

2022 CHEVROLET CORVETTE SERVICE MANUAL

- SEARCH

1. Engine/Propulsion
2. Engine Mechanical - 6.2L (LT2)
3. Repair Instructions
- 4.

Camshaft Timing Chain Component Removal and Installation

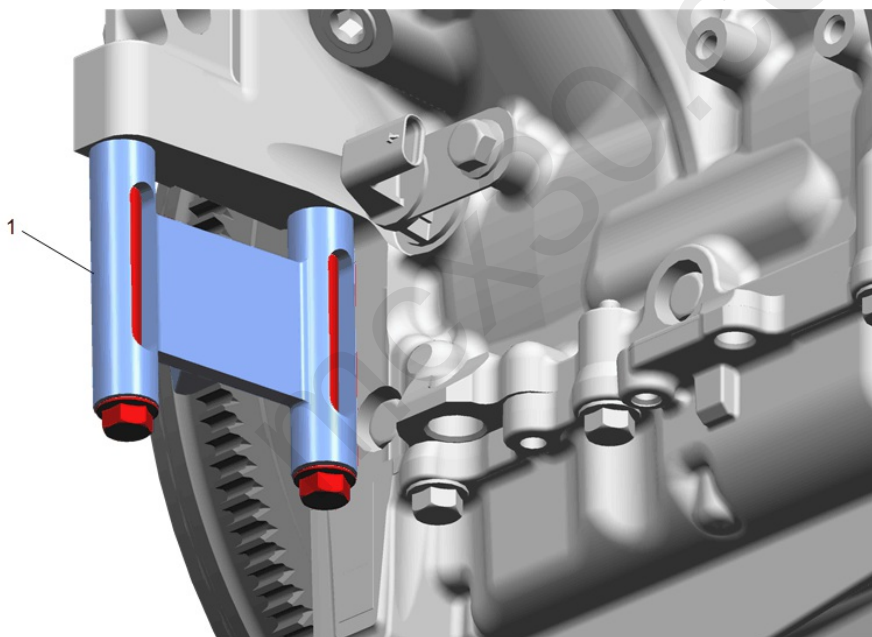
Special Tools

- EN ϕ ÄÄ“46330Ä,Ä Timing Belt Tensioner Retaining Pin
- EN ϕ ÄÄ“45059Ä,Ä Angle Meter
- EN ϕ ÄÄ“52751Ä,Ä Flywheel Holding Tool

Equivalent regional tools: Special Tools.

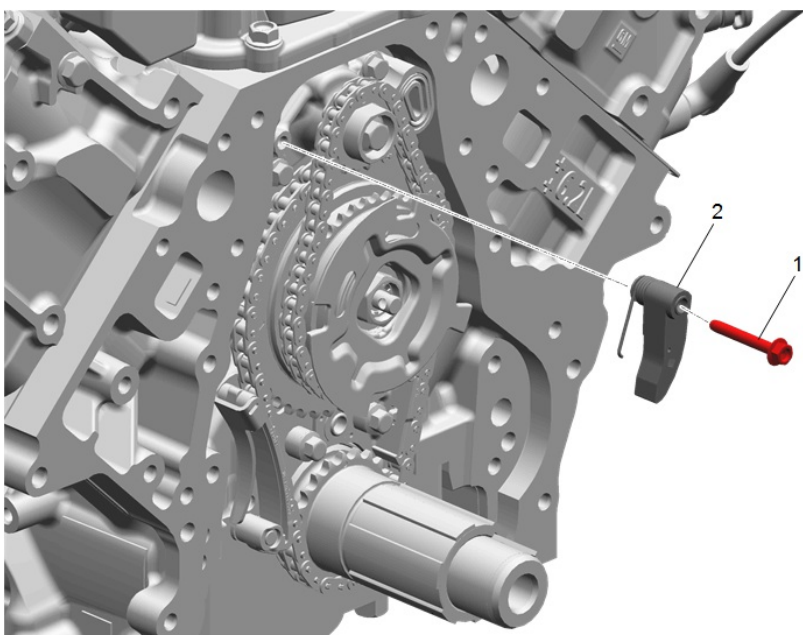
Removal Procedure

1. Engine Front Cover >> Remove - Engine Front Cover Replacement

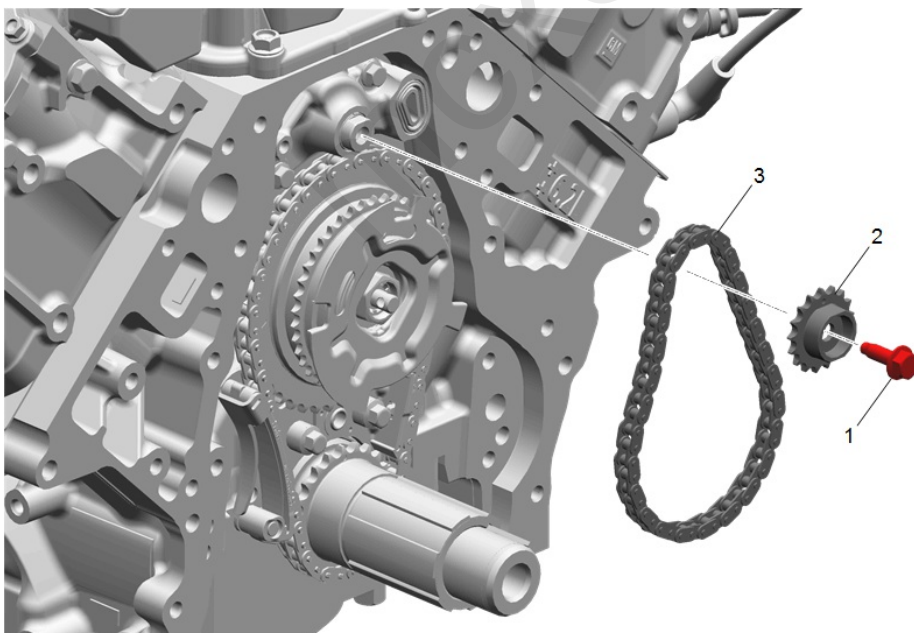


2.
Click here for full size
3. Caution:

Refer to Fastener Caution.
4. EN ϕ ÄÄ“52751Ä,Ä Flywheel Holding Tool (1>) >> Install
5. Use the Starter Bolts or two M10 ÄÄÄ“ 1.5 x 120 mm bolts for proper tool operation. Tighten the EN ϕ ÄÄ“52751Ä,Ä Flywheel Holding Tool (1) bolts to 50 N-m (37 lb ft)

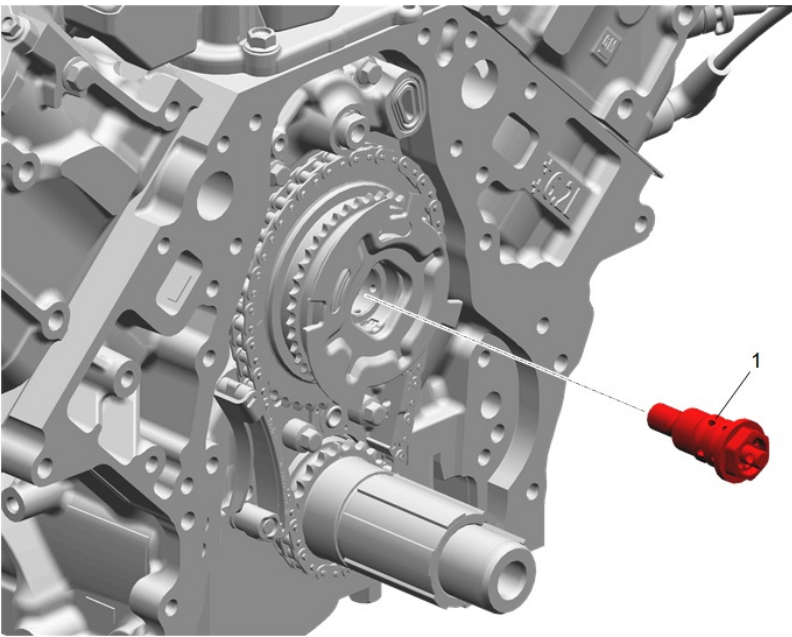


6. [Click here for full size](#)
7. Timing Chain Tensioner Bolt (1>) >> Remove
8. Timing Chain Tensioner (2>) >> Remove



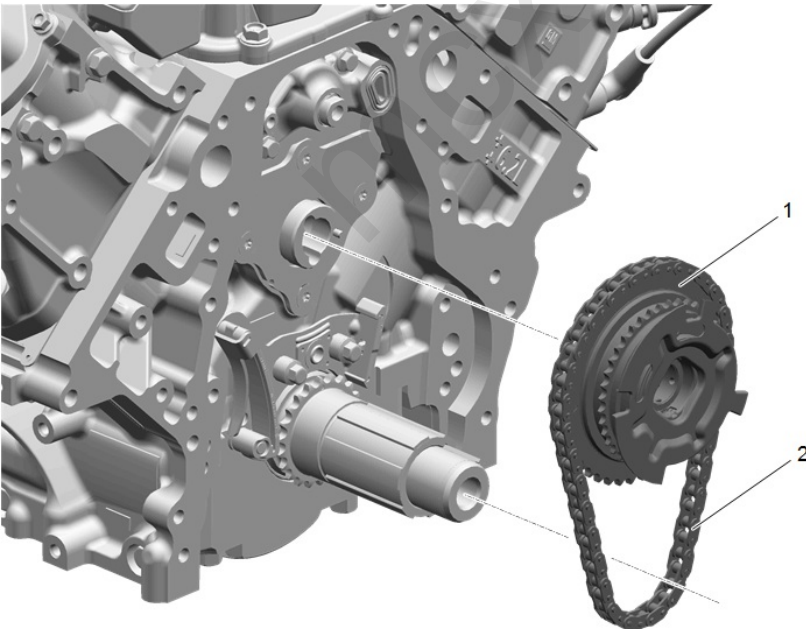
9. [Click here for full size](#)
10. Oil Pump Sprocket Bolt (1>) >> Remove
11. Oil Pump Sprocket (2>) >> Remove

12. Oil Pump Drive Chain (3>) >> Remove



13.
[Click here for full size](#)

14. Camshaft Position Actuator Solenoid Valve (1>) >> Remove and DISCARD



15.
[Click here for full size](#)

16. Warning:

Refer to Camshaft Position Actuator Removal and Installation Warning.

17. Note:

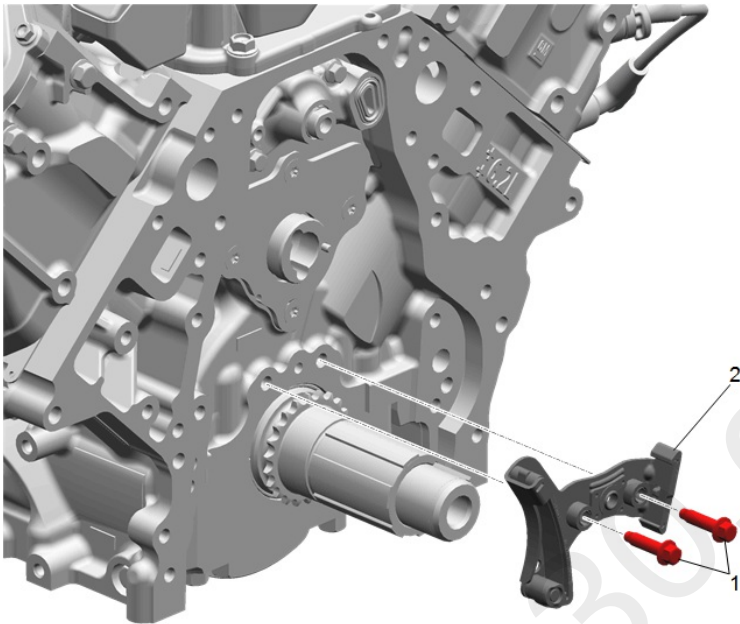
Never pull on the reluctor wheel (3) when attempting to remove the actuator.

18. Loosen and separate the camshaft position actuator (1) and timing chain (2) from the camshaft. Position fingers behind the actuator sprocket and pull the actuator away from the front of the camshaft.

Extra Item: video

19. Camshaft Position Actuator (1>) & Timing Chain (2>) >> Remove

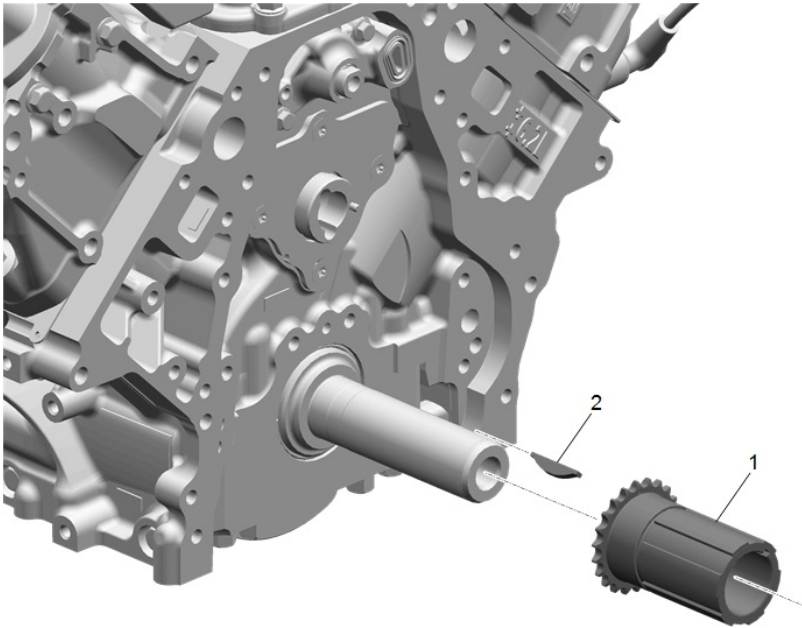
20. Insert a tie strap through the center of the actuator and over the reluctor wheel to hold it together.



21.
[Click here for full size](#)

22. Timing Chain Tensioner Bolt (1>) >> Remove [2x]

23. Timing Chain Tensioner (2>) >> Remove



24. [Click here for full size](#)
25. Crankshaft Sprocket (1>) >> Remove
26. Note:
Crankshaft balancer key only needs removed if necessary.
27. Crankshaft Balancer Key (2>) >> Remove

Cleaning and Inspection Procedure

Note:

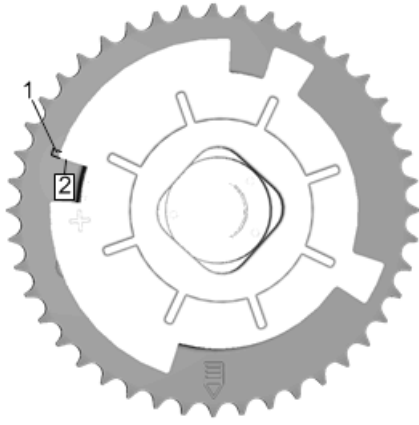
The following cleaning and inspection and/or overhaul steps are ONLY to be performed as determined necessary based on the condition of the part being removed with the intention of reinstallation. The labor time to perform any of these steps is not included in the base labor time and if required would need to be documented and submitted as Other Labor Hours for warranty claim reimbursement. A description of the repairs performed must be documented in the technician correction comments.

Camshaft Position Actuator Cleaning and Inspection

1. [Click here for full size](#)
2. Warning:

Refer to Safety Glasses and Compressed Air Warning.

3. Inspect the camshaft position actuator for a broken spring (1).
4. Clean the camshaft position actuator with cleaning solvent.
5. Dry the components with compressed air.



6.
[Click here for full size](#)

7. Inspect the camshaft position actuator for the following conditions:

- 8.
- Improper positioning of the camshaft position reluctor wheel. The actuator return spring should reposition the reluctor wheel to the PARK position. Inspect for proper alignment of the mark on the face of the sprocket (1) with the flat edge of the reluctor wheel (2). If the reluctor wheel is not properly positioned, the internal components of the actuator are sticking or the return spring is broken and the actuator should be replaced as an assembly.
 - Nicked or damaged edges on the camshaft position reluctor wheel
 - Damaged timing sprocket teeth

9. [Click here for full size](#)

10. Inspect the camshaft position actuator for dirt, debris, or restrictions within the oil passages (1, 2).

Camshaft Position Actuator Solenoid Valve Inspection

1. Note:

- The inspection procedure is provided for diagnostic purposes only.
- Do not use the camshaft position actuator solenoid valve again. Install a NEW valve during assembly.

2.
[Click here for full size](#)

3. Inspect the camshaft position actuator solenoid valve for the following conditions:

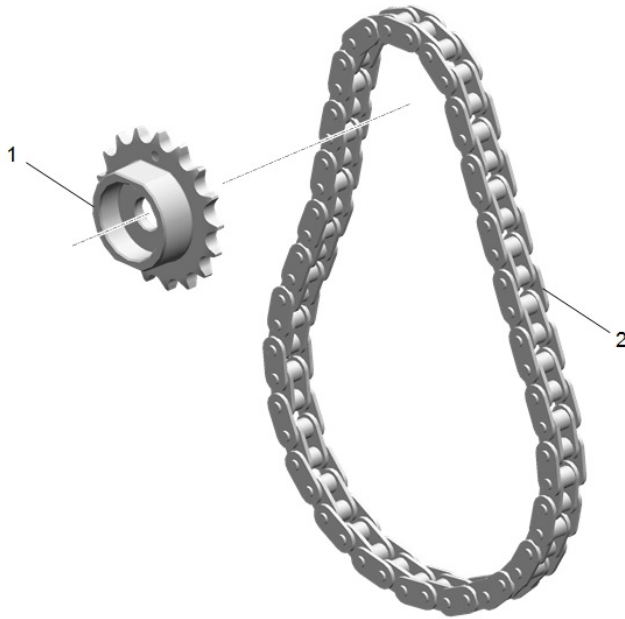
- 4.
- Dirt, debris, or restrictions within the oil passages (1)
 - Damaged threads (2)
 - If the threads of the valve are damaged, also inspect the threads in the front of the camshaft for damage.
 - Dirt, debris, or restrictions within the oil inlet (3)
 - If debris is detected, the engine assembly should be inspected to determine the source of contamination.

5.
[Click here for full size](#)

6. Inspect for a sticking valve spool or broken valve spool spring.

7. Depress the valve spool into the housing. The valve should move freely with no binding or sticking and minimal resistance inward. When released, the valve spring should return the spool to the proper extended position (1) of 6.52~6.92 mm (0.257~0.272 in).

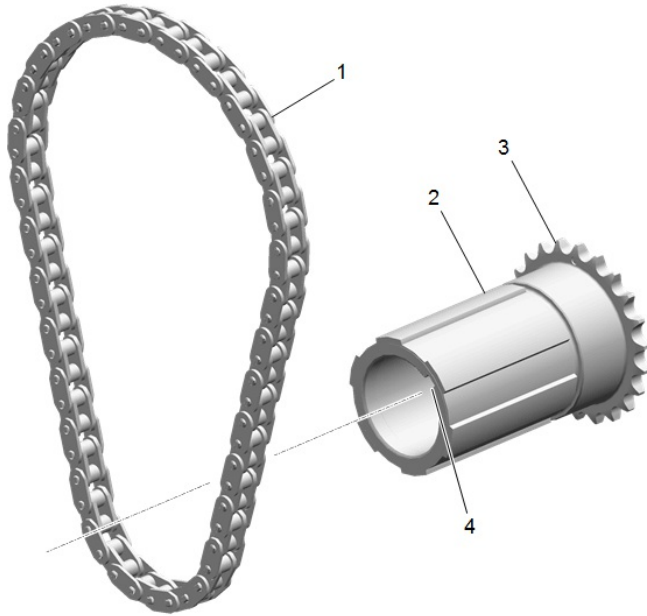
Oil Pump Drive Chain and Oil Pump Sprocket Cleaning and Inspection



1. [Click here for full size](#)
2. **Warning:**

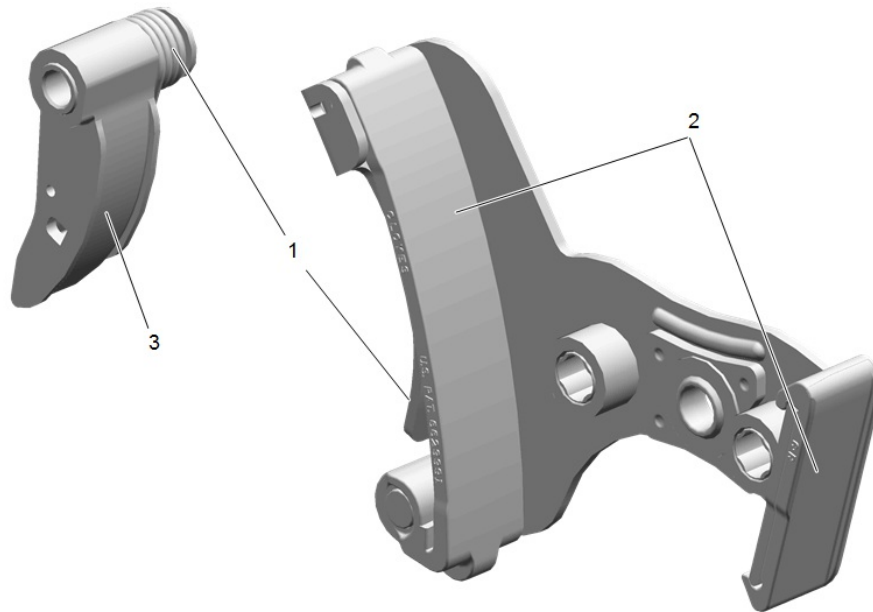
Refer to Safety Glasses and Compressed Air Warning.
3. Clean the components with cleaning solvent.
4. Dry the components with compressed air.
5. Inspect the oil pump sprocket (1) for worn, damaged, or chipped teeth.
6. Inspect the oil pump drive chain (2) for binding or wear.

Timing Chain and Crankshaft Sprocket Cleaning and Inspection



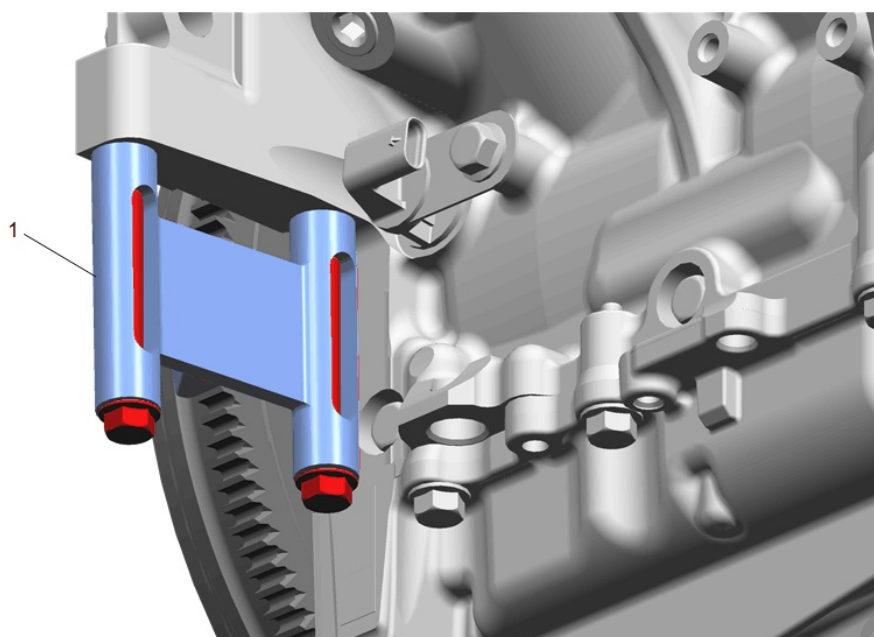
1. [Click here for full size](#)
2. **Warning:**
Refer to Safety Glasses and Compressed Air Warning.
3. Clean the components with cleaning solvent.
4. Dry the components with compressed air.
5. Inspect the timing chain (1) for binding or wear.
6. Inspect for worn oil pump drive splines (2).
7. Inspect the crankshaft sprocket (3) for worn, damaged, or chipped teeth.
8. Inspect for a damaged keyway (4).

Timing Chain Tensioner Cleaning and Inspection

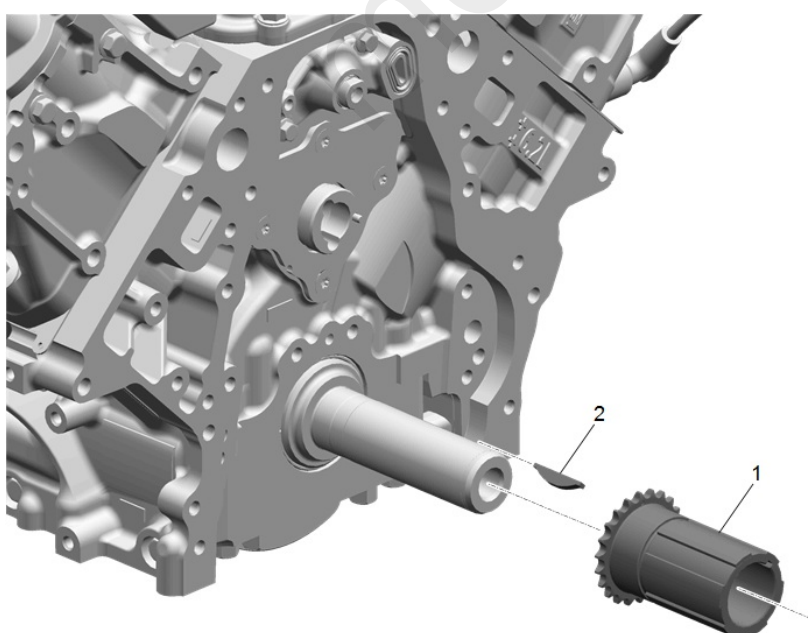


1.
Click here for full size
2. Inspect the timing chain tensioner for the following conditions:
3.
 - Damaged or broken tension spring (1)
 - Excessive wear or scoring on the chain guide surfaces (2, 3)

Installation Procedure



1. [Click here for full size](#)
2. Caution:
Refer to Fastener Caution.
3. Reinstall the EN52751 Flywheel Holding Tool (1) if it was removed.
4. Use the Starter Bolts or two M10 1.5 x 120 mm bolts for proper tool operation. Tighten the EN52751 Flywheel Holding Tool (1) bolts to 50 N-m (37 lb ft)



5. [Click here for full size](#)

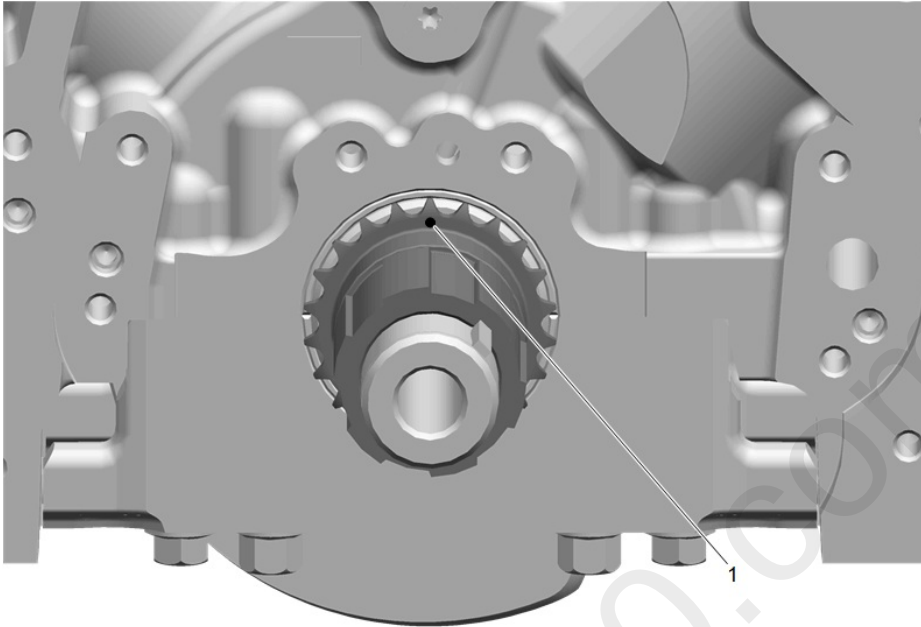
6. Note:

Crankshaft balancer key only needs installed if removed.

7. Crankshaft Balancer Key (2>) >> Install

8. Crankshaft Sprocket (1>) >> Install

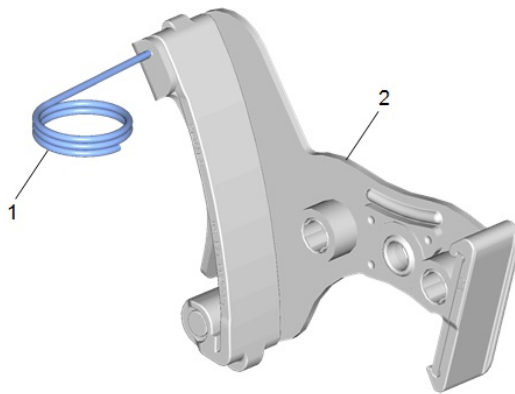
9. Align the keyway of the crankshaft sprocket with the crankshaft balancer key.



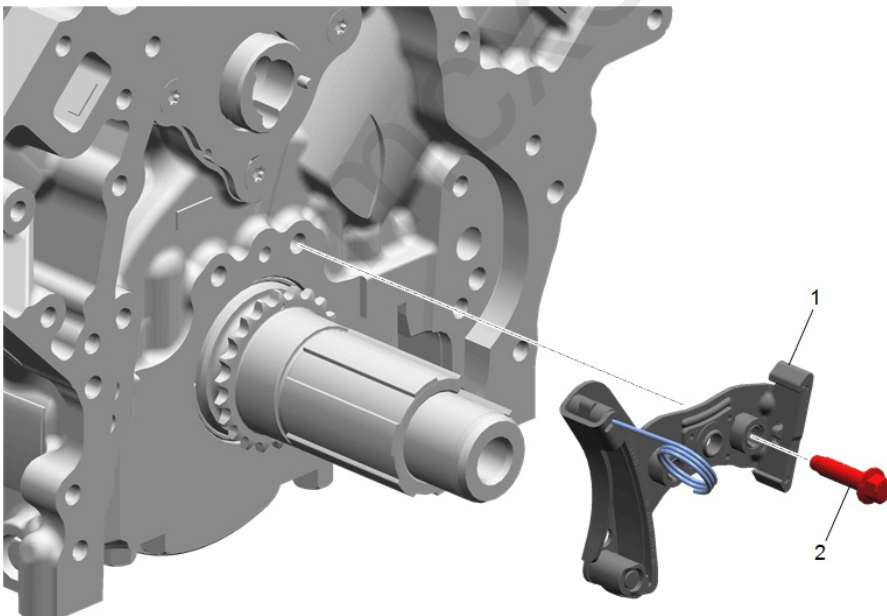
10.

[Click here for full size](#)

11. Rotate the crankshaft sprocket until the sprocket alignment mark (1) is in the 12 o'clock position.



12. [Click here for full size](#)
13. Compress the timing chain tensioner guide on the tensioner (2) and install the EN46330 Timing Belt Tensioner Retaining Pin (1).



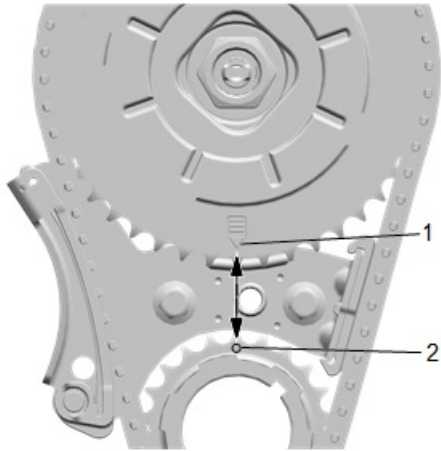
14. [Click here for full size](#)
15. Caution:
Refer to Fastener Caution.
16. Install the timing chain tensioner (1) and left side bolt (2). Do not install the right side bolt at this time. The right side bolt will be installed after

the camshaft position actuator and chain have been installed onto the engine.

17. Warning:

Refer to Camshaft Position Actuator Removal and Installation Warning.

18. Remove the tie strap from the actuator.

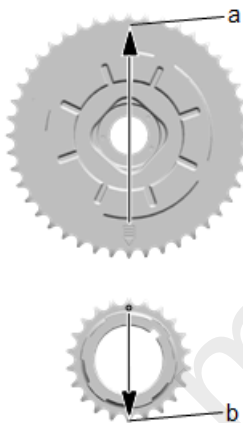


19. [Click here for full size](#)

20. Note:

The alignment mark on the camshaft position actuator (1) and the alignment mark on the crankshaft sprocket (2) are off-center from the oil pump feed hole gasket on the timing chain tensioner. The alignment marks need to be lined up with one another, but NOT with the oil feed hole.

21. The camshaft and the crankshaft sprocket alignment marks MUST be aligned properly.



22. [Click here for full size](#)

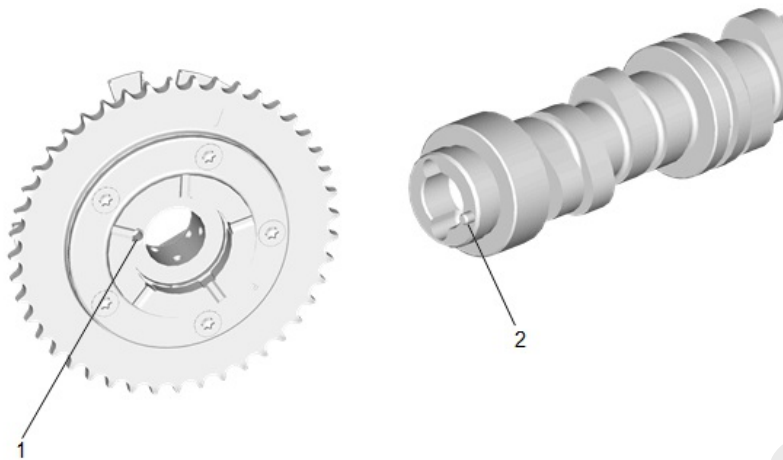
23. If the alignment marks on the camshaft position actuator and crankshaft sprocket are difficult to see or line up, an alternate method can be used. Mark the gear tooth directly opposite of the alignment mark on the camshaft position actuator (a). Mark the gear tooth directly opposite of the alignment mark on the crankshaft sprocket (b).



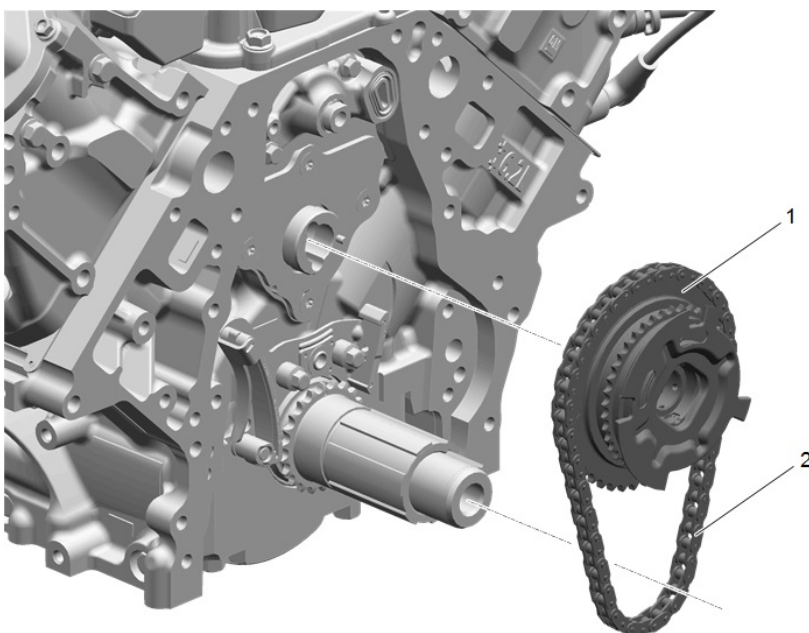
24.

[Click here for full size](#)

25. The timing chain has 30 links. Place links (1) and (30) on either side of the mark made on the camshaft position actuator and place links (15) and (16) on either side of the mark made on the crankshaft sprocket. This will ensure that the factory alignment marks are in the correct position and that the engine is properly timed.



26. [Click here for full size](#)
27. Note:
- Properly locate the camshaft position actuator onto the locating pin of the camshaft.
 - The sprocket teeth and timing chain must mesh.
 - The camshaft and the crankshaft sprocket alignment marks MUST be aligned properly.
 - Do not use the camshaft position actuator solenoid valve again. Install a NEW valve during assembly.
28. Identify the alignment hole (1) in the rear face of the camshaft position actuator and the locating pin (2) on the front face of the camshaft.



29. [Click here for full size](#)

30. **Warning:**

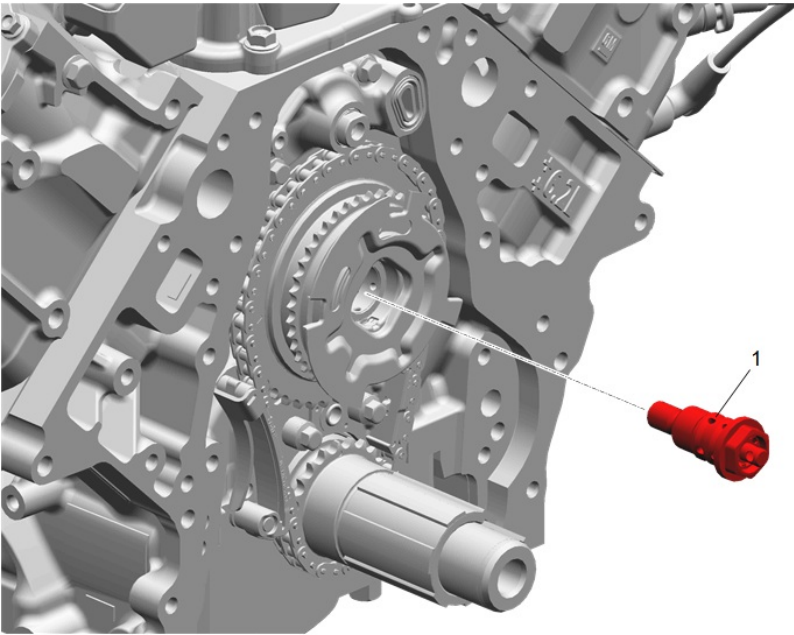
Refer to Camshaft Position Actuator Removal and Installation Warning.

31. **Note:**

Never push on the reluctor wheel when attempting to install the actuator.

32. Install the camshaft position actuator (1) and timing chain (2). Align the hole in the rear face of the camshaft position actuator (1) with the locating pin on the front face of the camshaft. If necessary, rotate the camshaft or crankshaft sprockets in order to align the timing marks. Use care to install the camshaft position actuator (1) completely onto the front of the camshaft. Position fingers onto the face of the actuator sprocket and push the actuator (1) onto the front of the camshaft.

Extra Item: video



33. [Click here for full size](#)

34. **Caution:**

This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

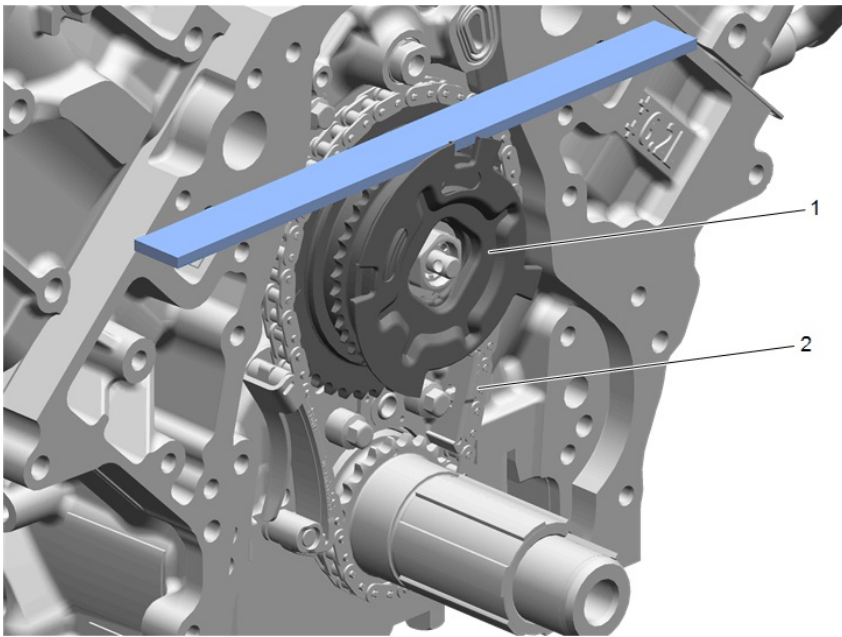
35. **Note:**

Add a small amount of clean engine oil to the back side of the valve flange. Adhesives, Fluids, Lubricants, and Sealers

36. **Camshaft Position Actuator Solenoid Valve (1>) >>> Install and tighten**

37.

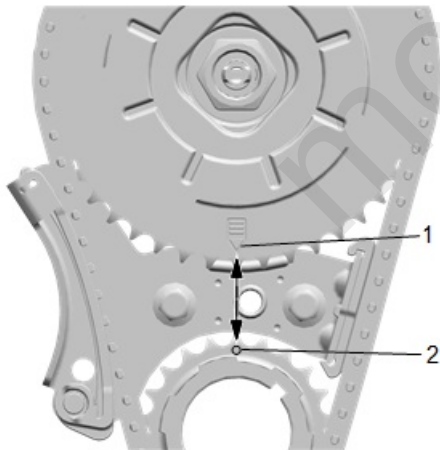
1. First Pass: 65 N-m (48 lb ft)
2. Final Pass: 90 degrees using *EN-45059* Angle Meter.



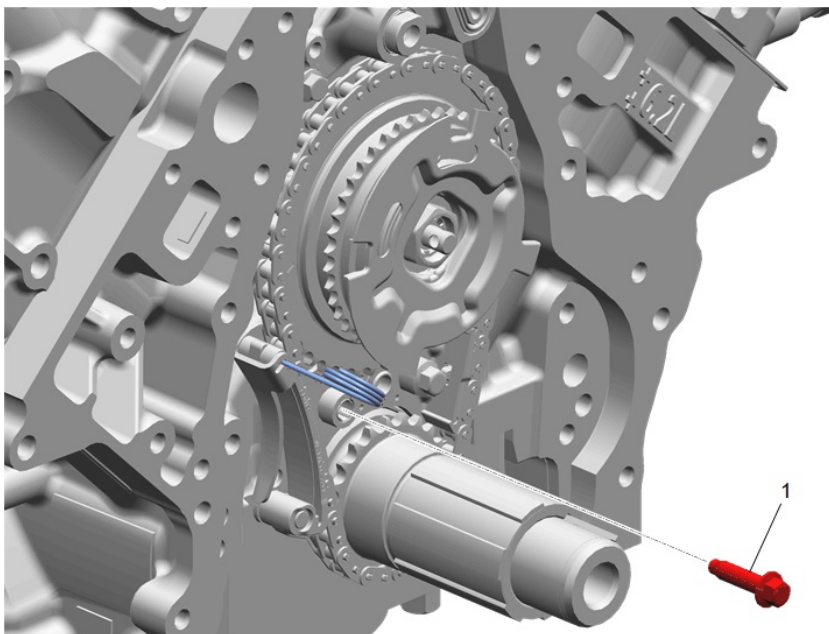
38. [Click here for full size](#)
 39. Note:

It is possible to push the camshaft rearward when installing the camshaft position actuator valve. Verify that the camshaft lobes are centered in the valve lifter bores after the camshaft position actuator is installed.

40. Locate a straight edge across the front face of the engine block and inspect for proper installation of the camshaft position actuator (1) and timing chain (2). With the camshaft position actuator (1) properly and completely installed onto the front of camshaft, the timing chain (2) will not protrude beyond the front face of engine block.

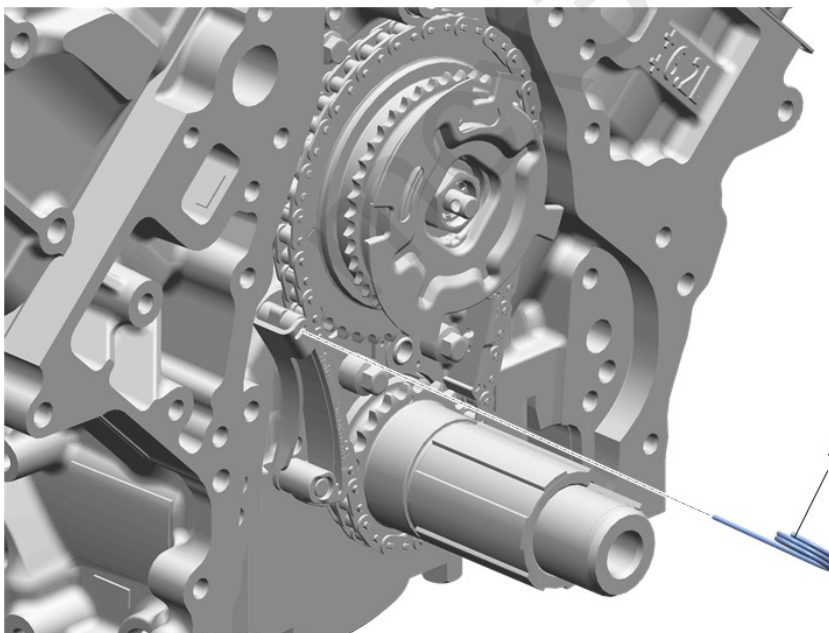


41. [Click here for full size](#)
 42. Inspect the sprockets for proper alignment. The mark on the camshaft position actuator sprocket (1) should be located in the 6 o'clock position and the mark on the crankshaft sprocket (2) should be located in the 12 o'clock position.



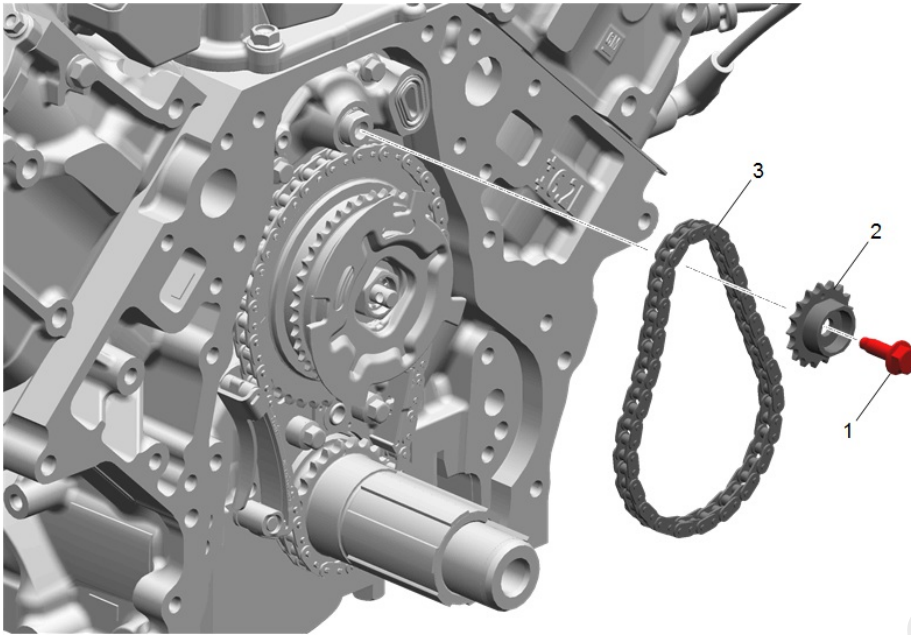
43.
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44. Install the right side bolt (1) into the timing chain tensioner and tighten both bolts to 25 N-m (18 lb ft).

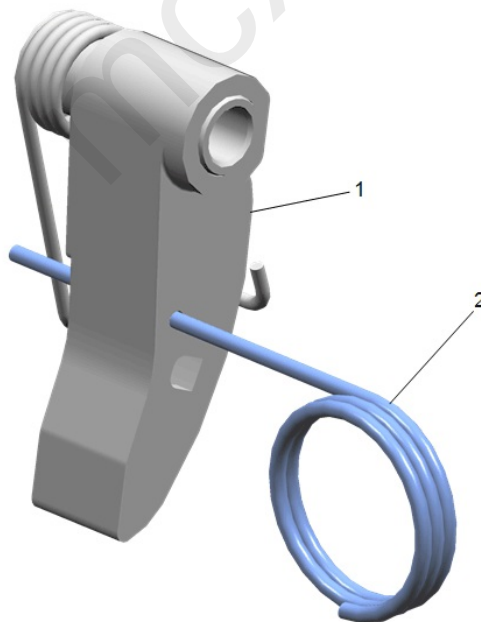


45.
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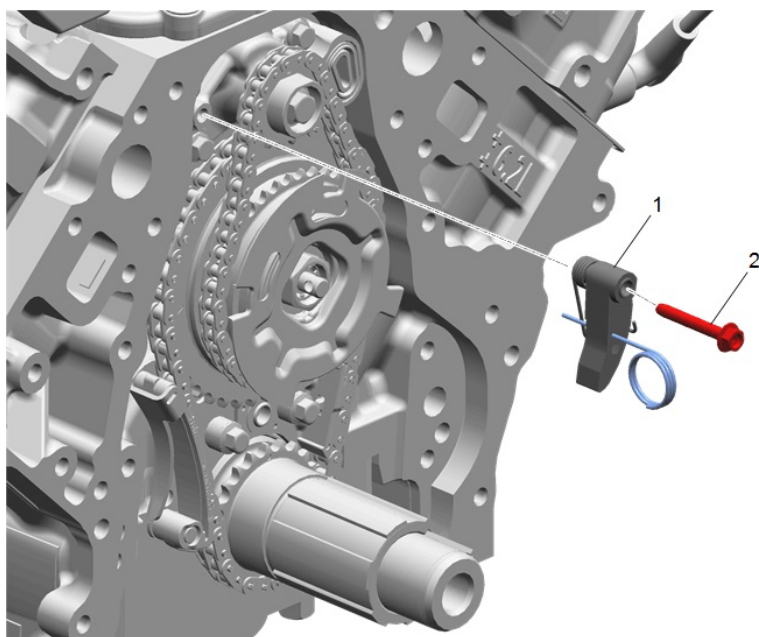
46. ENÃÂ46330ÃÂ Timing Belt Tensioner Retaining Pin(1>) >> Remove



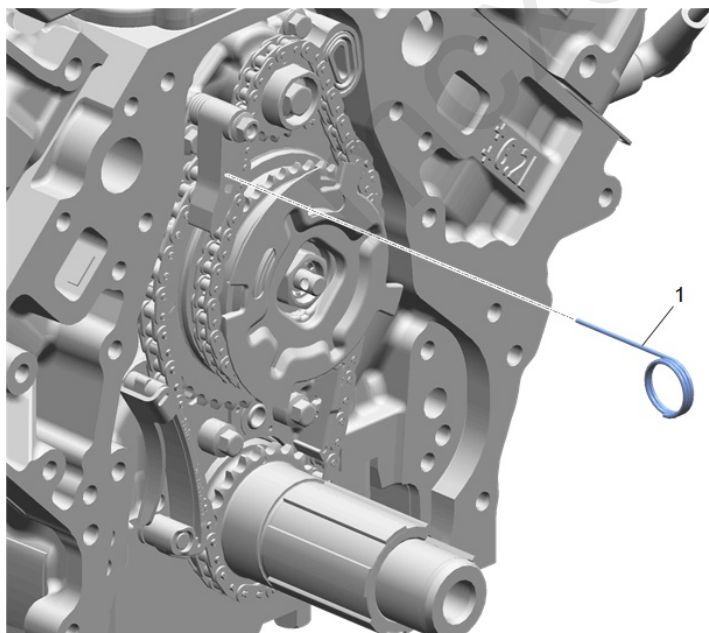
47. [Click here for full size](#)
48. Oil Pump Drive Chain (3>) >> Install
49. Oil Pump Sprocket (2>) >> Install
50. Oil Pump Sprocket Bolt (1>) >> Install and tighten 25 N-m (18 lb ft)



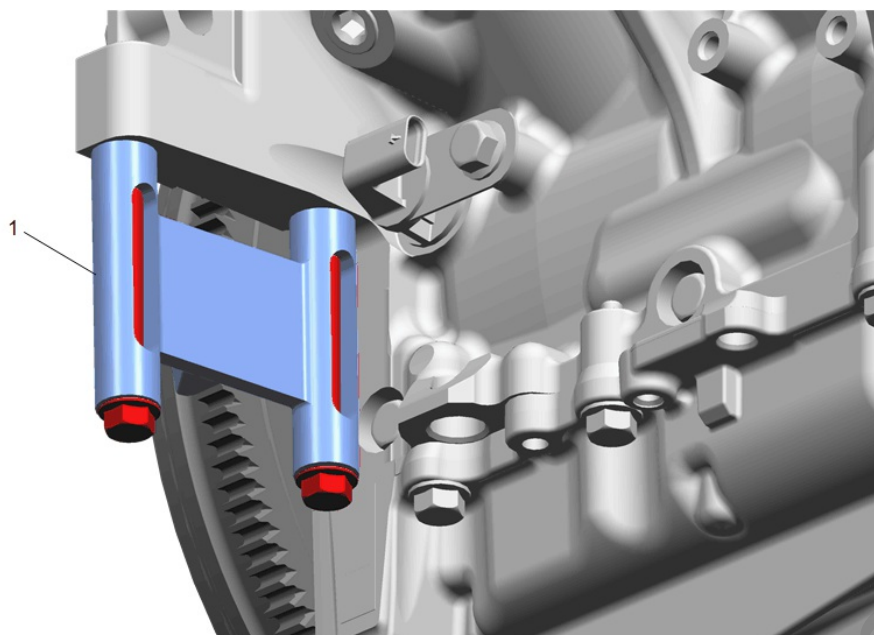
51. [Click here for full size](#)
52. Compress the timing chain tensioner guide (1) and install the ENA 46330 Timing Belt Tensioner Retaining Pin (2).



53. [Click here for full size](#)
54. Timing Chain Tensioner (1>) >> Install
55. Timing Chain Tensioner Bolt (2>) >> Install and tighten 10 N-m (89 lb in)



56. [Click here for full size](#)
57. ENÅÄÄÄ“46330Ä,Ä Timing Belt Tensioner Retaining Pin (1>) >> Remove



58.

[Click here for full size](#)

59. EN52751 Flywheel Holding Tool(1>) >> Remove

60. Engine Front Cover >> Install - Engine Front Cover Replacement