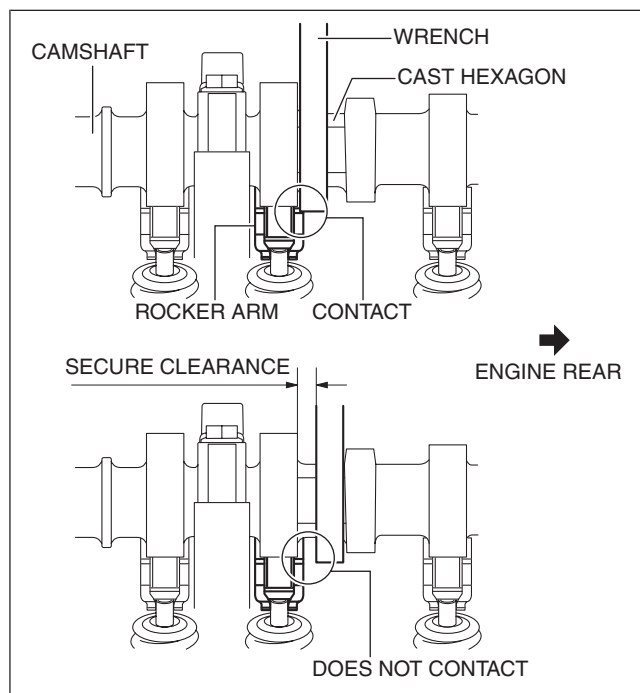


Warning

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

Caution

- If the camshaft is rotated with the timing chain removed and the piston at the top dead center position, the valve may contact the piston and the engine could be damaged. When rotating the camshaft with the timing chain removed, rotate it after lowering the piston from the top dead center position.
- When rotating the camshaft using a wrench on the cast hexagon, the wrench may contact the rocker arm and damage the rocker arm. To prevent damage to the rocker arm when holding the camshaft on the cast hexagon, use a wrench on the rear side of the engine as shown in the figure to secure a clearance between the cam.

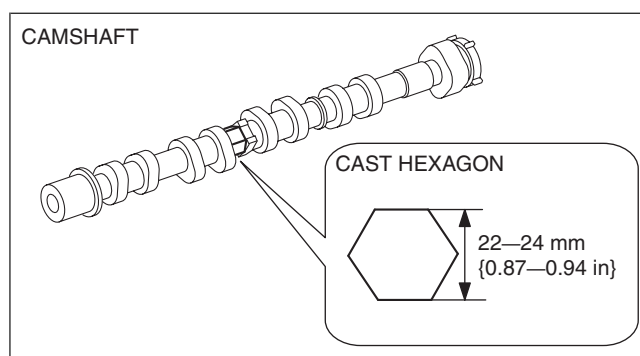


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Note

- Width at the cast hexagon of the camshaft is 22—24 mm {0.87—0.94 in}.

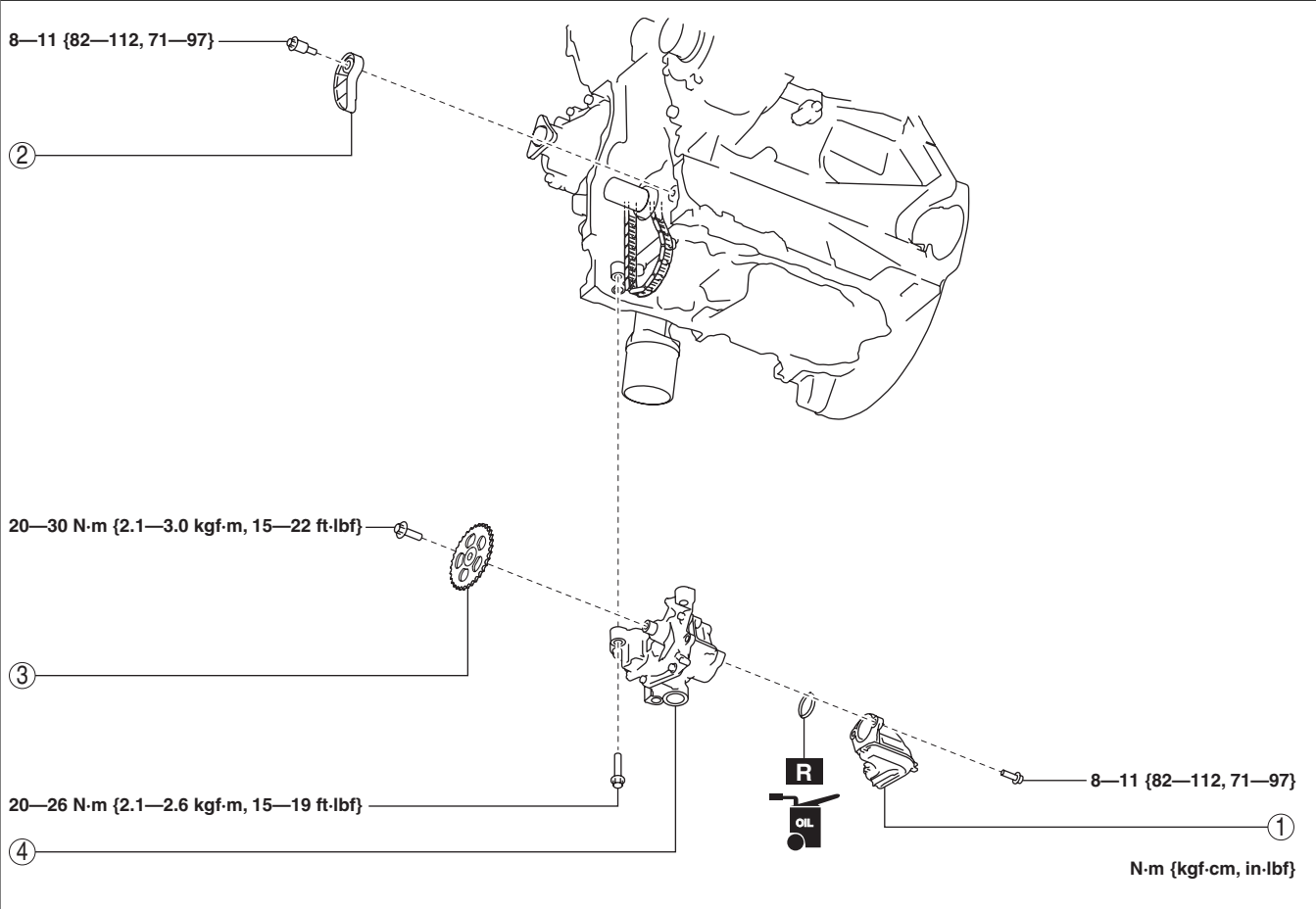
1. Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].)
2. Remove the plug hole plate. (See PLUG HOLE PLATE REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
3. Remove the ignition coil/ion sensors. (See IGNITION COIL/ION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
4. Remove the front under cover No.2. (See FRONT UNDER COVER No.2 REMOVAL/INSTALLATION.)
5. Remove the splash shield. (See SPLASH SHIELD REMOVAL/INSTALLATION.)
6. Remove the drive belt. (See DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
7. Drain the engine oil. (See ENGINE OIL REPLACEMENT [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
8. Remove the oil pan. (See OIL PAN REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
9. Remove the engine front cover. (See TIMING CHAIN REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
10. Remove in the order indicated in the table.



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11. Install in the reverse order of removal.
12. Refill with the specified type and amount of the engine oil. (See ENGINE OIL REPLACEMENT [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
13. Start the engine and confirm that there is no oil leakage.
- If there is oil leakage, repair or replace the applicable part.
14. Inspect the oil level. (See ENGINE OIL LEVEL INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
15. Inspect for the ignition timing and idle speed. (See ENGINE TUNE-UP [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
16. Inspect the oil pressure. (See OIL PRESSURE INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

SKYACTIV-G 2.0

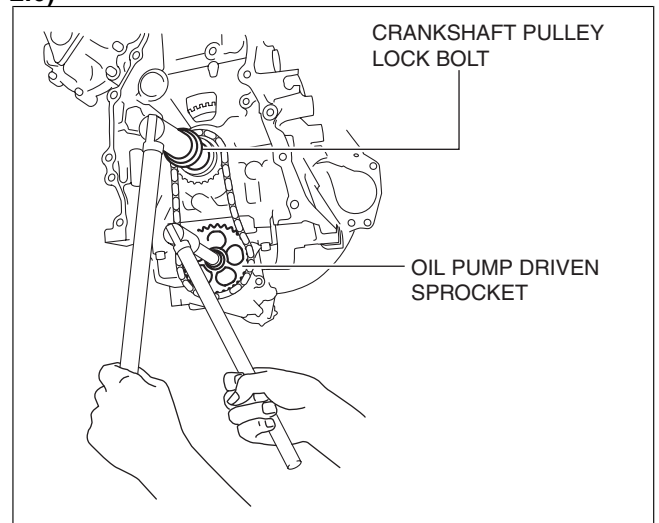


1	Oil strainer
2	Oil pump chain tensioner
3	Oil pump driven sprocket (See Oil Pump Driven Sprocket Removal Note (SKYACTIV-G 2.0).) (See Oil Pump Driven Sprocket Installation Note (SKYACTIV-G 2.0).)

4	Oil pump (See Oil Pump Installation Note (SKYACTIV-G 2.0).)
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Oil Pump Driven Sprocket Removal Note (SKYACTIV-G 2.0)

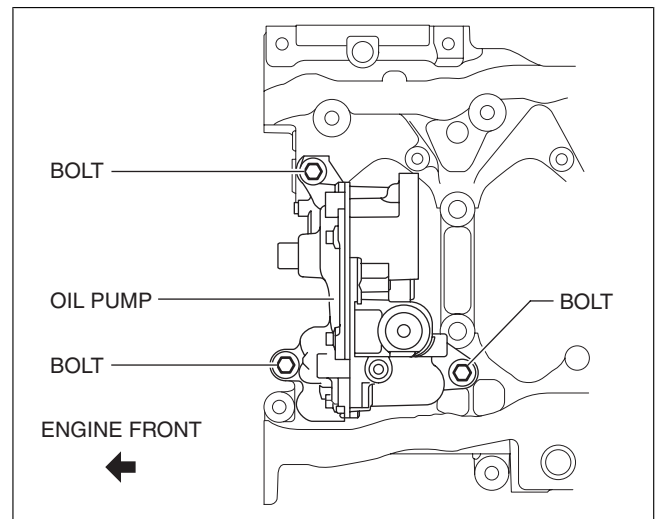
1. Temporarily assemble the crankshaft pulley lock bolt, and lock the oil pump against rotation as shown in the figure.
2. Remove the oil pump driven sprocket.



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Oil Pump Installation Note (SKYACTIV-G 2.0)

1. Install the oil pump using the following procedure:
 - (1) Temporarily tighten the **three bolts** shown in the figure.



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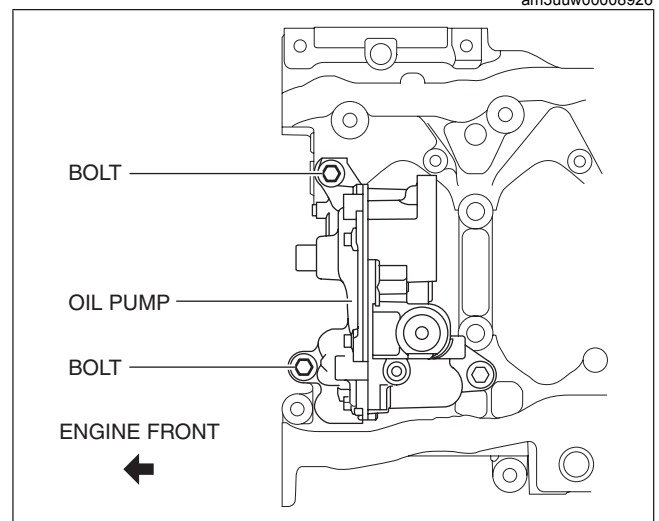
- (2) Tighten the **two bolts** shown in the figure to the specified torque.

Note

- The tightening order for the two bolts is optional.

Tightening torque

20—26 N·m {2.1—2.6 kgf·m, 15—19 ft·lbf}

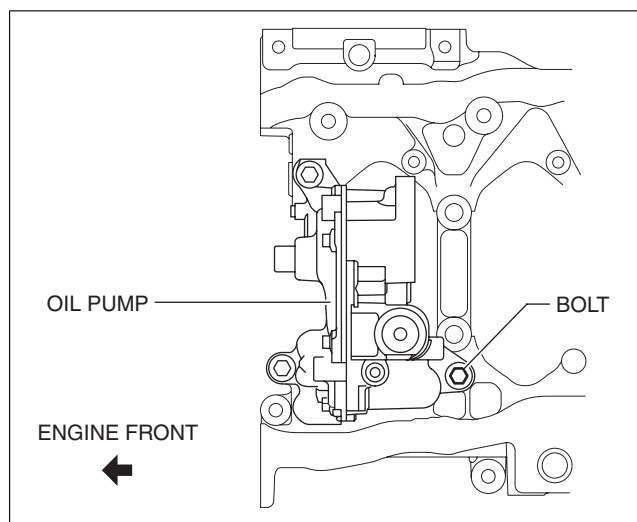


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- (3) Finally, tighten the bolt shown in the figure to the specified torque.

Tightening torque

20—26 N·m {2.1—2.6 kgf·m, 15—19 ft·lbf}



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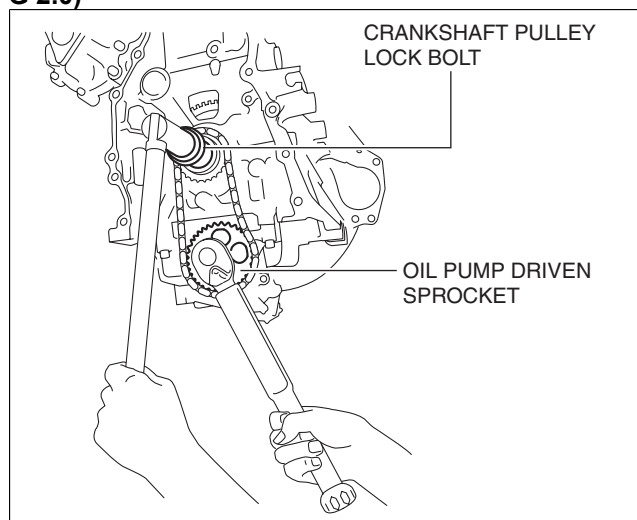
Oil Pump Driven Sprocket Installation Note (SKYACTIV-G 2.0)

1. Temporarily assemble the crankshaft pulley lock bolt, and lock the oil pump against rotation as shown in the figure.
2. Install the oil pump driven sprocket.

Tightening torque

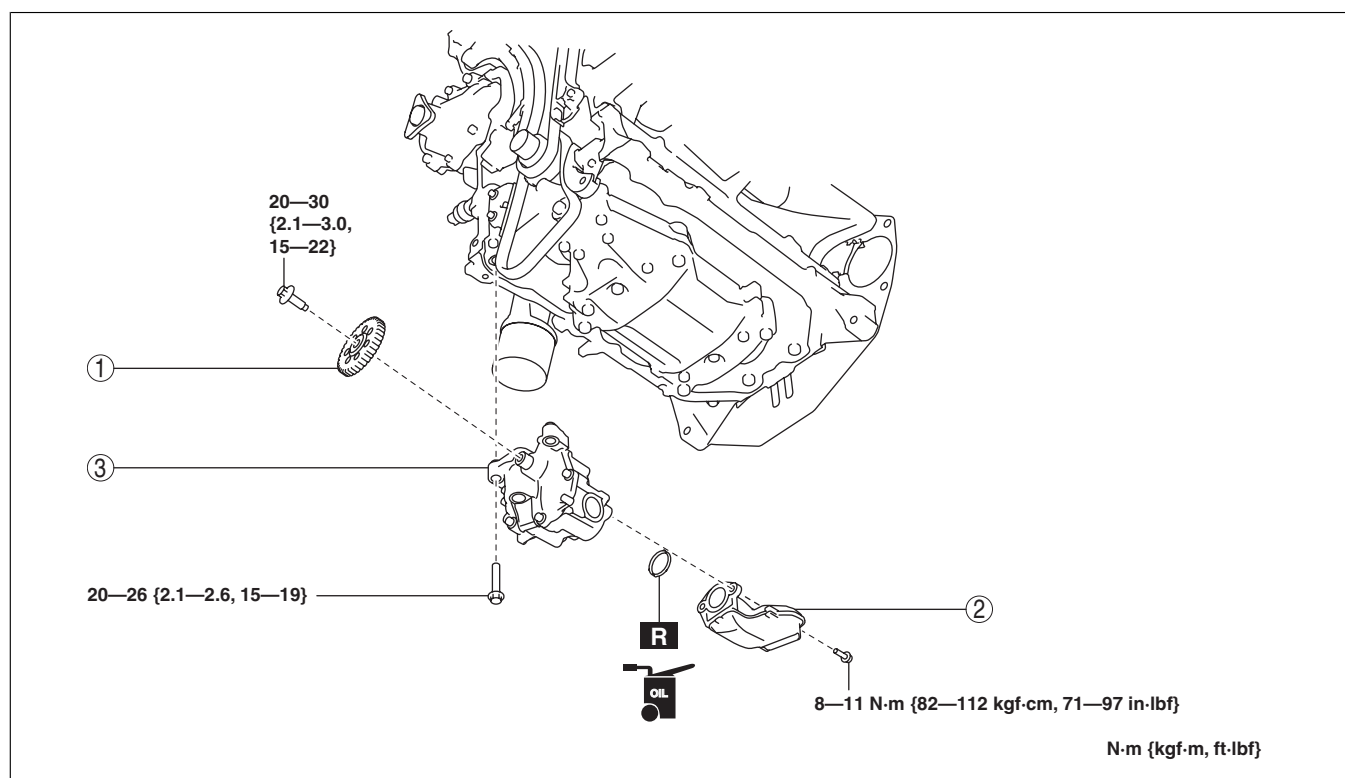
20—30 N·m {2.1—3.0 kgf·m, 15—22 ft·lbf}

3. Remove the temporarily assembled crankshaft pulley lock bolt.



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SKYACTIV-G 2.5



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1	Oil pump driven sprocket (See Oil Pump Driven Sprocket Removal Note (SKYACTIV-G 2.5).) (See Oil Pump Driven Sprocket Installation Note (SKYACTIV-G 2.5).)
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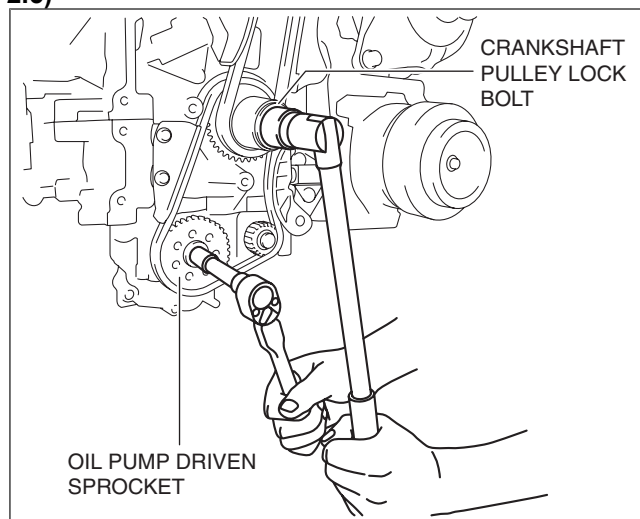
2	Oil strainer
3	Oil pump (See Oil Pump Installation Note (SKYACTIV-G 2.5).)

Oil Pump Driven Sprocket Removal Note (SKYACTIV-G 2.5)

1. Temporarily assemble the crankshaft pulley lock bolt, and lock the oil pump against rotation as shown in the figure.
2. Slightly loosen the oil pump driven sprocket installation bolt.

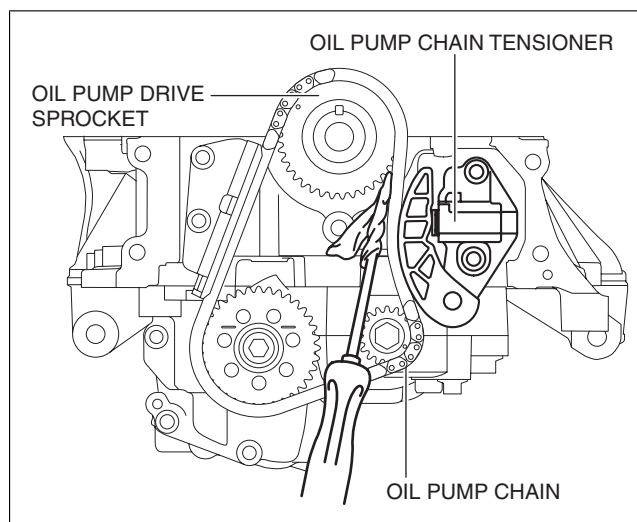
Note

- At this stage, only loosen the oil pump driven sprocket installation bolt, do not remove it. After releasing the tension on the oil pump chain tensioner, completely remove the bolt.



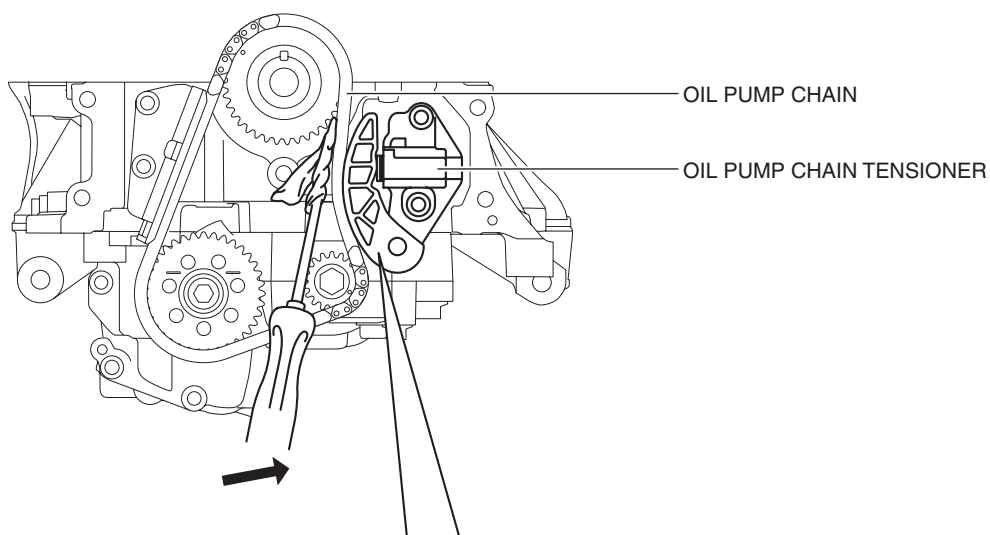
am6zzw00010225

3. Set a cloth wrapped flathead screwdriver in the gap between oil pump drive sprocket and the oil pump chain as shown in the figure.



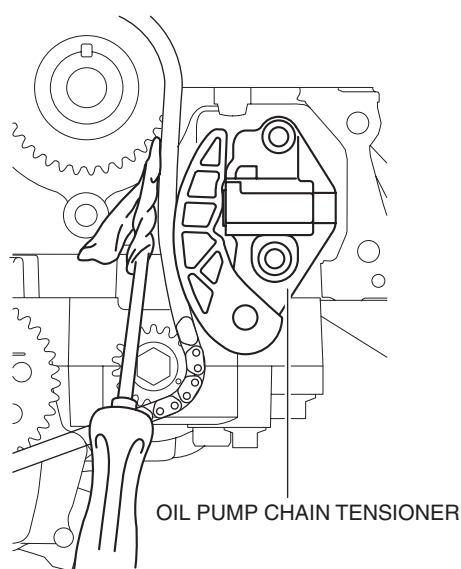
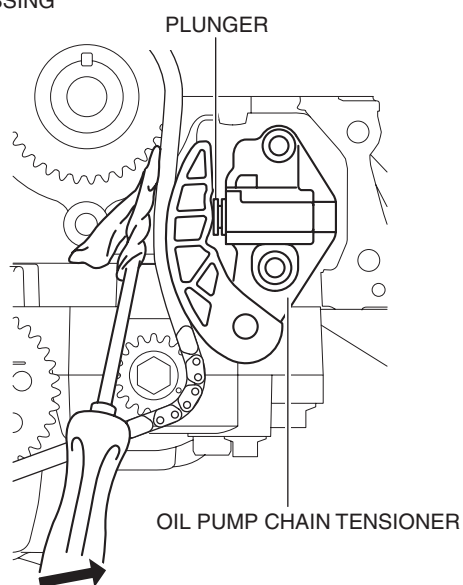
am6zzw00010226

4. Move the screwdriver in the direction of the arrow and press the oil pump chain, and then press on the plunger of the oil pump chain tensioner.



BEFORE PRESSING

AFTER PRESSING



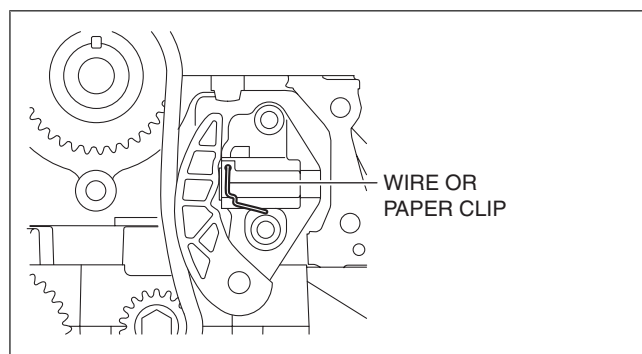
am6zzw00010227

5. Insert a wire with an **approx. diameter of 1.4 mm {0.055 in}** or a paper clip into the body hole of the oil pump chain tensioner with the plunger pressed.

Note

- The wire or paper clip secures the plunger, and the tension can be released.

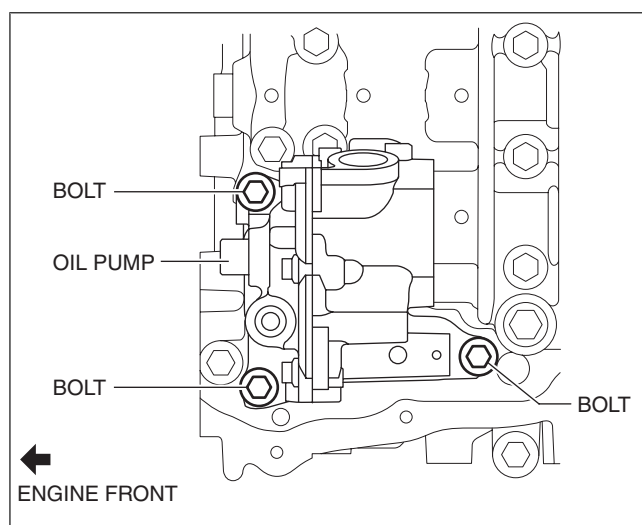
6. Remove the oil pump driven sprocket installation bolt and oil pump driven sprocket.
7. Set the oil pump chain aside so that it does not obstruct the oil pump removal work.



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Oil Pump Installation Note (SKYACTIV-G 2.5)

1. Install the oil pump using the following procedure:
 - (1) Temporarily tighten the **three bolts** shown in the figure.



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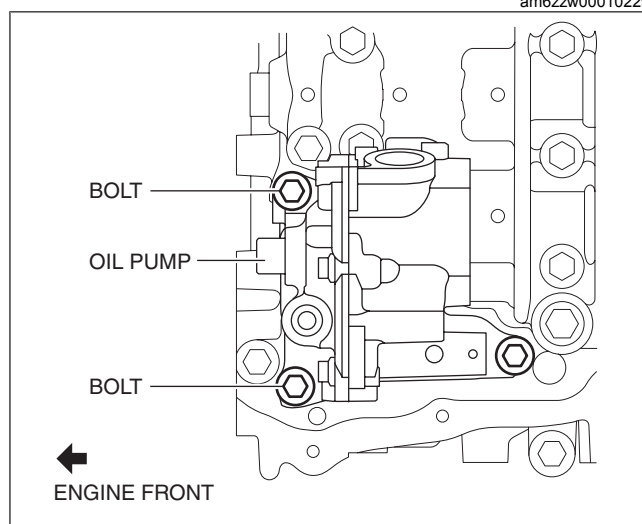
- (2) Tighten the **two bolts** shown in the figure to the specified torque.

Note

- The tightening order for the two bolts is optional.

Tightening torque

20—26 N·m {2.1—2.6 kgf·m, 15—19 ft·lbf}

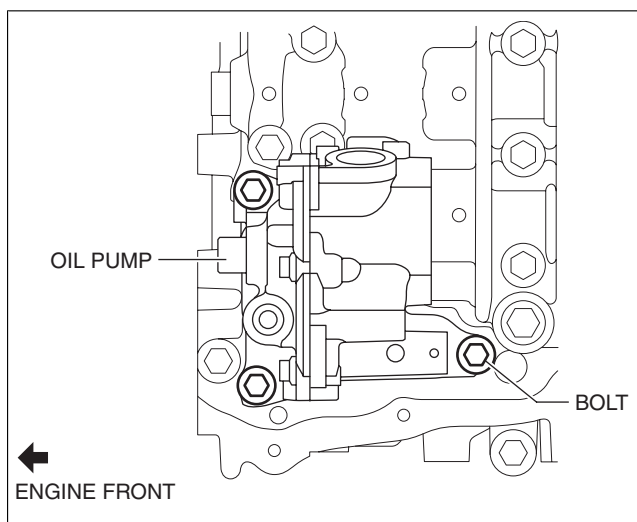


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- (3) Finally, tighten the bolt shown in the figure to the specified torque.

Tightening torque

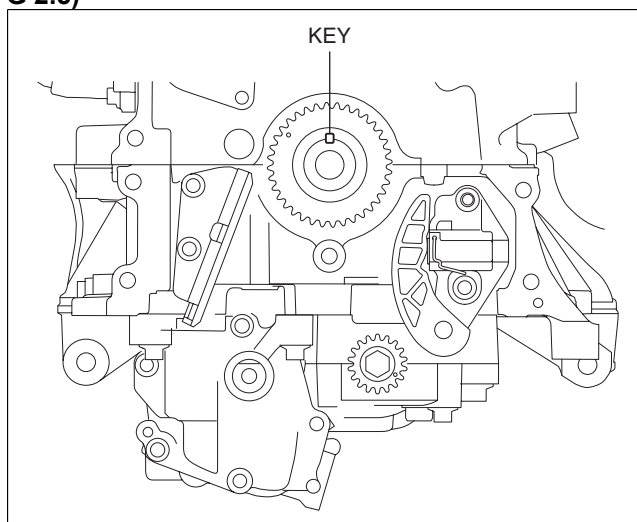
20—26 N·m {2.1—2.6 kgf·m, 15—19 ft·lbf}



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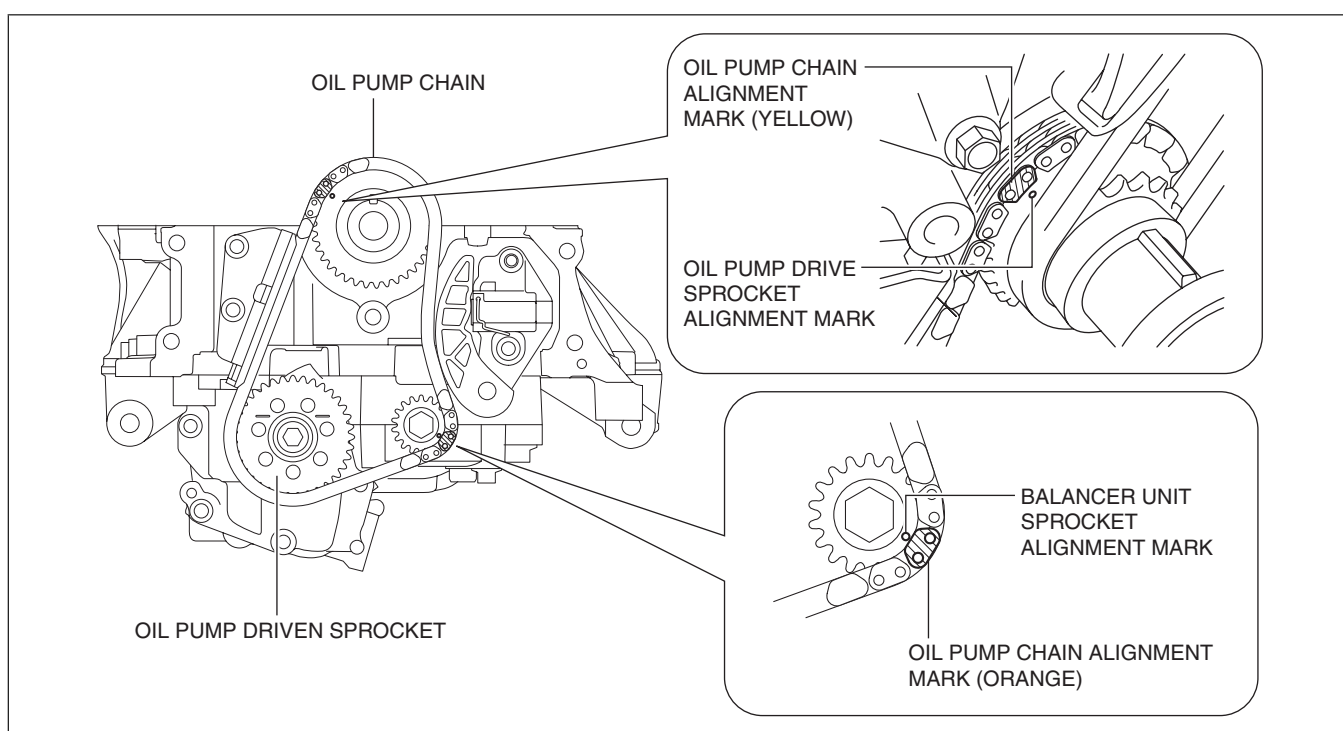
Oil Pump Driven Sprocket Installation Note (SKYACTIV-G 2.5)

1. Rotate the crankshaft clockwise to align the key position as shown in the figure.



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2. Align the oil pump chain alignment marks in two locations with the balancer unit sprocket alignment mark and the oil pump drive sprocket alignment mark as shown in the figure, and install the oil pump chain and oil pump driven sprocket.



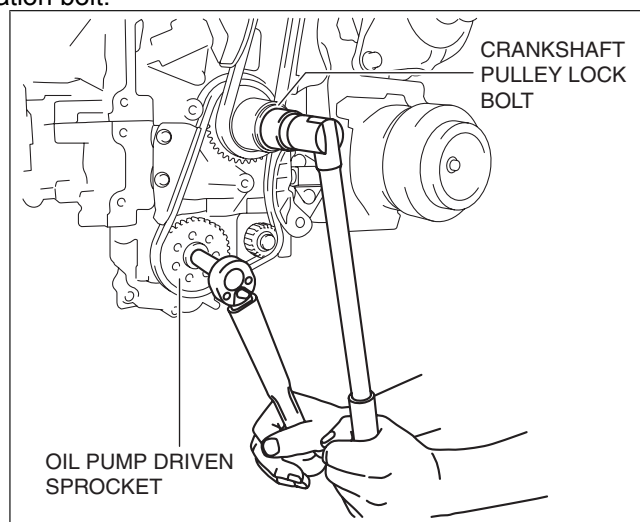
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3. Temporarily tighten the oil pump driven sprocket installation bolt.
4. Lock the oil pump against rotation as shown in the figure.
5. Tighten the oil pump driven sprocket installation bolt.

Tightening torque

20—30 N·m {2.1—3.0 kgf·m, 15—22 ft·lbf}

6. Remove the temporarily assembled crankshaft pulley lock bolt.
7. Remove the wire or paper clip installed to the oil pump chain tensioner and apply tension to the oil pump chain.
 - If a new oil pump chain tensioner is used, remove the installed stopper.



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