

SECTION 303-01C: Engine — 5.0L (4V)  
IN-VEHICLE REPAIR

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

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## Oil Pan

### Material

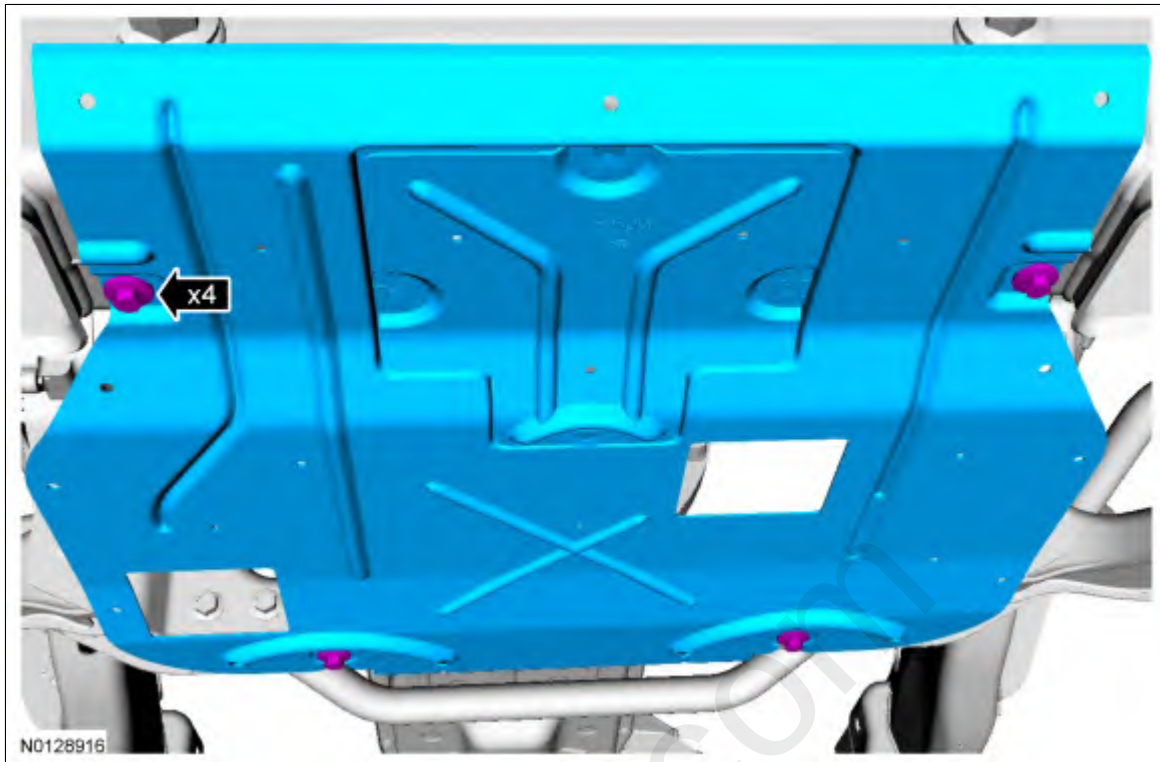
| Item                                            | Specification     |
|-------------------------------------------------|-------------------|
| Motorcraft® Metal Surface Prep<br>ZC-31-A       | —                 |
| Motorcraft® Silicone Gasket<br>Remover<br>ZC-30 | —                 |
| Silicone Gasket and Sealant<br>TA-30            | WSE-M4G323-<br>A4 |

### Removal

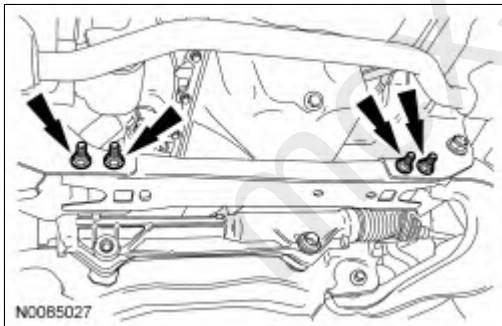
**NOTICE:** During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan, may cause engine failure.

### All vehicles

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to [Section 100-02](#).
2. Disconnect the battery ground cable. For additional information, refer to [Section 414-01](#).
3. Remove the oil level indicator.
4. If equipped, remove the 4 bolts and the skid plate.

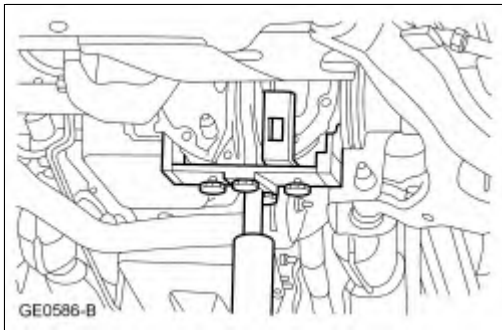


5. Remove the drain plug and drain the engine oil.
  - Install the drain plug and tighten to 26 Nm (19 lb-ft).
6. Remove the 4 nuts and bolts and the crossmember.

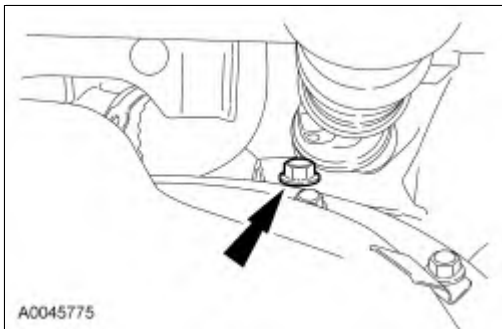


#### Four Wheel Drive (4X4) vehicles

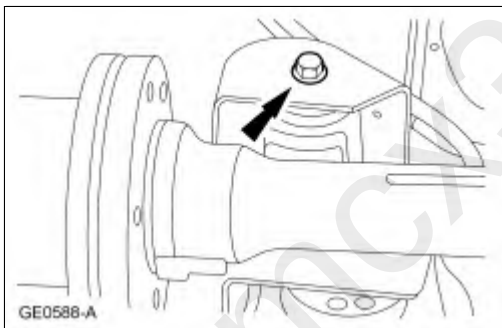
7. Position a suitable hydraulic jack under the front axle.
  - Securely strap the jack to the axle.



8. Remove the upper front axle carrier mounting bushing bolt.

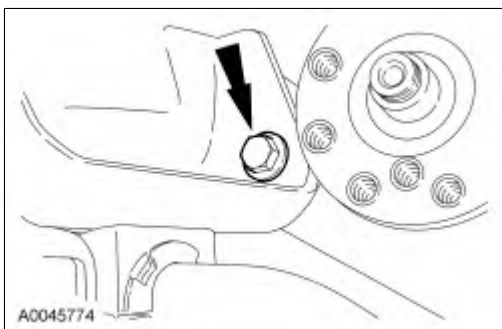


9. Remove the axle shaft housing carrier bushing bolt.



10. **NOTE:** Front driveshaft removed for clarity only.

Remove the lower front axle carrier mounting bushing bolt.

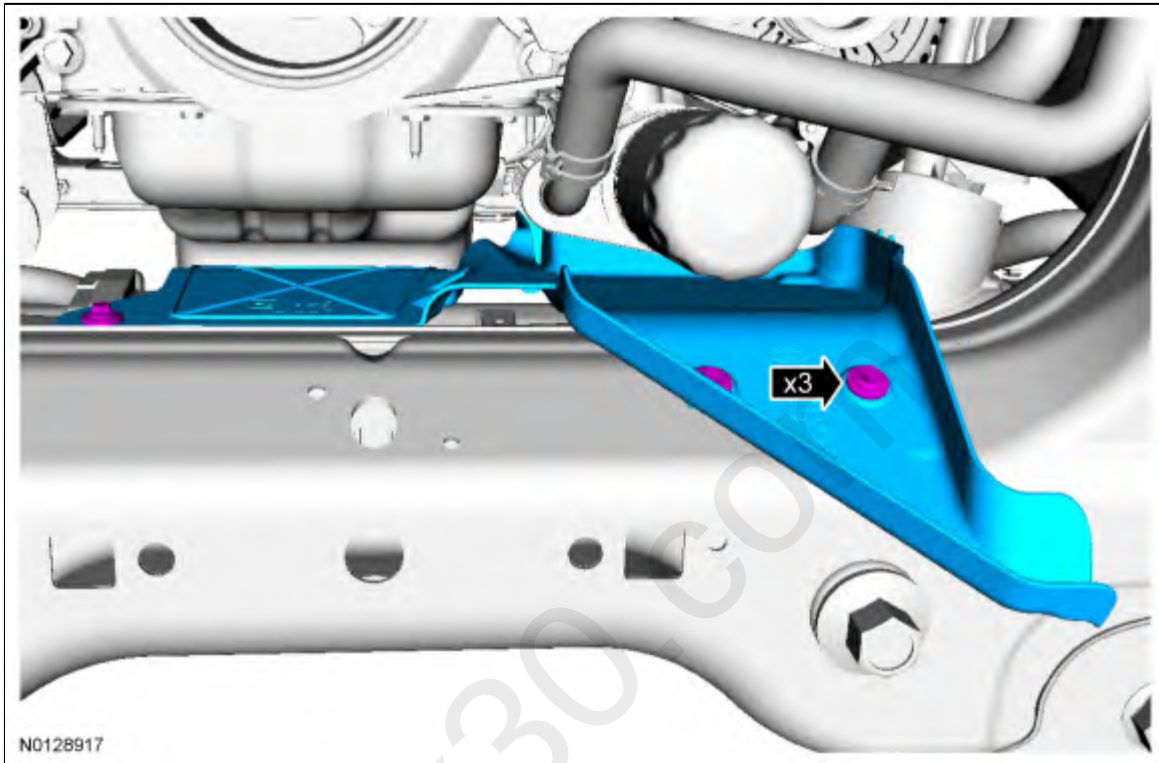


11. **NOTICE:** Use care when lowering the front axle housing, or the vacuum lines to the axle solenoid may become disconnected or damaged.

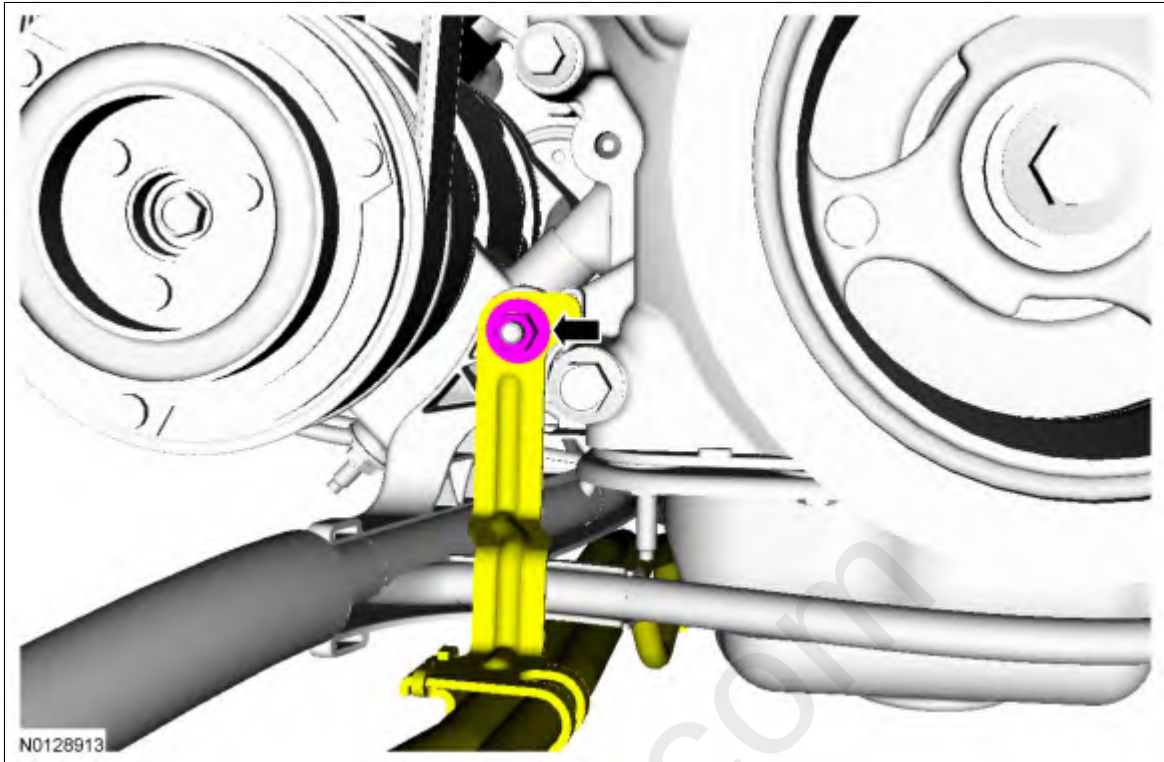
Lower the axle to allow clearance for the oil pan to be removed.

**All vehicles**

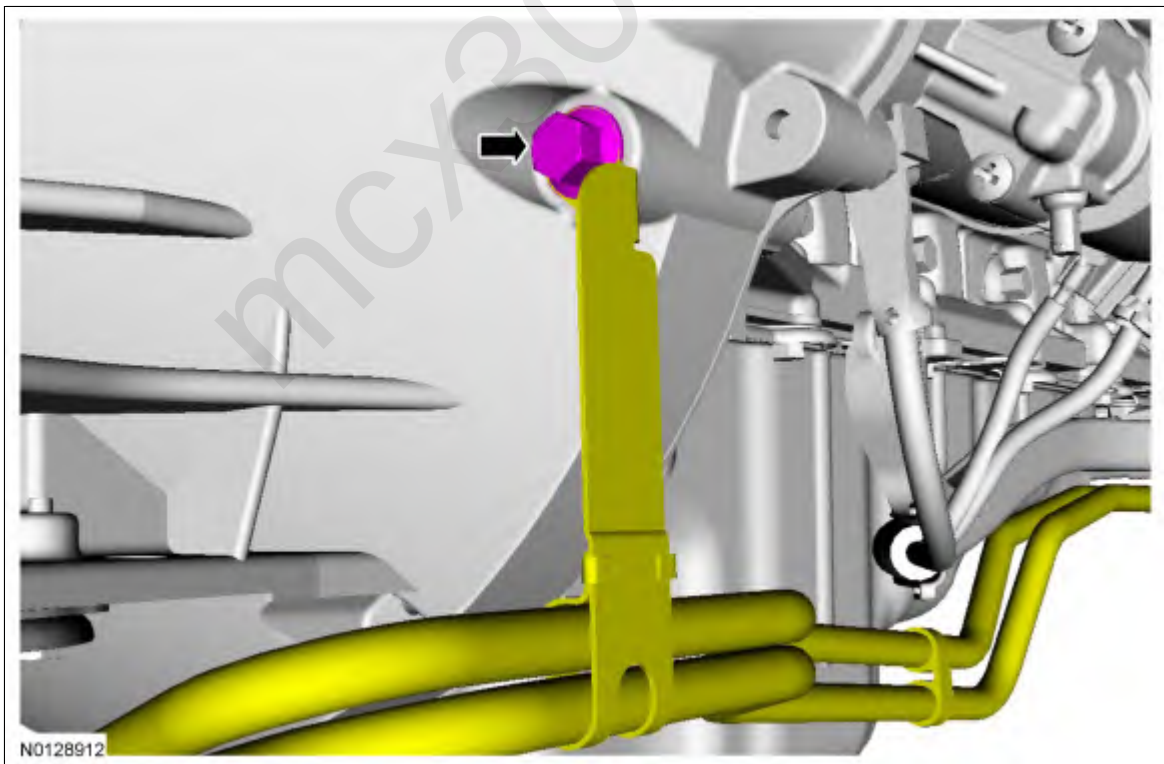
12. Remove the 3 bolts and the oil drain gutter.



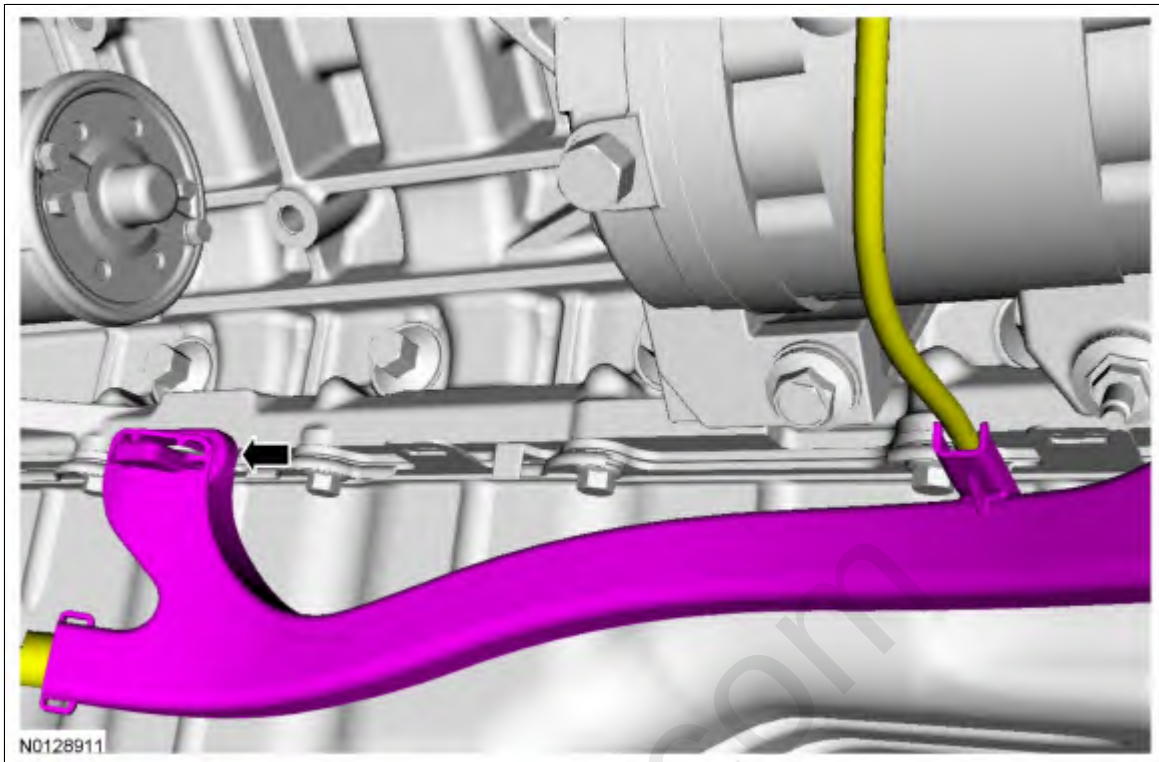
13. Remove the nut and the transmission cooler tube bracket from the engine front cover stud bolt.



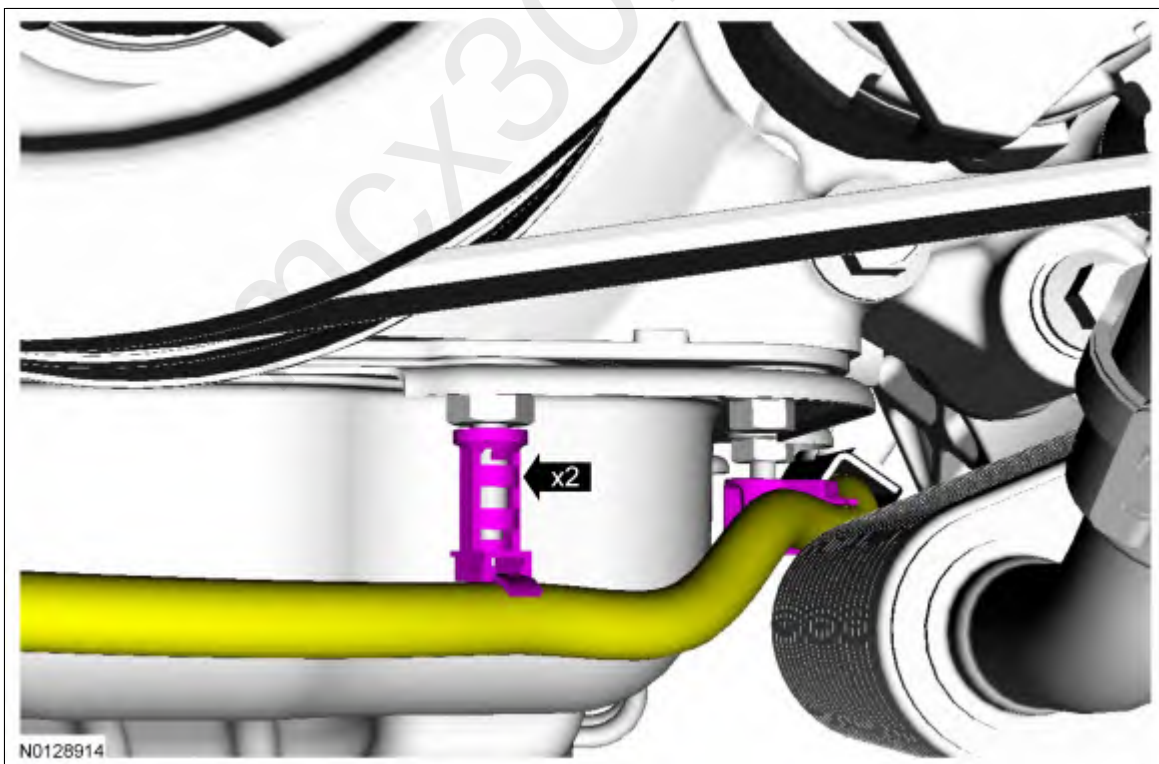
14. Remove the bolt and the transmission cooler tube bracket from the bellhousing.



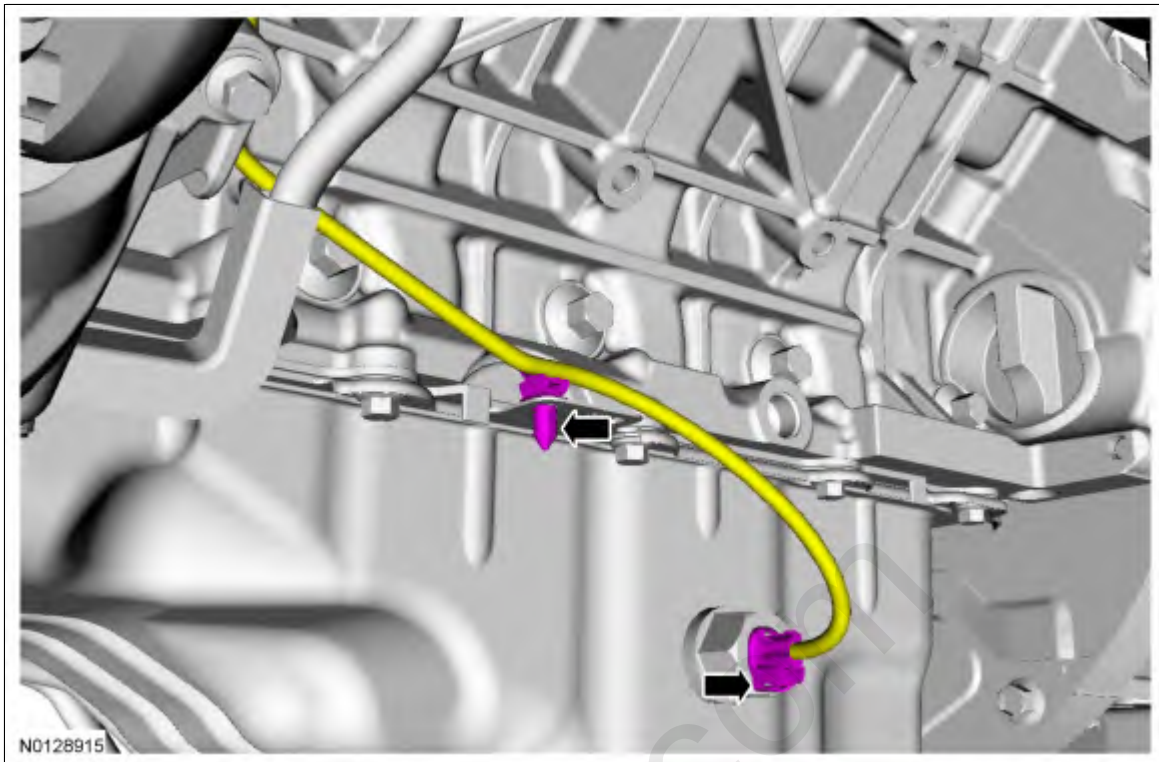
15. Detach the starter motor wiring harness retainer from the oil pan.



16. Detach the 2 wiring harness retainers from the oil pan stud bolts.



17. Disconnect the oil level sensor electrical connector and wiring harness retainer.



18. Remove the 3 stud bolts, the 13 bolts and the oil pan.

## Installation

### All vehicles

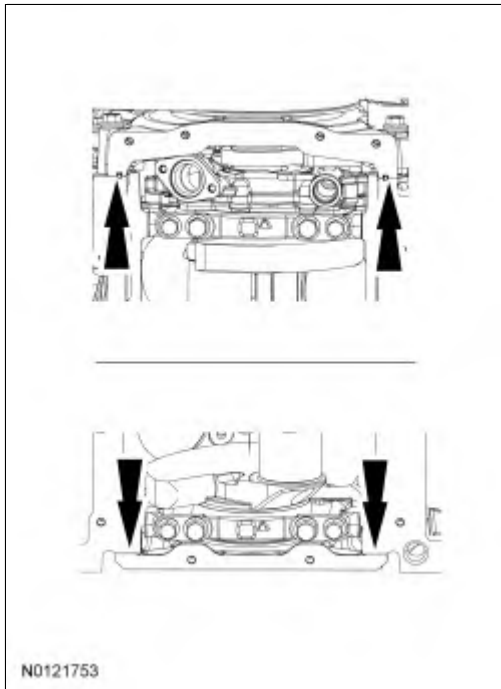
1. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges, which make leak paths. Use a plastic scraping tool to remove all traces of old sealant.

Inspect the oil pan and engine sealing surfaces. Clean the mating surfaces of the engine and oil pan with silicone gasket remover and metal surface prep. Follow the directions on the packaging.

2. **NOTE:** If the oil pan is not installed and the fasteners tightened 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. Failure to follow this procedure can cause future oil leakage. If this timing cannot be met, tighten fasteners 7, 8, 9 and 10 to 8 Nm (71 lb-in) within 5 minutes of applying the sealer and final torque all of the fasteners within 1 hour of applying the sealer.

**NOTE:** If the engine front cover has been removed, it is only necessary to apply sealant to the crankshaft rear seal retainer plate-to-cylinder block sealing surfaces.

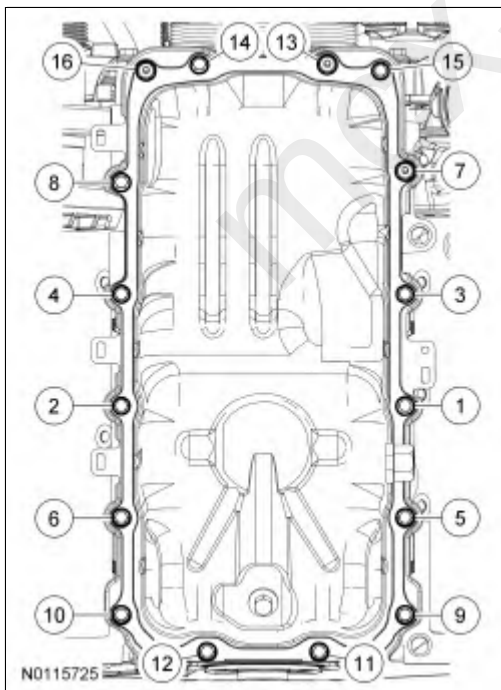
Apply an 8 mm (0.31 in) bead of silicone sealant to the crankshaft rear seal retainer plate-to-cylinder block sealing surfaces and the engine front cover-to-cylinder block sealing surfaces.



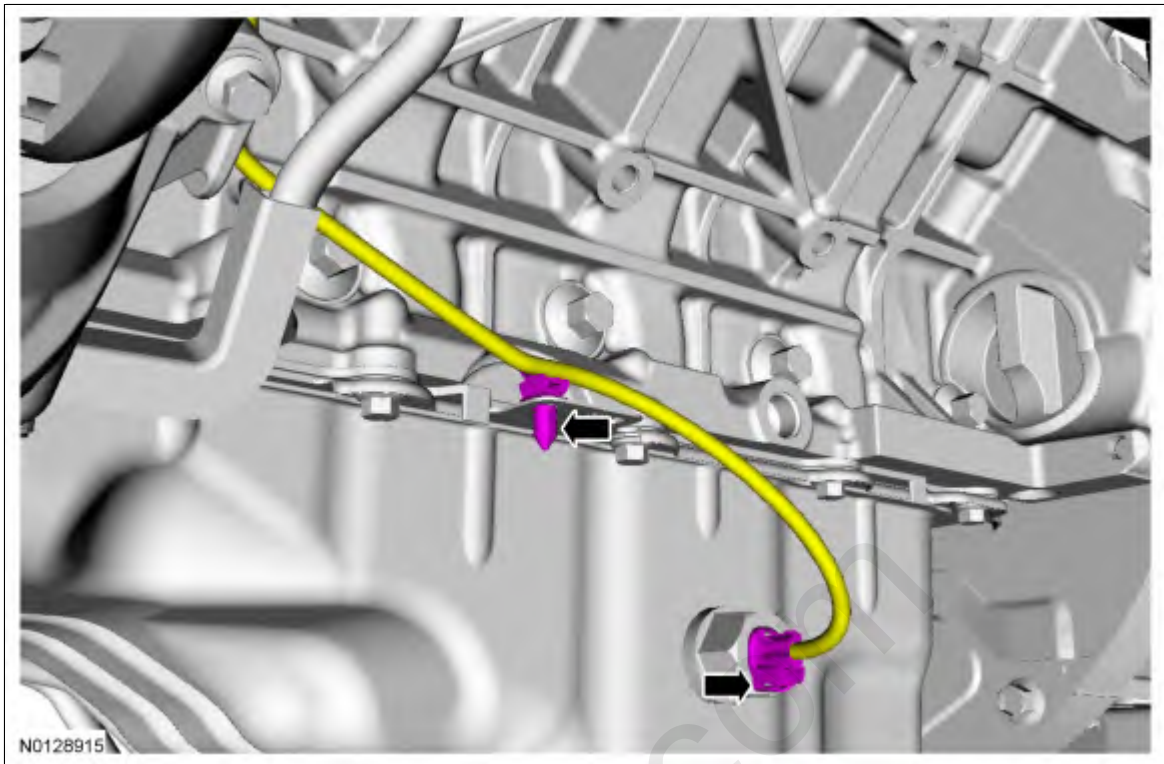
3. **NOTE:** Fastener locations 7, 13 and 16 are stud bolts.

Using a new gasket, install the oil pan and tighten the fasteners in sequence in 3 stages.

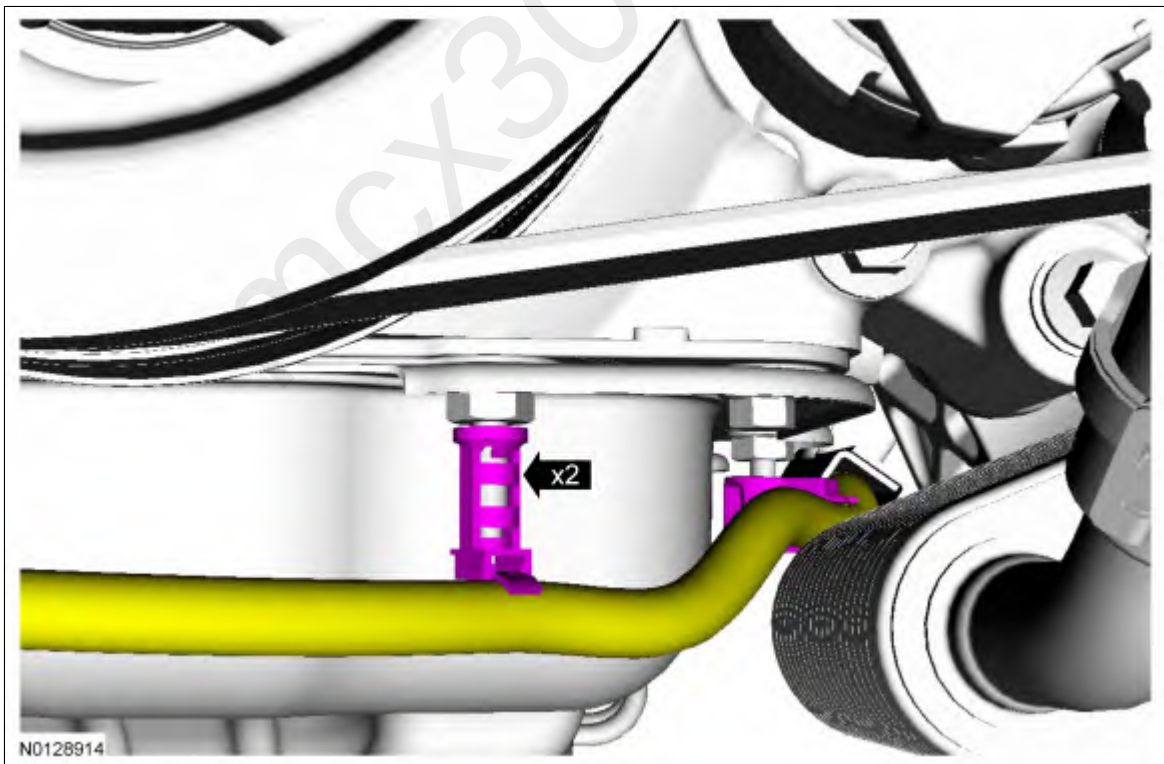
- Stage 1: Tighten to 2 Nm (18 lb-in)
- Stage 2: Tighten to 10 Nm (89 lb-in).
- Stage 3: Tighten an additional 45 degrees.



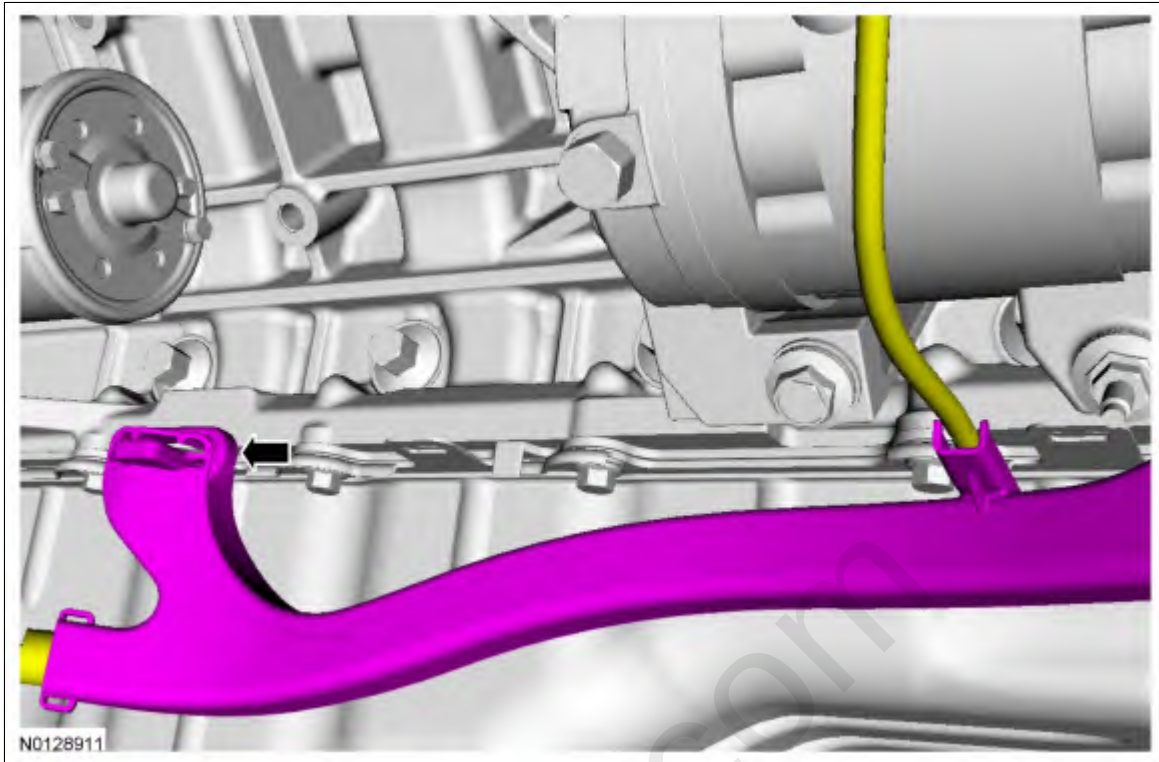
4. Connect the oil level sensor electrical connector and wiring harness retainer.



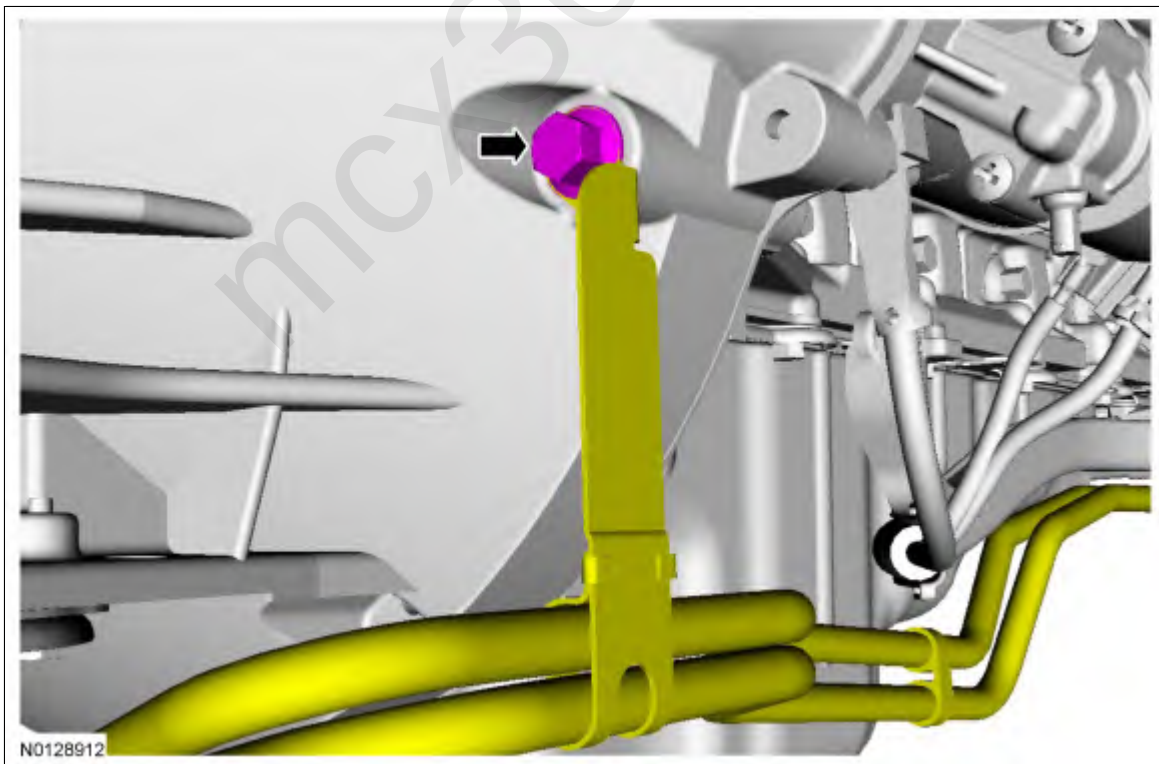
5. Attach the 2 wiring harness retainers to the oil pan stud bolts.



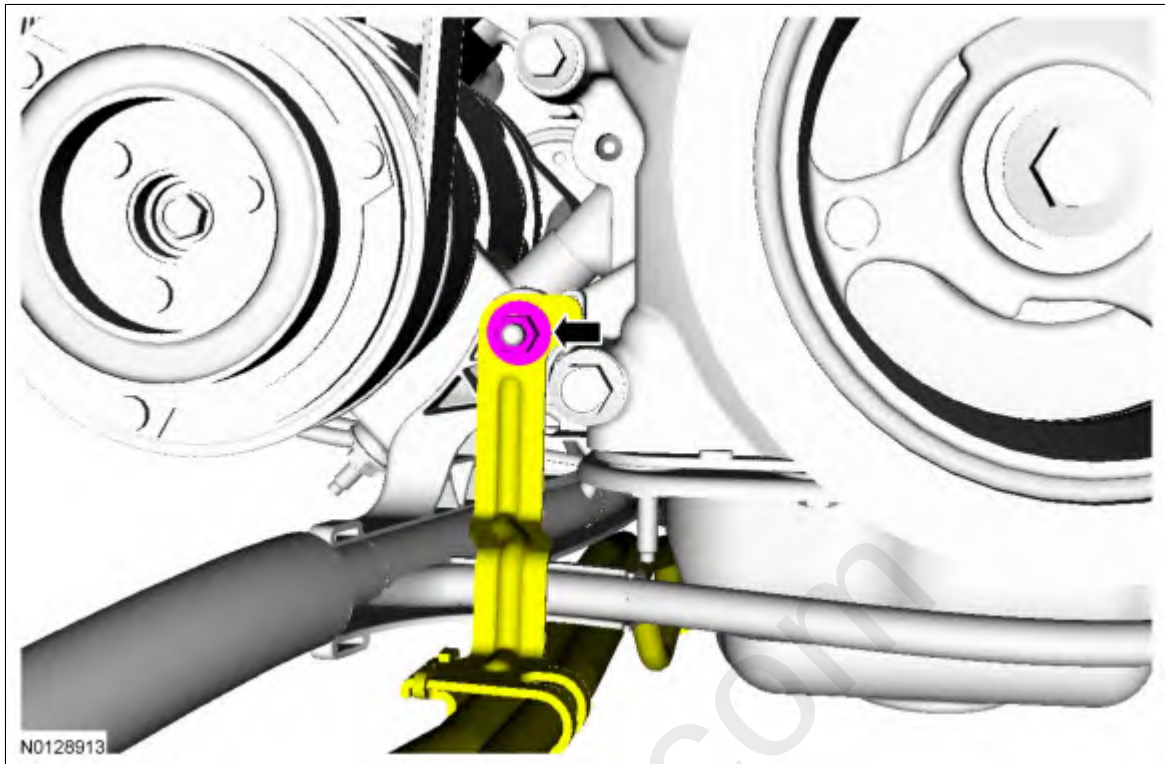
6. Attach the starter motor wiring harness retainer to the oil pan.



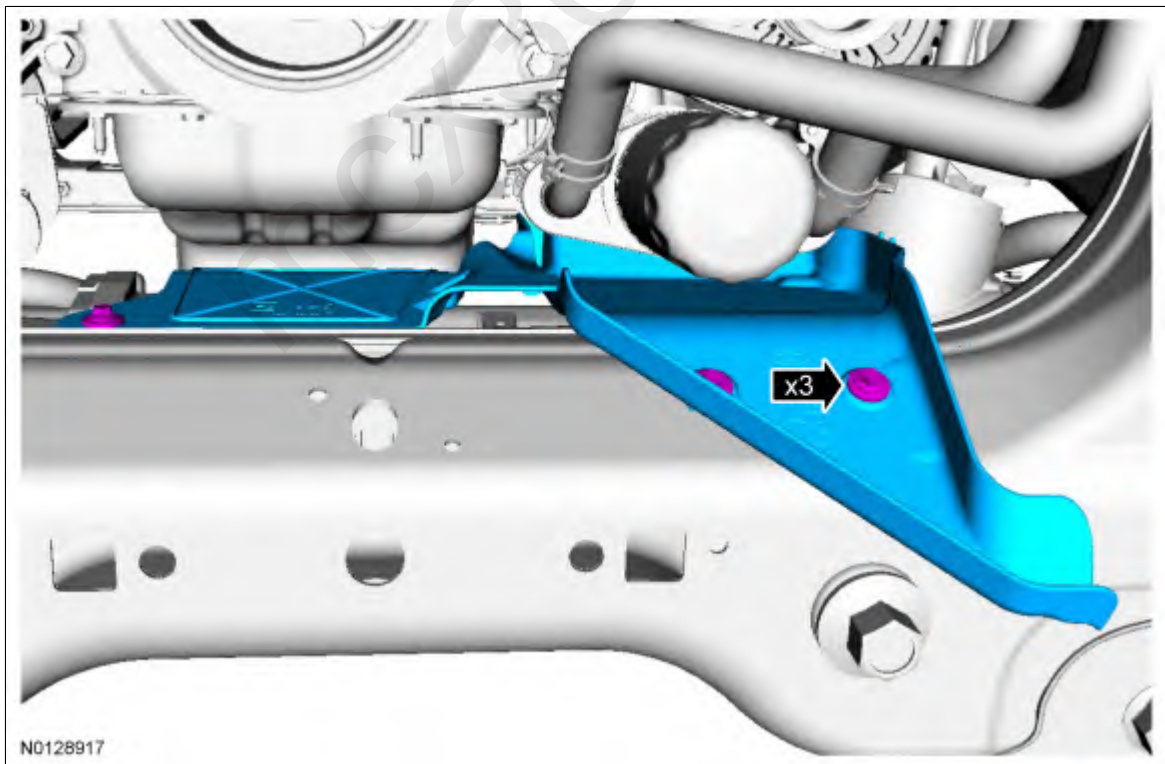
7. Install the transmission cooler tube bracket and the bolt onto the bellhousing.
  - Tighten to 48 Nm (35 lb-ft).



8. Install the transmission cooler tube bracket and the nut onto the engine front cover stud bolt.
  - Tighten to 13 Nm (115 lb-in).



9. Install the oil drain gutter and the 3 bolts.
- Tighten to 10 Nm (89 lb-in).

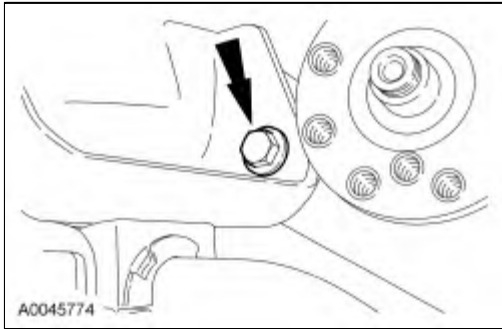


**Four Wheel Drive (4X4) vehicles**

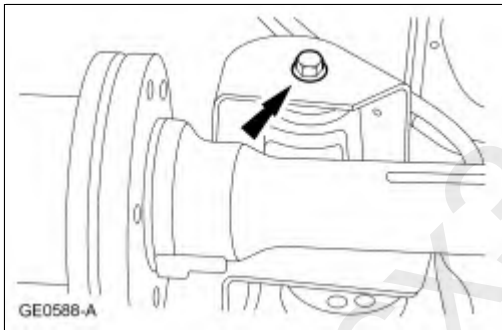
10. **NOTICE:** Use care when positioning the front axle housing, or the vacuum tubes to the axle solenoid may become disconnected or damaged.

Raise the front axle carrier into position.

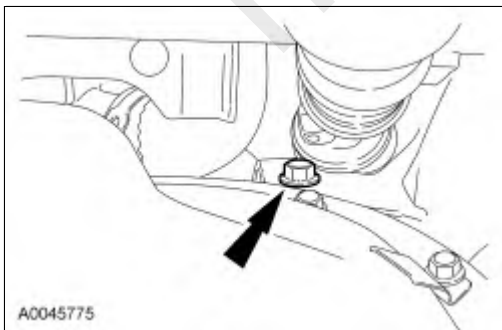
11. Install the lower front axle carrier mounting bushing bolt.
- Tighten to 115 Nm (85 lb-ft).



12. Install the axle shaft housing carrier bushing bolt.
- Tighten to 115 Nm (85 lb-ft).

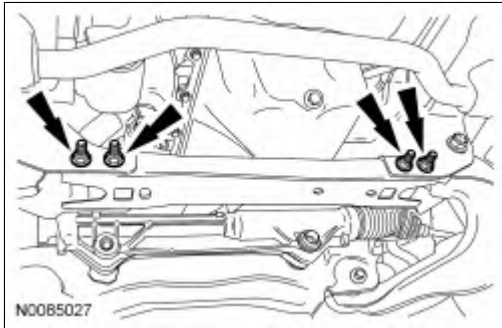


13. Install the upper front axle carrier mounting bushing bolt.
- Tighten to 115 Nm (85 lb-ft).

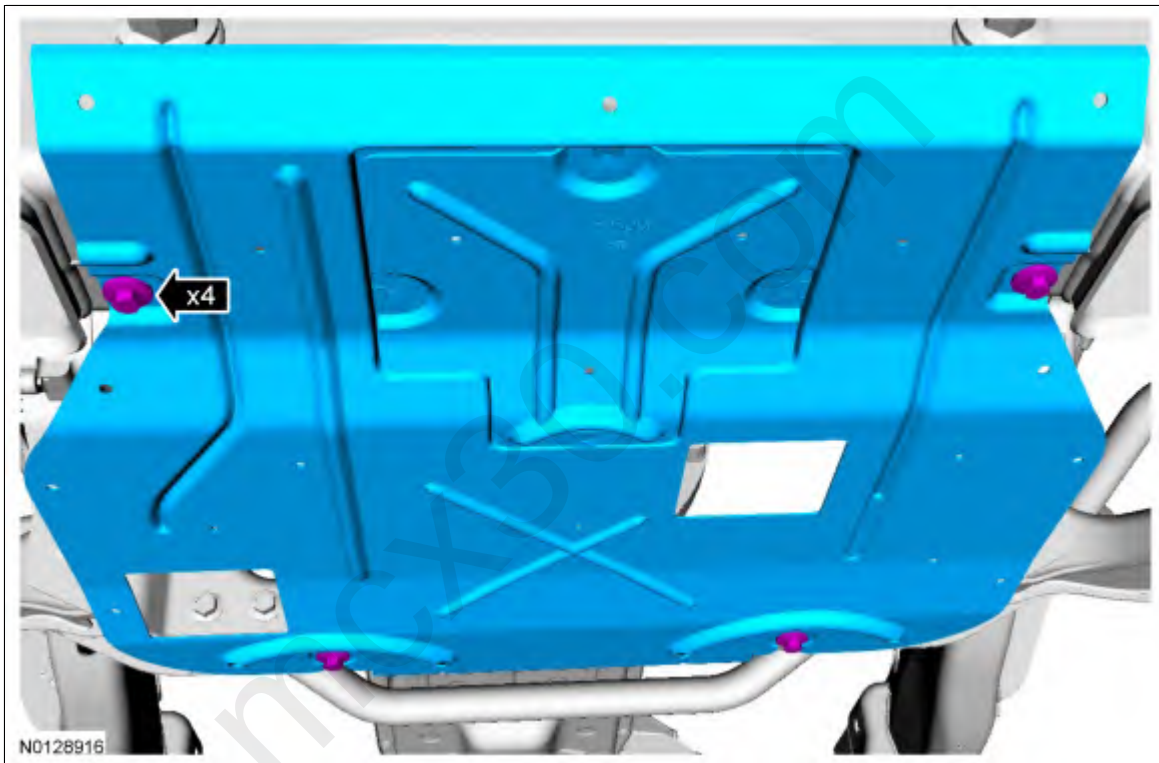


#### All vehicles

14. Position the crossmember and install the 4 nuts and bolts.
- Tighten to 90 Nm (66 lb-ft).



15. If equipped, install the skid plate and the 4 bolts.
  - Tighten to 48 Nm (35 lb-ft).



16. Install the oil level indicator.
  17. Fill the engine with clean engine oil.
  18. Connect the battery ground cable. For additional information, refer to [Section 414-01](#).
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