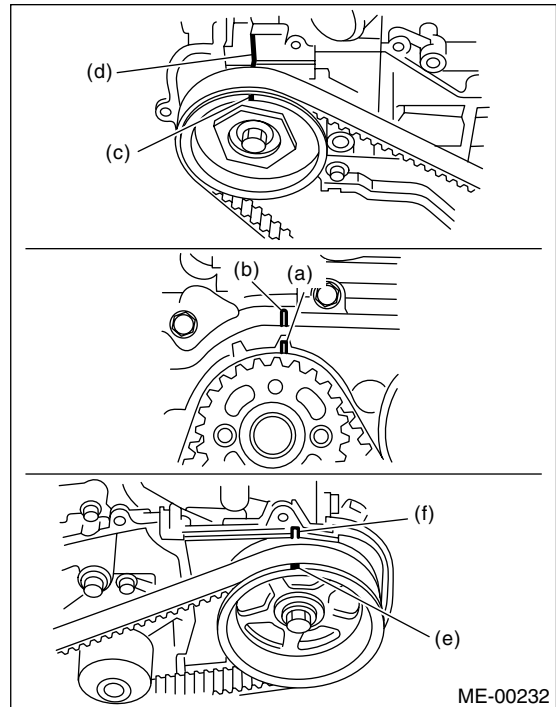
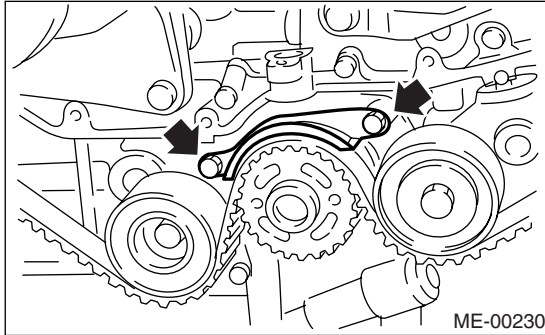


15. Timing Belt Assembly

A: REMOVAL

1. TIMING BELT

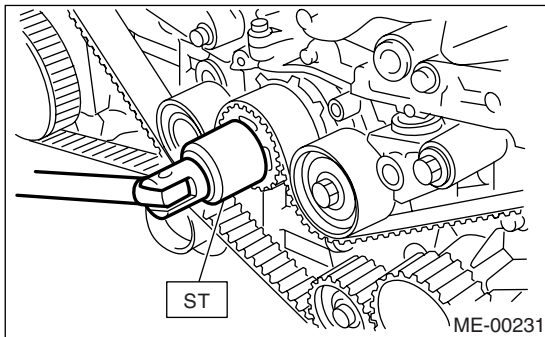
- 1) Remove the V-belt. <Ref. to ME(H4SO)-42, REMOVAL, V-belt.>
- 2) Remove the crank pulley. <Ref. to ME(H4SO)-44, REMOVAL, Crank Pulley.>
- 3) Remove the timing belt cover. <Ref. to ME(H4SO)-45, REMOVAL, Timing Belt Cover.>
- 4) Remove the timing belt guide. (MT model)



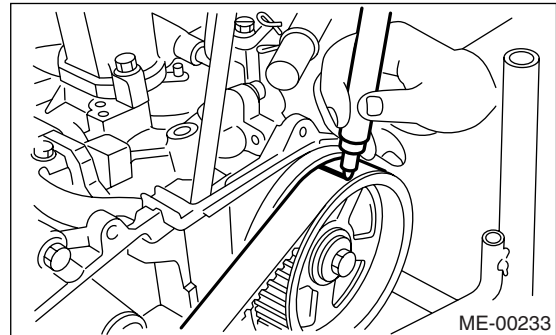
5) If the alignment mark (a) or arrow mark (which indicates rotation direction) on timing belt fade away, put new marks before removing the timing belt as shown in procedures below.

- (1) Turn the crankshaft using ST. Align the mark (a) of sprocket to oil pump notch (b) and ensure the right side cam sprocket mark (c) and cylinder head matching surface (d) and left side cam sprocket mark (e) and timing belt cover notch (f) are properly adjusted.

ST 499987500 CRANKSHAFT SOCKET



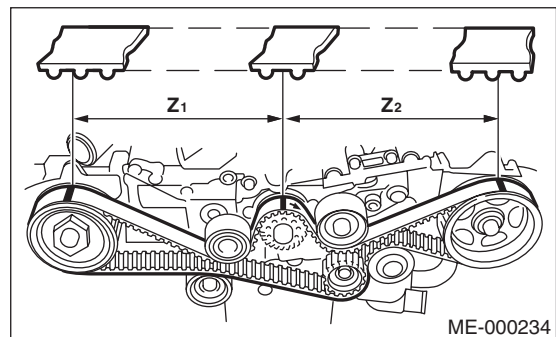
(2) Using white paint, put alignment or arrow marks on the timing belts in relation to crank sprocket and cam sprockets.



Specified data:

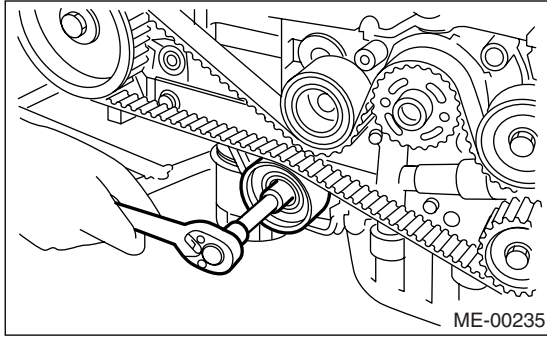
Z₁: 46.8 tooth length

Z₂: 43.7 tooth length

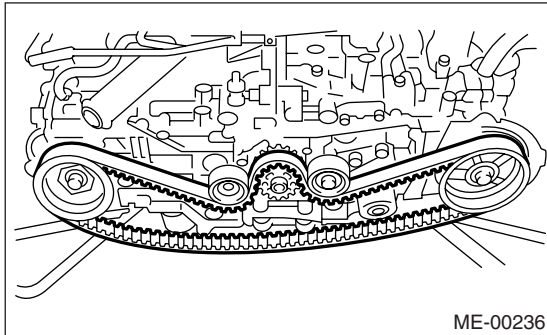


6) Remove the belt idler (No. 2).

7) Remove the belt idler No. 2.



8) Remove the timing belt.

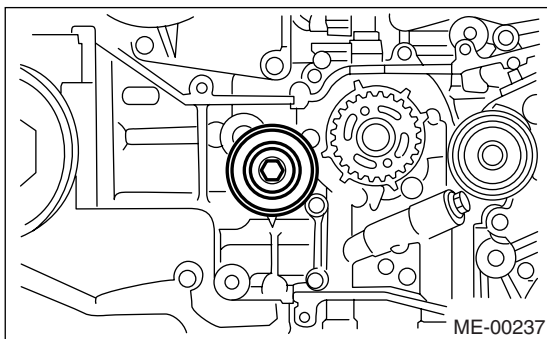


CAUTION:

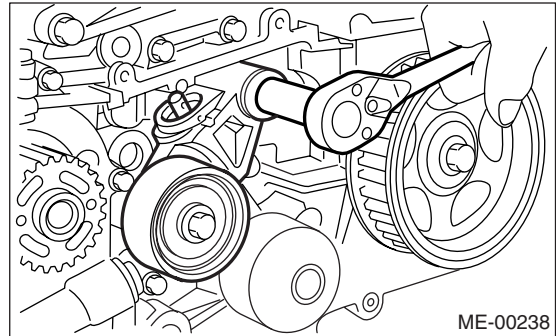
After the timing belt has been removed, never rotate the intake and exhaust cam sprocket. If the cam sprocket is rotated, the intake and exhaust valve heads strike together and valve stems are bent.

2. BELT IDLER AND AUTOMATIC BELT TENSION ADJUSTER ASSEMBLY

1) Remove the belt idler (No. 1).



2) Remove the automatic belt tension adjuster assembly.



B: INSTALLATION

1. AUTOMATIC BELT TENSION ADJUSTER ASSEMBLY AND BELT IDLER

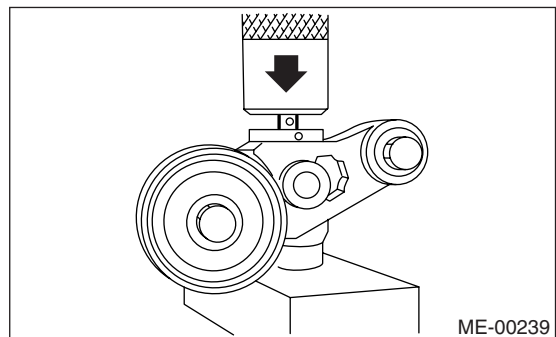
1) Preparation for installation of automatic belt tension adjuster assembly;

CAUTION:

- Always use a vertical type pressing tool to move the adjuster rod down.
- Do not use a lateral type vise.
- Push the adjuster rod vertically.
- Press-in the adjuster rod gradually taking more than 3 minutes.
- Do not allow press pressure to exceed 9,807 N (1,000 kgf, 2,205 lb).
- Allowed press-in position of the adjusting rod top is till end surface of the cylinder. Do not press-in far more. Doing so may damage the cylinder.
- Do not release the press pressure until stopper pin is completely inserted.

(1) Attach the automatic belt tension adjuster assembly to the vertical pressing tool.

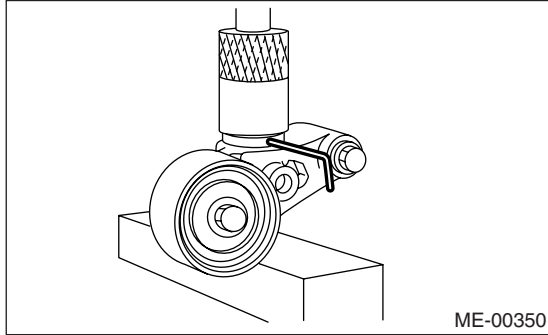
(2) Slowly move the adjuster rod down with a pressure of 294 N (30 kgf, 66 lb) until the adjuster rod is aligned with the stopper pin hole in the cylinder.



TIMING BELT ASSEMBLY

MECHANICAL

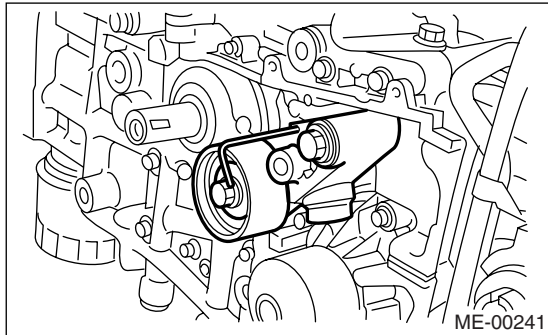
- (3) With a 2 mm (0.08 in) dia. stopper pin or a 2 mm (0.08 in) (nominal) dia. hex bar wrench inserted into the stopper pin hole in the cylinder, secure the adjuster rod.



- 2) Install the automatic belt tension adjuster assembly.

Tightening torque:

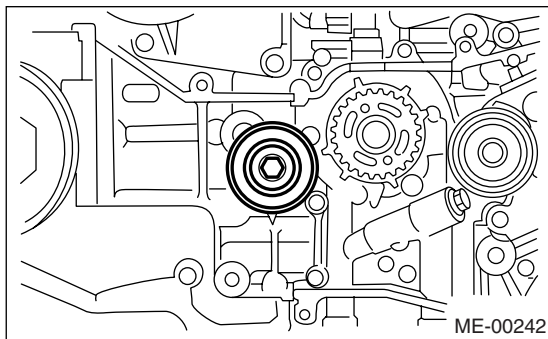
39 N·m (4.0 kgf·m, 28.9 ft·lb)



- 3) Install the belt idler (No. 1).

Tightening torque:

39 N·m (4.0 kgf·m, 28.9 ft·lb)



2. TIMING BELT

- 1) Preparation for the installation of automatic belt tension adjuster assembly. <Ref. to ME(H4SO)-47, AUTOMATIC BELT TENSION ADJUSTER ASSEMBLY AND BELT IDLER, INSTALLATION, Timing Belt Assembly.>

- 2) Installation of timing belt

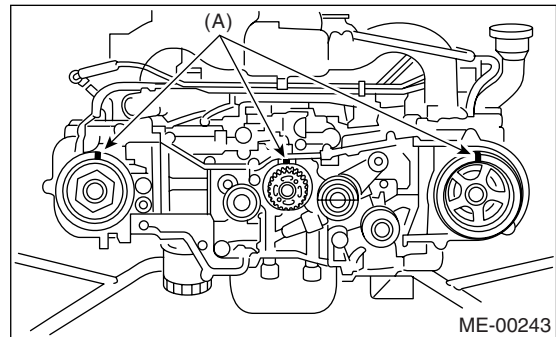
- (1) Turn the cam sprocket No. 2 using ST1, and then turn the cam sprocket No. 1 using ST2 so that their alignment marks (A) come to top positions.

ST1 18231AA010 CAM SPROCKET WRENCH

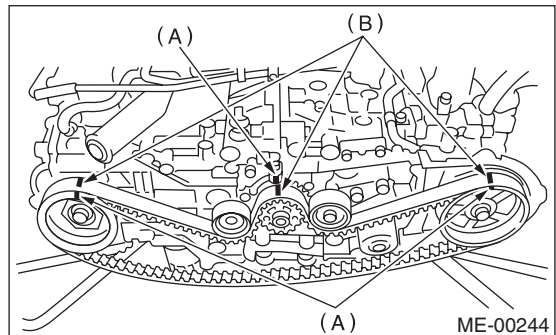
NOTE:

Also the CAM SPROCKET WRENCH (499207100) can be used.

ST2 499207400 CAM SPROCKET WRENCH



- (2) While aligning alignment mark on the timing belt (B) with marks on sprockets (A), position the timing belt properly.



- 3) Install the belt idler No. 2.

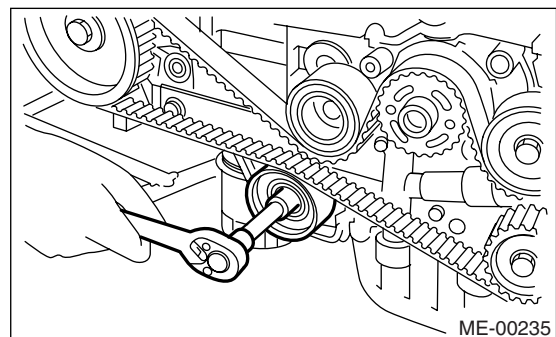
Tightening torque:

39 N·m (4.0 kgf·m, 28.9 ft·lb)

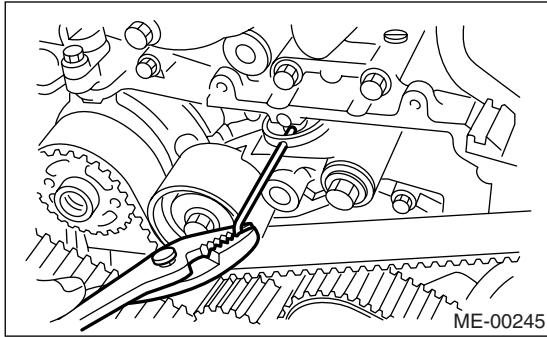
- 4) Install the belt idler (No. 2).

Tightening torque:

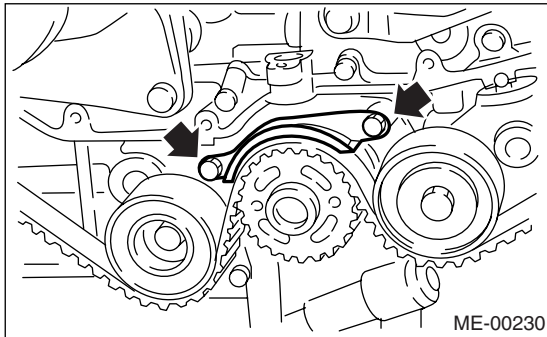
39 N·m (4.0 kgf·m, 28.9 ft·lb)



5) After ensuring that the marks on timing belt and cam sprockets are aligned, remove the stopper pin from belt tension adjuster.

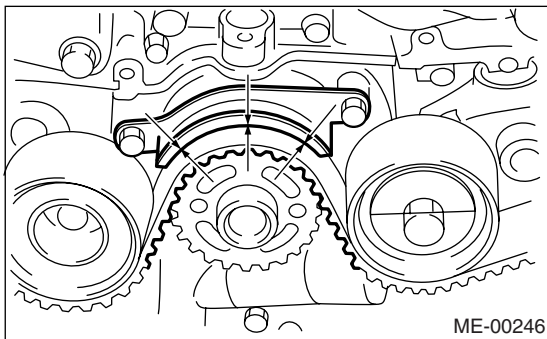


6) Install the timing belt guide. (MT model)
 (1) Temporarily tighten the timing belt guide mounting bolts.



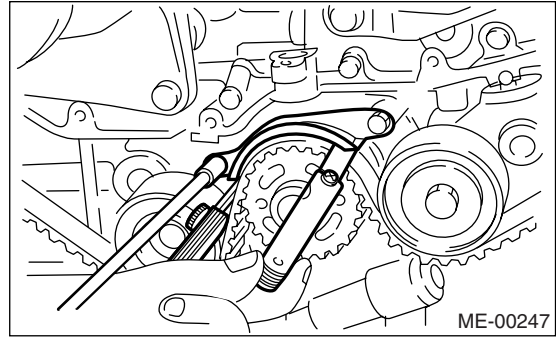
(2) Check and adjust the clearance between timing belt and timing belt guide by using thickness gauge.

Clearance:
 $1.0 \pm 0.5 \text{ mm}$ ($0.039 \pm 0.020 \text{ in}$)



(3) Tighten the timing belt guide mounting bolts.

Tightening torque:
 $10 \text{ N}\cdot\text{m}$ ($1.0 \text{ kgf}\cdot\text{m}$, $7.2 \text{ ft}\cdot\text{lb}$)



7) Install the timing belt cover. <Ref. to ME(H4SO)-45, INSTALLATION, Timing Belt Cover.>

8) Install the crank pulley. <Ref. to ME(H4SO)-44, REMOVAL, Crank Pulley.>

9) Install the V-belt. <Ref. to ME(H4SO)-42, INSTALLATION, V-belt.>

C: INSPECTION

1. TIMING BELT

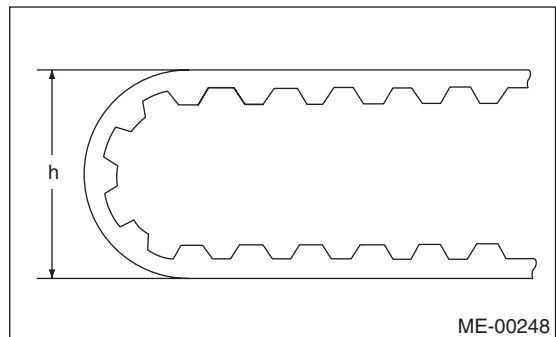
1) Check the timing belt teeth for breaks, cracks, and wear. If any fault is found, replace the belt.

2) Check the condition of back side of belt; if any crack is found, replace the belt.

CAUTION:

- Be careful not to let oil, grease or coolant contact the belt. Remove quickly and thoroughly if this happens.
- Do not bend the belt sharply.

Bending diameter: h
 60 mm (2.36 in) or more



TIMING BELT ASSEMBLY

MECHANICAL

2. AUTOMATIC BELT TENSION ADJUST-ER

1) Visually check oil seals for leaks, and rod ends for abnormal wear or scratches. If necessary, replace automatic belt tension adjuster ASSY.

NOTE:

Slight traces of oil at rod's oil seal does not indicate a problem.

2) Check that the adjuster rod does not move when a pressure of 294 N (30 kgf, 66 lb) is applied to it. This is to check adjuster rod stiffness.

3) If the adjuster rod is not stiff and moves freely when applying 294 N (30 kgf, 66 lb), check it using the following procedures:

(1) Slowly press-in top of the adjuster rod down till the end surface of the cylinder. Repeat this motion 2 or 3 times.

(2) With the adjuster rod moved all the way up, apply a pressure of 294 N (30 kgf, 66 lb) to it. Check adjuster rod stiffness.

(3) If the adjuster rod is not stiff and moves down, replace the automatic belt tension adjuster assembly with a new one.

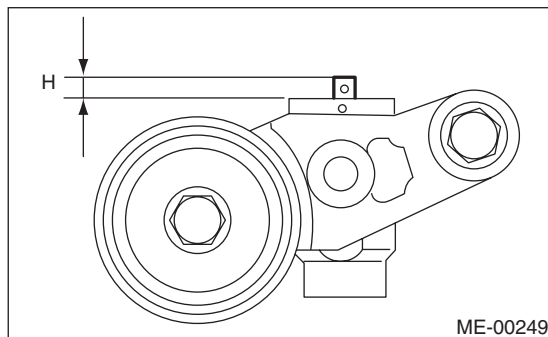
CAUTION:

- Always use a vertical type pressing tool to move the adjuster rod down.
- Do not use a lateral type vise.
- Push the adjuster rod vertically.
- Press-in the push adjuster rod gradually taking more than 3 minutes.
- Do not allow press pressure to exceed 9,807 N (1,000 kgf , 2,205 lb).
- Allowed press-in position of the adjusting rod top is till end surface of the cylinder. Do not press-in far more. Doing so may damage the cylinder.

4) Measure the extension of rod beyond the body. If it is not within specifications, replace with a new one.

Rod extension: H

$5.7 \pm 0.5 \text{ mm}$ ($0.224 \pm 0.020 \text{ in}$)



3. BELT TENSION PULLEY

1) Check the mating surfaces of timing belt and contact point of adjuster rod for abnormal wear or scratches. Replace the automatic belt tension adjuster assembly if faulty.

2) Check the tension pulley for smooth rotation. Replace if noise or excessive play is noted.

3) Check the tension pulley for grease leakage.

4. BELT IDLER

1) Check the belt idler for smooth rotation. Replace if noise or excessive play is noted.

2) Check the belt outer contacting surfaces of idler pulley for abnormal wear and scratches.

3) Check the belt idler for grease leakage.