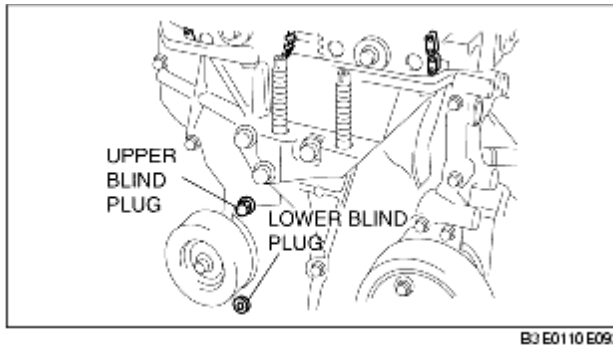


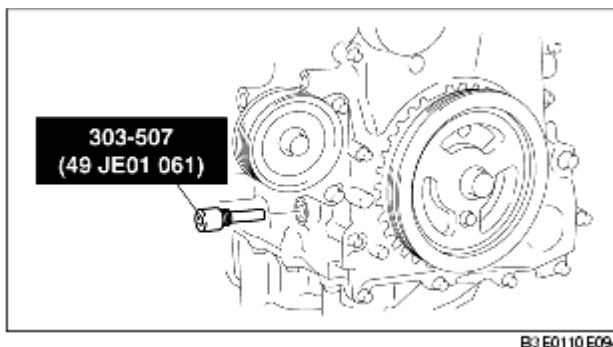
## VALVE CLEARANCE ADJUSTMENT

B3E011012111204

1. Remove the engine front cover lower blind plug.
2. Remove the engine front cover upper blind plug.

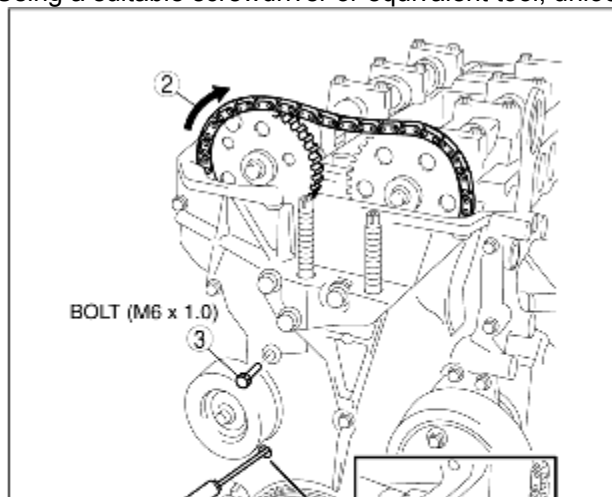


3. Remove the cylinder block lower blind plug.
4. Install the **SST** as shown in the figure.



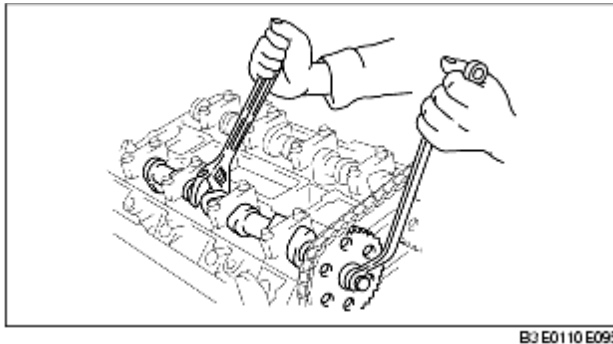
5. Turn the crankshaft clockwise so that the crankshaft is in the No.1 cylinder TDC position.
6. Loosen the timing chain.

(1) Using a suitable screwdriver or equivalent tool, unlock the chain tensioner ratchet.



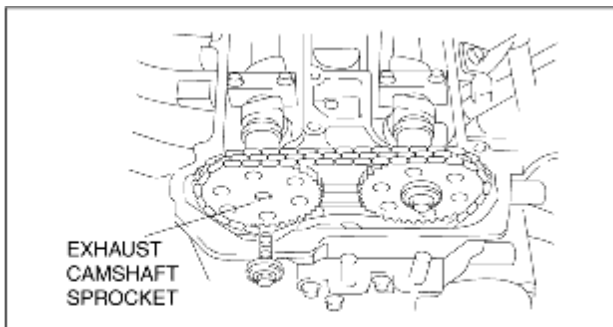
- (2) Turn the exhaust camshaft clockwise using a suitable wrench on the cast hexagon and loosen the timing chain.
- (3) Placing the suitable bolt (**M6 × 1.0 Length 25-35 mm {0.9-1.3 in}**) at the engine front cover upper blind plug, secure the chain guide at the position where the tension is released.

7. Hold the exhaust camshaft using a suitable wrench on the cast hexagon as shown in the figure.



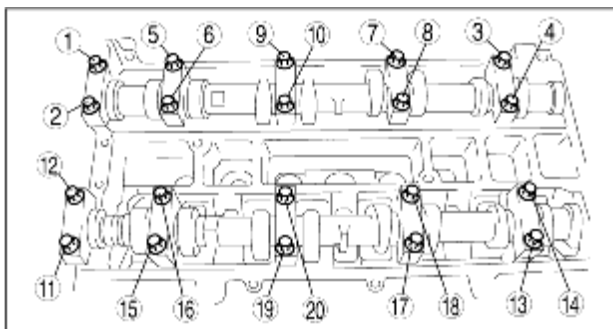
B3 E0110 E095

8. Remove the exhaust camshaft sprocket.



B3 E0110 E097

9. Loosen the camshaft cap bolts in several passes in the order shown in the figure.



B3 E0110 E057

### Note

- The cylinder head and the camshaft caps are numbered to make sure they are reassembled in their original position. When removed, keep the caps with the cylinder head they were removed from. Do not mix the caps.

10. Remove the camshaft.

11. Remove the tappet.

12. Select proper adjustment shim.

**New adjustment shim**

= Removed shim thickness + Measured valve clearance - Standard valve clearance (IN: 0.25 mm {0.0098 in}, EX: 0.30 mm {0.0118 in})

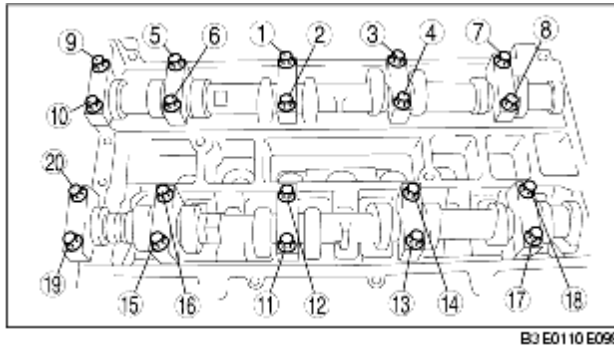
**Standard [Engine cold]**

IN: 0.22-0.28 mm {0.0087-0.0110 in}

EX: 0.27-0.33 mm {0.0106-0.0130 in}

13. Install the camshaft with No.1 cylinder aligned with the TDC position.

14. Tighten the camshaft cap bolt using the following two steps.

**Tightening torque**

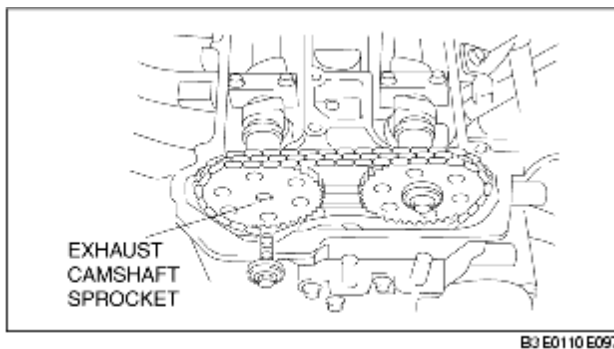
(1) 5.9-9.0 N·m

{51.0-91.7 kgf·cm, 44.3-79.5 in·lbf}

(2) 14.0-17.0 N·m

{1.5-1.7 kgf·m, 10.4-12.5 ft·lbf}

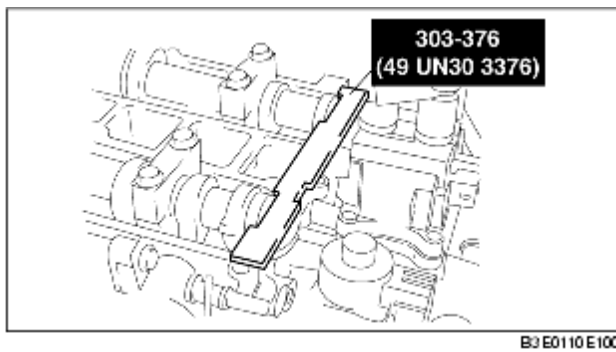
15. Install the exhaust camshaft sprocket.

**Note**

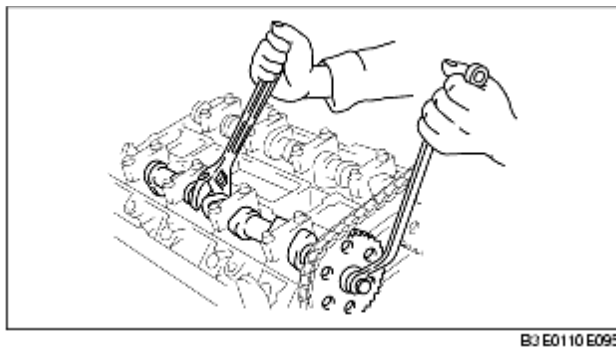
- Do not tighten the bolt for the camshaft sprocket during this step. First confirm the valve timing, then tighten the bolt.

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

**Europe**

**Except Europe**

17. Remove the M6 × 1.0 bolt from the engine front cover to apply tension to the timing chain.
18. Turn the crankshaft clockwise so that the crankshaft is in the No.1 cylinder TDC position.
19. Hold the exhaust camshaft using a suitable wrench on the cast hexagon as shown in the figure.



20. Tighten the exhaust camshaft sprocket lock bolt.

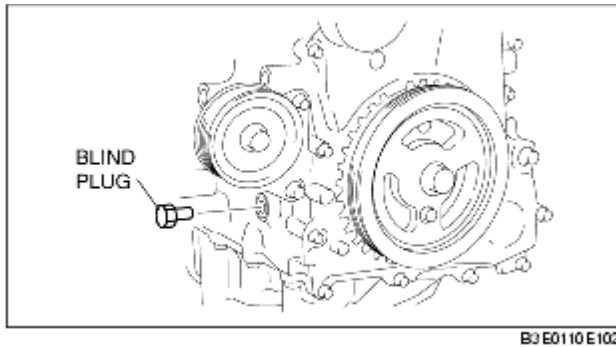
N·m {kgf·m, ft·lbf}

Bolt type	Tightening torque
Bolt and washer assembly	69-75 {7.1-7.6, 50.9-55.3}
Washer based bolt	89-95 {9.1-9.6, 65.7-70.0}
Washer based bolt for variable valve timing mechanism	69-75 {7.1-7.6, 50.9-55.3}

21. Remove the **SST** from the camshaft.
22. Remove the **SST** from the block lower blind plug.
23. Rotate the crankshaft clockwise two turns until the TDC position.
  - If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 14.
24. Apply silicone sealant to the engine front cover upper blind plug.
25. Install the engine front cover upper blind plug.

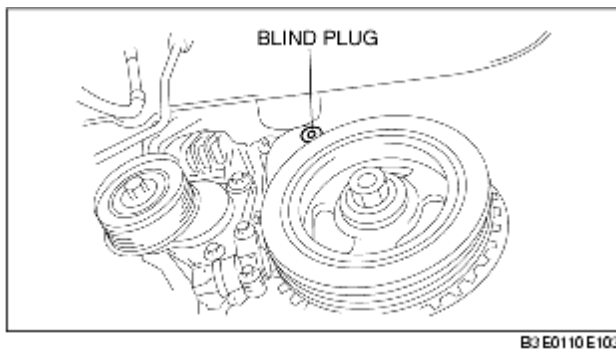
**Tightening torque**  
**10 N·m {1.0 kgf·m, 7.4 ft·lbf}**

26. Install the cylinder block lower blind plug.



**Tightening torque**  
**20 N·m {2.0 kgf·m, 14.8 ft·lbf}**

27. Install the new engine front cover lower blind plug.



**Tightening torque**  
**12 N·m {1.2 kgf·m, 8.9 ft·lbf}**