

SECTION 303-01B: Engine — 3.7L
INSTALLATION

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

Engine

Special Tool(s)

 ST1341-A	2,200# Floor Crane, Fold Away 300-OTC1819E
 ST3101-A	Bar, Engine Spreader 303-1454
 ST1377-A	Lifting Bracket, Engine 303-F047 (014-00073)

Material

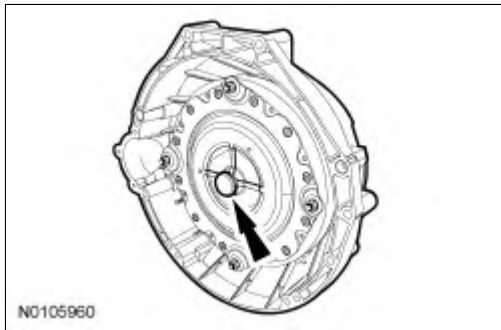
Item	Specification
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil (Canada) XO-5W20-QSP (US); CXO-5W20-LSP12 (Canada)	WSS-M2C945-A
Motorcraft® Multi-Purpose Grease XL-5	ESB-M1C93-B



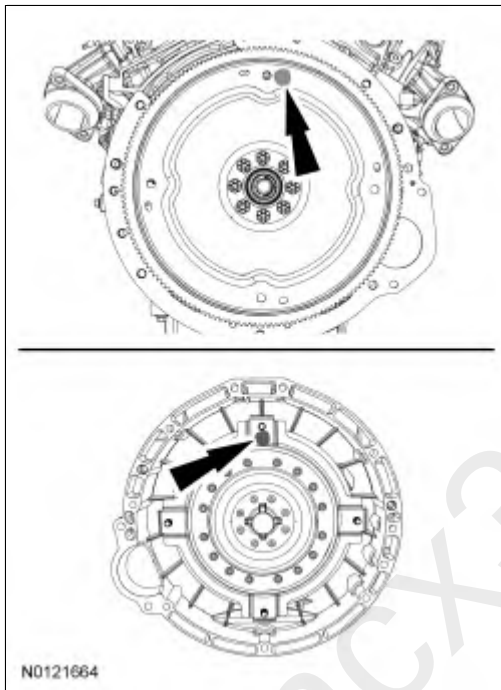
WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

1. **NOTICE:** Prior to installation of the engine, the torque converter pilot hub must be lubricated with multi-purpose grease or damage to the torque converter or the engine crankshaft can occur

Lubricate the torque converter pilot hub with multi-purpose grease.



2. Align the torque converter stud and flexplate hole near the paint marks at the 12 o'clock position.



3. Using the Heavy Duty Floor Crane and Engine Spreader Bar, position the engine in the engine compartment.



4. Attach the generator wiring harness retainer to the lower LH side of the engine block.



5. Using the Heavy Duty Floor Crane and Engine Spreader Bar, position the engine to the transmission.



6. Align the engine to the transmission and install LH bellhousing-to-engine bolt.
 - Tighten the bolt, it will be torqued at a later step.



7. Install the engine-to-bellhousing bolt.
 - Tighten the bolt, it will be torqued at a later step.



8. Install the oil pan-to-bellhousing bolt.
 - Tighten to 48 Nm (35 lb-ft).



9. Tighten the engine-to-bellhousing bolt.
 - Tighten to 48 Nm (35 lb-ft).



10. Using the Heavy Duty Floor Crane and Engine Spreader Bar, raise the engine for clearance for the LH engine support insulator.



11. Install the LH engine support insulator.

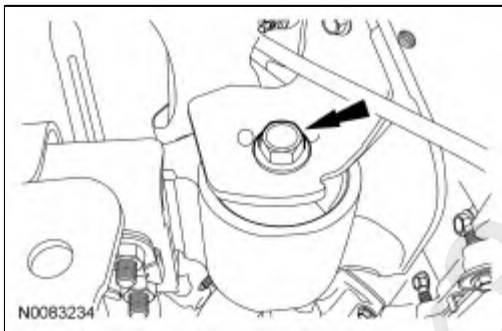


12. **NOTICE:** Use only hand tools when installing the LH engine support insulator through bolt or the engine support insulator may be damaged.

NOTE: Clean the LH and RH engine support insulator-to-frame mating surfaces of any dirt or foreign material prior to installation.

Install the new LH engine support insulator and the through bolt.

- Do not torque at this time.



13. Lower the engine.
14. Install the 3 LH engine support insulator bolts.
- Tighten to 175 Nm (129 lb-ft).



15. Install the 2 LH bellhousing-to-oil pan bolts.
- Tighten to 48 Nm (35 lb-ft).



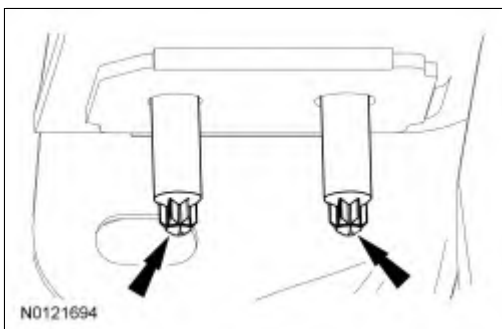
16. Install the LH bellhousing-to-engine bolt.
- Tighten to 48 Nm (35 lb-ft).



17. Tighten LH bellhousing-to-engine bolt.
- Tighten to 48 Nm (35 lb-ft).



18. Install the 2 new RH engine support insulator studs.
- Tighten to 30 Nm (22 lb-ft).



19. **NOTICE:** Use only hand tools when installing the RH engine support insulator nuts or the engine support insulator may be damaged.

Install the 2 new RH engine support insulator nuts.

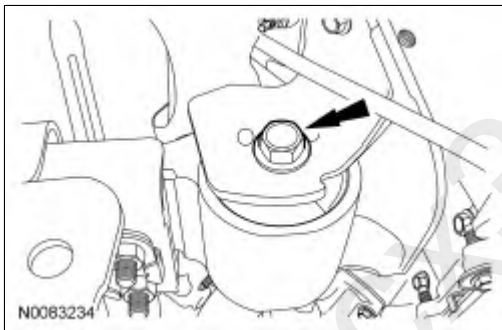
- Tighten to 175 Nm (129 lb-ft).



20. **NOTICE:** Use only hand tools when tightening the LH engine support insulator through bolt or the engine support insulator may be damaged.

Tighten the LH engine mount through bolt.

- Tighten to 350 Nm (258 lb-ft).



21. If equipped, install the 2 coolant hoses to the oil cooler.



22. **NOTE:** Do not lubricate the engine oil filter gasket.

Install a new engine oil filter.

- Tighten to 5 Nm (44 lb-in) and then rotate an additional 180 degrees.



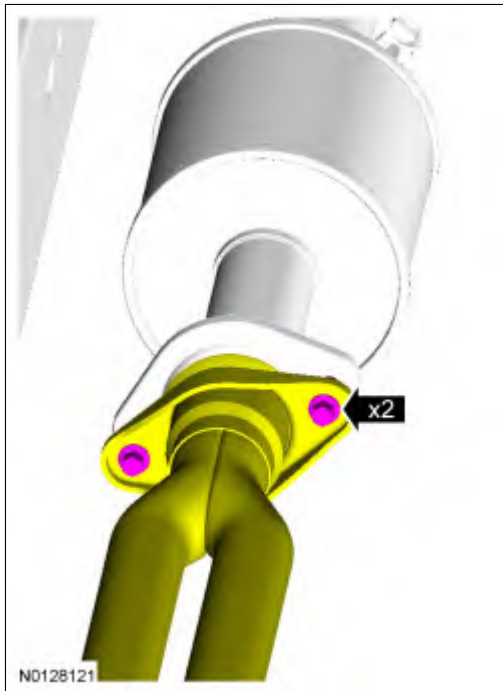
23. **NOTE:** LH shown, RH similar.

Install the new 2 LH and RH catalytic converter-to-exhaust manifold nuts.

- Tighten to 45 Nm (35 lb-ft).



24. Position the exhaust Y-pipe dual catalytic converter-to-exhaust intermediate pipe and install the 2 new bolts.
- Tighten the inner exhaust Y-pipe dual catalytic converter-to-exhaust intermediate pipe bolt to 63 Nm (46 lb-ft).
 - Tighten the outer exhaust Y-pipe dual catalytic converter-to-exhaust intermediate pipe bolt to 63 Nm (46 lb-ft).



25. **NOTE:** LH shown, RH similar.

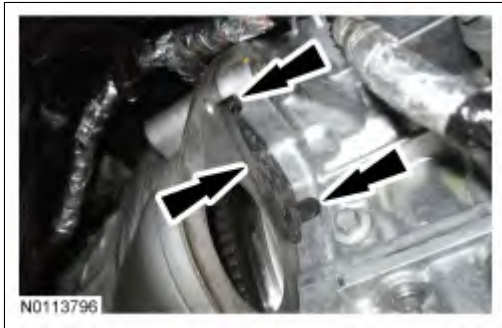
Connect the LH and RH Heated Oxygen Sensor (HO2S) electrical connectors.



26. Install the 4 torque converter nuts.
- Tighten to 44 Nm (32 lb-ft).



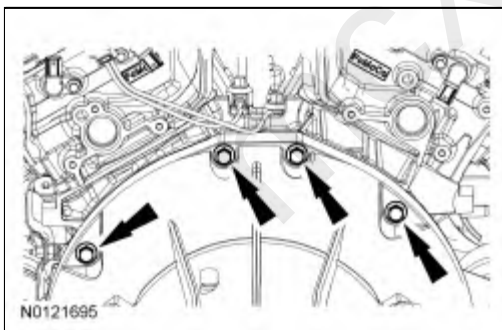
27. Install the access cover and the 2 pin-type retainers.



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



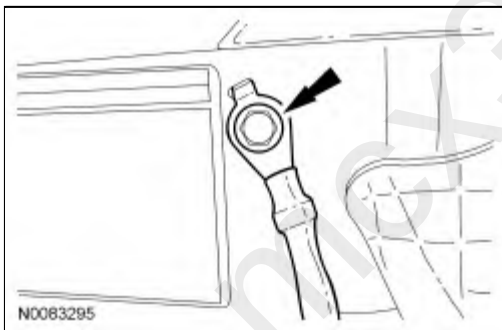
29. Install the starter motor. For additional information, refer to [Section 303-06](#).
30. If equipped, install the front driveshaft. For additional information, refer to [Section 205-01](#).
31. Install the 4 upper bellhousing-to-engine bolts.
- Tighten to 48 Nm (35 lb-ft).



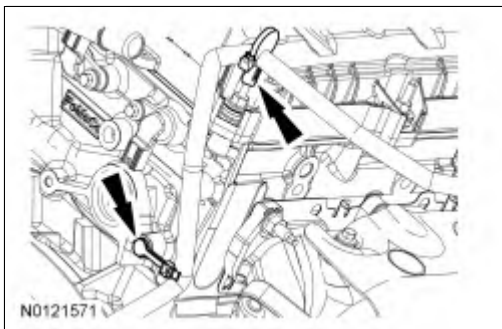
32. Install the cowl panel and attach the 2 clips and install the 6 screws.



33. Install the cowl panel grille. For additional information, refer to [Section 501-02](#).
34. Install the ground strap and bolt to the cowl.
 - Tighten to 10 Nm (89 lb-in).



35. Attach the wiring harness retainers to the rear of the RH valve cover stud bolt and the rear of the RH cylinder head.



36. Connect the 2 coolant hoses to the degas bottle.



37. Connect the 2 heater hose couplings at the rear of the engine.



38. Install the crankcase vent tube quick connect coupling to LH valve cover. For additional information, refer to [Section 310-00](#).



39. Install the PVC tube quick connect coupling to RH valve cover. For additional information, refer to [Section 310-00](#).



40. Connect the fuel supply tube quick connect coupling to the fuel rail. For additional information, refer to [Section 310-00](#).



41. Install the upper intake manifold. For additional information, refer to [Upper Intake Manifold](#) in this section.
42. Attach and connect the engine harness electrical connector.



43. Connect the middle PCM electrical connector.
 - Attach the wiring harness retainer to the fender splash shield.



44. Install the Air Conditioning (A/C) compressor belt. For additional information, refer to [Section 303-05](#).

45. Install the generator. For additional information, refer to [Section 414-00](#).
46. Connect the A/C compressor electrical connector.
 - Attach the A/C compressor wiring harness to the A/C compressor.



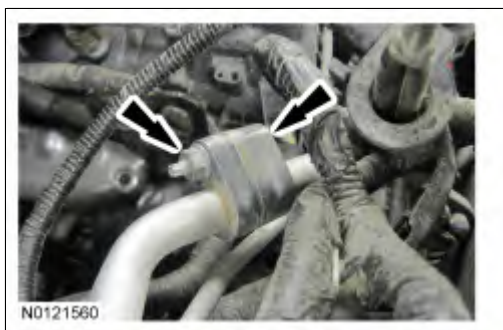
47. Attach the generator wiring harness to the engine front cover.



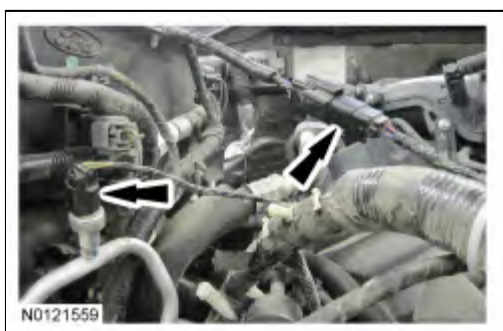
48. Install the transmission cooler line bracket and nut to the engine front cover stud bolt.
 - Tighten to 12 Nm (106 lb-in).



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



50. Connect the Battery Junction Box (BJB) wiring harness and the A/C pressure transducer electrical connectors.



51. Fill the engine with clean engine oil.
52. Install the Air Cleaner (ACL) upper tray. For additional information, refer to Intake Air System Components — Exploded View, 3.7L in [Section 303-12](#).
53. Install the cooling module. For additional information, refer [Section 303-03](#).
54. If equipped, connect the block heater electrical connector at the thermostat housing.
- Attach the block heater wiring harness retainer to the LH valve cover stud bolt.

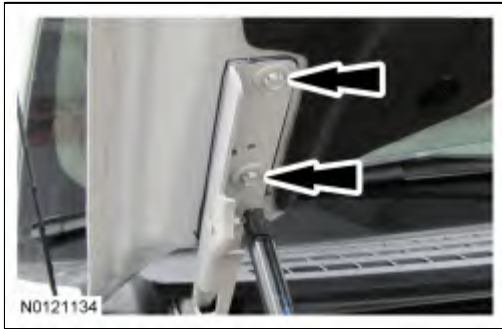


55. Connect the battery ground cable. For additional information, refer to [Section 414-01](#).
56. **NOTE:** Align the index marks made during hood removal.

NOTE: RH shown, LH similar.

Position the hood and install the 4 bolts.

- Tighten to 12 Nm (106 lb-in).



57. After completing the repairs, use the scan tool to perform the Misfire Monitor Neutral Profile Correction procedure following the on-screen instructions.
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