

TIMING CHAIN REMOVAL/INSTALLATION [LF]

B3E011012201W01

Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See [Fuel Line Safety Procedure](#).)

1. Remove the following parts.

- (1) Plug hole plate (See [PLUG HOLE PLATE REMOVAL/INSTALLATION \[LF\]](#).)
- (2) Plug hole plate bracket
- (3) Accelerator cable and bracket
- (4) Battery cover (See [BATTERY REMOVAL/INSTALLATION \[LF\]](#).)

2. Disconnect the negative battery cable.

3. Remove the following parts.

- (1) Ignition coils (See [IGNITION COIL REMOVAL/INSTALLATION \[LF\]](#).)
- (2) Front wheel and tire (RH) (See [GENERAL PROCEDURES \(SUSPENSION\)](#).)
- (3) Under cover and splash shields
- (4) Crankshaft position (CKP) sensor (See [CRANKSHAFT POSITION \(CKP\) SENSOR REMOVAL/INSTALLATION \[LF\]](#).)
- (5) Drive belt (See [DRIVE BELT REPLACEMENT \[LF\]](#).)
- (6) A/C compressor with the oil hose still connected and position the A/C compressor so that it is out of the way (See [A/C COMPRESSOR REMOVAL/INSTALLATION \[LF\]](#).)
- (7) Coolant reserve tank with the hose still connected and position the coolant reserve tank so that it is out of the way

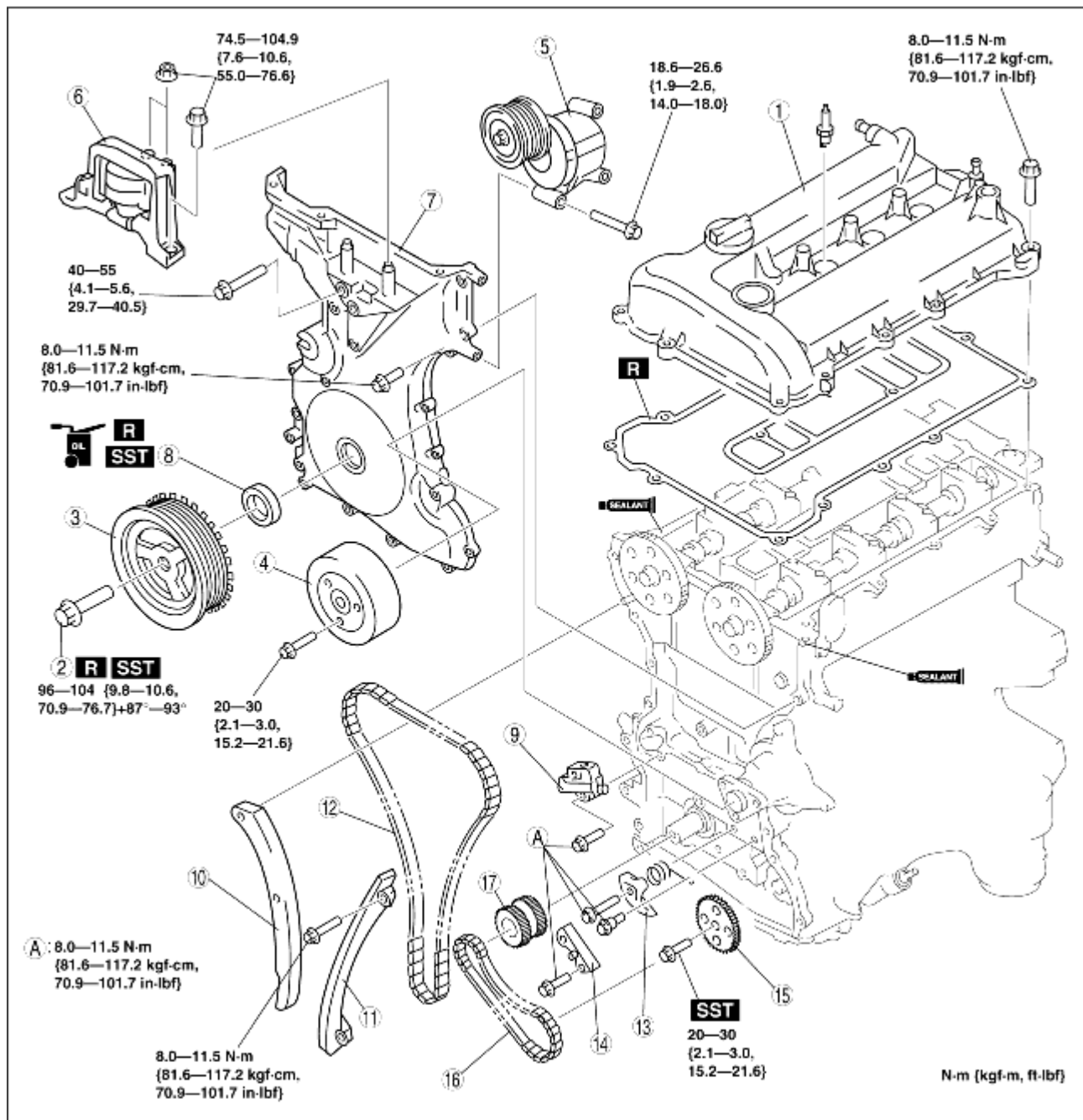
4. Remove in the order indicated in the table.

5. Install in the reverse order of removal.

6. Start the engine.

7. Inspect the following and adjust if necessary.

- Pulley and belt for runout and contact
- Leakage of engine oil
- Ignition timing and idle speed, and amount of CO and HC (See [ENGINE TUNE-UP \[LF\]](#).)
- Engine-driven accessories operation

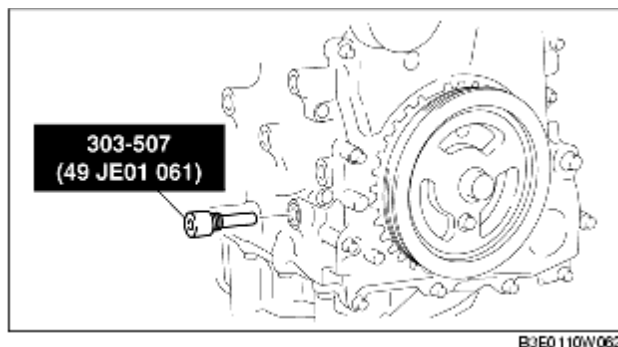


1	Cylinder head cover (See Cylinder Head Cover Installation Note.)
2	Crankshaft pulley lock bolt (See Crankshaft Pulley Lock Bolt Removal Note.) (See Crankshaft Pulley Lock Bolt Installation Note.)
3	Crankshaft pulley
4	Water pump pulley
5	Drive belt auto tensioner
6	No.3 engine mount rubber and No.3 engine joint bracket (See No.3 Engine Mount Rubber Removal Note.) (See No.3 Engine Mount Rubber Installation Note.)
7	Engine front cover

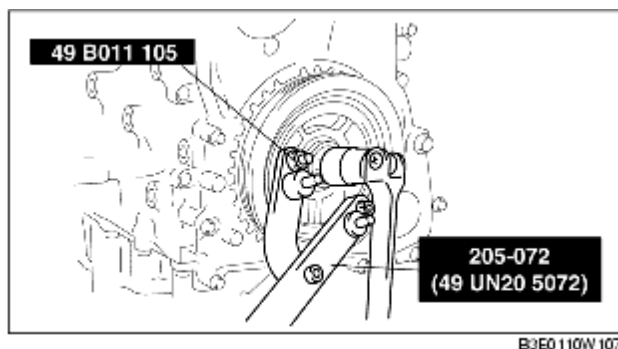
	(See Engine Front Cover Installation Note.)
8	Front oil seal (See Engine Front Cover Removal Note.) (See Front Oil Seal Installation Note.)
9	Chain tensioner (See Chain Tensioner Removal Note.)
10	Tensioner arm
11	Chain guide
12	Timing chain (See Timing Chain Installation Note.)
13	Oil pump chain tensioner
14	Oil pump chain guide
15	Oil pump sprocket (See Oil Pump Sprocket Removal Note.) (See Oil Pump Sprocket Installation Note.)
16	Oil pump chain
17	Crankshaft sprocket

Crankshaft Pulley Lock Bolt Removal Note

1. Remove the cylinder block lower blind plug.
2. Install the **SST**.

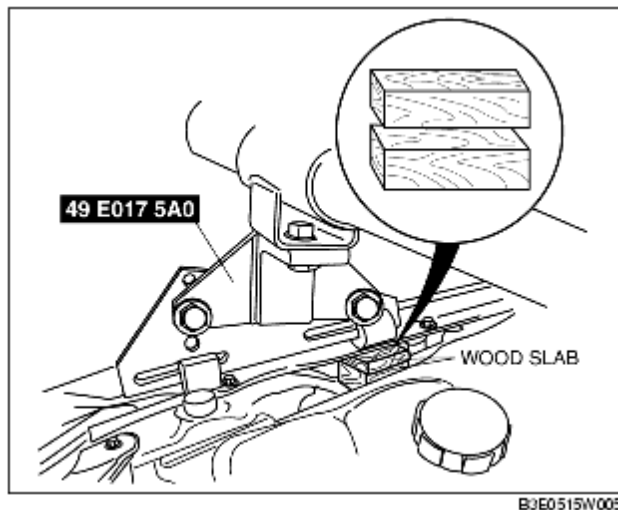


3. Turn the crankshaft clockwise the crankshaft is in the No.1 cylinder TDC position (until the balance weight is attached to the **SST**).
4. Hold the crankshaft pulley using the **SSTs**.



No.3 Engine Mount Rubber Removal Note

1. Install the suitable wood slabs between the front fender panel and apron reinforcement upper.

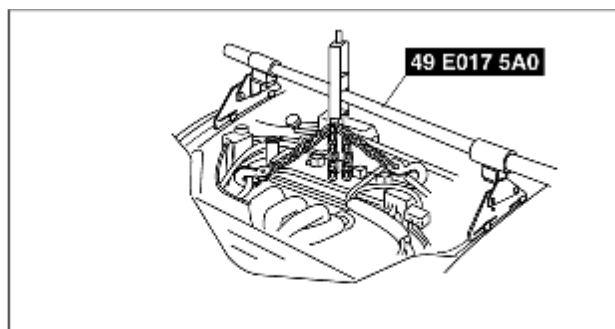


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Note

- Wood slab height
4SD: approx. 35 mm {1.38 in}
5HB: approx. 60 mm {2.36 in}
- Cut the wood slab into two piece and insert.

2. Support the engine using the **SST**.



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Note

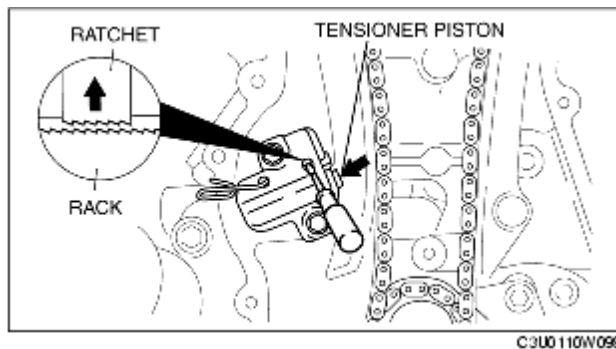
- A hoist or small crane can be used in place of the **SST (49E 017 5A0)**.

Engine Front Cover Removal Note

1. Remove the oil seal using a screwdriver as shown in the figure.

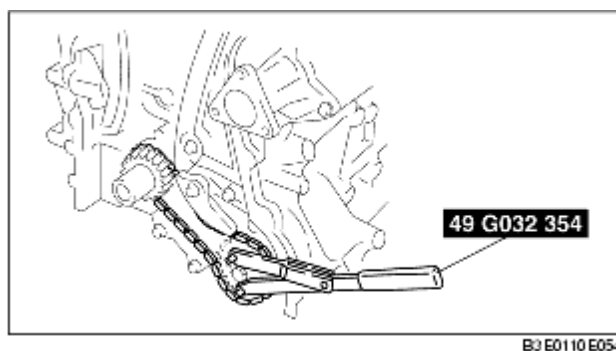
Chain Tensioner Removal Note

1. Unlock the chain tensioner ratchet using a suitable screw driver or equivalent tool.
2. Slowly compress the tensioner piston.
3. Hold the tensioner piston using a **1.5 mm {0.059 in}** wire or paper clip.



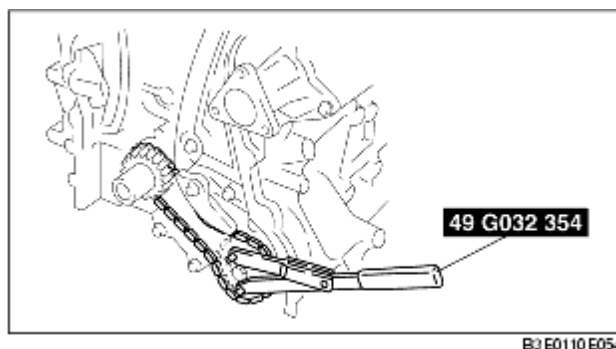
Oil Pump Sprocket Removal Note

1. Hold the oil pump sprocket using the **SST**.



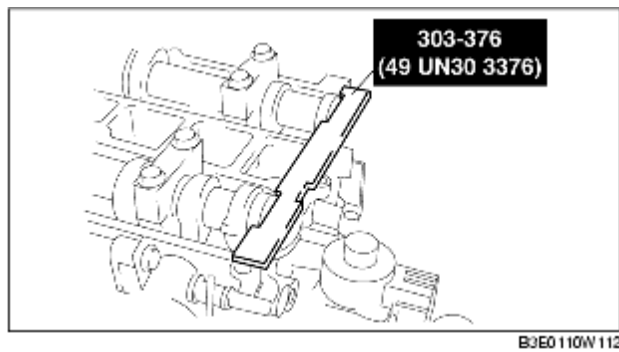
Oil Pump Sprocket Installation Note

1. Hold the oil pump sprocket using the **SST**.



Timing Chain Installation Note

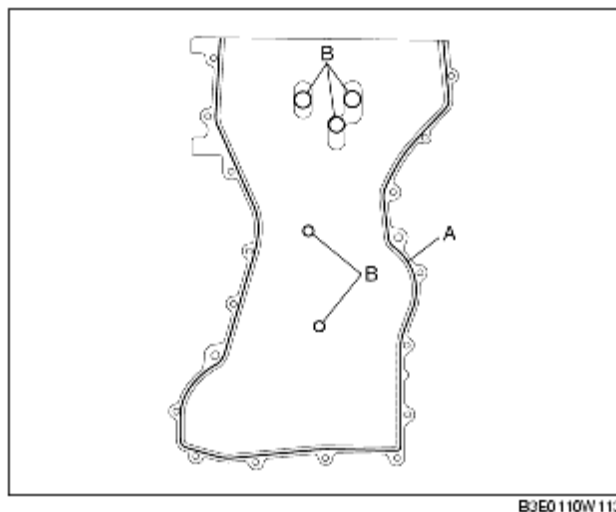
1. Install the **SST** to the camshaft as shown in the figure.



2. Install the timing chain.
3. Remove the retaining wire or paper clip from the auto tensioner to apply tension to the timing chain.

Engine Front Cover Installation Note

1. Apply silicone sealant to the engine front cover as shown in the figure.



Caution

- Install the engine front cover within 10 min of applying the silicone sealant.

Thickness

A: 2.2-3.2 mm {0.087-0.125 in}

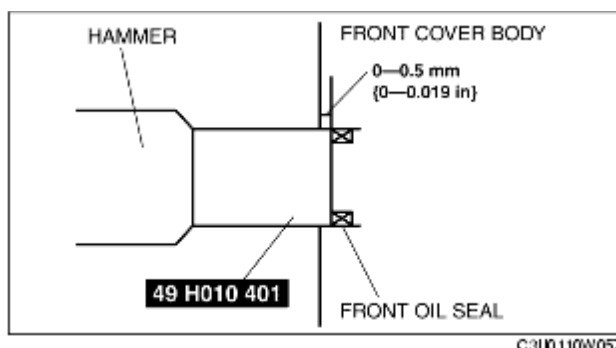
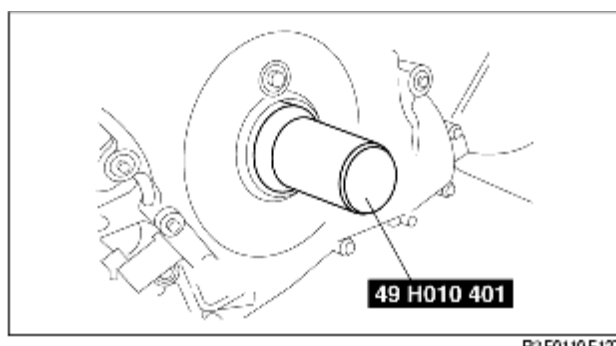
B: 1.5-2.5 mm {0.059-0.098 in}

2. Install the engine front cover bolts in the order shown in the figure.

Bolt No.	Tightening torque
1-18	8.0-11.5 N·m {81.6-117.2 kgf·cm, 70.9-101.7 in·lbf}
19-22	40-55 N·m {4.1-5.6 kgf·m, 29.7-40.5 ft·lbf}
23	20-30 N·m {2.1-3.0 kgf·m, 14.8-22.1 ft·lbf}

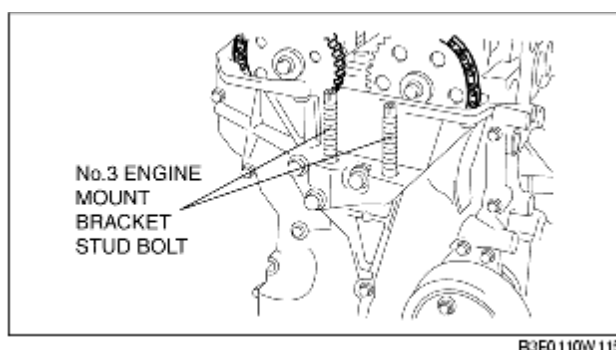
Front Oil Seal Installation Note

1. Apply clean engine oil to the oil seal.
2. Push the oil seal slightly in by hand.
3. Compress the oil seal using the **SST** and a hammer.



No.3 Engine Mount Rubber Installation Note

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

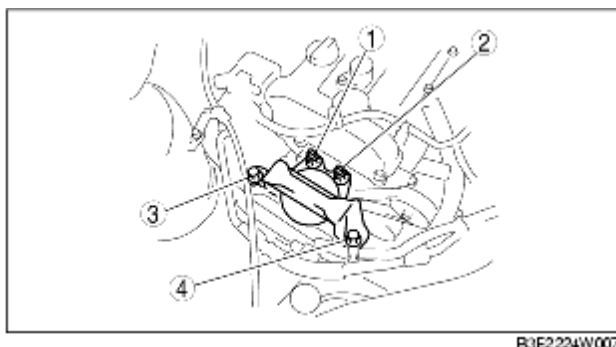


Tightening torque**7.0-13 N·m****{71.4-132.5 kgf·cm, 62.0-115.0 in·lbf}****Note**

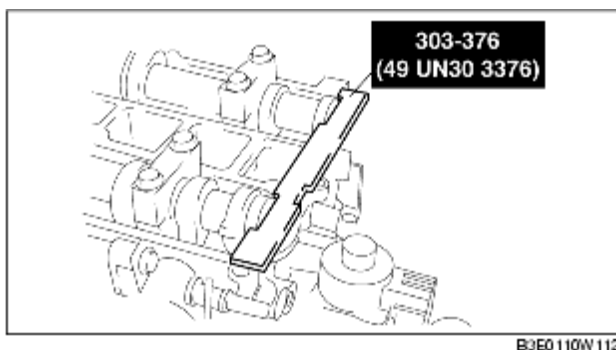
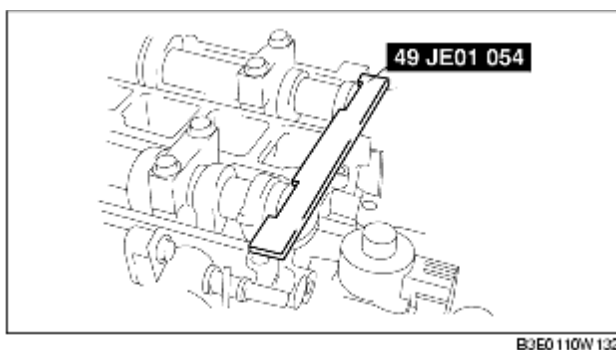
- If the No.3 engine mount bracket and the engine are removed, retighten the No.3 engine mount bracket stud bolt

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.

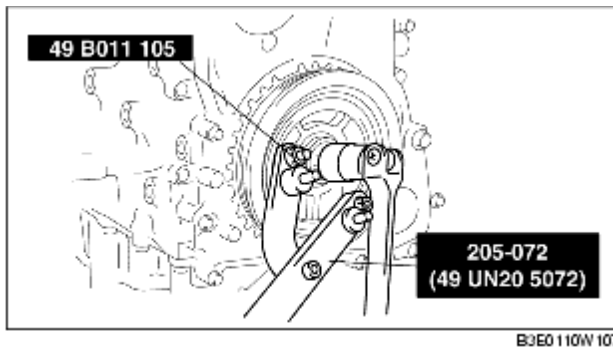
**Crankshaft Pulley Lock Bolt Installation Note**

1. Install the **SST** to the camshaft as shown in the figure.



2. Install the **M6 x 1.0** bolt in by hand.

3. Turn the crankshaft clockwise until the crankshaft is in the No.1 cylinder TDC position (until the balance weight is attached to the **SST**).
4. Hold the crankshaft pulley using the **SST**.

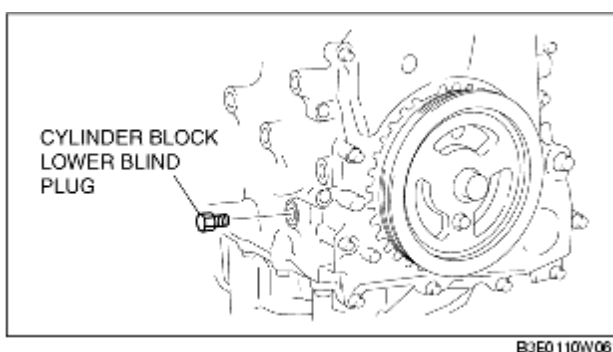


5. Tighten the crankshaft pulley lock bolt in the order shown with the following 2 steps using the **SST (49 D032 316)**.

Tightening torque

- (1) 96-104 N·m
{9.8-10.6 kgf·m, 70.9-76.7 ft·lbf}
- (2) 87°-93°

6. Remove the **M6 x 1.0** bolt.
7. Remove the **SST** from the camshaft.
8. Remove the **SST** from the cylinder block lower blind plug.
9. Rotate the crankshaft clockwise two turns until the TDC position.
 - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.
10. Install the cylinder block lower blind plug.



Tightening torque

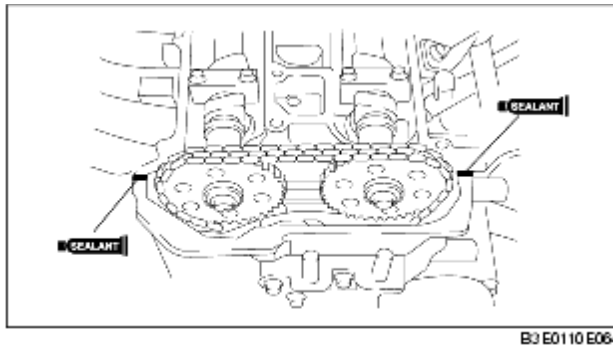
- 18-22 N·m {1.9-2.2 kgf·m, 14-16 ft·lbf}

Cylinder Head Cover Installation Note

1. Apply silicone sealant to the mating faces as shown in the figure.

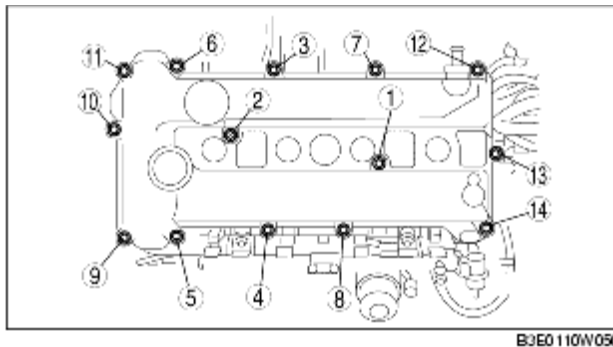
Caution

- Install the cylinder head cover within 10 min of applying the silicone sealant.



- **Thickness**
4.0-6.0 mm {0.16-0.23 in}

2. Install the cylinder head cover with a new gasket.
3. Tighten the bolts in the order shown in the figure.



Tightening torque
8.0-10.5 N·m
{81.6-107.1 kgf·cm, 70.9-94.4 in·lbf}