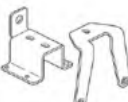


Engine

Special Tool(s) / General Equipment

 E234304	205-142 (T80T-4000-J) Installer, Differential Bearing Cone
 E133913	205-153 (T80T-4000-W) Handle
	303-1507 Brackets, Support
	303-1508 Installer, Front Crank Seal
 E222985	303-335 (T88T-6701-A) Installer, Front Cover Oil Seal TKIT-1988-FLM TKIT-1988-F
	303-F047 Lifting Bracket, Engine
Floor Crane	
Mounting Stand	
Piston Ring Compressor	
Vise	

Materials

Name	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6

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, can cause engine failure.

NOTE: Assembly of the engine requires various inspections/measurements of the engine components. These inspections/measurements will aid in determining if the engine components will require replacement. Refer to Section 303-00.

- Record the main bearing code and cylinder bore grades.
 - Select-fit main bearings.
 - Cylinder bore grades.
 - Cylinder block serial number.



- MINIMUM BLOCK DIA**

A B C D E F G H I K L M N O P Q R S T U V W X Y Z

2.400 A31 A32 A33 A34 A35 A36 A37 A38 A39 A40 A41 A42 A43 A44 A45 A46 A47 A48 A49 A50 A51 A52 A53 A54 A55 A56 A57 A58 A59 A60 A61 A62 A63 A64 A65 A66 A67 A68 A69 A70 A71 A72 A73 A74 A75 A76 A77 A78 A79 A80 A81 A82 A83 A84 A85 A86 A87 A88 A89 A90 A91 A92 A93 A94 A95 A96 A97 A98 A99 A100 A101 A102 A103 A104 A105 A106 A107 A108 A109 A110 A111 A112 A113 A114 A115 A116 A117 A118 A119 A120 A121 A122 A123 A124

MAXIMUM CRANKSHAFT DIA

3.400
3.350
3.300
3.250
3.200
3.150
3.100
3.050
3.000
2.950
2.900
2.850
2.800
2.750
2.700
2.650
2.600
2.550
2.500
2.450
2.400

-
- MINIMUM BLOCK DIA.**
- MAXIMUM CRANKSHAFT DIA.**
- 72-000**
- A B C D E F G H I J K L M N O P Q R S T U V W X**
- W 82154**
- W 82155**
- G 62122**
- U 62121**
- T 62120**
- S 62149**
- R 62148**
- Q 62147**
- P 62146**
- O 62145**
- N 62144**
- M 62143**
- L 62142**
- K 62141**
- J 62140**
- I 62139**
- H 62138**
- G 62137**
- F 62136**
- E 62135**
- D 62134**
- C 62133**
- B 62132**
- A 62131**
- 72-000**

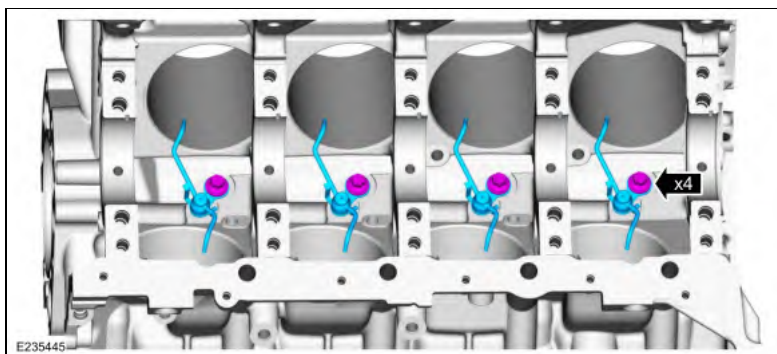
5. **NOTE:** Before assembling the cylinder block, all sealing surfaces must be free of chips, dirt, paint and foreign material. Also, make sure the coolant and oil passages are clear.

Install the piston oil cooler valves and the bolts.

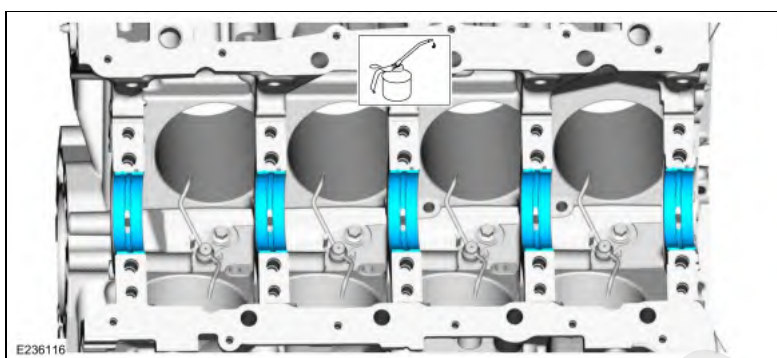
Torque:

Stage 1: 177 lb.in (20 Nm)

Stage 2: 60°

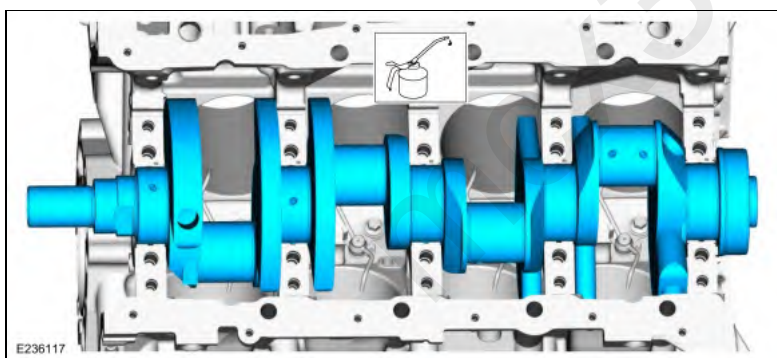


6. Lubricate with clean engine oil and install the upper crankshaft main bearings.

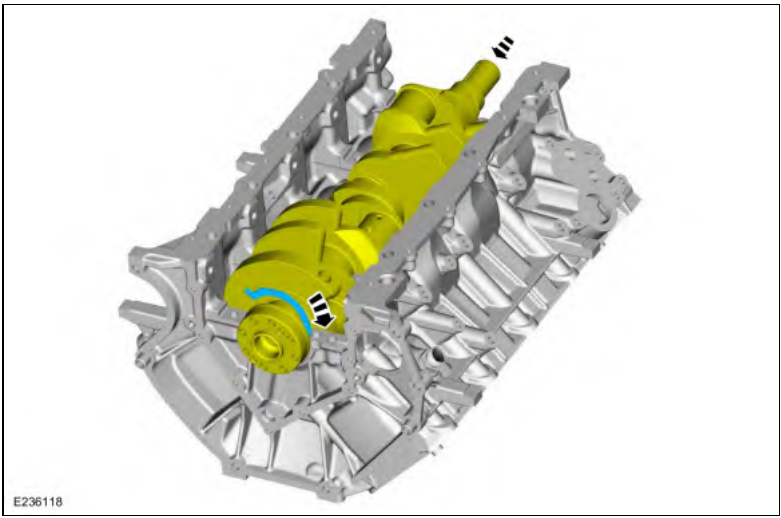


7. **NOTICE:** Do not allow the crankshaft to come into contact with the piston oil cooler valves during assembly or engine damage may occur.

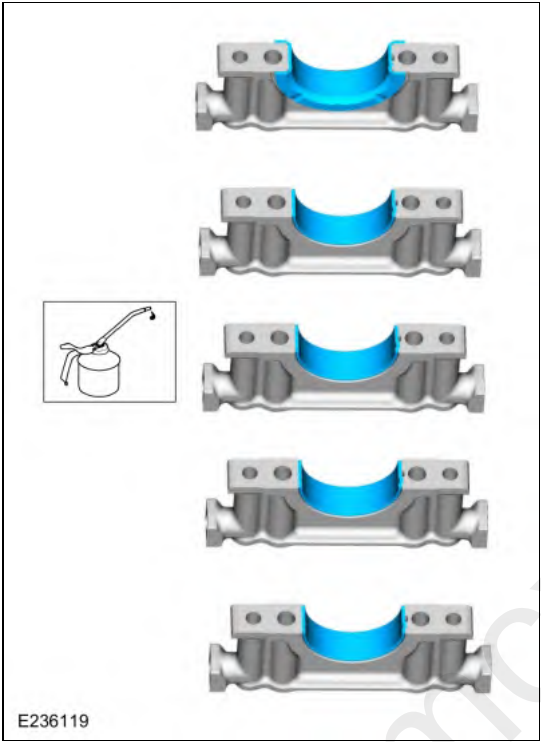
Lubricate with clean engine oil and install the crankshaft.



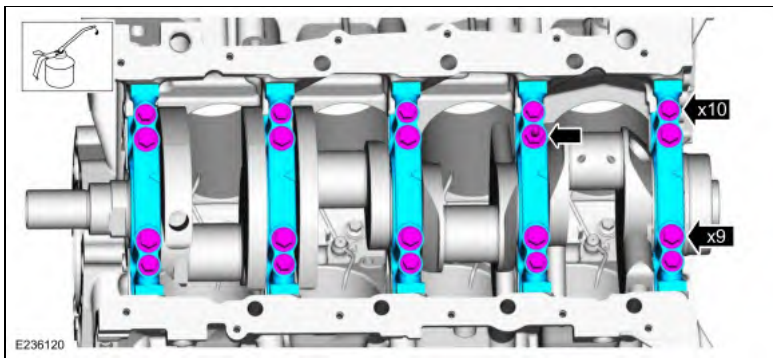
8. Lubricate with clean engine oil and push the crankshaft rearward and install the rear crankshaft upper thrust washer at the back of the No. 5 main boss.



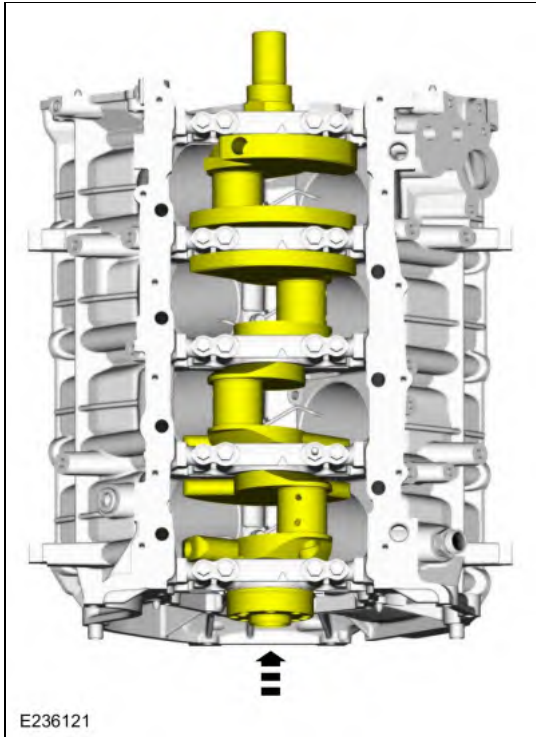
9. Lubricate with clean engine oil and install the lower crankshaft main bearings and the lower thrust washer.



10. Lubricate with clean engine oil and install the main bearing caps and bolts on the cylinder block, keeping the cap as square as possible, alternately draw the cap down evenly using the cap fasteners.



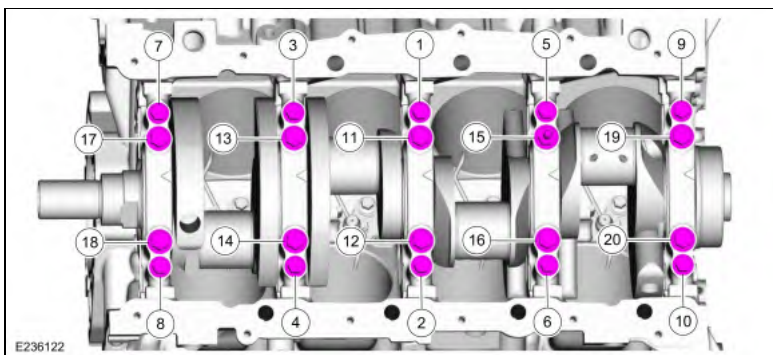
11. Push the crankshaft forward to seat the crankshaft thrust washer.



12. Tighten the vertical main bearing cap fasteners in sequence shown.

Torque:

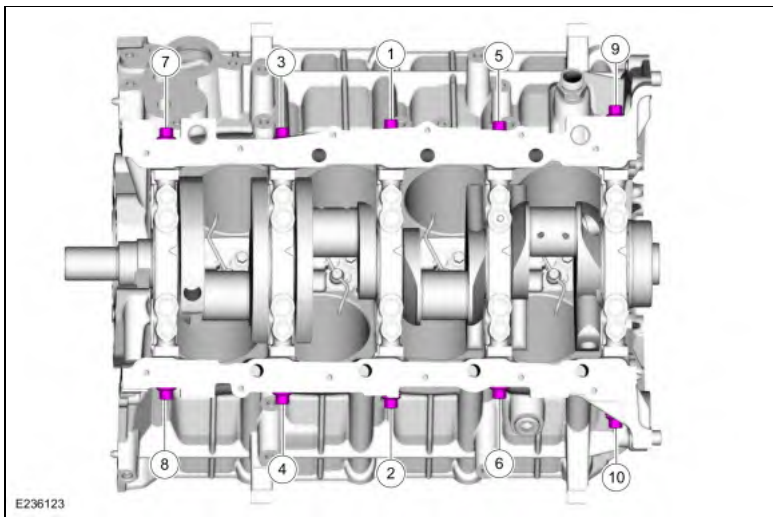
- Stage 1: Tighten bolts 1 through 10 to: 26 lb.ft (35 Nm)
- Stage 2: Tighten bolts 1 through 10 to: 37 lb.ft (50 Nm)
- Stage 3: Tighten bolts 1 through 10 an additional: 90°
- Stage 4: Tighten bolts 11 through 20 to: 26 lb.ft (35 Nm)
- Stage 5: Tighten bolts 11 through 20 to: 48 lb.ft (65 Nm)
- Stage 6: Tighten bolts 11 through 20 an additional: 90°



13. Install the cross-mounted main bearing cap fasteners and tighten in sequence shown.

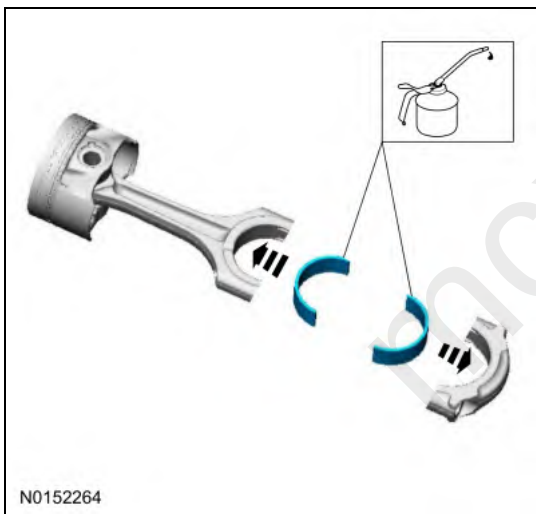
Torque:

- Stage 1: 177 lb.in (20 Nm)
- Stage 2: 26 lb.ft (35 Nm)
- Stage 3: 60°



- 14.
- Check the crankshaft end play clearance.
Refer to: Specifications (303-01A Engine - 6.2L V8, Specifications).
 - Check the piston-to-cylinder bore clearance.
Refer to: Specifications (303-01A Engine - 6.2L V8, Specifications).
 - Assemble the pistons and position the piston ring gaps.
Refer to: Piston (303-01A Engine - 6.2L V8, Disassembly and Assembly of Subassemblies).

15. Lubricate with clean engine oil and install the connecting rod bearings.

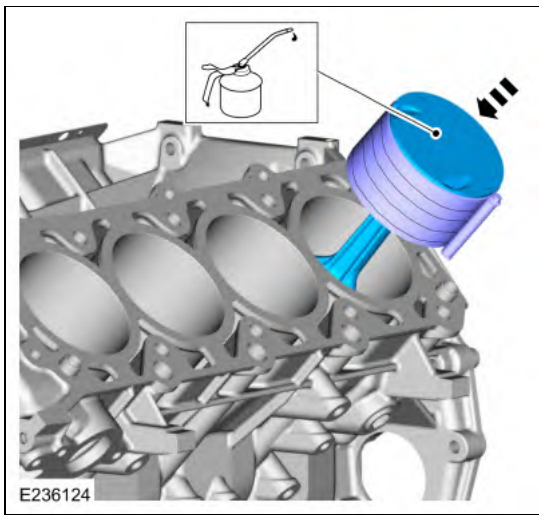


16. **NOTICE:** Do not allow the piston connecting rods to come in contact with the piston cooling jets or engine damage may occur.

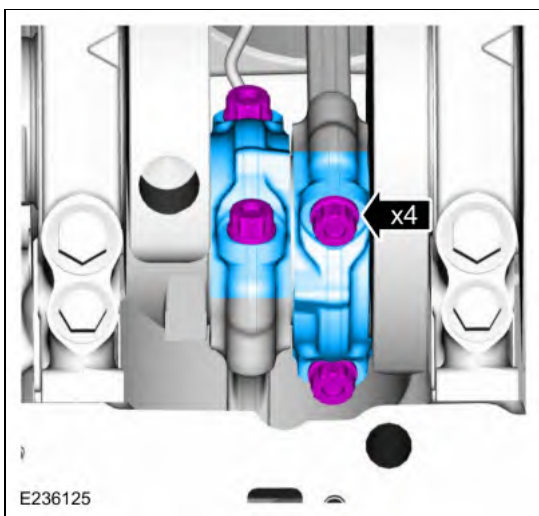
NOTICE: Be sure not to scratch the cylinder wall or crankshaft journal with the connecting rod. Push the piston down until the connecting rod bearing seats on the crankshaft journal. Failure to follow this instruction may result in engine damage.

NOTE: Lubricate the pistons, piston rings, connecting rod bearings and the entire cylinder bores with clean engine oil.

- Using a piston ring compressor, install the piston and connecting rod assembly.
Use the General Equipment: Piston Ring Compressor
- Repeat for each piston.



- 17.
- Install the bearings, connecting rod caps and the new bolts finger tight.
 - Repeat for each set of pistons.



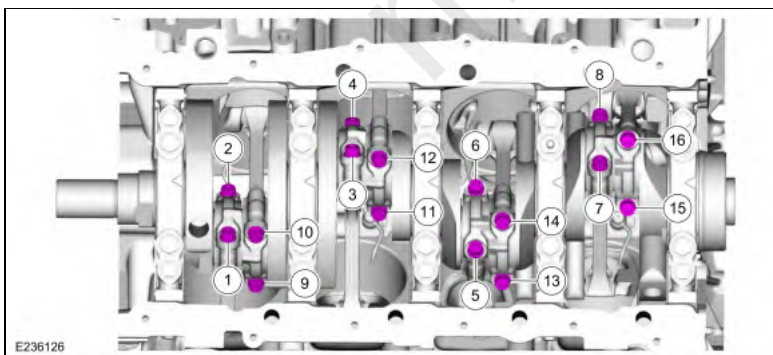
18. Tighten the connecting rod bolts in 3 stages, in the sequence shown.

Torque:

Stage 1: 177 lb.in (20 Nm)

Stage 2: 28 lb.ft (38 Nm)

Stage 3: 105Å°

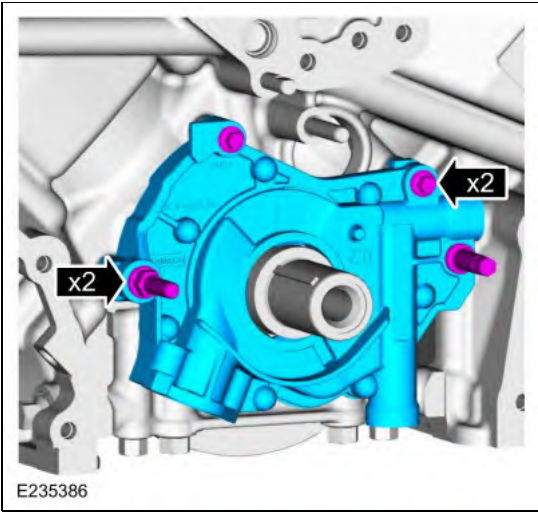


19. Prime the oil pump. Add 2 tablespoons of clean engine oil to the oil pump and rotate the oil pump by hand.

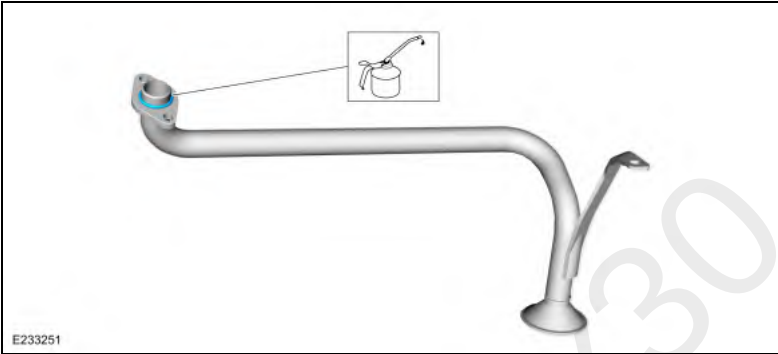
20. Install the oil pump, upper bolts and the lower stud bolts.

Torque:

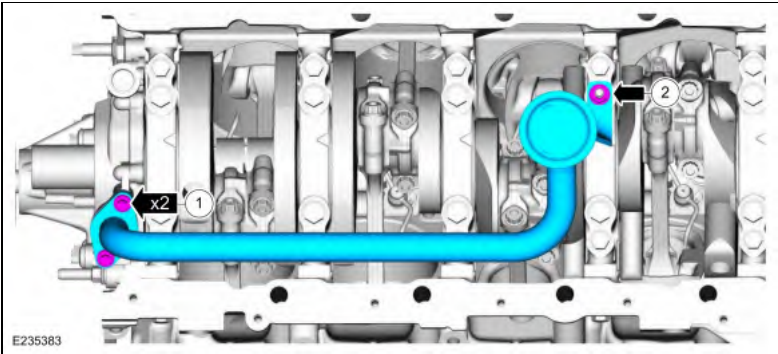
- Stage 1: Tighten all fasteners to: 18 lb.in (2 Nm)
- Stage 2: Tighten the upper bolts to: 89 lb.in (10 Nm)
- Stage 3: Tighten the lower stud bolts to: 177 lb.in (20 Nm)
- Stage 4: Tighten the upper bolts an additional: 45°
- Stage 5: Tighten the lower stud bolts an additional: 60°



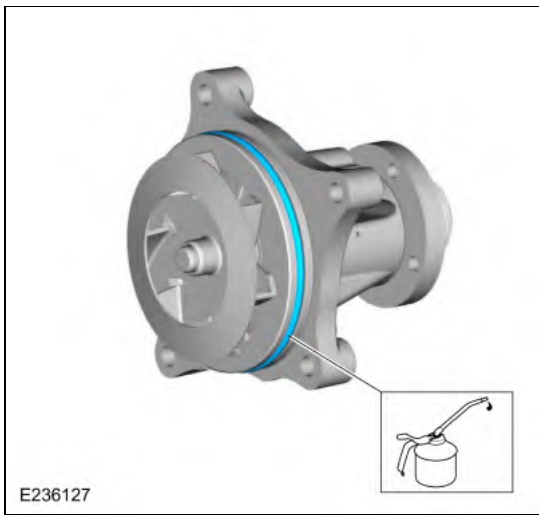
21. Lubricate with clean engine oil and install the oil pump screen and pickup tube O-ring seal.



- 22.
- Install the oil pump screen and pickup tube and the bolts.
Torque: 89 lb.in (10 Nm)
 - Install the oil pump screen and pickup tube nut.
Torque: 18 lb.ft (24 Nm)



23. Install the new coolant pump O-ring seal and lubricate with clean engine coolant.

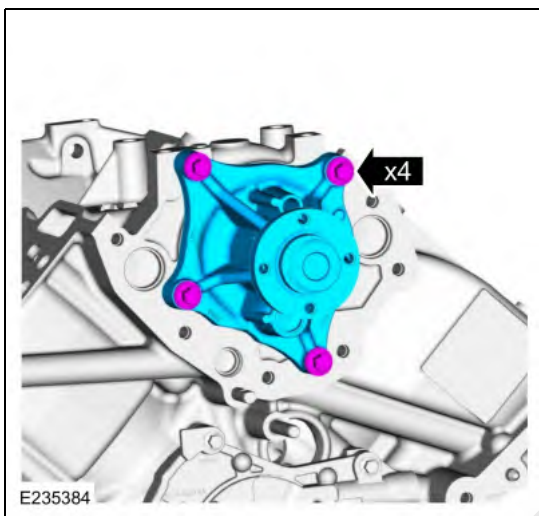


24. Install the coolant pump and the bolts.

Torque:

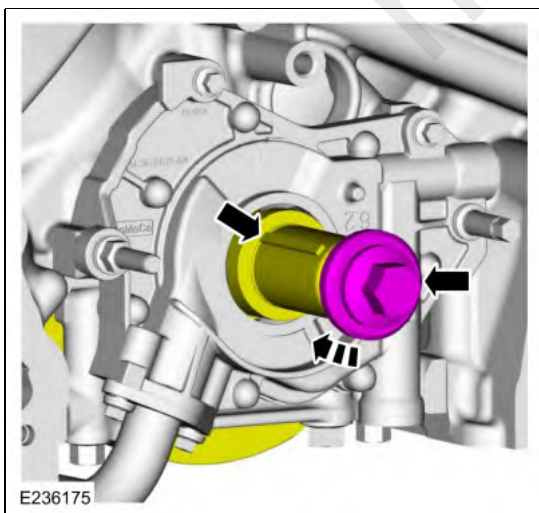
Stage 1: 177 lb.in (20 Nm)

Stage 2: 45°

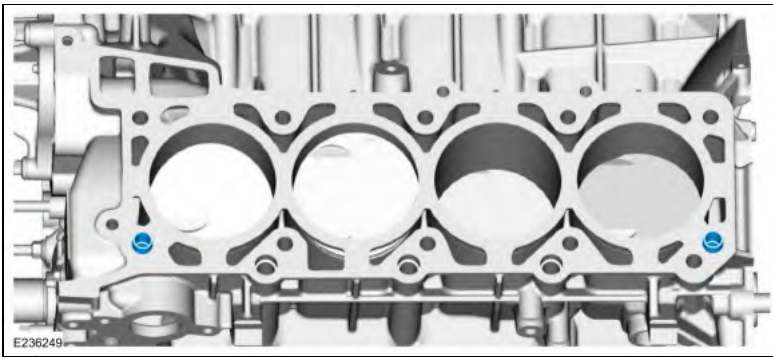


25. **NOTE:** Only rotate the engine in a clockwise direction.

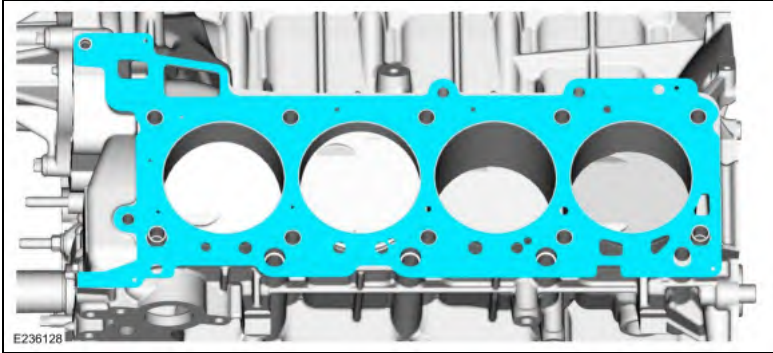
- Install the crankshaft bolt.
- Using the crankshaft bolt, rotate the engine in a clockwise direction and position the crankshaft keyway at the 11 o'clock position.
- Remove the crankshaft bolt.



26. Install the dowels on the LH bank of the cylinder block.



27. Install a new LH cylinder head gasket.



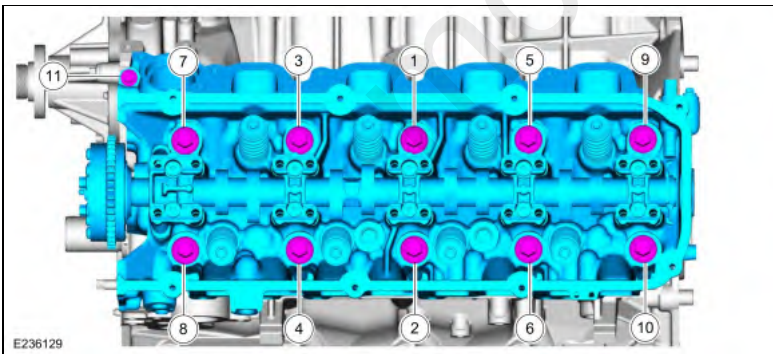
28. **NOTICE:** Make sure all coolant residue and foreign material are cleaned from the block surface and cylinder bore.

NOTE: The cylinder head bolts are torque-to-yield and must not be reused. New cylinder head bolts must be installed.

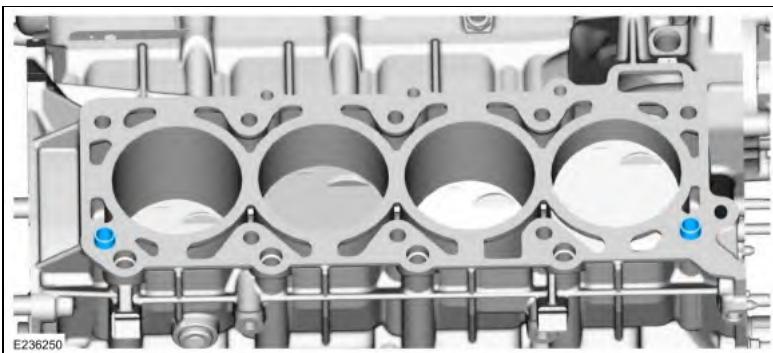
Install the LH cylinder head and the new bolts and tighten in 10 stages.

Torque:

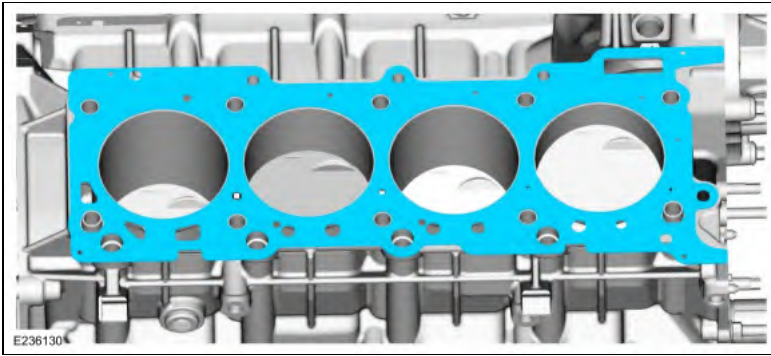
- Stage 1: Tighten bolts 1 through 10 to: 18 lb.ft (25 Nm)
- Stage 2: Tighten bolts 1 through 10 to: 55 lb.ft (75 Nm)
- Stage 3: Loosen: 180°
- Stage 4: Tighten bolts 1 through 10 to: 18 lb.ft (25 Nm)
- Stage 5: Tighten bolts 1 through 10 to: 37 lb.ft (50 Nm)
- Stage 6: Tighten bolt 11 to: 89 lb.in (10 Nm)
- Stage 7: Tighten bolts 1 through 10 an additional: 90°
- Stage 8: Tighten bolts 1 through 10 an additional: 90°
- Stage 9: Tighten bolt 11 to: 177 lb.in (20 Nm)
- Stage 10: Tighten bolt 11 an additional: 45°



29. Install the dowels on the RH bank of the cylinder block.



30. Install a new RH cylinder head gasket.



31. **NOTICE:** Make sure all coolant residue and foreign material are cleaned from the block surface and cylinder bore.

NOTE: The cylinder head bolts are torque-to-yield and must not be reused. New cylinder head bolts must be installed.

Install the RH cylinder head and the new bolts and tighten in 7 stages.

Torque:

Stage 1: Tighten bolts 1 through 10 to: 18 lb.ft (25 Nm)

Stage 2: Tighten bolts 1 through 10 to: 55 lb.ft (75 Nm)

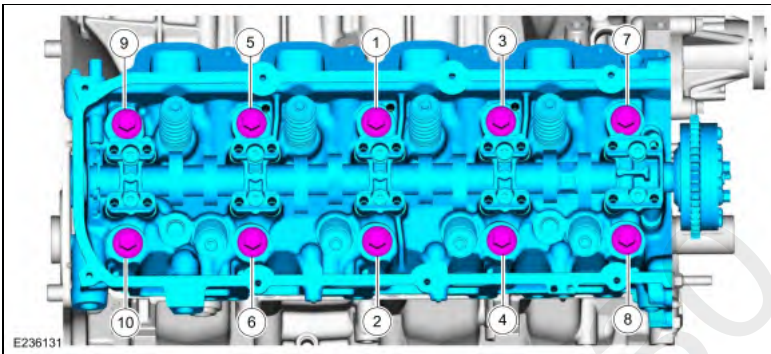
Stage 3: Loosen: 180°

Stage 4: Tighten bolts 1 through 10 to: 18 lb.ft (25 Nm)

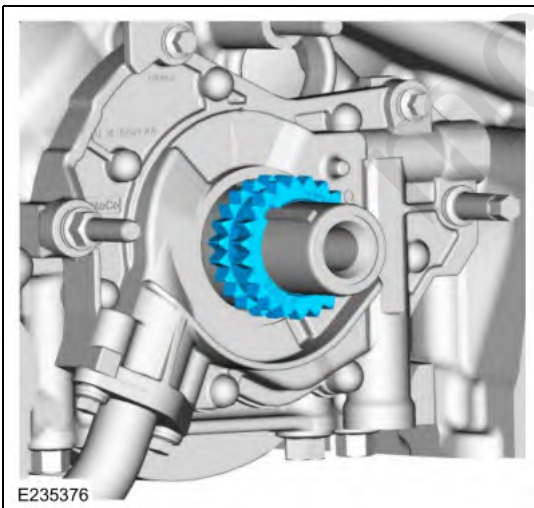
Stage 5: Tighten bolts 1 through 10 to: 37 lb.ft (50 Nm)

Stage 6: Tighten bolts 1 through 10 an additional: 90°

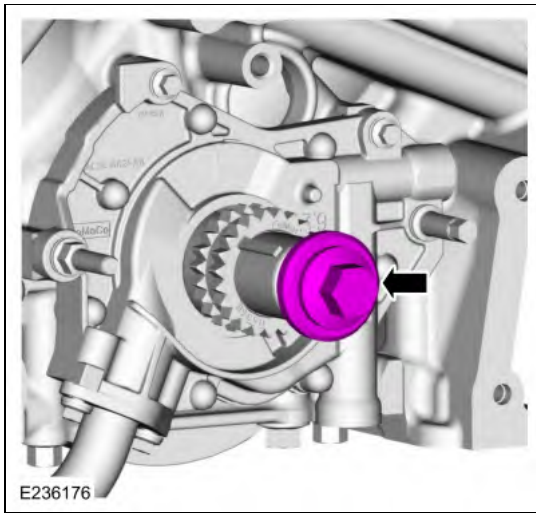
Stage 7: Tighten bolts 1 through 10 an additional: 90°



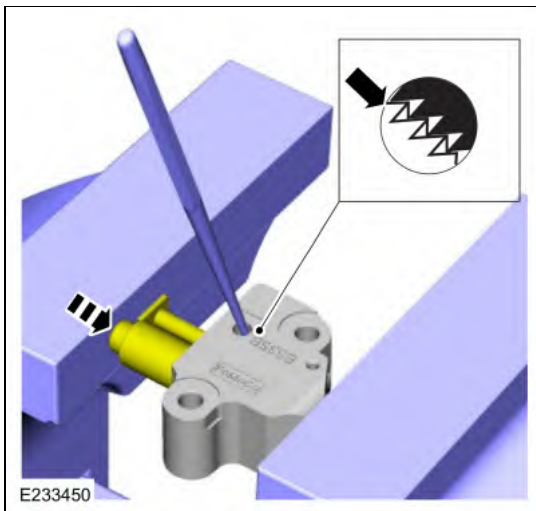
32. Install the crankshaft sprocket.



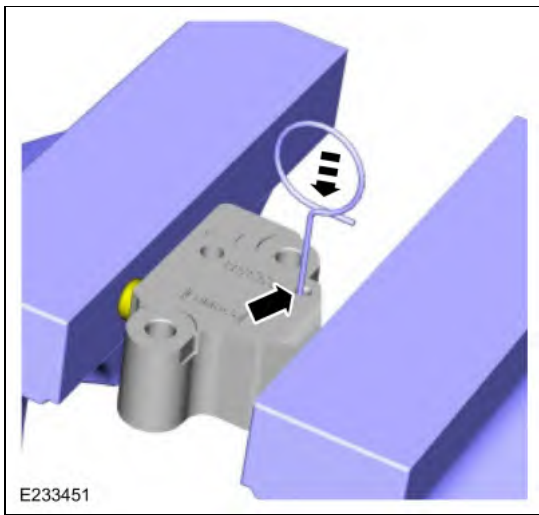
33. Install the crankshaft pulley bolt and washer.



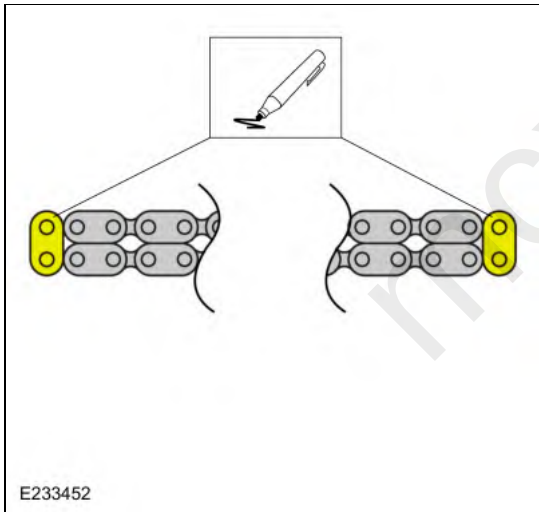
34. Using a small pick, carefully push the LH tensioner rack pawl retainer away from the rack pawl and compress the tensioner plunger and rack using a vise. Use the General Equipment: Vise



- 35.
- Install a retaining clip into the tensioner to hold the rack pawl and plunger in the seated position for tensioner installation.
 - Remove the LH tensioner from the vise.



36. If the copper links are not visible, mark the links on each end, and use as timing marks.

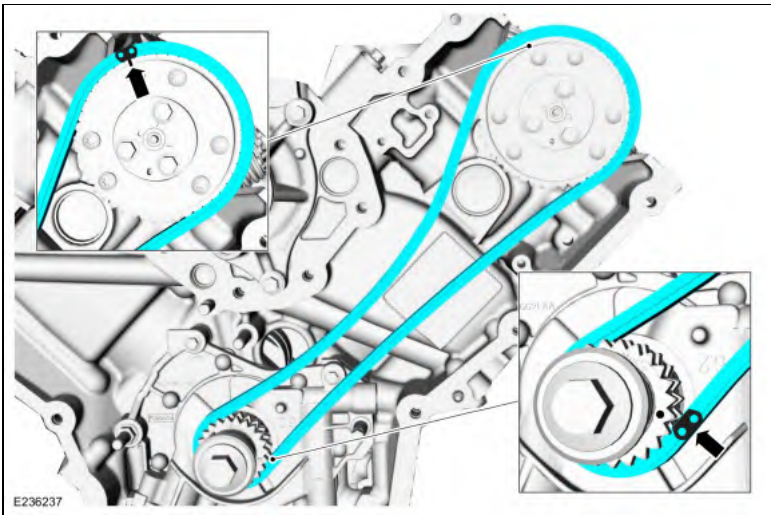


37. **NOTE:** Verify the crankshaft keyway is at the 11 o'clock position.

NOTE: Make sure the upper half of the timing chain is below the tensioner arm dowel and above the chain guide pin.

Install the LH timing chain.

- Align the colored link on the timing chain with the timing mark on the LH VCT assembly.
- Align the colored link on the timing chain with the timing mark on the crankshaft sprocket.



38. Install the LH timing chain tensioner arm.

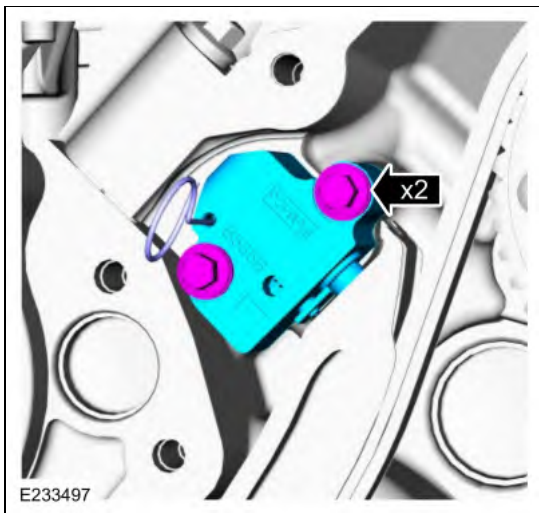


39. Install the LH primary timing chain tensioner and bolts.

Torque:

Stage 1: 89 lb.in (10 Nm)

Stage 2: 45Â°

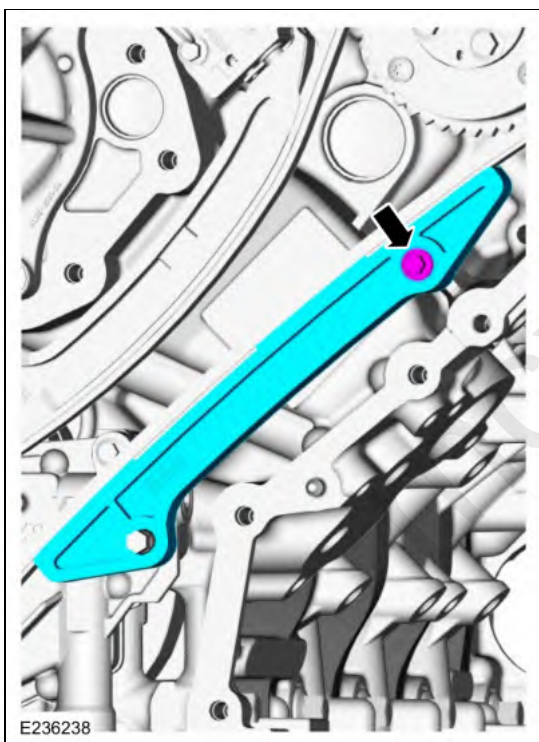


40. Install the LH timing chain guide and the bolt.

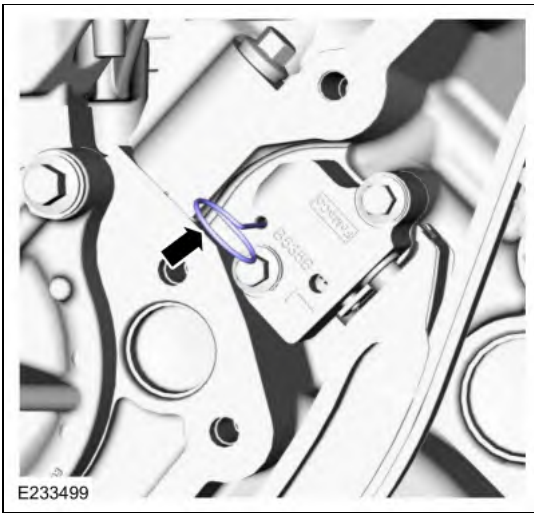
Torque:

Stage 1: 89 lb.in (10 Nm)

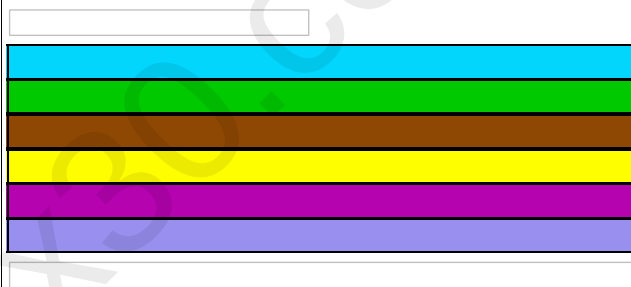
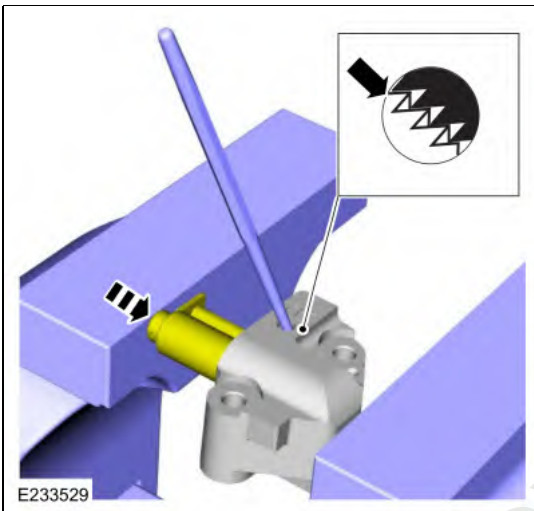
Stage 2: 45°



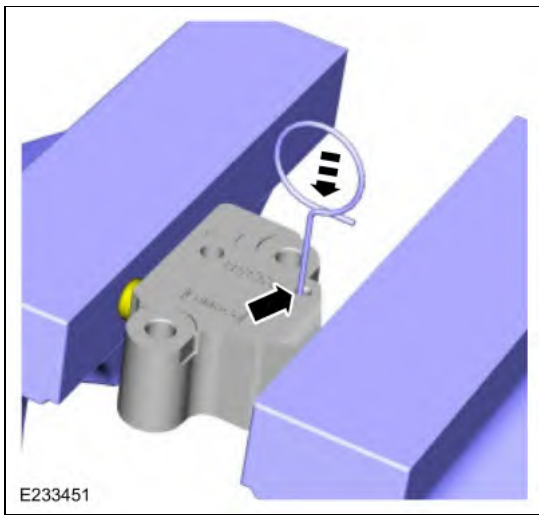
41. Remove the retaining clip from the LH timing chain tensioner.



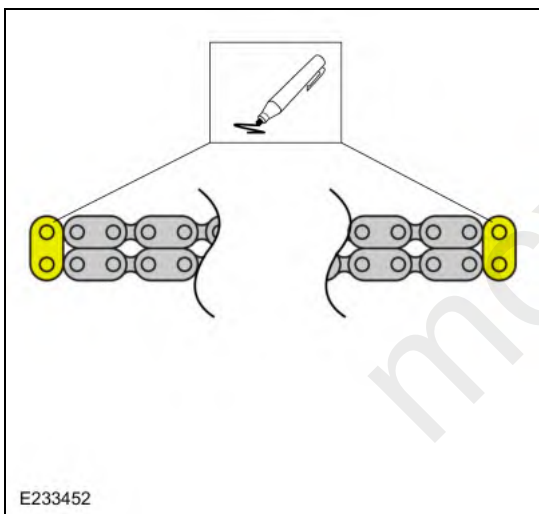
42. Using a small pick, carefully push the RH tensioner rack pawl retainer away from the rack pawl and compress the tensioner plunger and rack using a vise.
Use the General Equipment: Vise



- 43.
- Install a retaining clip into the tensioner to hold the rack pawl and plunger in the seated position for tensioner installation.
 - Remove the RH tensioner from the vise.



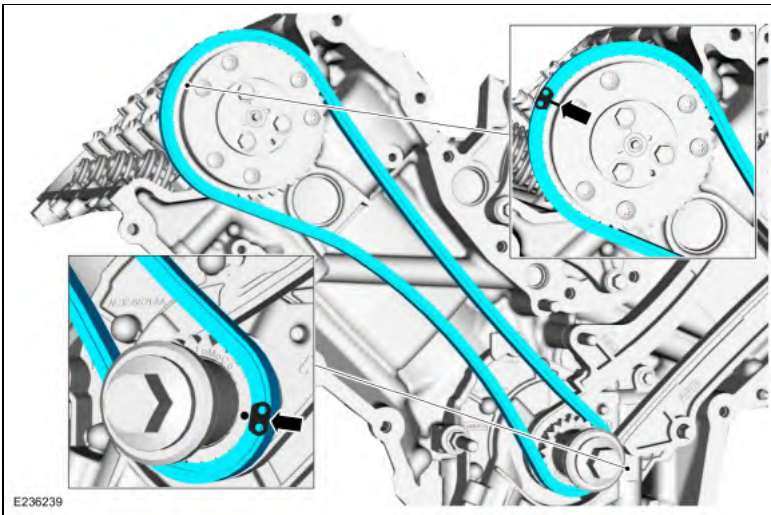
44. If the copper links are not visible, mark the links on each end, and use as timing marks.



45. **NOTE:** Verify the crankshaft keyway is at the 11 o'clock position.

Install the RH timing chain.

- Align the colored link on the timing chain with the timing mark on the crankshaft sprocket.
- Align the colored link on the timing chain with the timing mark on the RH VCT assembly.

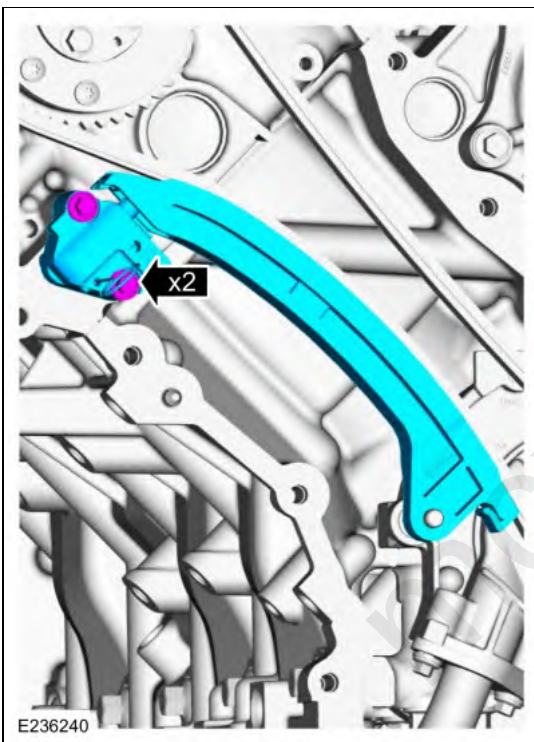


46. Position the RH timing chain tensioner arm on the dowel pin and install the RH timing chain tensioner and the bolts.

Torque:

Stage 1: 89 lb.in (10 Nm)

Stage 2: 45Â°

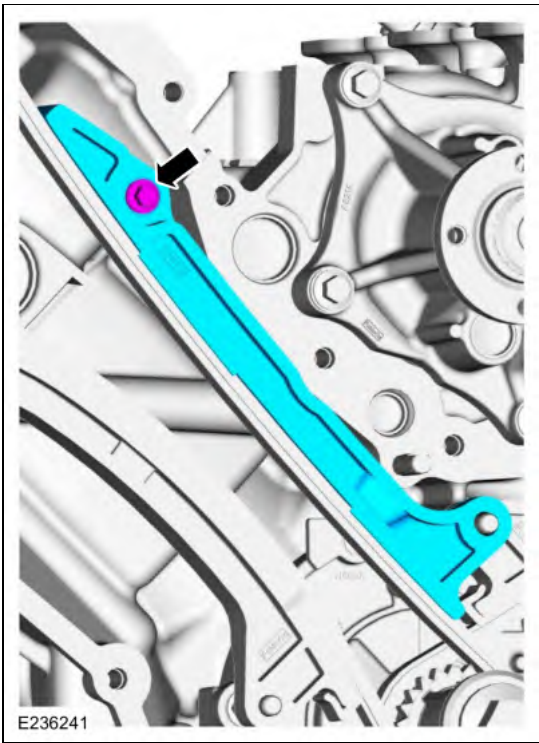


47. Install the RH timing chain guide and bolt.

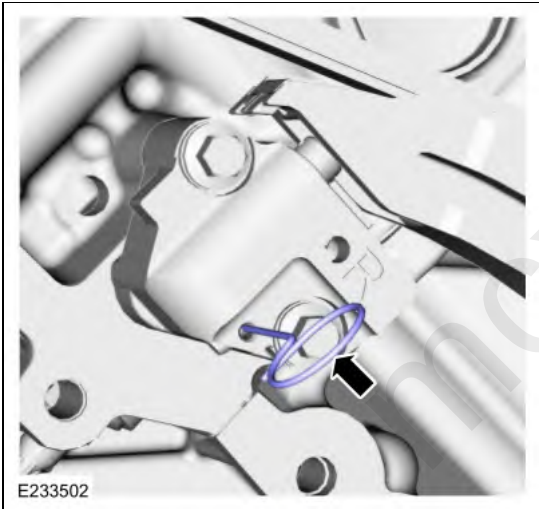
Torque:

Stage 1: 89 lb.in (10 Nm)

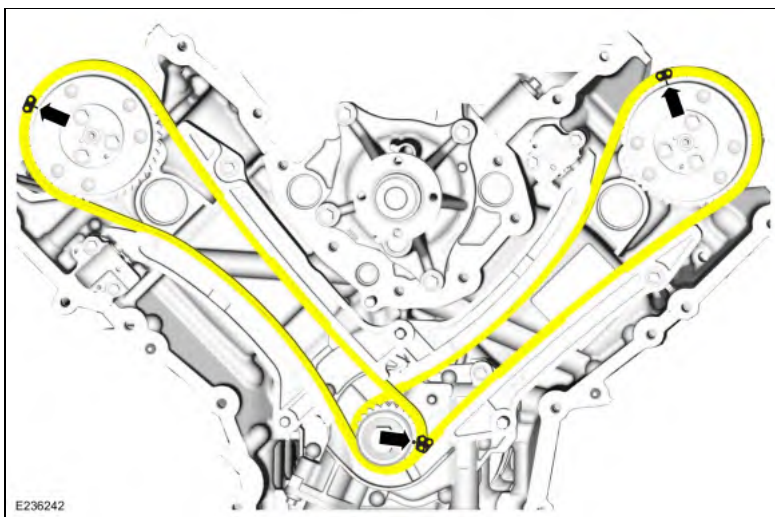
Stage 2: 45Â°



48. Remove the retaining clip from the RH timing chain tensioner.

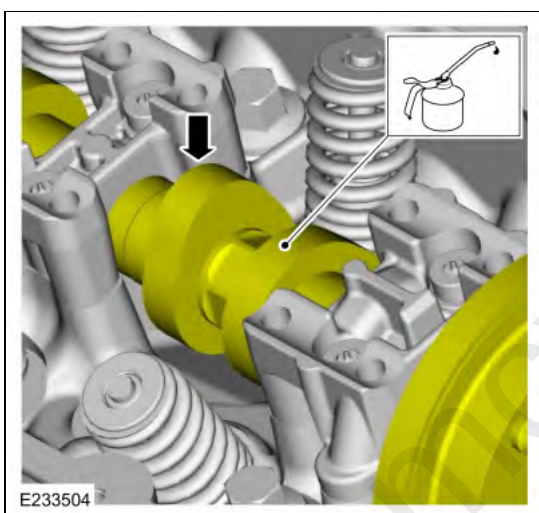


49. As a post-check, verify correct alignment of all timing marks.



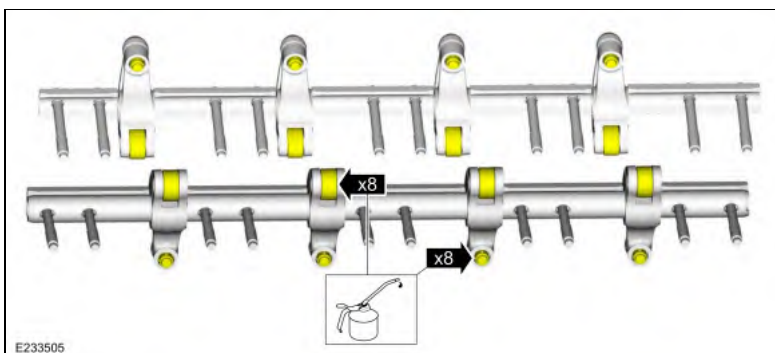
50.

- Using the crankshaft bolt, rotate the engine clockwise until the No. 1 cylinder camshaft intake lobe is positioned so that the intake valve would be fully opened.
- Lubricate the all RH camshaft lobes with clean engine oil.

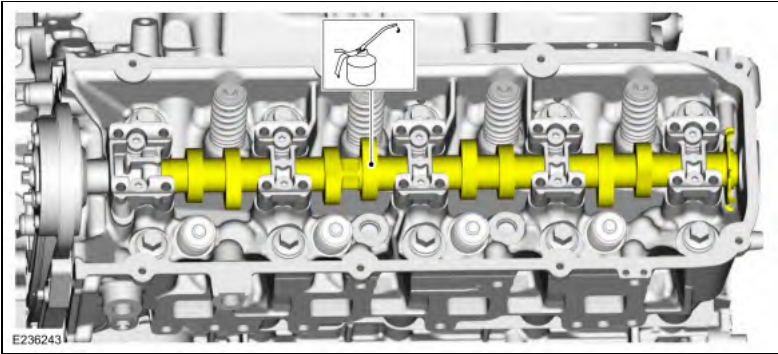


51. **NOTE:** *LH shown, RH similar.*

Lubricate the LH and RH rocker arm shaft-to-valve tip and rocker arm-to-camshaft lobe contact area with clean engine oil prior to installation.

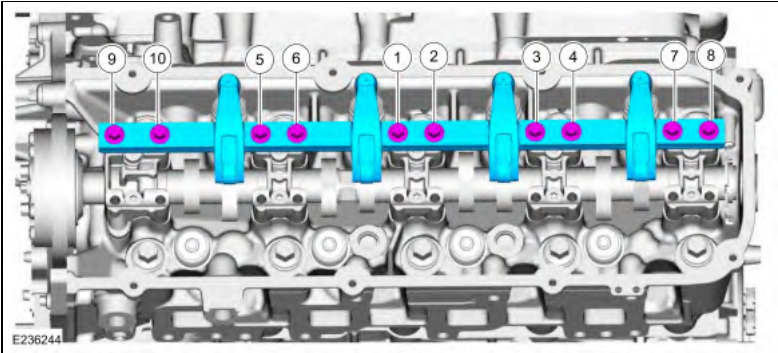


52. Lubricate the all LH camshaft lobes with clean engine oil.

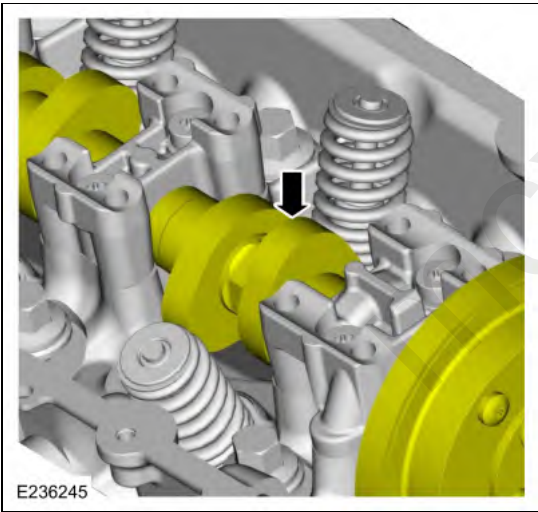


53. Install the LH intake rocker arm shaft assembly and the bolts finger-tight and tighten the bolts sequence shown, in 3 stages.

Torque:
Stage 1: 89 lb.in (10 Nm)
Stage 2: 177 lb.in (20 Nm)
Stage 3: 60°

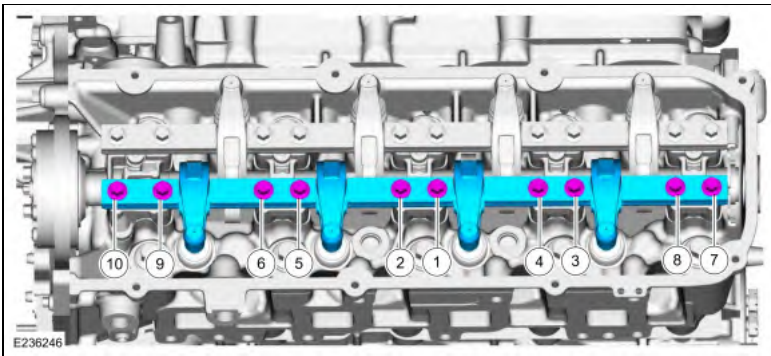


54. Using the crankshaft bolt, rotate the engine clockwise until the No. 1 cylinder camshaft exhaust lobe is positioned so that the exhaust valve would be fully opened.

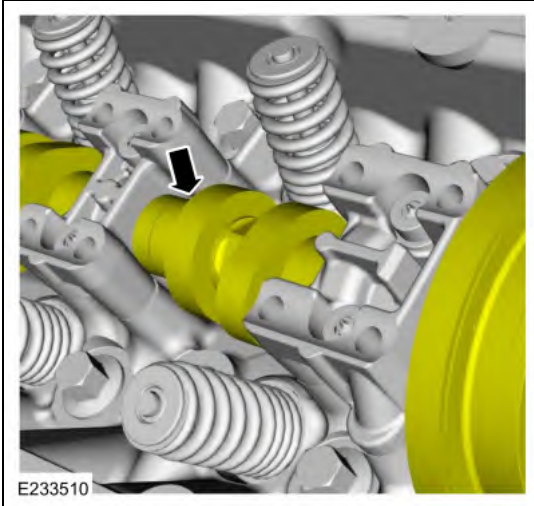


55. Install the LH exhaust rocker arm shaft assembly and the bolts finger-tight and tighten the bolts sequence shown, in 3 stages.

Torque:
Stage 1: 89 lb.in (10 Nm)
Stage 2: 177 lb.in (20 Nm)
Stage 3: 60°



56. Using the crankshaft bolt, rotate the engine clockwise until the No. 1 cylinder camshaft intake lobe is positioned so that the intake valve would be fully closed.



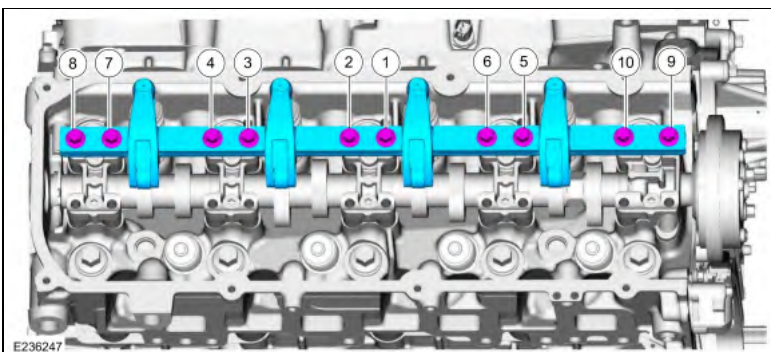
57. Install the RH intake rocker arm shaft assembly and the bolts finger-tight and tighten the bolts sequence shown, in 3 stages.

Torque:

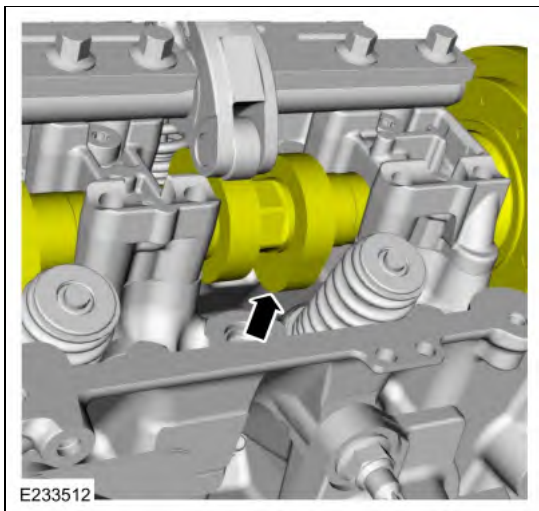
Stage 1: 89 lb.in (10 Nm)

Stage 2: 177 lb.in (20 Nm)

Stage 3: 60°



58. Using the crankshaft bolt, rotate the engine clockwise until the No. 1 cylinder camshaft exhaust lobe is positioned so that the exhaust valve would be fully closed.



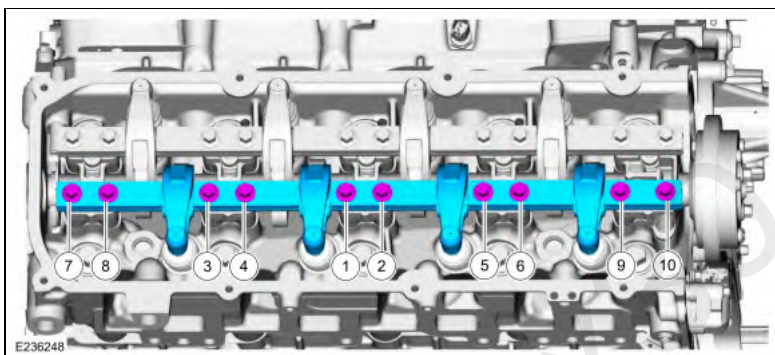
59. Install the RH exhaust rocker arm shaft assembly and the bolts finger-tight and tighten the bolts sequence shown, in 3 stages.

Torque:

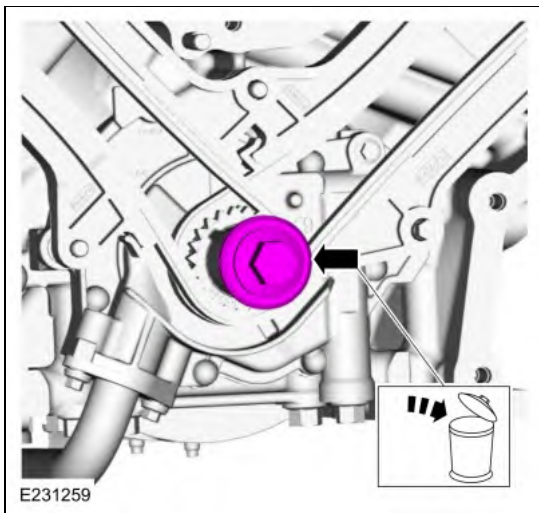
Stage 1: 89 lb.in (10 Nm)

Stage 2: 177 lb.in (20 Nm)

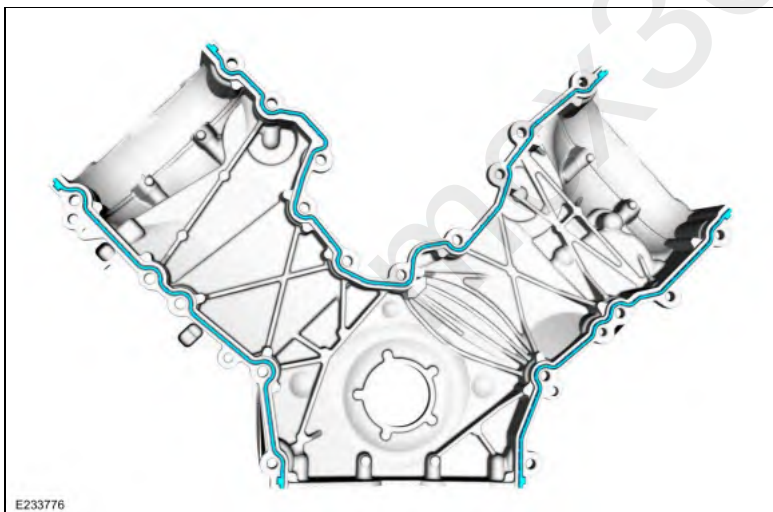
Stage 3: 60°



60. Remove and discard the crankshaft pulley bolt and washer.



61. Install the new gaskets on the engine front cover.

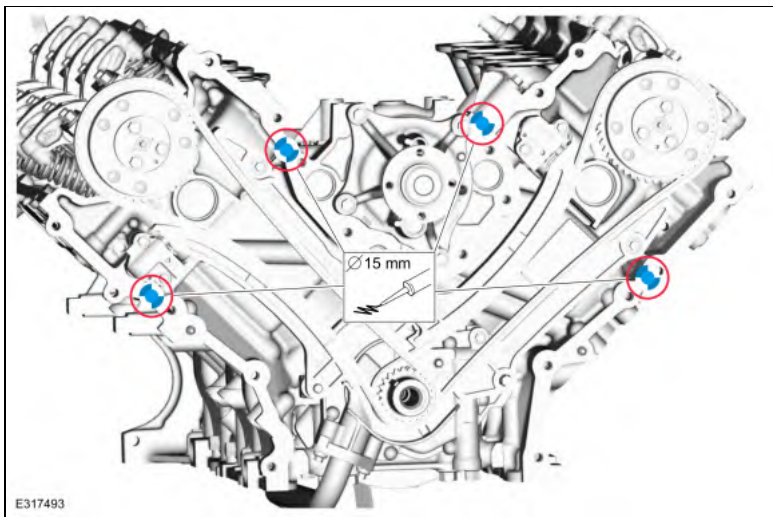


62. **NOTE:** If the engine front cover is not secured within 4 minutes, the sealant must be removed and the sealing area cleaned.

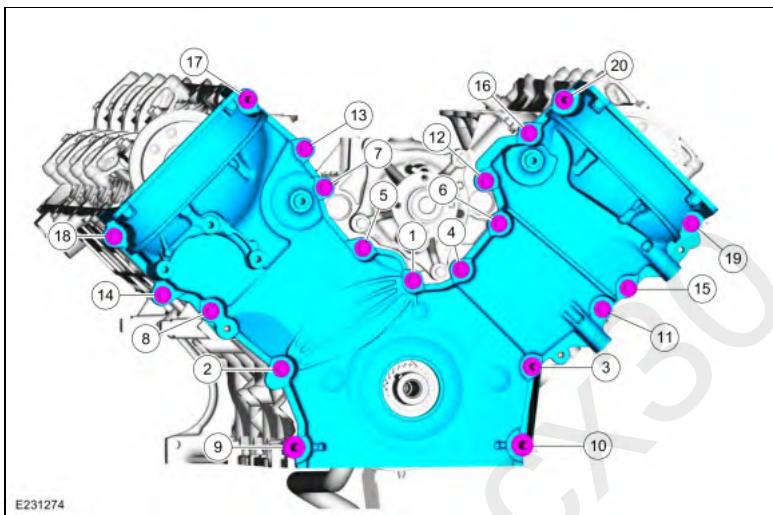
NOTE: Make sure that the engine front cover gaskets are in place on the engine front cover before installation.

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.

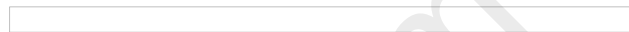
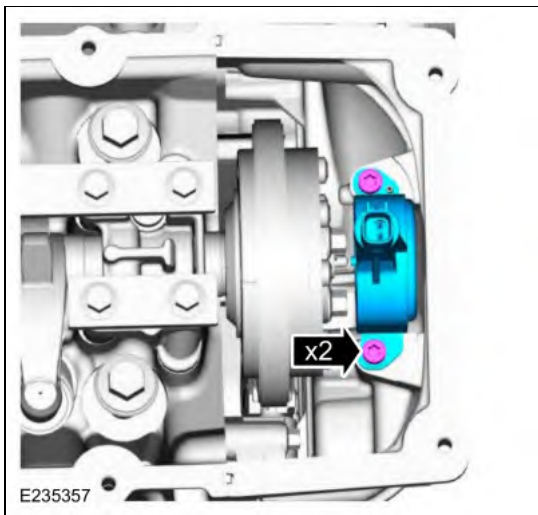
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



- 63.
- Install the engine front cover bolts and studs bolts finger-tight.
 - Tighten the engine front cover bolts and studs bolts in sequence shown.
- Torque:*
 Tighten bolts 1 through 20 to: 89 lb.in (10 Nm)
 Tighten bolts 1 through 20 to: 177 lb.in (20 Nm)
 Tighten bolts 1 through 20 an additional: 30°



64. Install the RH VCT oil control solenoid and tighten the bolts.
- Torque:*
 Stage 1: 71 lb.in (8 Nm)
 Stage 2: 30°

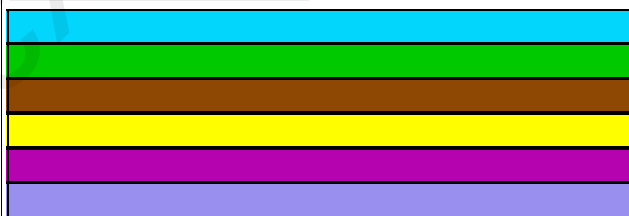
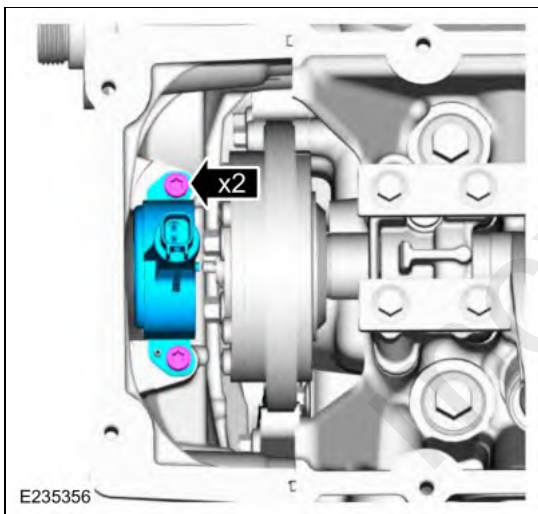


65. Install the LH VCT oil control solenoid and tighten the bolts.

Torque:

Stage 1: 71 lb.in (8 Nm)

Stage 2: 30Â°

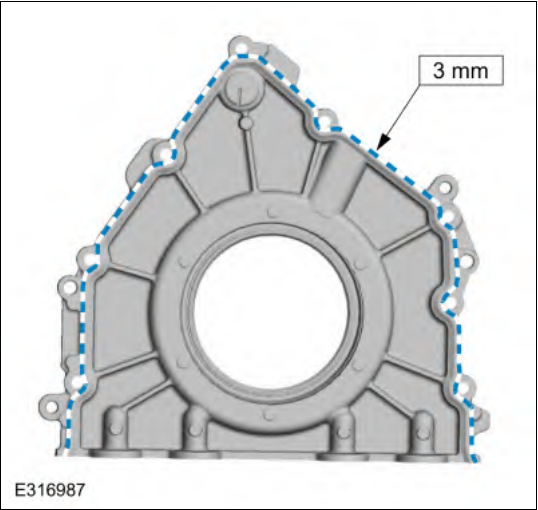


66. **NOTE:** If the rear crankshaft seal retaining plate is not secured within 4 minutes, the sealant must be removed and the sealing area cleaned with silicone gasket remover and metal surface prep. Follow the directions on the packaging. Allow to dry until there is no sign of wetness, or 4 minutes, whichever is longer. Failure to follow this procedure may cause future oil leaks.

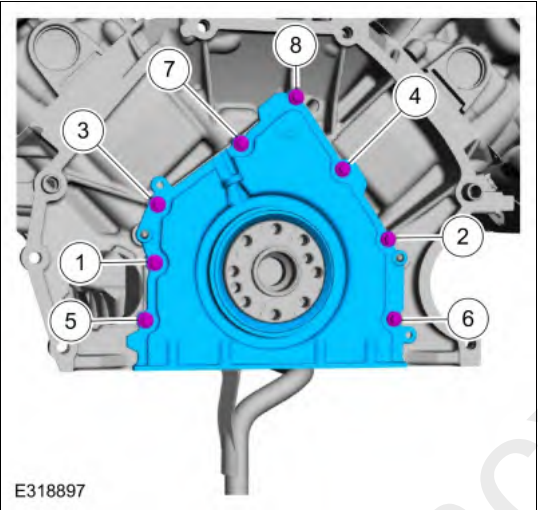
NOTE: The silicone must be applied on the groove along the retainer plate.

Apply a 3 mm (0.12 in) bead of silicone gasket and sealant around the crankshaft rear seal retainer plate sealing surface.

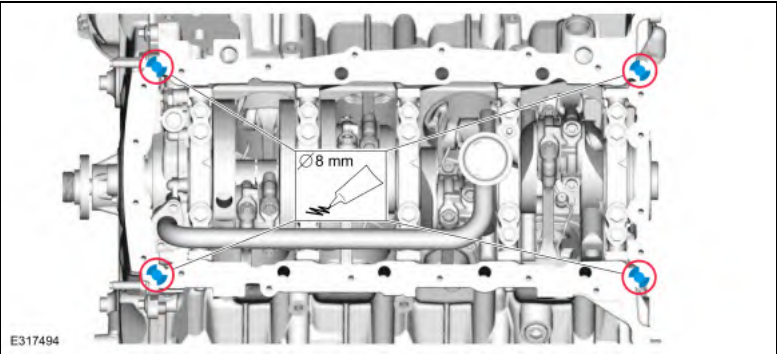
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



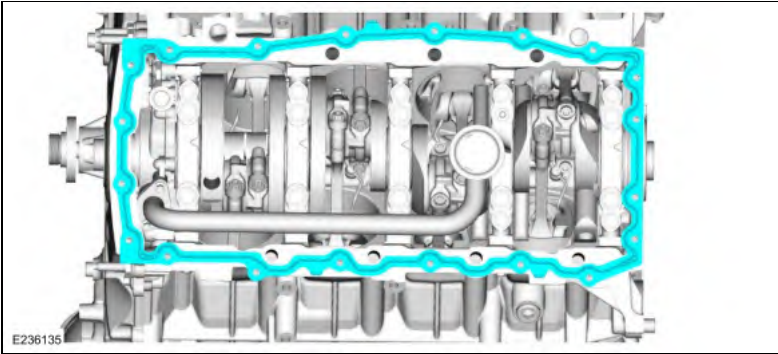
- 67.
- Install the crankshaft rear seal retainer plate and the bolts finger-tight.
 - Tighten the bolts in sequence shown.
- Torque:*
Stage 1: 89 lb.in (10 Nm)
Stage 2: 30Å°



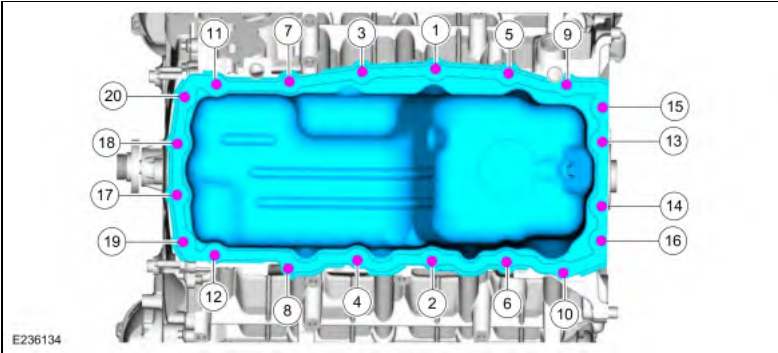
68. **NOTE:** If not secured within 4 minutes, the sealant must be removed and the sealing area cleaned.
- Apply 8 mm (0.314 in) silicone gasket and sealant at the crankshaft rear seal retainer plate-to-cylinder block and engine front cover-to-cylinder block sealing surface.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



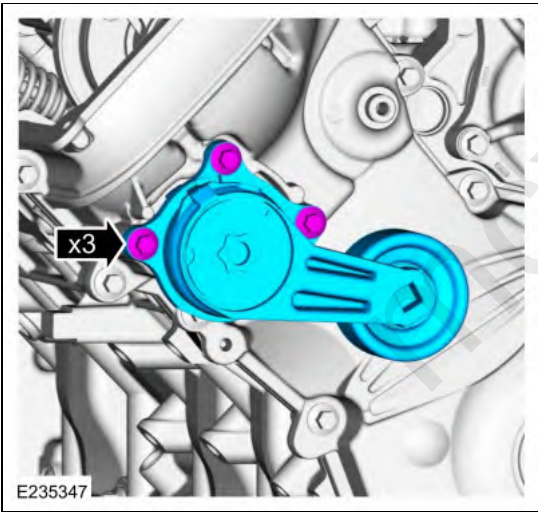
69. Install a new oil pan gasket.



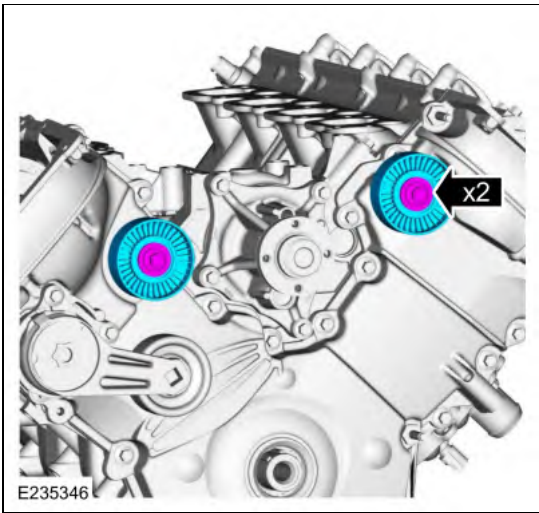
70. Install the oil pan and the bolts finger tight and tighten in 2 stages in the sequence shown.
Torque:
Stage 1: 106 lb.in (12 Nm)
Stage 2: 40 Å°



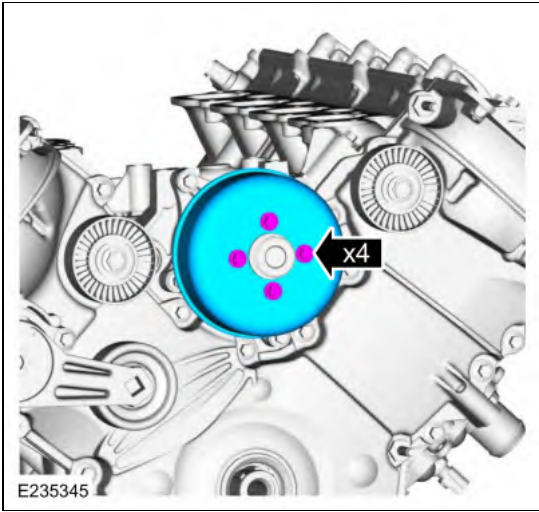
71. Install the accessory drive belt tensioner and the bolts.
Torque: 18 lb.ft (25 Nm)



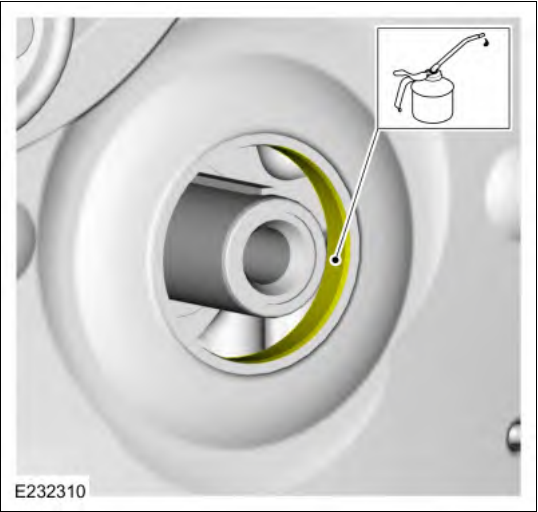
72. Install the accessory drive belt idler pulleys and the bolts.
Torque: 18 lb.ft (25 Nm)



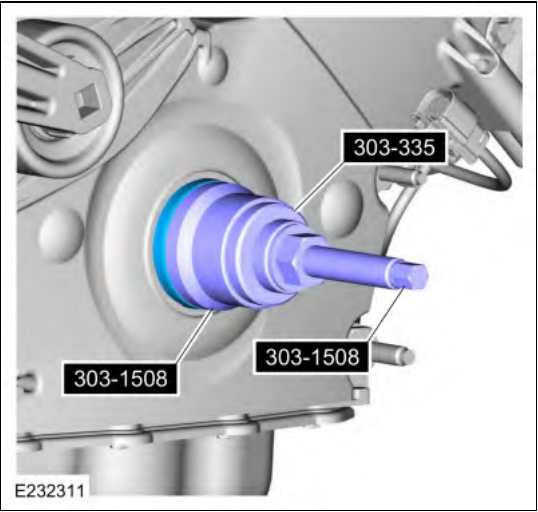
73. Install the coolant pump pulley and the bolts.
Torque: 18 lb.ft (25 Nm)



74. Lubricate the engine front cover bore with clean engine oil.



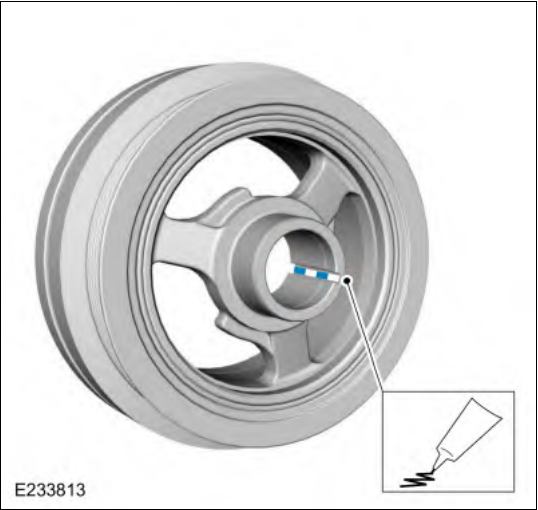
75. Using the special tools, install the new crankshaft front seal.
Use Special Service Tool: 303-335 (T88T-6701-A) Installer, Front Cover Oil Seal. , 303-1508 Installer, Front Crank Seal.



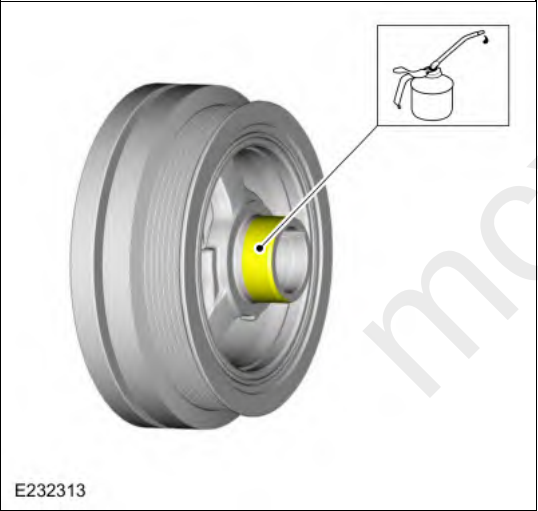
76. Lubricate the crankshaft front seal inner lip with clean engine oil.



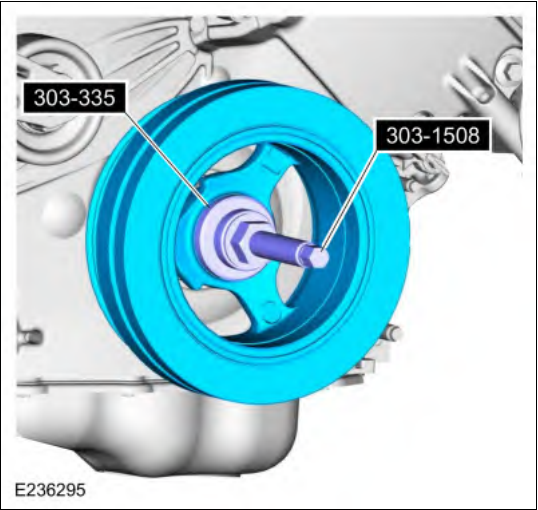
77. **NOTE:** If the crankshaft pulley is not secured within 4 minutes, the sealant must be removed and the sealing area cleaned.
Apply a bead of silicone gasket and sealant to the woodruff key slot.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



78. Lubricate the crankshaft pulley sealing surface with clean engine oil prior to installation.



79. Using the special tools, install the crankshaft pulley.
Use Special Service Tool: 303-335 (T88T-6701-A) Installer, Front Cover Oil Seal. , 303-1508 Installer, Front Crank Seal.



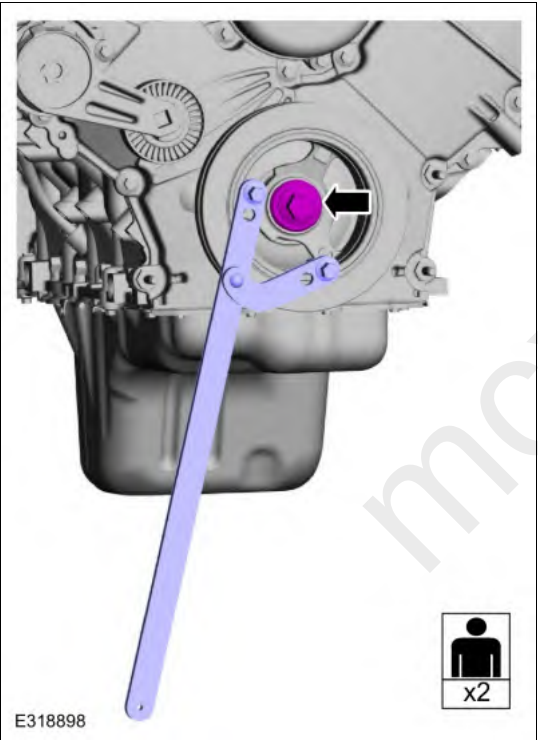
80. **NOTE:** Use a universal pulley holder (such as an OTC 4754, or equivalent).

Using a universal pulley holder, install and tighten a new crankshaft pulley bolt and the washer and tighten in 2 stages.

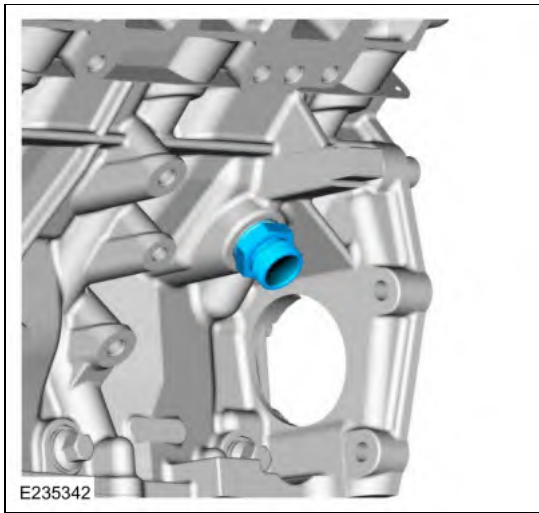
Torque:

Stage 1: 129 lb.ft (175 Nm)

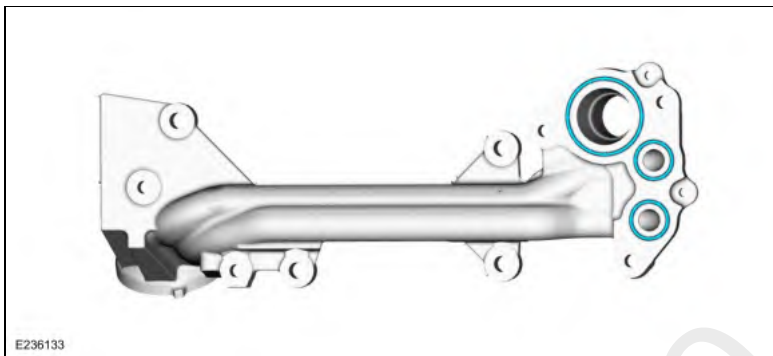
Stage 2: 90°



81. If equipped, install the engine block heater.
Torque: 30 lb.ft (40 Nm)



82. Install new oil filter adapter O-ring seals.

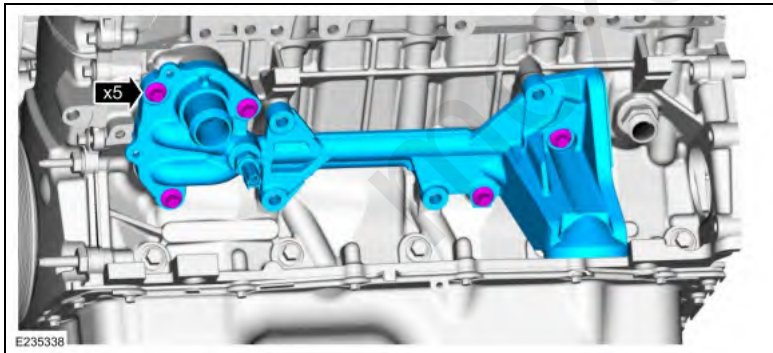


83. Install the oil filter adapter and the bolts.

Torque:

Stage 1: 177 lb.in (20 Nm)

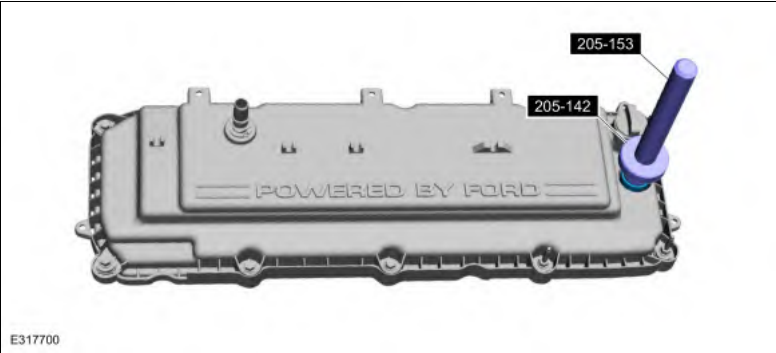
Stage 2: 60°



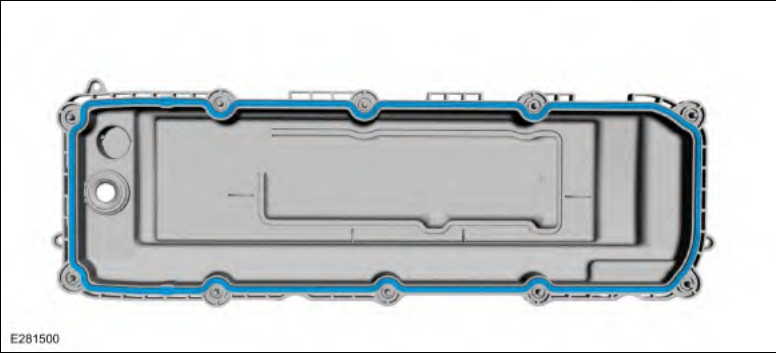
84. **NOTE:** Installation of new seals is only required if damaged seals were removed.

Using the special tools, install a new VCT oil control solenoid seal.

Use Special Service Tool: 205-153 (T80T-4000-W) Handle. , 205-142 (T80T-4000-J) Installer, Differential Bearing Cone.

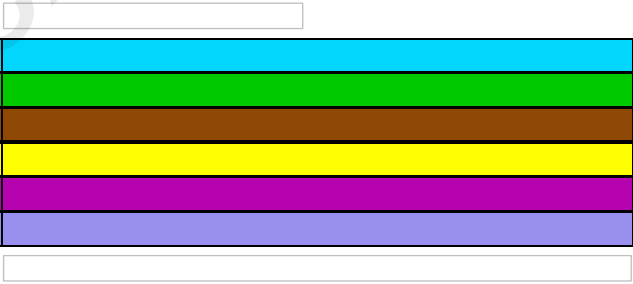
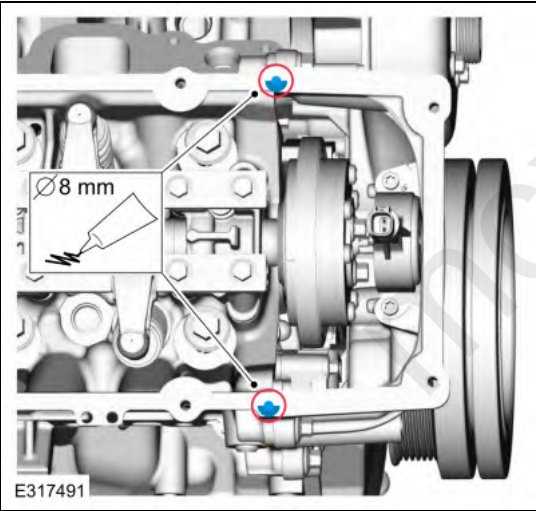


85. Install a new RH valve cover gasket.

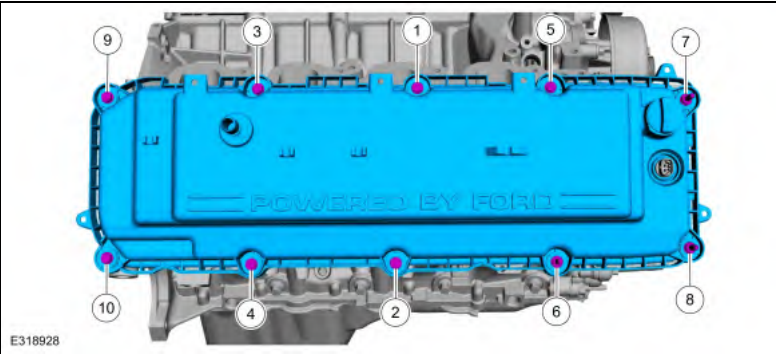


86. **NOTICE:** If the valve cover is not installed and the fasteners tightened within 4 minutes, the sealant must be removed and the sealing area cleaned.

Apply an 8 mm (0.31 in) bead of Motorcraft® High Performance Engine RTV Silicone to the engine front cover-to-cylinder head joints.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)

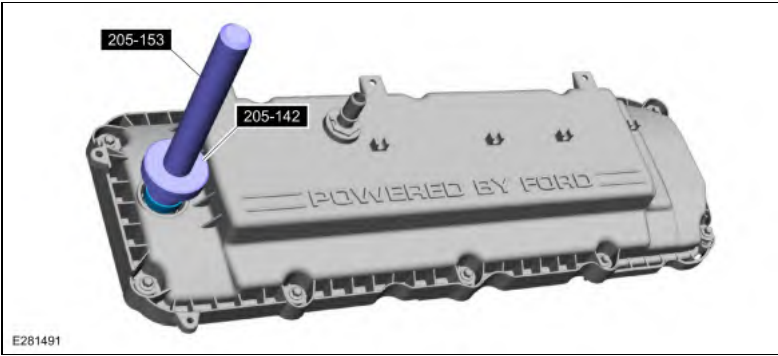


87. Install the RH valve cover and tighten the bolts.
Torque: 89 lb.in (10 Nm)

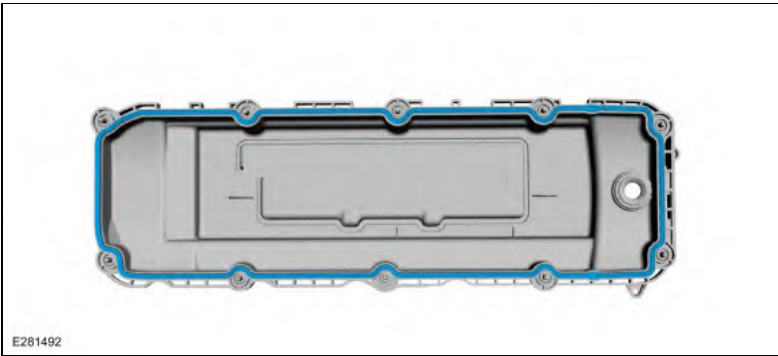


88. **NOTE:** Installation of new seals is only required if damaged seals were removed.

Using the special tools, install a new VCT oil control solenoid seal.
Use Special Service Tool: 205-153 (T80T-4000-W) Handle. , 205-142 (T80T-4000-J) Installer, Differential Bearing Cone.

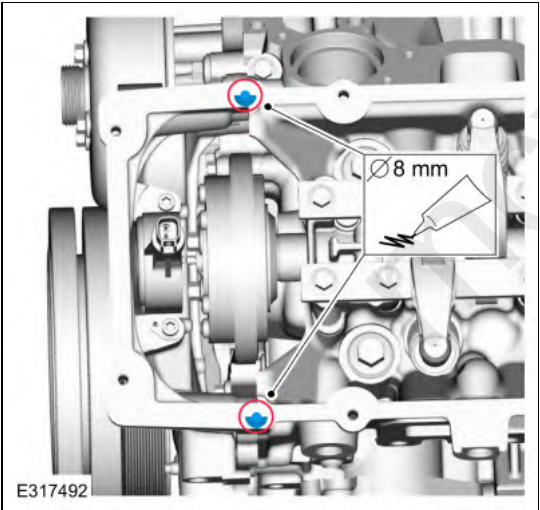


89. Install a new LH valve cover gasket.

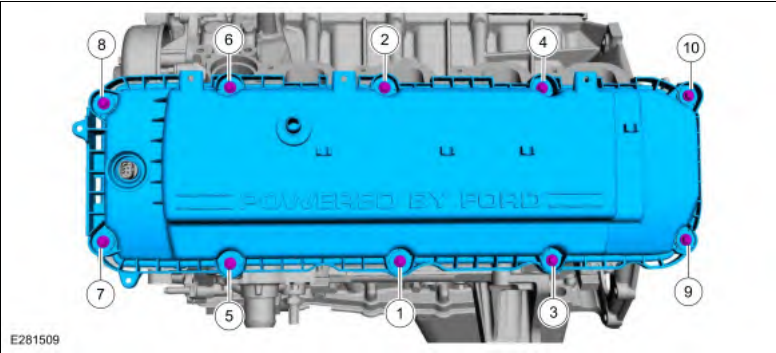


90. **NOTICE:** If the valve cover is not installed and the fasteners tightened within 4 minutes, the sealant must be removed and the sealing area cleaned.

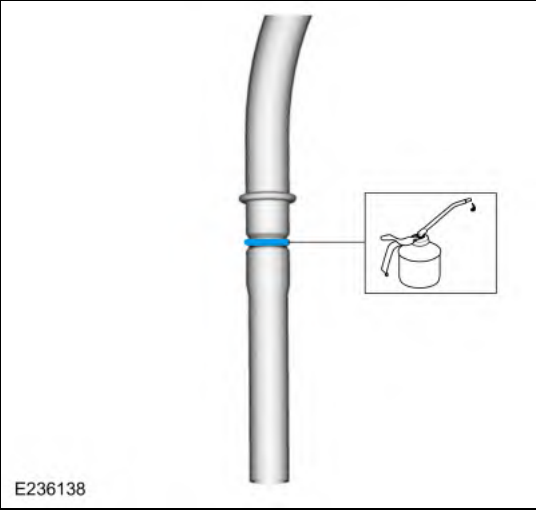
Apply an 8 mm (0.31 in) bead of Motorcraft® High Performance Engine RTV Silicone to the engine front cover-to-cylinder head joints.
Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



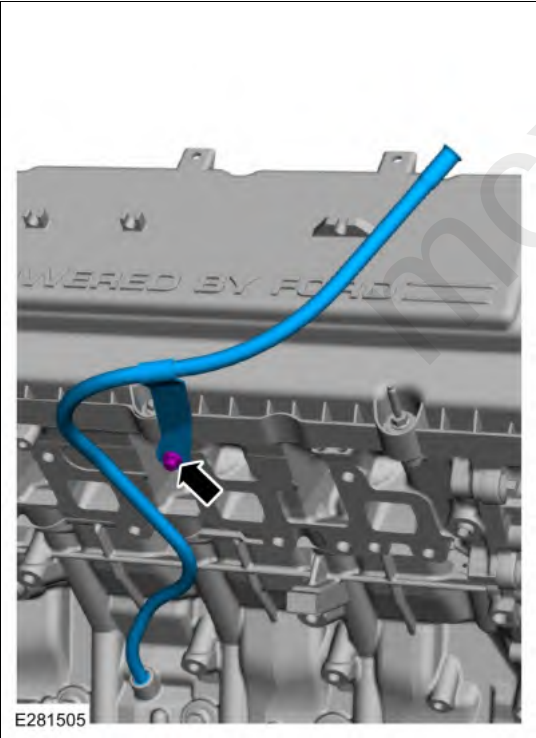
91. Install the LH valve cover and tighten the bolts.
Torque: 89 lb.in (10 Nm)



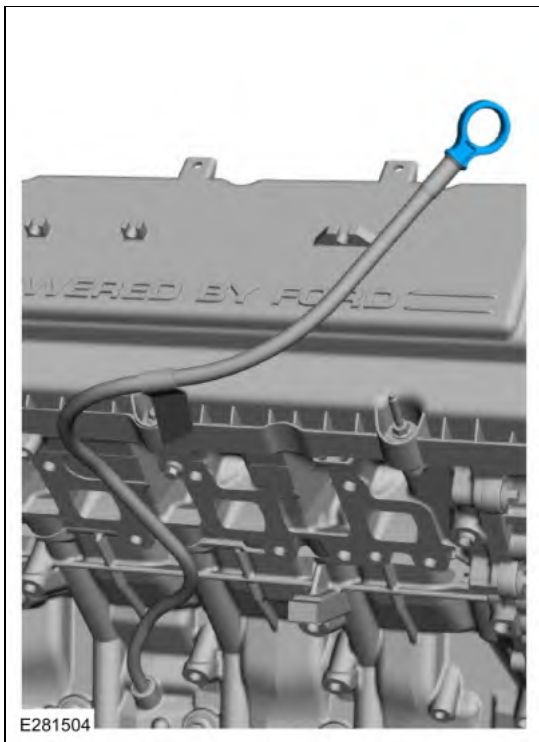
92. Lubricate oil level indicator tube O-ring seal and with clean engine oil.



93. Install the oil level indicator tube and the bolt.
Torque: 89 lb.in (10 Nm)

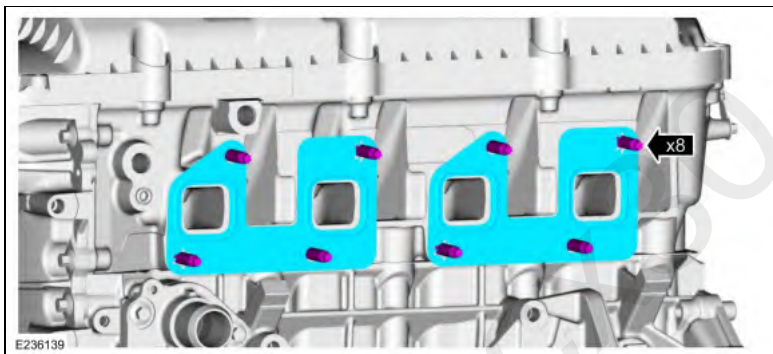


94. Install the oil level indicator.



95.

- Install the new LH exhaust manifold studs.
Torque: 18 lb.ft (25 Nm)
- Install the new LH exhaust manifold gaskets.



96.

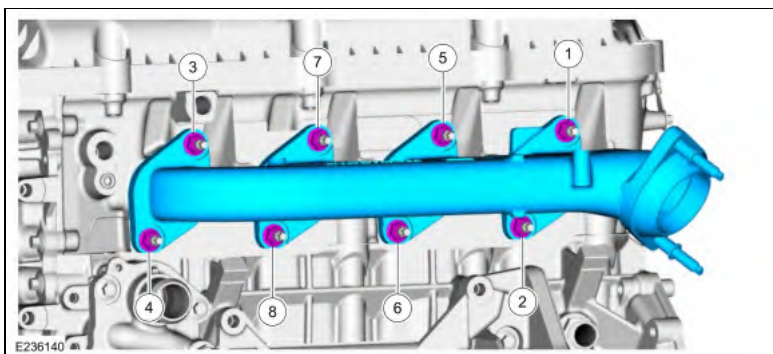
- Install the LH exhaust manifold and the new nuts finger-tight.
- **NOTE:** *Torque sequence must be performed twice.*

Tighten the exhaust manifold nuts in sequence shown.

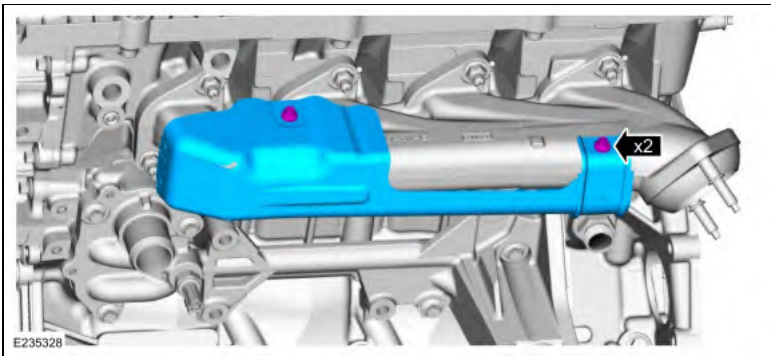
Torque:

Stage 1: 18 lb.ft (24 Nm)

Stage 2: 23 lb.ft (31 Nm)

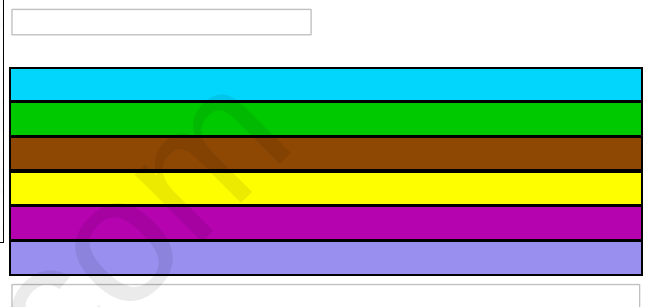
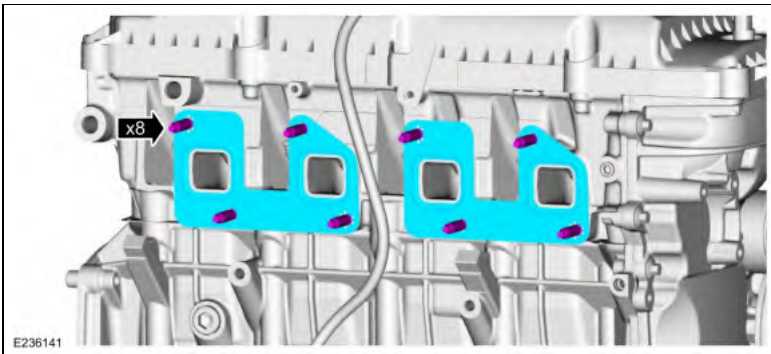


97. Install the LH exhaust manifold heat shield and the bolts.
Torque: 106 lb.in (12 Nm)



98.

- Install the RH new exhaust manifold studs.
Torque: 18 lb.ft (25 Nm)
- Install the new exhaust manifold gaskets.



99.

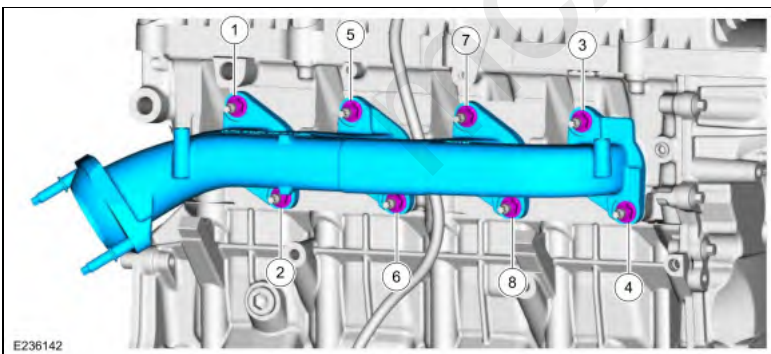
- Install the RH exhaust manifold and the new nuts finger-tight.
- **NOTE:** *Torque sequence must be performed twice.*

Tighten the exhaust manifold nuts in sequence shown.

Torque:

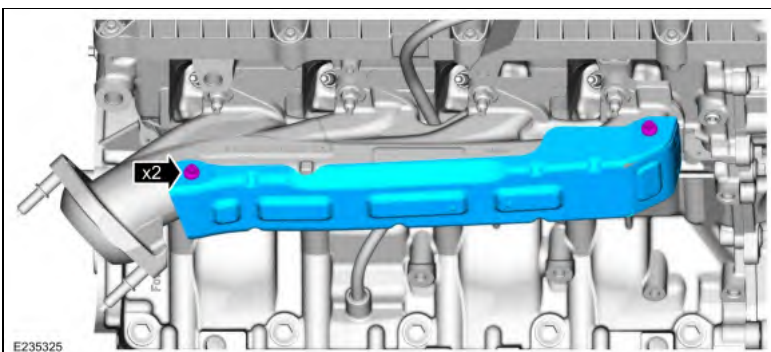
Stage 1: 18 lb.ft (24 Nm)

Stage 2: 23 lb.ft (31 Nm)



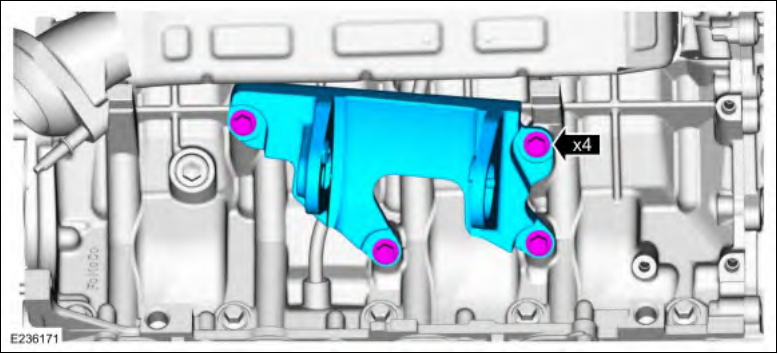
100. Install the RH exhaust manifold heat shield and the bolts.

Torque: 106 lb.in (12 Nm)



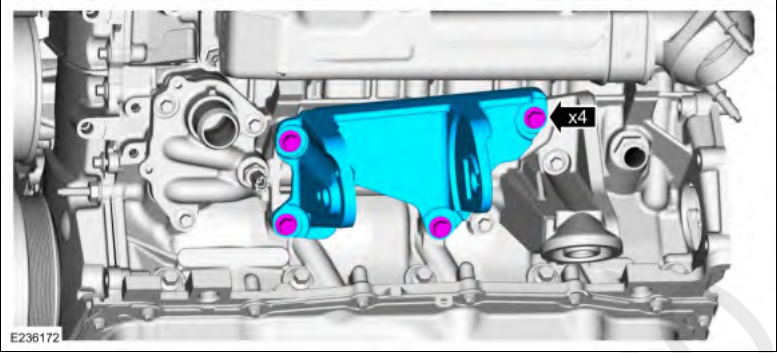
101. Install the RH engine mount bracket and the bolts.

Torque:
Stage 1: 22 lb.ft (30 Nm)
Stage 2: 60Â°

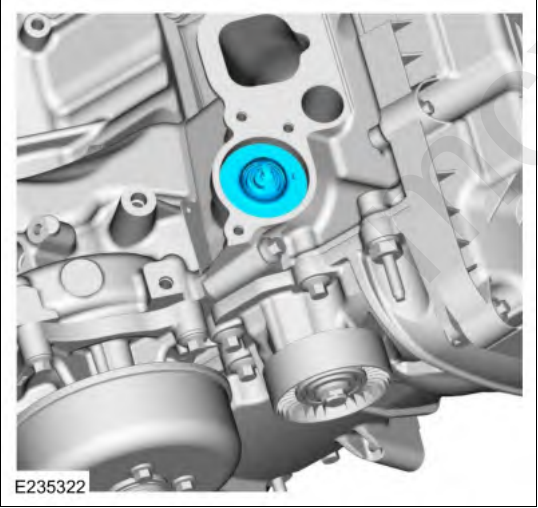


102. Install the LH engine mount bracket and the bolts.

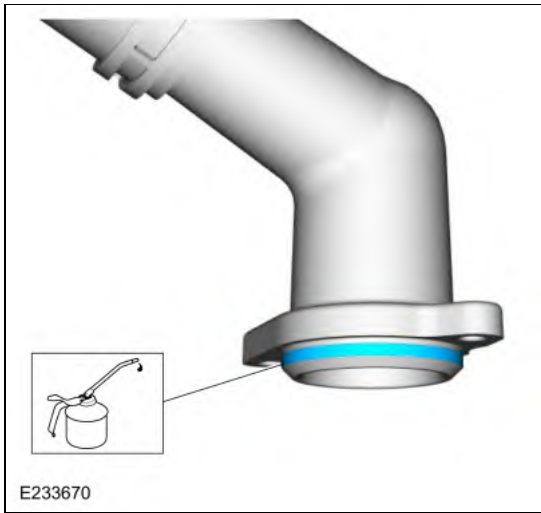
Torque:
Stage 1: 22 lb.ft (30 Nm)
Stage 2: 60Â°



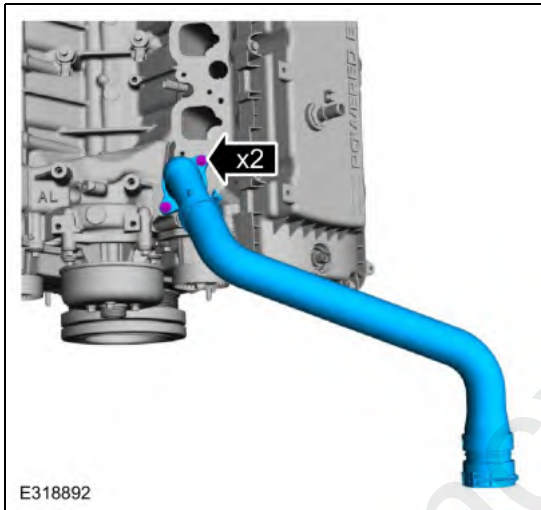
103. Install the thermostat.



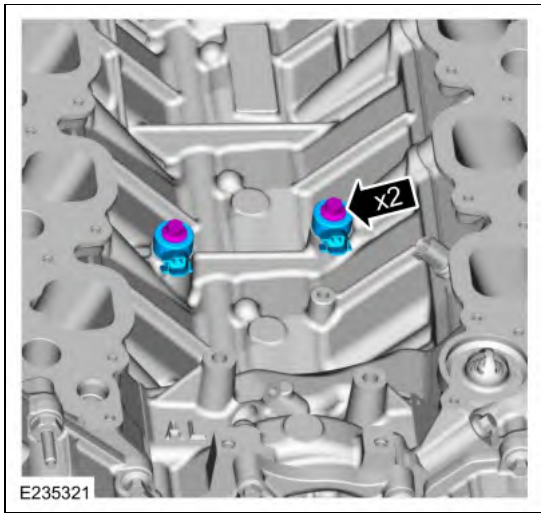
104. Install and lubricate the thermostat housing O-ring seal.



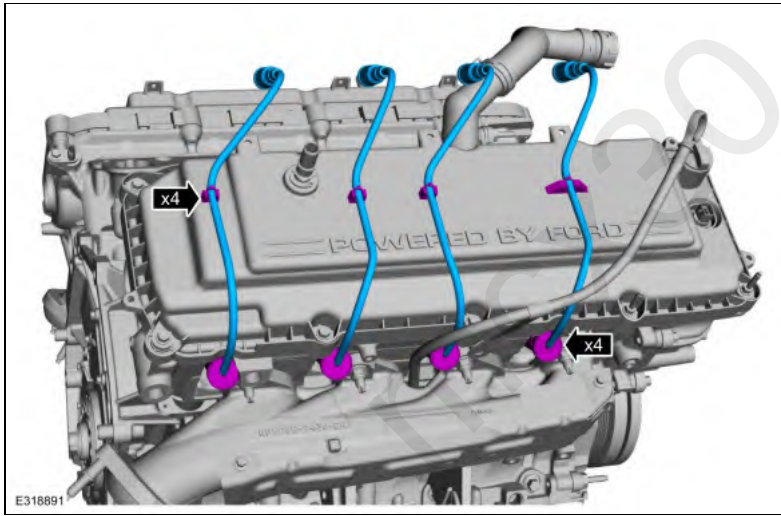
105. Install the thermostat housing and upper radiator hose assembly and the bolts.
Torque: 89 lb.in (10 Nm)



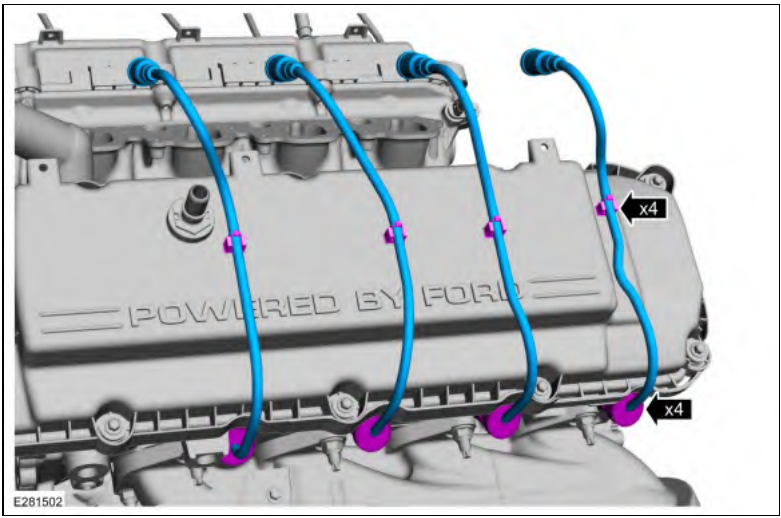
106. Install the KS and the bolts.
Torque: 177 lb.in (20 Nm)



107. Connect the RH spark plug wires to the lower spark plugs and attach the retainers to the valve cover.



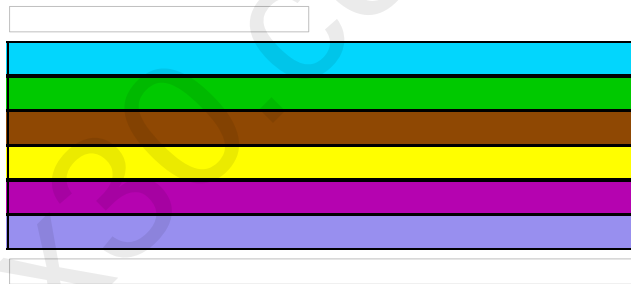
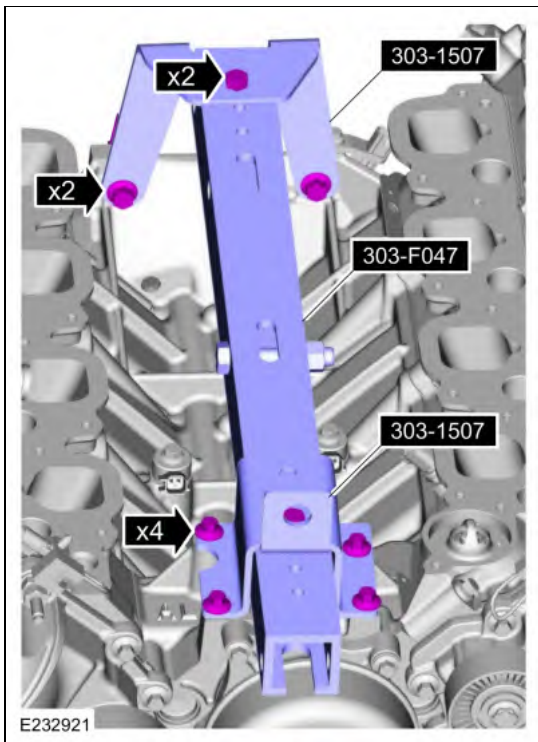
108. Connect the LH spark plug wires to the lower spark plugs and attach the retainers to the valve cover.



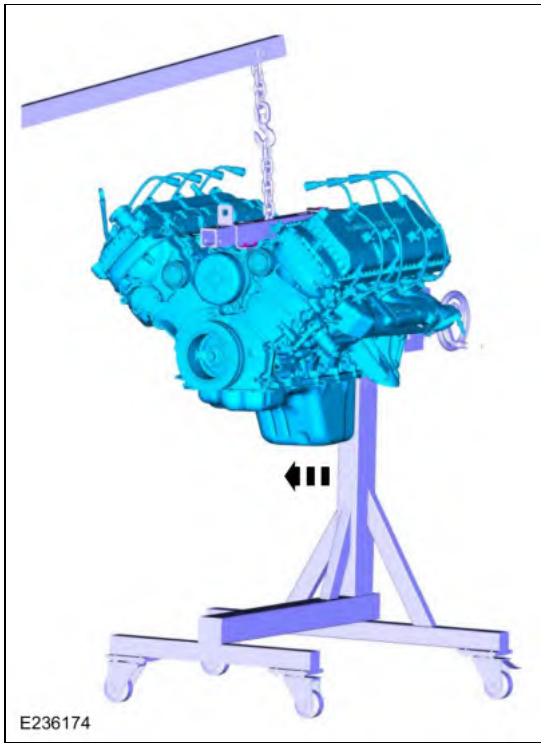
109. Install the radio ignition interference capacitors and the nuts.
Torque: 18 lb.ft (25 Nm)



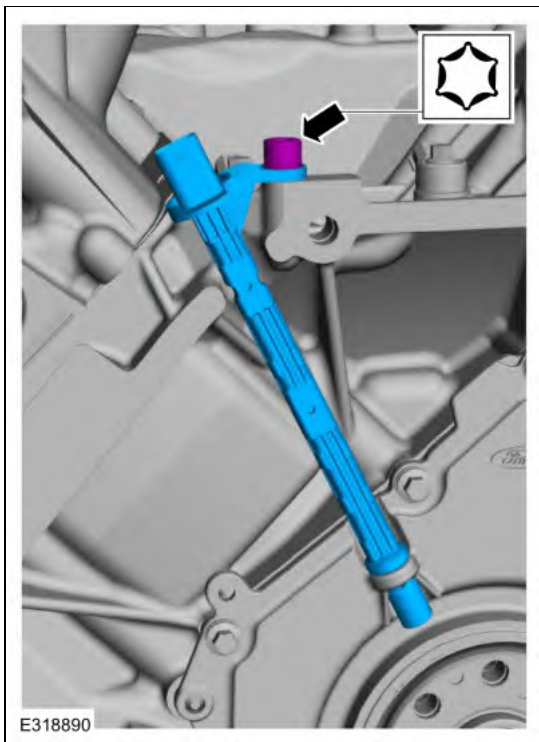
110. Install the special tools and the bolts.
Install Special Service Tool: 303-1507 Brackets, Support. , 303-F047 Lifting Bracket, Engine.



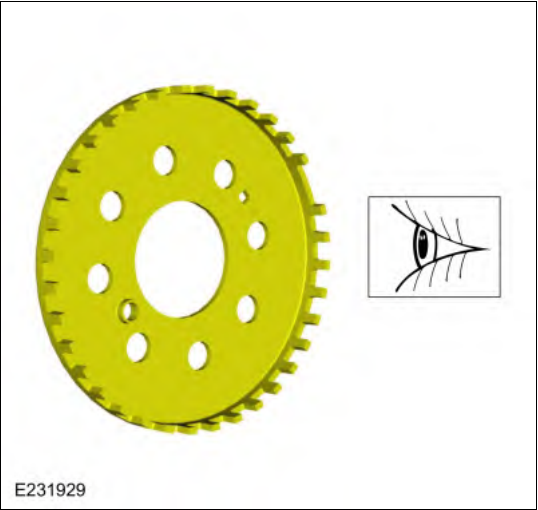
111. Using the floor crane, remove the engine from the mounting stand.
Use the General Equipment: Floor Crane
Use the General Equipment: Mounting Stand



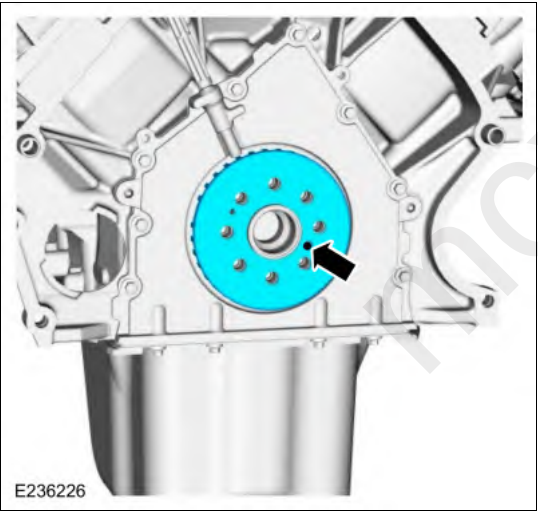
112. Install the CKP sensor and the bolt.
Torque: 89 lb.in (10 Nm)



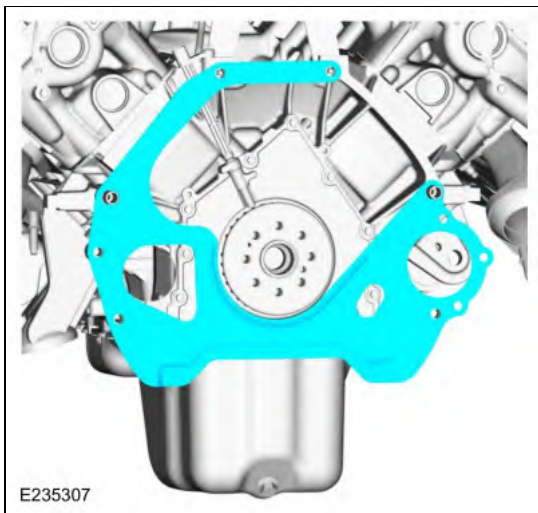
113. Inspect the ignition pulse ring for damage. If the ignition pulse ring has been dropped or has any visual damage, it must be replaced.



114. With the inset hole on the crankshaft ignition pulse ring aligned with the inset hole on the crankshaft flange, install the crankshaft ignition pulse ring.



115. Install the engine-to-transmission spacer plate.



116. **NOTE:** Flexplate shown, flywheel similar.

- Install the flexplate and the new bolts finger-tight.
- Tighten the bolts in sequence shown in 6 stages.

Torque:

Stage 1: Tighten fasteners 1 through 4 in sequence to: 177 lb.in (20 Nm)
 Stage 2: Tighten fasteners 1 through 4 in sequence to: 26 lb.ft (35 Nm)
 Stage 3: Tighten fasteners 1 through 4 in sequence an additional: 60°
 Stage 4: Tighten fasteners 5 through 8 in sequence to: 177 lb.in (20 Nm)
 Stage 5: Tighten fasteners 5 through 8 in sequence to: 26 lb.ft (35 Nm)
 Stage 6: Tighten fasteners 5 through 8 in sequence an additional: 60°

