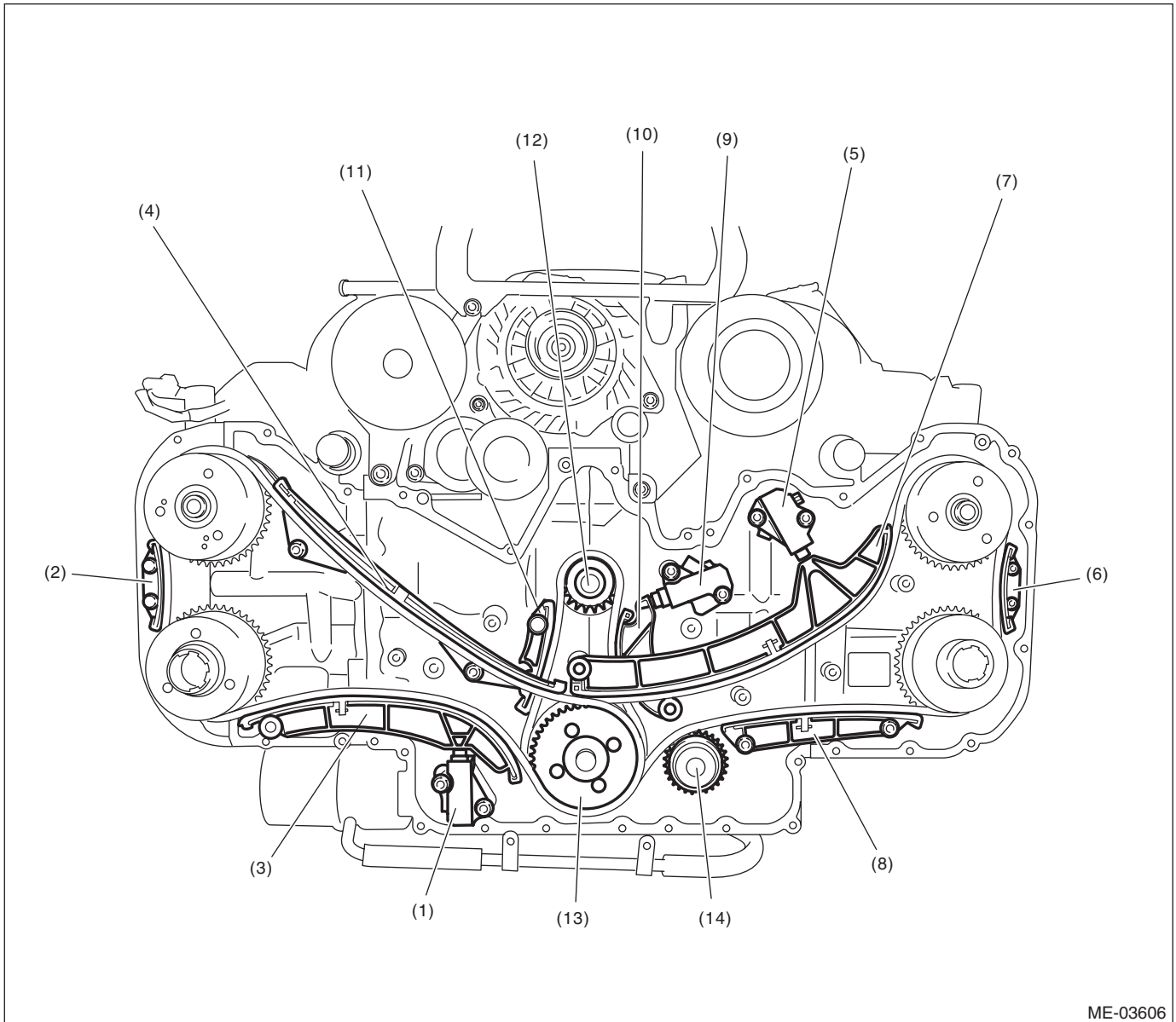


# Timing Chain Assembly

MECHANICAL

## 15. Timing Chain Assembly

### A: LOCATION



ME-03606

- |                                    |                                    |                          |
|------------------------------------|------------------------------------|--------------------------|
| (1) Chain tensioner (RH)           | (6) Chain guide (between cams, LH) | (11) Chain guide (main)  |
| (2) Chain guide (between cams, RH) | (7) Chain tensioner lever (LH)     | (12) Crank sprocket      |
| (3) Chain tensioner lever (RH)     | (8) Chain guide (LH)               | (13) Idler sprocket      |
| (4) Chain guide (RH)               | (9) Chain tensioner (main)         | (14) Water pump sprocket |
| (5) Chain tensioner (LH)           | (10) Chain tensioner lever (main)  |                          |

## B: REMOVAL

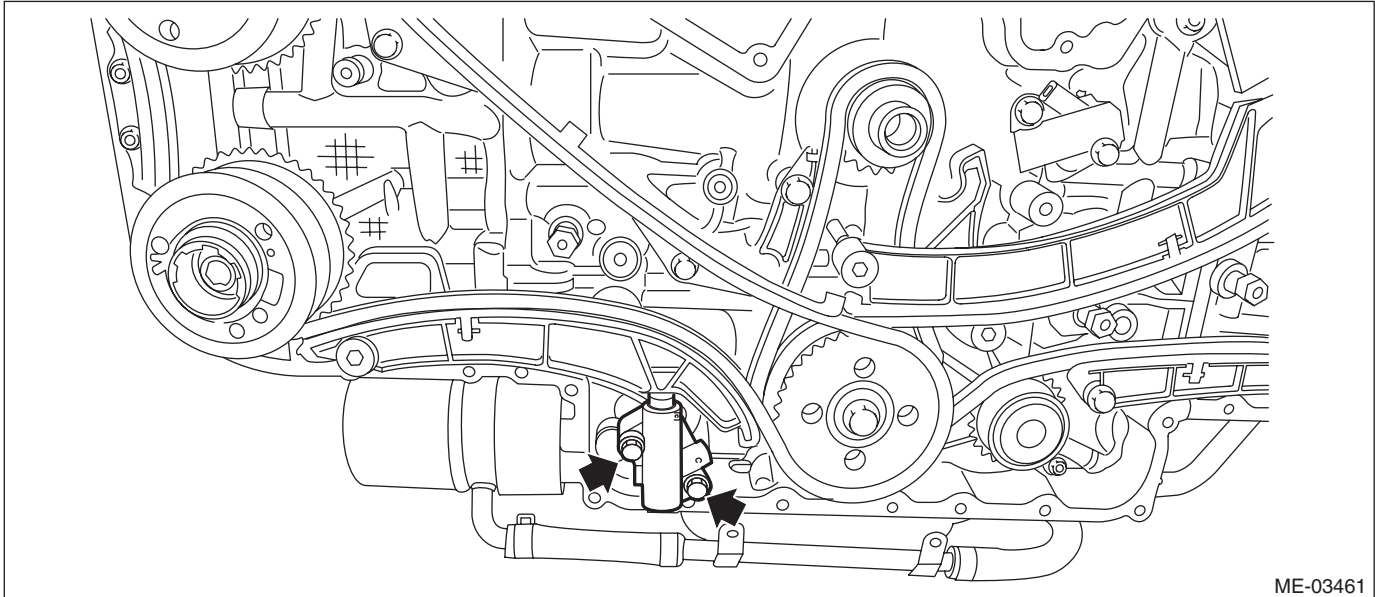
### NOTE:

To avoid mixing the timing chain component parts, separate each part after their removal.

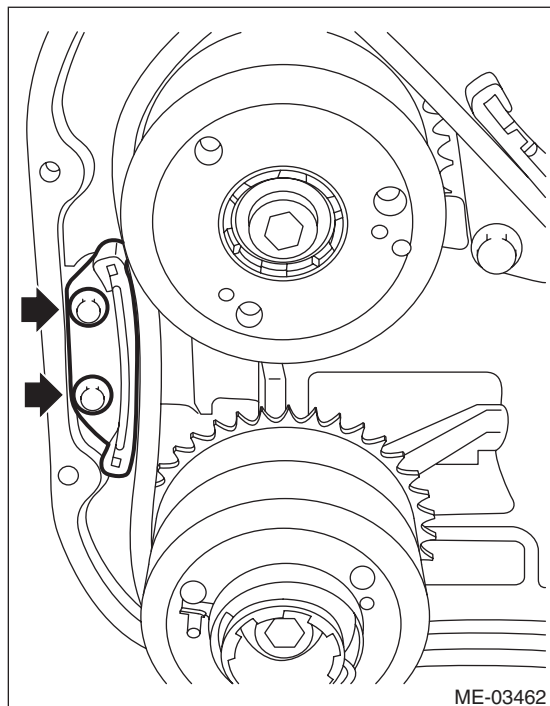
- 1) Drain the engine oil. <Ref. to LU(H6DO)-9, REPLACEMENT, Engine Oil.>
- 2) Remove the radiator. <Ref. to CO(H6DO)-17, REMOVAL, Radiator.>
- 3) Remove the V-belts. <Ref. to ME(H6DO)-51, REMOVAL, V-belt.>
- 4) Remove the crank pulley. <Ref. to ME(H6DO)-52, REMOVAL, Crank Pulley.>
- 5) Remove the chain cover. <Ref. to ME(H6DO)-53, REMOVAL, Chain Cover.>
- 6) Remove the chain tensioner (RH).

### NOTE:

When removing chain tensioner (RH), hold the plunger by hand so that it does not come flying out.



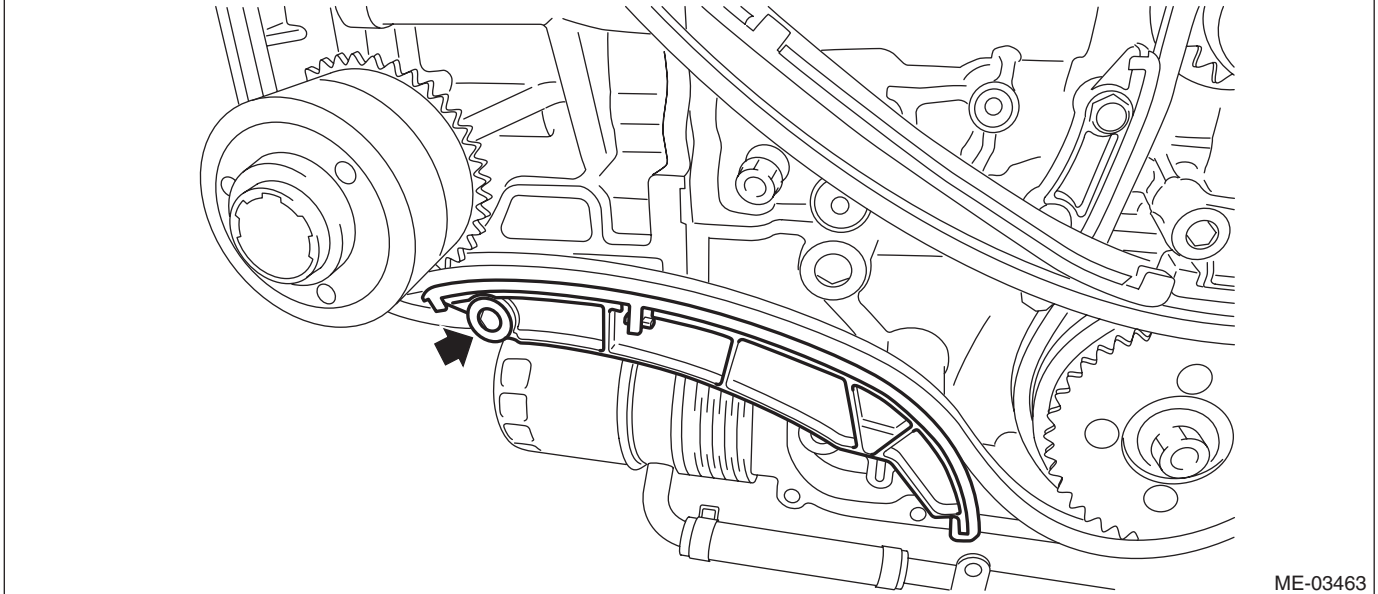
- 7) Remove the chain guide (RH: between cams).



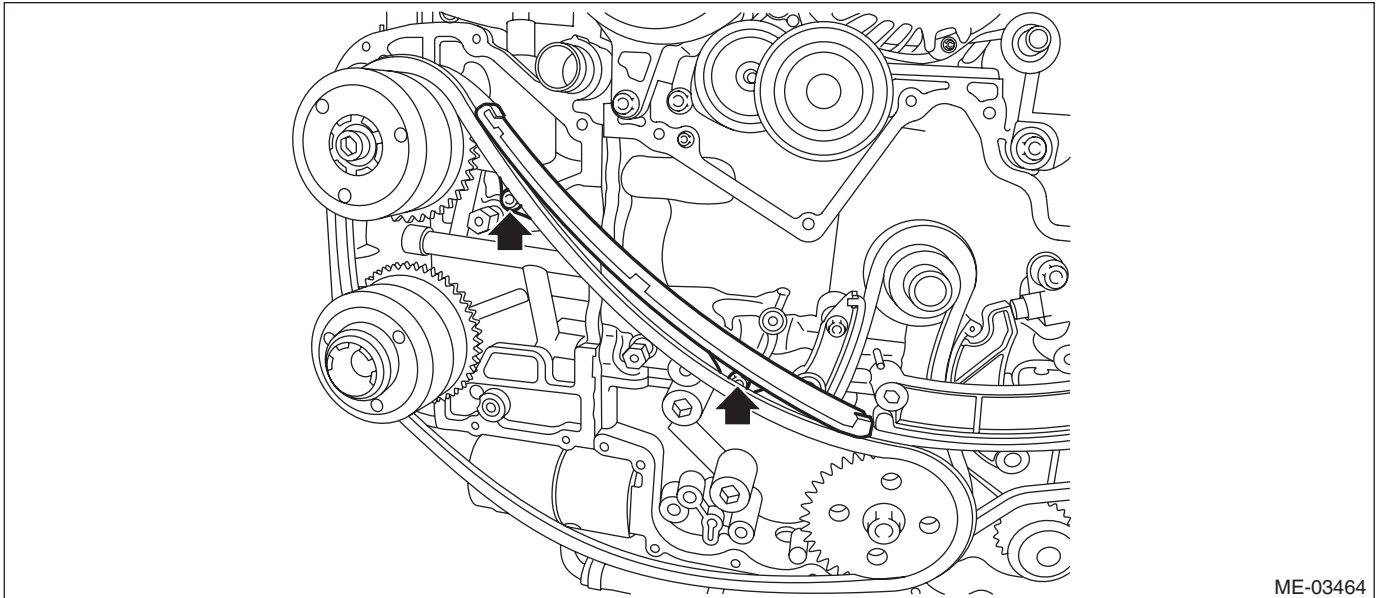
## Timing Chain Assembly

### MECHANICAL

8) Remove the chain tensioner lever (RH).



9) Remove the chain guide (RH).

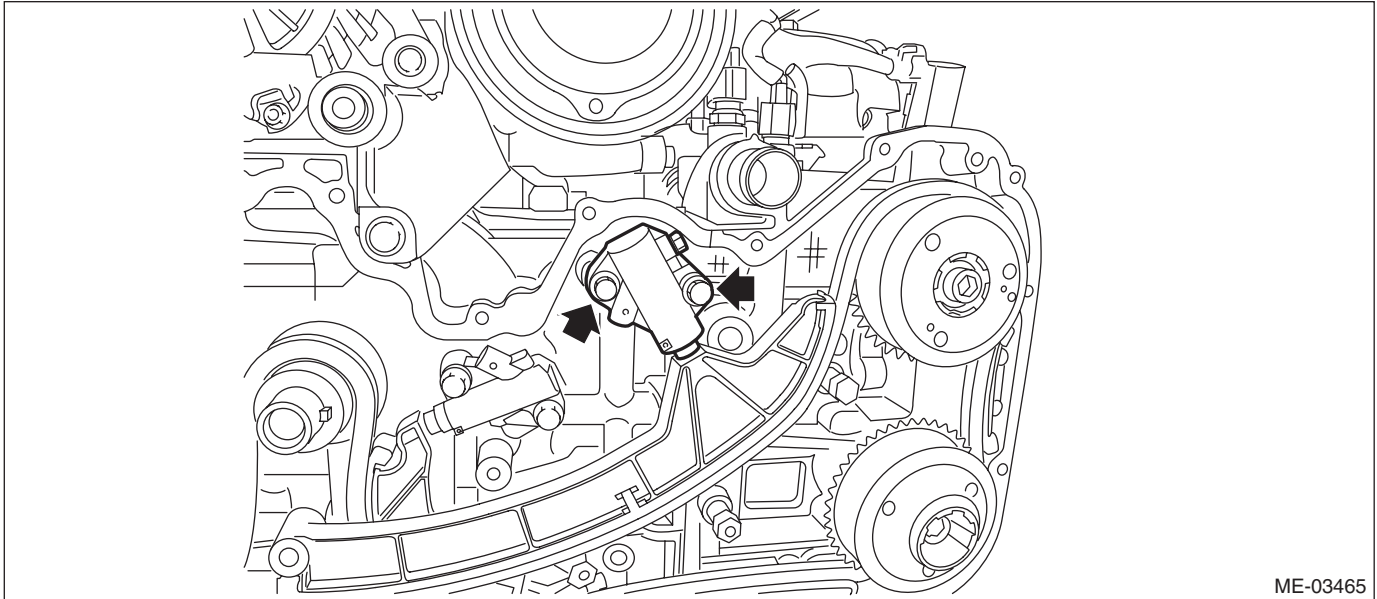


10) Remove the timing chain (RH).

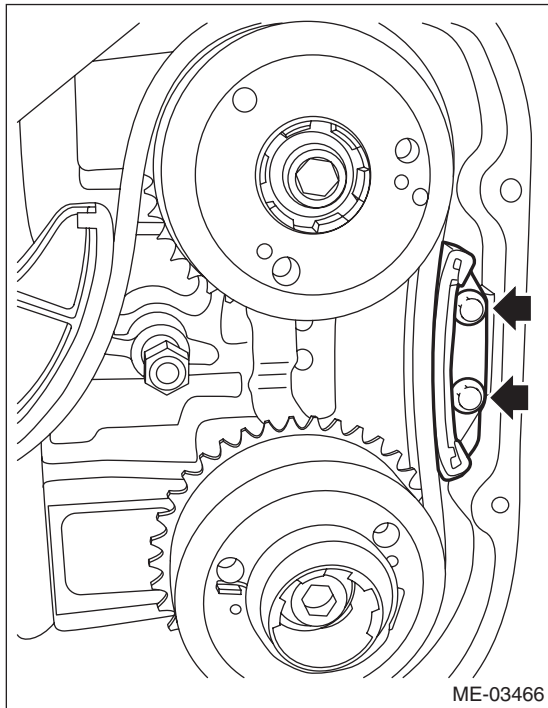
11) Remove the chain tensioner (LH).

**NOTE:**

When removing chain tensioner (LH), hold the plunger by hand so that it does not come flying out.



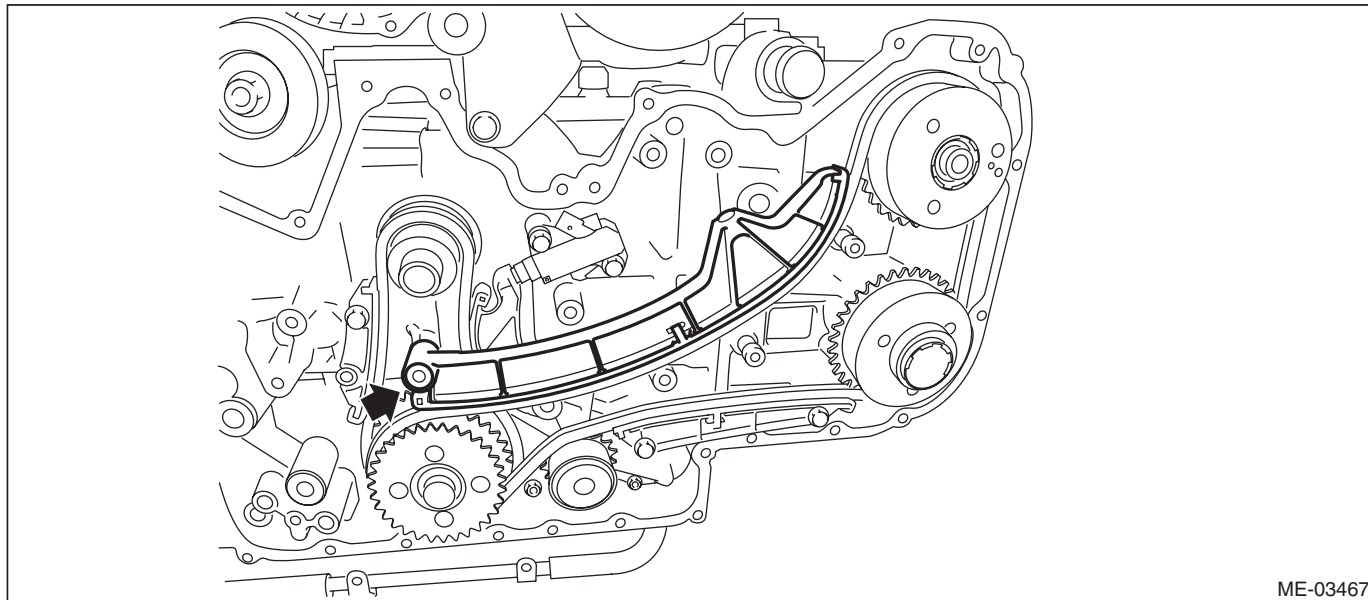
12) Remove the chain guide (LH: between cams).



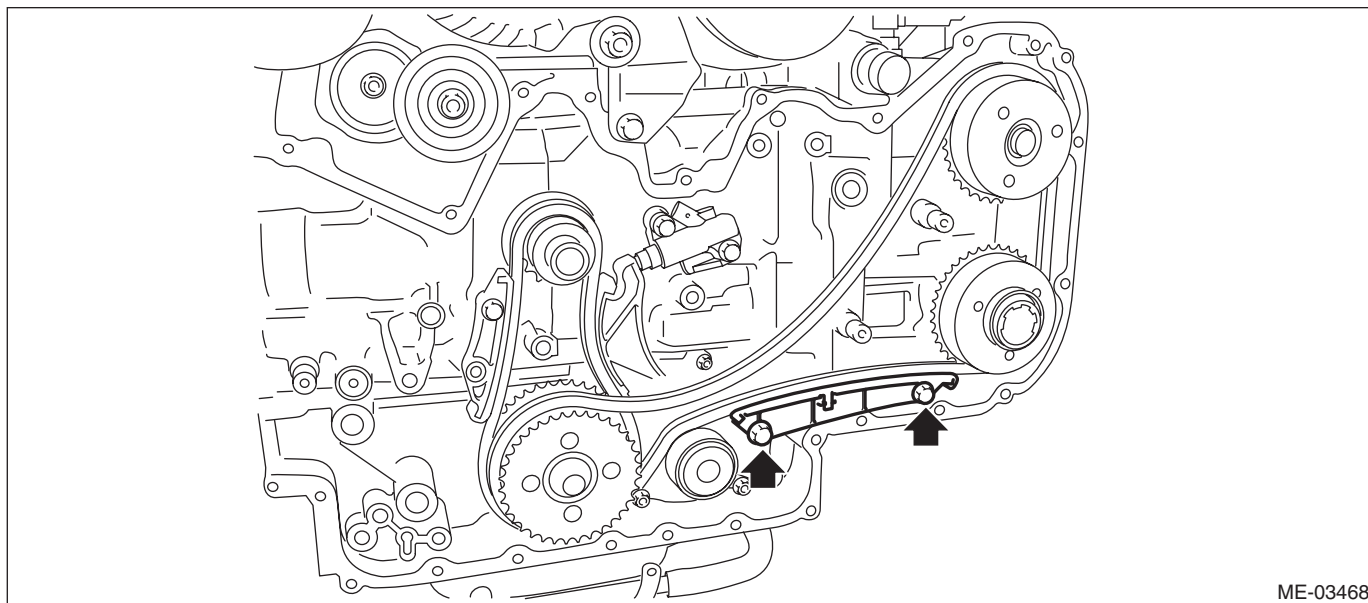
## Timing Chain Assembly

### MECHANICAL

13) Remove the chain tensioner lever (LH).



14) Remove the chain guide (LH).

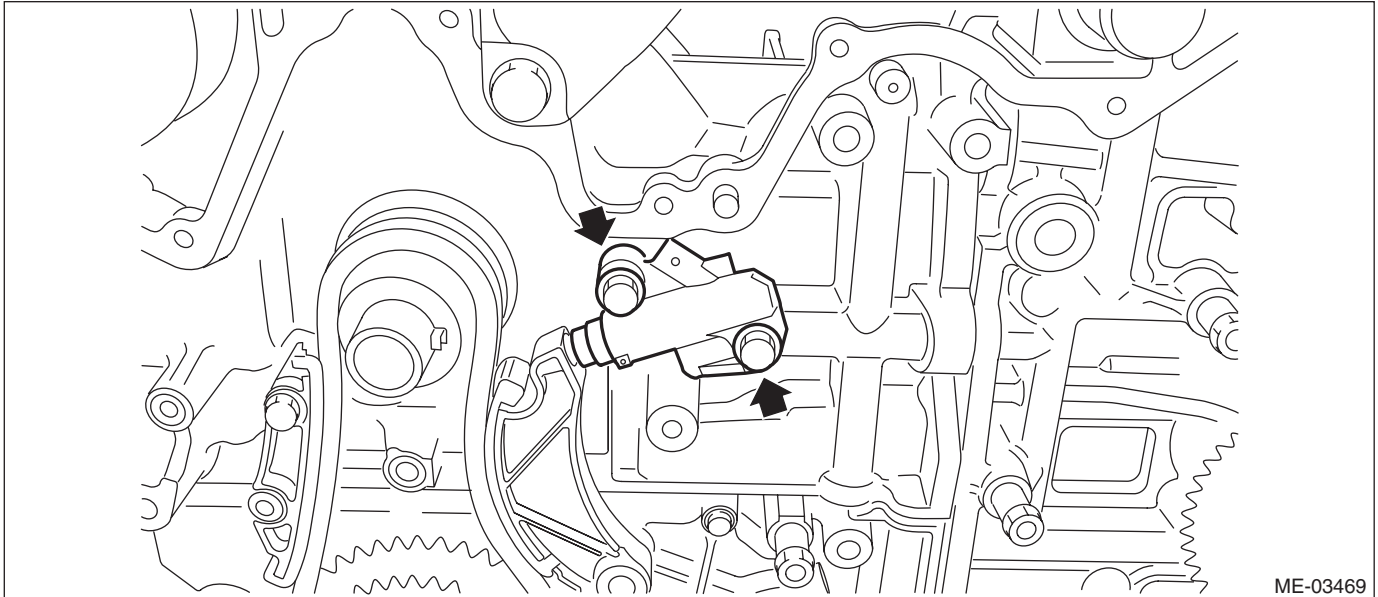


15) Remove the timing chain (LH).

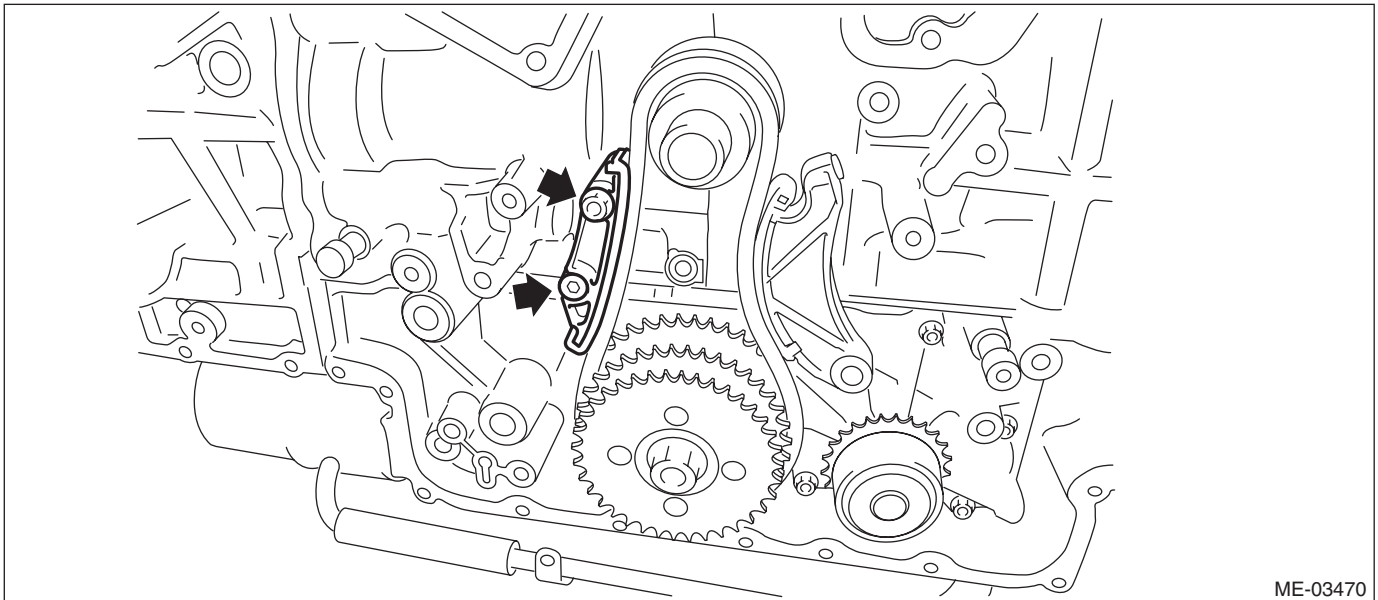
16) Remove the chain tensioner (main).

**NOTE:**

When removing chain tensioner (main), hold the plunger by hand so that it does not come flying out.



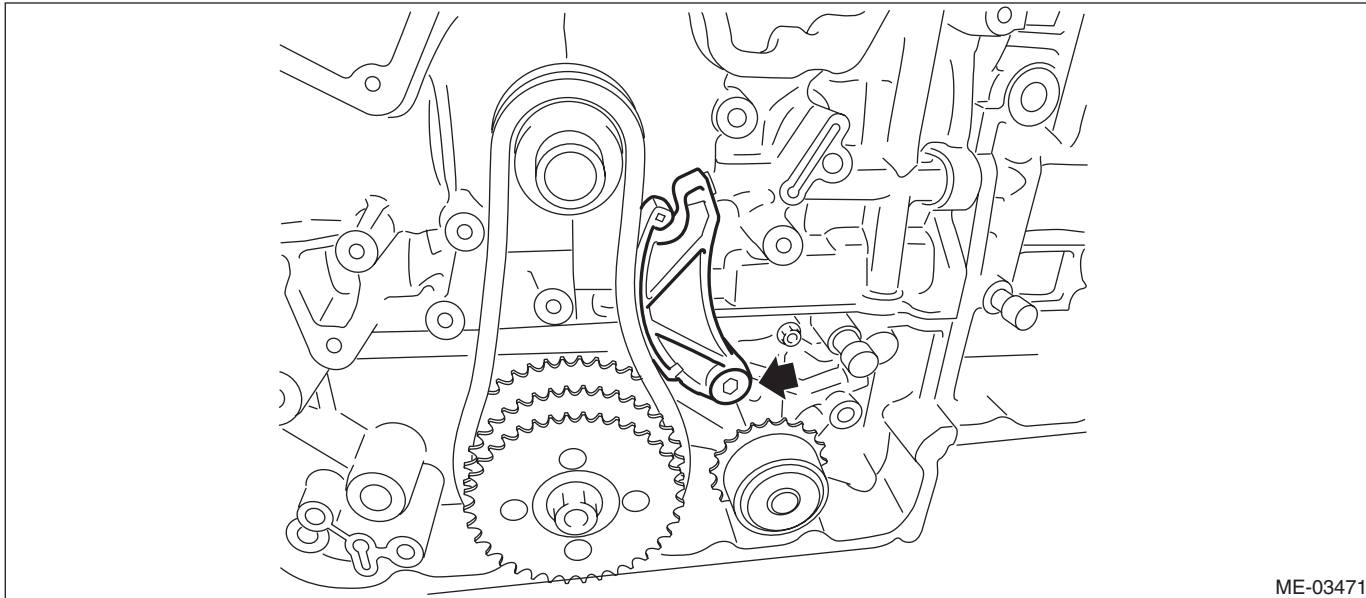
17) Remove the chain guide (main).



# Timing Chain Assembly

## MECHANICAL

18) Remove the chain tensioner lever (main).

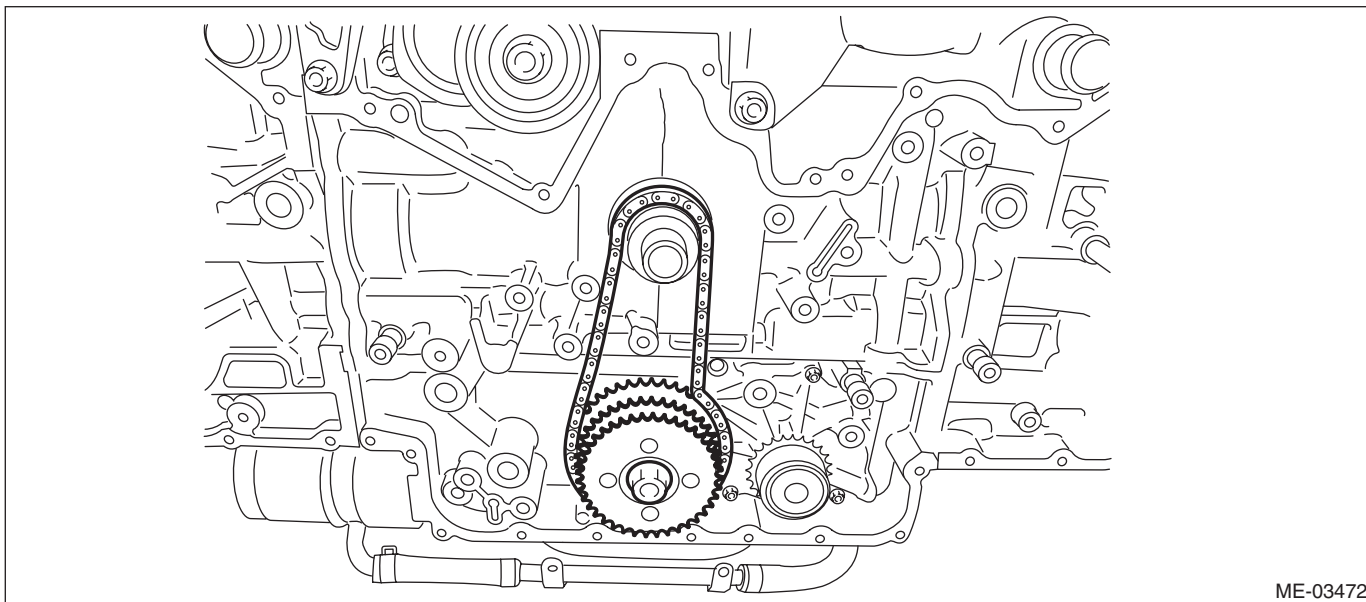


19) Use the ST to lock the idler sprocket, and loosen the idler sprocket bolt.

ST1 18355AA000 PULLEY WRENCH

ST2 18334AA000 PULLEY WRENCH PIN SET

20) Remove the idler sprocket bolts, and remove the idler sprocket and timing chain (main).



## C: INSTALLATION

### NOTE:

- Be careful that the foreign matter is not into or onto the assembled component during installation.
- Apply engine oil to all component parts of the timing chain.

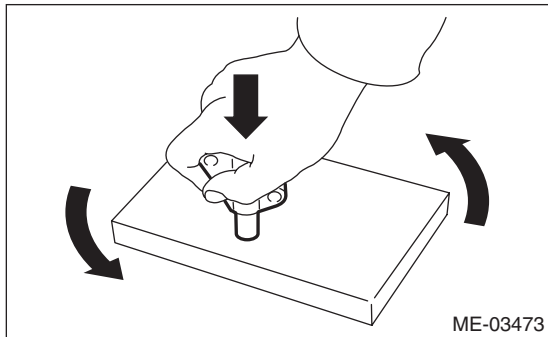
### 1) Prepare to attach the chain tensioner.

(1) Insert the screw, spring pin and plunger into the tensioner body.

(2) As shown in the figure, turn the rubber mat counterclockwise while holding the chain tensioner from above by hand.

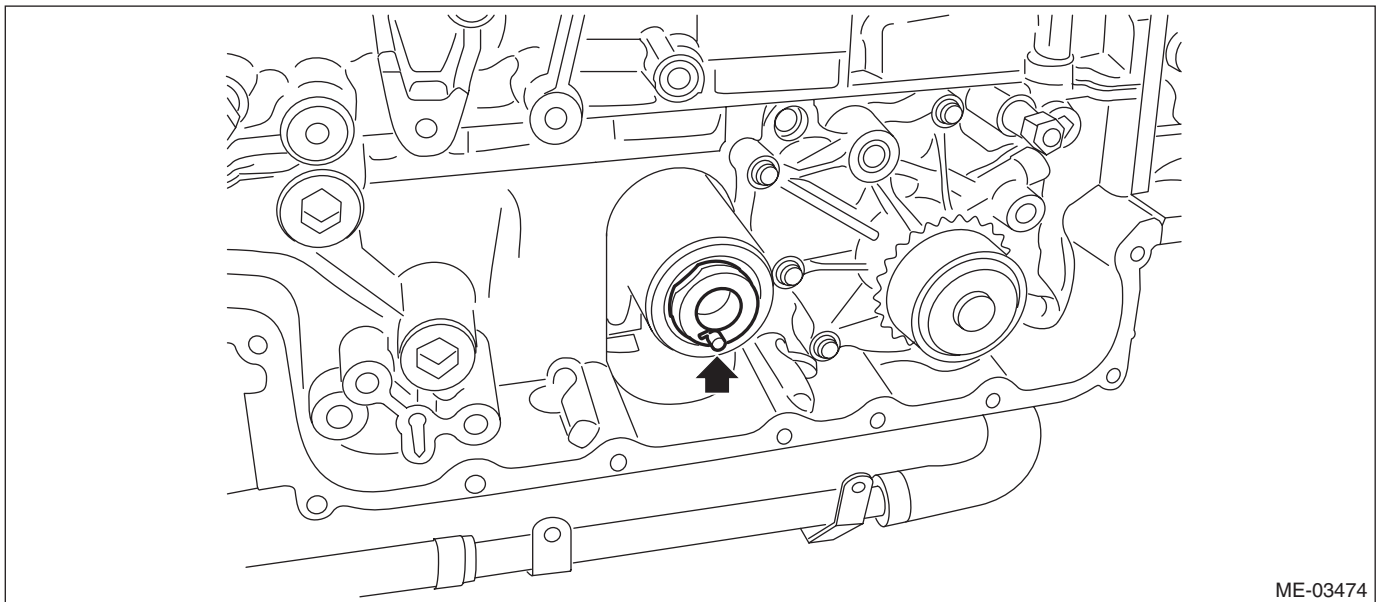
### NOTE:

Degrease the contact surface between the plunger head and rubber mat, so that they do not slip.



(3) Insert the stopper pin into the hole on the chain tensioner body.

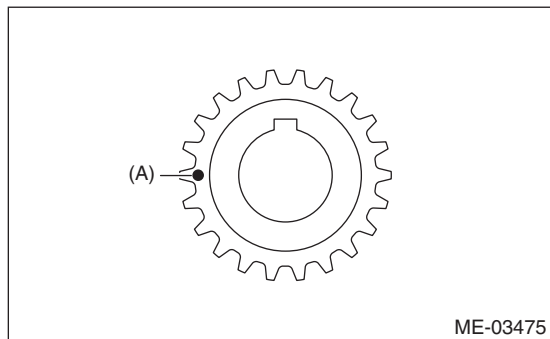
### 2) Align the position of oil pump shaft knock pin to six o'clock position as shown in the figure.



# Timing Chain Assembly

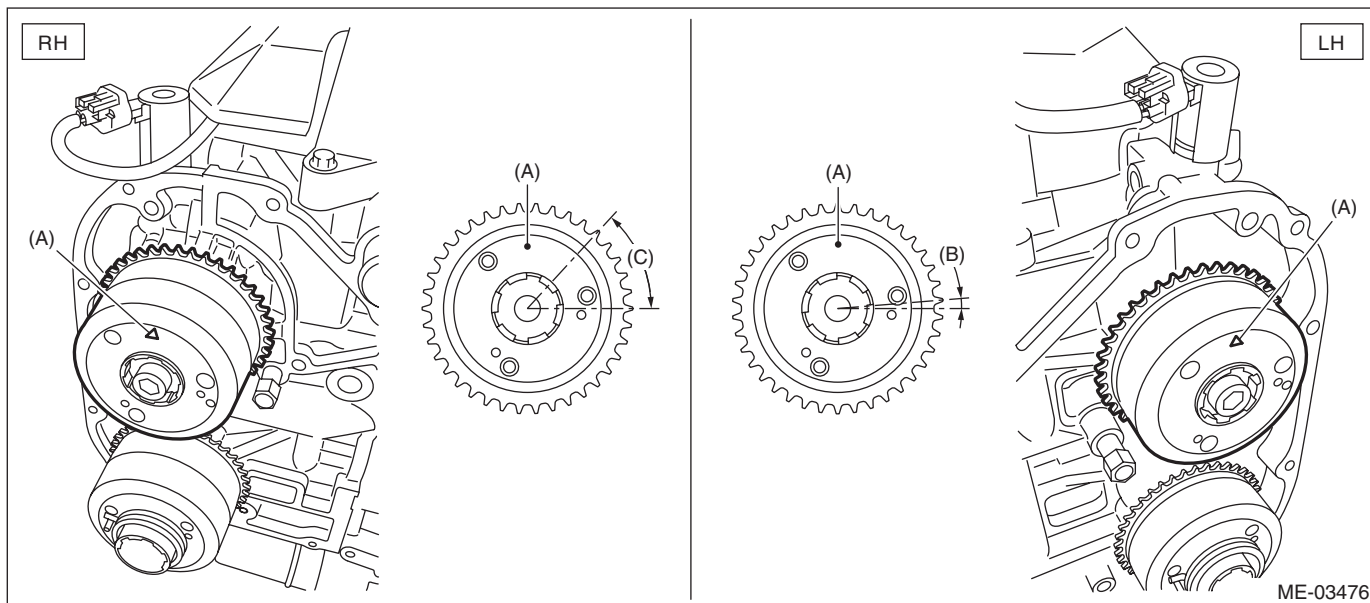
## MECHANICAL

- 3) Using ST, align the “Top mark” on crank sprocket to nine o’clock position as shown in the figure.  
ST 18252AA000 CRANKSHAFT SOCKET



(A) Top mark

- 4) Align the intake cam sprocket to twelve o’clock position as shown in the figure.  
ST 499977500 CAM SPROCKET WRENCH



(A) Align the marking (top mark) to twelve o’clock position.

(B) 6°

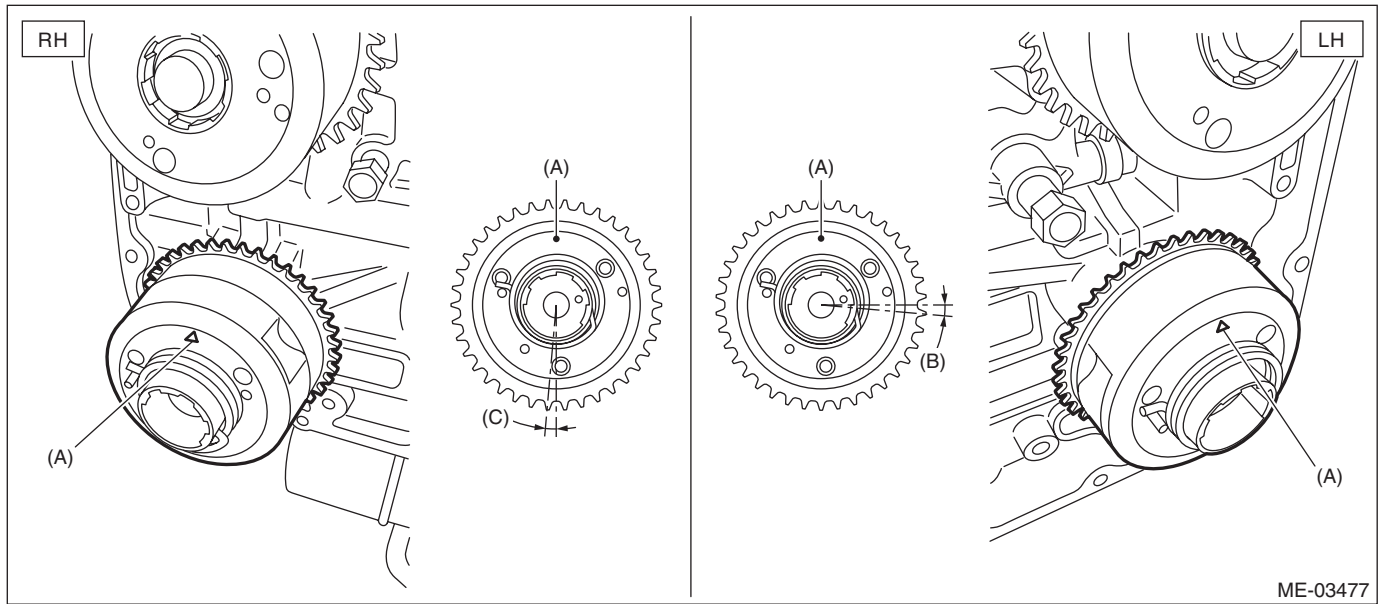
(C) 47°

# Timing Chain Assembly

MECHANICAL

5) Align the exhaust cam sprocket to twelve o'clock position as shown in the figure.

ST 499977500 CAM SPROCKET WRENCH



(A) Align the marking (top mark) to twelve o'clock position.

(B) 5.5°

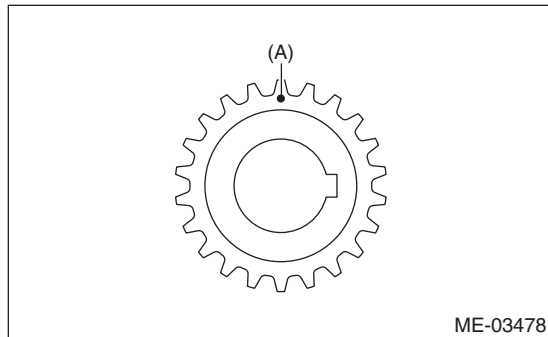
(C) 3.5°

6) Using ST, align the "Top mark" on crank sprocket to twelve o'clock position as shown in the figure.

NOTE:

- The #1 piston is positioned at TDC.
- Do not rotate the crankshaft and cam sprocket before completing timing chain installation.
- At this time, crank sprocket key is at three o'clock position.

ST 18252AA000 CRANKSHAFT SOCKET



(A) Top mark

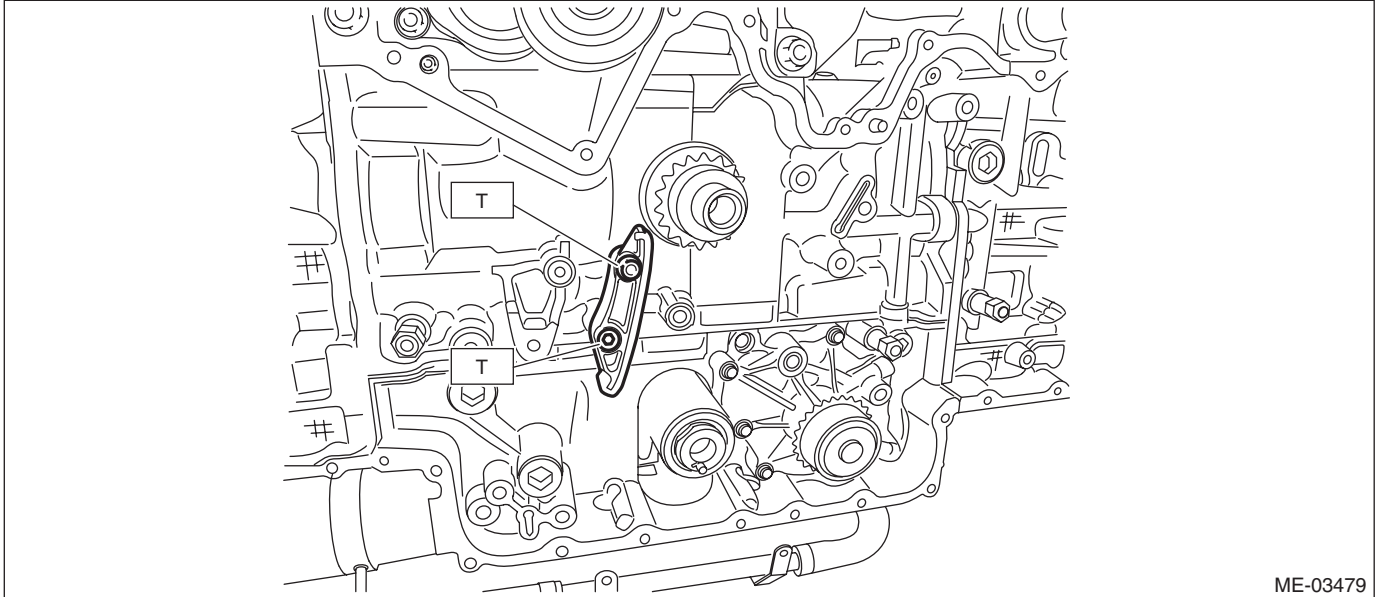
# Timing Chain Assembly

## MECHANICAL

7) Install the chain guide (main).

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



8) Install the idler sprocket and timing chain (main).

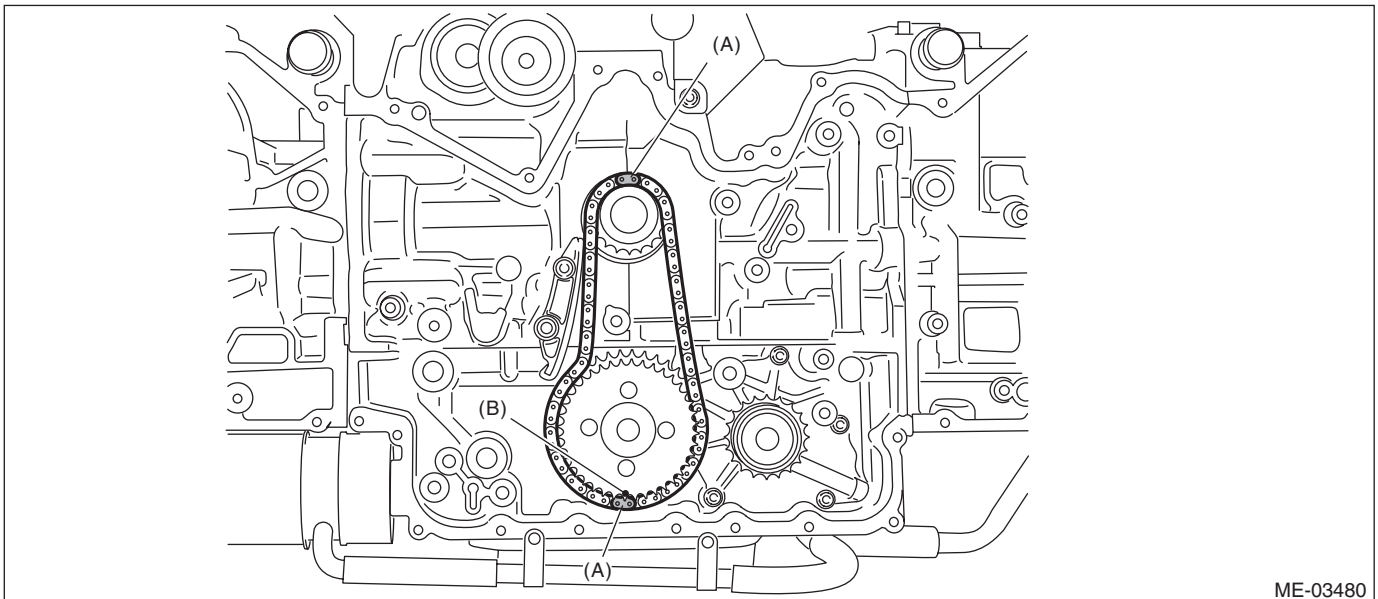
- (1) Match the timing chain mark (gold) to the timing mark position of the idler sprocket.
- (2) Align the idler sprocket timing mark at six o'clock position, and install the idler sprocket and timing chain.
- (3) Make sure that the timing chain mark (gold) is located at twelve o'clock position on the crank sprocket.
- (4) Use the ST to lock the idler sprocket, and install the idler sprocket bolt.

ST1 18355AA000 PULLEY WRENCH

ST2 18334AA000 PULLEY WRENCH PIN SET

**Tightening torque:**

**120 N·m (12.2 kgf-m, 88.5 ft-lb)**



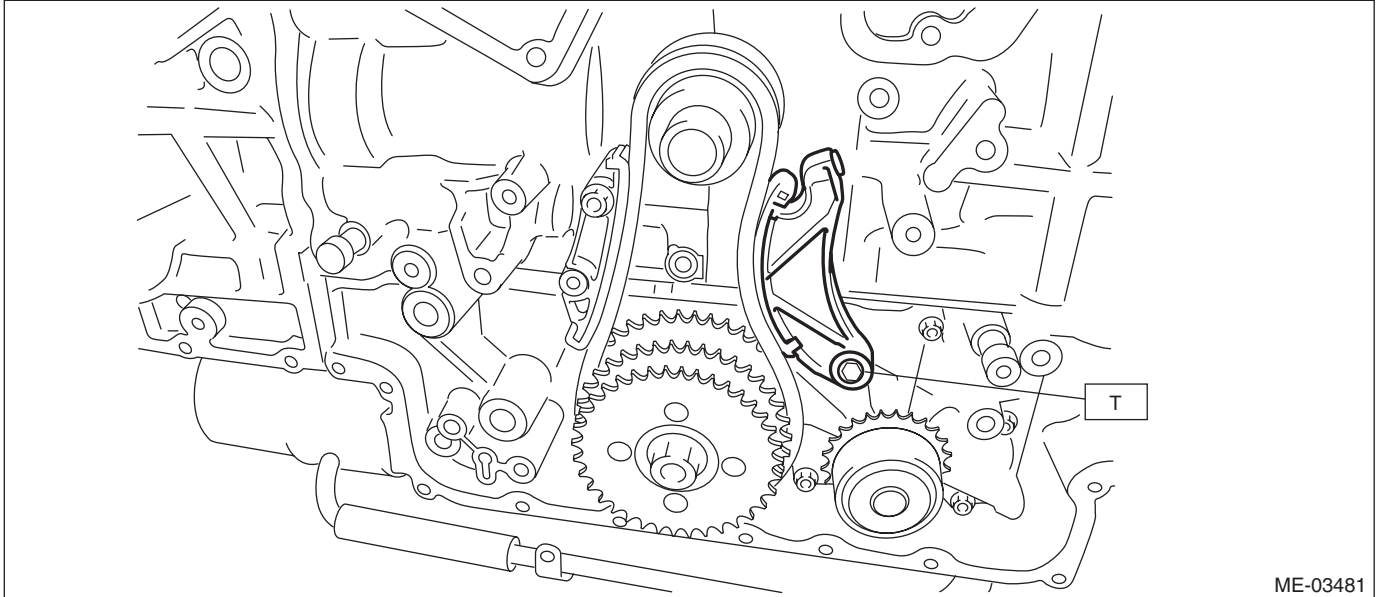
(A) Gold

(B) Timing mark

9) Install the chain tensioner lever (main).

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



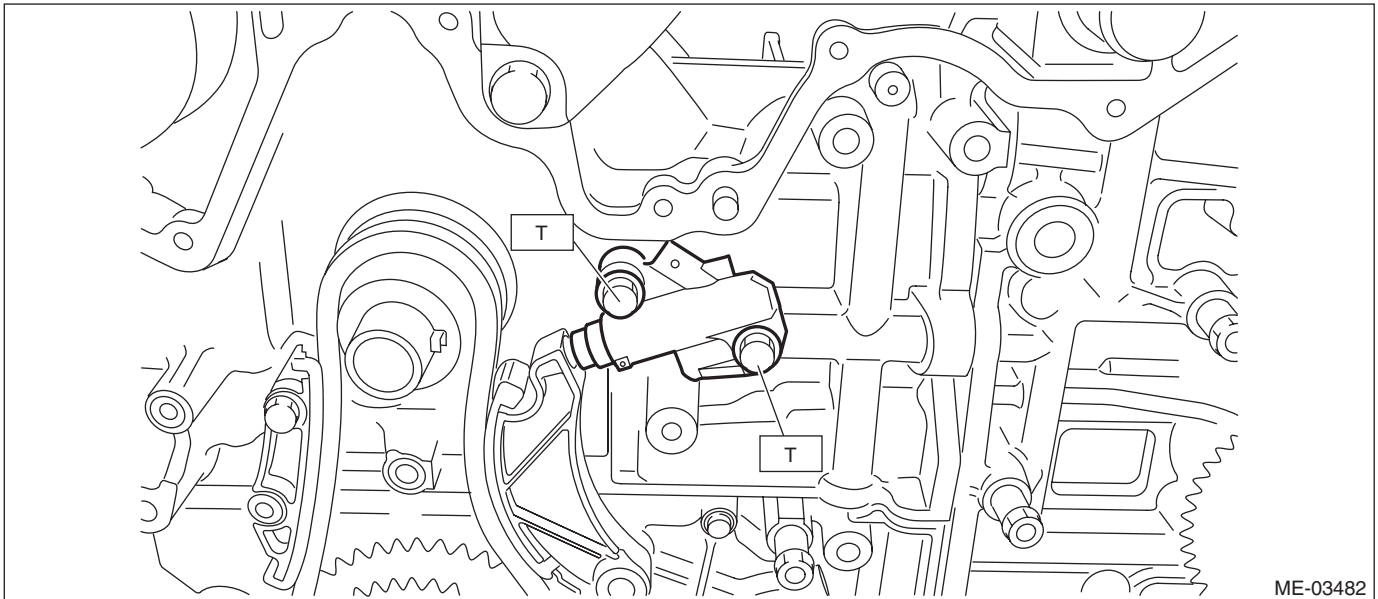
10) Install the chain tensioner (main) and pull out the stopper pin.

**NOTE:**

The timing chain (main) line will be complete.

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



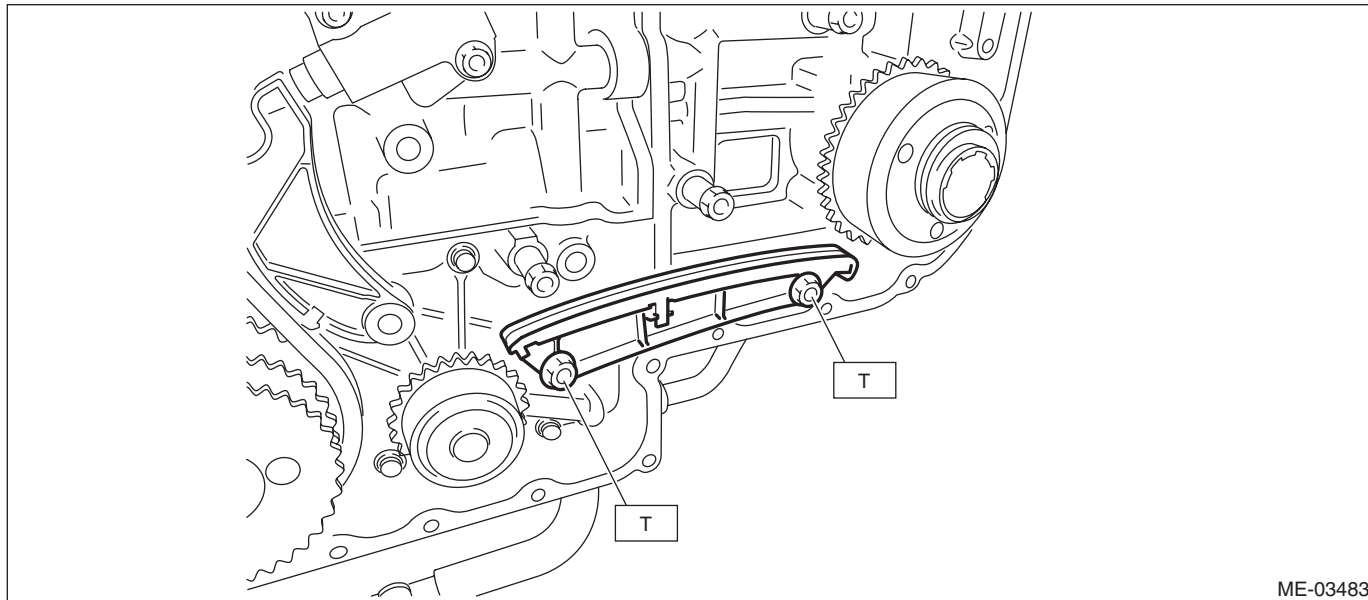
# Timing Chain Assembly

## MECHANICAL

11) Install the chain guide (LH).

**Tightening torque:**

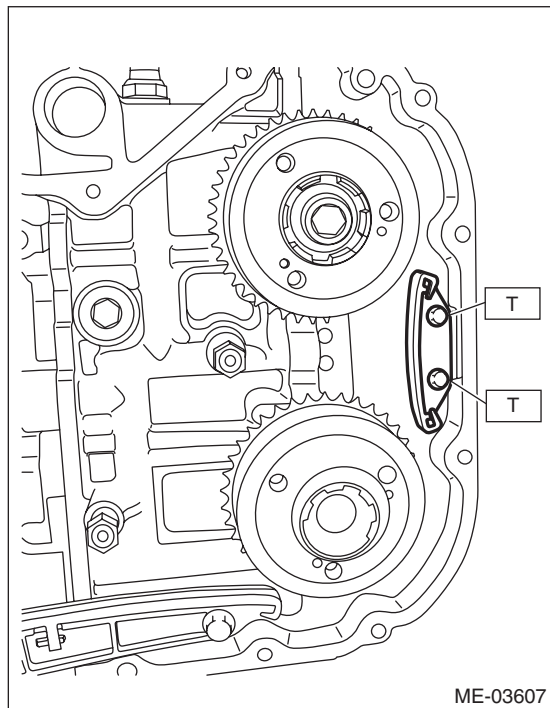
**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



12) Install the chain guide (LH: between cams).

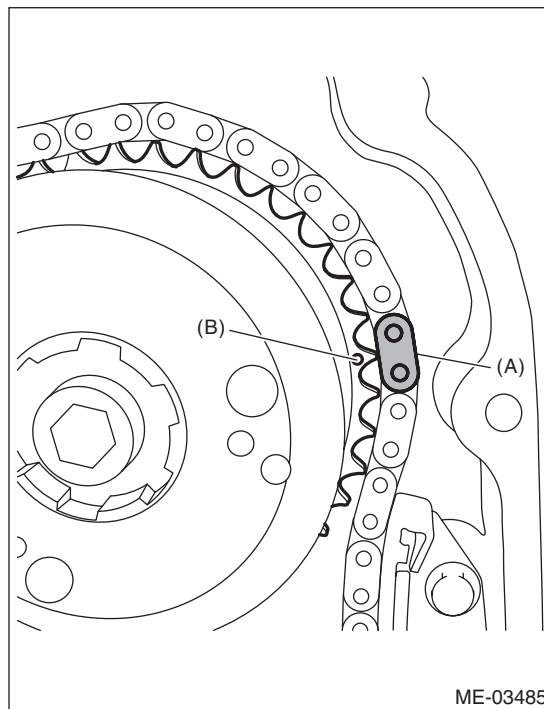
**Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



13) Install timing chain (LH).

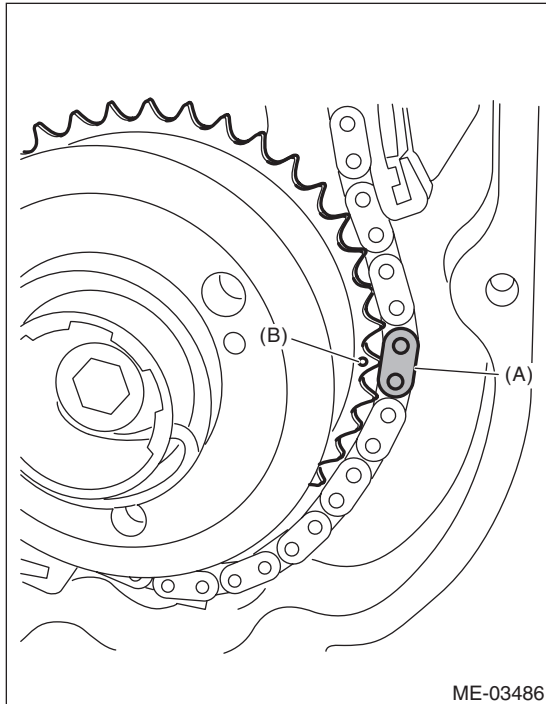
(1) Match the timing mark of intake cam sprocket (LH) to the timing chain mark (blue).



(A) Blue

(B) Timing mark

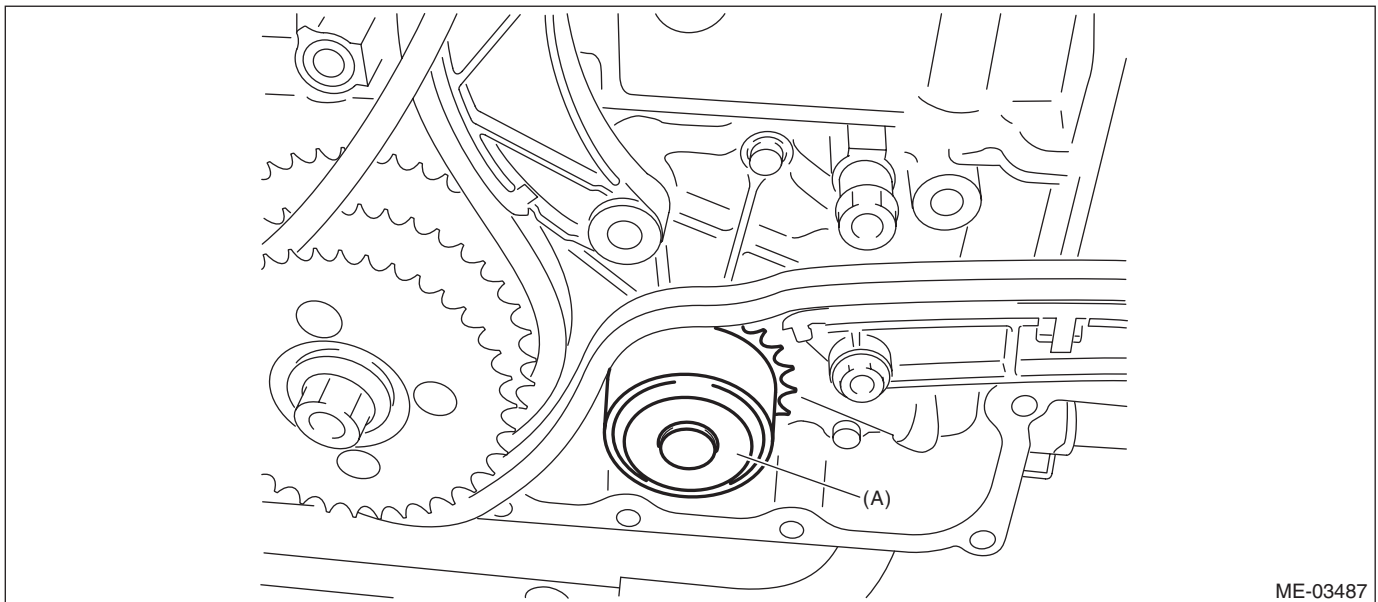
(2) Match the timing mark of exhaust cam sprocket (LH) to the timing chain mark (blue).



(A) Blue

(B) Timing mark

(3) Install the timing chain to the water pump sprocket.

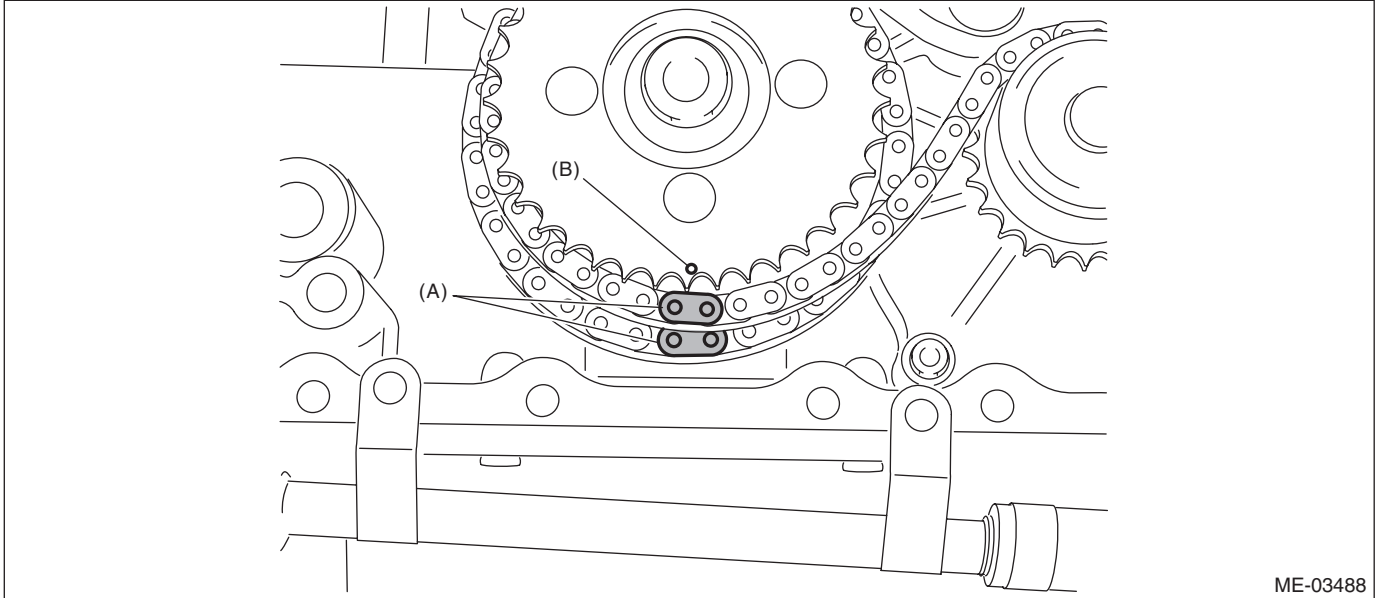


(A) Water pump sprocket

# Timing Chain Assembly

## MECHANICAL

(4) Match the timing mark of idler sprocket to the timing chain mark (gold).



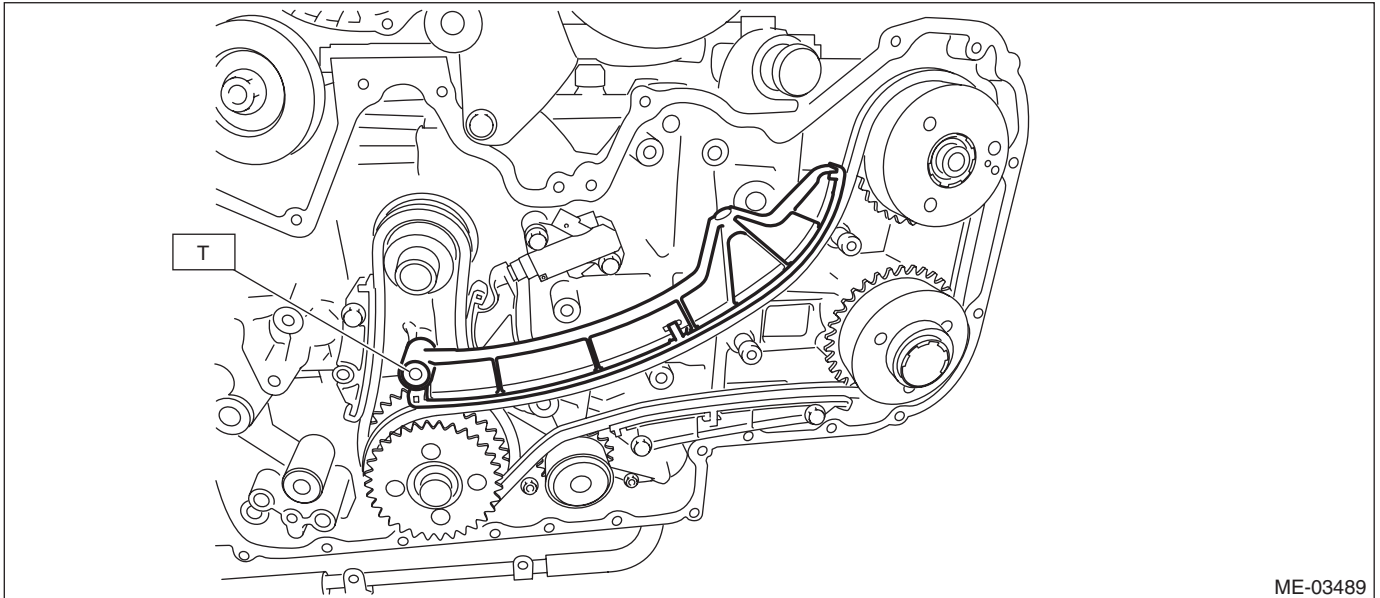
(A) Gold

(B) Timing mark

14) Install the chain tensioner lever (LH).

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



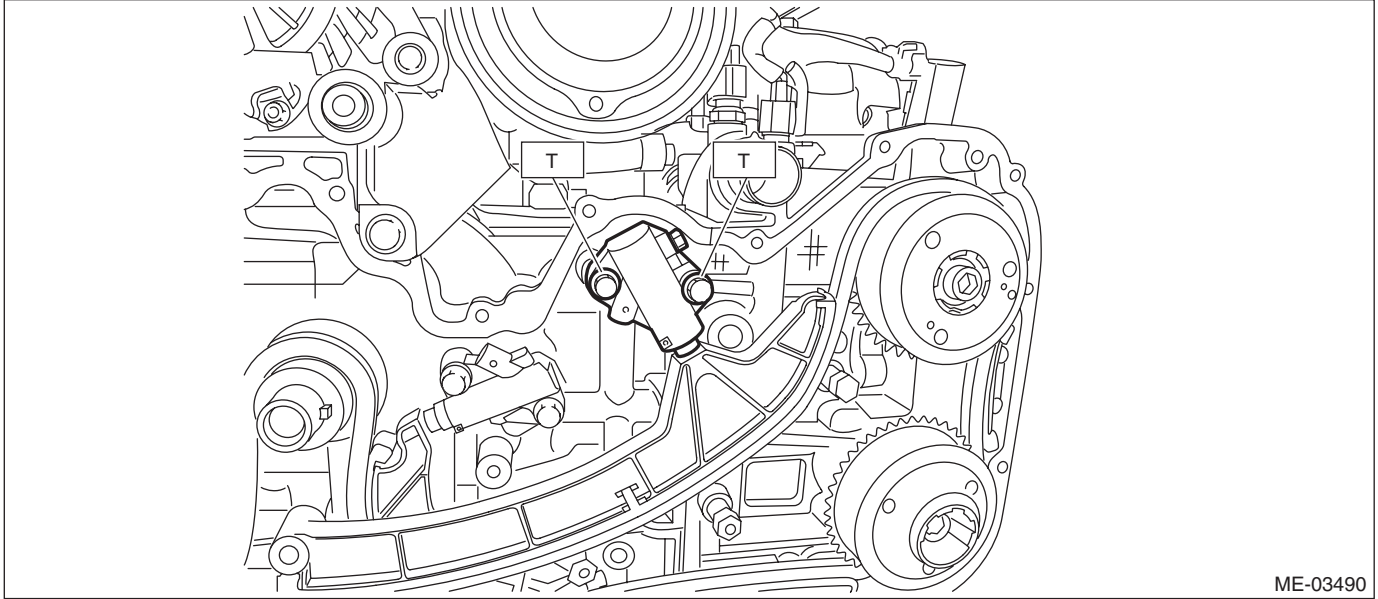
15) Install the chain tensioner (LH) and pull out the stopper pin.

**NOTE:**

- Make sure that there is a bolt attached on the side face of the chain tensioner housing.
- The timing chain (LH) line will be complete.

**Tightening torque:**

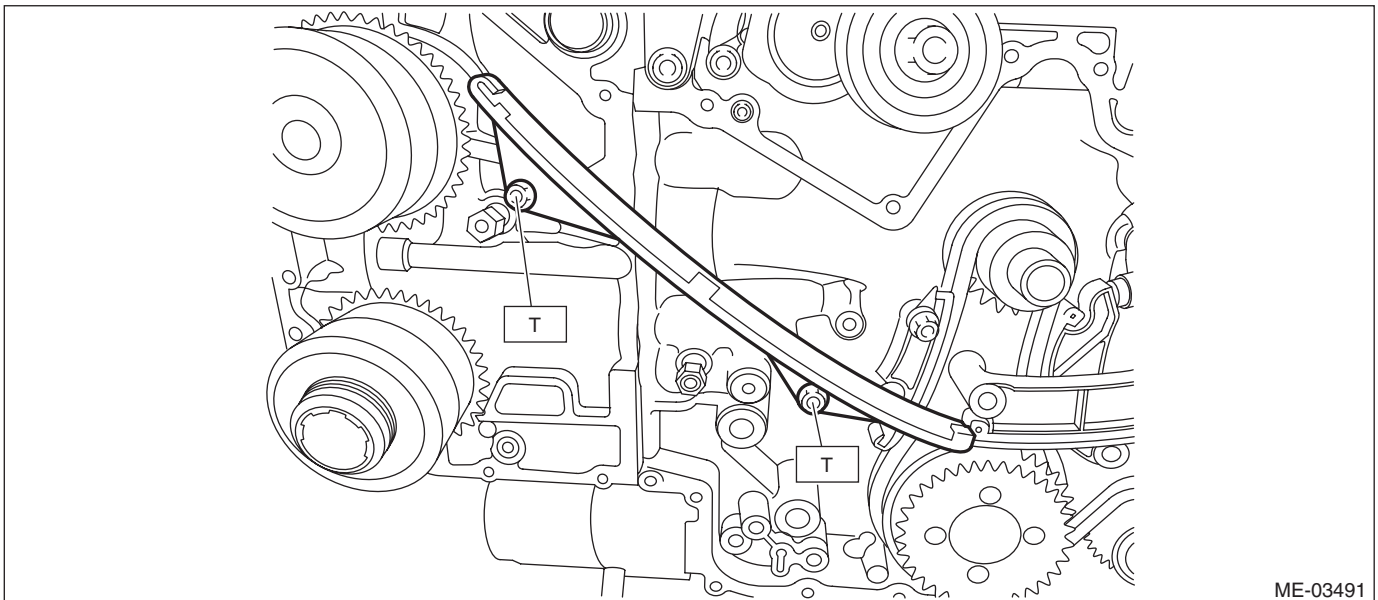
**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



16) Install the chain guide (RH).

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



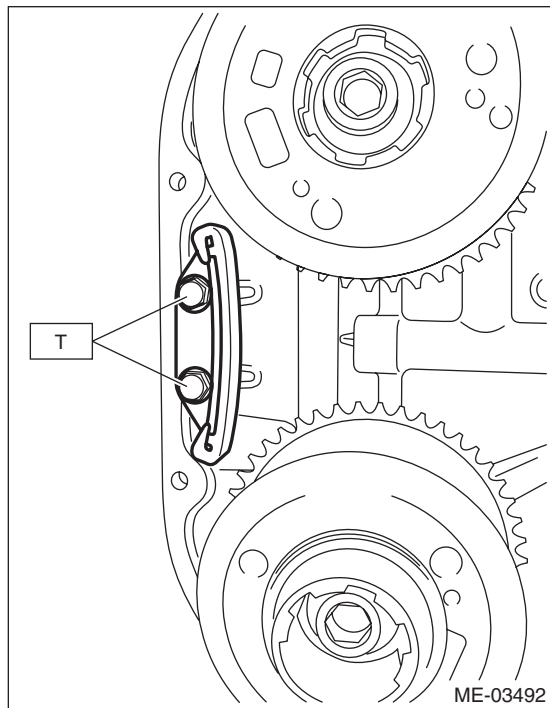
# Timing Chain Assembly

## MECHANICAL

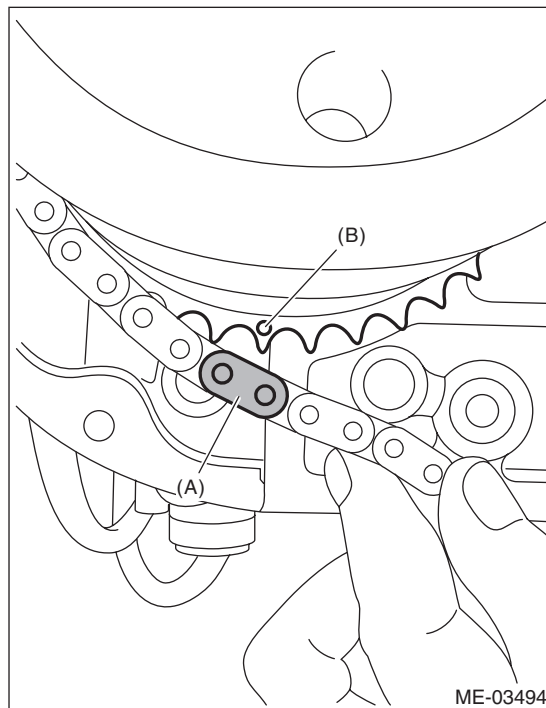
17) Install the chain guide (RH: between cams).

**Tightening torque:**

**6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**



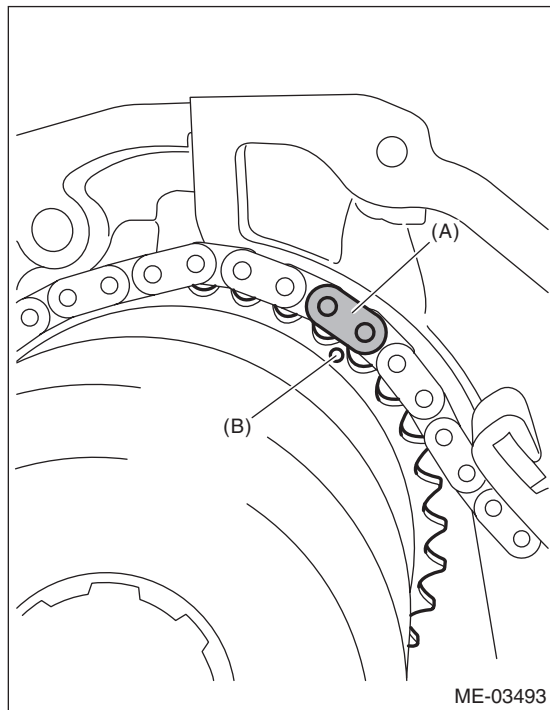
(2) Match the timing mark of exhaust cam sprocket (RH) to the timing chain mark (blue).



- (A) Blue
- (B) Timing mark

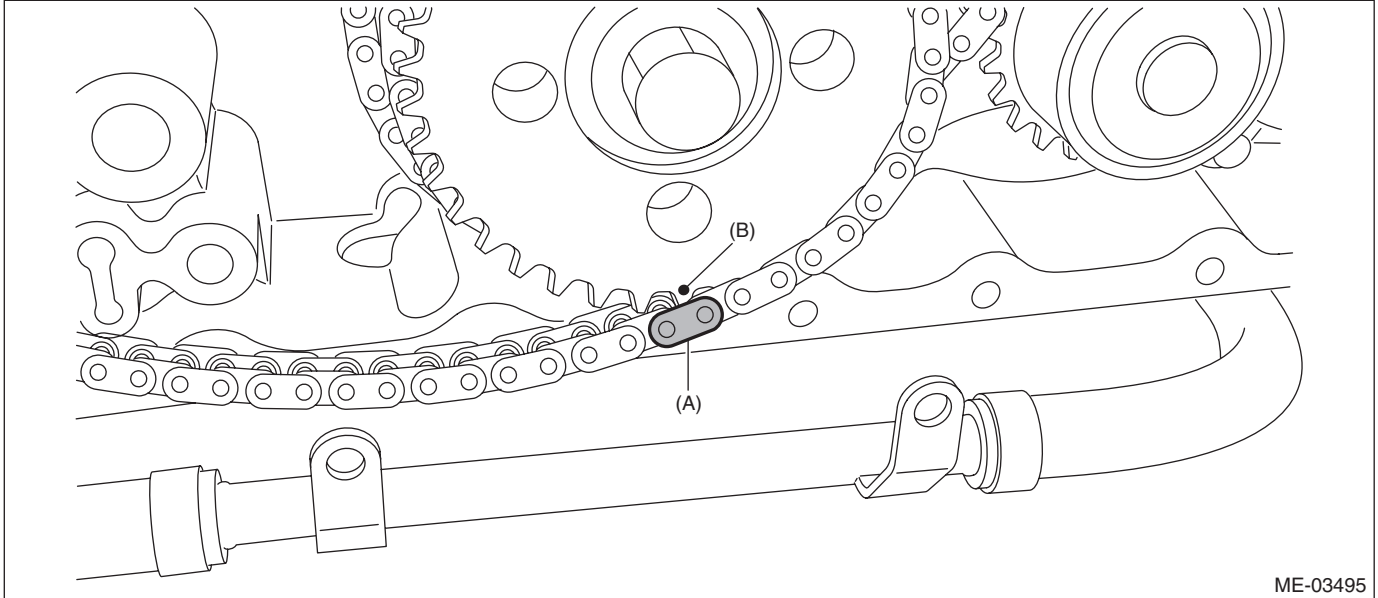
18) Install timing chain (RH).

(1) Match the timing mark of intake cam sprocket (RH) to the timing chain mark (blue).



- (A) Blue
- (B) Timing mark

(3) Match the timing mark of idler sprocket to the timing chain mark (gold).



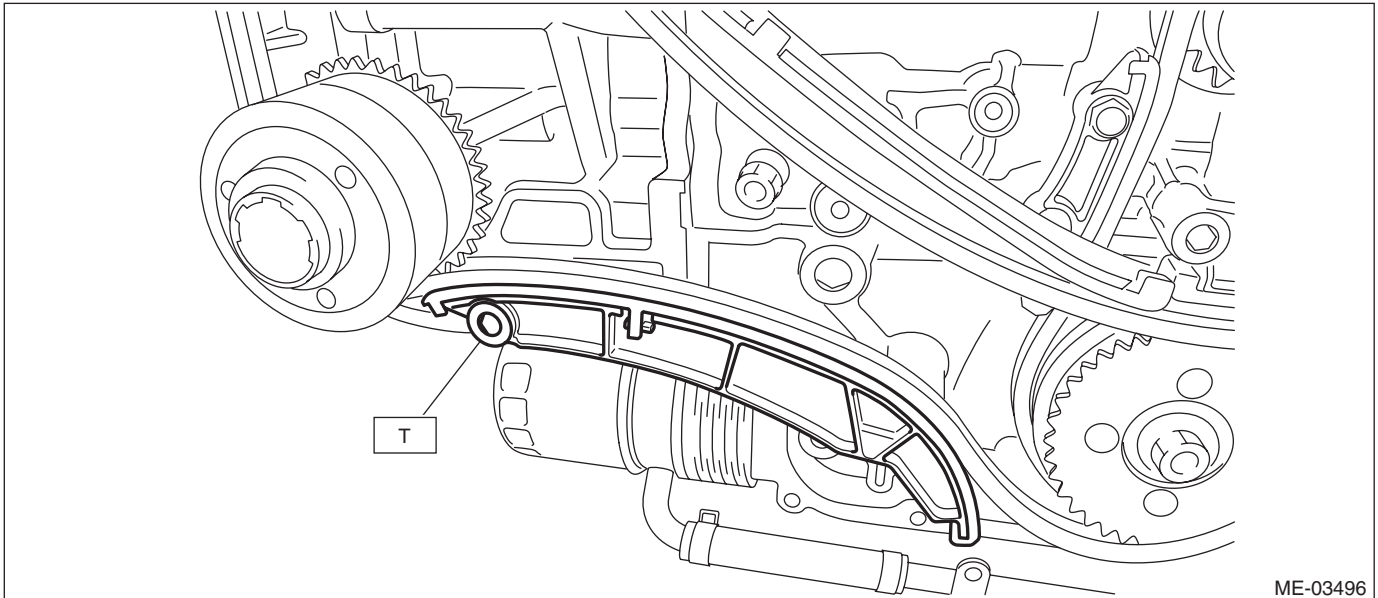
(A) Gold

(B) Timing mark

19) Install the chain tensioner lever (RH).

**Tightening torque:**

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



ME-03496

# Timing Chain Assembly

## MECHANICAL

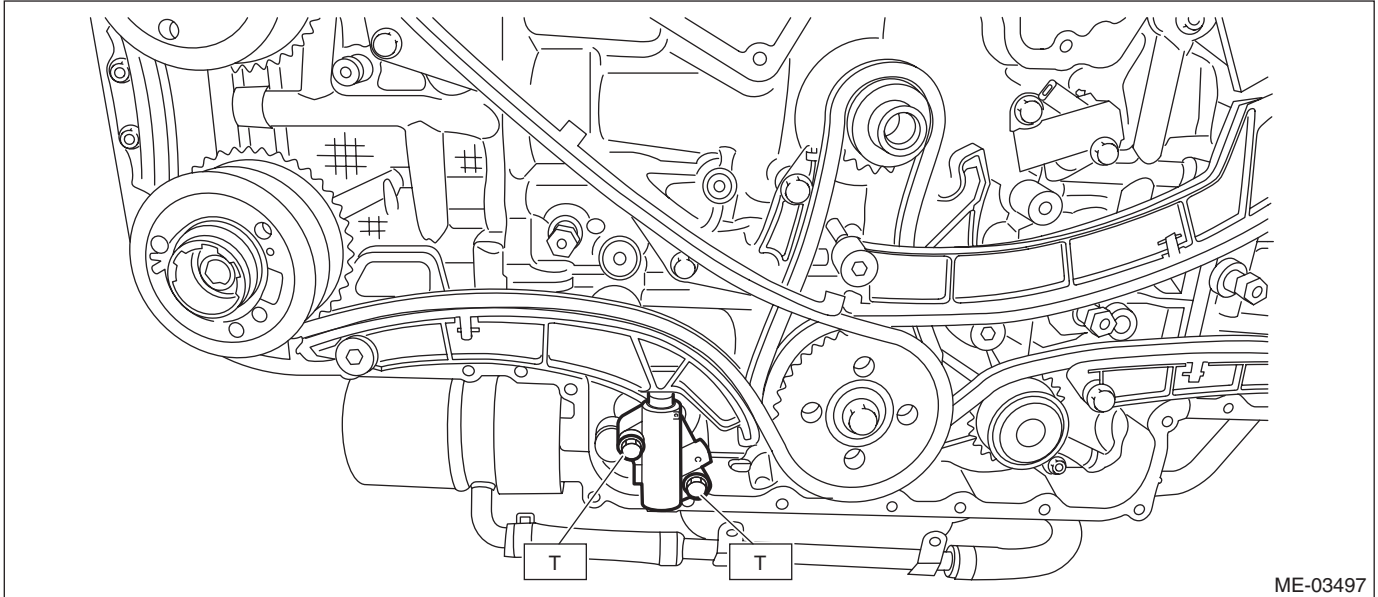
20) Install the chain tensioner (RH) and pull out the stopper pin.

### NOTE:

The timing chain (RH) line will be complete.

### Tightening torque:

**16 N·m (1.6 kgf-m, 11.8 ft-lb)**



21) After installation, perform the following confirmations.

### CAUTION:

**Always make sure to perform this confirmation.**

- (1) Make sure that the timing mark of idler sprocket is aligned to three timing chain marks (gold).
- (2) Make sure that the twelve o'clock position on the crank sprocket is aligned to the timing chain (main) mark (gold).
- (3) Make sure that the LH side cam sprocket timing mark is aligned to the timing chain mark (blue).
- (4) Make sure that the RH side cam sprocket timing mark is aligned to the timing chain mark (blue).
- (5) Make sure that all bolts are tightened at the specified torque.

22) Using the ST, turn the crankshaft in the direction of engine rotation, and make sure that there are no abnormal conditions.

### CAUTION:

**Always make sure to perform this confirmation.**

- 23) Install the chain cover. <Ref. to ME(H6DO)-56, INSTALLATION, Chain Cover.>
- 24) Install the crank pulley. <Ref. to ME(H6DO)-52, INSTALLATION, Crank Pulley.>
- 25) Install the V-belts. <Ref. to ME(H6DO)-51, INSTALLATION, V-belt.>
- 26) Fill engine oil. <Ref. to LU(H6DO)-9, REPLACEMENT, Engine Oil.>
- 27) Make sure there is no oil leaks in the chain cover mating surface.
- 28) Install the radiator. <Ref. to CO(H6DO)-18, INSTALLATION, Radiator.>