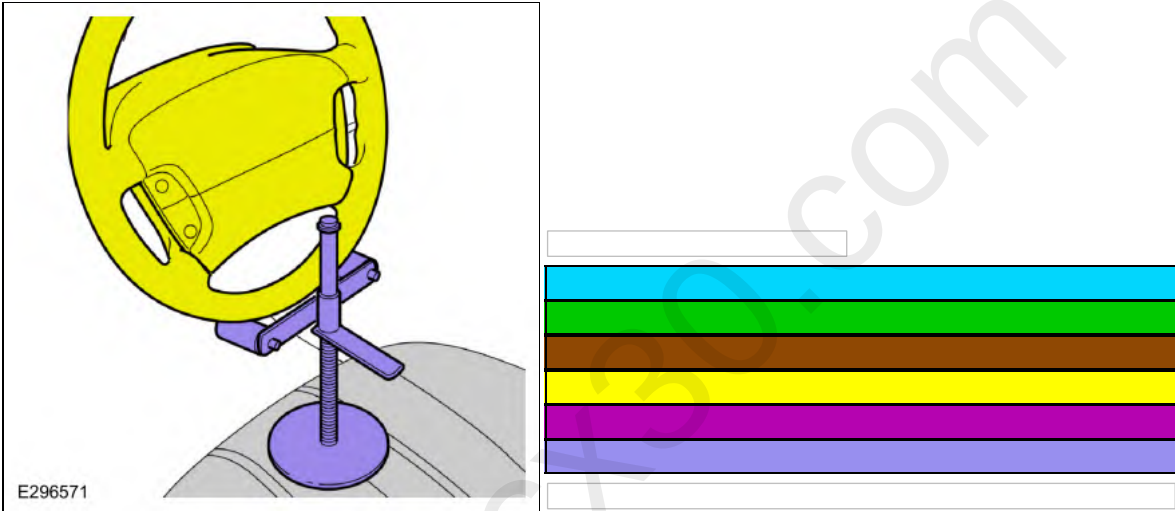
Engine Mount LH

Special Tool(s) / General Equipment

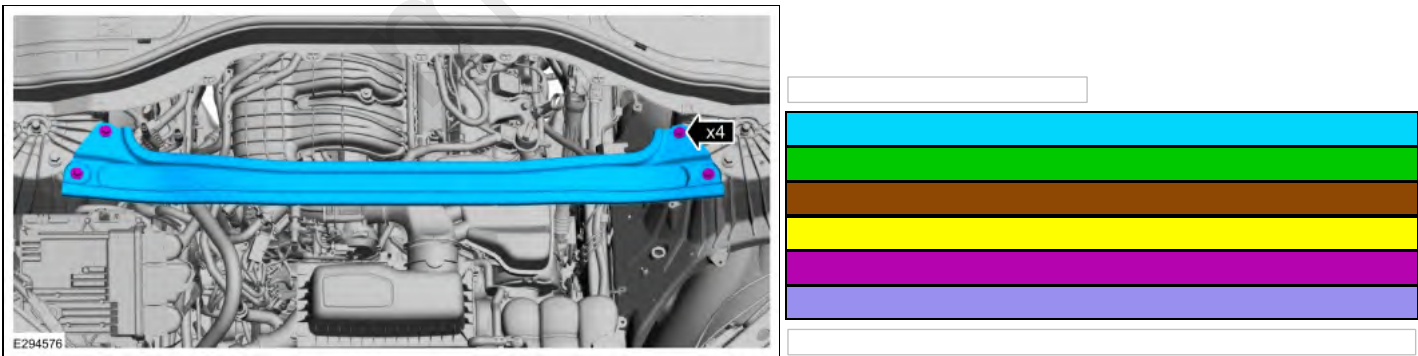
	303-050 (T70P-6000) Lifting Bracket, Engine
	303-F072 Support Bar, Engine
Cable Ties	

Removal

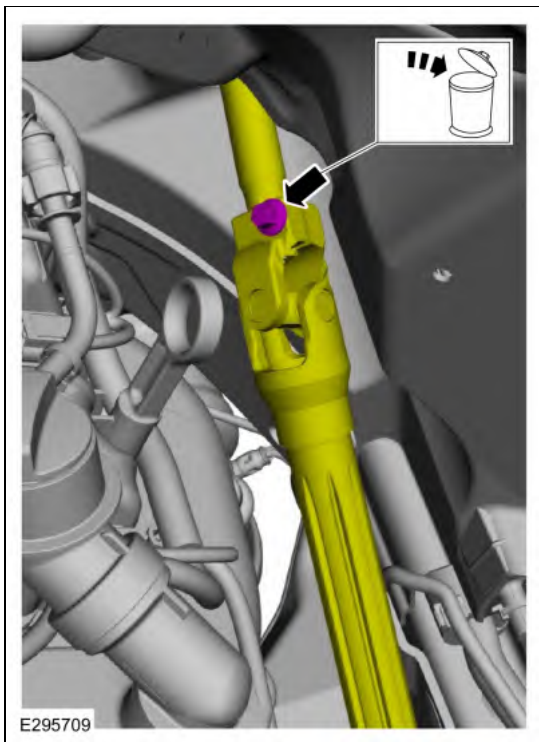
- With the vehicle in NEUTRAL, position it on a hoist.
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
- Using a holding device, hold the steering wheel.



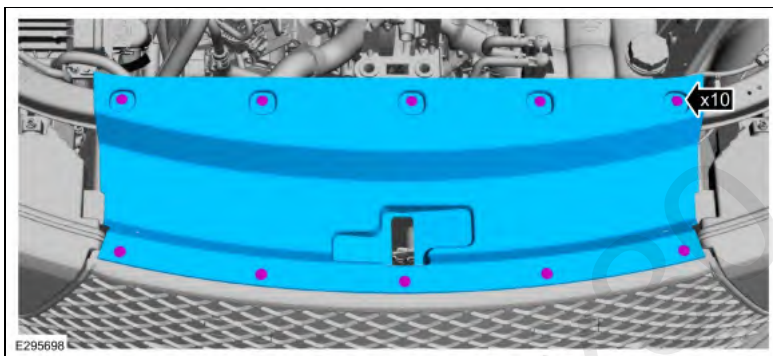
- Remove the bolts and the suspension support bar.



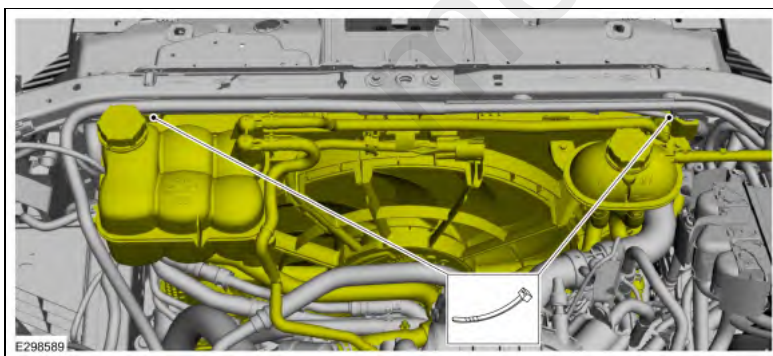
- Remove the following items:
 - Remove the throttle body.
Refer to: Throttle Body (303-04C Fuel Charging and Controls - 3.3L Duratec-V6/3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
 - Remove the air cleaner.
Refer to: Air Cleaner (303-12C Intake Air Distribution and Filtering - 3.3L Duratec-V6, Removal and Installation).
 - Remove the cowl panel.
Refer to: Cowl Panel (501-02 Front End Body Panels, Removal and Installation).
- Remove the bolt and disconnect the steering shaft.
 - Discard the bolt.



6. Remove the retainers and the upper radiator panel.



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



8. Remove the engine front cover bolt and install the special tool in the top hole of the engine front cover.
Install Special Service Tool: 303-050 (T70P-6000) Lifting Bracket, Engine.