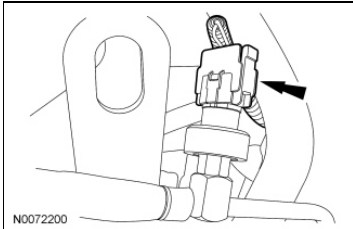
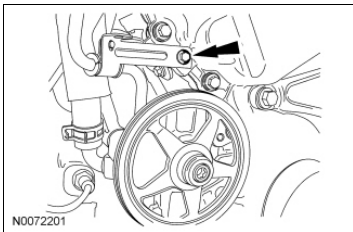


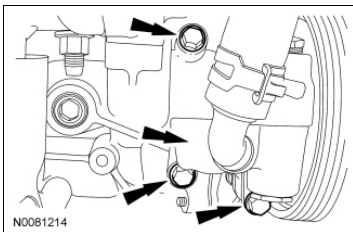
19. Disconnect the Power Steering Pressure (PSP) switch electrical connector.



20. Remove the PSP tube bracket-to-power steering pump bolt.

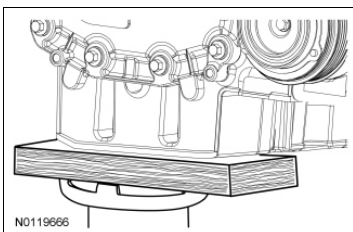


21. Remove the 3 bolts and position aside the power steering pump.

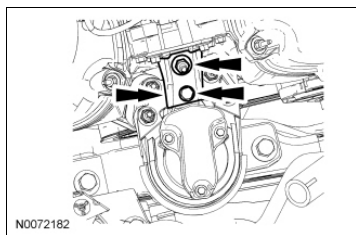


22. **NOTICE:** Failure to position the wood block and floor jack as illustrated can result in damage to the oil pan.

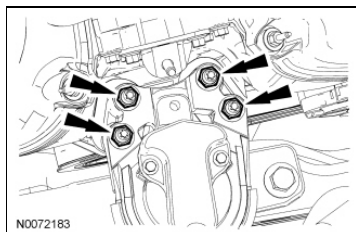
Position a floor jack with a block of wood under the front of the oil pan.



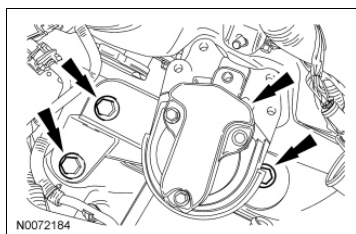
23. Remove the nut, bolt and engine mount brace.



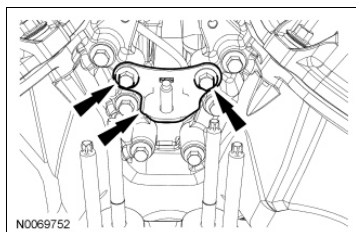
24. Remove the 4 engine mount nuts.



25. Remove the 3 bolts and the engine mount.

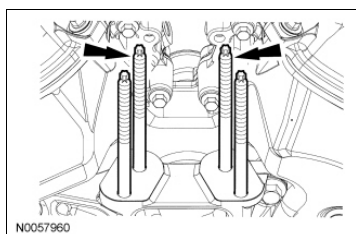


26. Remove the 2 bolts and the engine mount bracket.

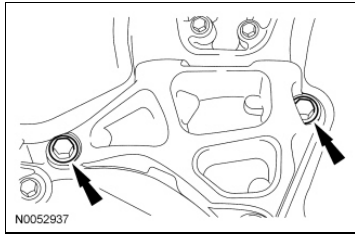


27. **NOTE:** Only use hand tools to remove the studs.

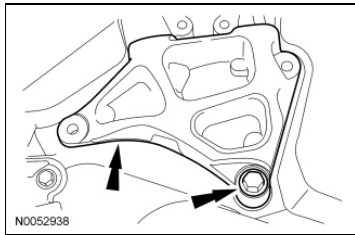
Remove the 2 engine mount studs.



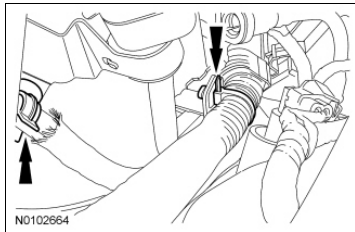
28. Remove the 2 upper engine mount bracket bolts.



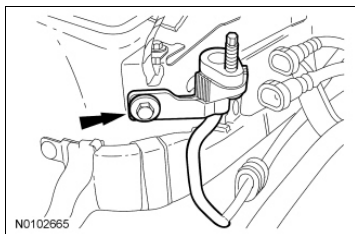
29. Loosen the lower engine mount bracket bolt and remove the engine mount bracket and bolt as an assembly.



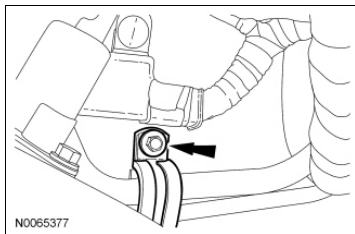
30. Detach the A/C tube and wiring harness from the retainers.



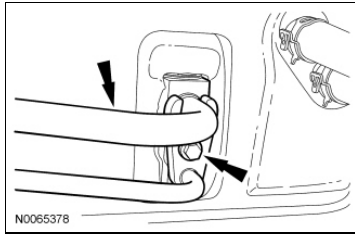
31. Remove the A/C tube bracket bolt.



32. Remove the A/C tube retaining clamp bolt.

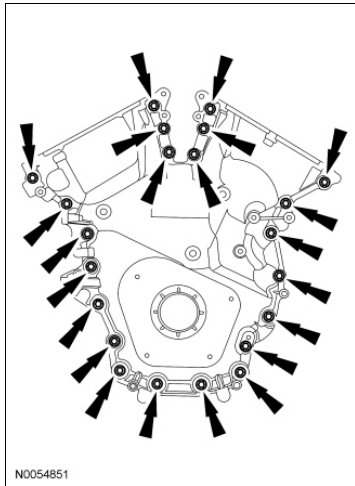


33. Remove the A/C tube-to-evaporator bolt and the 2 A/C tubes.
• Discard the O-ring seals.



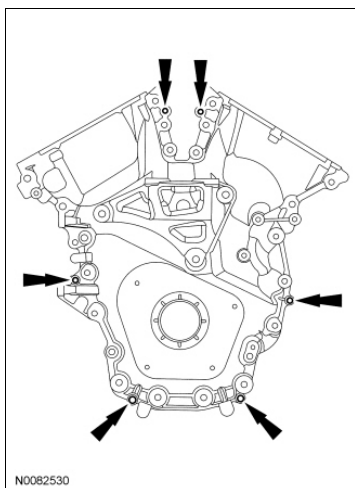
34. Using the floor jack, raise the engine slightly.

35. Remove the 22 engine front cover bolts.



36. Install 6 of the engine front cover bolts (finger tight) into the 6 threaded holes in the engine front cover.

- Tighten the bolts one turn at a time in a crisscross pattern until the engine front cover-to-cylinder block seal is released.
 - ◆ Remove the engine front cover.



Installation

1. **NOTICE:** Only use a 3MTM 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 the engine front cover.

Clean the engine front cover using a 3MTM 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.

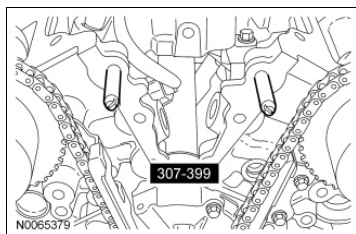
2. **NOTICE:** Place clean, lint-free shop towels over exposed engine cavities. Carefully remove the towels so foreign material is not dropped into the engine. Any foreign material (including any material created while cleaning gasket surfaces) that enters the oil passages or the oil pan may cause engine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

NOTICE: Do not use wire brushes, power abrasive discs or 3MTM Roloc® Bristle Disk (2-in white, part number 07528) to clean the sealing surfaces of the engine block, cylinder heads, and oil pan. These tools cause contamination that can cause premature engine failure. Remove all traces of sealant, including any sealant from the inner surface of the cylinder block and cylinder head.

Clean the sealing surfaces of the cylinder heads, the cylinder block and the oil pan in the following sequence.

1. Remove any large deposits of silicone or gasket material.
2. Apply silicone gasket remover and allow to set for several minutes.
3. Remove the silicone gasket remover. A second application of silicone gasket remover may be required if residual traces of silicone or gasket material remain.
4. Apply metal surface prep to remove any remaining traces of oil or coolant and to prepare the surfaces to bond. Do not attempt to make the metal shiny. Some staining of the metal surfaces is normal.
5. Make sure the 2 locating dowel pins are seated correctly in the cylinder block.

3. Install the Alignment Pins.

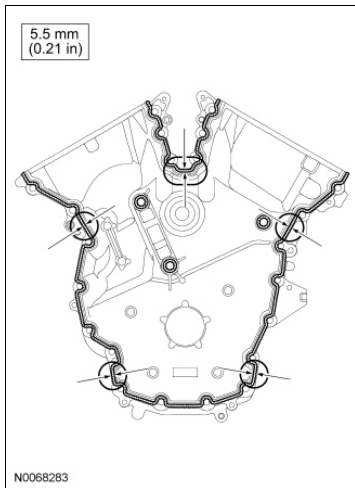


4. **NOTICE:** Failure to use Motorcraft® High Performance Engine RTV Silicone may cause the engine oil to foam excessively and result in serious engine damage.

NOTE: The engine front cover and bolts 17, 18, 19 and 20 must be installed within 4 minutes of the initial sealant application. The remainder of the engine front cover bolts and the engine mount bracket bolts must be installed and tightened within 35 minutes of the initial sealant application. If the time limits are exceeded, the sealant must be removed, the sealing area cleaned and sealant reapplied. To clean the sealing area, use silicone gasket remover and metal surface prep. Failure to follow this procedure can cause future oil leakage.

Apply a 3.0 mm (0.11 in) bead of Motorcraft® High Performance Engine RTV Silicone to the engine front cover sealing surfaces including the 3 engine mount bracket bosses.

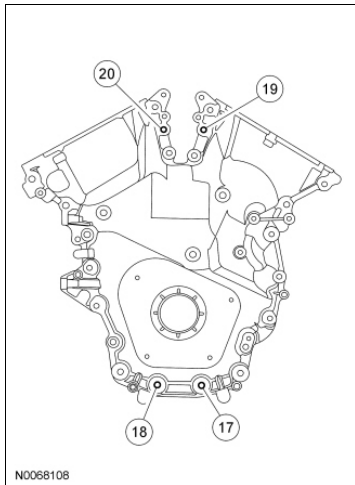
- Apply a 5.5 mm (0.21 in) bead of Motorcraft® High Performance Engine RTV Silicone to the oil pan-to-cylinder block joint and the cylinder head-to-cylinder block joint areas of the engine front cover in 5 places as indicated.



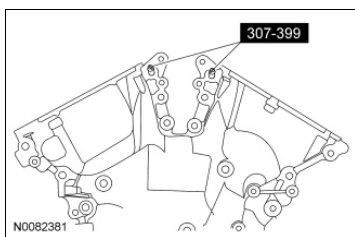
5. **NOTE:** Make sure the 2 locating dowel pins are seated correctly in the cylinder block.

Install the engine front cover and bolts 17, 18, 19 and 20.

- Tighten in sequence to 3 Nm (27 lb-in).

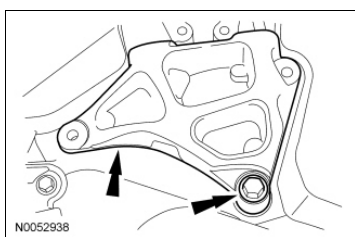


6. Remove the Alignment Pins.



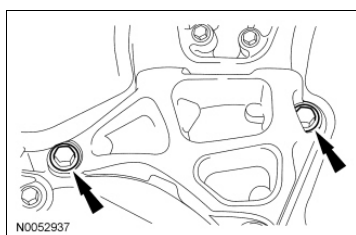
7. Install the engine mount bracket and lower bolt.

- Do not tighten at this time.



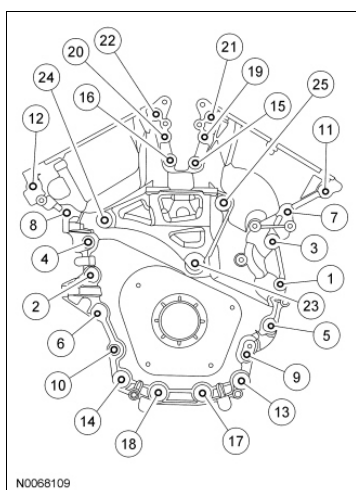
8. Install the 2 upper engine mount bracket bolts.

- Do not tighten at this time.



9. Install the remaining engine front cover bolts. Tighten all of the engine front cover bolts and engine mount bracket bolts in the sequence shown in 2 stages:

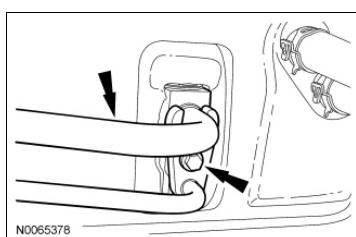
- Stage 1: Tighten bolts 1 thru 22 to 10 Nm (89 lb-in) and bolts 23, 24 and 25 to 15 Nm (133 lb-in).
- Stage 2: Tighten bolts 1 thru 22 to 24 Nm (18 lb-ft) and bolts 23, 24 and 25 to 75 Nm (55 lb-ft).



10. Using the floor jack, lower the engine to the installed position.

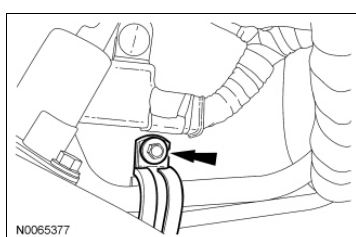
11. Install the new O-ring seals and the A/C tubes-to-evaporator and the bolt.

- Tighten to 8 Nm (71 lb-in).

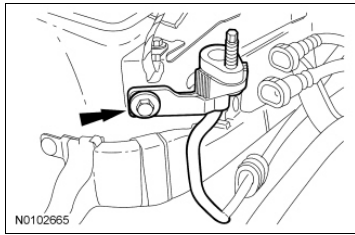


12. Install the A/C tube retaining clamp bolt.

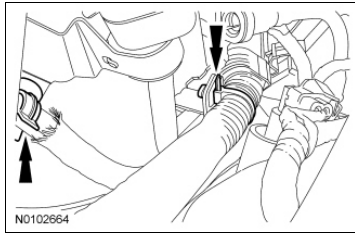
- Tighten to 9 Nm (80 lb-in).



13. Install the A/C tube bracket bolt.
 - Tighten to 15 Nm (133 lb-in).



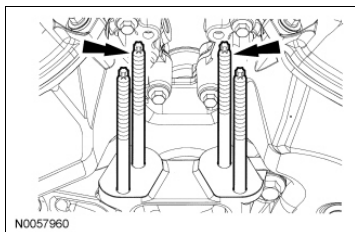
14. Attach the A/C tube and wiring harness to the retainers.



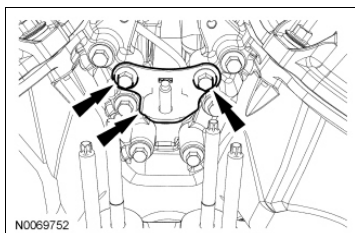
15. **NOTICE:** The thread sealer on the engine mount studs (including new engine mount studs if applicable) must be cleaned off with a wire brush and new Threadlock and Sealer applied prior to installing the engine mount studs. Failure to follow this procedure may result in damage to the engine mount studs or engine.

Install the engine mount studs in the following sequence.

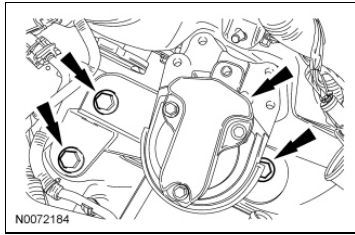
1. Clean the front cover engine mount stud holes with pressurized air to remove any foreign material.
2. Clean all the thread sealer from the engine mount studs (old and new studs).
3. Apply new Threadlock and Sealer to the engine mount stud threads.
4. Install the 2 engine mount studs.
 - ◆ Tighten to 20 Nm (177 lb-in).



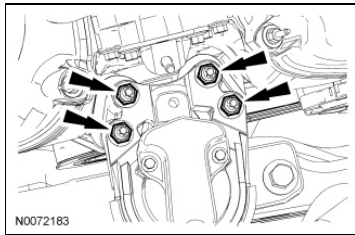
16. Install the engine mount bracket and the 2 bolts.
 - Tighten to 30 Nm (22 lb-ft).



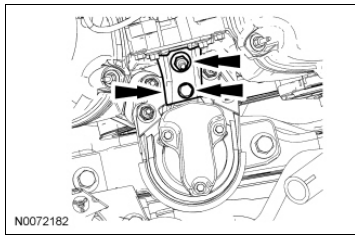
17. Install the engine mount and the 3 bolts.
 - Tighten to 90 Nm (66 lb-ft).



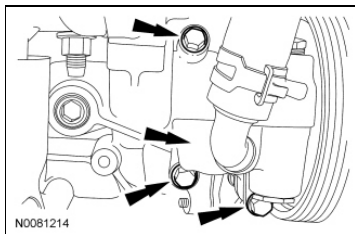
18. Install the 4 engine mount nuts.
- Tighten to 63 Nm (46 lb-ft).



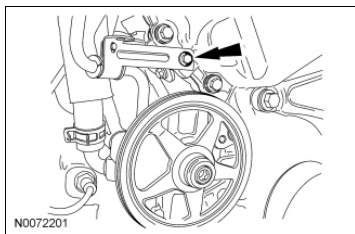
19. Install the engine mount brace, nut and bolt.
- Tighten to 20 Nm (177 lb-in).



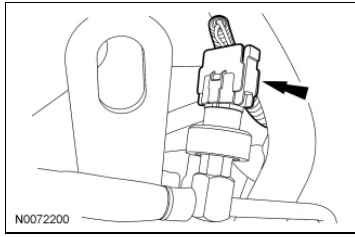
20. Position the power steering pump and install the 3 bolts.
- Tighten to 25 Nm (18 lb-ft).



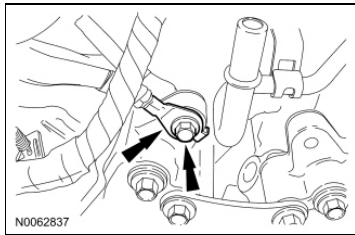
21. Install the power Power Steering Pressure (PSP) tube bracket-to-power steering pump bolt.
- Tighten to 10 Nm (89 lb-in).



22. Connect the PSP switch electrical connector.

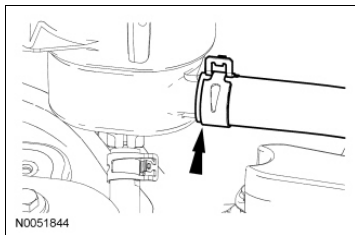


23. Install the ground cable bolt.
- Tighten to 12 Nm (106 lb-in).



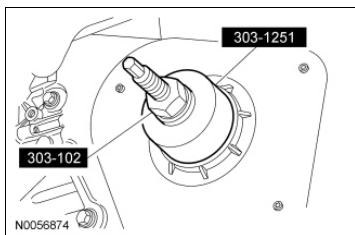
24. Install the RH and LH valve covers. For additional information, refer to Valve Cover - LH and Valve Cover - RH in this section.

25. Connect the hose to the power steering reservoir.



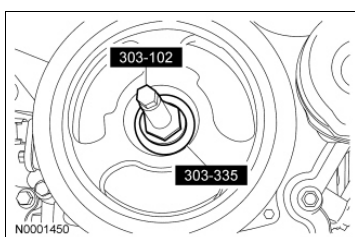
26. **NOTE:** Apply clean engine oil to the crankshaft front seal bore in the engine front cover.

Using the Crankshaft Vibration Damper Replacer and Front Crankshaft Seal Installer, install a new crankshaft front seal.

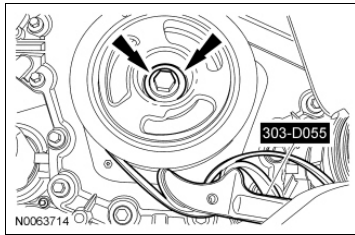


27. **NOTE:** Lubricate the outside diameter sealing surfaces with clean engine oil.

Using the Crankshaft Vibration Damper Replacer and Front Cover Oil Seal Installer, install the crankshaft pulley.

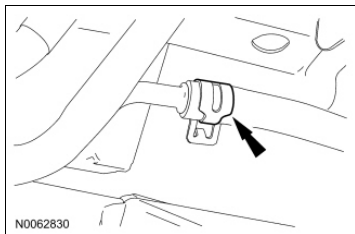


28. Using the Strap Wrench, install the crankshaft pulley washer and new bolt and tighten in 4 stages.
- Stage 1: Tighten to 120 Nm (89 lb-ft).
 - Stage 2: Loosen one full turn.
 - Stage 3: Tighten to 50 Nm (37 lb-ft).
 - Stage 4: Tighten an additional 90 degrees.

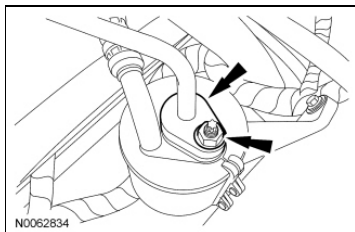


29. Install the RH inner fender splash shield. For additional information, refer to [Section 501-02](#) .

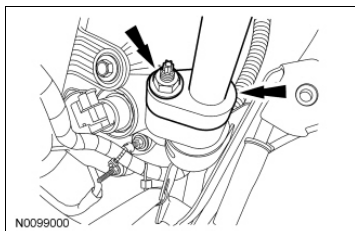
30. Connect the power steering cooler tube.



31. Using a new O-ring seal and gasket seal, install the A/C tube and the nut.
- Tighten to 15 Nm (133 lb-in).



32. Using a new O-ring seal and gasket seal, connect the A/C tube and install the nut.
- Tighten to 15 Nm (133 lb-in).



33. Install the EVAP canister purge valve. For additional information, refer to [Section 303-13](#) .

34. Install the degas bottle. For additional information, refer to [Section 303-03](#) .

35. Install the accessory drive belt, tensioner and the power steering belt. For additional information, refer to [Section 303-05](#) .

36. Install the front wheels and tires. For additional information, refer to [Section 204-04](#) .