

**Recommended Installation Procedure** (11 DEC 09)  
ATech Timing Belt Tensioner (979847/901) VW 1.6/2.0L L4 EA189 CR Engine

**Initial Preparation:**

- **Caution: The procedure to access the timing belt tensioner and all other timing driven components must be done according to VW's guidelines.**
- **The mounting of the TBT is done on the engine with a stud (provided on the engine block) and a *Flanged M8 Hex Nut*.**

**Cold Engine – Cold tensioner:**

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 cool tensioner onto a hot engine or vice versa.** (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).  
For this application:  
Crankshaft has to be locked in position using a crankshaft locking tool, (Fig 5). Follow VW's guidelines.  
Camshaft has to be locked in position using an insert pin through cam sprocket access window and into the hole on engine block. Follow VW's guidelines.  
The Cam sprocket bolts have to be loosened to allow for the free rotation of the camshaft sprocket which will ease the installation of the belt, (Fig. 2). Follow VW's guidelines for procedure.  
The Fuel Injection Pump sprocket has to be locked in position using an insert pin. Follow VW's guidelines for procedure.

**Caution:**

**If the alignment of the crankshaft and the engine block is missed, do not rotate the Crankshaft counterclockwise to the correct position, but rather rotate the Crankshaft 2 more full rotations with the camshaft to the timing position. This is to be accomplished while the belt is still attached.**

**Belt and TBT (Timing Belt Tensioner) removal**

3. Once the procedure for setting the TDC is completed, loosen the *Flanged Mounting Nut* and rotate the TBT's installation shaft counterclockwise to release the belt tension.
4. Remove the timing belt, the tensioner's flanged mounting Nut and the OLD Timing Belt Tensioner. It is recommended to replace the timing belt during the replacement of the tensioner.

**Installation of the TBT (timing belt tensioner) and the Belt**

5. Install the new tensioner (Fig. 6) on the engine mounting stud ensuring that the anti-rotation index tab of the base plate is engaged with the anti-rotation slot on the engine cover of the cylinder block, (Fig. 7).
6. Hand tighten (lightly) the flanged M8 (Fig. 3) mounting nut on the stud.
7. 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 working **COUNTERCLOCKWISE ONLY**. Engage the crankshaft sprocket, water pump, idler, fuel injection pump, idler, camshaft sprocket and timing belt tensioner and idler.

**Caution:**

**Do not at any time use a pry bar to load the belt over the tensioner pulley flange.**

8. Engage the installation tool, either the 2-pin (Fig. 4) or a 6mm Hex Key, with the installation shaft, and rotate it **clockwise** while preventing the rotation of the flanged mounting nut with a 15mm wrench. The tensioner will move against the belt and the Arm Pointer will eventually start to move clockwise, (Fig. 8).
9. Continue rotating the Installation Shaft **Clockwise** and pass the nominal position notch, until the arm pointer approximately reaches the edge of the base plate. (Fig. 9).

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10. Hold the Installation Shaft with the installation tool and tighten the tensioner in this position by torquing the Flanged Mounting Nut to **23±3 Nm**, and add an extra **45°** of **clockwise** Wrench rotation, (Fig. 9).

**Verification of the Nominal Position**

11. Follow VW's procedure for re-tightening the camshaft sprockets' bolts. Remove the Installation Tool, the Wrench, and any other tools used for the alignment of the TDC position.
12. Rotate the Crankshaft **2** complete revolutions **Clockwise manually** for proper seating of the belt until the crankshaft is repositioned at the TDC position.  
Timing check:
  - ◆ Try to install the **TDC** alignment locking tools of the crankshaft and the camshafts. If the tools fit smoothly, proceed to step 13 for checking the TBT arm pointer alignment.
  - ◆ If any of the crankshaft or camshaft sprockets are not aligned at the TDC position, the belt has to be removed and the installation procedure has to be repeated starting at step 2.

**Caution: If the alignment of the crankshaft and its corresponding mark on the engine is missed, do not rotate the Crankshaft counterclockwise to the correct position, but rather rotate the Crankshaft 2 more full rotations to the alignment point.**

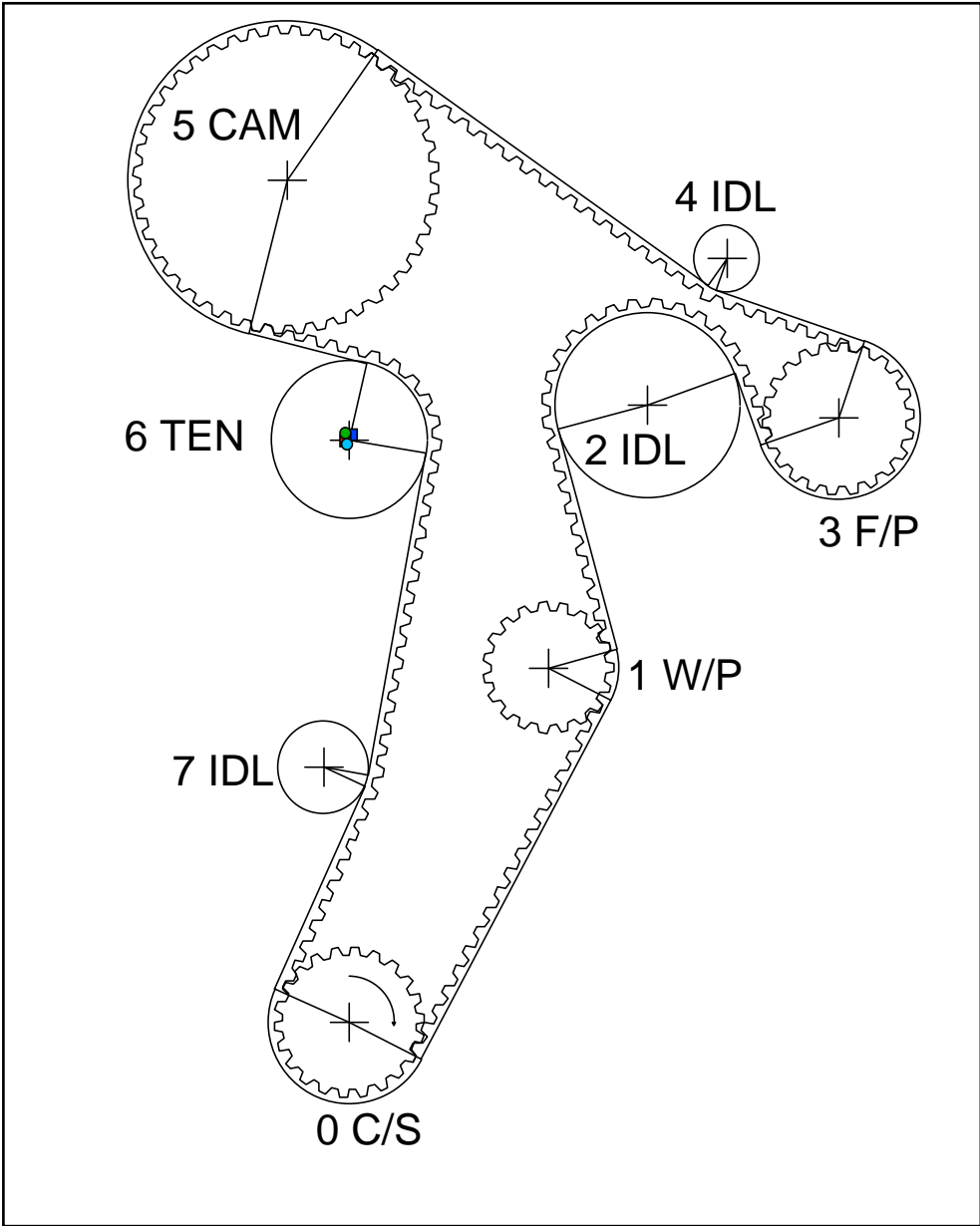
13. Check the position of the Arm Pointer.  
If the arm pointer is aligned within the **Minimum & Maximum** range of the Nominal Position Notch in the front plate, (Fig. 10). The installation is complete.  
**If not**, proceed as follows (The installation needs to be readjusted until the proper position is achieved).

**Readjustment**

The timing belt tensioner re-adjustment is required if the arm pointer does not align within the permissible **Minimum & Maximum** range of the Nominal Position Notch on the front plate of the tensioner (Fig. 10).

14. Engage the Installation Tool with the tensioner installation shaft and retain the installation shaft's position while loosening the Flanged Mounting Nut with the 15mm Wrench. The Flanged Mounting Nut and the Tensioner do not need to be removed.
15. Prevent the rotation of the flanged mounting nut with the 15mm Wrench and rotate the Installation Shaft with the Installation tool, until the Arm Pointer moves within the **Minimum & Maximum** range of the Nominal Position Notch in the front plate, (Fig. 10).
16. Hold the Installation Shaft with the installation tool and tighten the tensioner in this position by torquing the Flanged Mounting Nut to **23±3 Nm**, and add an extra **45°** of **clockwise** Wrench Rotation, (Figure 11.) Remove all tools used for crankshaft and camshafts alignment and any other tools used for the tensioner installation.
17. Repeat steps # 12 and 13.

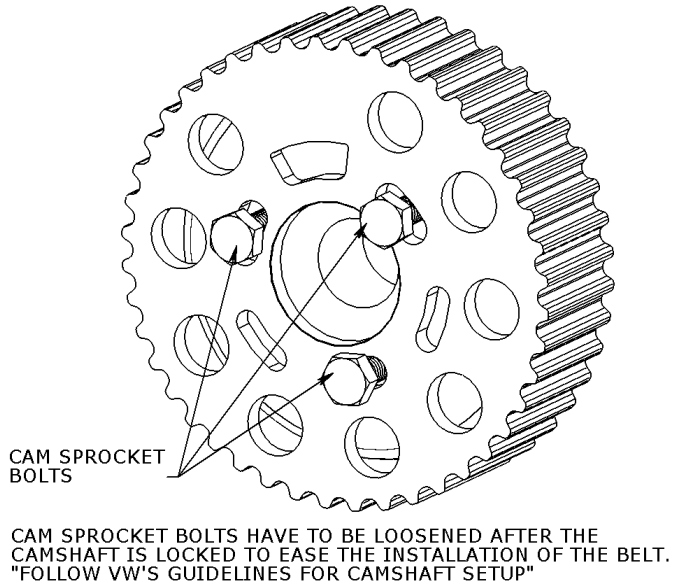
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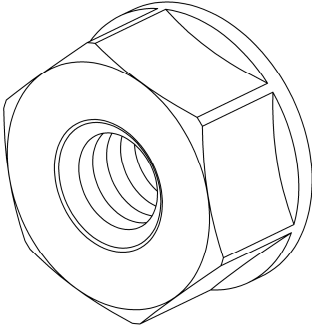
0: Crankshaft 1: Water Pump 2: Idler 3: Fuel Pump 4: Idler 5: CAM  
6: Ten 7: Idler

**Figure 1. Timing Drive Layout for VW 1.6/2.0 L4 EA189 CR**

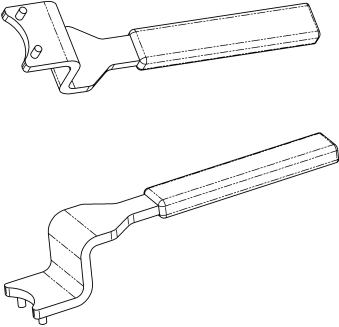
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**Figure 2. Camshaft sprocket.**



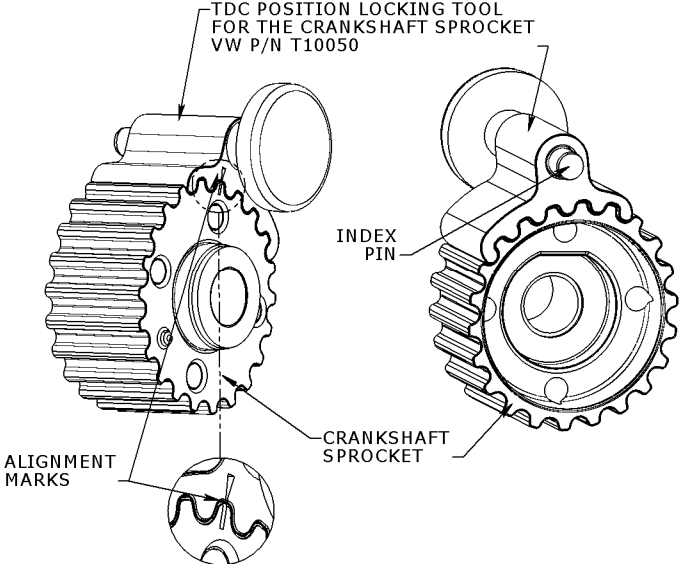
**Figure 3. Flanged Mounting Nut**



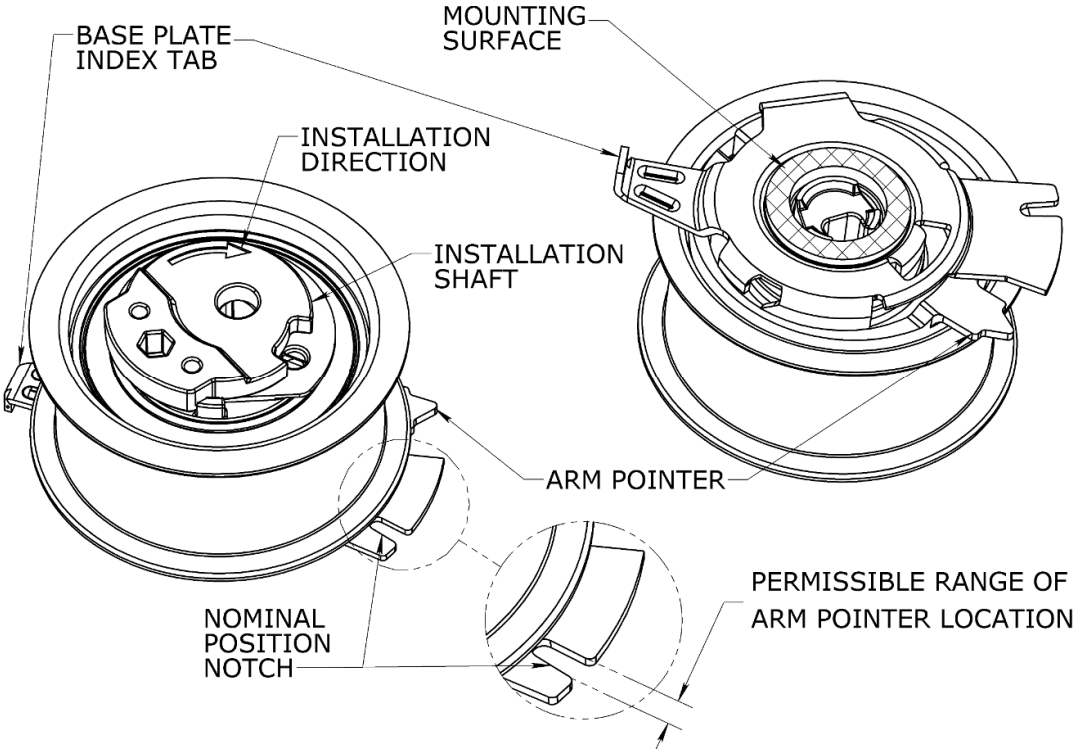
**INSTALLATION TOOL**  
Schley 86400  
or Matra V159  
or Snap-On YA8640

**Figure 4. Installation Tool**

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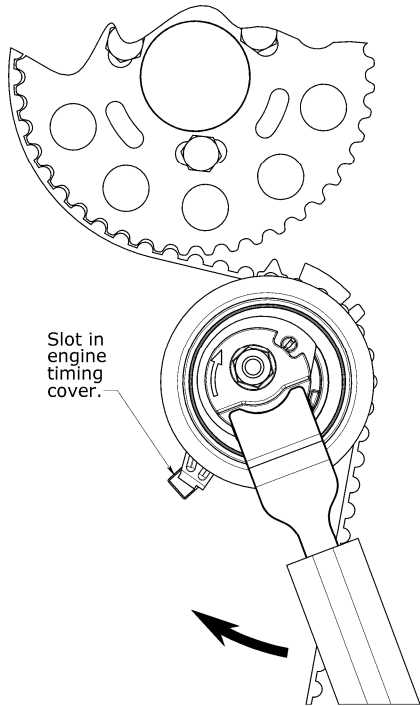


**Figure 5: Crankshaft TDC alignment tool**

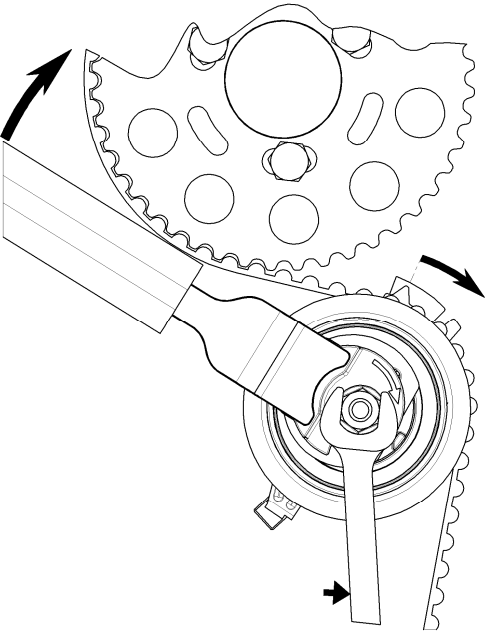


**Figure 6: Initial Tensioner Setup**

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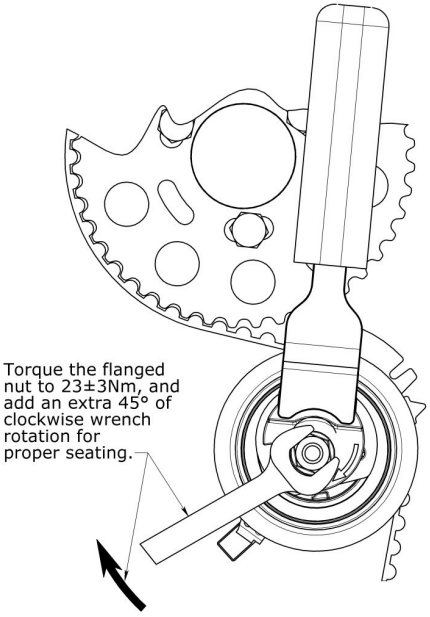


**Figure 7. Rotate the Installation Shaft Clockwise.**

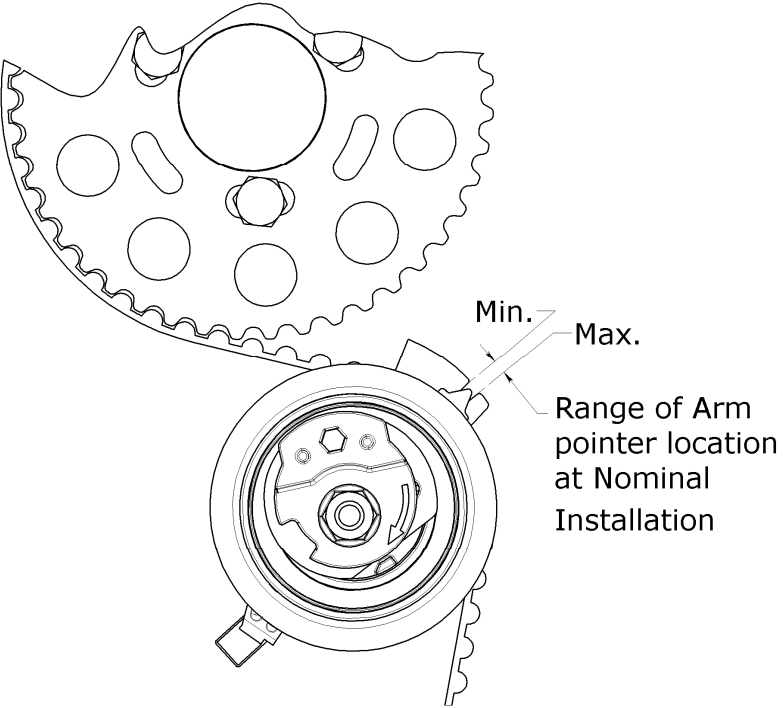


**Figure 8. Tensioner pointer will start to move clockwise**

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**Figure 9. Stop Rotating the installation shaft when the Arm Pointer reaches the edge of the Base Plate.**



**Figure 10. Illustration of the Arm Pointer at Nominal Position**