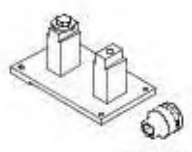
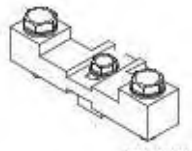
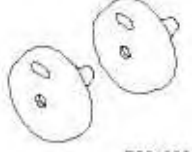
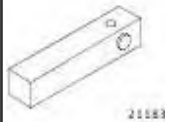


Assembly

Special Tool(s) / General Equipment

	205-069 Dial Indicator Gauge (Metric)
	205-070 Holding Fixture, Dial Indicator Gauge
	303-1611 Torque Multiplier
	303-1611-03 Adapter for 303-1611, Torque Multiplier
	303-1637 Holding Tool, Crankshaft
	303-1643 Locking Tool, Flywheel
	303-1650 Mounting Device, Timing Belt
	303-1668 Sealer Gun, Front Cover



303-432
Holding Fixture, Dial Indicator Gauge (Cylinder Liner Protrusion)

1/2 Inch Square Drive Breaker Bar

4 mm Drill Bit

6 mm Drill Bit

Plastic Scraper

Materials

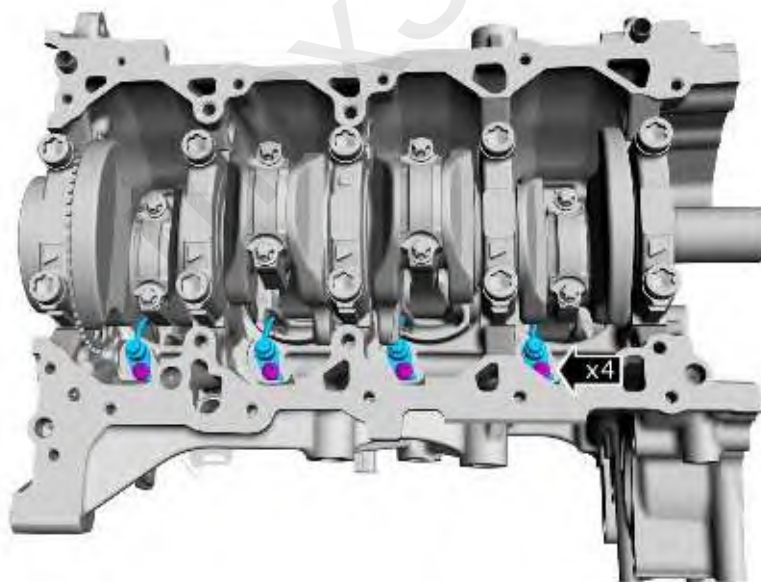
Name	Specification
Primer	-
Brake Cleaner	-
RTV Silicone Sealant	WSE-M4G323-A6



NOTICE: Extreme cleanliness must be exercised when handling the components.

- NOTE: Make sure that new bolts are installed.
NOTE: Make sure that the components are correctly located.

Torque: 10 Nm

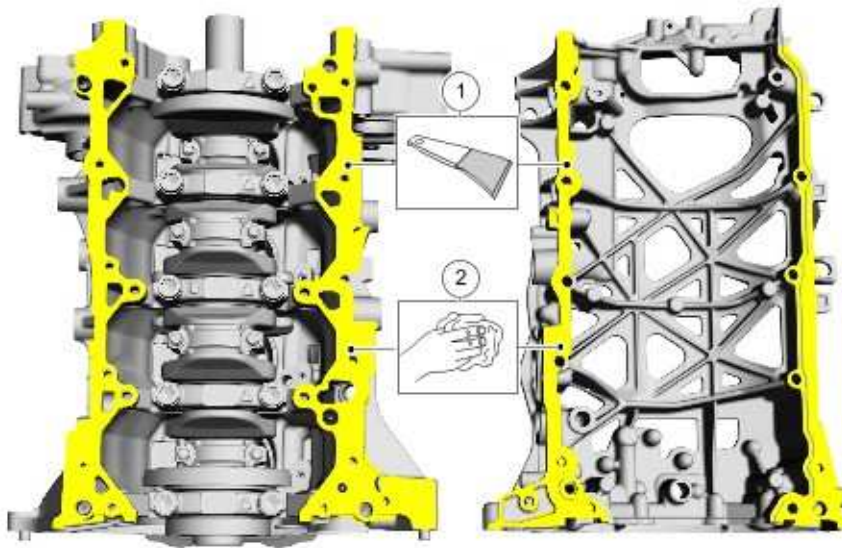


E282389

- NOTE: Make sure that the mating faces are clean and free of foreign material.

1. Use the General Equipment: **Plastic Scraper**

2. Material: - (**Primer**)



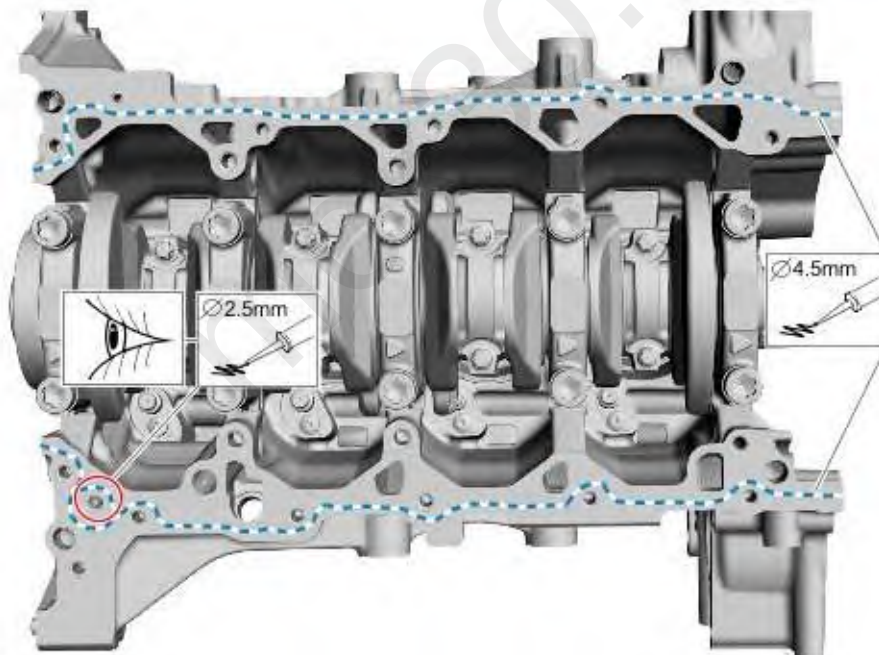
E228573

3. **NOTE:** Make sure that the component is clean, free of foreign material and lubricant.
NOTE: The component must be installed within 10 minutes of applying the sealant.

 Complete this step within: 10min

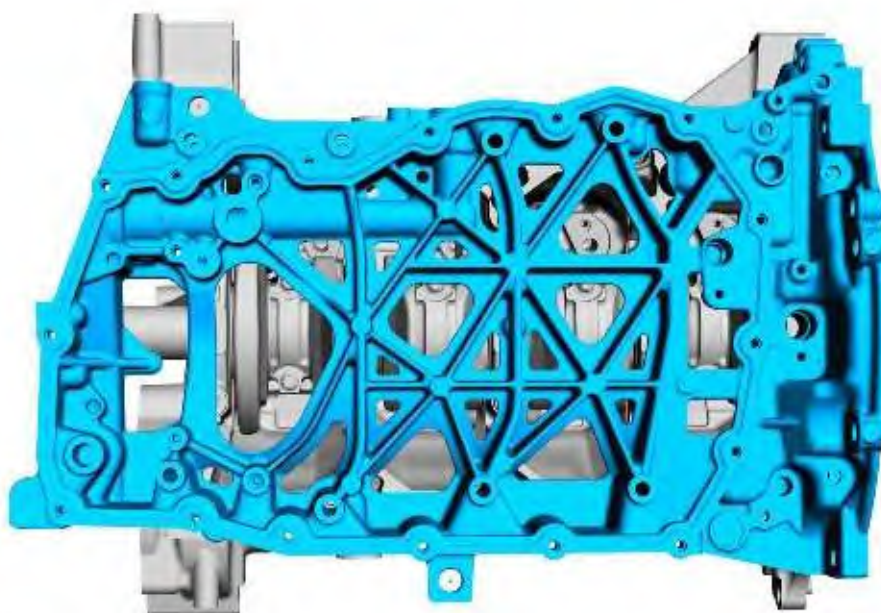
Use Special Service Tool: [303-1668](#).

Material: [WSE-M4G323-A6 \(RTV Silicone Sealant\)](#)



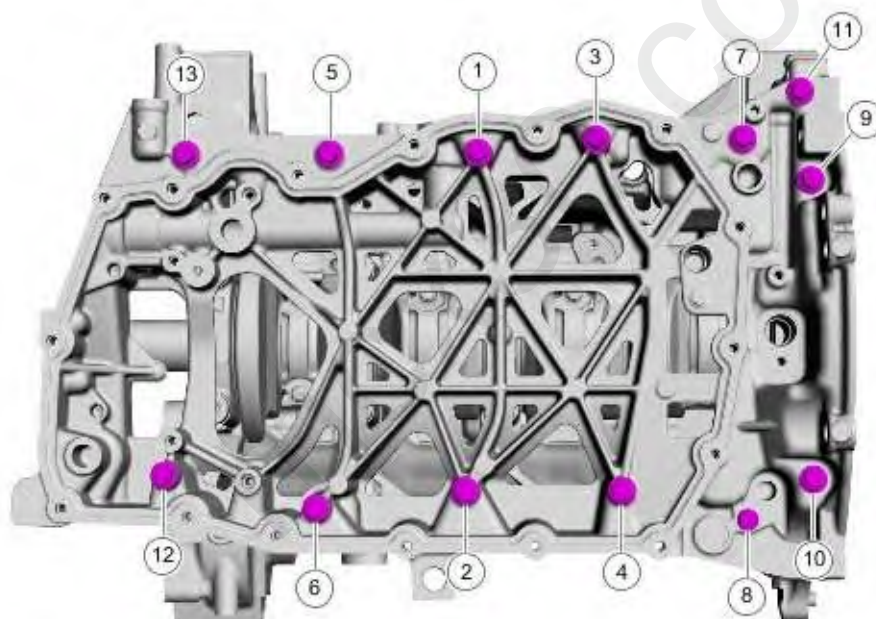
E228995

- 4.



E228572

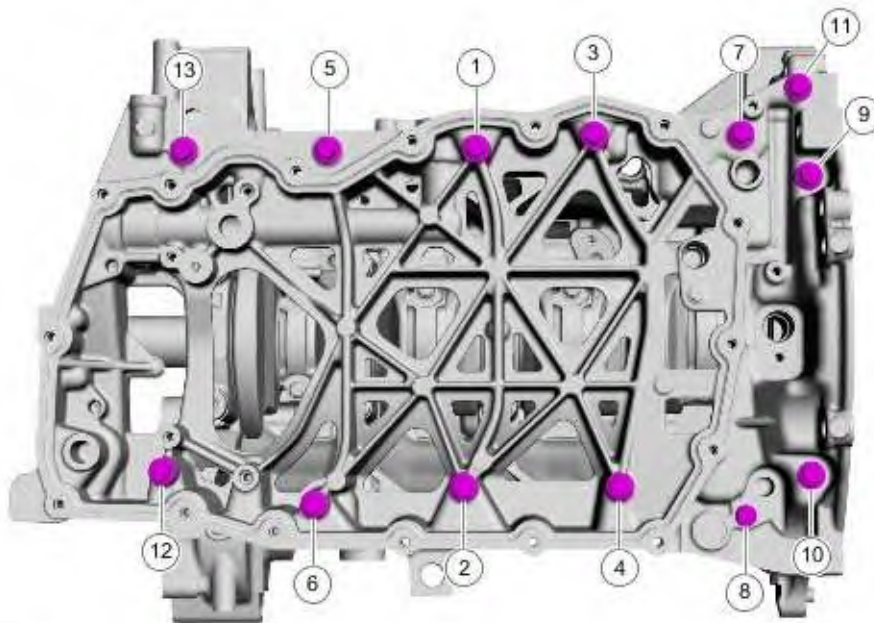
5. **NOTE:** Only tighten the bolts finger tight at this stage.
Make sure that a new bolt is installed on position 8.



E228086

6. Make sure that a new bolt is installed on position 8.

Torque:
1-13 5 Nm



E228086

7. Make sure that a new bolt is installed on position 8.

Torque:

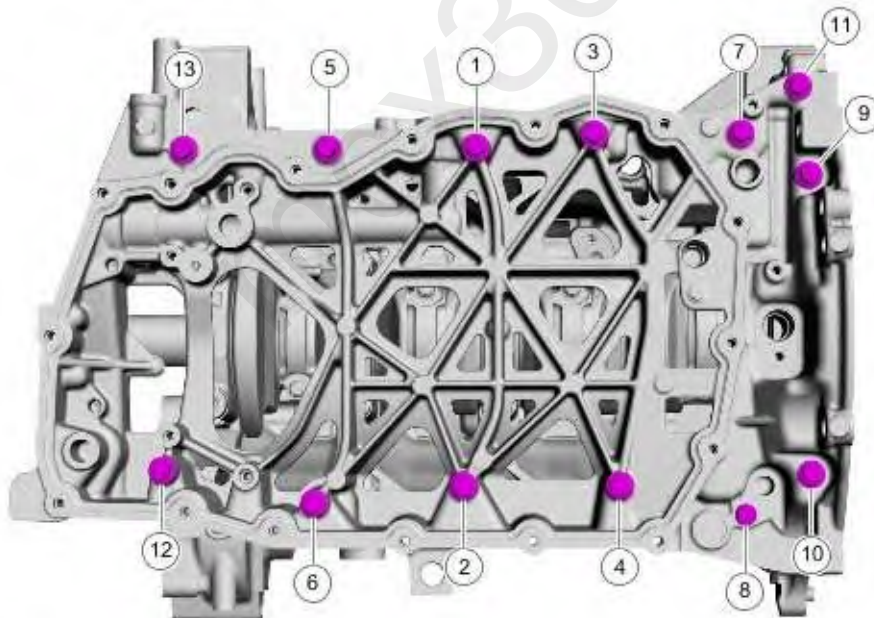
1-7: 23 Nm

8: 13 Nm

9-10: 23 Nm

11: 13 Nm

12-13: 23 Nm



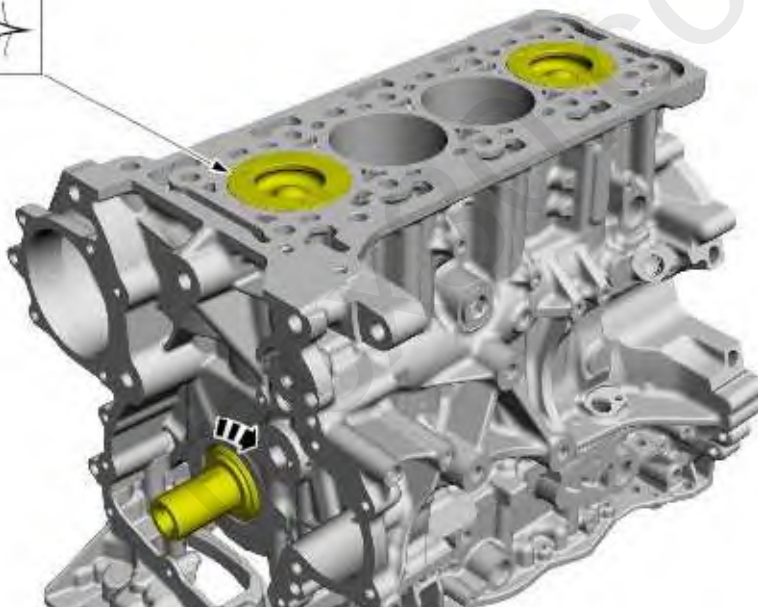
E228086

8.  **NOTICE:** Make sure that no excess sealant residue is evident.



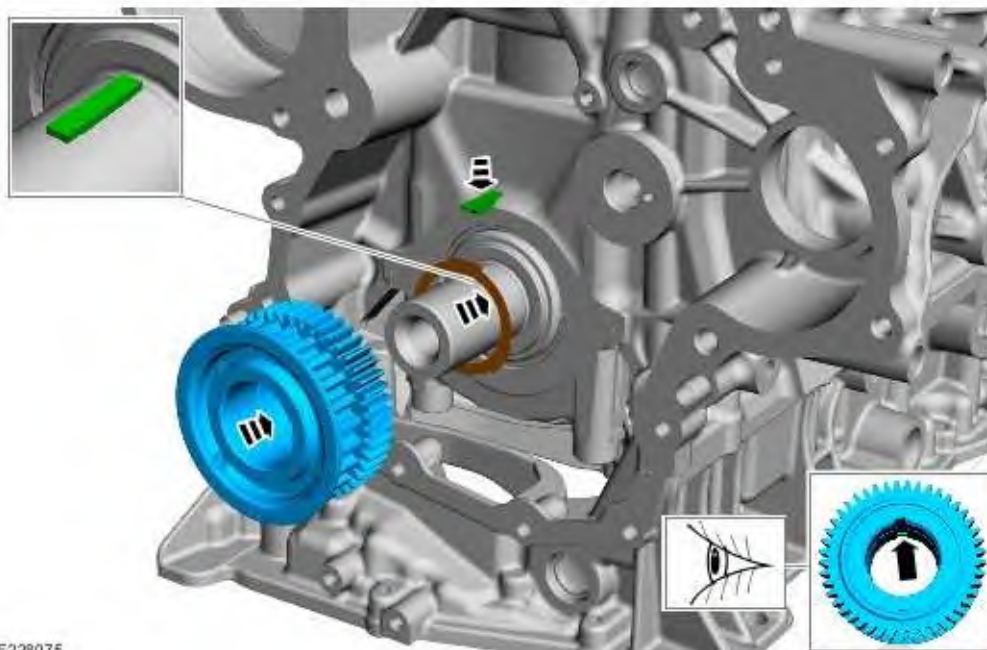
E228574

9. Rotate the crankshaft until piston No. 1 is at top dead center (TDC).

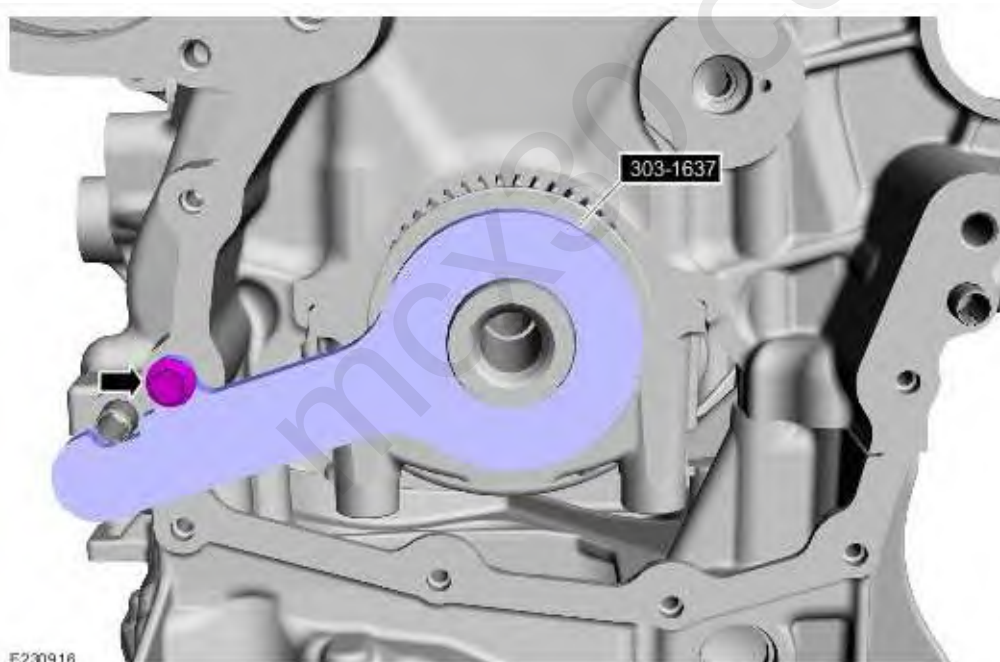


E229006

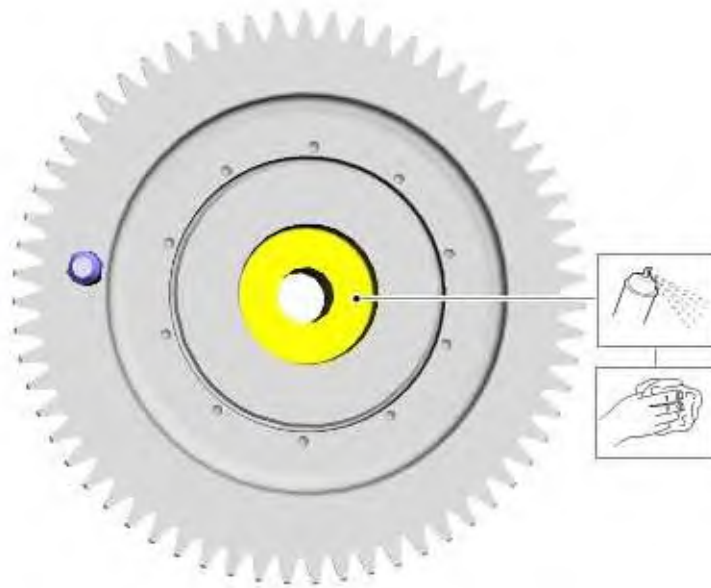
10.



11.  **NOTICE:** The special tool must only be used to align the crankshaft timing.
Install Special Service Tool: 303-1637.



12. **NOTICE:**
-  Make sure that the surface is clean and free of foreign material.
 -  Use lint free cloth.
- Material: - (Brake Cleaner)*



E253431

13.

1. 1.  NOTICE: Make sure that the component aligns with the installation mark.
2. 2.  NOTICE: Make sure that a new bolt is installed.

Torque:

Standard bolts torque

Stage 1: 60 Nm

Stage 2: Loosen: 90°

Stage 3: 20 Nm

Stage 4: 45 Nm

Stage 5: 45°

Self-locking bolts torque

Stage 1: 60 Nm

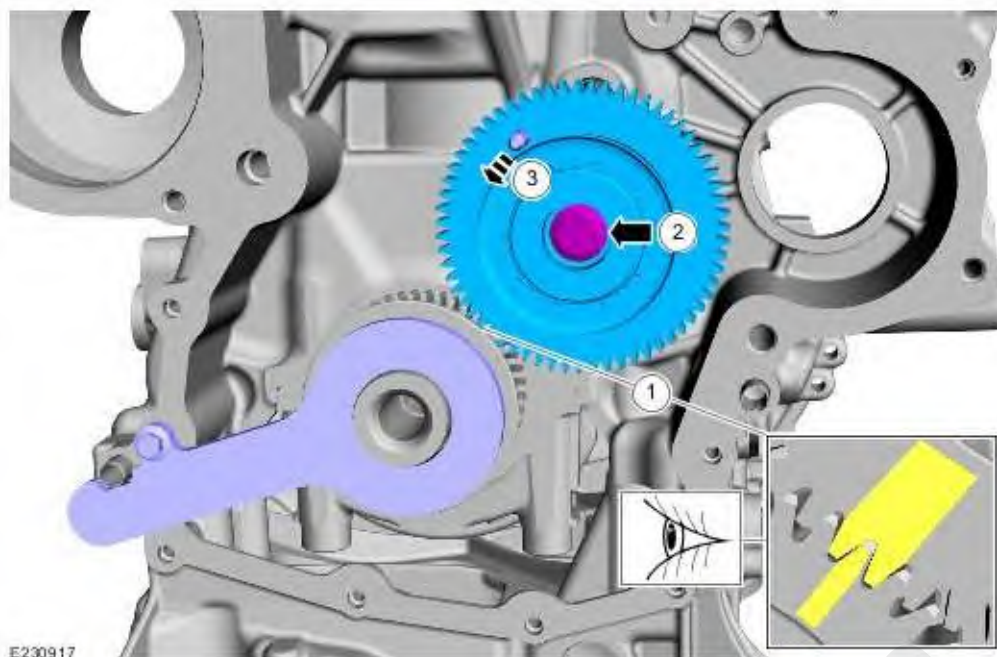
Stage 2: Loosen: 90°

Stage 3: 20 Nm

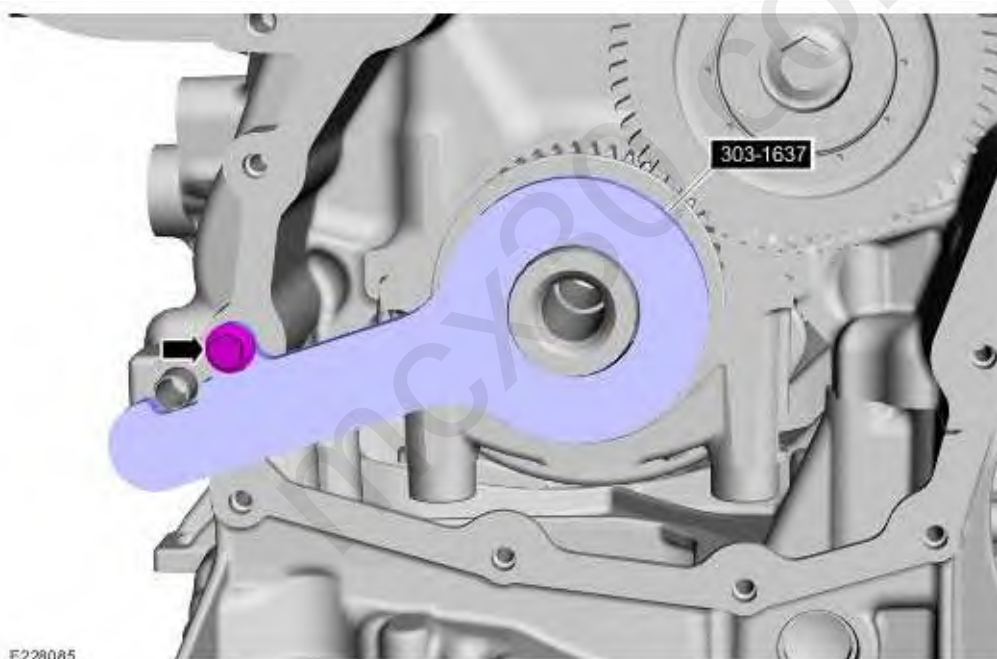
Stage 4: 30 Nm

Stage 5: 60°

3. Remove the General Equipment: 4 mm Drill Bit

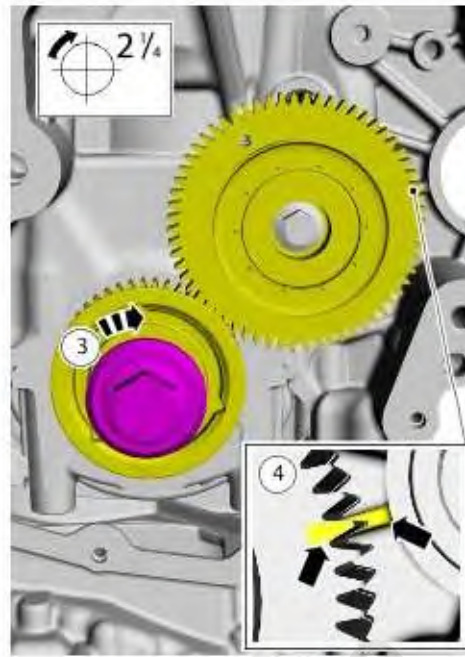
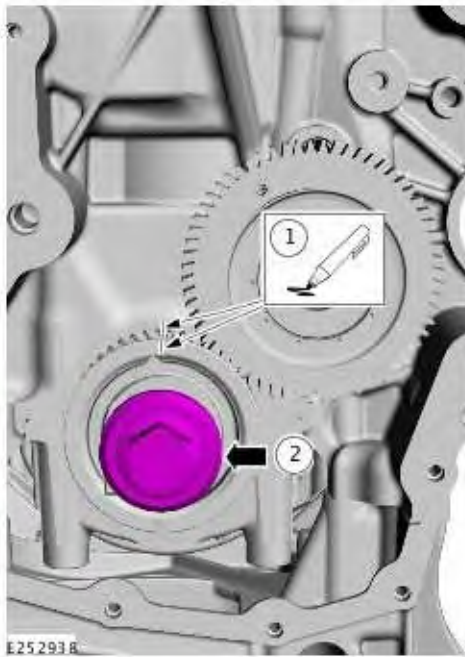


14. Remove Special Service Tool: 303-1637.



15.

1. 1.  **NOTICE:** Make sure that the crankshaft is not rotated
Mark the position of the component.
2. **NOTE:** Only tighten the bolt finger tight at this stage.
3. 3.  **NOTICE:** Only rotate the crankshaft clockwise.



16. NOTICE:



Extreme cleanliness must be exercised when handling the component.



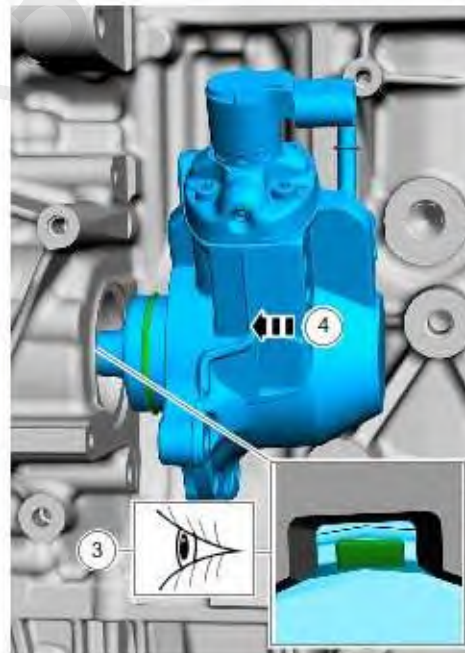
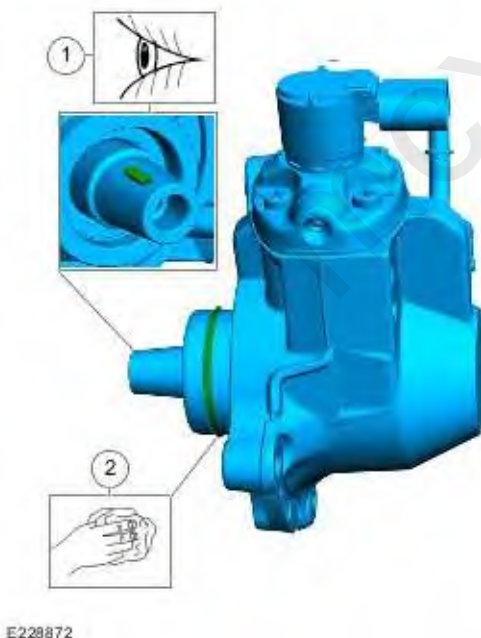
Use lint free cloth.

NOTE: Make sure that the threaded holes are clean and free of foreign matter.

NOTE: Make sure that a new O-ring seal is installed.

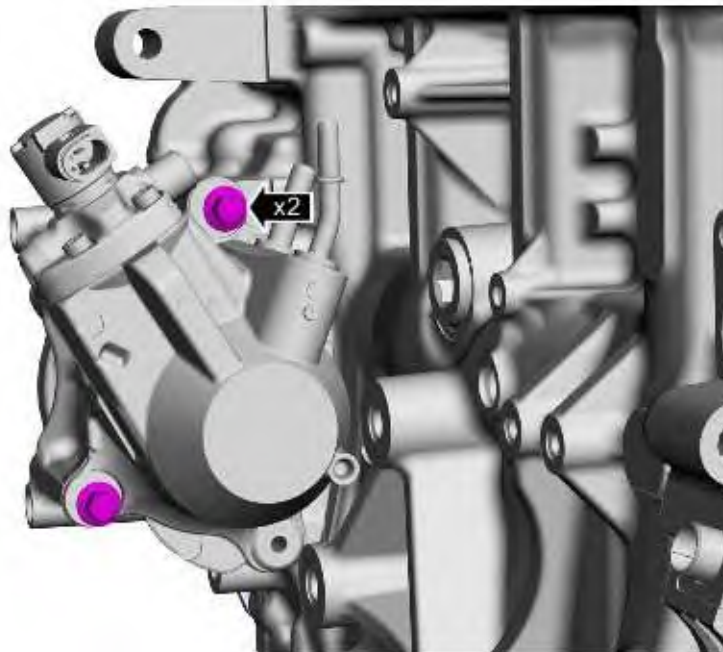
NOTE: Make sure that the seal is correctly located.

NOTE: The component must be installed by hand before final tightening.



17. NOTE: Make sure that new bolts are installed.

Torque: 23 Nm



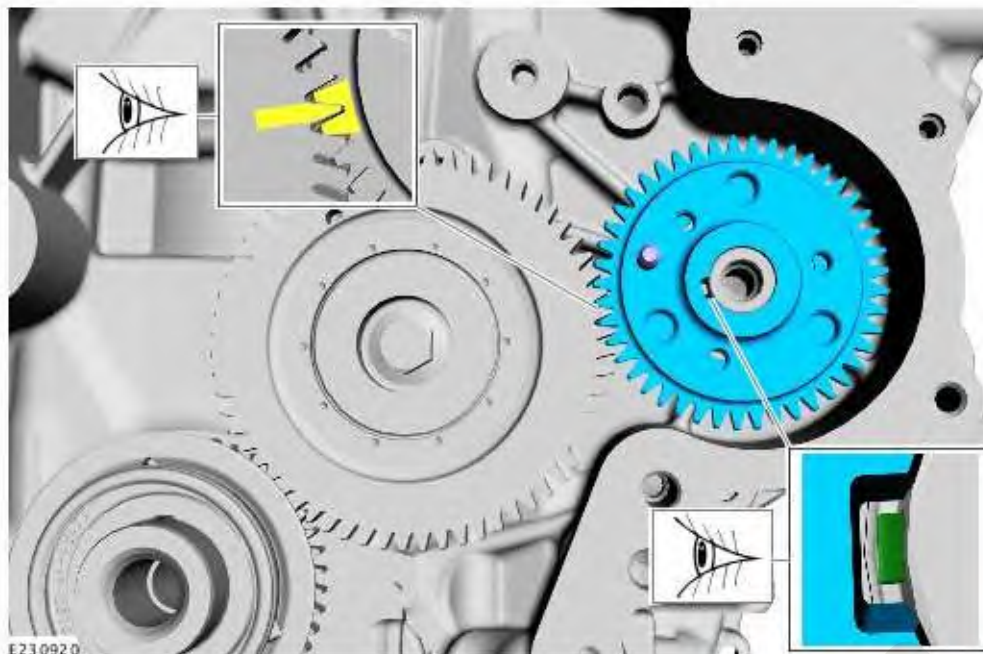
E228081

18. *Install the General Equipment:* 4 mm Drill Bit

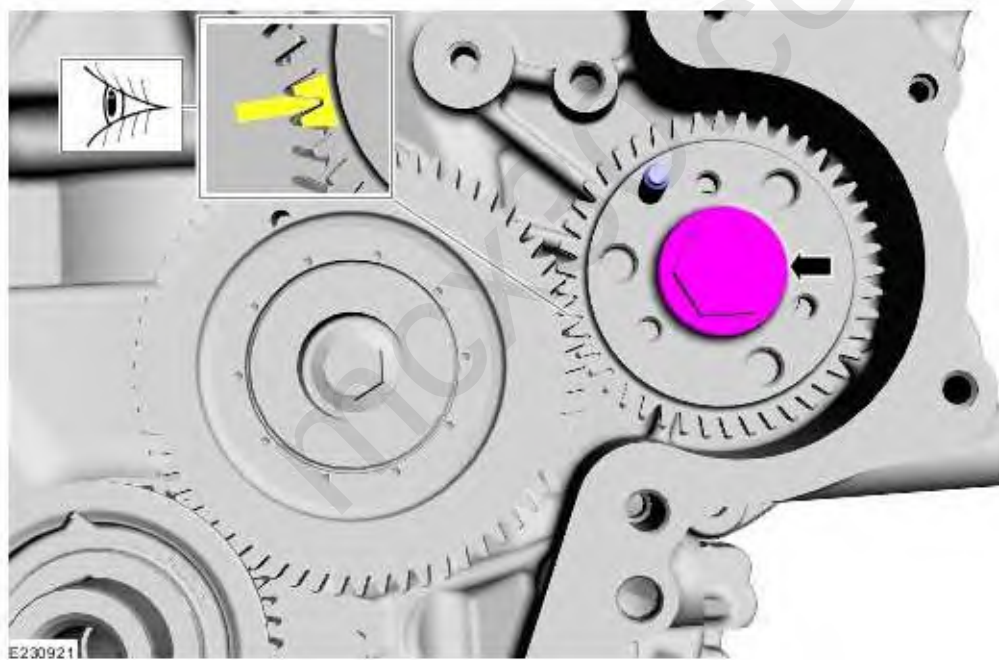


E230919

19. **NOTE:** Make sure that the installation marks are aligned.



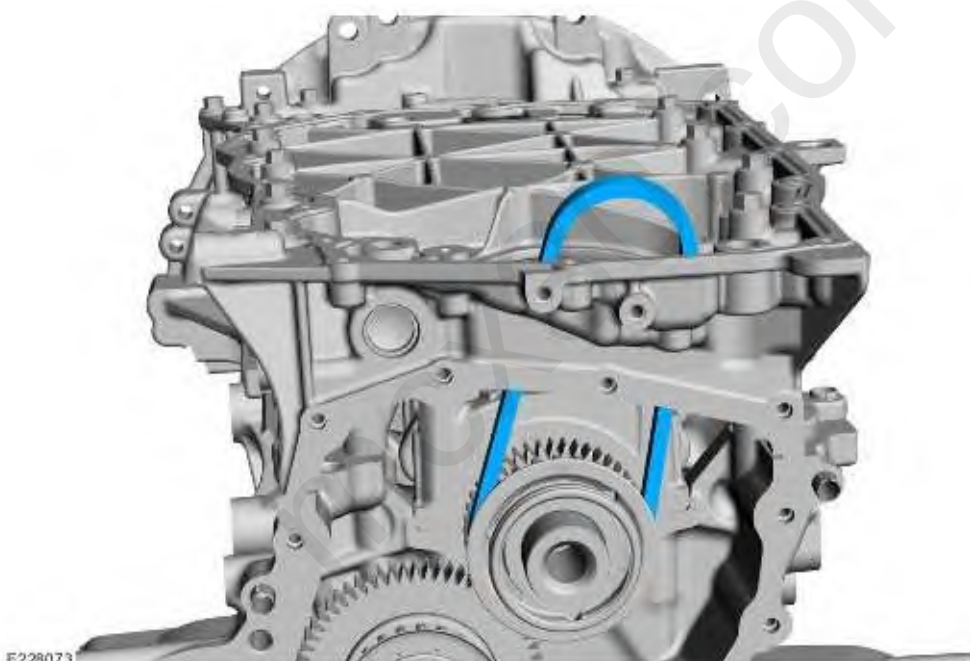
20. NOTE: Make sure a new bolt is installed.
 NOTE: Make sure that the installation marks are aligned.
 NOTE: Only tighten the bolt finger tight at this stage.



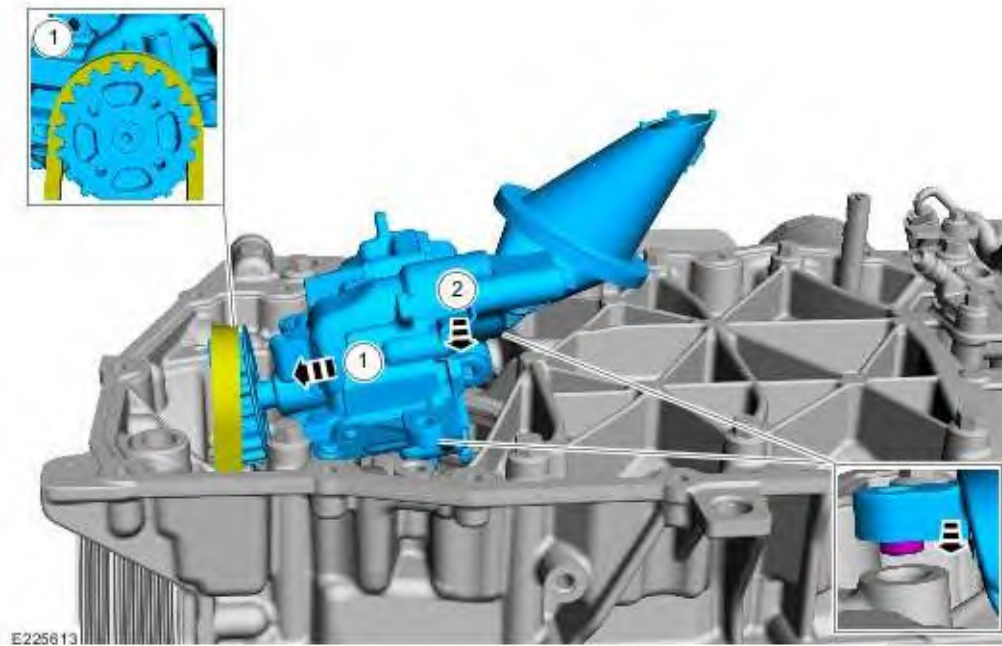
21. Remove the General Equipment: 4 mm Drill Bit



22.



23.

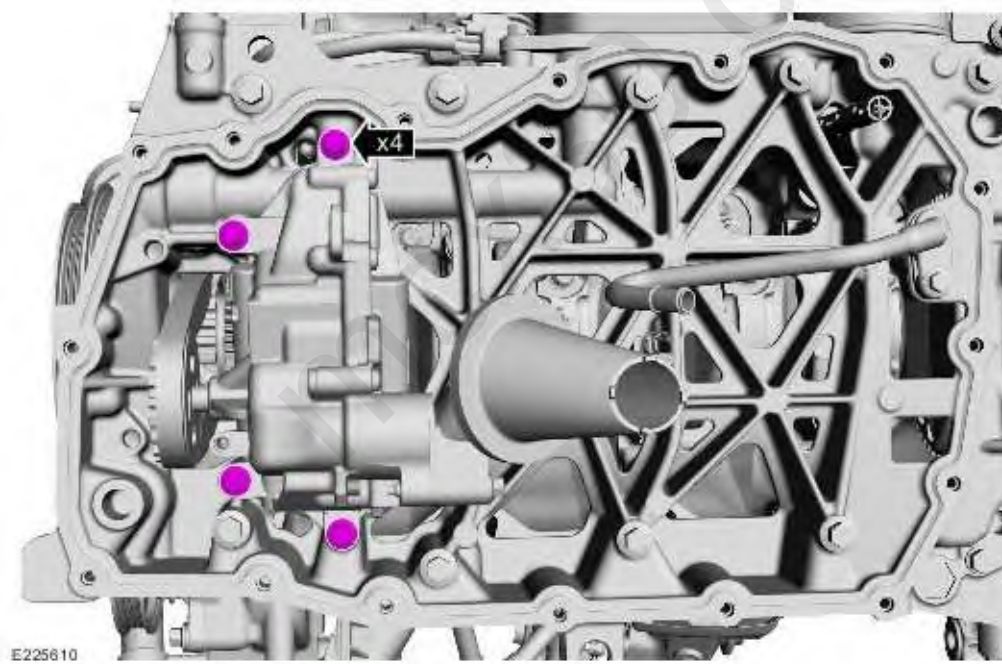


24. **NOTE:** Install all the bolts finger tight before final tightening.

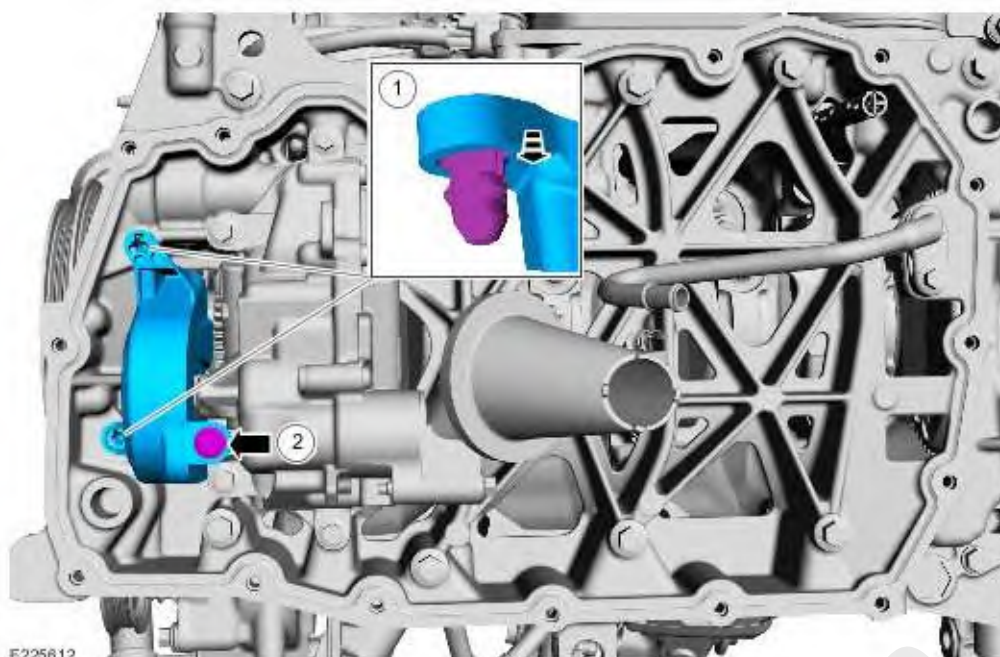
Torque:

Stage 1: 5 Nm

Stage 2: 10 Nm



25. **Torque:** 10 Nm

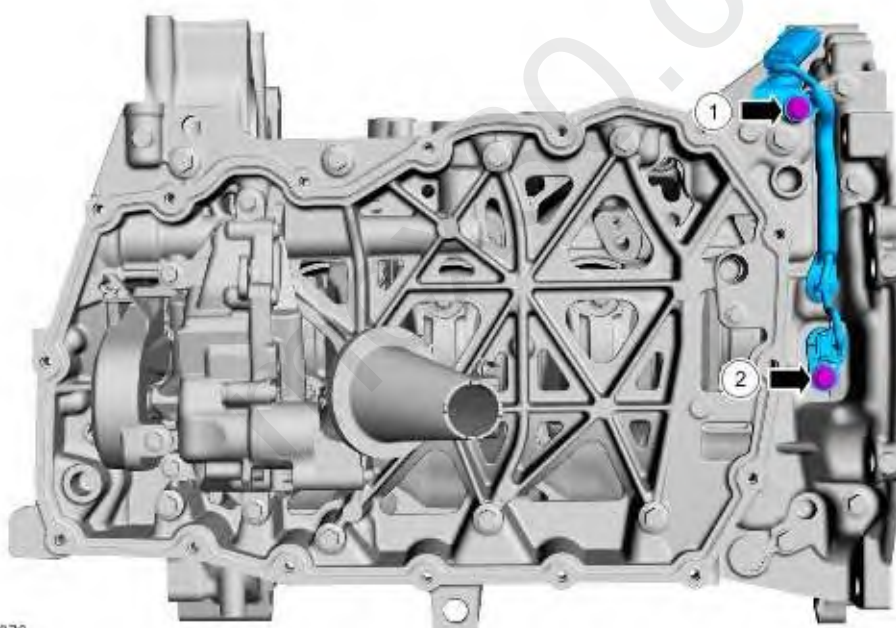


E225612

26. *Torque:*

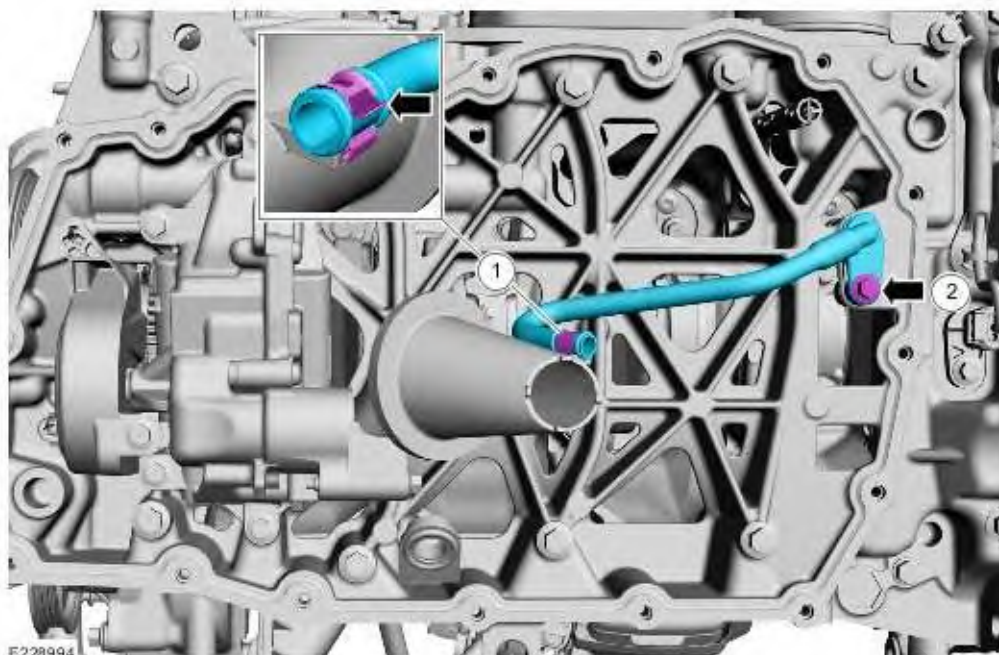
1: 10 Nm

2: 10 Nm



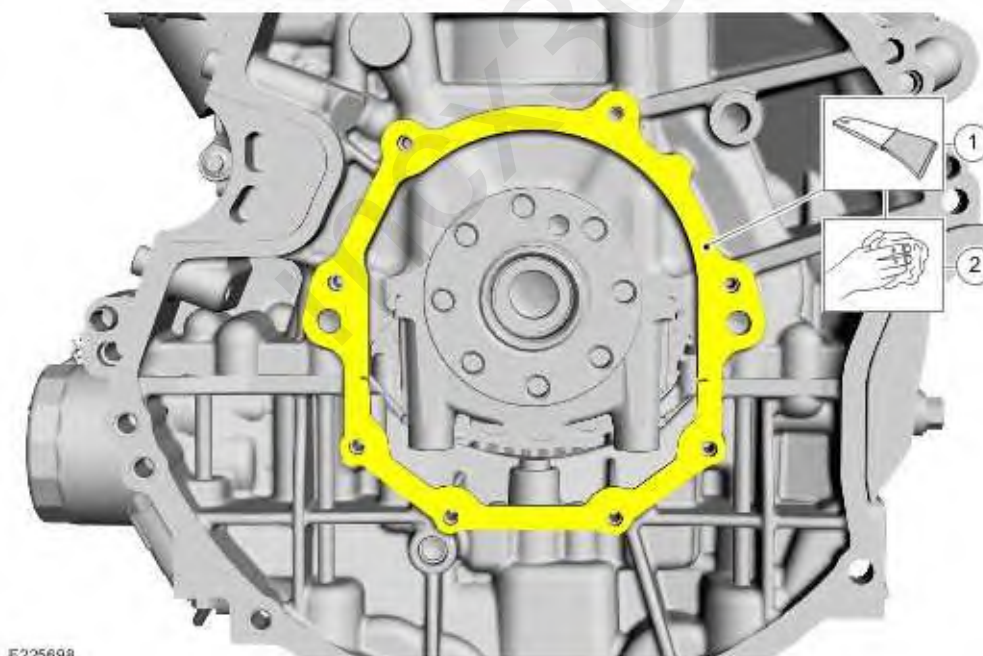
E228076

27. *Torque:* 10 Nm



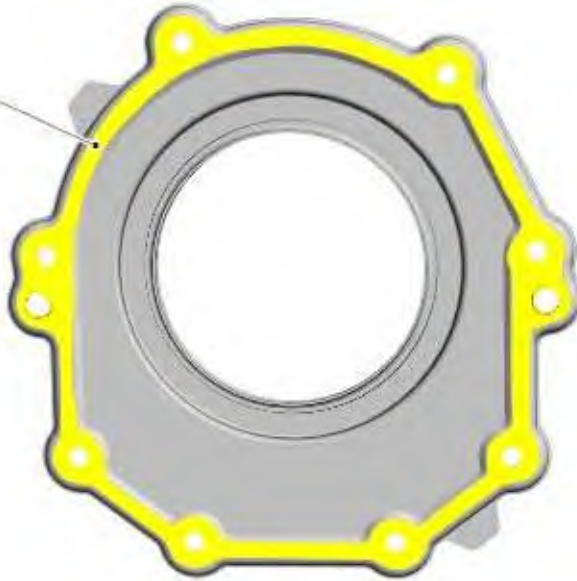
28.

1. Use the General Equipment: [Plastic Scraper](#)
2. NOTE: Make sure that the mating faces are clean and free of foreign material.
Material: - ([Primer](#))



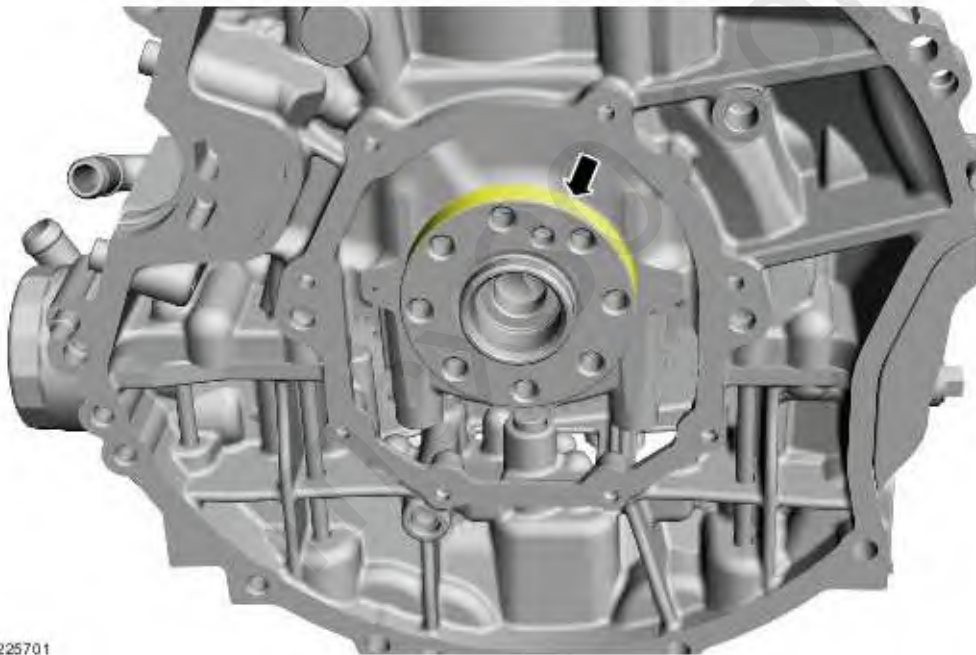
29.

- NOTE: Make sure that a new component is installed.
NOTE: Make sure that the mating faces are clean and free of foreign material.
Material: - ([Primer](#))



E225732

30. **NOTE:** Make sure that the mating faces are clean and free of foreign material.



E225701

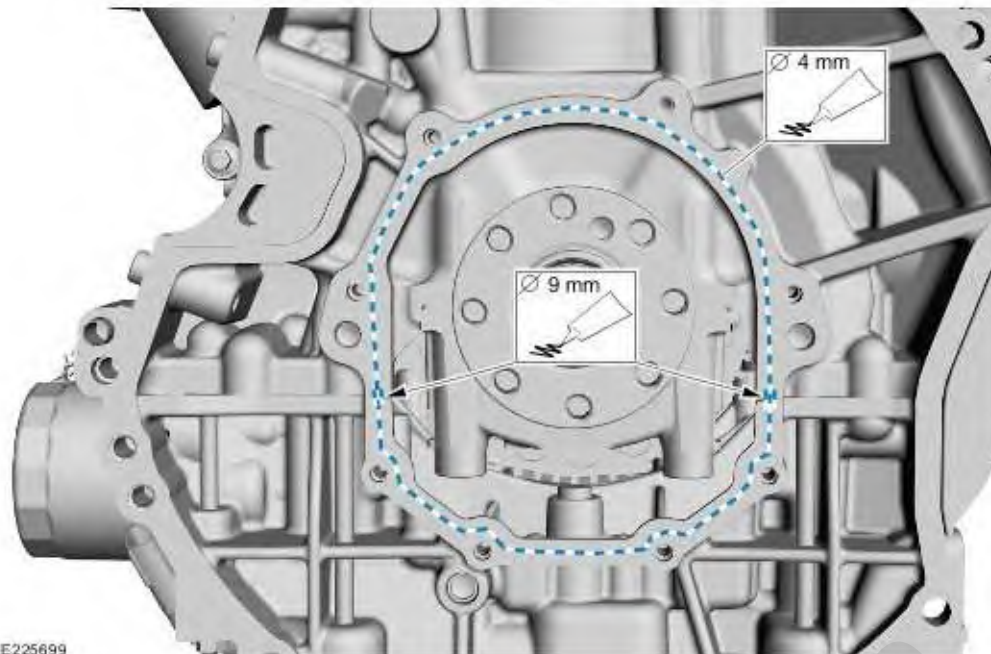
31. **NOTE:** Make sure that the component is clean, free of foreign material and lubricant.
NOTE: The component must be installed within 10 minutes of applying the sealant.



Complete this step within: 10min

Use Special Service Tool: [303-1668](#).

Material: [WSE-M4G323-A6 \(RTV Silicone Sealant\)](#)

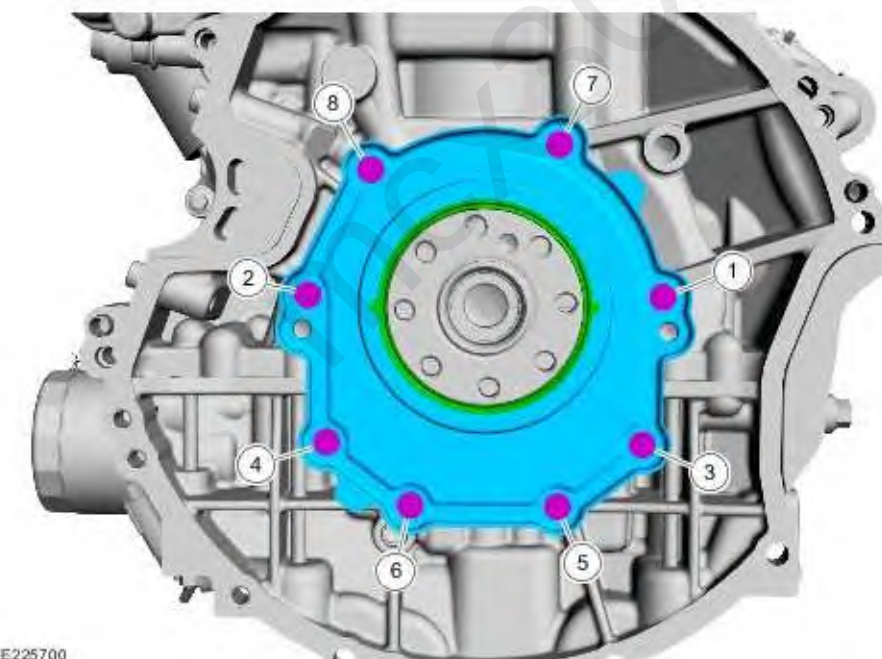


32. **⚠ NOTICE:** Take extra care not to damage the mating faces.
NOTE: New crankshaft rear seal carriers are supplied with an alignment sleeve which must be removed after installation.

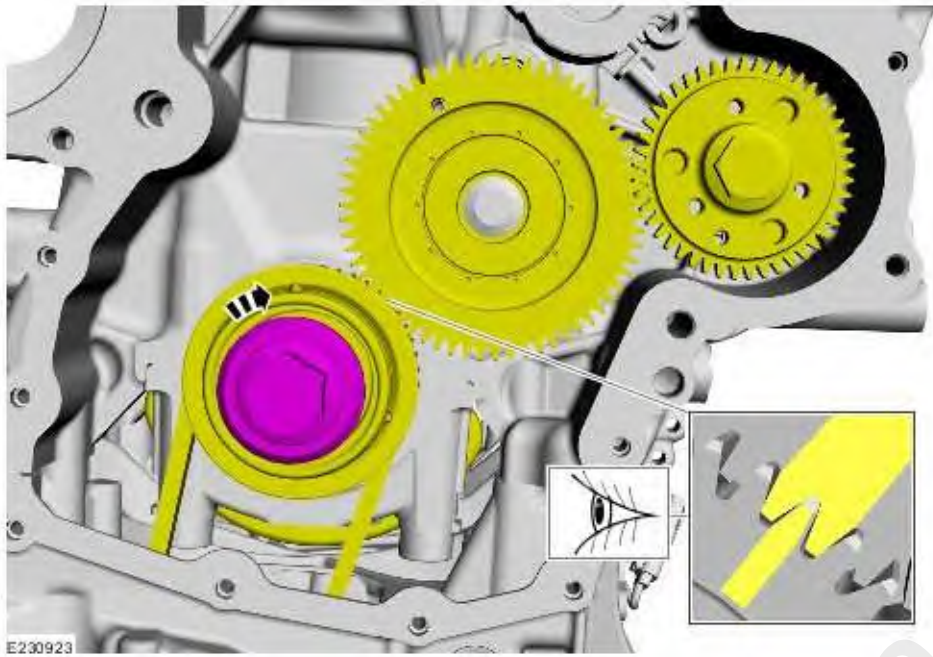
Torque:

Stage 1: 5 Nm

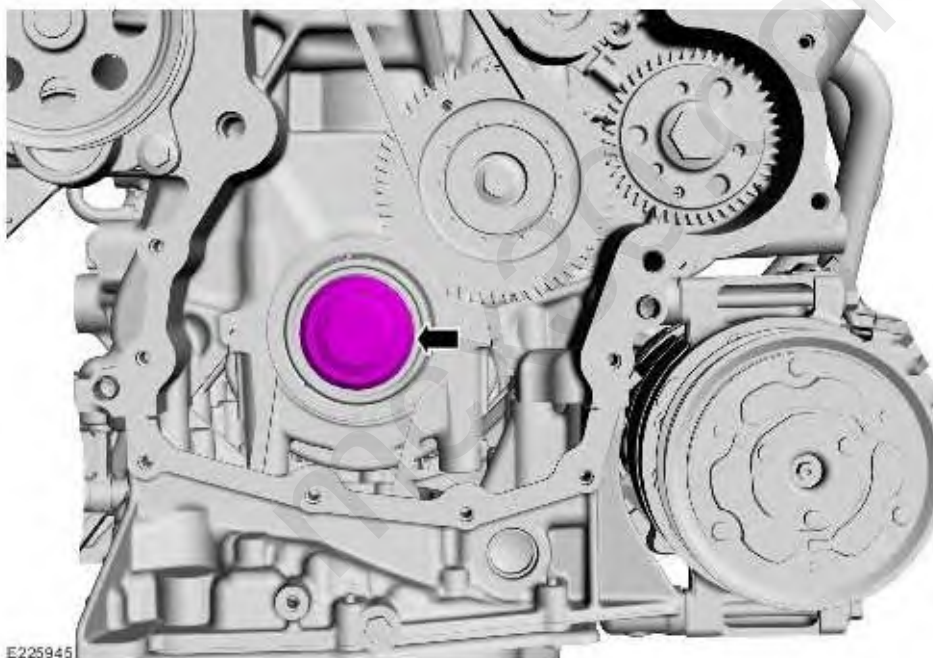
Stage 2: 10 Nm



33. **⚠ NOTICE:** Only rotate the crankshaft clockwise.
 Rotate the crankshaft until piston No. 1 is at top dead center (TDC).

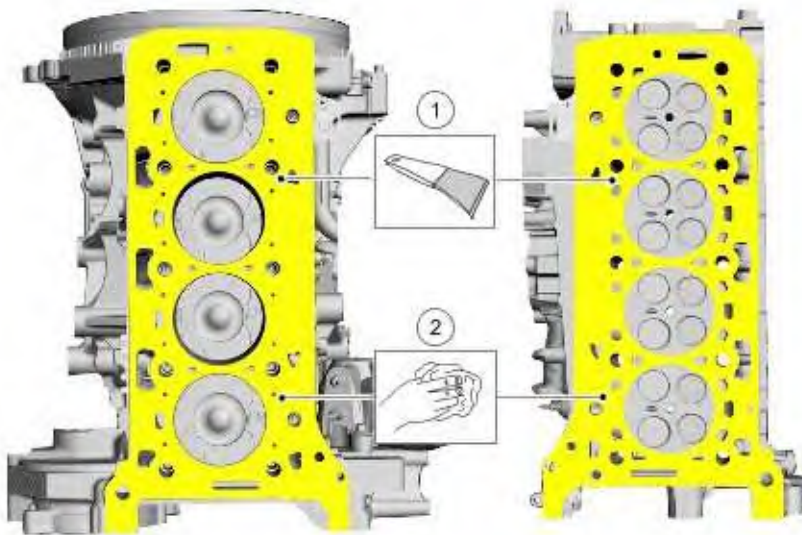


34.



35.

1. Use the General Equipment: [Plastic Scraper](#)
2. NOTE: Make sure that the mating faces are clean and free of foreign material.
Material: - ([Brake Cleaner](#))



E228874

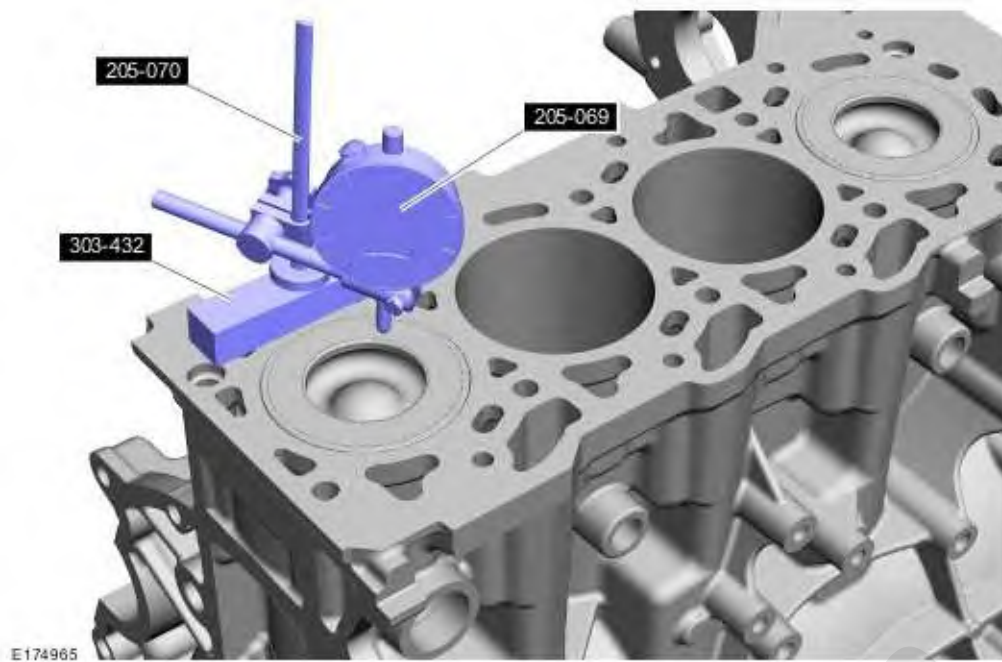
36. **NOTE:** Measure the piston protrusion of each cylinder at top dead center (TDC) Measure the distance between the piston crown and the cylinder block at the points indicated.



E174964

37. The largest measurement determines the choice of the cylinder head gasket.

Use Special Service Tools: [205-070](#), [205-069](#), [303-432](#).

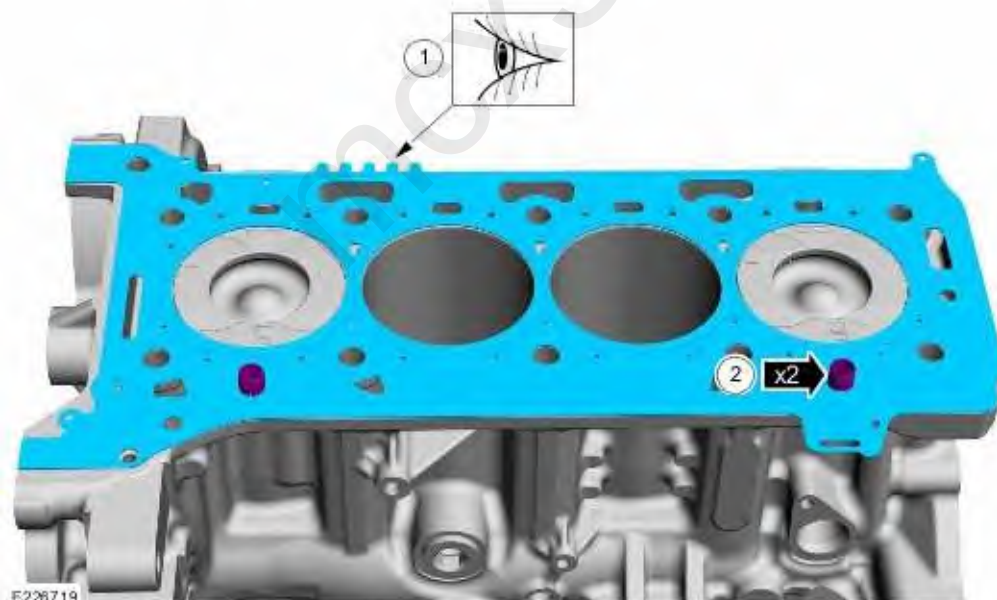


38.  **NOTICE:** Make sure that no fluids are present in the cylinder head bolt threaded bores.

1. **NOTE:** Make sure that a new component is installed.

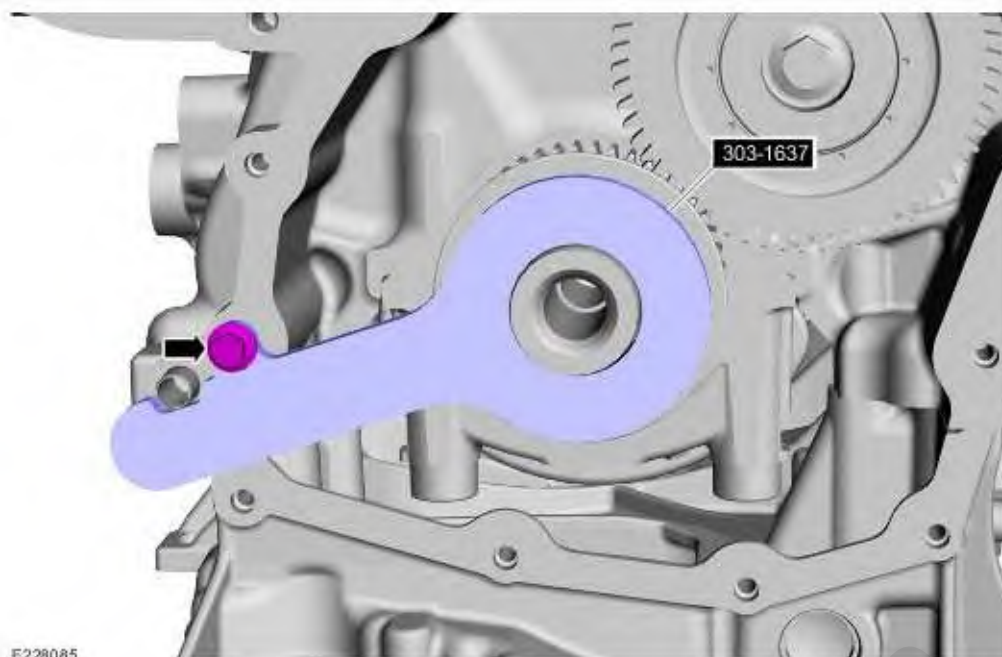
Refer to: [Specifications](#) (303-01A Engine, Specifications).

2.  **NOTICE:** Make sure that the gasket is correctly located.

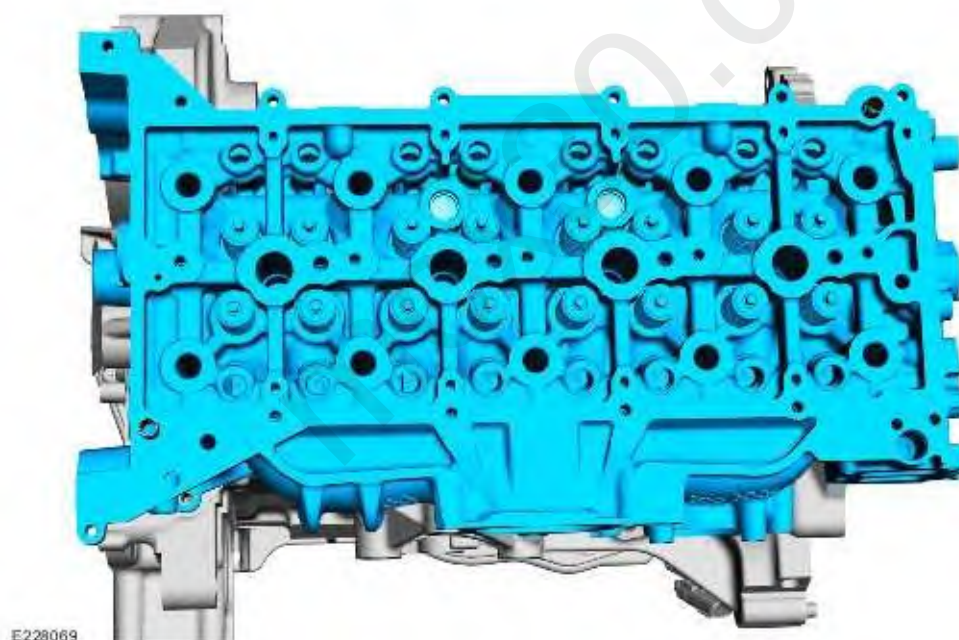


39.  **NOTICE:** The special tool must only be used to align the crankshaft timing.

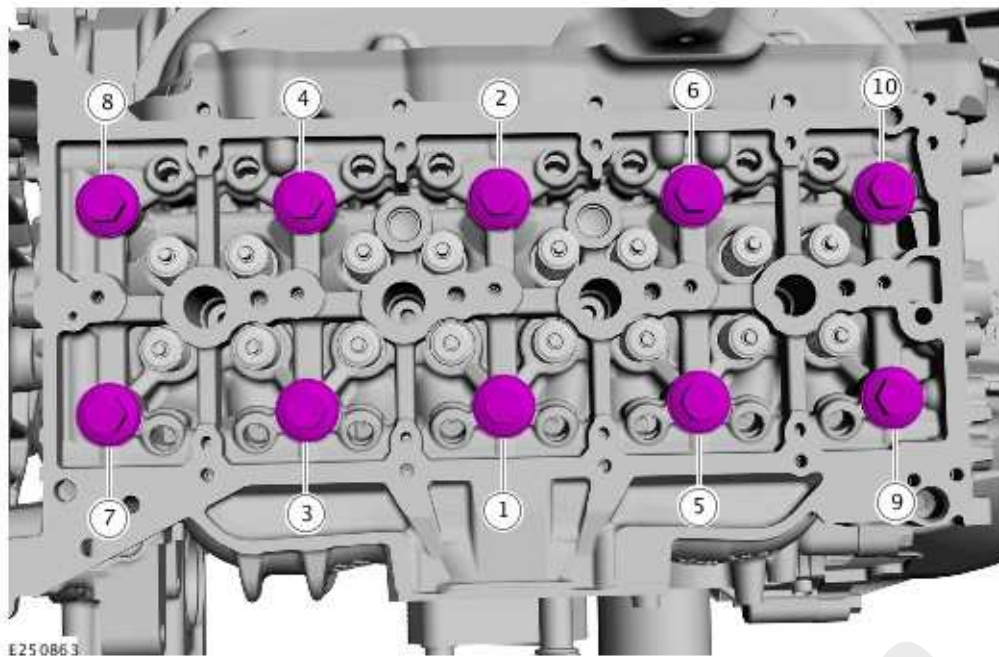
Install Special Service Tool: [303-1637](#).



40.  **NOTICE:** Make sure that the component is correctly located on the locating dowels.
NOTE: Make sure that no components catch.



41. **NOTE:** Only tighten the bolts finger tight at this stage.
NOTE: Make sure that new bolts are installed.



42. *Torque:*

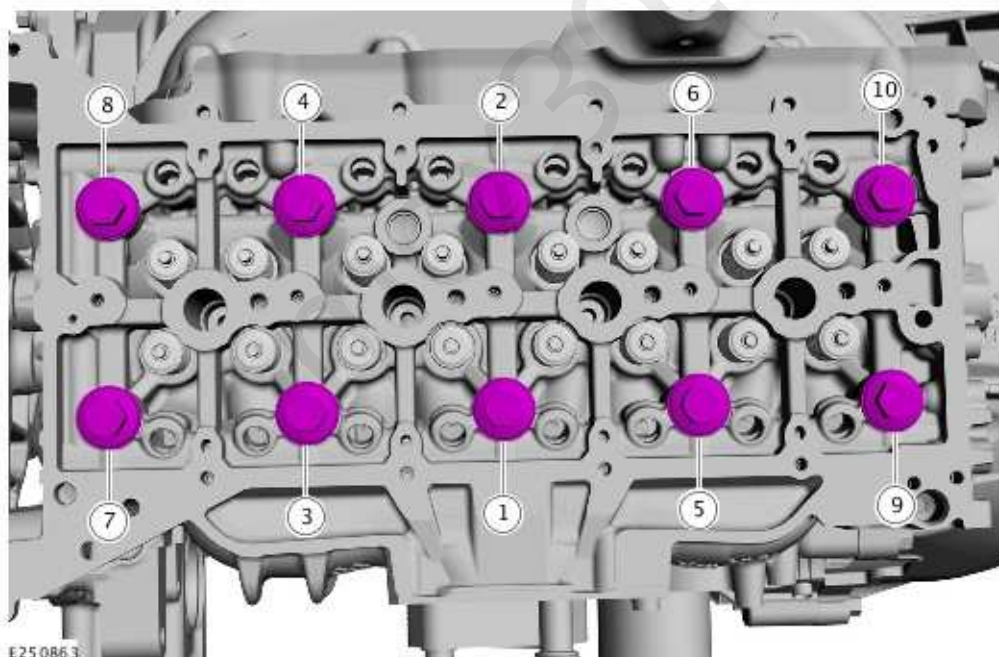
Stage 1: 15 Nm

Stage 2: 25 Nm

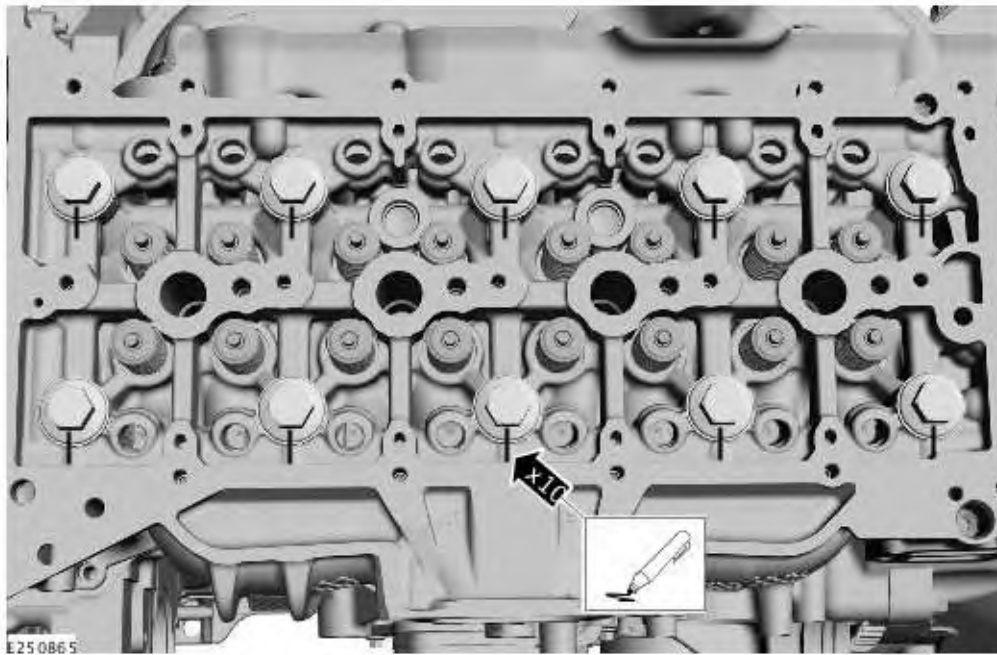
Stage 3: 40 Nm

Stage 4: 90°

Stage 5: 90°



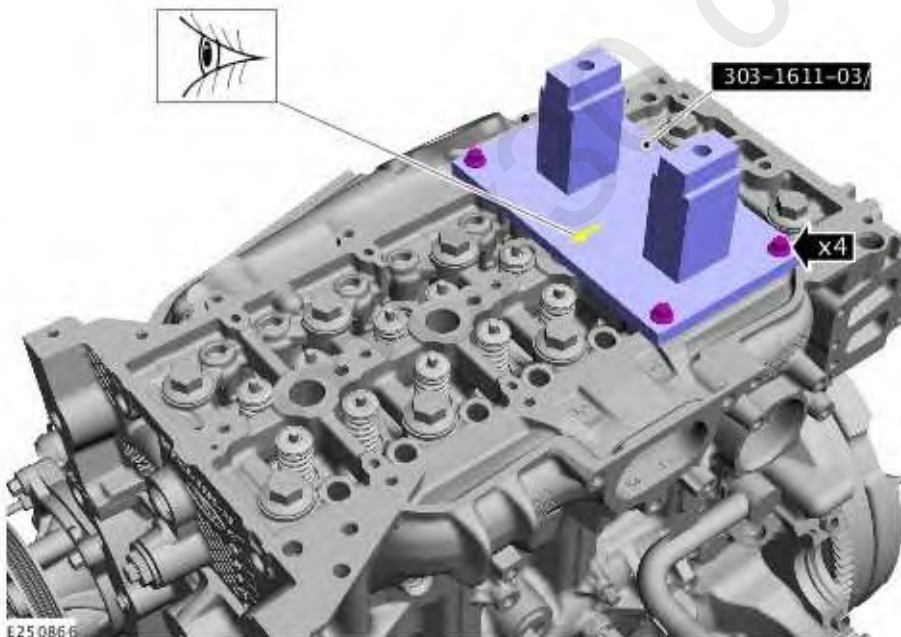
43. Mark the position of the bolts.



44. **NOTE:** Make sure that the component is correctly installed.

Install Special Service Tool: [303-1611-03](#).

Torque: 10 Nm

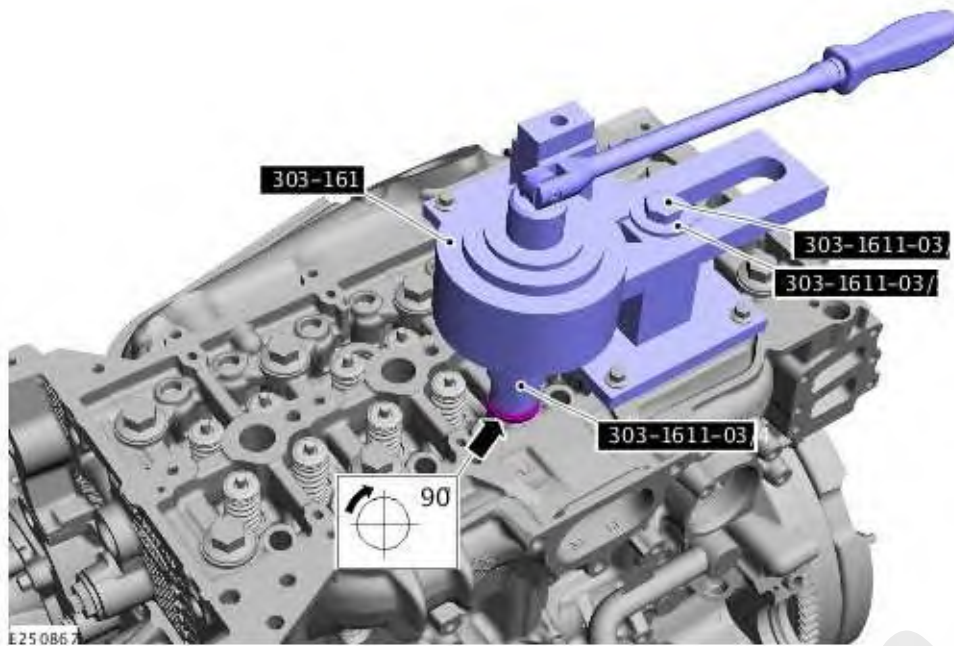


45. *Install Special Service Tools:* [303-1611-03](#), [303-1611](#).

Use the General Equipment: [1/2 Inch Square Drive Breaker Bar](#)

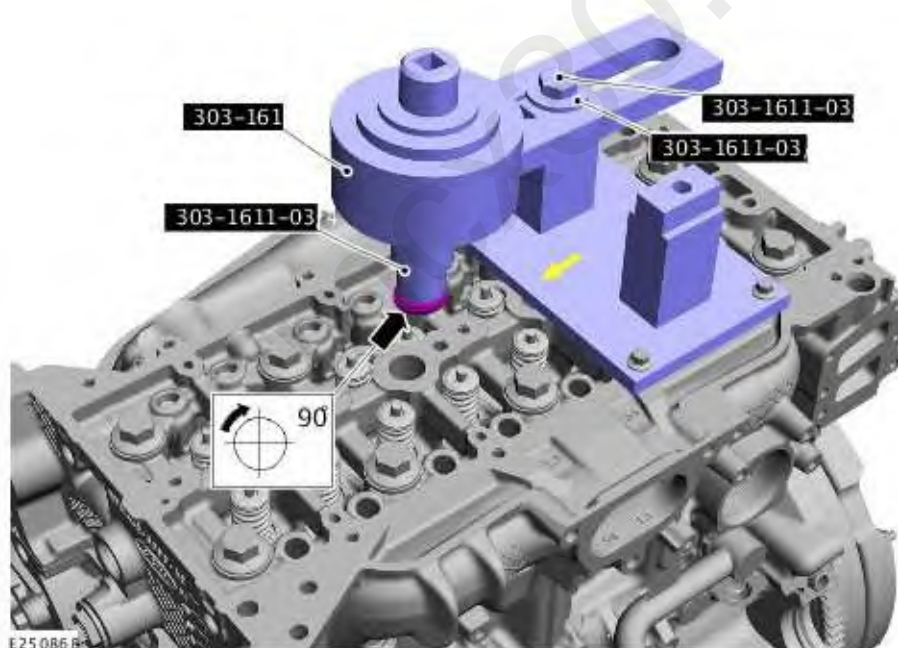
Torque:

Stage 6: 90°



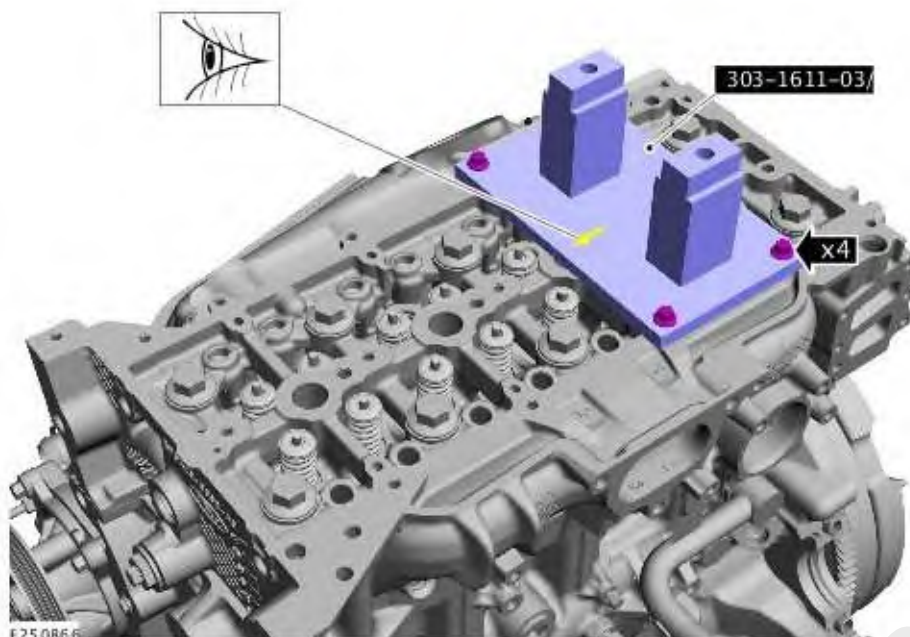
46. Remove Special Service Tools: [303-1611](#), [303-1611-03](#).

47. Install Special Service Tools: [303-1611-03](#), [303-1611](#).
 Use the General Equipment: [1/2 Inch Square Drive Breaker Bar](#)
 Torque:
 Stage 6: 90°



48. Remove Special Service Tools: [303-1611](#), [303-1611-03](#).

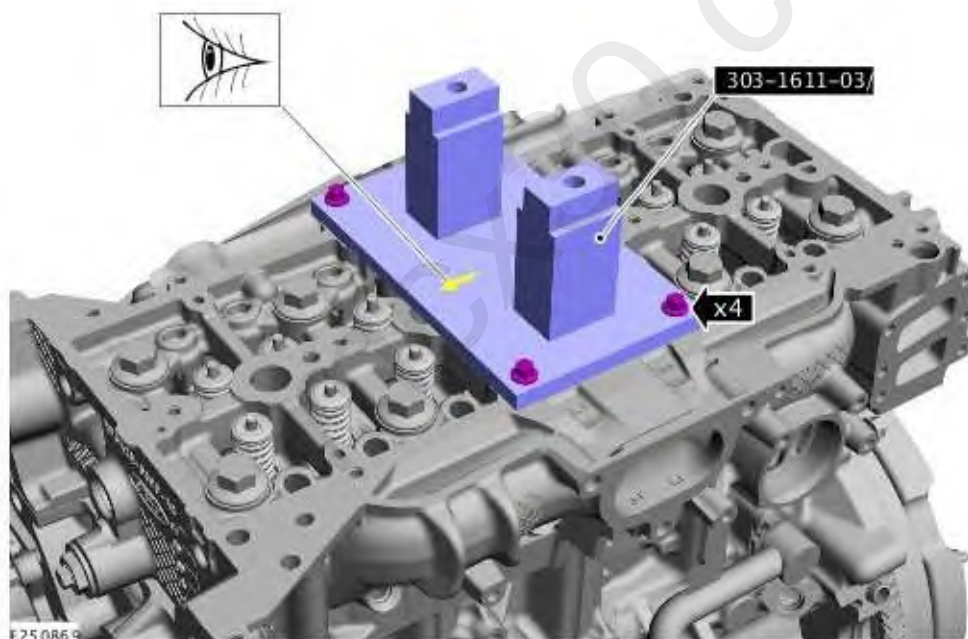
49. Remove Special Service Tool: [303-1611-03](#).



50. **NOTE:** Make sure that the component is correctly installed.

Install Special Service Tool: 303-1611-03.

Torque: 10 Nm

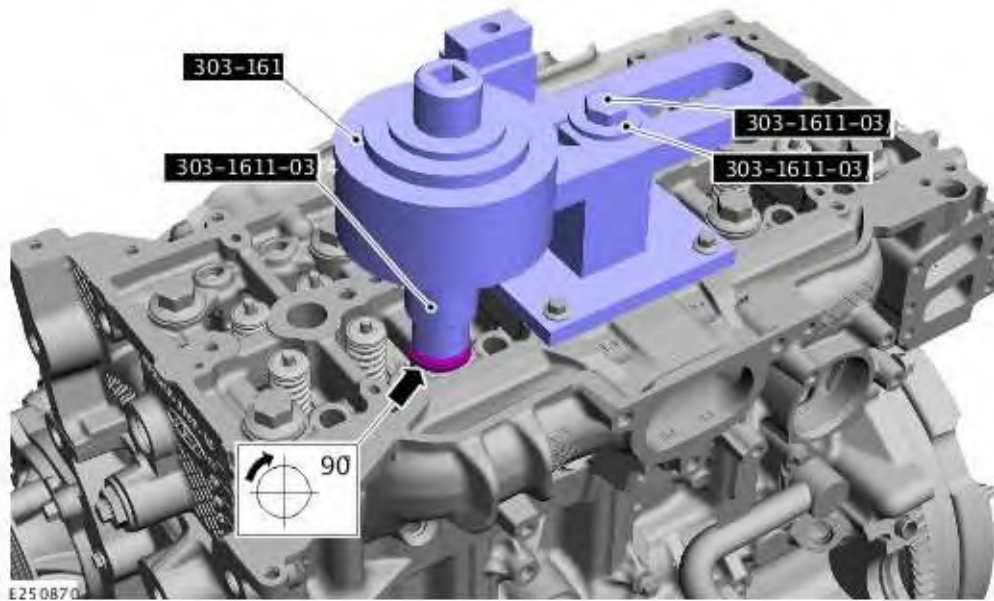


51. Install Special Service Tools: 303-1611-03, 303-1611.

Use the General Equipment: 1/2 Inch Square Drive Breaker Bar

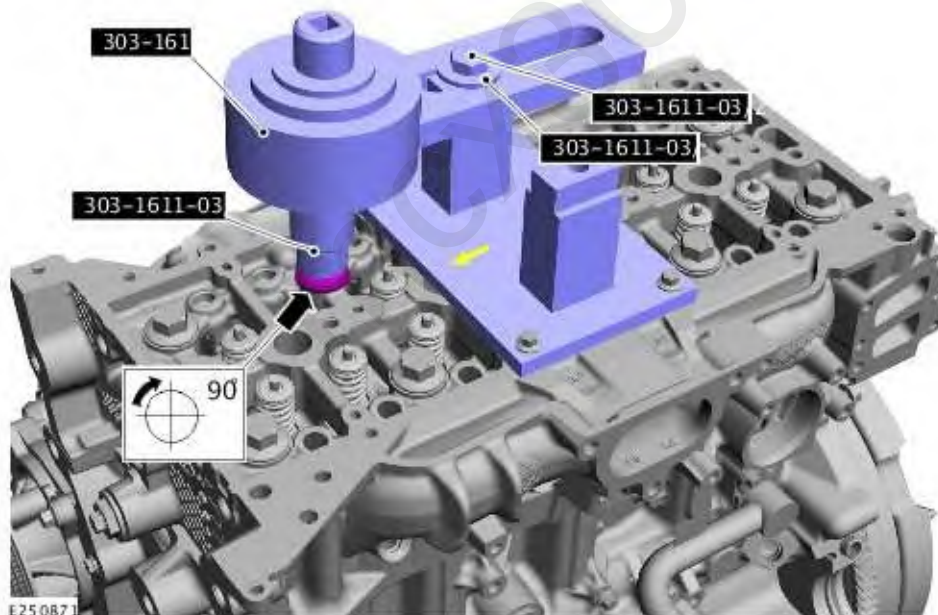
Torque:

Stage 6: 90°



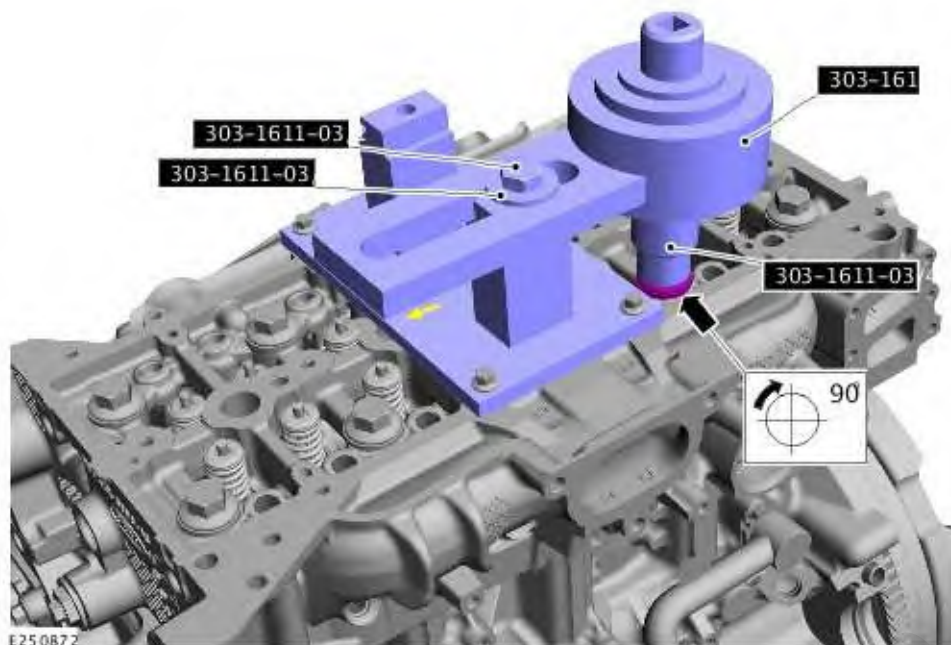
52. Remove Special Service Tools: 303-1611, 303-1611-03.

53. Install Special Service Tools: 303-1611-03, 303-1611.
 Use the General Equipment: 1/2 Inch Square Drive Breaker Bar
 Torque:
 Stage 6: 90°



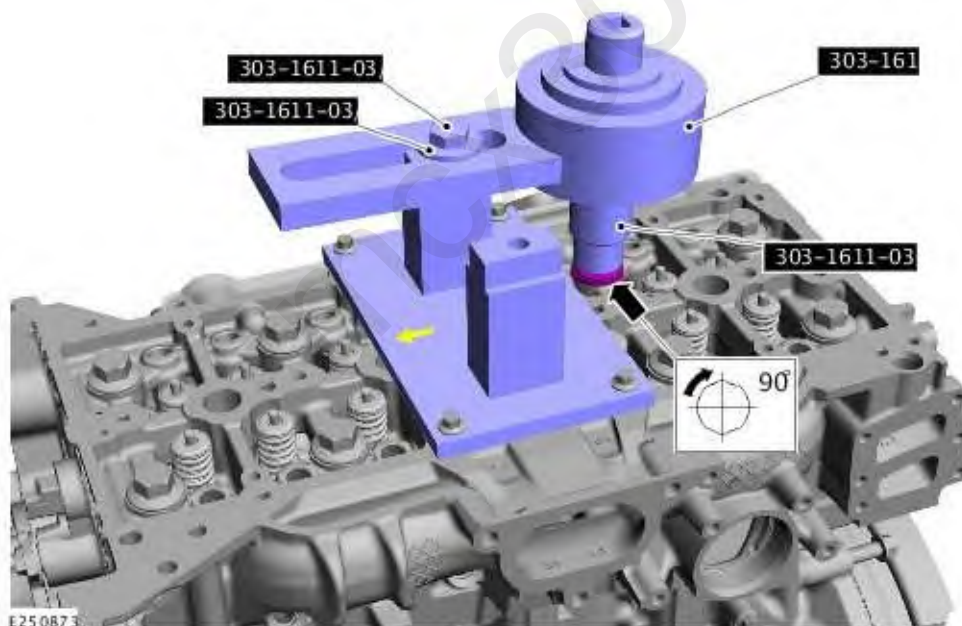
54. Remove Special Service Tools: 303-1611, 303-1611-03.

55. Install Special Service Tools: 303-1611-03, 303-1611.
 Use the General Equipment: 1/2 Inch Square Drive Breaker Bar
 Torque:
 Stage 6: 90°



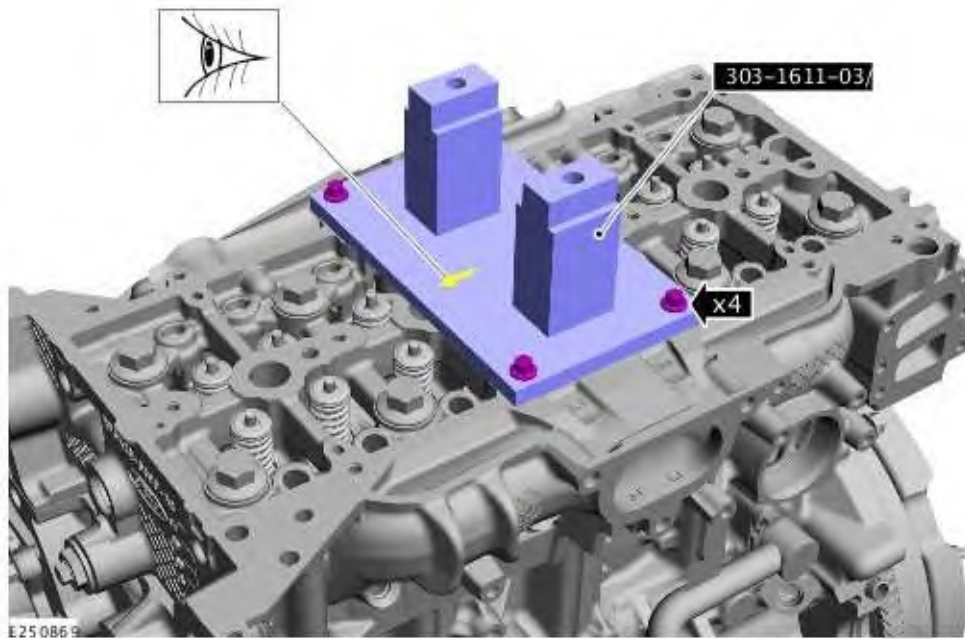
56. Remove Special Service Tools: 303-1611, 303-1611-03.

57. Install Special Service Tools: 303-1611-03, 303-1611.
 Use the General Equipment: 1/2 Inch Square Drive Breaker Bar
 Torque:
 Stage 6: 90°



58. Remove Special Service Tools: 303-1611, 303-1611-03.

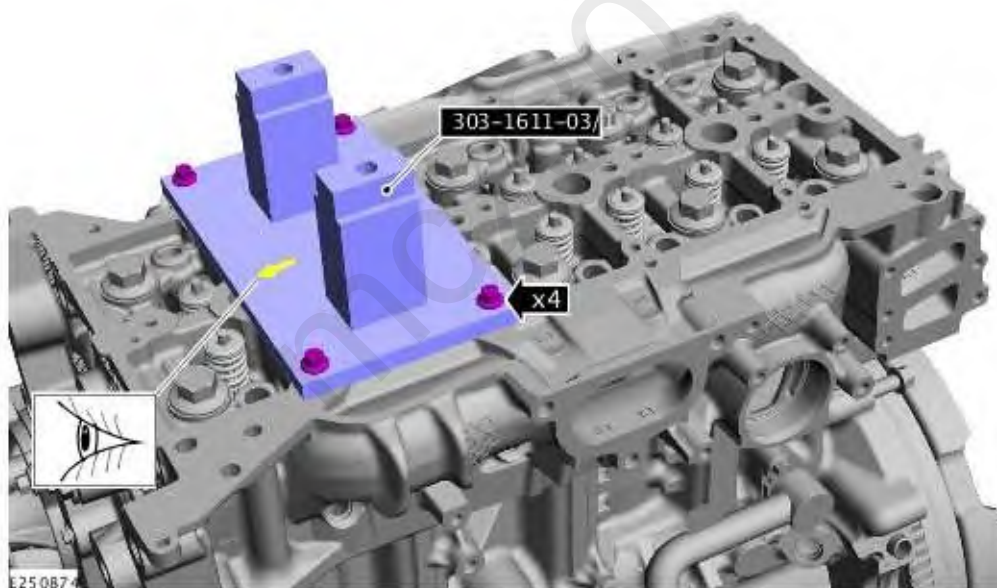
59. Remove Special Service Tool: 303-1611.



60. **NOTE:** Make sure that the component is correctly installed.

Install Special Service Tool: 303-1611-03.

Torque: 10 Nm

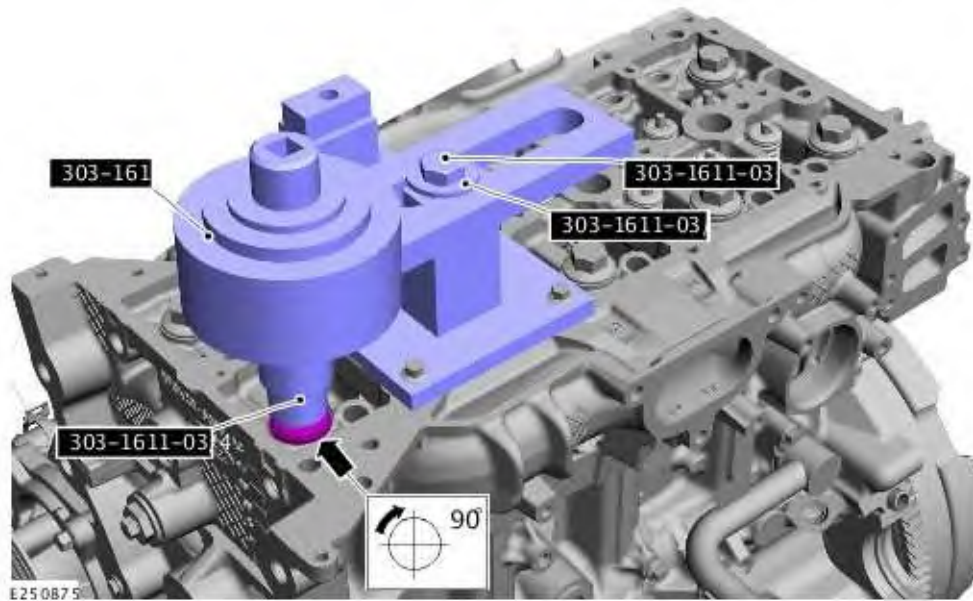


61. Install Special Service Tools: 303-1611-03, 303-1611.

Use the General Equipment: 1/2 Inch Square Drive Breaker Bar

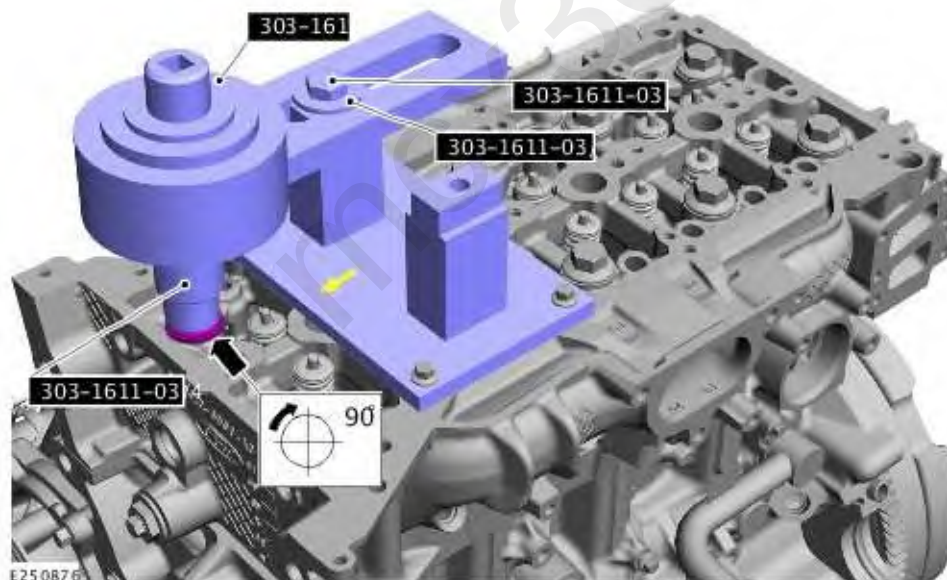
Torque:

Stage 6: 90°



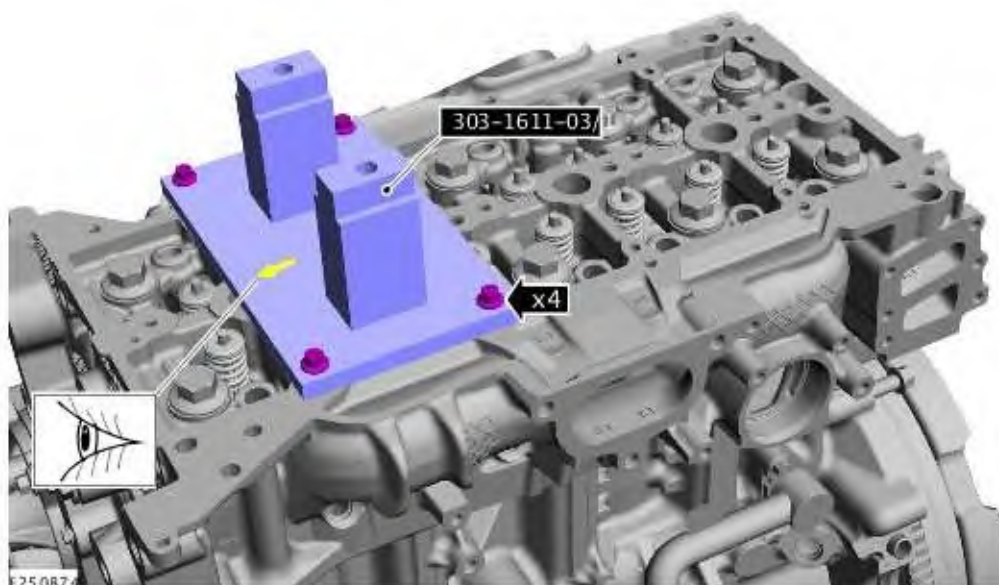
62. Remove Special Service Tools: [303-1611](#), [303-1611-03](#).

63. Install Special Service Tools: [303-1611-03](#), [303-1611](#).
Use the General Equipment: [1/2 Inch Square Drive Breaker Bar](#)
Torque:
Stage 6: 90°



64. Remove Special Service Tools: [303-1611](#), [303-1611-03](#).

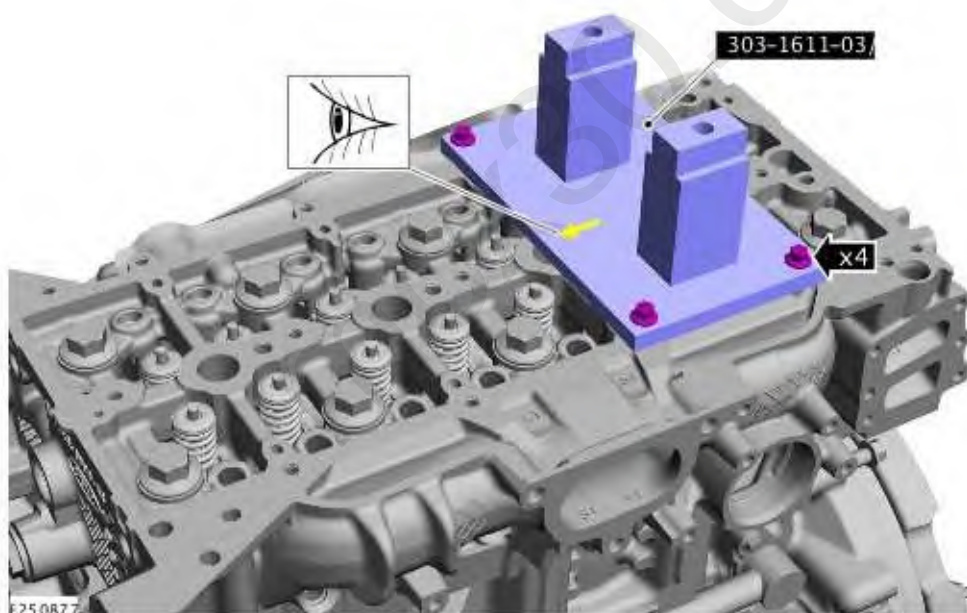
65. Remove Special Service Tool: [303-1611-03](#).



66. **NOTE:** Make sure that the component is correctly installed.

Install Special Service Tool: 303-1611-03.

Torque: 10 Nm

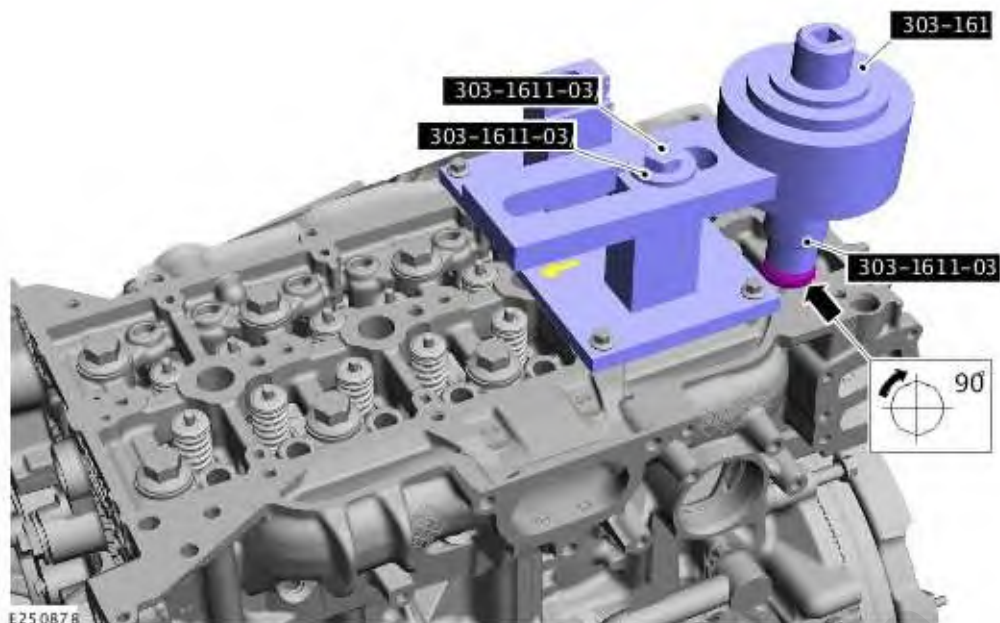


67. Install Special Service Tools: 303-1611-03, 303-1611.

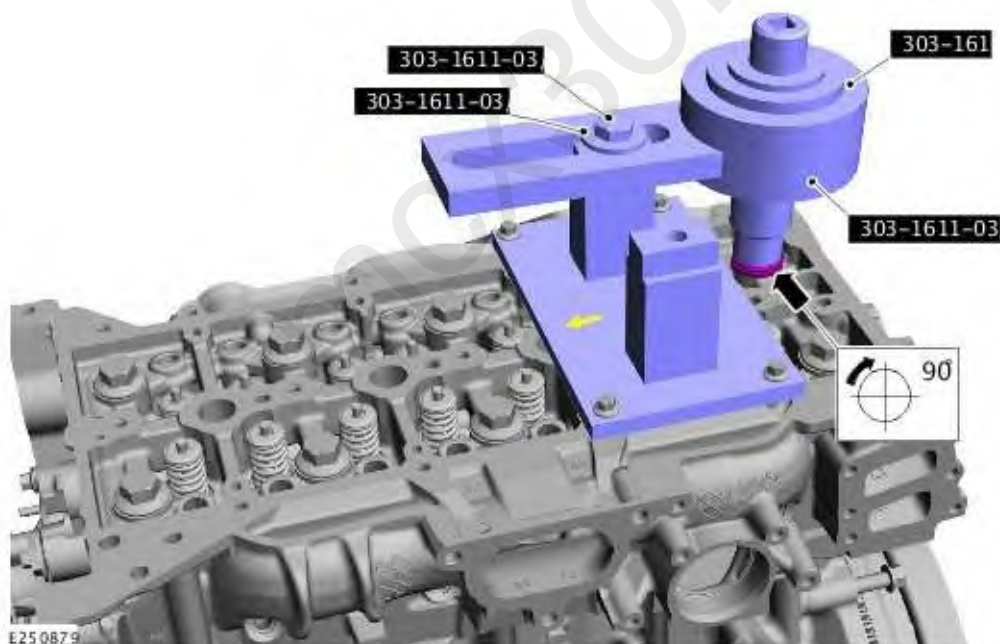
Use the General Equipment: 1/2 Inch Square Drive Breaker Bar

Torque:

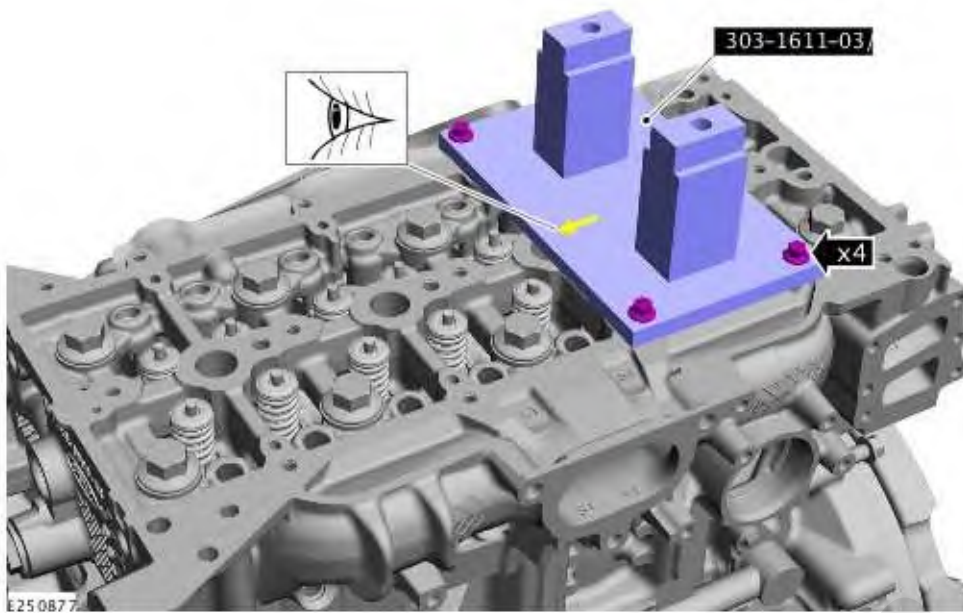
Stage 6: 90°



68. Remove Special Service Tools: 303-1611, 303-1611-03.
69. Install Special Service Tools: 303-1611-03, 303-1611.
 Use the General Equipment: 1/2 Inch Square Drive Breaker Bar
 Torque:
 Stage 6: 90°



70. Remove Special Service Tools: 303-1611, 303-1611-03.
71. Remove Special Service Tool: 303-1611-03.



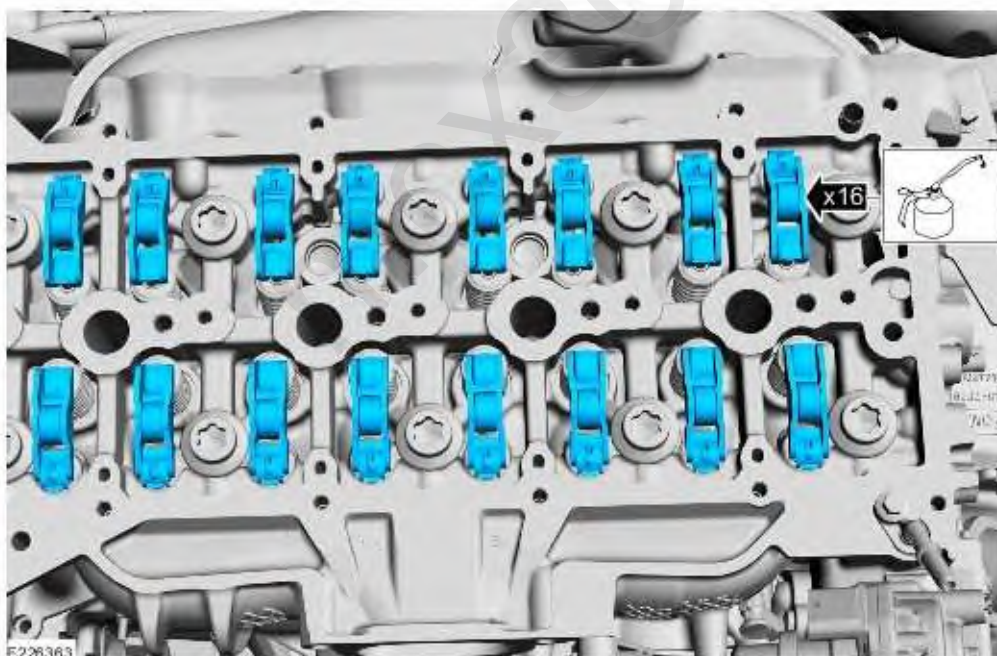
72. **Stage 7: Repeat the steps 45 to 72.**

73.

- **NOTE:** Component must be lubricated with clean engine oil.

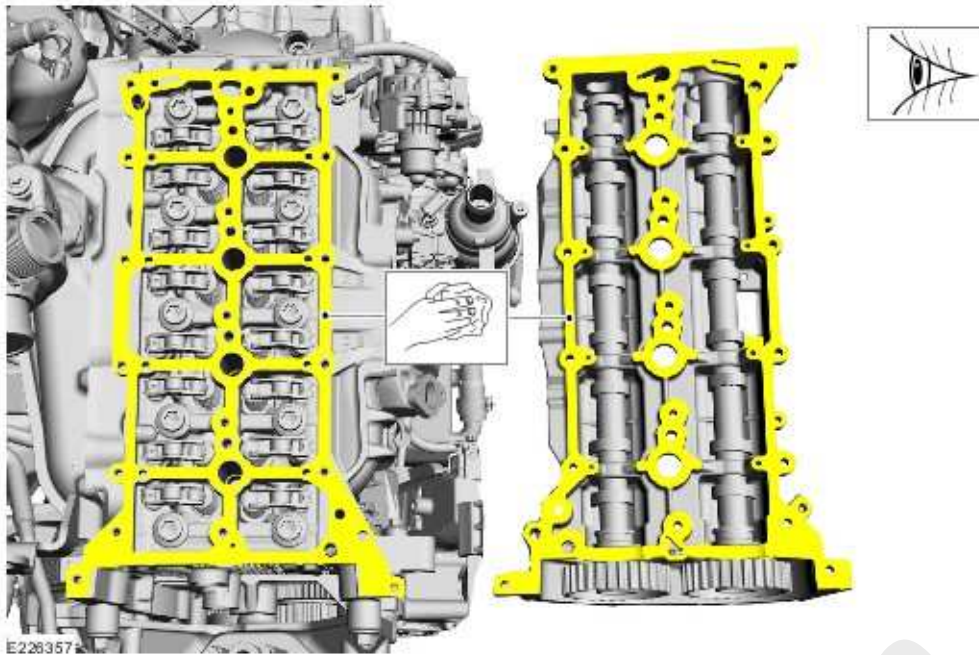
Refer to: Specifications (303-01 Engine - 2.0L EcoBlue (88kW/120PS) (YN), 2.0L EcoBlue (110kW/150PS) (YM), 2.0L EcoBlue (140kW/190PS) (BC), Specifications).

- **NOTE:** Make sure that the components are installed to the position noted before removal.

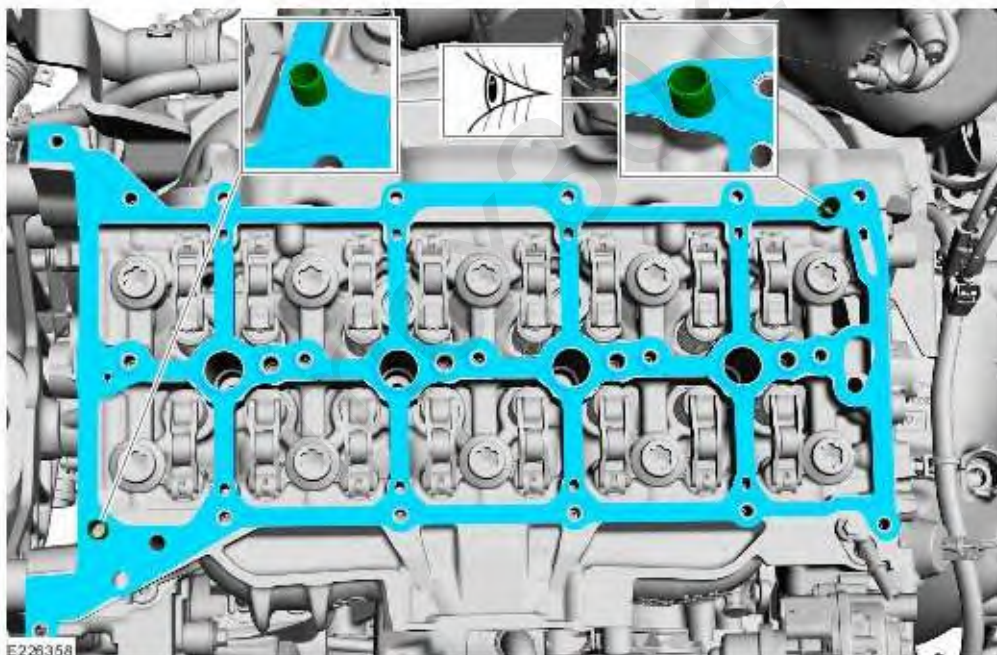


74. **NOTE:** Make sure that the mating faces are clean and free of foreign material.

Material: - (Brake Cleaner)

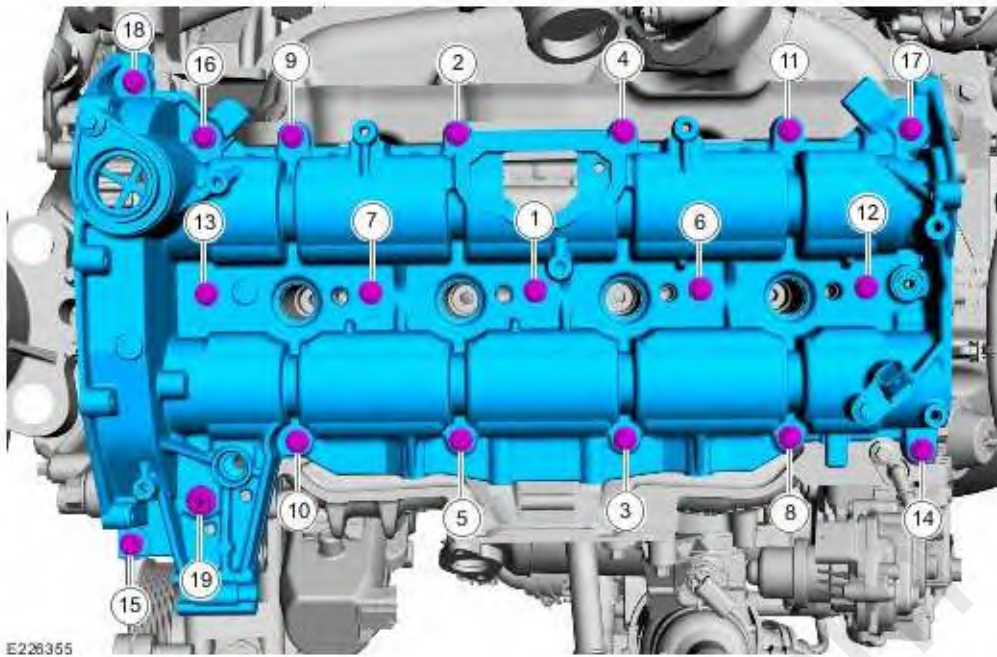


75.  **NOTICE:** Make sure that the component is correctly located on the locating dowels.
NOTE: Make sure that a new component is installed.



76.  **NOTICE:** Make sure that the component is correctly located on the locating dowels.
NOTE: Make sure that the component is at ambient air temperature.
1. Tighten each bolt 2 turns at a time.
- Torque:*
1-19 5 Nm
2. *Torque:*
1-18 10 Nm

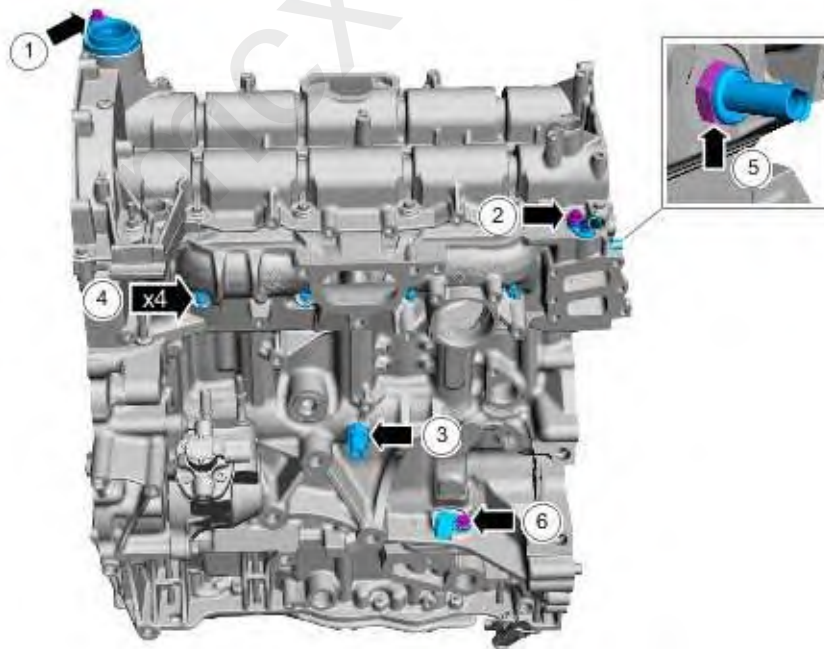
3. Torque:
19 23 Nm



77. NOTE: Install all the bolts finger tight before final tightening.

Torque:

- 1: 10 Nm
- 2: 10 Nm
- 3: 20 Nm
- 4: 13 Nm
- 5: 11 Nm
- 6: 10 Nm

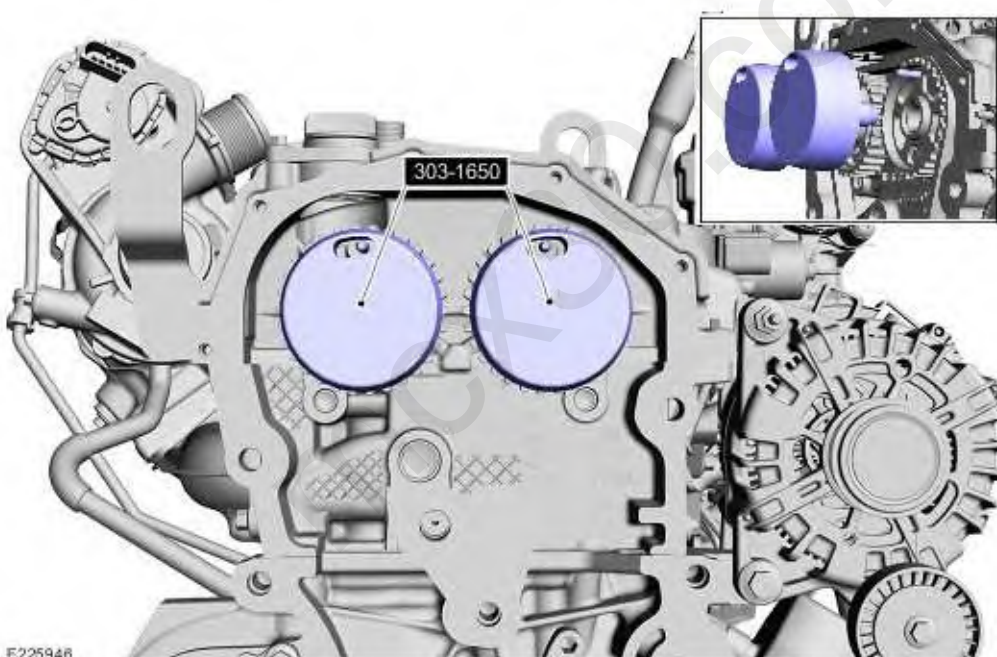


78. NOTE: Make sure that a new component is installed.

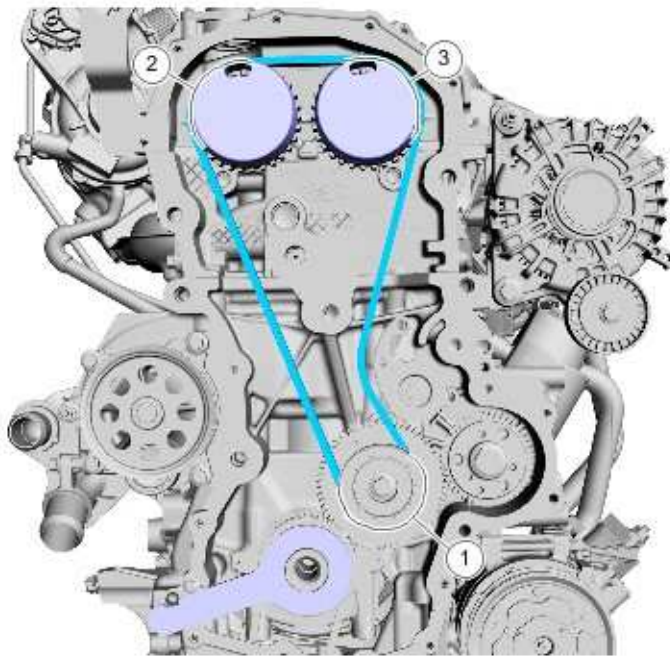
Torque: 25 Nm



79. Install Special Service Tool: [303-1650](#).

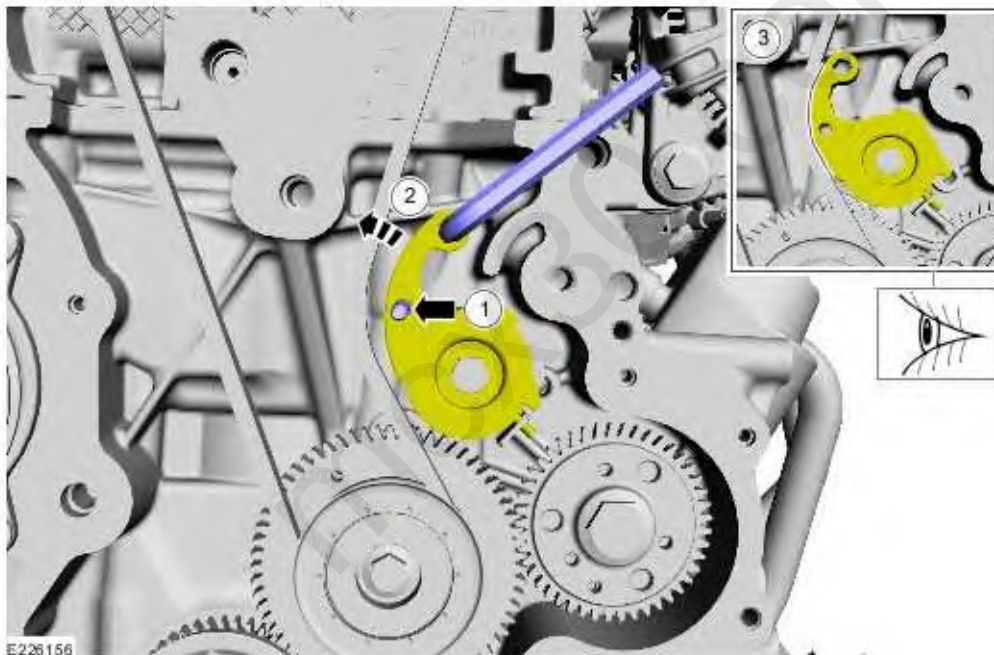


80. NOTE: Make sure that a new component is installed.



E226157

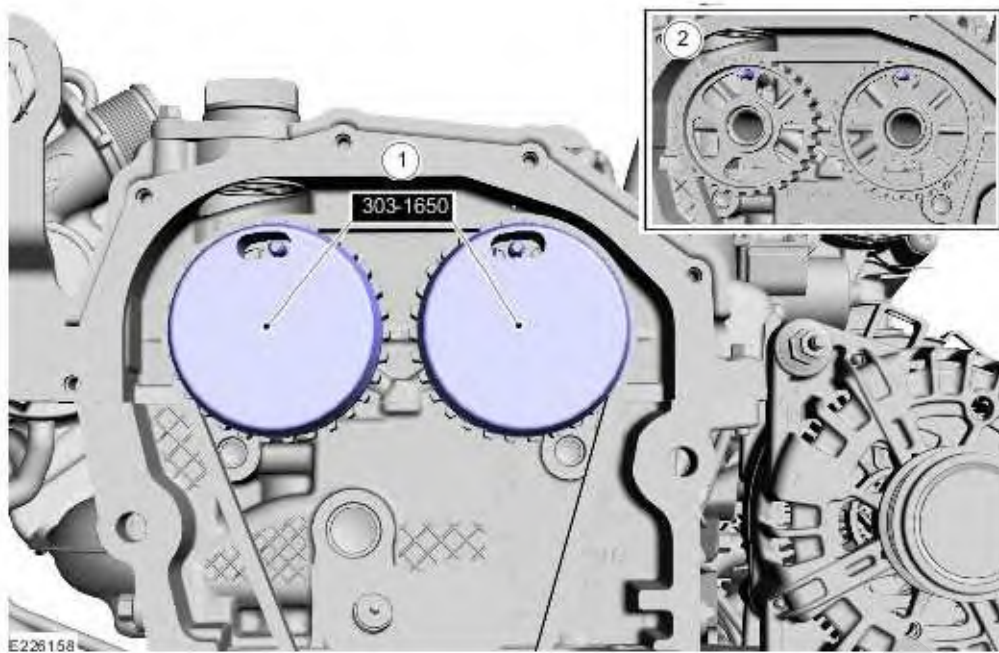
81.



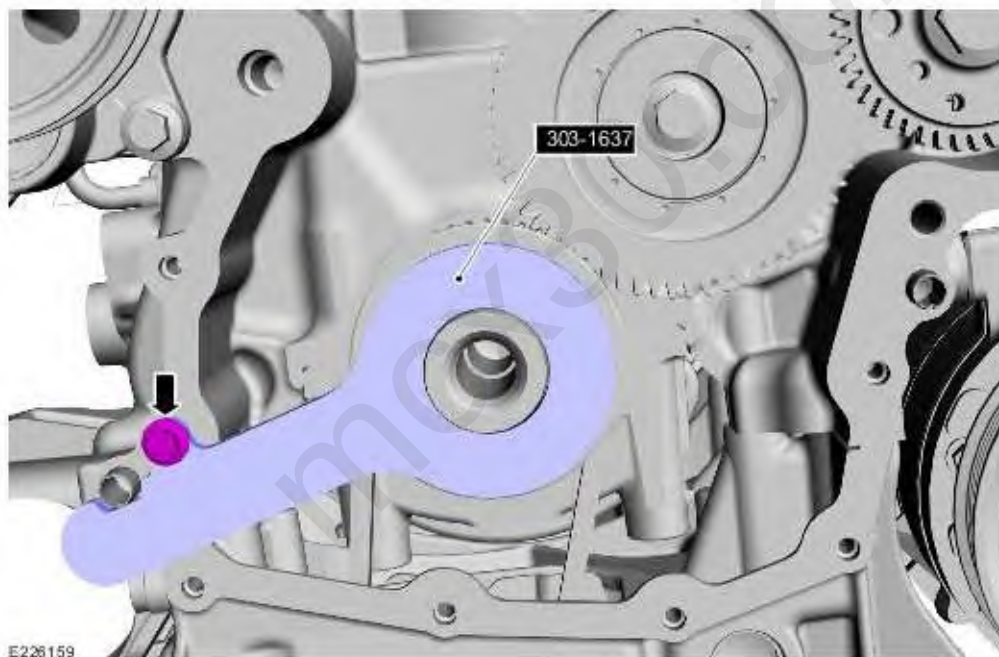
E226156

82. Remove the following items:

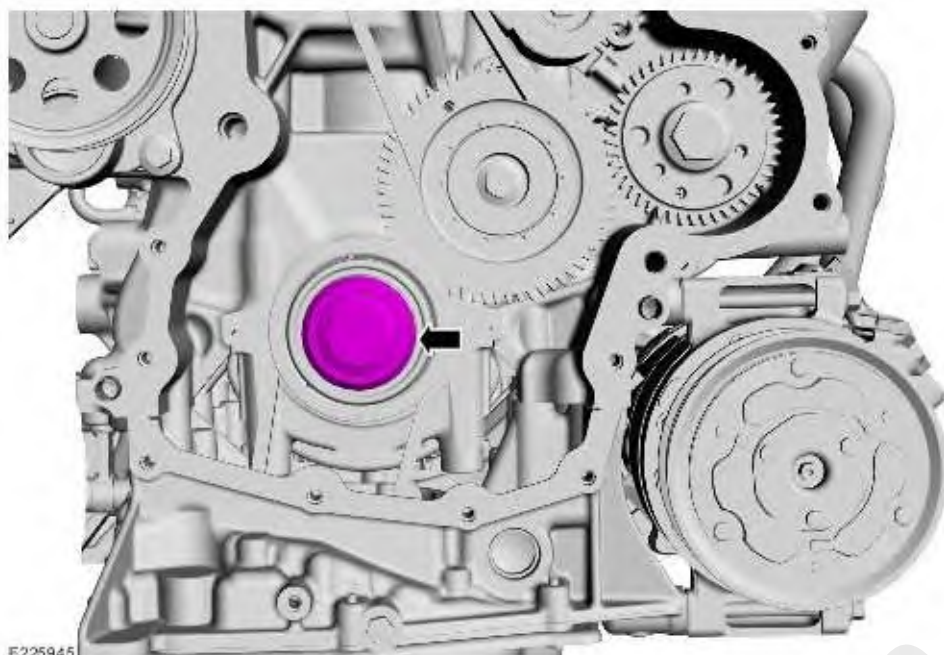
1. Use Special Service Tool: [303-1650](#).
2. Use the General Equipment: [6 mm Drill Bit](#)



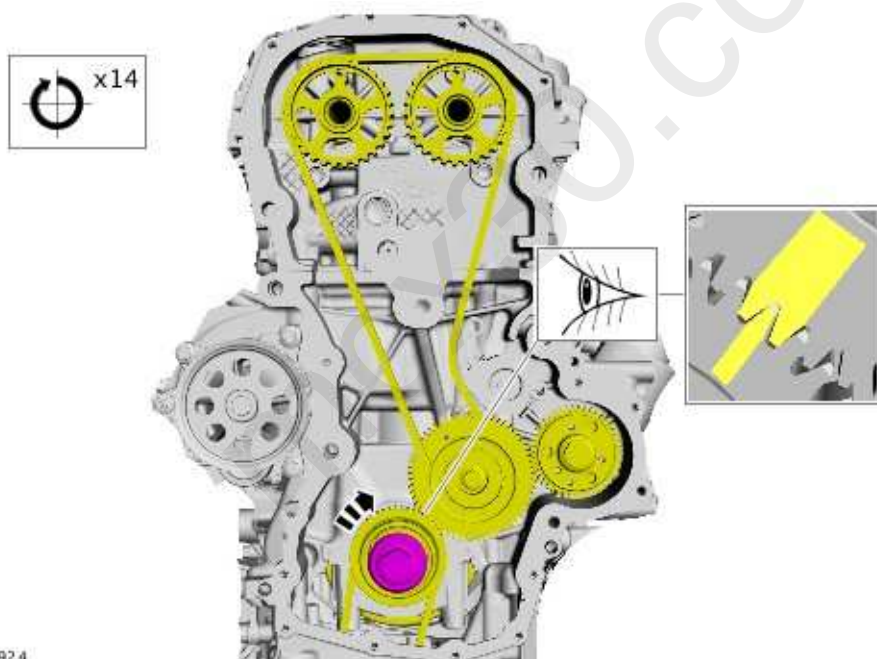
83. Remove Special Service Tool: [303-1637](#).



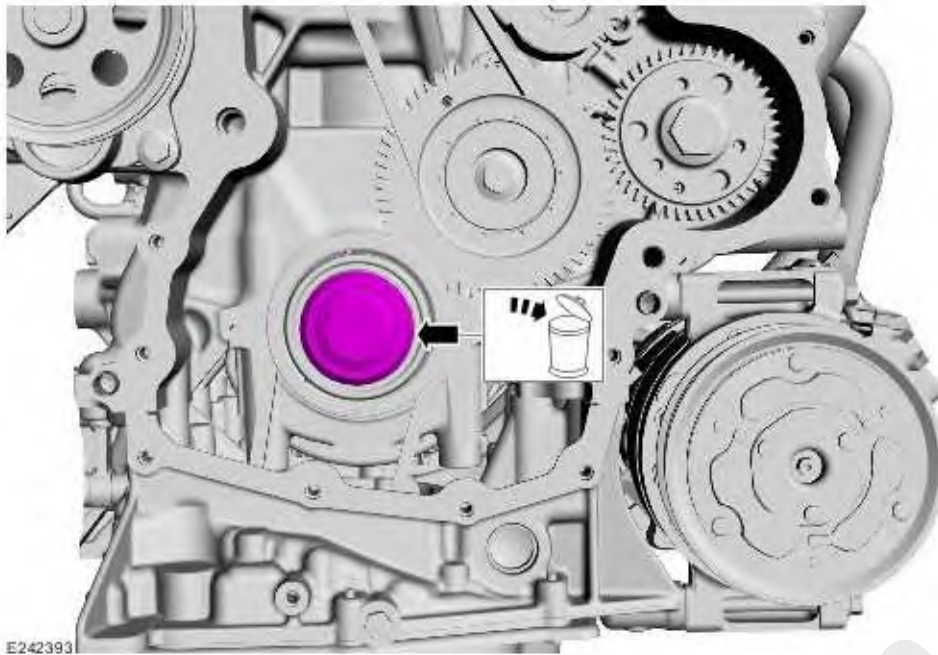
84. NOTE: Only tighten the bolt finger tight at this stage.



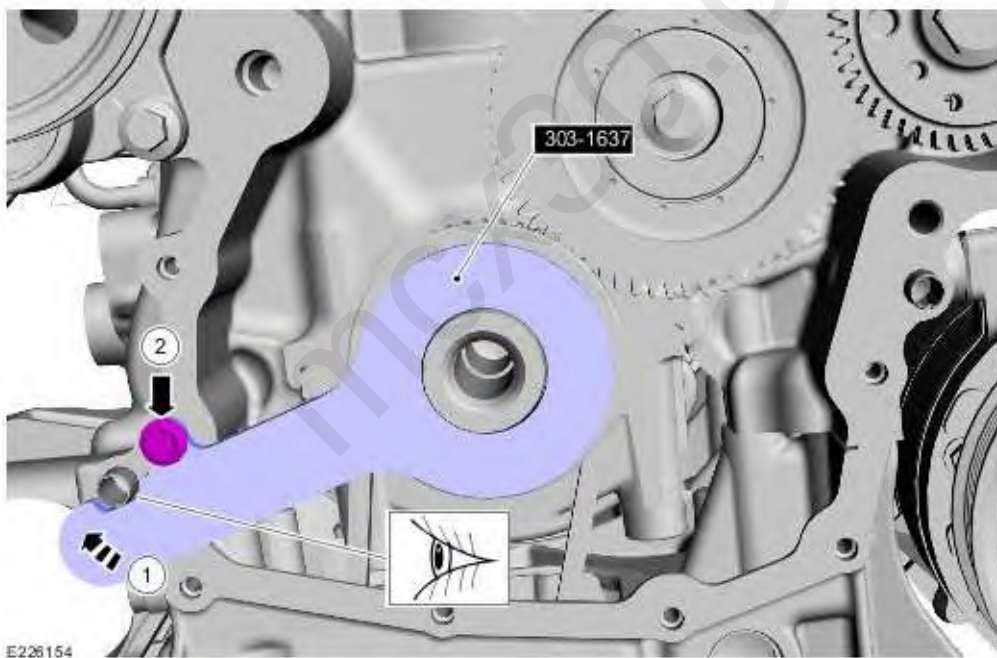
85.  **NOTICE:** Only rotate the crankshaft clockwise.
Rotate the crankshaft 14 revolutions.



- 86.



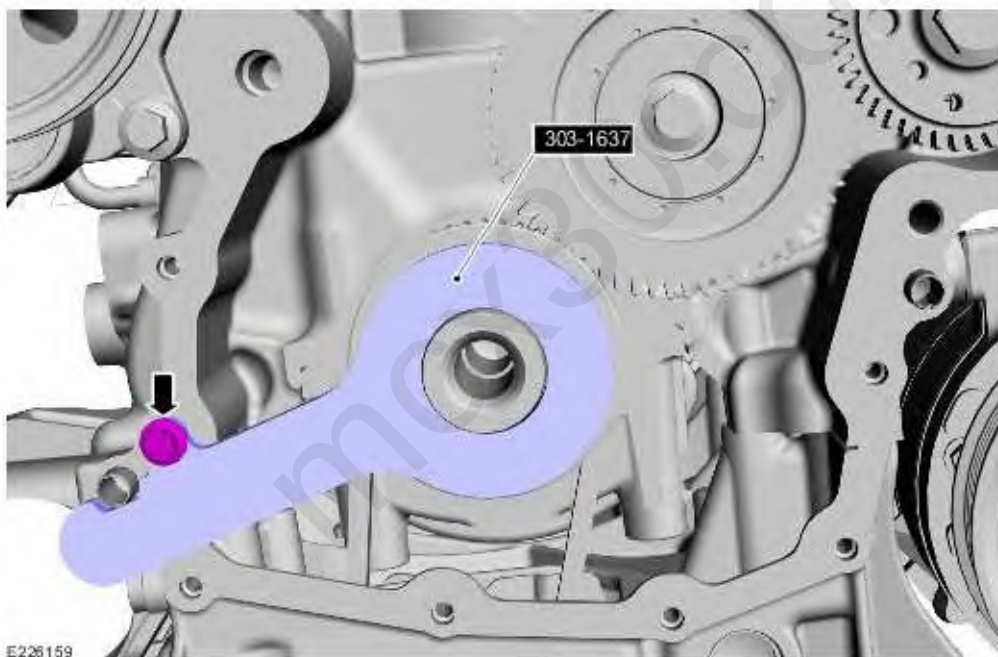
87. **⚠ NOTICE:** The special tool must only be used to align the crankshaft timing.
NOTE: Only tighten the bolt finger tight at this stage.
Install Special Service Tool: 303-1637.



88. **⚠ NOTICE:** Visually check if the timing holes of the camshaft sprockets are in a clockwise overlap position to the timing holes in the camshaft module.

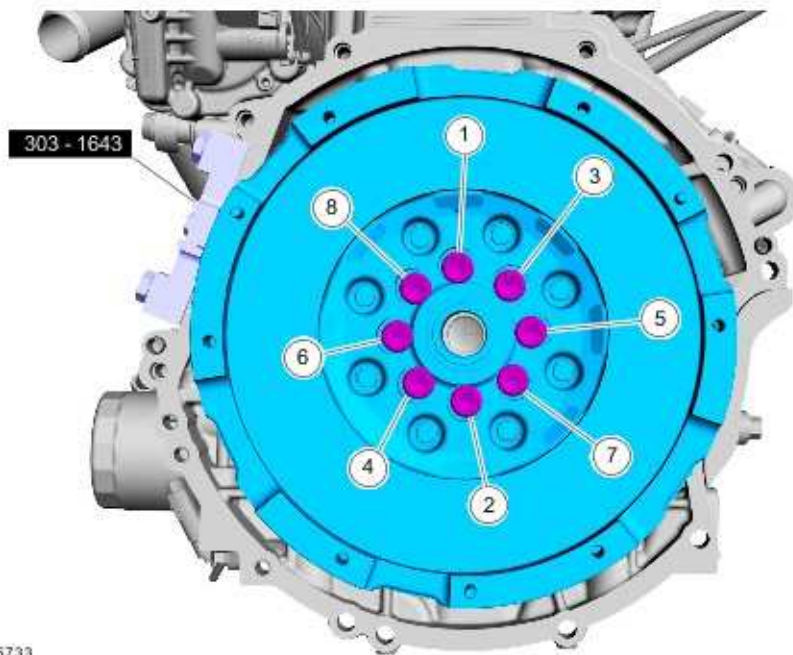


89. Remove Special Service Tool: [303-1637](#).



90.  **NOTICE:** Make sure that the flywheel is in full contact with the crankshaft flange before installing the flywheel bolts.
NOTE: The component can only be installed in 1 position.
NOTE: Make sure that new bolts are installed.
NOTE: Only tighten the bolts finger tight at this stage.

Install Special Service Tool: [303-1643](#).



E225733

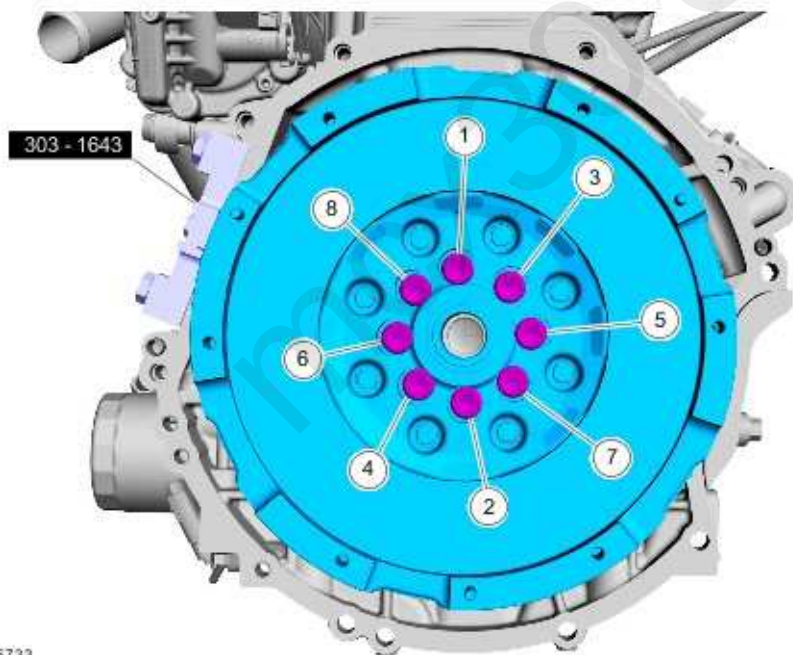
91. *Torque:*

Stage 1: 15 Nm

Stage 2: 30 Nm

Stage 3: 50 Nm

Stage 4: 90°



E225733

92. **NOTE:** Only tighten the bolt finger tight at this stage.

Torque:

Stage 1: 25 Nm

Stage 2: 75 Nm



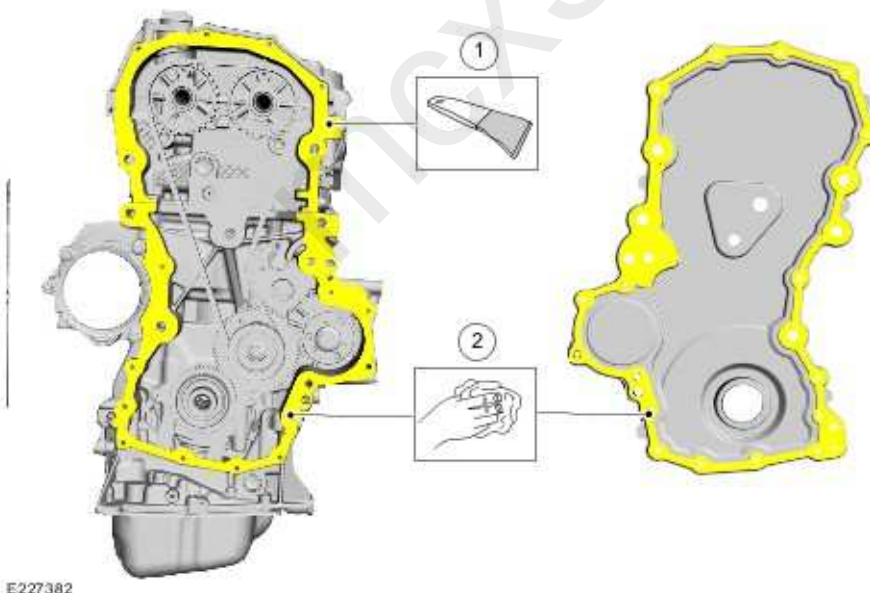
93.

NOTE: Make sure that the mating faces are clean and free of foreign material.

NOTE: Make sure that a new component is installed.

1. Use the General Equipment: [Plastic Scraper](#)

2. Material: - ([Primer](#))



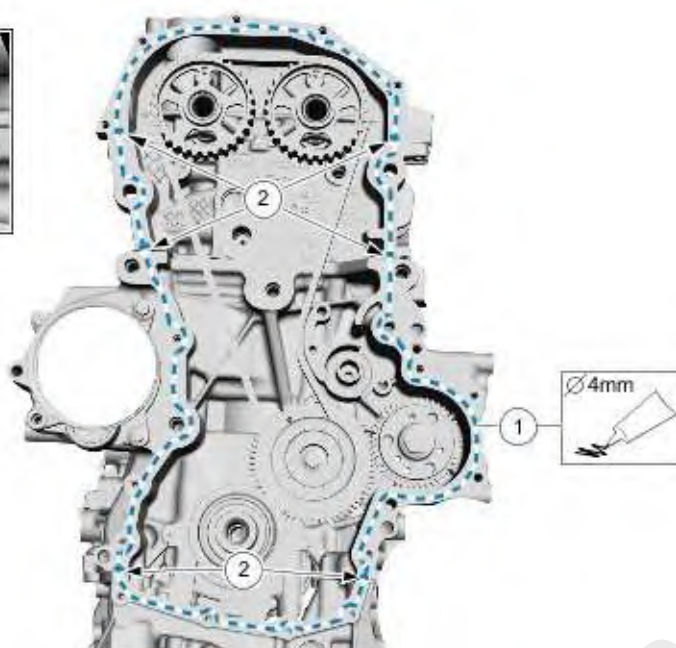
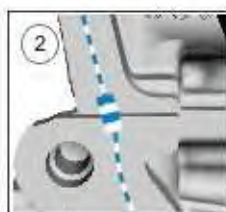
94. NOTE: Make sure that the component is clean, free of foreign material and lubricant.
NOTE: The component must be installed within 10 minutes of applying the sealant.



Complete this step within: 10min

Use Special Service Tool: [303-1668](#).

Material: [WSE-M4G323-A6 \(RTV Silicone Sealant\)](#)



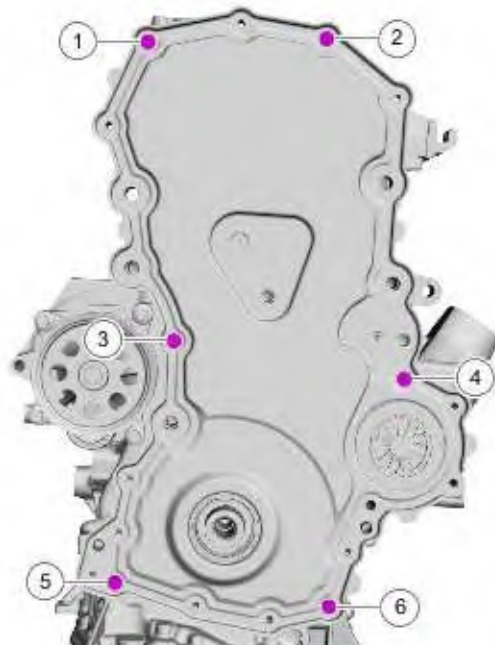
E227381

95.  **NOTICE:** Make sure that the component is correctly located on the locating dowels.
NOTE: Make sure that a new component is installed.



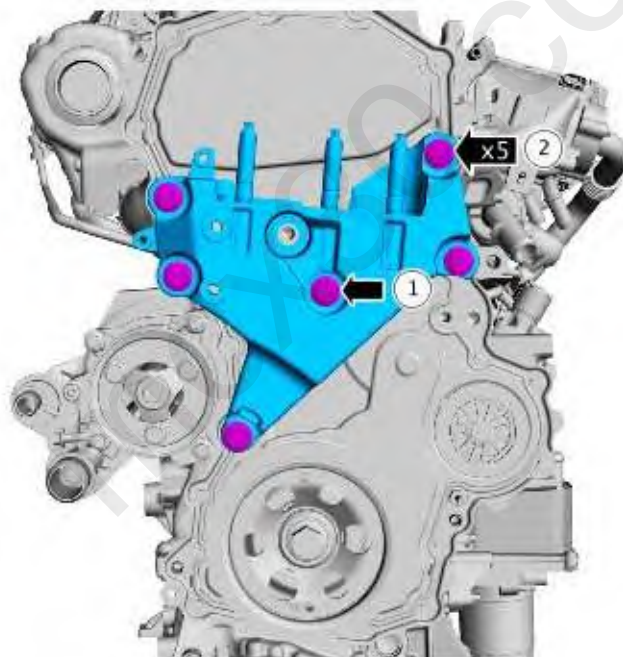
E225939

96. **NOTE:** Only tighten the bolts finger tight at this stage.



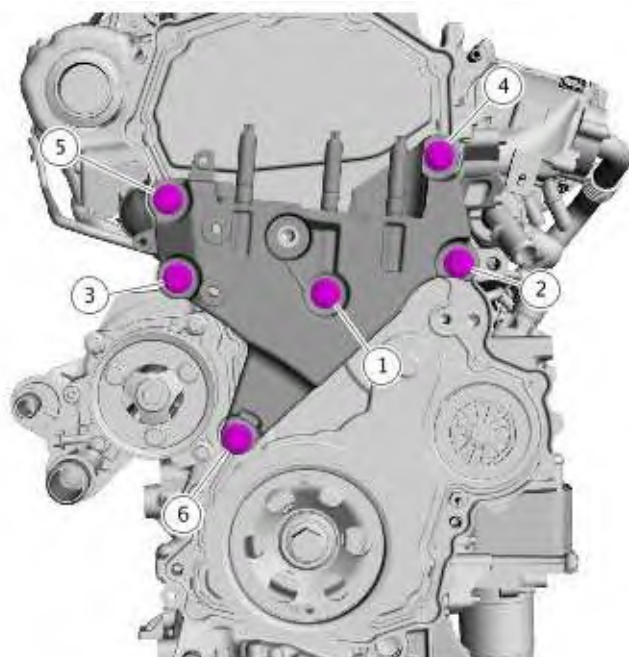
E234040

97. NOTE: Make sure that the components are installed to the position noted before removal.
NOTE: Only tighten the bolts finger tight at this stage.



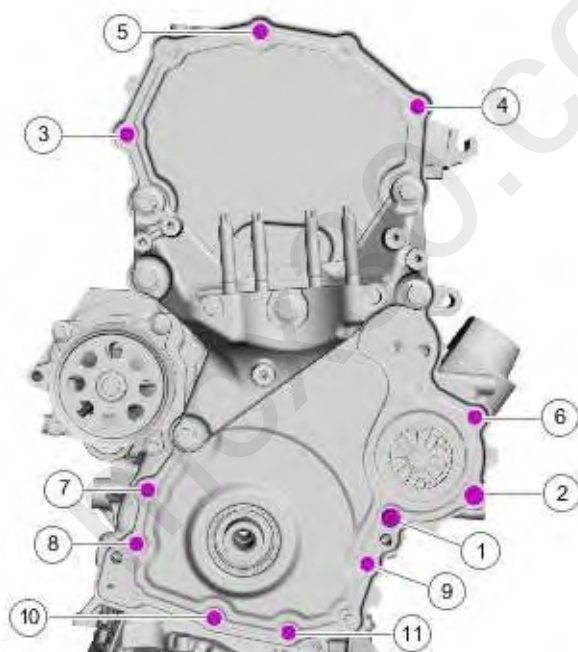
E289319

98. *Torque:*
Stage 1: 12 Nm
Stage 2: 80 Nm
Stage 3: 90°



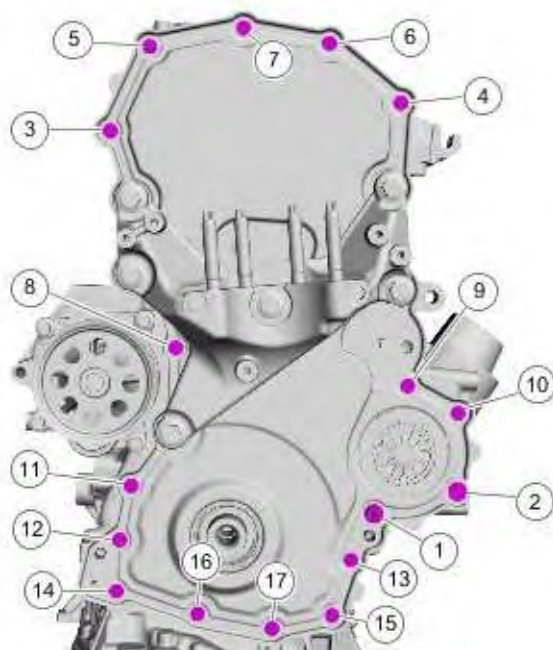
E289332

99. NOTE: Only tighten the bolts finger tight at this stage.



E234042

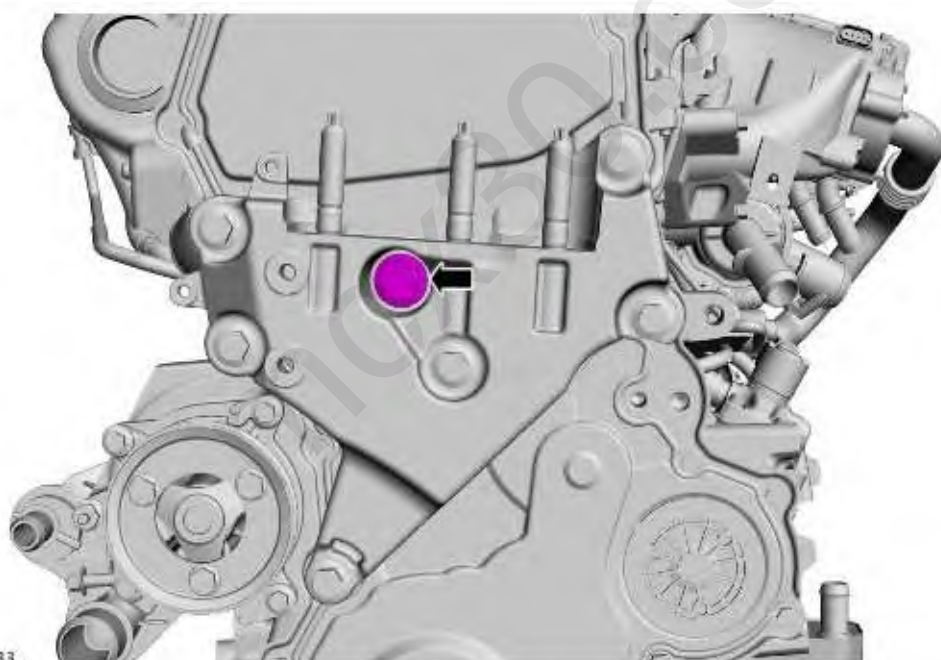
100. Torque:
 1-2 18 Nm
 3-17 10 Nm



E234043

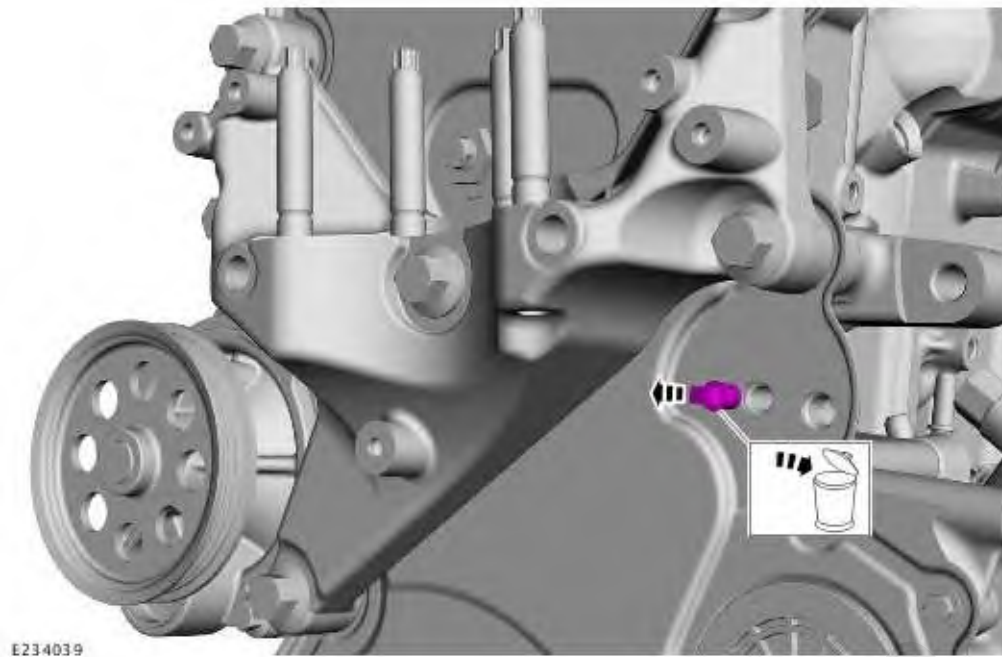
101. NOTE: Install the bolt finger tight before final tightening.
NOTE: Make sure a new bolt is installed.

Torque: 55 Nm



E289333

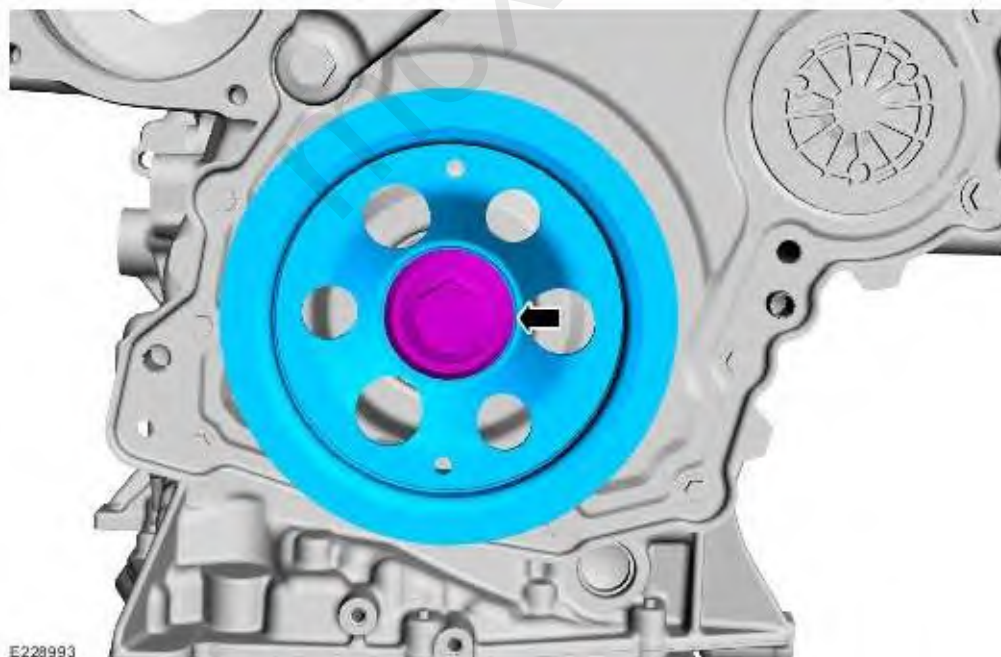
- 102.



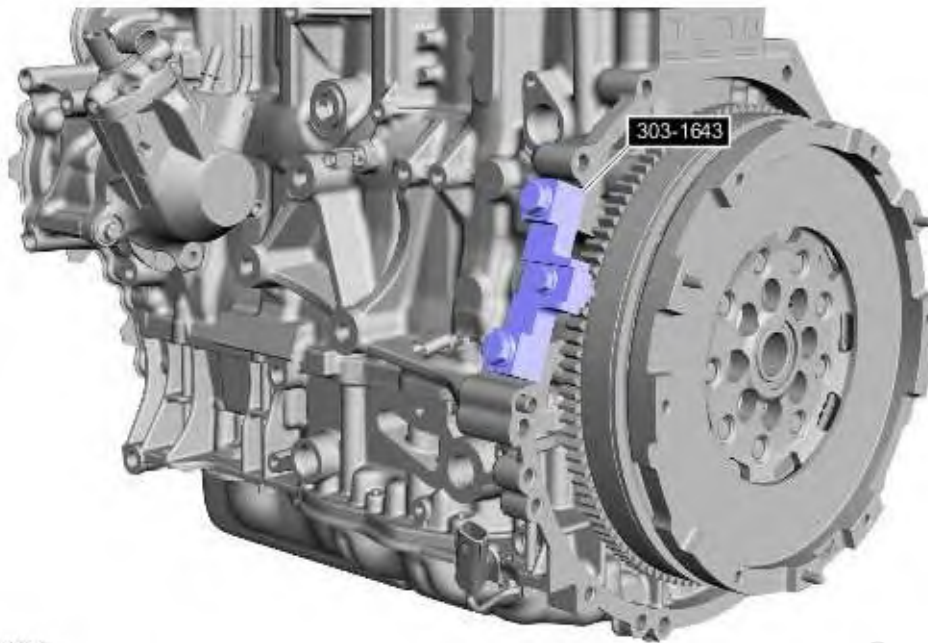
103. **NOTE:** Make sure a new bolt is installed.
NOTE: Only tighten the bolt finger tight at this stage.

Torque:

Stage 1: 10 Nm
 Stage 2: Loosen: 60°
 Stage 3: 20 Nm
 Stage 4: 70 Nm
 Stage 5: 150 Nm
 Stage 6: Loosen: 90°
 Stage 7: 100 Nm
 Stage 8: 300 Nm
 Stage 9: 90°



104. Remove Special Service Tool: [303-1643](#).

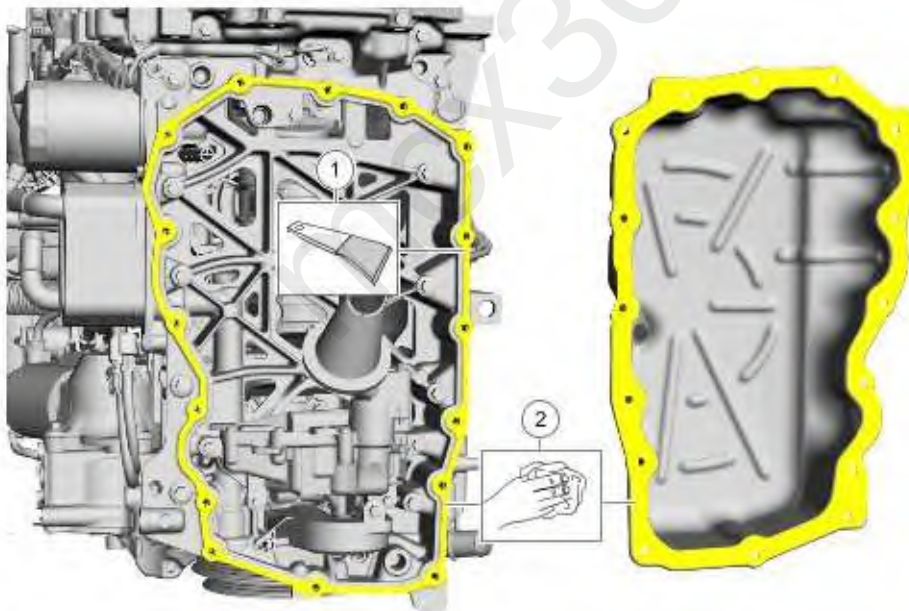


E227375



105.

1. Use the General Equipment: [Plastic Scraper](#)
2. NOTE: Make sure that the mating faces are clean and free of foreign material.
Material: - ([Primer](#))



E224594

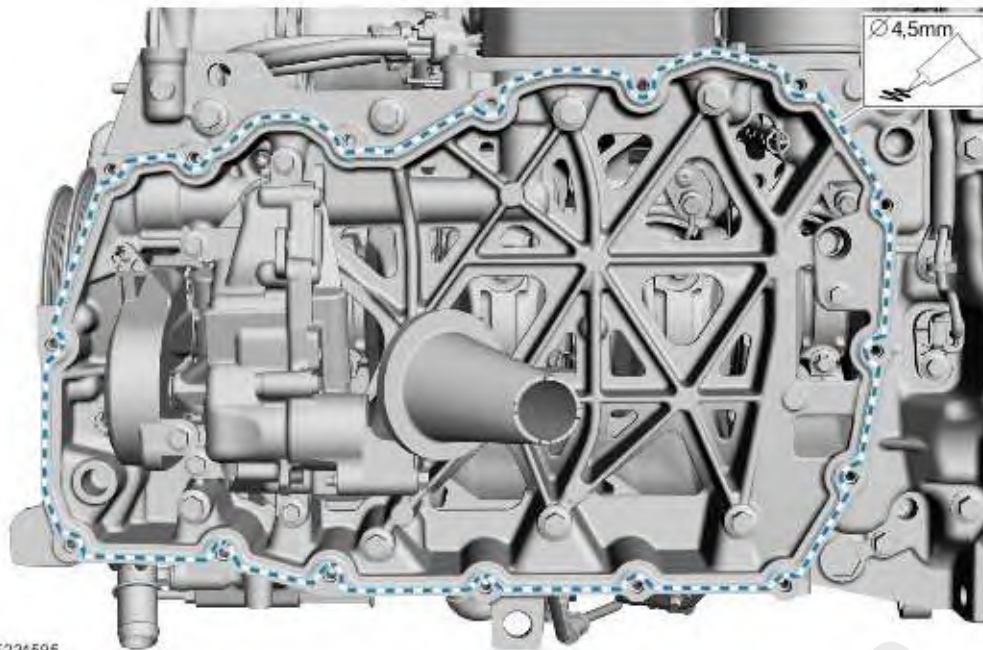
106. NOTE: Make sure that the component is clean, free of foreign material and lubricant.
NOTE: The component must be installed within 10 minutes of applying the sealant.



Complete this step within: 10min

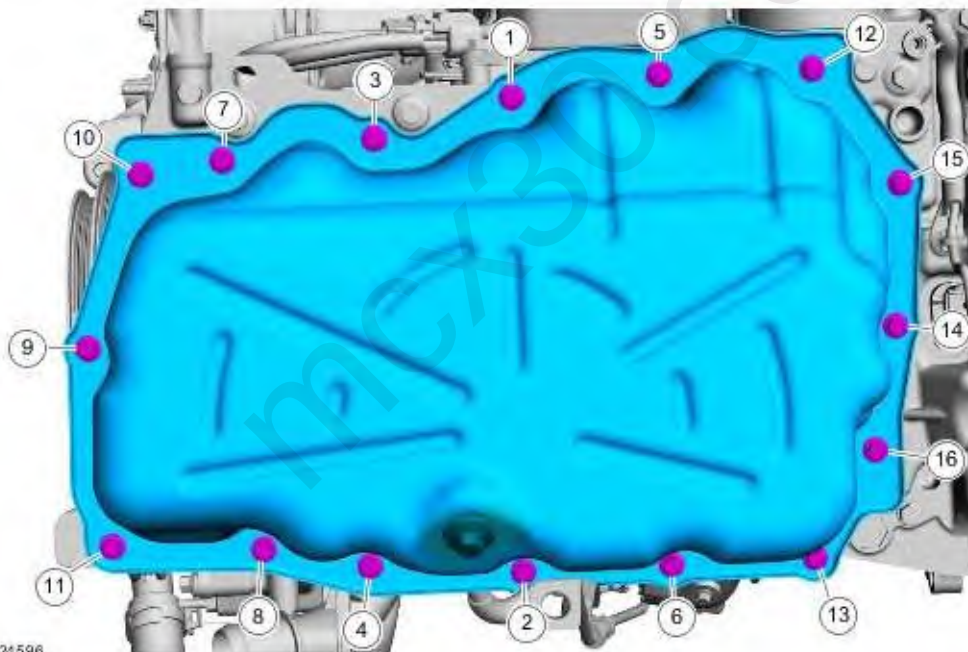
Use Special Service Tool: [303-1668](#).

Material: [WSE-M4G323-A6 \(RTV Silicone Sealant\)](#)



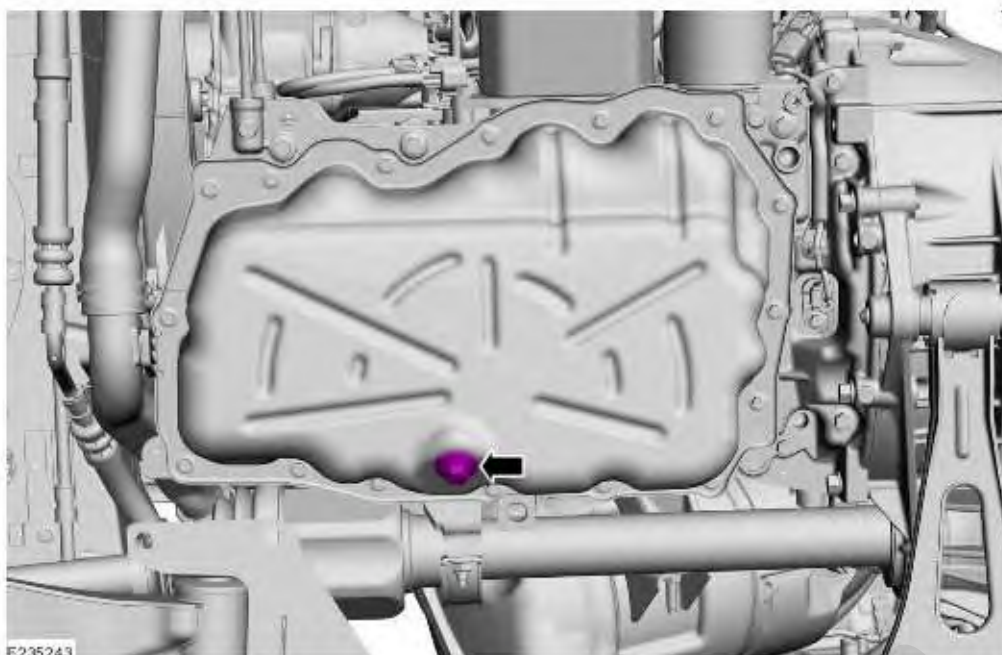
E224595

107. *Torque:*
 Stage 1: 5 Nm
 Stage 2: 10 Nm



E224596

108. **NOTE:** Make sure a new bolt is installed.
Torque: 39 Nm



E235243

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