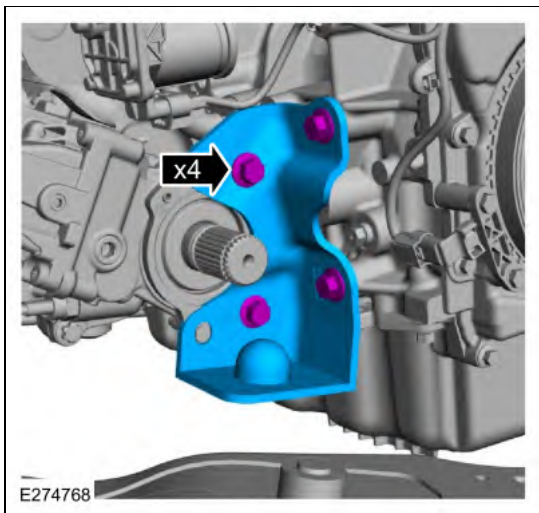
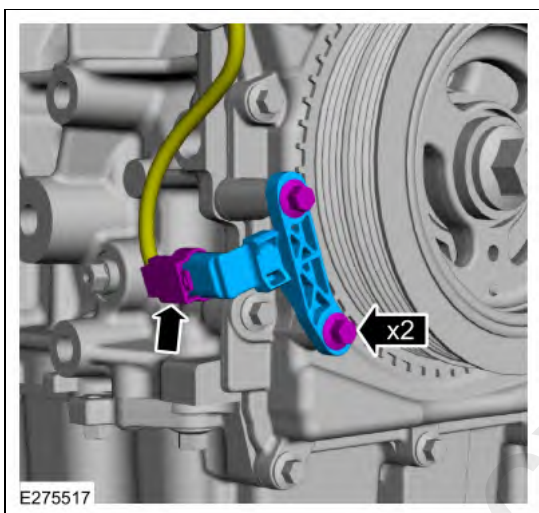


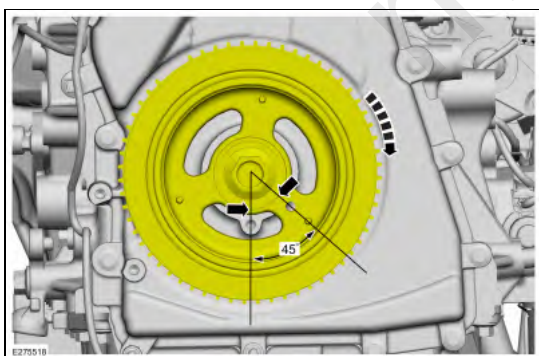


LHD AWD/LHD FWD

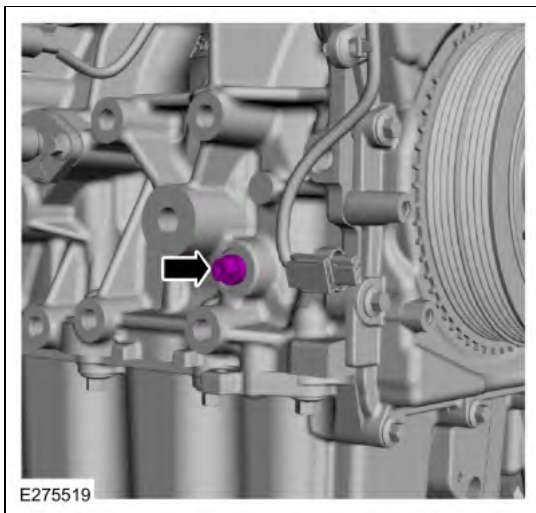
8.
 - Disconnect the CKP sensor electrical connector.
 - Remove the bolts and the CKP sensor.



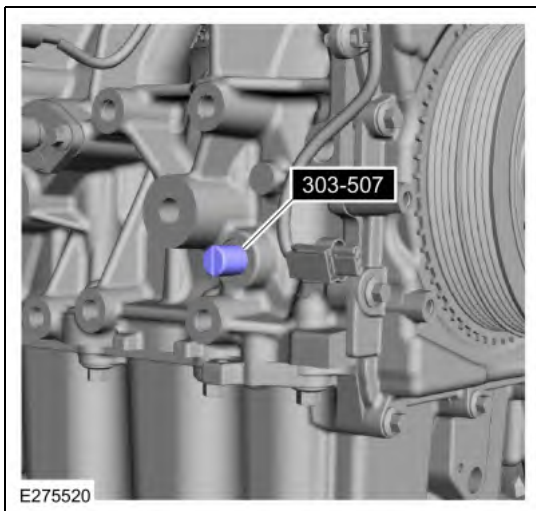
9. Turn the crankshaft clockwise until the No.1 piston is 45 degrees BTDC using the guide holes on the engine front cover and the crankshaft pulley.



10. Remove the engine plug bolt.



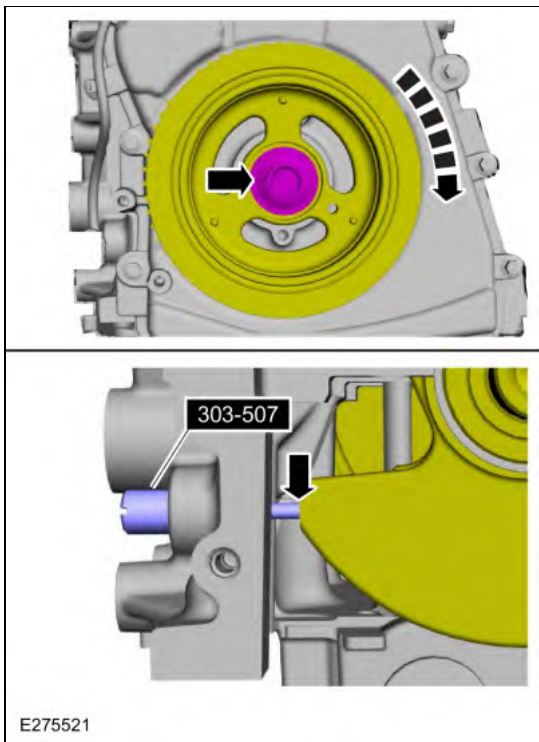
11. Install Special Service Tool: 303-507 Timing Peg, Crankshaft TDC.



12. **NOTE:** The Crankshaft TDC Timing Peg will contact the crankshaft and prevent it from turning past TDC. However, the crankshaft can still be rotated in the counterclockwise direction. The crankshaft must remain at the TDC position during the crankshaft pulley removal and installation.

NOTE: The engine front cover is removed from graphic for clarity.

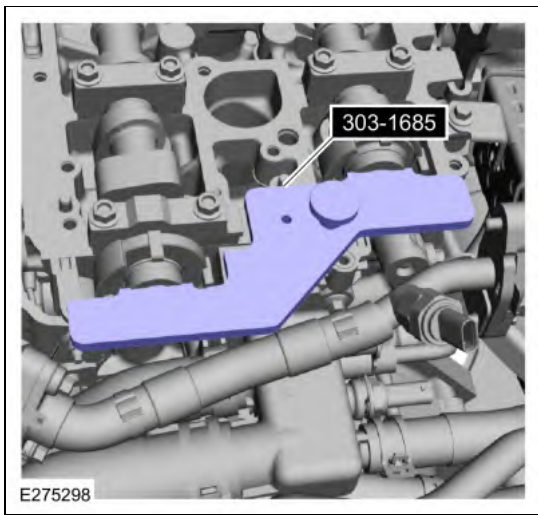
Rotate the crankshaft clockwise until the contacts the special tool.
Use Special Service Tool: 303-507 Timing Peg, Crankshaft TDC.



13. **NOTICE:** The Camshaft Alignment Tool is for camshaft alignment only. Using this tool to prevent engine rotation can result in engine damage.

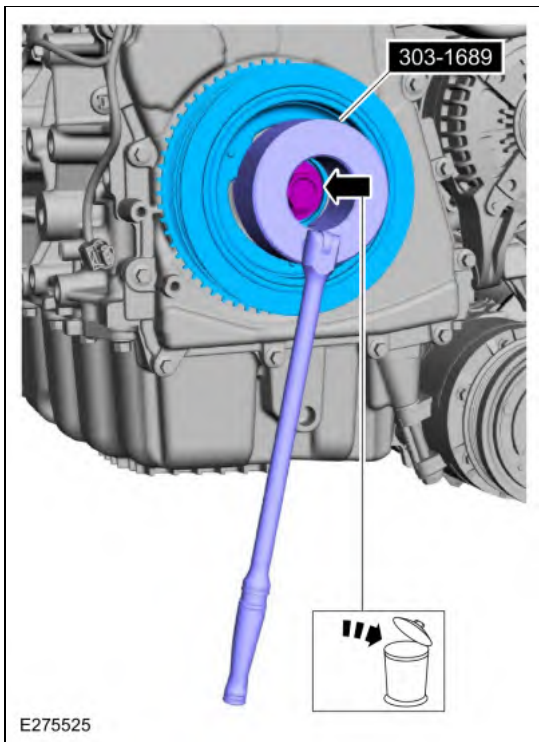
NOTE: The camshaft timing slots are offset. If the Camshaft Alignment Tool cannot be installed, remove the TDC Timing Peg and rotate the crankshaft three-fourths of a revolution clockwise and repeat the previous 2 steps of this procedure.

Install Special Service Tool: 303-1685 Alignment Tool, Camshaft.

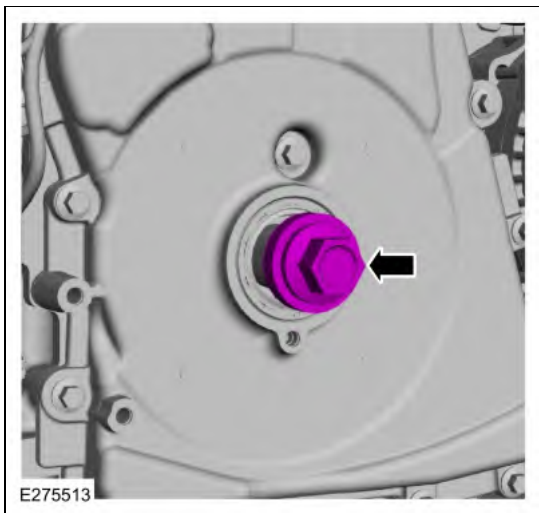


14. **NOTICE:** The crankshaft must remain in the TDC position during removal of the pulley bolt or damage to the engine can occur. Therefore, the crankshaft pulley must be held in place with the Crank Damper Holding Tool and the bolt should be removed using an air impact wrench (1/2-in drive minimum).

- Using the special tool, remove the bolt, washer and the crankshaft pulley.
Use Special Service Tool: 303-1689 Holding Tool, Crank Damper.
 - **NOTE:** Retain the original crankshaft pulley bolt to use for the removal of the crankshaft front seal.
- Discard the bolt.



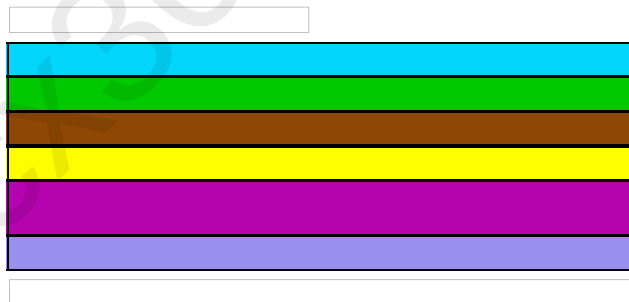
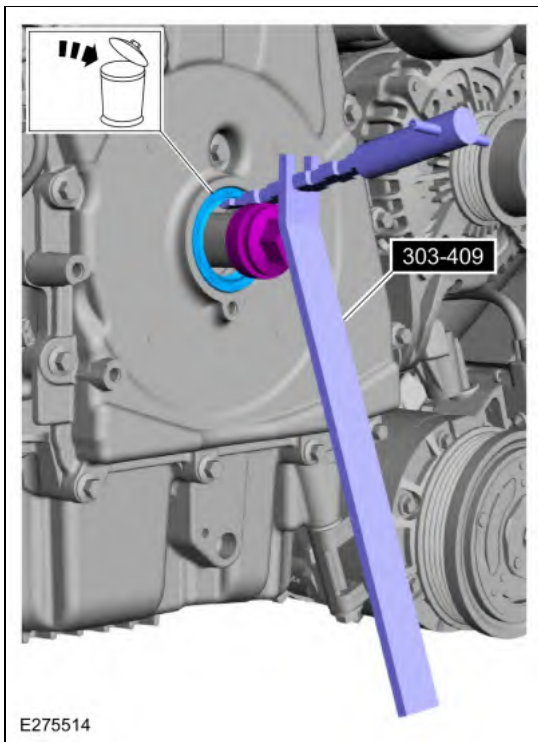
15. Install the old crankshaft pulley bolt.



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

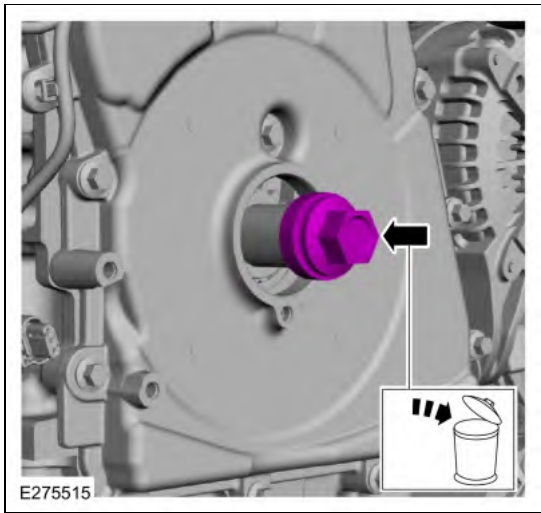
Using the special tool, remove and discard the crankshaft front seal.

Use Special Service Tool: 303-409 (T92C-6700-CH) Remover, Crankshaft Seal.

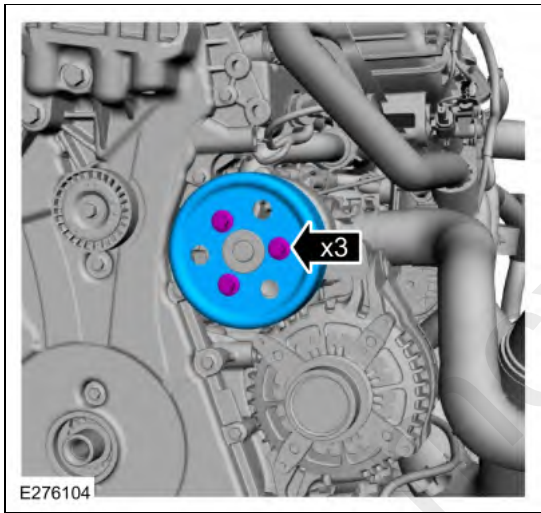


17. **NOTE:** *If necessary, retain the original crankshaft pulley bolt to use in other procedures.*

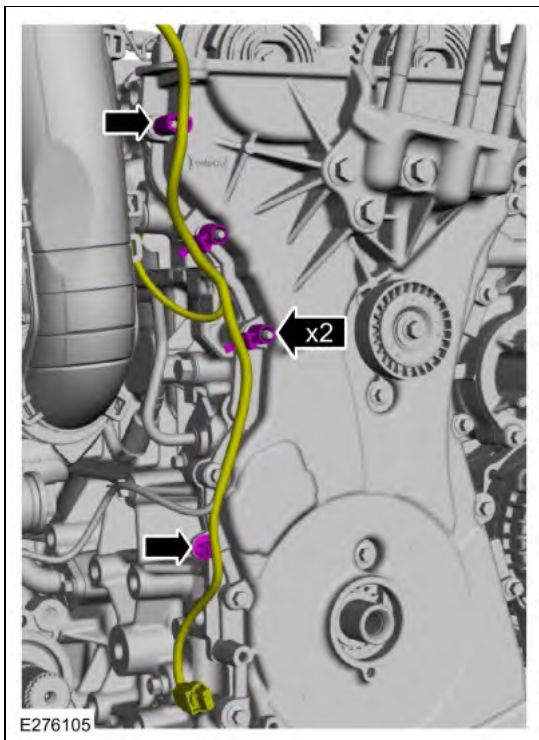
Remove and discard the crankshaft pulley bolt.



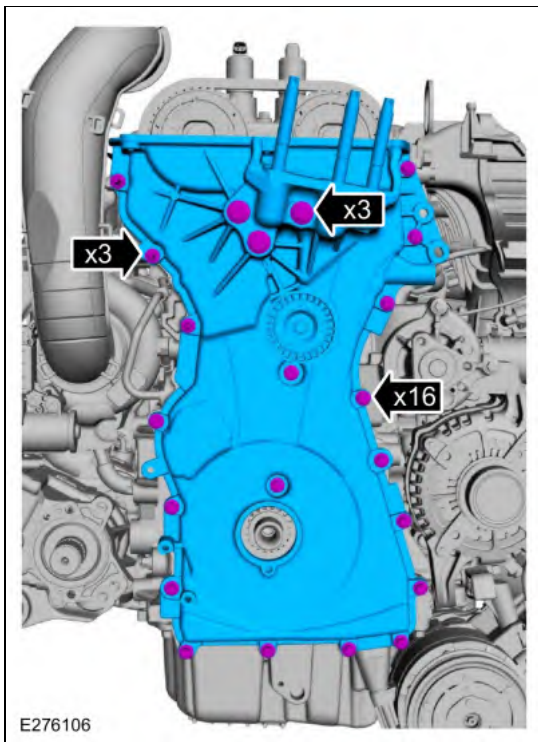
18. Remove the engine mount.
Refer to: Engine Mount (303-01A Engine - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).
19. Remove the bolts and the coolant pump pulley.



20. Detach wiring harness retainers from the engine front cover and stud bolts.

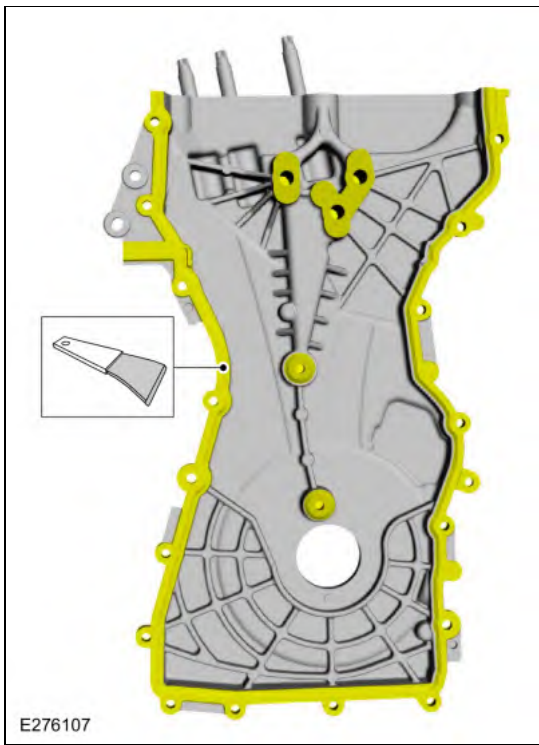


21. Remove the fasteners and the engine front cover.

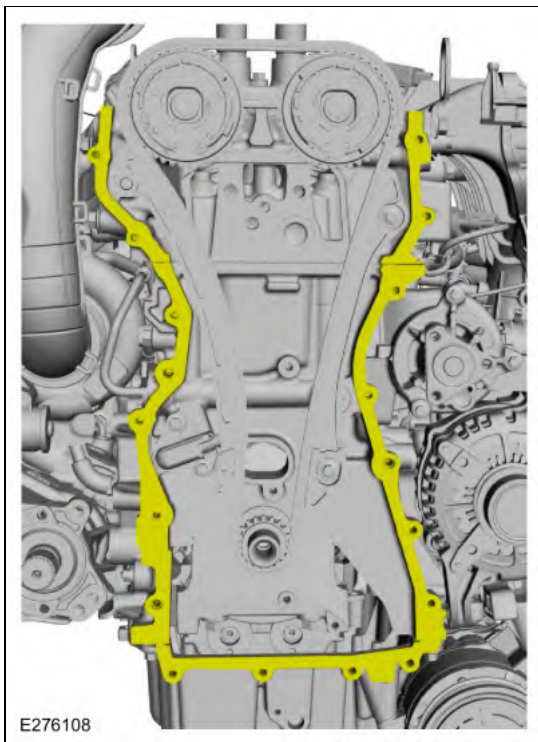


22.

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



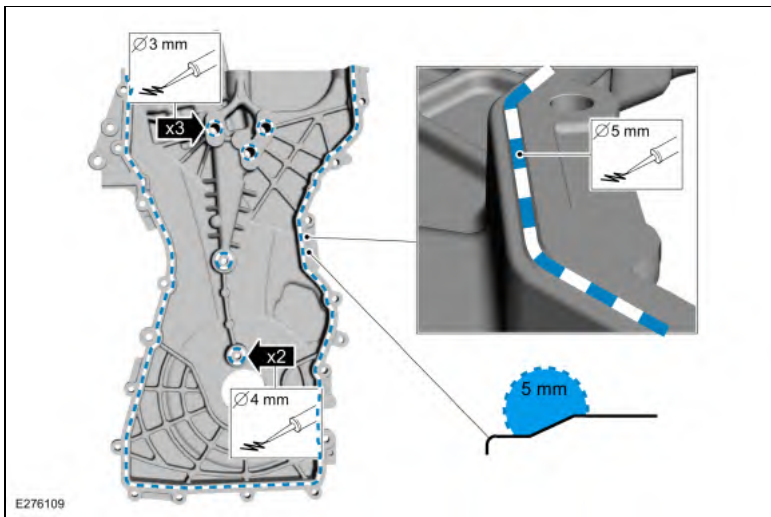
23. Clean and prepare the RTV sealing surface.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).



Installation

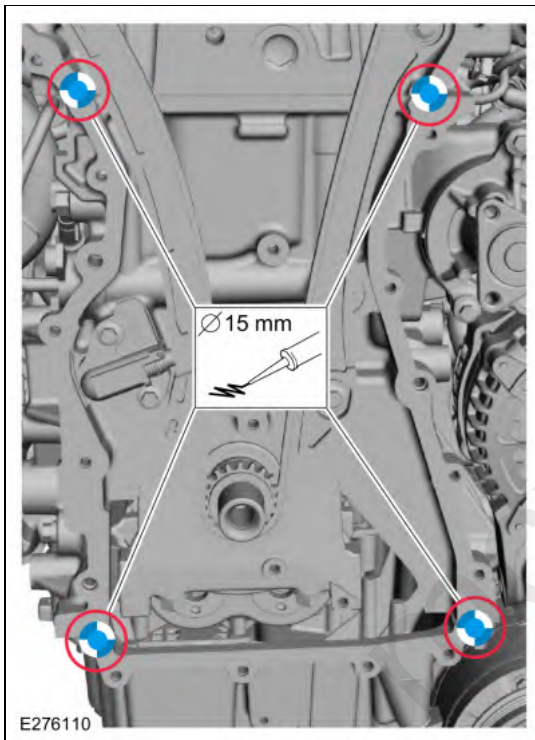
LHD AWD/LHD FWD

- NOTE:** The engine front cover must be secured within 10 minutes of Silicone Gasket and Sealant application. If the engine front cover is not secured within 10 minutes, the sealant must be removed and the sealing area cleaned.
 - Apply a 3 mm (0.12 in) bead of silicone sealant on the 3 upper bosses, as shown.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)
 - Apply a 4 mm (0.16 in) bead of silicone sealant on the chamfer on the 2 lower bosses, as shown.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)
 - Apply a 5 mm (0.19 in) bead of silicone sealant on the chamfer, as shown.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



2. **NOTE:** The engine front cover must be secured within 10 minutes of Silicone Gasket and Sealant application. If the engine front cover is not secured within 10 minutes, the sealant must be removed and the sealing area cleaned.

Apply a 15 mm (0.59 in) drop of silicone sealant at the cylinder head-to-cylinder block and cylinder block-to-oil pan joint areas.
 Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)

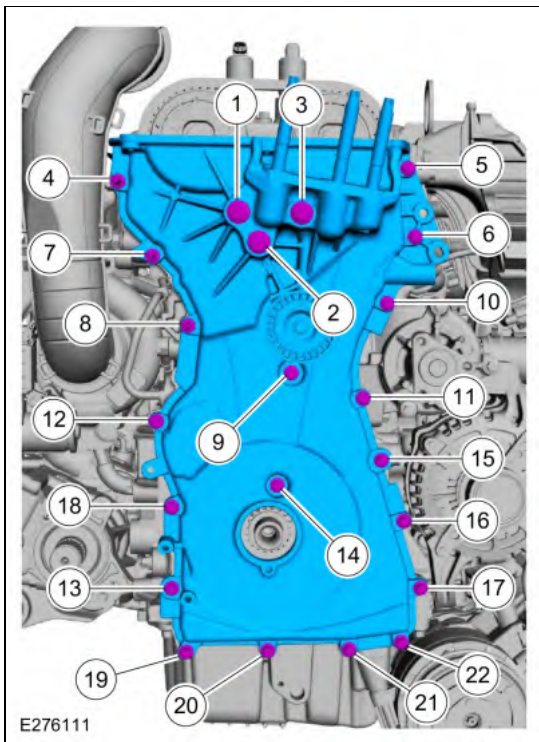


3. Install the engine front cover and the fasteners and tighten in the sequence shown.

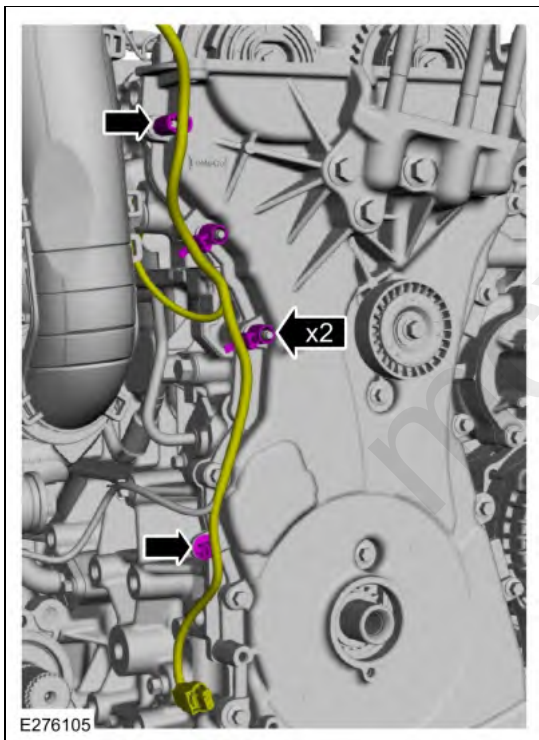
Torque:

Bolts 1 - 3: 35 lb.ft (48 Nm)

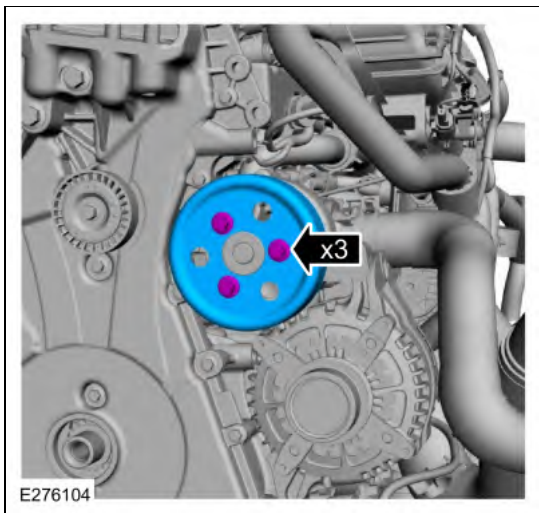
Bolts 4 - 22: 97 lb.in (11 Nm)



4. Attach wiring harness retainers to the engine front cover and stud bolts.



5. Install the coolant pump pulley and bolts finger-tight.



6. Install the engine mount.

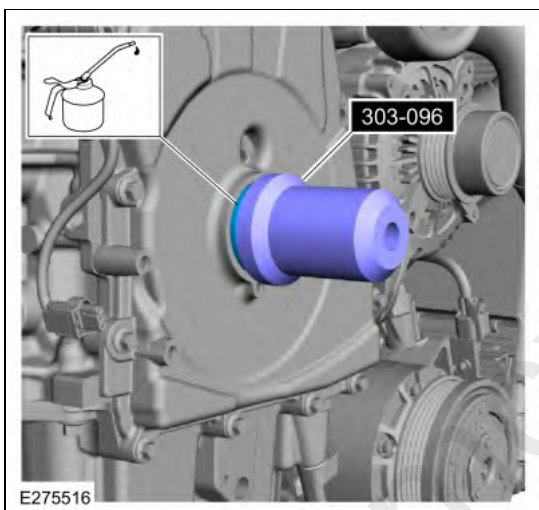
Refer to: Engine Mount (303-01A Engine - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).

7.

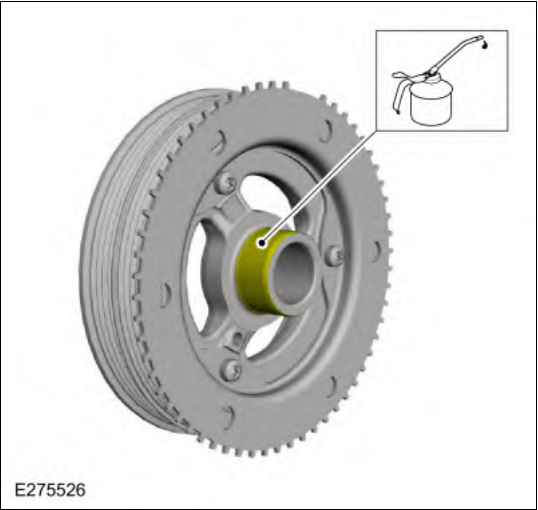
- Lubricate the crankshaft front seal with clean engine oil.
- **NOTE:** Remove the through-bolt from the Camshaft Front Oil Seal Installer.

Using the special tools, install the crankshaft front seal.

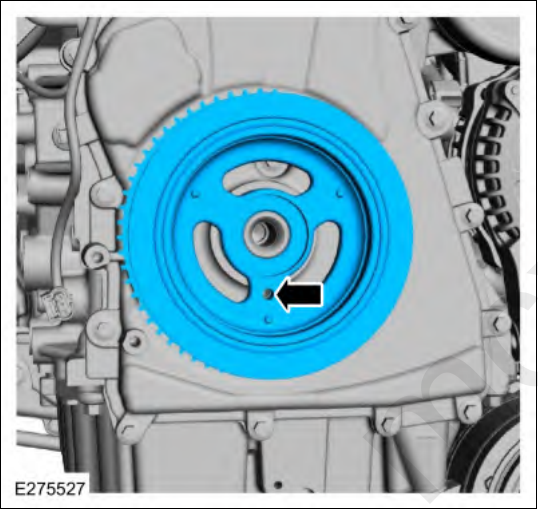
Use Special Service Tool: 303-096 (T74P-6150-A) Installer, Camshaft Front Oil Seal.



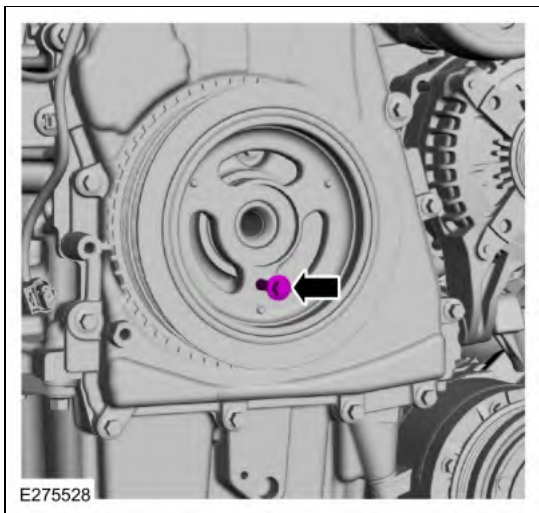
8. Lubricate the crankshaft pulley with clean engine oil.



9. Position the crankshaft pulley onto the crankshaft with the access hole at the 6 o'clock position.



10. **NOTE:** This step will correctly align the crankshaft pulley to the crankshaft.
Install an M6 bolt.



11. **NOTICE:** The crankshaft must remain in the TDC position during installation of the pulley bolt or damage to the engine can occur. Therefore, the crankshaft pulley must be held in place with the Crank Damper Holding Tool and the bolt should be installed using hand tools only.

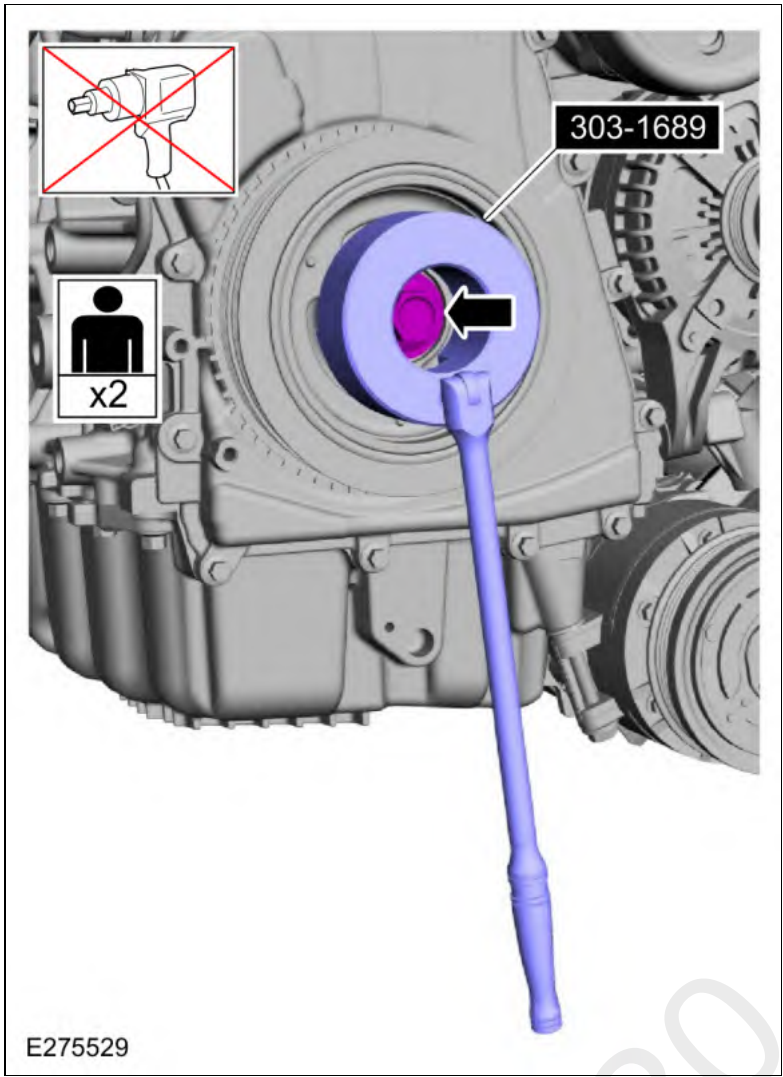
Using the special tool, install the new crankshaft bolt and washer and tighten.

Use Special Service Tool: 303-1689 Holding Tool, Crank Damper.

Torque:

Stage 1: 74 lb.ft (100 Nm)

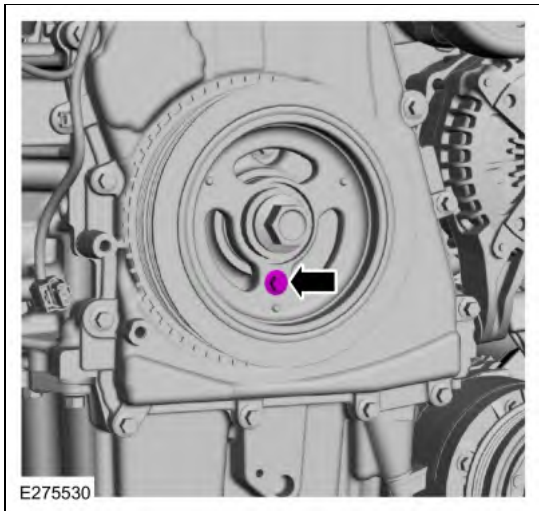
Stage 2: 90°



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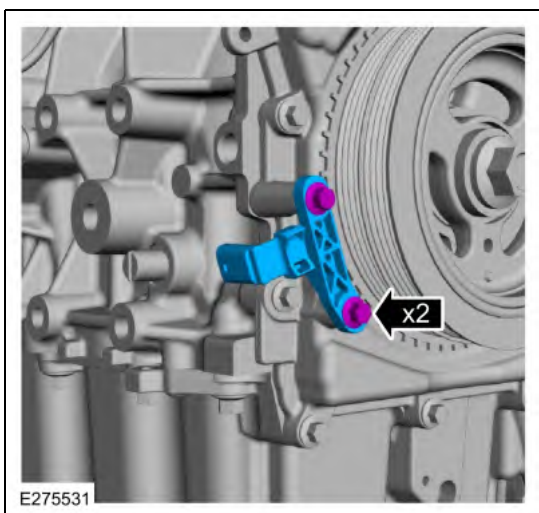


12. Remove the M6 bolt.



13. **NOTE:** Do not tighten the CKP sensor bolts at this time.

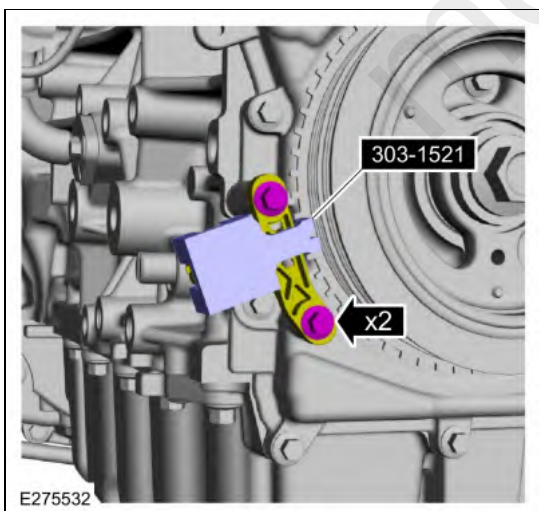
Install the CKP sensor and the bolts finger tight.



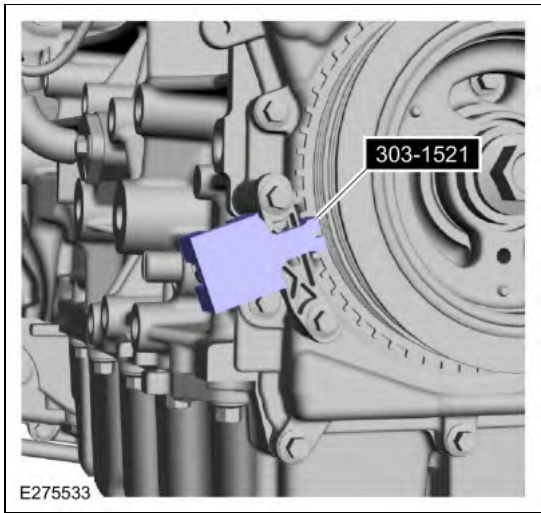
14. Install the special tool onto the CKP sensor and the tooth of the crankshaft pulley trigger wheel.

Use Special Service Tool: 303-1521 Alignment Tool, Crankshaft Position Sensor.

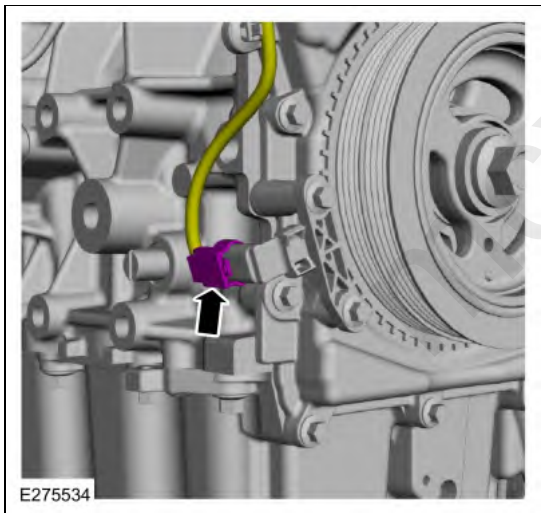
Torque: 97 lb.in (11 Nm)



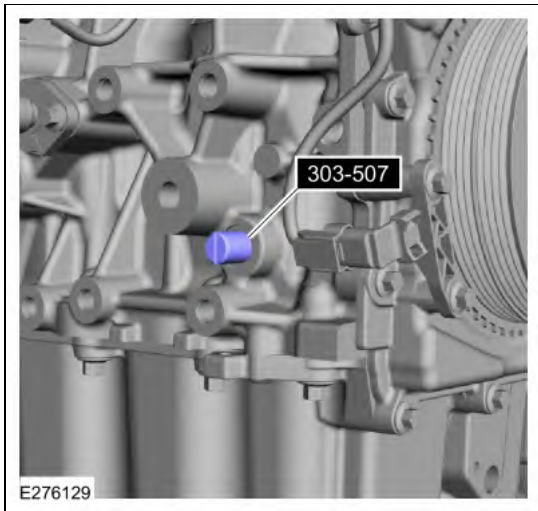
15. Remove Special Service Tool: 303-1521 Alignment Tool, Crankshaft Position Sensor.



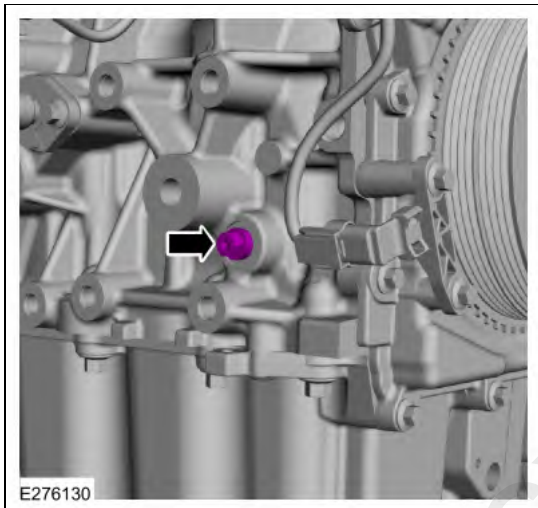
16. Connect the CKP sensor electrical connector.



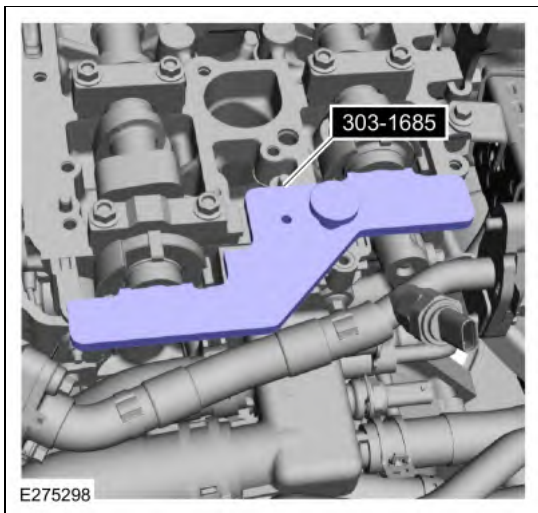
17. Remove Special Service Tool: 303-507 Timing Peg, Crankshaft TDC.



18. Install the engine plug bolt.
Torque: 177 lb.in (20 Nm)

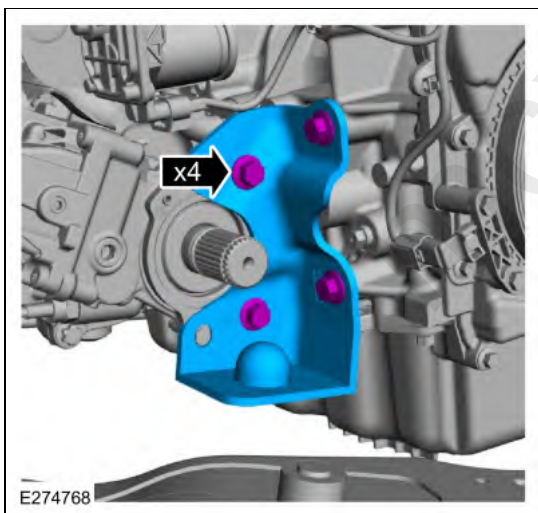


19. Remove Special Service Tool: 303-1685 Alignment Tool, Camshaft.



LHD AWD

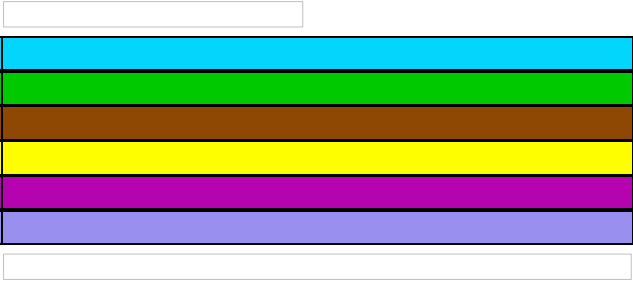
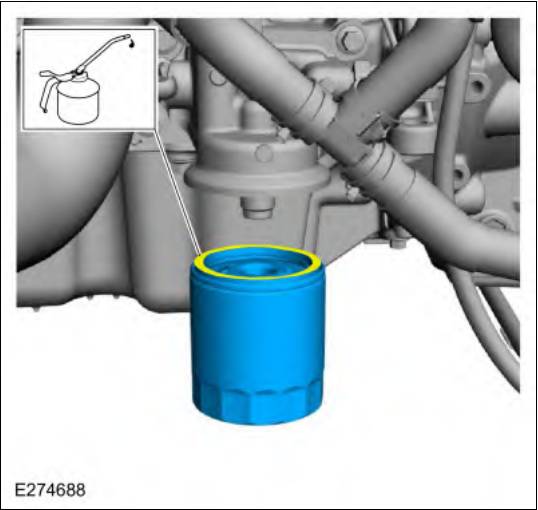
20. Install the transfer case support bracket and the bolts.
Torque: 35 lb.ft (48 Nm)



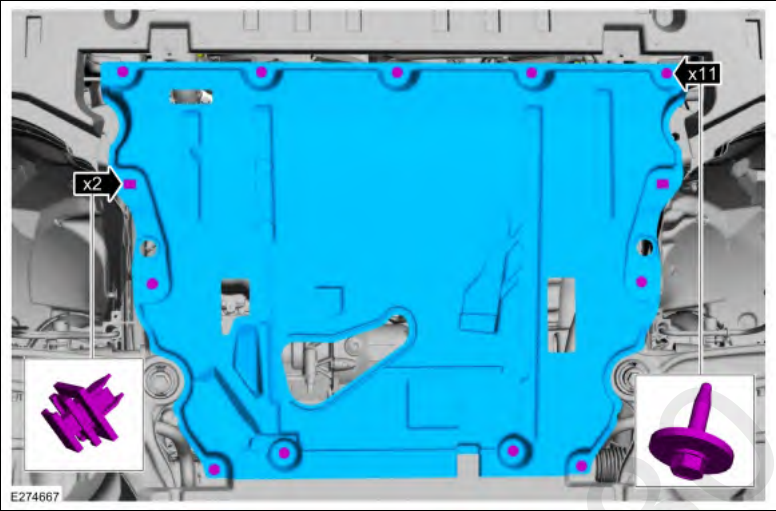
21. Install the RH halfshaft.
 Refer to: Front Halfshaft RH - 2.0L EcoBoost (184kW/250PS) â€“ MI4, All-Wheel Drive (AWD) (205-04 Front Drive Halfshafts, Removal and Installation).

LHD AWD/LHD FWD

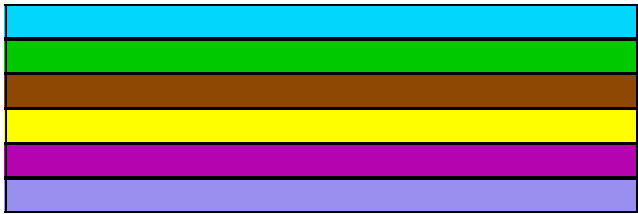
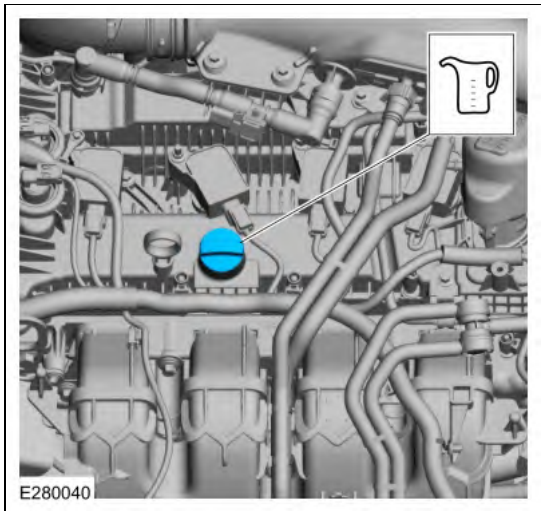
22. Install the following items:
1. Install the RH fender splash shield.
 Refer to: Fender Splash Shield (501-02 Front End Body Panels, Removal and Installation).
 2. Install the high-pressure fuel pump drive unit.
 Refer to: High-Pressure Fuel Pump Drive Unit (303-04A Fuel Charging and Controls - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).
 3. Install the accessory drive belt tensioner.
 Refer to: Accessory Drive Belt Tensioner (303-05A Accessory Drive - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).
 4. Install the accessory drive belt.
 Refer to: Accessory Drive Belt (303-05A Accessory Drive - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).
23. Tighten the coolant pump pulley bolts.
Torque: 18 lb.ft (25 Nm)



27. Install the underbody shield and the retainers.



28. Fill the engine with clean engine oil.
Refer to: Specifications (303-01A Engine - 2.0L EcoBoost (184kW/250PS) â€™ MI4, Specifications).



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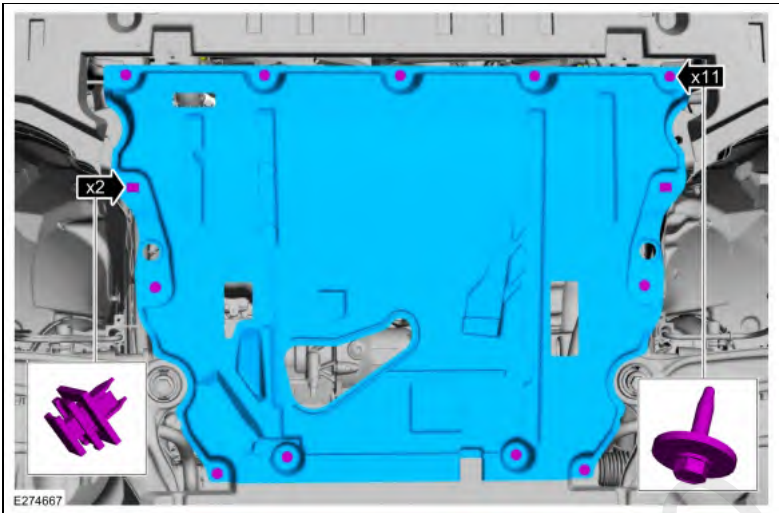
Engine Mount

Special Tool(s) / General Equipment

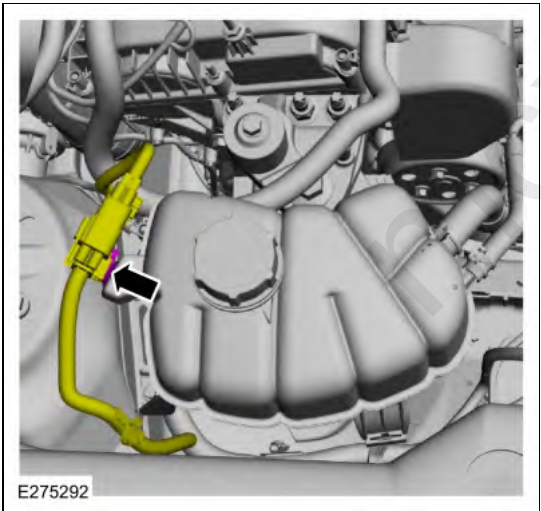
Trolley Jack
Wooden Block

Removal

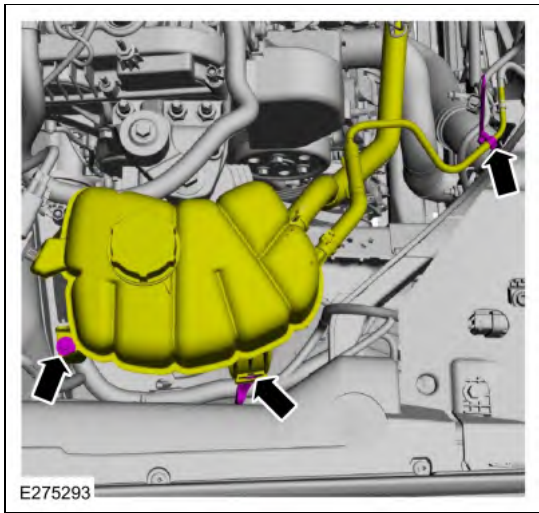
1. With the vehicle in NEUTRAL, position it on a hoist.
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
2. Remove the retainers and the underbody shield.



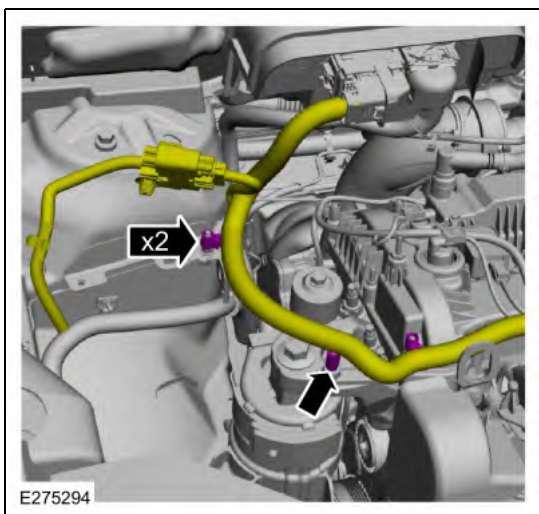
3. Detach wire harness retainer from the degas bottle.



4. Remove the bolt, release the degas bottle tabs and the coolant tube retainer and position the degas bottle aside.
Torque: 80 lb.in (9 Nm)

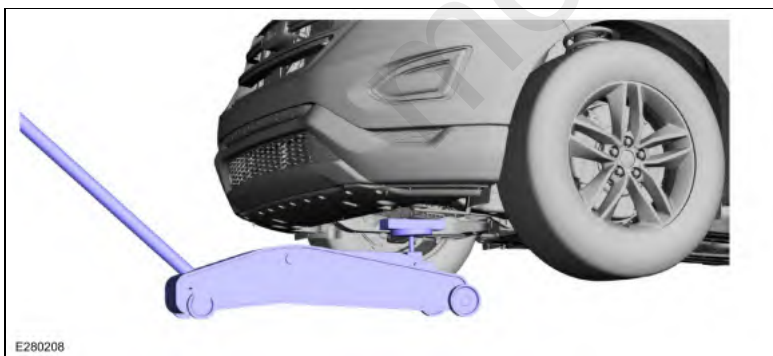


5. Detach wire harness retainers from the shock tower, engine mount and valve cover.



6. Position the jack and wooden block under the front of the oil pan to support the engine.

Use the General Equipment: Trolley Jack
Use the General Equipment: Wooden Block



7.

1. Remove the engine mount nuts and discard.
2. Remove the engine mount bolts and discard.
3. Remove the engine mount nut and discard.
 - Remove the engine mount.