

Recommended Installation Procedure (31 MARCH 2010)
ATech Timing Belt Tensioner (979004) EA113 1.8T 20 Valve Longitudinal Engine

Caution:

The procedure to access the timing belt tensioner and all other timing driven components must be done according to the car manufacturer's guidelines.

Engine temperature:

1. The tensioner must be installed on the engine at room temperature by allowing the engine and tensioner to stabilize to the same relative ambient temperature for proper belt tension adjustment. **Do not attempt to install a tensioner onto a hot engine.** (For reference, the minimum engine cooling period is 4 hours in tropical climatic regions).

Crank and Camshaft TDC position setup:

2. Rotate the crankshaft **CLOCKWISE ONLY** to **TDC** (Top Dead Center) position (i.e. #1 cylinder firing position). Review AUDI & VW's guidelines on how to locate and lock the crankshaft and camshaft positions at TDC.

Caution:

If the alignment of the TDC position is missed, DO NOT rotate the Crankshaft counterclockwise to the correct position, but rather rotate the Crankshaft 2 more full rotations with the camshafts to TDC position. This is to be accomplished while the belt is still attached. Also, DO NOT at anytime rotate the crankshaft and the camshafts when the timing belt is removed.

Belt and Timing Belt Tensioner removal

Once the procedure for setting TDC is completed, according to AUDI & VW's guidelines:

3. Fully engage an 8mm Allen Key into the tensioner hub and rotate the tensioner counterclockwise slowly until the flat locking tool (Ref OE No. T10008) can be inserted to lock the hydraulic damper.
4. Loosen the mounting nut and rotate the tensioner clockwise slowly by engaging a 2-pin tool (Ref OE No. 3387) shaft away from the belt to release the belt tension. Remove the timing belt, the tensioner mounting nut and the old tensioner
5. Loosen and remove the two M6 bolts from the damper-bracket-idler assembly, then remove damper-bracket-idler assembly.

It is recommended to replace the timing belt during the replacement of the tensioner.

Initial Setup of the Timing Belt Tensioner

6. Install the new style idler bracket (Fig. 2, non-hydraulic damper) on the engine and retighten the two M6 bolts to 10 Nm.
7. Install the tensioner (Fig. 3) on the engine mounting stud ensuring that the anti-rotation index tab of the base plate is engaged in the hole in the timing back cover.
8. Rotate the installation shaft on the tensioner by using a 8mm Allen Key to the approximate "7 O'clock position" (Fig. 4). This will maximize the belt clearance for ease of installation. Hand tighten (lightly) the mounting nut on the stud.

Installation of the Timing Belt Tensioner and the Belt

9. Install the timing belt being careful to engage the appropriate teeth of all the corresponding sprockets as per drive layout (Fig.1) starting with the crankshaft and moving COUNTERCLOCKWISE direction to water pump, camshaft, the left side idler and the tensioner being last component. Ensure the timing belt is taut between sprockets on the non-tensioned side during installing the belt.
10. Using a 13mm wrench to prevent the rotation of the mounting nut, rotate the installation shaft CLOCKWISE with 8mm Allen Key. The tensioner assembly will move against the belt and the alignment ridge on the arm will eventually start to move CLOCKWISE.
11. Continue rotating the installation shaft in the clockwise direction **1** (Fig. 5), so that the ridge passes the nominal notch and stops at load stop as shown in Detail **1** (Fig. 5). Then rotate the installation shaft in the counter-clockwise direction **2** (Fig. 5) to have the ridge pass the nominal notch and stop as shown in Detail **2** (Fig. 5). After cycling the tensioner as mentioned, rotate the installation shaft in the clockwise direction **3** only (Fig. 5) so the ridge aligns within the edges of the nominal notch as shown in Detail **3** (Fig. 5).

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12. Once the nominal position is achieved, prevent the rotation of the installation shaft and torque the mounting nut to **21~26 Nm** (Fig. 5).

Caution: Do not over-torque the Mounting Nut.

Verification of the Nominal Position

It is highly recommended to use a mechanic's mirror to verify the location of the nominal setting of the tensioner in the event that this area is not visible from any other direction.

13. Remove the 8mm Allen Key, the 13mm wrench, and all other tools for setting the TDC position.
14. Rotate the crankshaft 2 complete revolutions clockwise MANUALLY for proper seating of the belt and re-align the crankshaft to TDC.

Check the following:

- Crankshaft mark is aligned.
- Camshaft sprocket mark is aligned.

If the alignment of any of the sprockets is not correct, the belt has to be taken off and the installation procedure has to be repeated starting at step 2.

Caution:

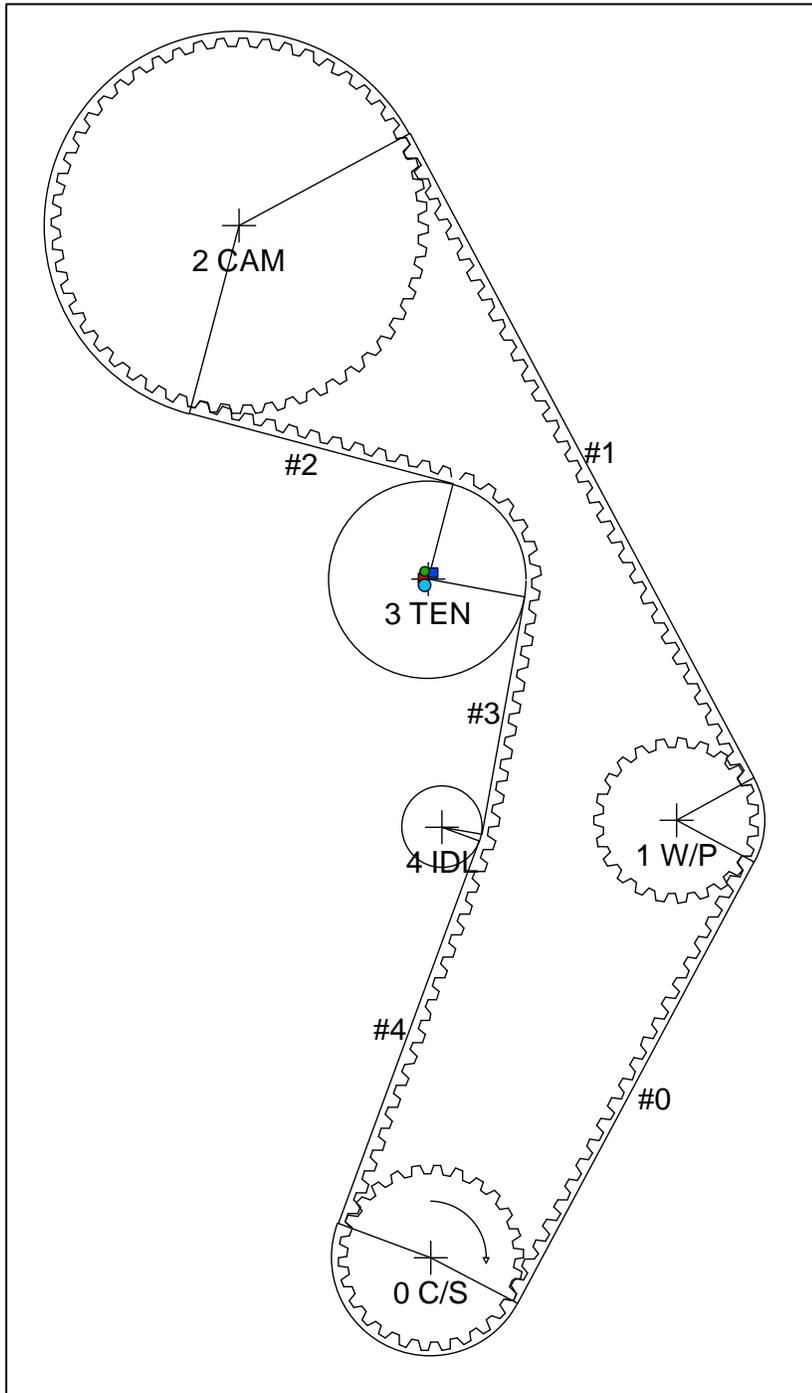
If the alignment of the TDC position is missed, do not rotate the Crankshaft counterclockwise to the correct position, but rather rotate the Crankshaft 2 more full rotations to the TDC position. There is a risk of damaging the engine due to incorrect synchronization.

15. Check the tensioner nominal position with the engine set at TDC:
If the 2 edges of the arm alignment ridge are within the alignment notch on the front plate (detail-3 in Fig. 5), the tensioner is set at its nominal position and the installation is complete.
If not, a tensioner re-adjustment is required until the proper position is achieved. For re-adjustment, proceed as follows:

Re-adjustment

16. Ensure that the TDC position has not disturbed. Engage the 8mm Allen Key and retain the installation shaft's position while loosening the mounting nut with a 13mm Wrench. The mounting nut and the tensioner do not need to be removed.
17. Prevent the mounting nut from rotating and cycle the installation shaft so that the alignment ridge cycles about the nominal position (Fig. 4) and then rotate the installation shaft CLOCKWISE only until the arm alignment ridge moves clockwise to align within the notch on the front plate (Fig. 5).
18. Re-torque the mounting nut to **21~26 Nm** while preventing the installation shaft from turning by holding it with an 8mm Allen Key.
19. Verify the proper installation of the tensioner by repeating steps #13, #14 and #15.

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0: Crankshaft, 1: Water Pump, 2: Camshaft, 3: Timing Belt Tensioner, 4: Idler

Figure1. Timing Drive Layout for Audi & VW EA113 1.8T 20 Valve

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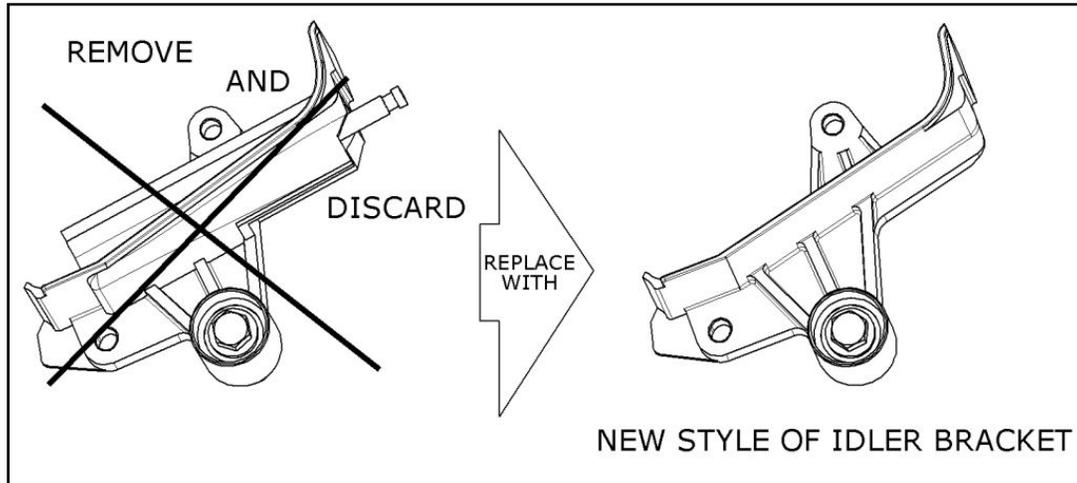


Figure 2: Replace the New Style Idler Bracket Assembly

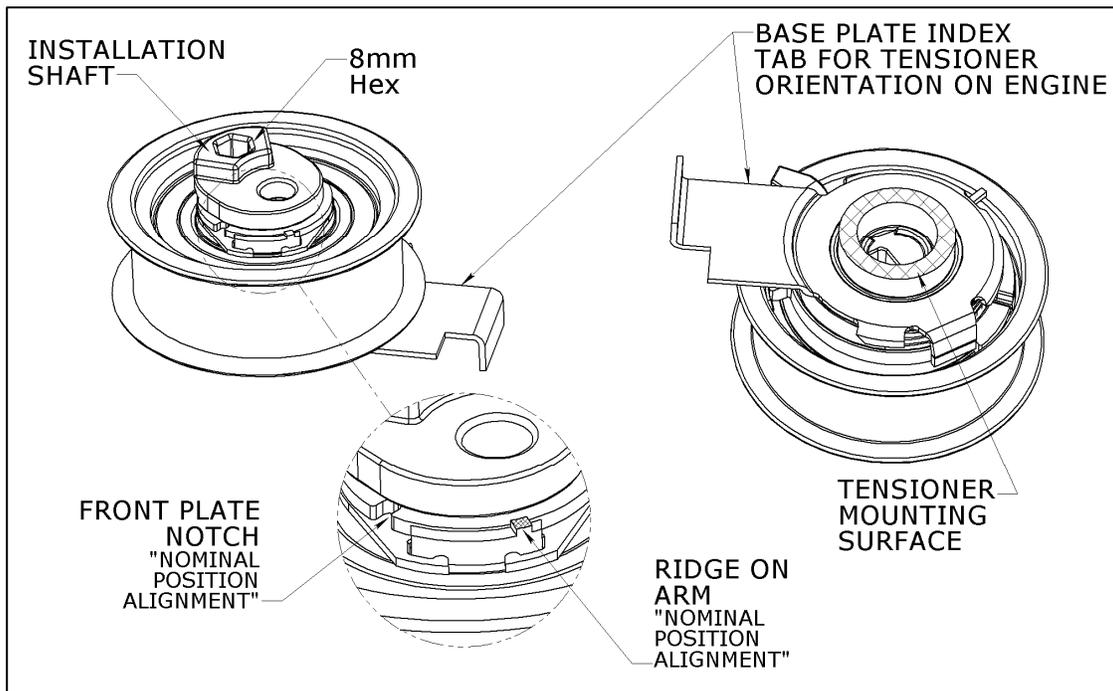


Figure 3: Timing Belt Tensioner shown as shipped

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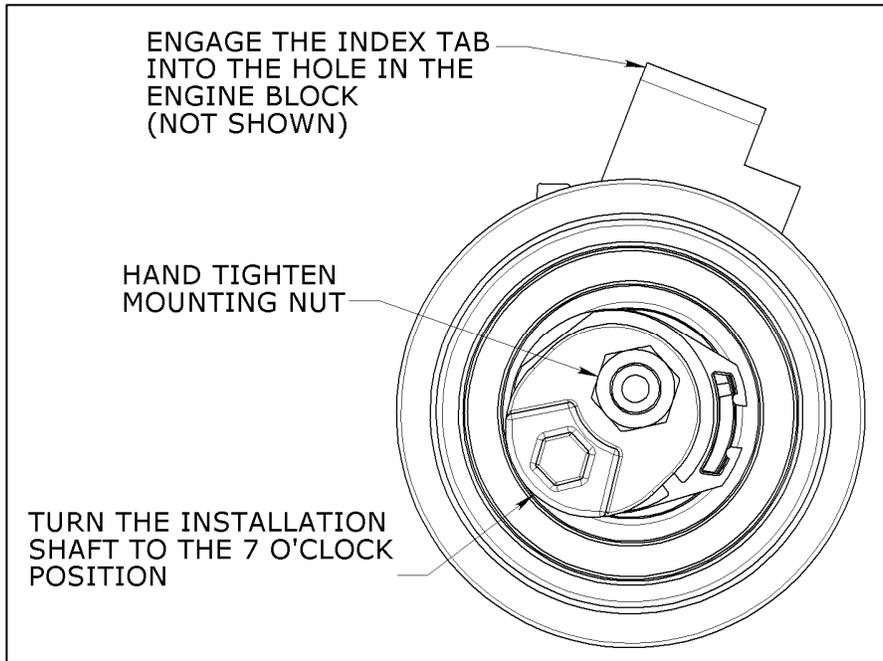


Figure 4: Initial setup of the Timing Belt Tensioner

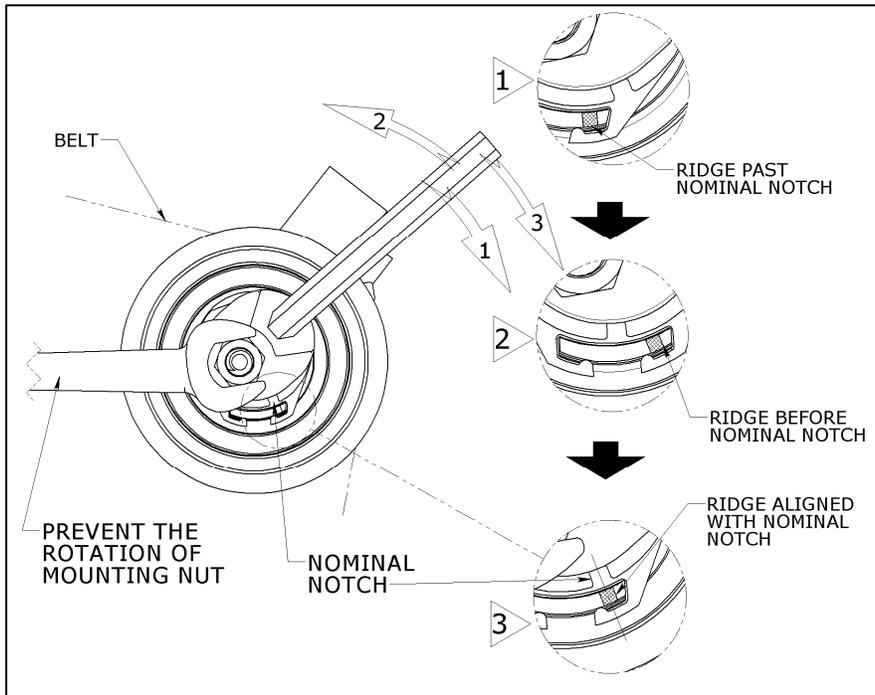


Figure 5: Tensioner Cycled before setting to Nominal Position

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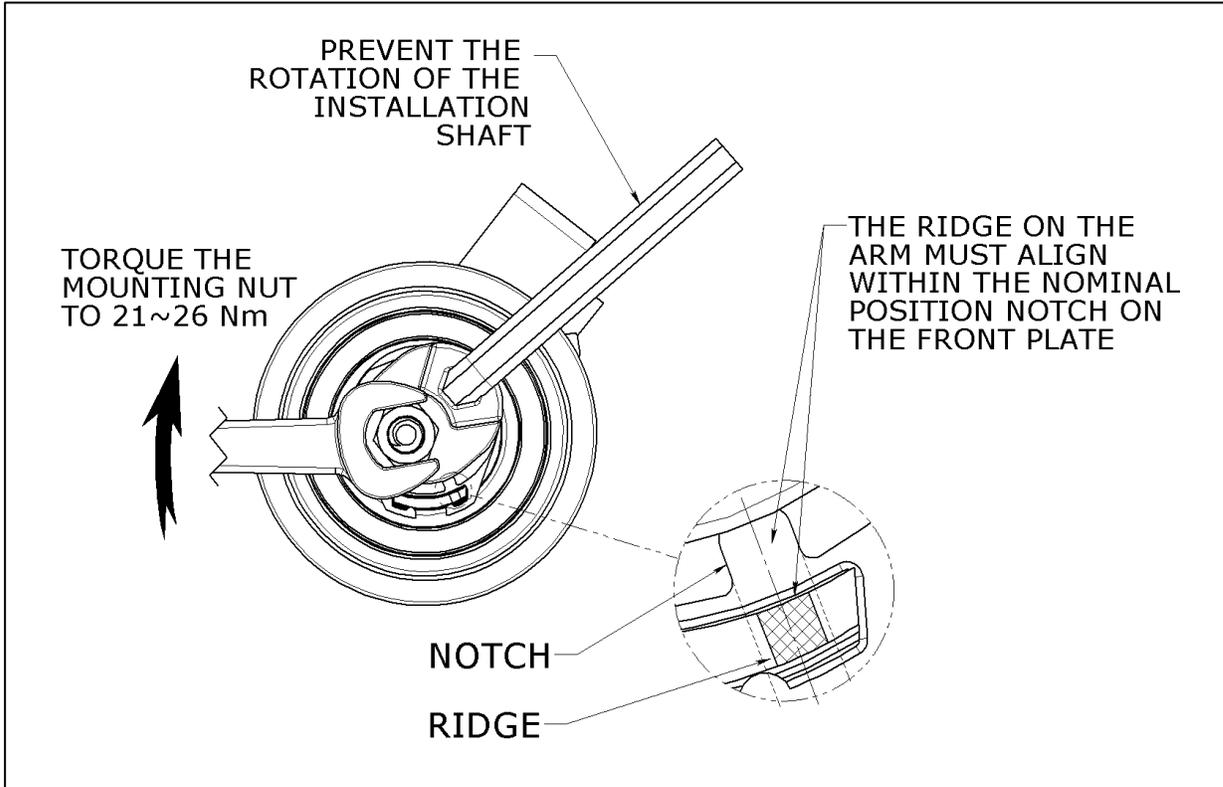


Figure 6: Tensioner Torqued at the Nominal Position