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## TIMING CHAIN REMOVAL/INSTALLATION [L3 Turbo]

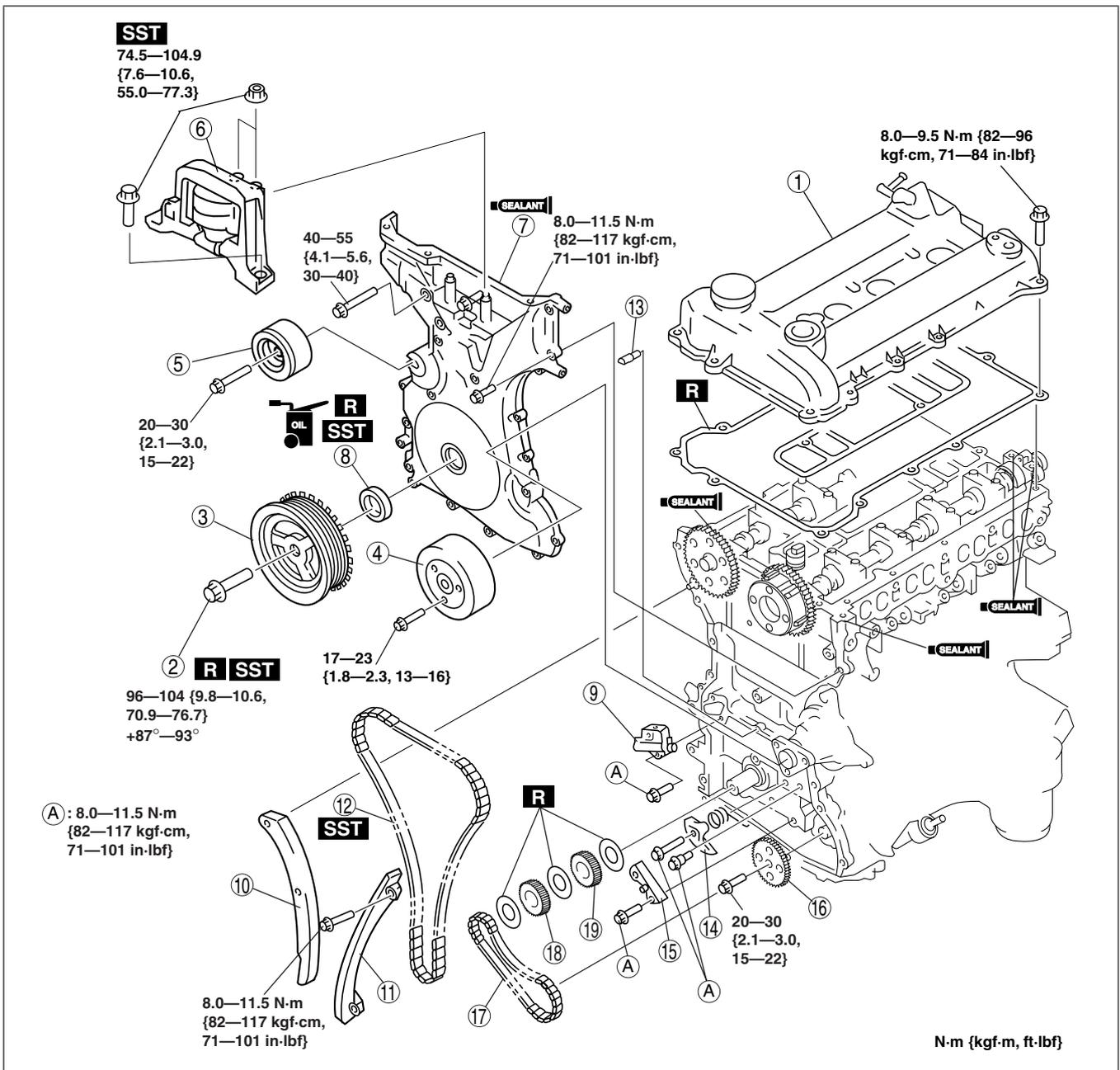
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1. Remove the battery cover.
2. Disconnect the negative battery cable.
3. Remove the under cover and splash shield.
4. Remove the charge air cooler. (See INTAKE AIR SYSTEM REMOVAL/INSTALLATION [L3 Turbo].)
5. Remove the high pressure fuel pump. (See HIGH PRESSURE FUEL PUMP REMOVAL/INSTALLATION [L3 Turbo].)
6. Remove the ignition coils. (See IGNITION COIL REMOVAL/INSTALLATION [L3 Turbo].)
7. Disconnect the wiring harness.
8. Remove the ventilation hose.
9. Remove the drive belt. (See DRIVE BELT REMOVAL/INSTALLATION [L3 Turbo].)
10. Remove the crankshaft position (CKP) sensor. (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [L3 Turbo].)
11. Remove the P/S oil pump with the hoses and pipes still connected. (See POWER STEERING OIL PUMP REMOVAL/INSTALLATION [L3 Turbo].)

### Note

- Position and secure the P/S oil pump out of the way with a rope or wire.

12. Remove in the order indicated in the figure.
13. Install in the reverse order of removal.
14. Start the engine and inspect and adjust the following:
  - (1) Engine oil amount (See ENGINE OIL LEVEL INSPECTION [L3 Turbo].)
  - (2) Runout and contact of pulley and belt.
  - (3) Ignition timing, idle speed, and idle mixture (CO and HC) verification (See ENGINE TUNE-UP [L3 Turbo].)



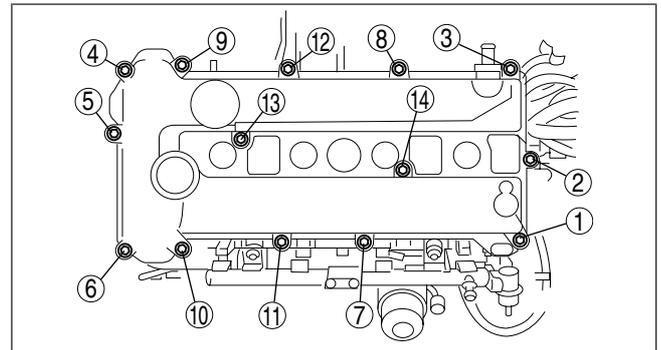
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1	Cylinder head cover (See Cylinder Head Cover Removal Note .) (See Cylinder Head Cover Installation Note .)
2	Crankshaft pulley lock bolt (See Crankshaft Pulley Lock Bolt Removal Note .) (See Crankshaft Pulley Lock Bolt Installation Note .)
3	Crankshaft pulley
4	Water pump pulley
5	Front drive belt idler pulley
6	No. 3 engine mount (See No.3 Engine Mount Removal Note .) (See No.3 Engine Mount Installation Note .)
7	Engine front cover (See Engine Front Cover Installation Note .)
8	Front oil seal (See Front Oil Seal Removal Note .) (See Front Oil Seal Installation Note .)
9	Chain tensioner (See Chain Tensioner Removal Note .)

10	Tensioner arm
11	Chain guide
12	Timing chain (See Timing Chain Installation Note .)
13	Oil jet
14	Oil pump chain tensioner
15	Oil pump chain guide
16	Oil pump driven sprocket (See Oil Pump Driven Sprocket Removal Note .) (See Oil Pump Driven Sprocket Installation Note .)
17	Oil pump chain
18	Crankshaft sprocket
19	Oil pump drive sprocket (See Oil Pump Driven Sprocket Installation Note .)

### Cylinder Head Cover Removal Note

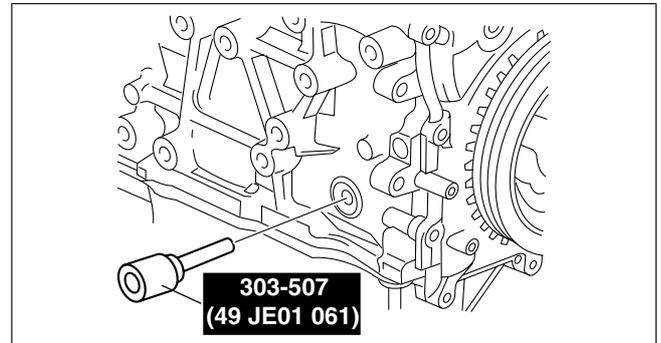
1. Loosen the cylinder head cover bolts in the order shown in the figure.



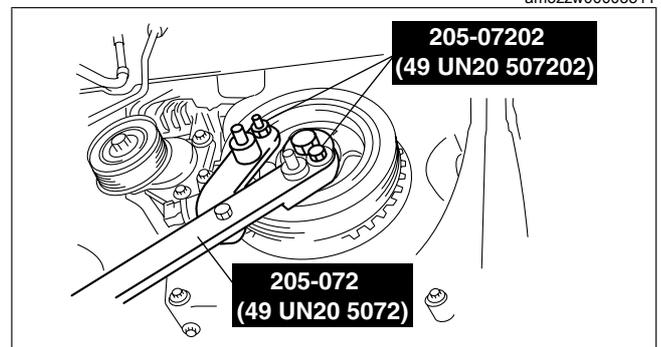
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### Crankshaft Pulley Lock Bolt Removal Note

1. Rotate the crankshaft in the direction of the engine rotation and remove the cylinder block lower blind plug when the No. 1 cylinder is at the point prior to top dead center (TDC) of compression, then install the **SST**.
2. Rotate the crankshaft in the direction of the engine rotation so that the No.1 piston is at TDC of the compression stroke. (Until the crank weight contacts **SST** and stops.)
3. Install the **SST** to the crankshaft pulley and lock the crankshaft against rotation.



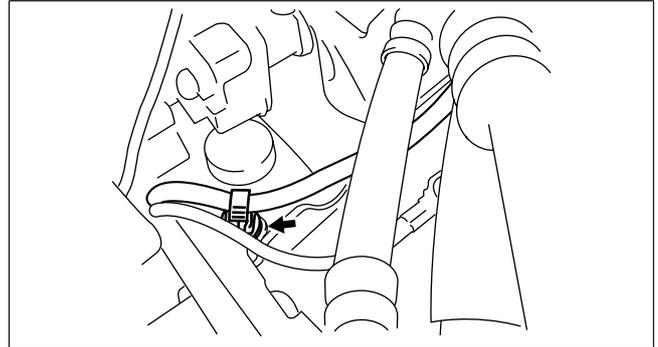
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### No.3 Engine Mount Removal Note

1. To install the front shaft (RH) of the **SST** (49 C017 5A0), remove the clip shown in the figure.



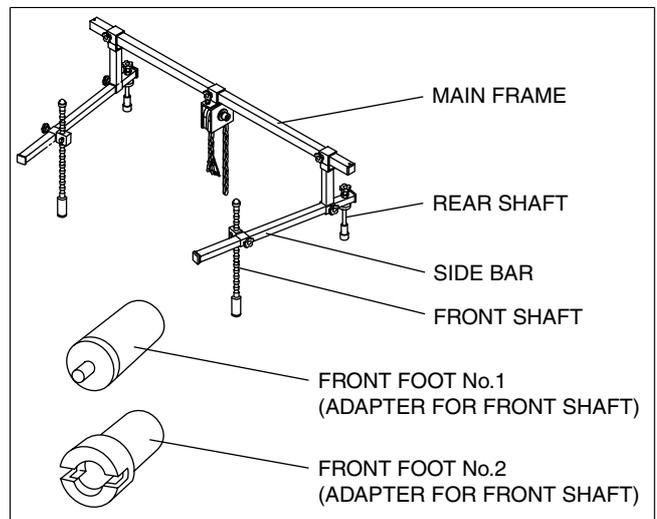
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2. Install the **SST** using the following procedure.

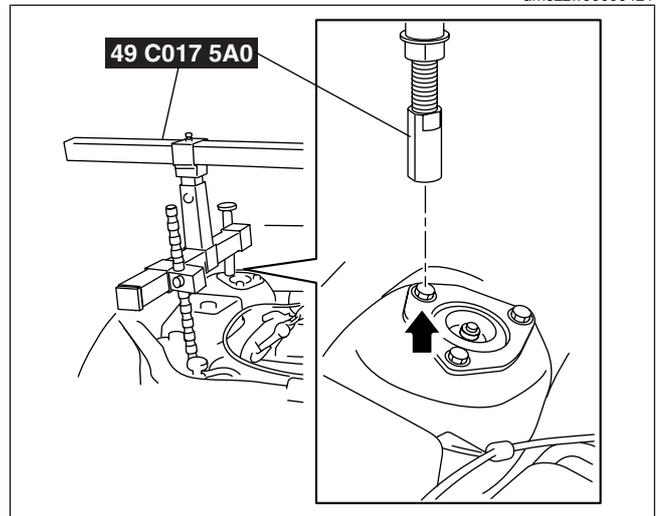
#### Caution

- Refer to the **SST** instruction manual for the basic handling procedure.

- (1) Install the right rear shaft of the **SST** to the bolt of the right shock absorber as shown in the figure.
- (2) Install the left rear shaft of the **SST** to the bolt of the left shock absorber (Identical position to right side).

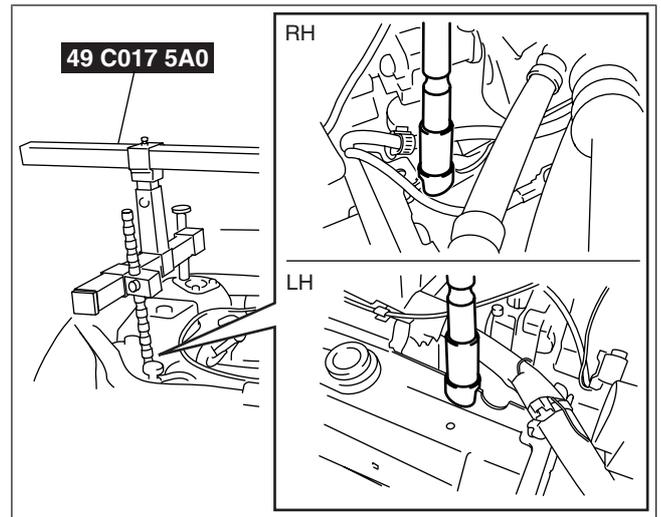


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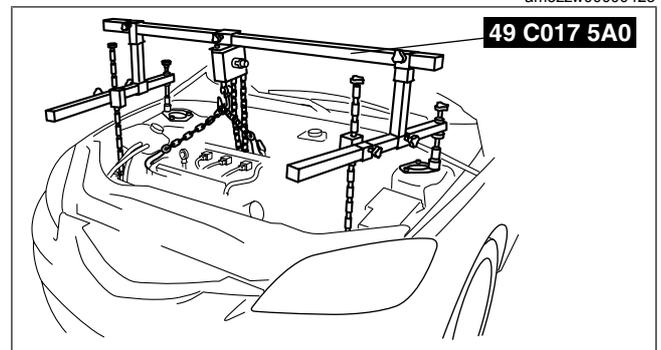
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- (3) Install front foot No.2 to the left/right front shaft of the **SST**, then align the groove of the front shaft of the **SST** with the folded up part of the vehicle as shown in the figure.
- (4) Adjust the positions of the **SST** side bars so that they are the same height (left and right) and horizontal.
- (5) Make sure each joint is securely tightened.



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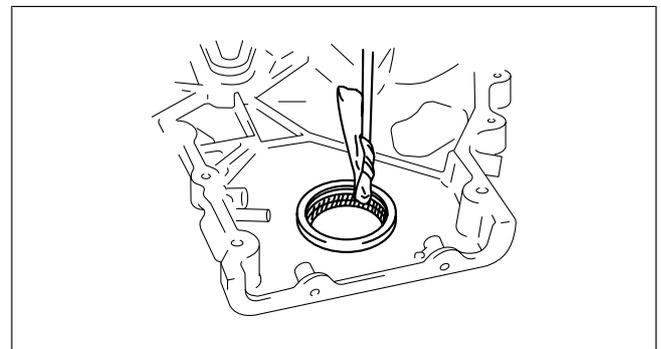
3. Support the engine using the **SST**.
4. Remove the battery tray bracket, No.4 engine mount rubber and bracket.



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#### Front Oil Seal Removal Note

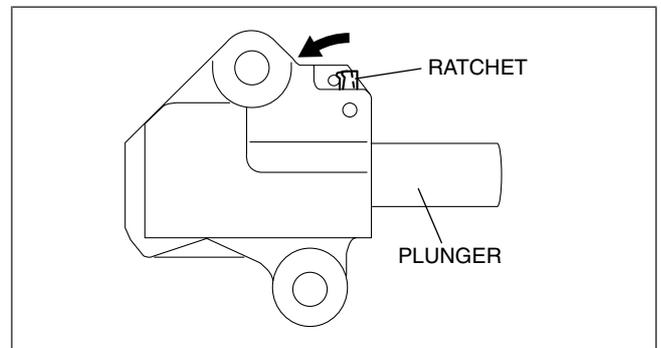
1. Remove the front oil seal using a flathead screwdriver or similar tool.



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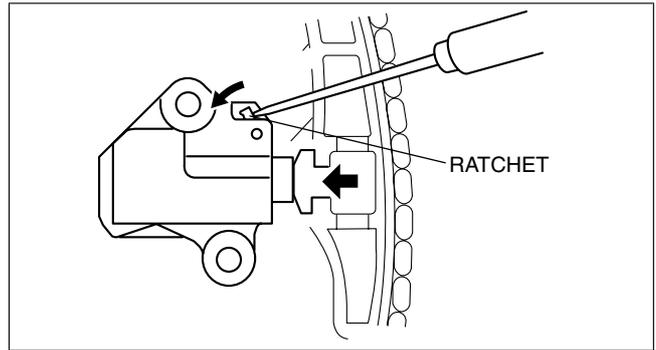
#### Chain Tensioner Removal Note

1. Press the timing chain tensioner ratchet to the left using a thin flathead screwdriver (precision screwdriver) to unlock the plunger.

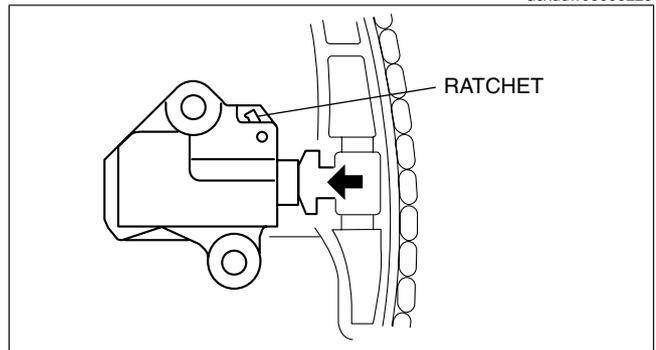


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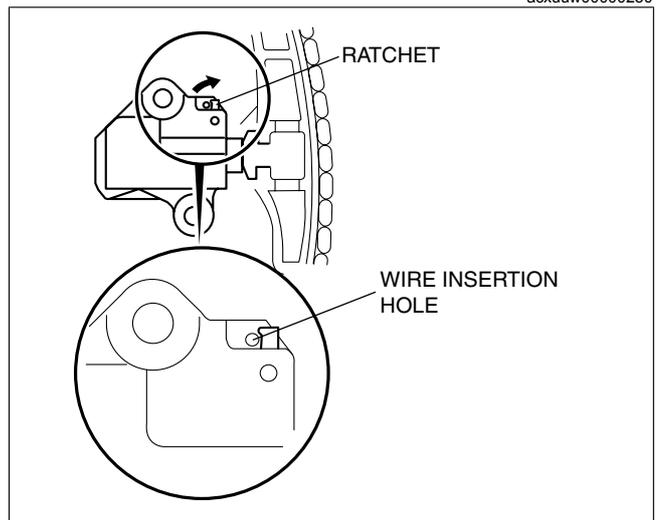
2. Slowly press the plunger back in the direction shown in the figure while pressing the ratchet.



3. Release the ratchet with the plunger still pressed down.

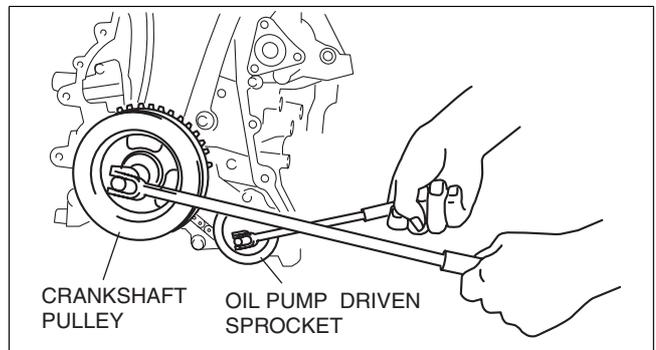


4. Press-in the plunger until the ratchet position is as indicated in the figure, and then insert the wire to lock the plunger.



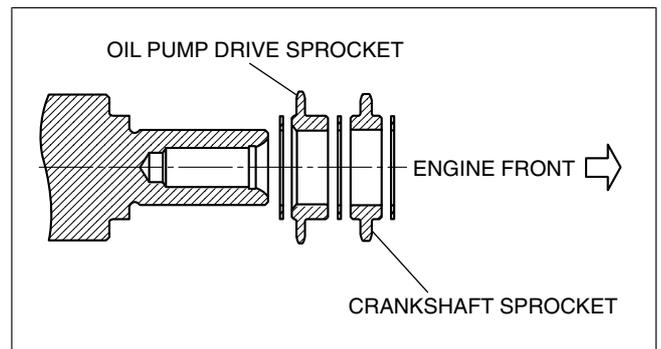
**Oil Pump Driven Sprocket Removal Note**

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



### Oil Pump Drive Sprocket Installation Note

1. The oil pump drive sprocket has the assembly direction as shown in the figure.

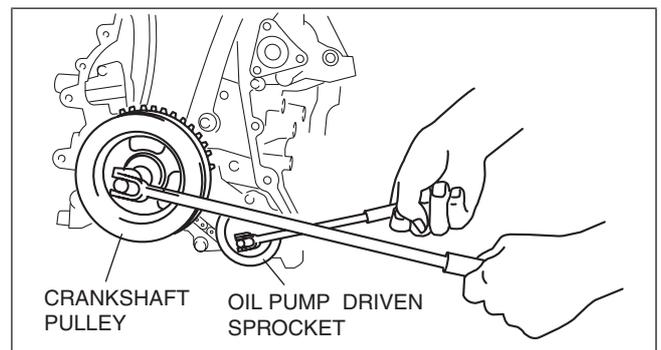


### Oil Pump Driven Sprocket Installation Note

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

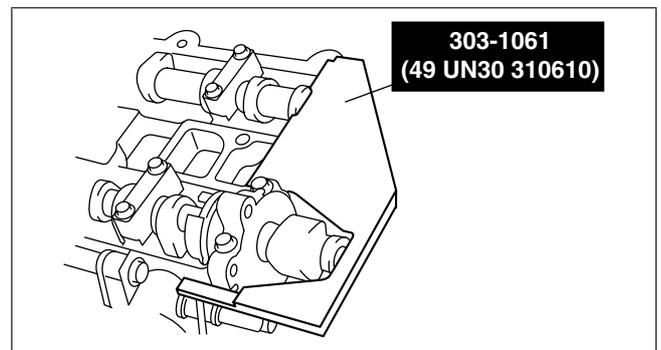
#### Tightening torque

20—30 {2.1—3.0 kgf·m, 15—22 ft·lbf}



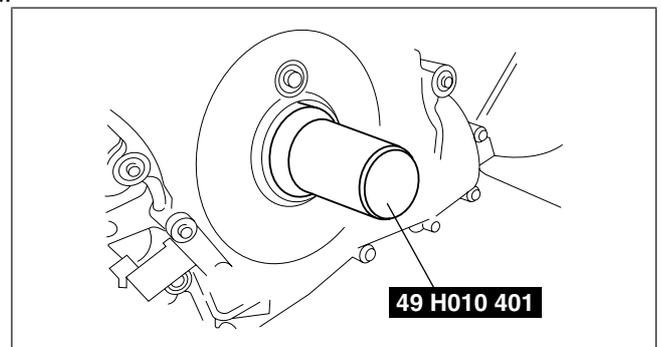
### Timing Chain Installation Note

1. Install the **SST** to the camshaft as shown in the figure.
2. Install the timing chain.
3. Remove the wire or paper clip from the chain tensioner piston and apply tension to the timing chain.

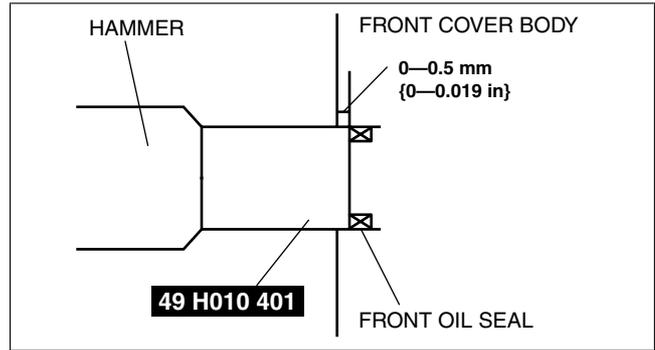


### Front Oil Seal Installation Note

1. Apply clean engine oil to a new front oil seal.
2. Push the front oil seal in the engine front cover by hand.
3. Use the **SST** to tap in the front oil seal.



**Front oil seal press-in amount**  
**0—0.5 mm {0—0.019 in}**



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**Engine Front Cover Installation Note**

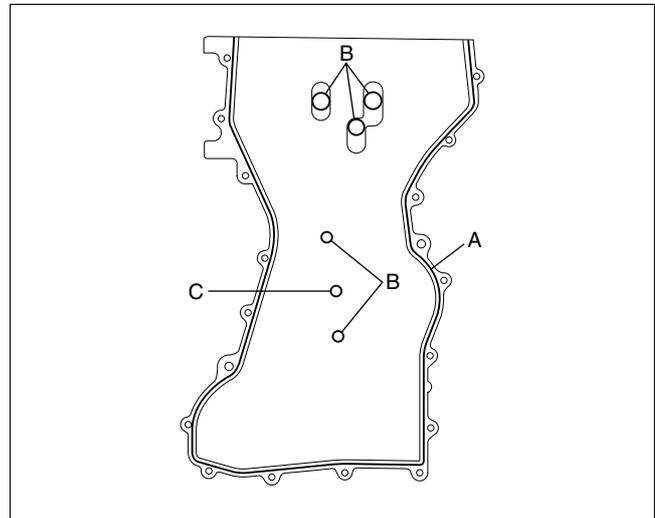
1. Apply silicone sealant to the engine front cover.

**Caution**

- Install the engine front cover within 10 min of applying the silicone sealant.
- Silicone sealant is not needed in area C shown in the figure.

**Thickness**

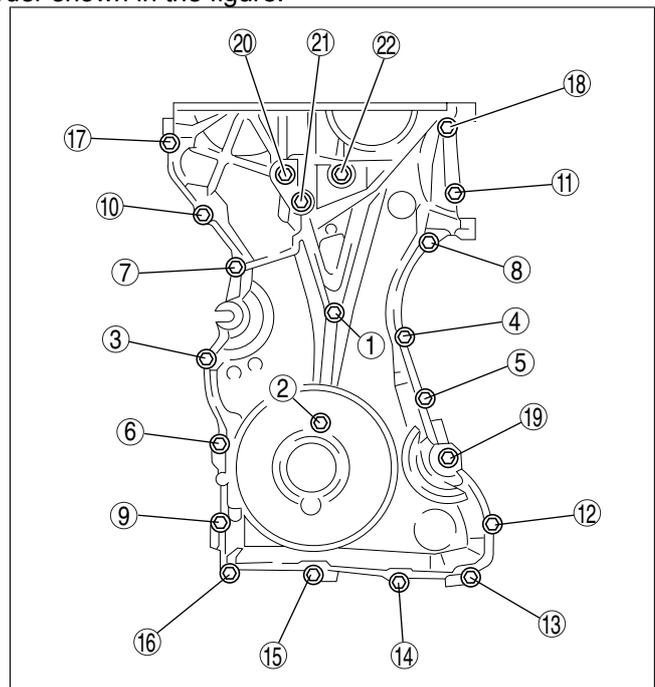
- A: 2.2—3.2 mm {0.087—0.12 in}
- B: 1.5—2.5 mm {0.06—0.098 in}



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2. Tighten the engine front cover installation bolts in the order shown in the figure.

Installation Position	Tightening Torque
1—18	8.0—11.5 N·m {82—117 kgf·cm, 71—101 in·lbf}
19—22	40—55 N·m {4.1—5.6 kgf·m, 30—40 ft·lbf}



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### No.3 Engine Mount Installation Note

1. Tighten the stud bolt of the No.3 engine mount bracket.

#### Tightening torque

**7.0—13 N·m {71.4—132.5 kgf·cm, 62.0—115.0 in·lbf}**

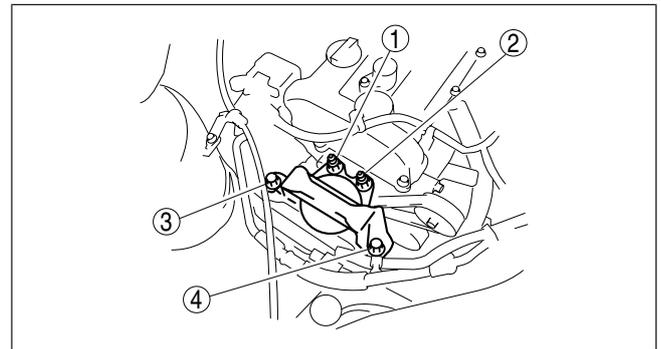
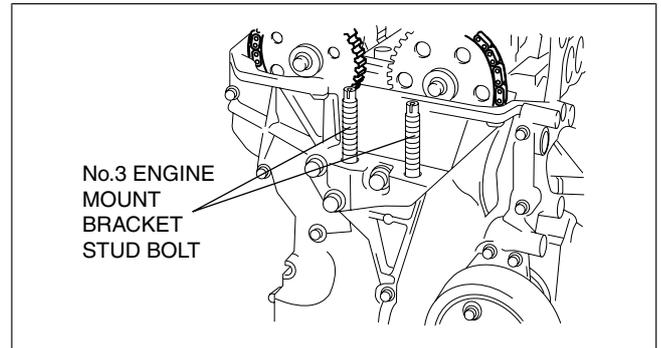
#### Note

- Tightening stud bolt when the nut of No.3 engine mount nut is loosened.

2. Hand-tighten the No.3 engine mount rubber and No. 3 engine mount bracket.
3. Tighten the bolts and nuts in the order as shown in the figure.

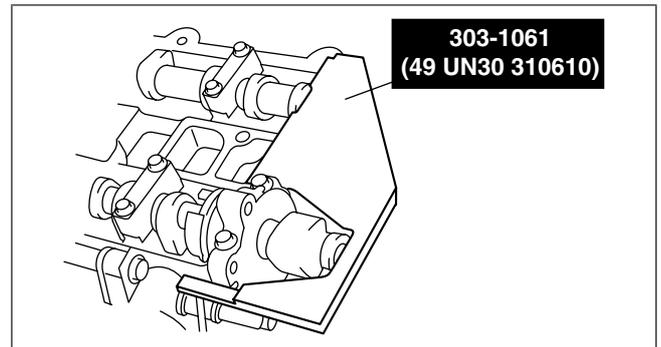
#### Tightening torque

**74.5—104.9 {7.6—10.6 kgf·m, 55.0—77.3 ft·lbf}**

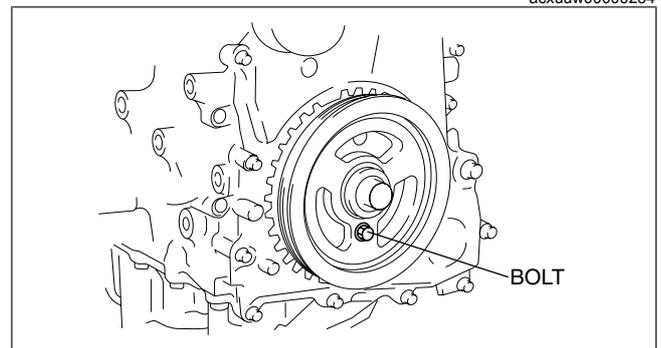


### Crankshaft Pulley Lock Bolt Installation Note

1. Install the **SST** to the camshaft as shown in the figure.
2. Verify that cylinder No.1 is at TDC of the compression stroke. (Position crank weight contacts **SST**.)



3. To position the crankshaft pulley, temporarily tighten it and, using a suitable bolt (**M6 X 1.0 length 25—35 mm {0.99—1.3 in}**), fix the crankshaft pulley to the engine front cover.



4. Install the **SSTs** to the crankshaft pulley, lock the crankshaft against rotation, and tighten the crankshaft pulley lock bolt using the following two steps.

**Tightening procedure**

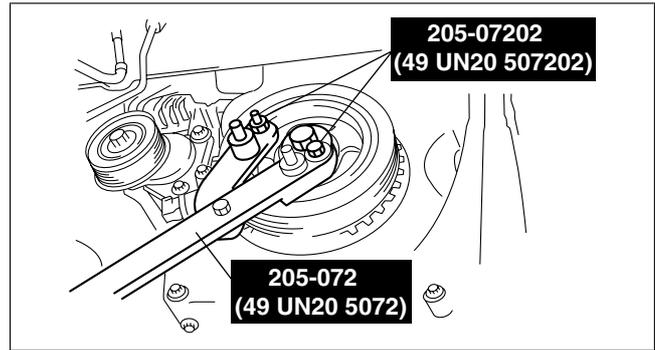
**1st step: 96—104 N·m {9.8—10.6 kgf·m, 70.9—76.7 ft·lbf}**

**2nd step: 87°—93°**

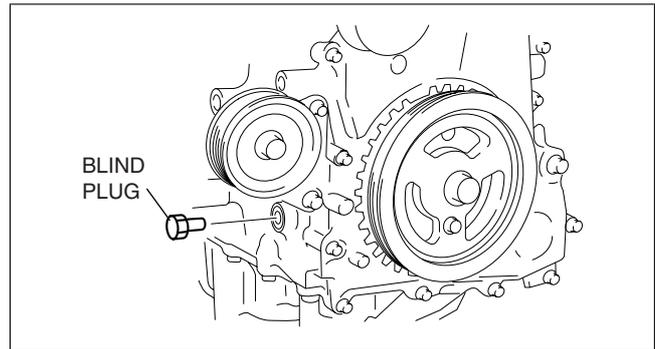
5. Remove the bolt (M6 X 1.0 length 25—35 mm {0.99—1.3 in}) installed to the crankshaft pulley.
6. Remove the **SST** from the camshaft.
7. Remove the **SST** installed in the cylinder block lower blind plug hole.
8. Rotate the crankshaft clockwise two turns and inspect the valve timing.
  - If not aligned, repeat from Step 1.
9. Install the cylinder block lower blind plug.

**Tightening torque**

**18—22 N·m {1.9—2.2 kgf·m, 14—16 ft·lbf}**



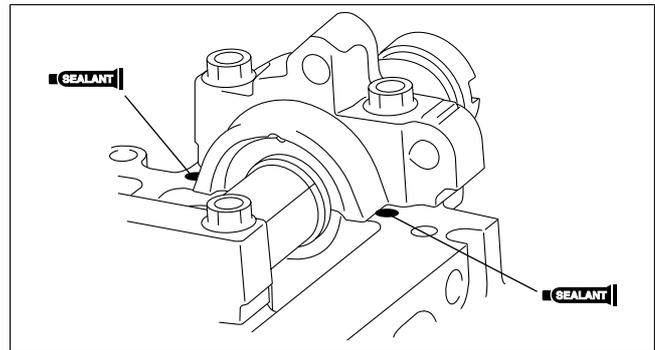
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**Cylinder Head Cover Installation Note**

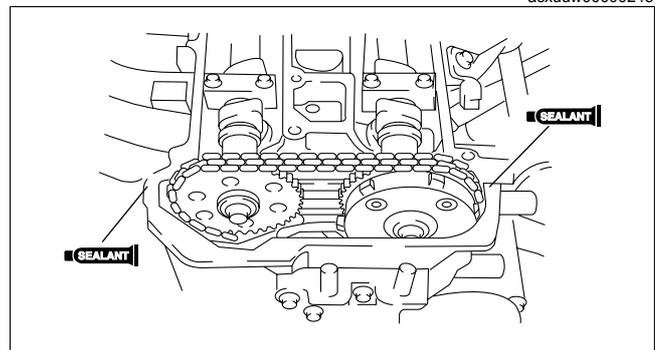
1. Apply silicone sealant to the areas shown in the figure.



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**Thickness**

**5.0 mm {0.20 in}**

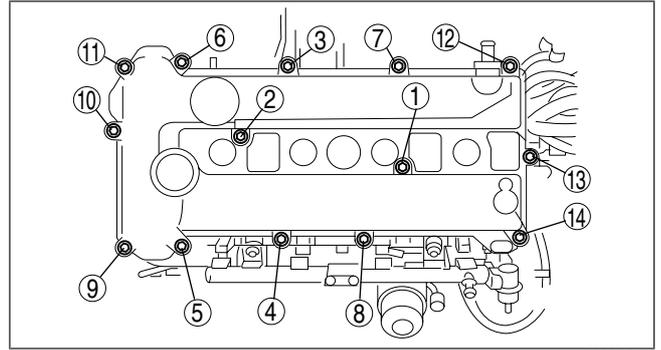


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2. Tighten the cylinder head cover bolts in the order shown in the figure.

**Tightening torque**

**8.0—9.5 N·m {82—96 kgf·cm, 71—84 in·lbf}**



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