

**Recommended Installation Procedure**  
ATech Timing Belt Tensioner 979608  
VW 1.4L 3-Cyl. and 1.9L 4-Cyl. Pumpe Duese Engine  
Release Date: 12. December 2003

**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 four (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, see Fig 5. Follow VW's guidelines for access.  
Camshaft has to be locked in position using a flat insert tool/pin. Follow VW's guidelines for access.  
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, see fig. 2. 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 two (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 (preferable from the w/p first), the tensioner's flanged mounting Nut and the **old** TBT. It is recommended to replace the timing belt during the replacement of the TBT.

**Installation of the TBT and the Belt**

5. Ensure that the installation pin is inserted into the hole on the arm of the tensioner.
6. Install the new tensioner (see 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 plastic cover of the cylinder block.
7. Hand tighten (lightly) the flanged M8 mounting nut on the stud.
9. Engage the installation tool or the 6 mm hex allen key into the installation shaft. Turn the installation shaft clockwise (as indicated by the arrow mark on the shaft) and it will move against the inserted installation pin to drive the tensioner in a clockwise direction as well away from the belt, see Fig. 7.

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10. Continue rotating the installation shaft until the arm hits the load stop, see Fig. 8. This will maximize the belt clearance for ease of belt installation.
11. Install the timing belt being careful to engage the appropriate teeth of all the corresponding sprockets as per drive layout (see Fig.1) starting with the crankshaft and working both directions engaging the crankshaft sprocket, idler, water pump and camshaft sprocket. Hold the belt taut (stretched tight) away from the TBT.
11. Install the belt on the TBT while holding the tensioner in load stop position with the installation tool.
12. Turn the installation shaft counterclockwise until the pin disengages from the slot of the installation shaft. Pull out the installation pin (See Fig. 9).
13. Using a 13mm Wrench to prevent the rotation of the flanged mounting nut, turn the Installation Shaft **CLOCKWISE** with the installation tool. The TBT assembly will move against the belt and the Arm Pointer will eventually start to move clockwise, see Fig. 10 (a) and (b).
14. Continue rotating Installation Shaft **CLOCKWISE** to pass the nominal position, until the arm pointer approximately reaches the edge of the base plate. See Fig. 11.
15. Rotate the installation shaft counterclockwise slowly and align the arm pointer with the base plate notch, see Fig. 12.  
**Caution: If the nominal position is missed, repeat from step #12.**
16. Tighten the tensioner in this position by torquing the Flanged Mounting Nut to **23±3 Nm**, and add an extra **45°** clockwise rotation, see Fig. 13.  
**Caution: Do not over-torque the flanged Mounting Nut.**
17. Follow VW's procedure for re-tightening the 3 bolts on the camshaft sprocket.

**Verification of the Nominal Position**

18. Remove the Installation Tool, the Wrench, and any other tools used for the alignment of the TDC position.
19. 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 camshaft. If the tools can fit smoothly, proceed to step #20 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 two (2) more full rotations to the alignment point.**

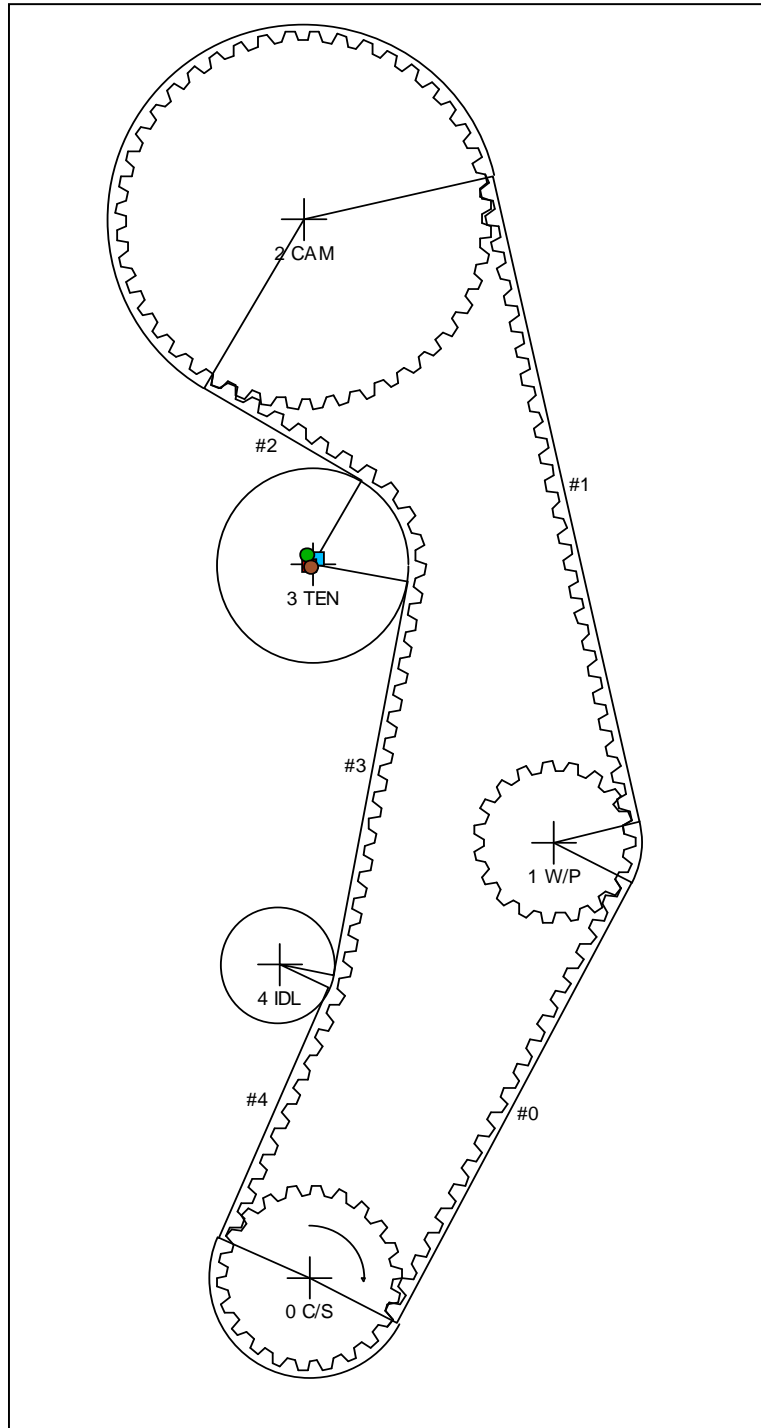
20. Check the position of the Arm Pointer.  
If the arm pointer is aligned with the base plate notch, see Fig. 12. The installation is complete.  
**If not**, proceed as follows (The installation needs to be readjusted until the proper position is achieved).

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**Readjustment**

21. Engage the Installation Tool with the TBT installation shaft and retain the installation shaft's position while loosening the Flanged Mounting Nut with the 13 mm Wrench. The Flanged Mounting Nut and the Tensioner do not need to be removed.
22. Repeat installation procedure from step #13.

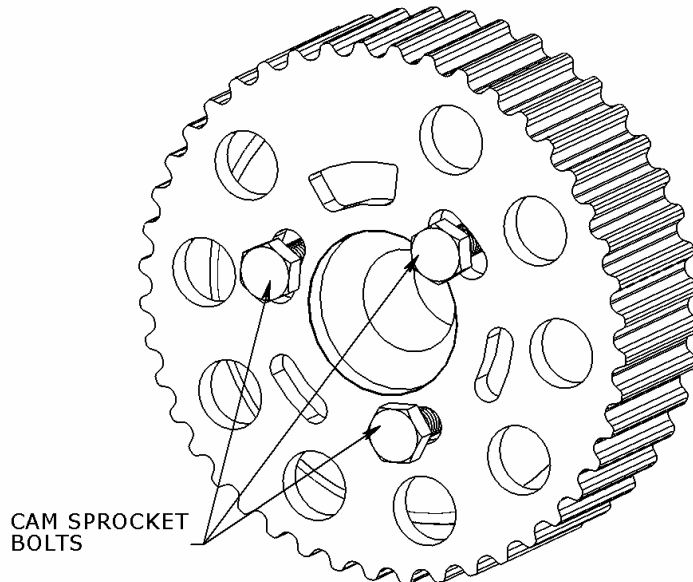
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0: Crankshaft 1: Water Pump 2: Camshaft 3: Tensioner 4: Idler

Figure 1: TBT Layout for VW 1.4L 3-Cyl. and 1.9L 4-Cyl.

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CAM SPROCKET BOLTS HAVE TO BE LOOSENED AFTER THE CAMSHAFT IS LOCKED TO EASE THE INSTALLATION OF THE BELT.  
"FOLLOW VW'S GUIDELINES FOR CAMSHAFT SETUP"

Figure 2: Camshaft sprocket.

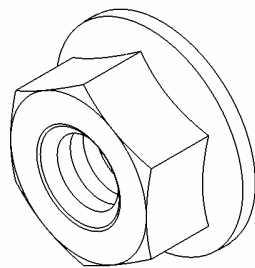
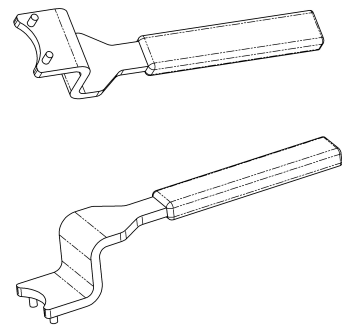


Figure 3: Flanged Mounting Nut



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

Figure 4: Installation Tool

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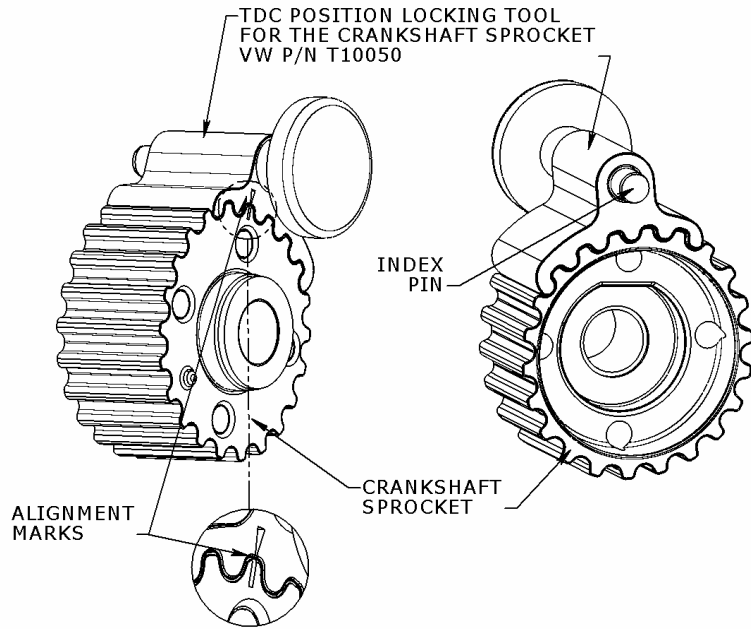


Figure 5: Crankshaft TDC alignment tool

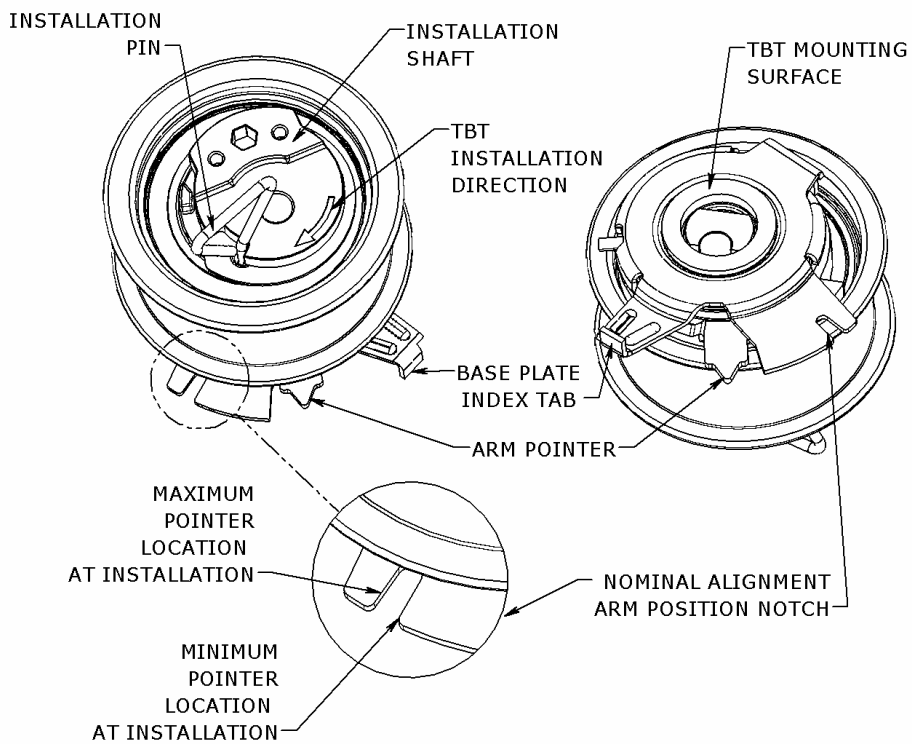


Figure 6: Initial Setup of the TBT

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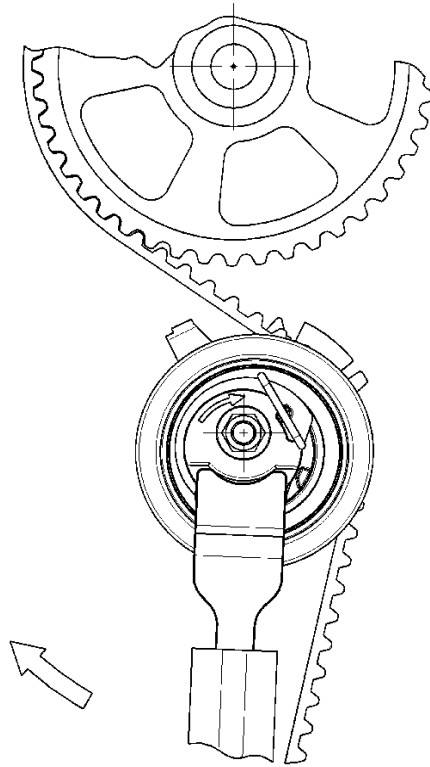


Figure 7: Rotate the Installation Shaft with the Installation Pin Inserted.

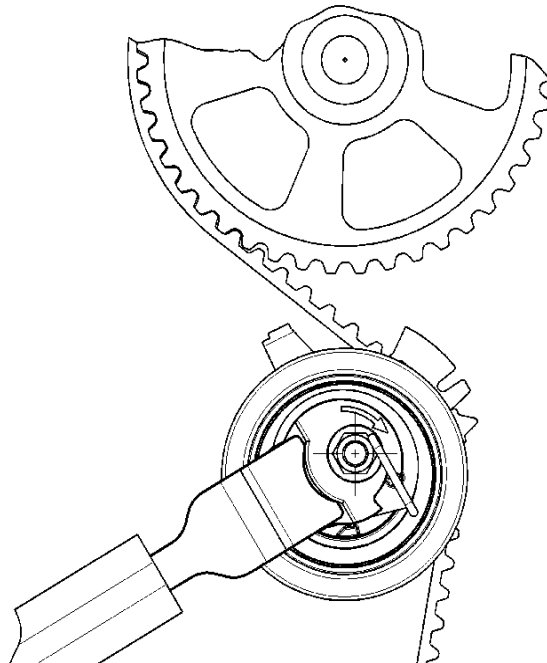


Figure 8: TBT shown at Load Stop

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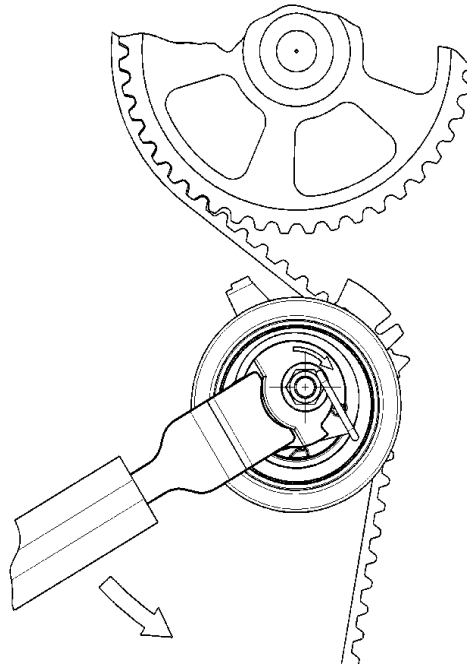


Figure 9: Rotate the TBT Counterclockwise for removing the Installation Pin

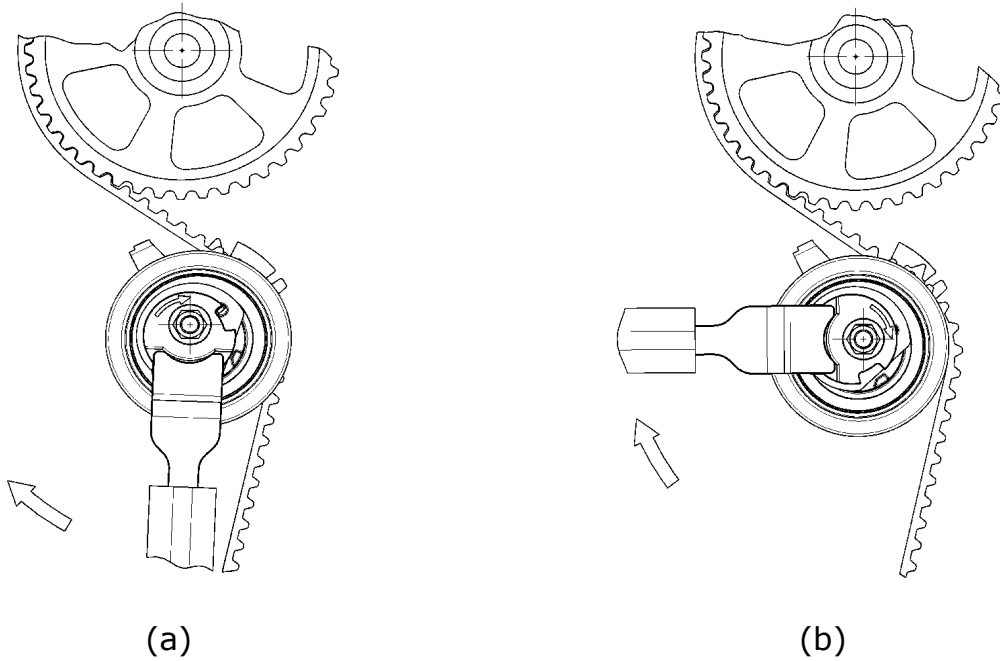


Figure 10: Illustration of the Arm Pointer Moves to Nominal Position



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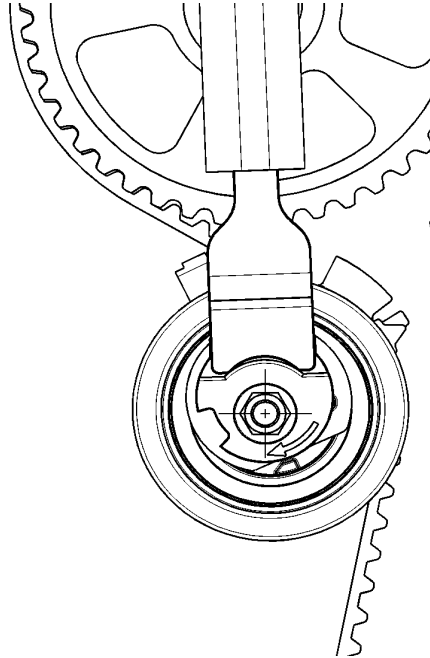


Figure 11: Stop Rotating when the Arm Pointer reaches the edge of the Base Plate.

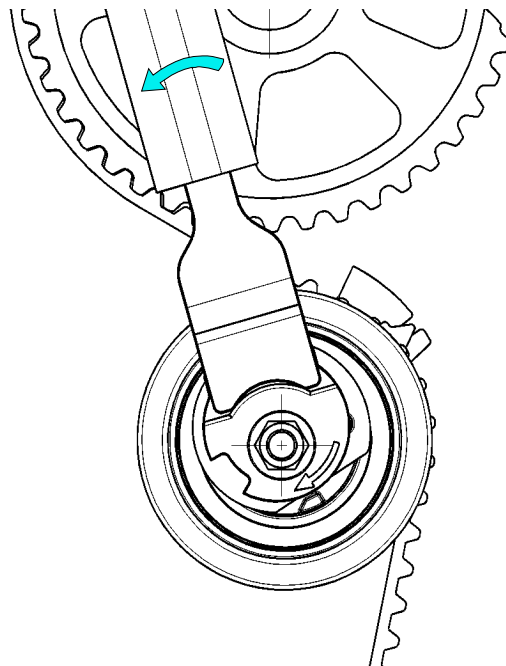


Figure 12: Tensioner Shown at Nominal Position

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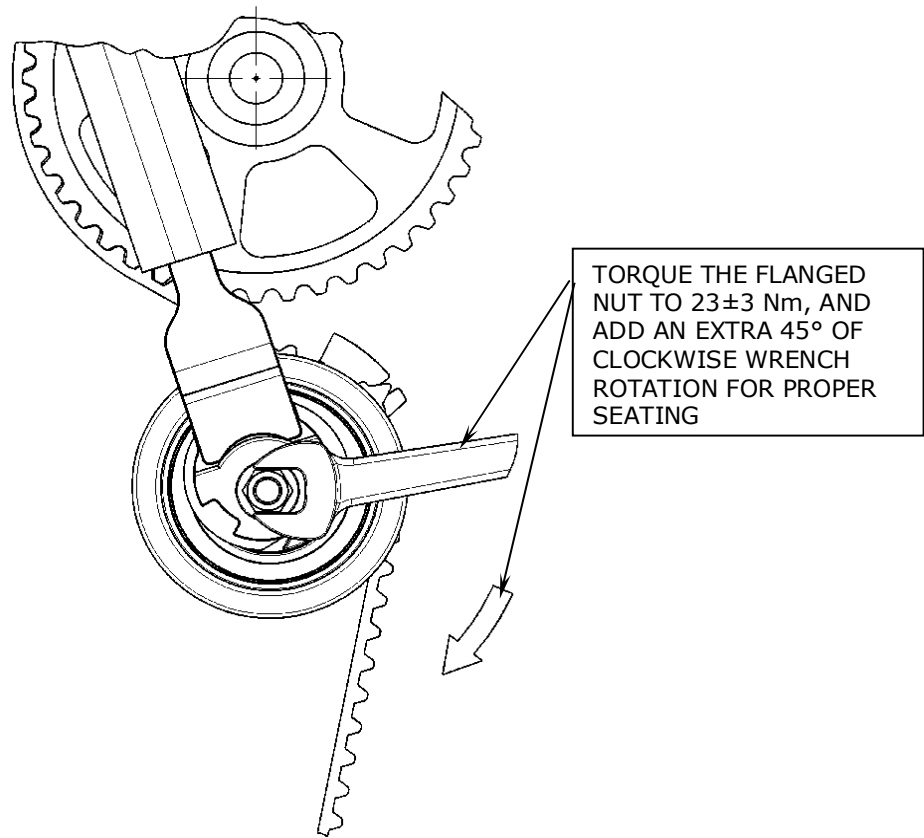


Figure 13: Tensioner Torqued at Nominal Position