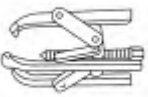
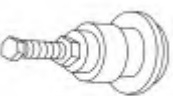


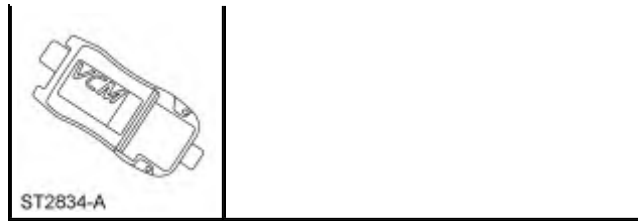
SECTION 303-01D: Engine — 6.2L (2V)  
IN-VEHICLE REPAIR

2014 F-150 Workshop Manual  
Procedure revision date: 10/25/2013

## Engine Front Cover

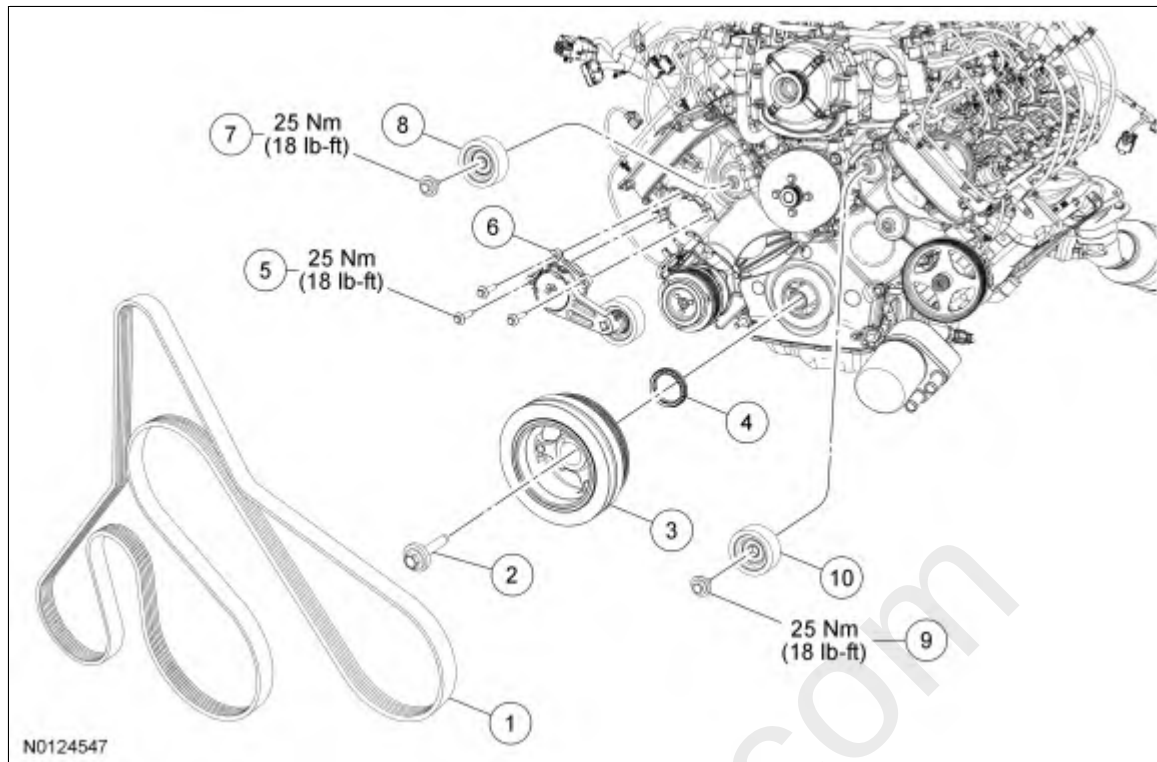
### Special Tool(s)

|                                                                                                 |                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>ST1184-A   | 3 Jaw Puller or equivalent<br>303-D121                                                                                                            |
| <br>ST2132-A   | Adapter Set, Step Plate<br>205-DS011 or equivalent                                                                                                |
| <br>ST3245-A  | Installer, Crankshaft Damper and<br>Crankshaft Front Seal<br>303-1508                                                                             |
| <br>ST1328-A | Installer, Front Cover Oil Seal<br>303-335 (T88T-6701-A)                                                                                          |
| <br>ST1385-A | Remover, Oil Seal<br>303-409 (T92C-6700-CH)                                                                                                       |
| <br>ST1438-A | Strap Wrench<br>303-D055 (D85L-6000-A) or<br>equivalent                                                                                           |
|                                                                                                 | Vehicle Communication Module<br>(VCM) and Integrated Diagnostic<br>System (IDS) software with<br>appropriate hardware, or<br>equivalent scan tool |

**Material**

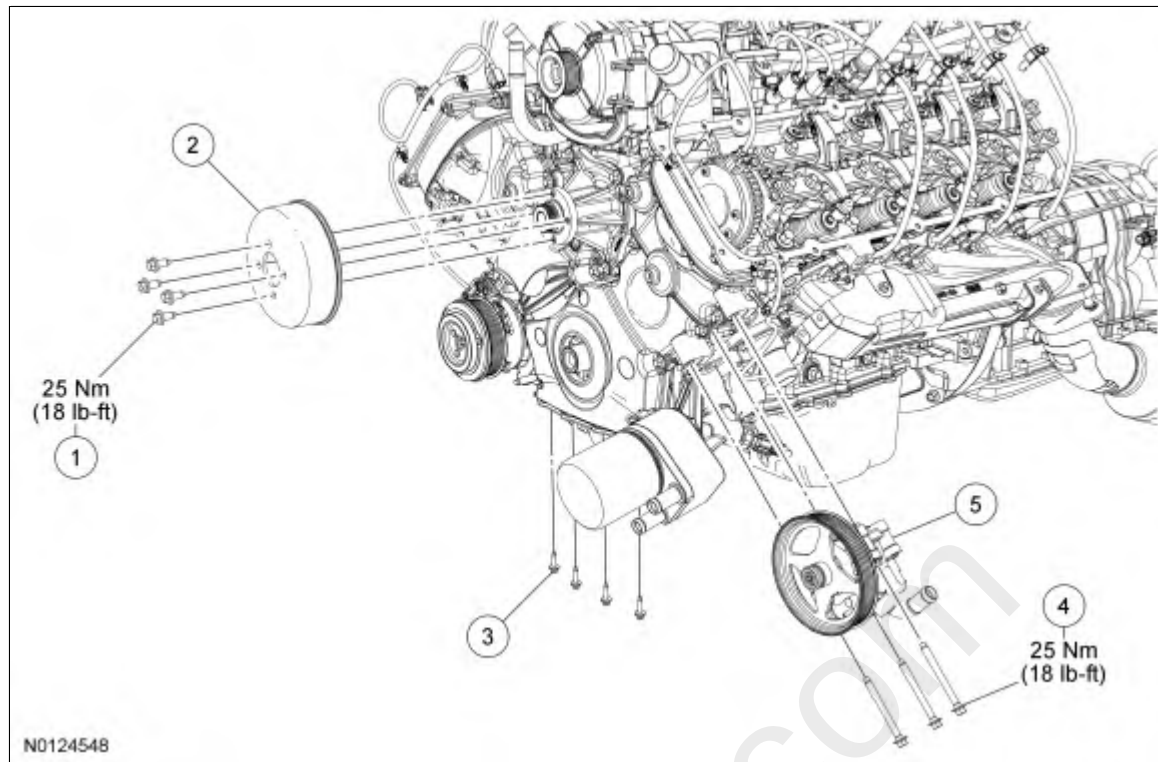
| Item                                                                                                                                                                 | Specification     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| MERCON® V Automatic Transmission Fluid<br>XT-5-QM (or XT-5-QMC) (US);<br>CXT-5-LM12 (Canada)                                                                         | MERCON® V         |
| Motorcraft® Metal Surface Prep<br>ZC-31-A                                                                                                                            | —                 |
| Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US);<br>Motorcraft® SAE 5W-20 Super Premium Motor Oil (Canada)<br>XO-5W20-QSP (US); CXO-5W20-LSP12 (Canada) | WSS-<br>M2C945-A  |
| Motorcraft® Silicone Gasket Remover<br>ZC-30                                                                                                                         | —                 |
| Silicone Gasket and Sealant<br>TA-30                                                                                                                                 | WSE-<br>M4G323-A4 |

**Front End Accessory Drive (FEAD), Crankshaft Pulley and Crankshaft Front Seal**



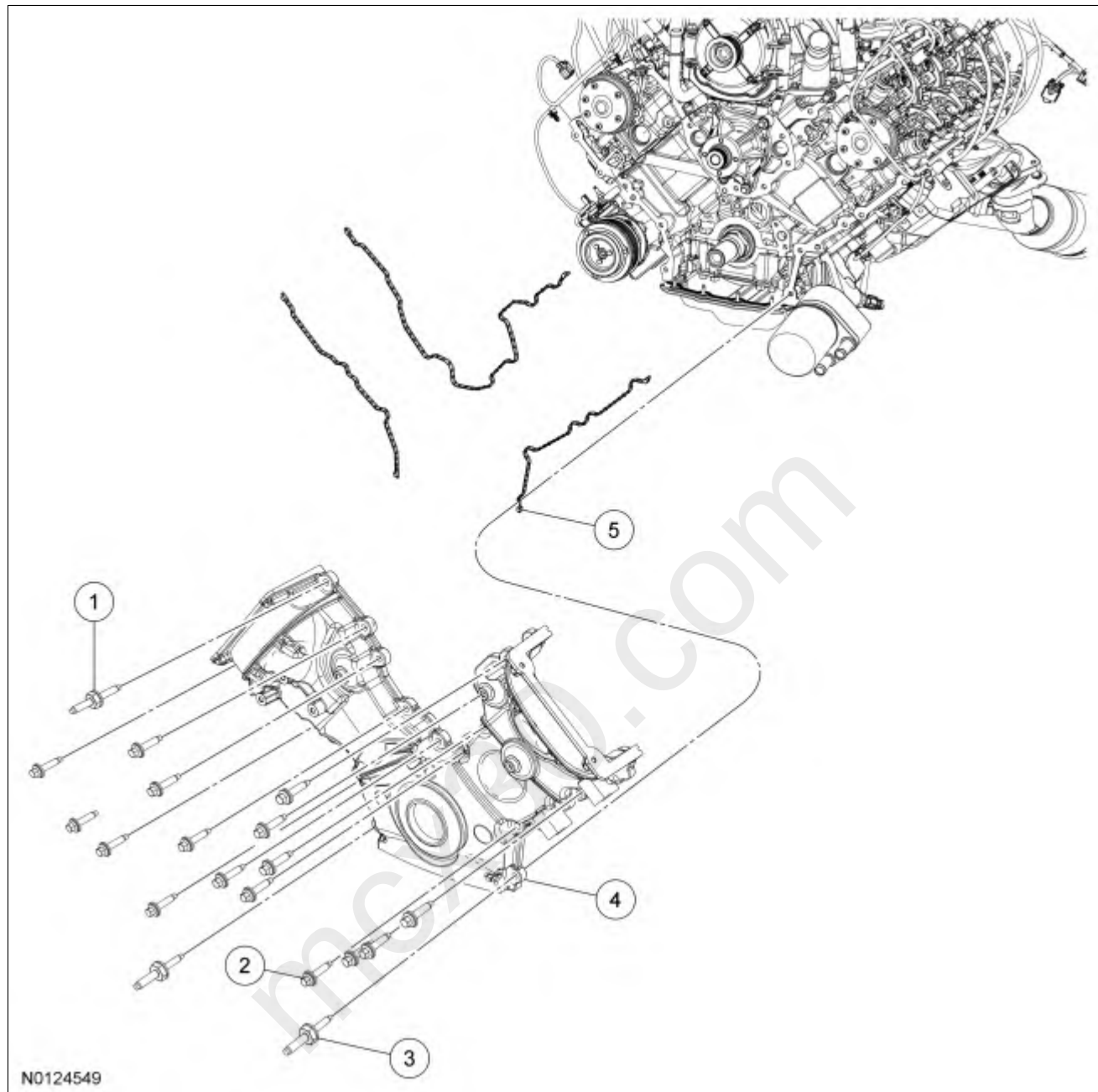
| Item | Part Number | Description                                      |
|------|-------------|--------------------------------------------------|
| 1    | 8620        | Accessory drive belt                             |
| 2    | W701512     | Crankshaft pulley bolt                           |
| 3    | 6316        | Crankshaft pulley                                |
| 4    | 6700        | Crankshaft front seal                            |
| 5    | N808920     | Accessory drive belt tensioner bolt (3 required) |
| 6    | 6B209       | Accessory drive belt tensioner                   |
| 7    | N808102     | RH accessory drive belt idler pulley bolt        |
| 8    | 19A216      | RH accessory drive belt idler pulley             |
| 9    | N808102     | LH accessory drive belt idler pulley bolt        |
| 10   | 19A216      | LH accessory drive belt idler pulley             |

### Coolant Pump Pulley, Power Steering Pump and Front Oil Pan Bolts



| Item | Part Number | Description                            |
|------|-------------|----------------------------------------|
| 1    | N806282     | Coolant pump pulley bolt (4 required)  |
| 2    | 8A528       | Coolant pump pulley                    |
| 3    | W701605     | Oil pan bolt (4 required)              |
| 4    | —           | Power steering pump bolts (3 required) |
| 5    | —           | Power steering pump                    |

### Engine Front Cover and Gaskets



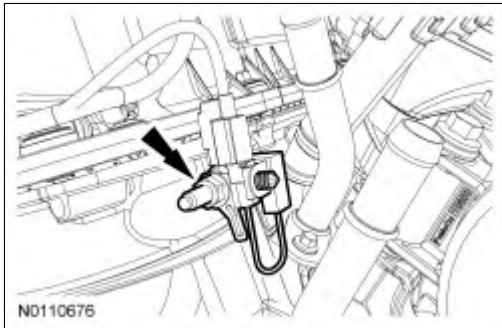
| Item | Part Number | Description                                            |
|------|-------------|--------------------------------------------------------|
| 1    | W713461     | Engine front cover stud                                |
| 2    | W713261     | Engine front cover bolt (17 required)                  |
| 3    | W713462     | Engine front cover stud (2 required)                   |
| 4    | 6C086       | Engine front cover                                     |
| 5    | —           | Engine front cover gasket (part of 6C086) (3 required) |

### Removal

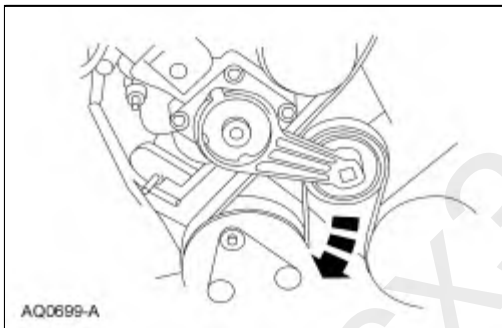
1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to [Section 100-](#)

02.

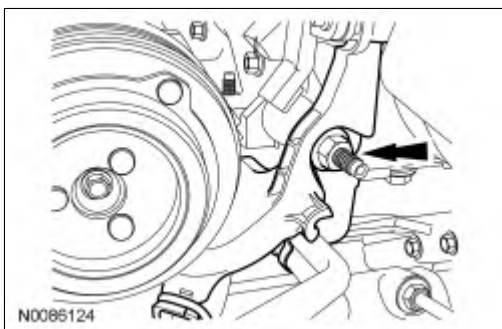
2. Remove the RH and LH Variable Camshaft Timing (VCT) variable force solenoids. For additional information, refer to [Section 303-14](#).
3. Remove the nut and position the radio ignition interference capacitor aside.



4. Loosen the 4 coolant pump pulley bolts.
5. Rotate the tensioner clockwise and remove the accessory drive belt.

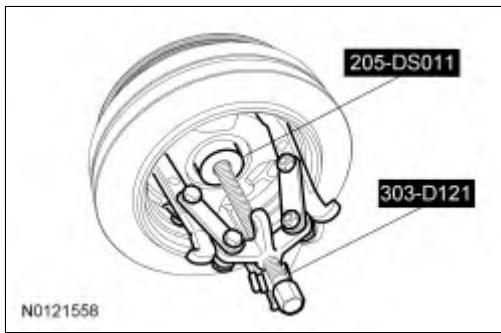


6. Remove the 4 bolts and the coolant pump pulley.
7. Drain the engine oil.
8. Remove the nut and position aside the transmission cooler tube support bracket and the starter wiring harness support bracket.



9. Remove the crankshaft pulley bolt.
  - Discard the crankshaft pulley bolt.

10. Using the 3 Jaw Puller and Step Plate, remove the crankshaft pulley.

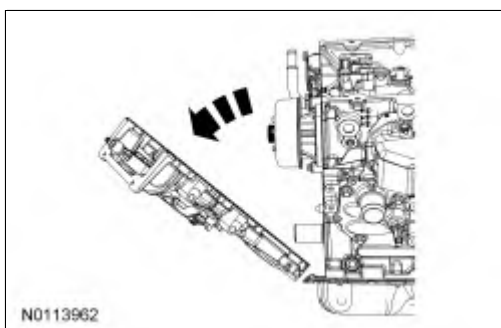


11. **NOTICE:** Use care not to damage the engine front cover or the crankshaft when removing the seal.

Using the Oil Seal Remover, remove the crankshaft front oil seal.



12. Remove the 2 bolts and the 2 accessory drive idler pulleys.
13. Remove the 3 bolts and the accessory drive belt tensioner.
14. Remove the 4 front oil pan bolts.
15. Remove the power steering pump. For additional information, refer to [Section 211-02](#).
16. Remove the 17 bolts and the 3 studs.
17. Remove the engine front cover from the front cover-to-cylinder block dowel.
  - Remove and discard the engine front cover gaskets.



18. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak paths. Use a plastic scraping tool to remove all traces of old sealant.

Clean the mating surfaces with silicone gasket remover and metal surface prep. Follow the directions on the packaging.

- Inspect the mating surfaces.

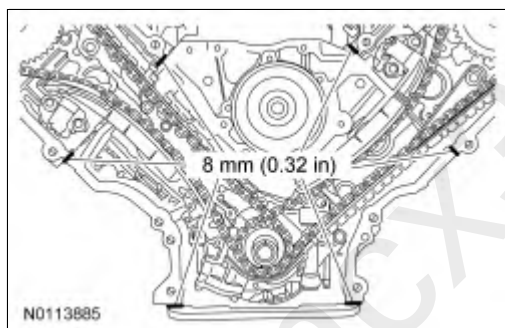
## Installation

1. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak paths. Use a plastic scraping tool to remove all traces of old sealant.

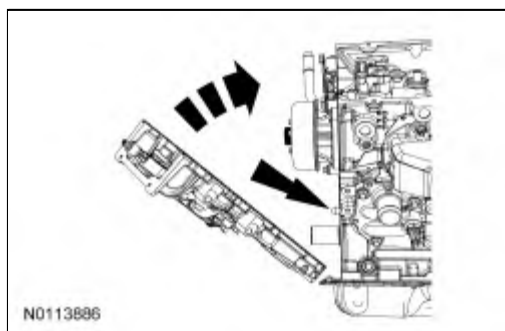
**NOTE:** If the engine front cover is not secured within 5 minutes, the sealant must be removed and the sealing area cleaned. To clean the sealing area, use silicone gasket remover and metal surface prep. Allow to dry until there is no sign of wetness, or 5 minutes, whichever is longer. Follow the directions on the packaging. Failure to follow this procedure can cause future oil leakage.

**NOTE:** Make sure that the engine front cover gasket is in place on the engine front cover before installation.

Apply a bead of silicone gasket and sealant along the cylinder head-to-cylinder block surface and the oil pan-to-cylinder block surface, at the locations shown.

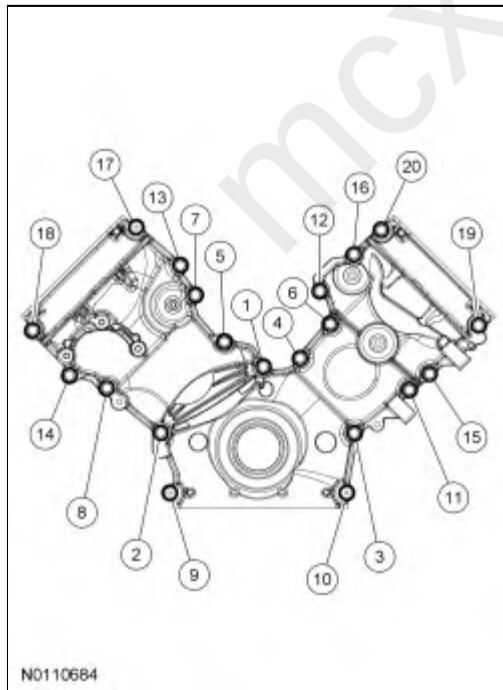


2. Install new engine front cover gaskets on the engine front cover. Position the engine front cover onto the dowels. Install the fasteners finger-tight.



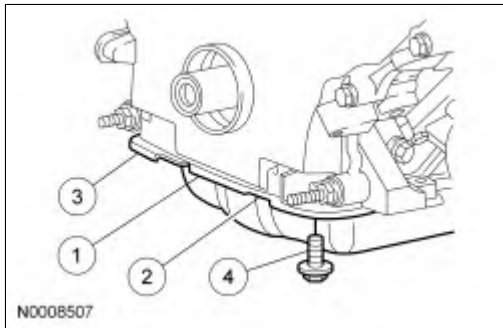
3. Tighten the 20 engine front cover fasteners in the sequence shown in 2 stages.  
 Stage 1: Tighten all fasteners to 10 Nm (89 lb-in).  
 Stage 2: Tighten all fasteners to 20 Nm (177 lb-in).  
 Stage 3: Tighten all fasteners an additional 45 degrees.

| Item | Part Number | Description                                 |
|------|-------------|---------------------------------------------|
| 1    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 2    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 3    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 4    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 5    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 6    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 7    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 8    | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 9    | W713462     | Stud, Hex Head Pilot, M8 x 33 + M10 x 30    |
| 10   | W713462     | Stud, Hex Head Pilot, M8 x 33 + M10 x 30    |
| 11   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 12   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 13   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 14   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 15   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 16   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 17   | W713461     | Stud, Hex Head Pilot, M8 x 33 + M8 x 27     |
| 18   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 19   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |
| 20   | W713261     | Bolt, Hex Flange Head Pilot, M8 x 1.25 x 33 |

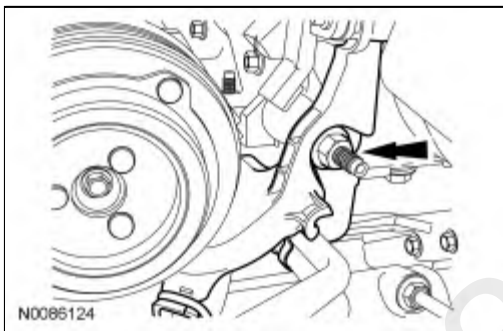


- Loosely install the 4 bolts, then tighten in 2 stages, in the sequence shown.

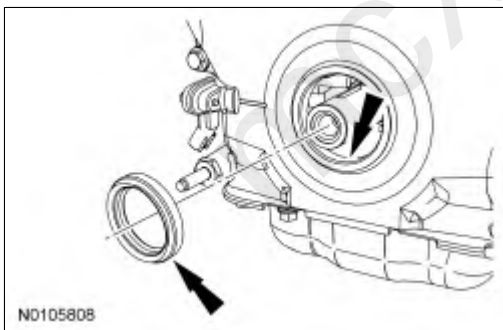
- Stage 1: Tighten to 10 Nm (89 lb-in).
- Stage 2: Tighten an additional 45 degrees.



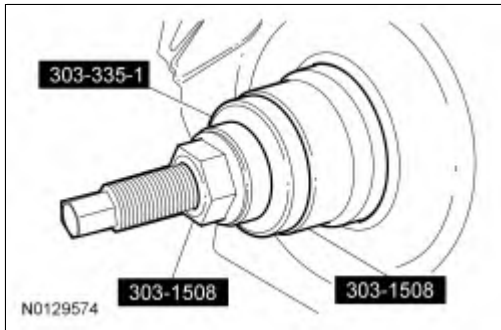
5. Position the starter wiring harness support bracket and the transmission fluid cooler tube support bracket and tighten the nut.
- Tighten to 10 Nm (89 lb-in).



6. Lubricate the engine front cover and the crankshaft seal inner lip with clean engine oil.

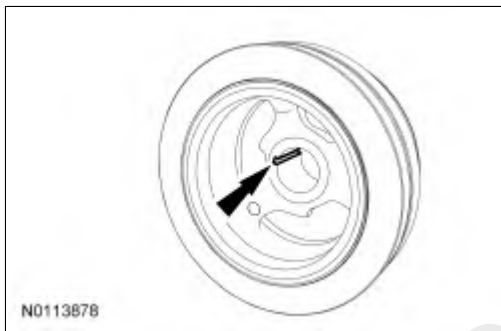


7. Using the Crankshaft Damper and Crankshaft Front Seal Installer and the Front Cover Oil Seal Installer, install a new crankshaft front seal into the engine front cover.

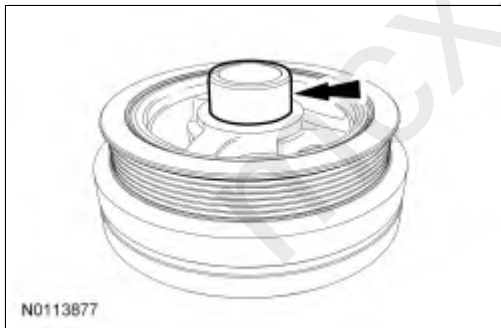


8. **NOTE:** If not secured within 5 minutes, the sealant must be removed and the sealing area cleaned with metal surface prep and silicone gasket remover. Allow to dry until there is no sign of wetness, or 5 minutes, whichever is longer. Failure to follow this procedure can cause future oil leakage.

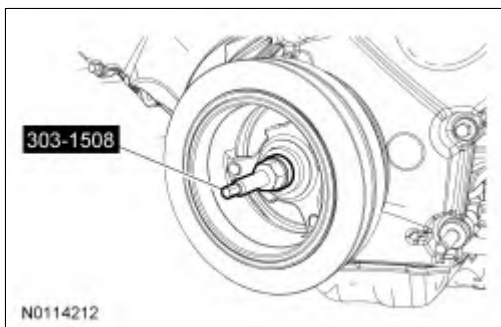
Apply silicone gasket and sealant to the Woodruff key slot in the crankshaft pulley.



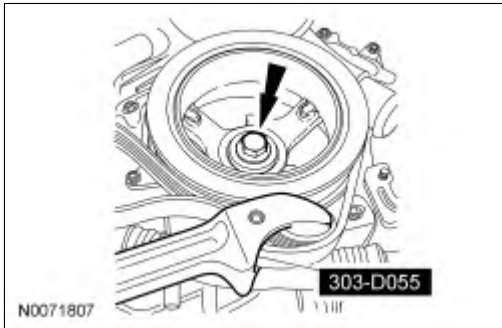
9. Lubricate the crankshaft pulley sealing area with clean engine oil prior to installation.



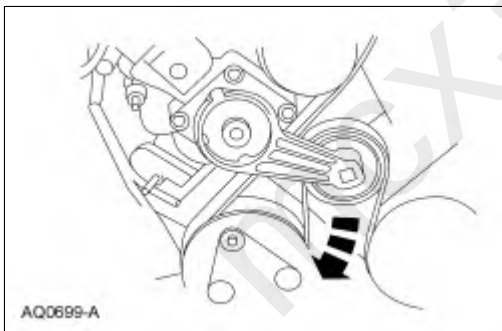
10. Using the Crankshaft Vibration Damper Installer, install the crankshaft pulley.



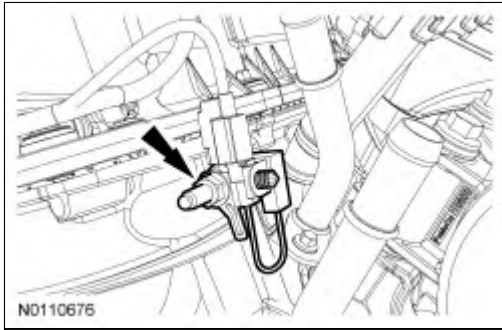
11. Using the Strap Wrench, install a new crankshaft pulley bolt and the original washer, tighten the bolt in 2 stages:
- Stage 1: Tighten to 175 Nm (129 lb-ft).
  - Stage 2: Tighten an additional 90 degrees.



12. Install the accessory drive belt tensioner and the 3 bolts.
- Tighten to 25 Nm (18 lb-ft).
13. Install the 2 accessory drive idler pulleys and the 2 bolts.
- Tighten to 25 Nm (18 lb-ft).
14. Position the coolant pump pulley and install the 4 bolts finger-tight.
15. Install the power steering pump. For additional information, refer to [Section 211-02](#).
16. Rotate the tensioner clockwise and install the accessory drive belt.



17. Tighten the 4 coolant pump pulley bolts.
- Tighten to 25 Nm (18 lb-ft).
18. Position the radio ignition interference capacitor and install the nut.
- Tighten to 25 Nm (18 lb-ft).



19. Install the RH and LH VCT variable force solenoids. For additional information, refer to [Section 303-14](#).
  20. Fill the crankcase with clean engine oil.
-