

## RECOMMENDED INSTALLATION PROCEDURE

### TIMING BELT TENSIONER 979592

VW 1.9L DIESEL, I4, SDI/TDI

Revision Date: 08/21/2002

1. Allow the engine and tensioner to stabilize to the same relative ambient temperature before installing a tensioner for proper belt tension adjustment. Do not attempt to install a cool tensioner onto a hot engine or vice versa.
2. Rotate the crankshaft CLOCKWISE to TDC (Top Dead Center) position (i.e. #1 cylinder firing position). This defined position is to be the position where there is no action (positive or negative) from the camshaft or other sprockets. One should find no sudden movement or abrupt action from either of the sprockets.

#### Precautionary Notes:

The procedure to access the timing belt tensioner and all other timing driven components must be done according to VW guidelines. The guidelines that should be followed are for

- a) Setting the TDC position of the camshaft and crankshaft pulley.
- b) Setting the fuel pump position.
- c) Removing and retightening all bolt torques.
- d) Reinstalling the belt.
- e) Using an approved VW M8 flanged nut, of which the flange is a 17 mm.  
(It is not recommended to use a standard M8 Nut and a flat washer.)

#### Belt and Tensioner Removal:

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

3. Slacken tensioner nut.
4. Rotate installation Shaft away from the belt COUNTERCLOCKWISE until its two holes are pointing at the "8 O'clock position". Use a 2 pin wrench (Figure 2a).
5. Lightly tighten tensioner nut (Figure 2b).
6. Remove timing belt.  
**Note:** Mark direction of rotation on the belt, if the belt is to be reused, although belt replacement is recommended at time of TBT servicing.
7. Remove tensioner nut and remove tensioner.

#### Replacing TBT (Timing Belt Tensioner)

8. Install new TBT on engine ensuring that the TBT's Anti-Rotation Tab is engaged with the Anti-Rotation Slot on the timing drive cover (Figures 4).
9. Rotate the Installation Shaft until its two holes are pointing at the "8 O'clock position" then lightly tighten the M8 Mounting Nut (Figure 4).

#### Belt Installation:

10. Install the timing belt in a COUNTER CLOCKWISE direction starting with the crankshaft sprocket, being careful to engage the appropriate teeth of all the corresponding sprockets as per drive layout (Figure 1).  
(Caution: Do not disturb the position of the crankshaft or camshaft sprockets during this procedure.)

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### Installation of the TBT

11. Rotate the Installation Shaft **CLOCKWISE ONLY** with the Installation Tool (Figure 5). Make sure to hold the mounting nut with a Wrench in order to prevent it from turning when rotating the Installation Shaft. The TBT assembly will move against the belt and the Arm will eventually start to move **CLOCKWISE** (Figure 6).
12. Continue rotating the Installation Shaft until the Arm Pointer aligns with the Nominal Position Notch on the front plate. For the correct range of the TBT see Figures 9 & 10.  
Note: If the tensioner was inadvertently turned too far, turn it fully Counter Clockwise and repeat the tensioning procedure.
13. Lock the tensioner in this position by tightening the Mounting Nut with **23±3 Nm** of torque. This final tightening of the nut has to be accomplished while preventing the installation shaft from rotating.

### Verification of the Nominal Position

14. Remove both the Installation Tool and the Torque Wrench. Rotate the crankshaft two (2) complete revolutions manually for proper seating of the belt until the crankshaft and camshaft sprockets are repositioned at the TDC position.  
**(Caution: Repositioning the Crankshaft to the TDC position must be done only during the clockwise rotation.)**
15. Check the position of the Arm Pointer.
  - If the Arm Pointer aligns with the Nominal Position Notch between the minimum and maximum width of the notch on the front plate after rotating the crankshaft, the installation is complete (Figure 10).
  - If not, go to step #16. The installation needs to be repeated until the proper position is achieved. There is also a good chance that the belt was not properly meshed with the sprocket pulleys.

### Readjustment

16. Engage the Installation Tool and retain it's position while loosening the Mounting Nut with the Wrench. The Mounting Nut and the Tensioner need not be removed. Rotate the Installation Shaft **COUNTER CLOCKWISE** with the Installation Tool until the Arm Pointer returns to the Free-Arm Position (Figures 3 and 4). Follow steps #3-#15.

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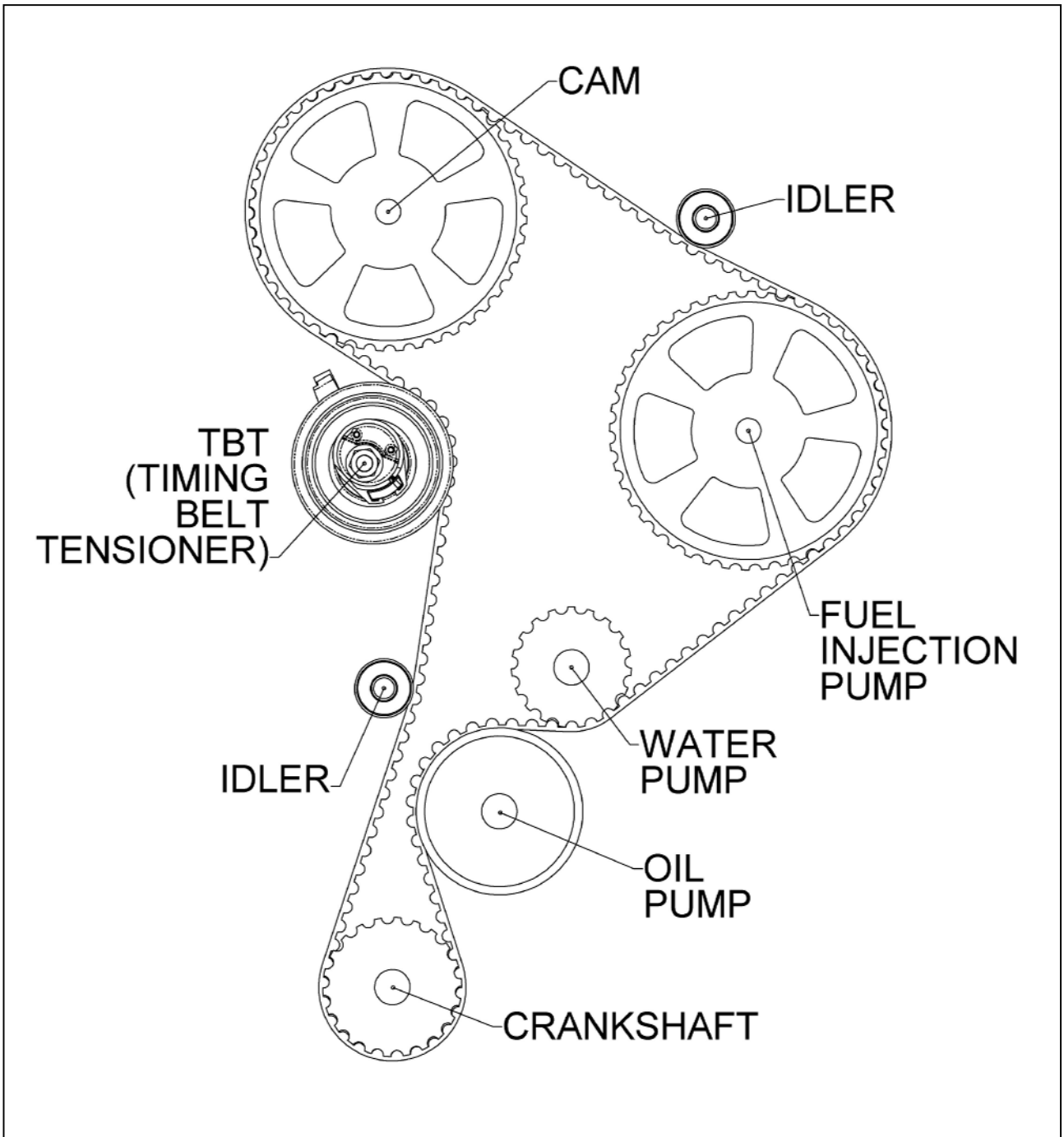


Figure 1: Timing Drive Layout 979592

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Figure 2a: Installation Tool

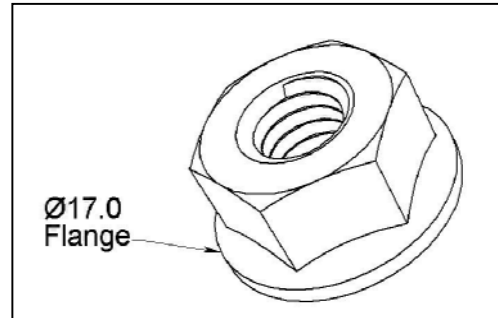


Figure 2b: Flanged Mounting Nut

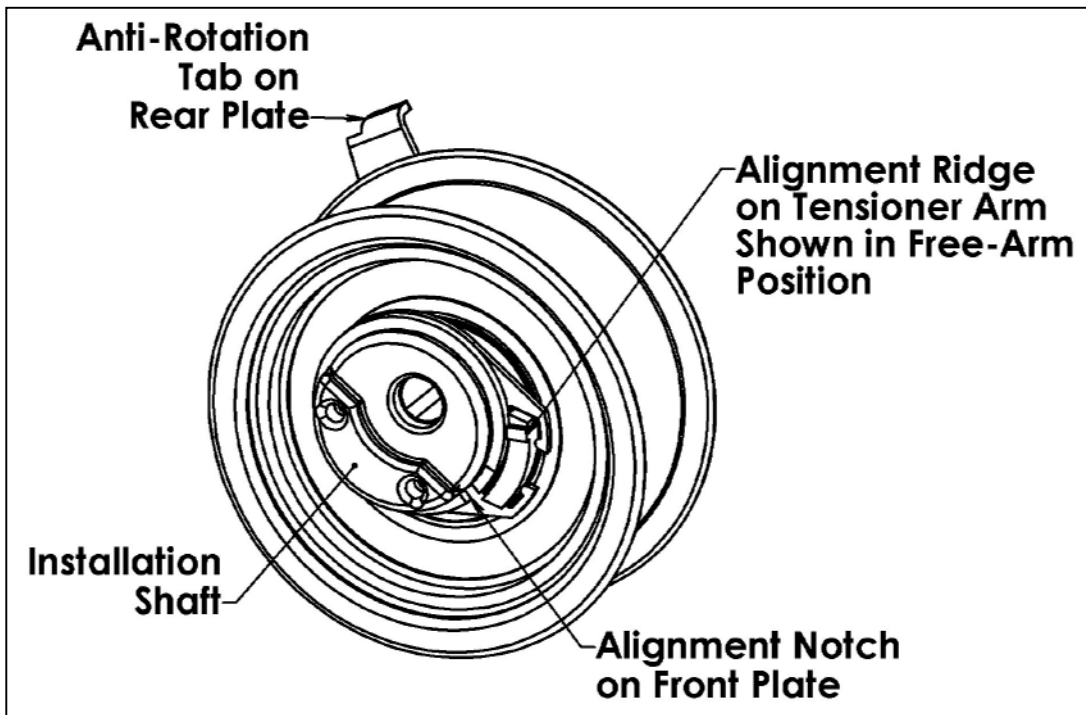


Figure 3: Timing Belt Tensioner 979592

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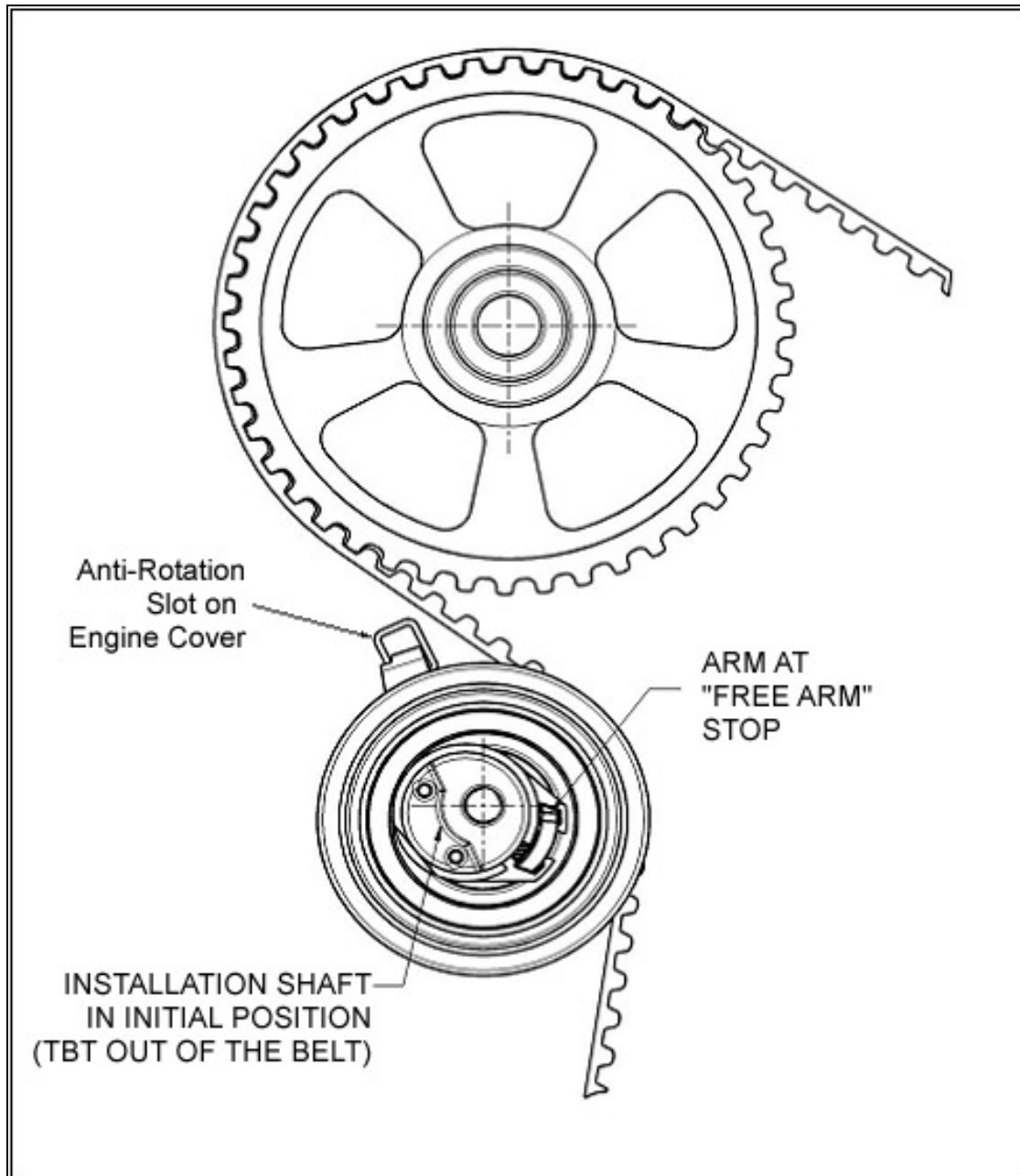


Figure 4: Install the tensioner on the mounting stud and fit the TBT Tab into the slot of the timing cover.

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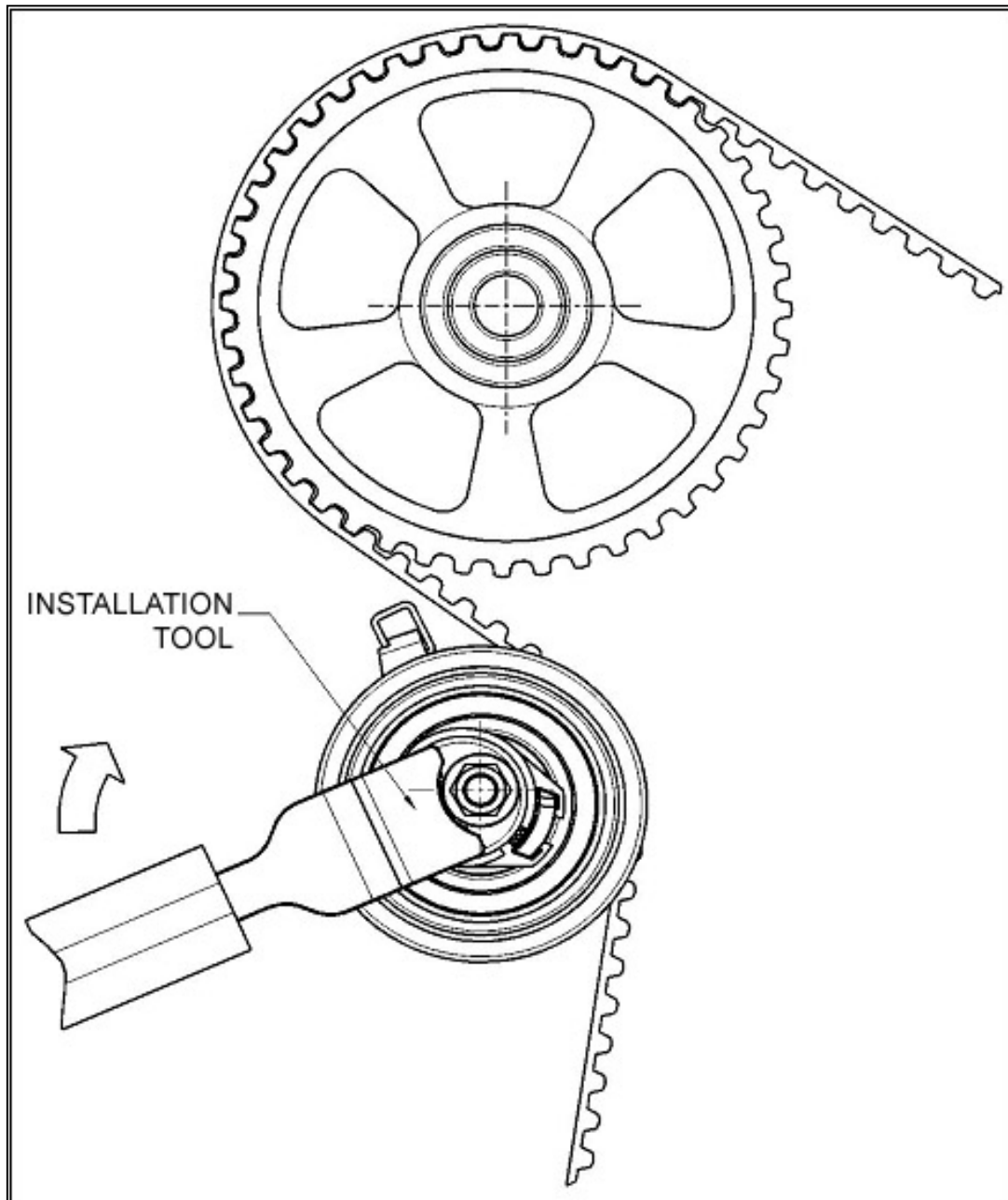


Figure 5: Hand-tighten the mounting nut. Fit the special installation tool on the installation shaft. Turn the installations shaft in clockwise direction.

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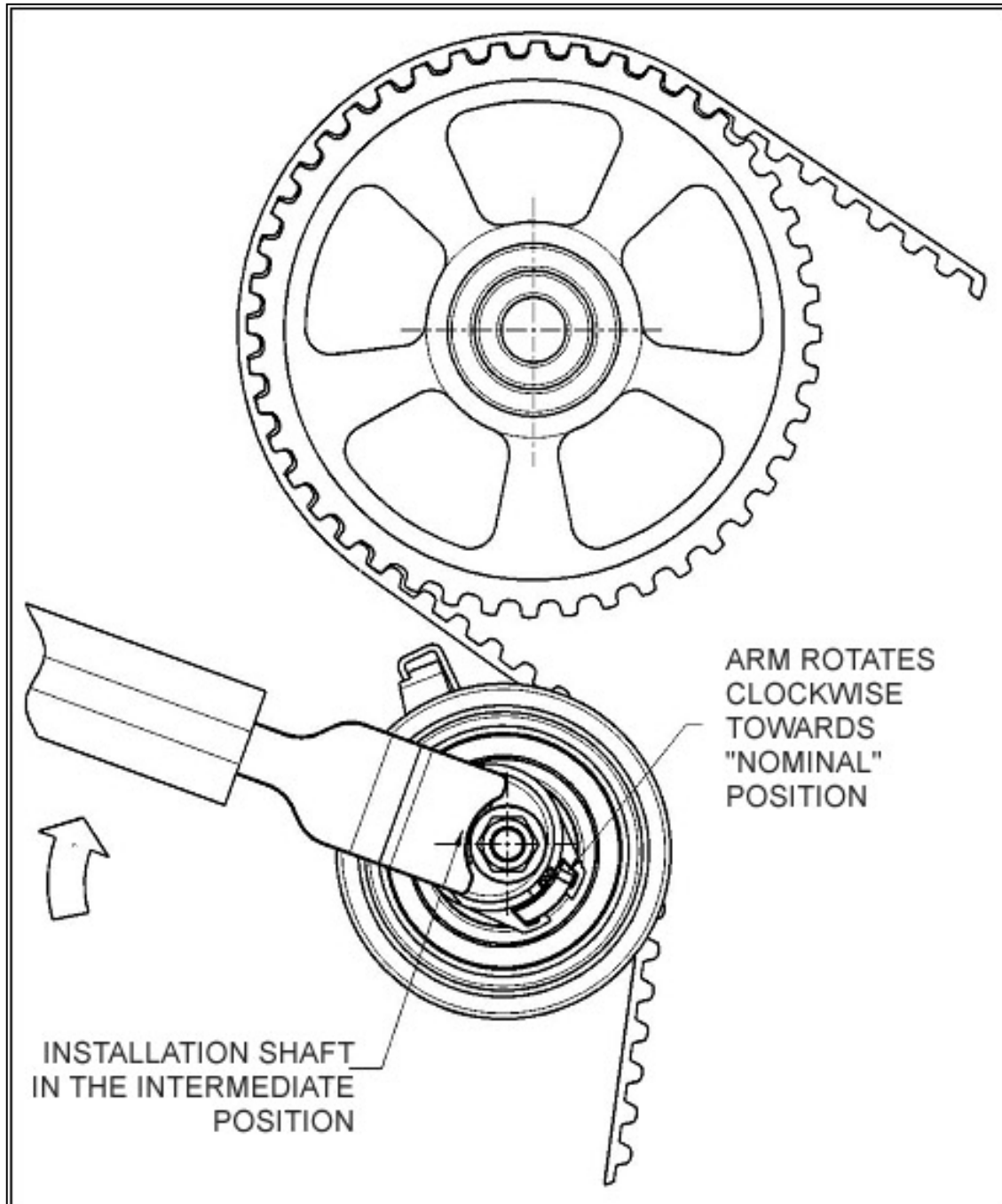


Figure 6: Note: During the rotation of the installation shaft, the arm indicator starts to move from "free-arm" position towards nominal.

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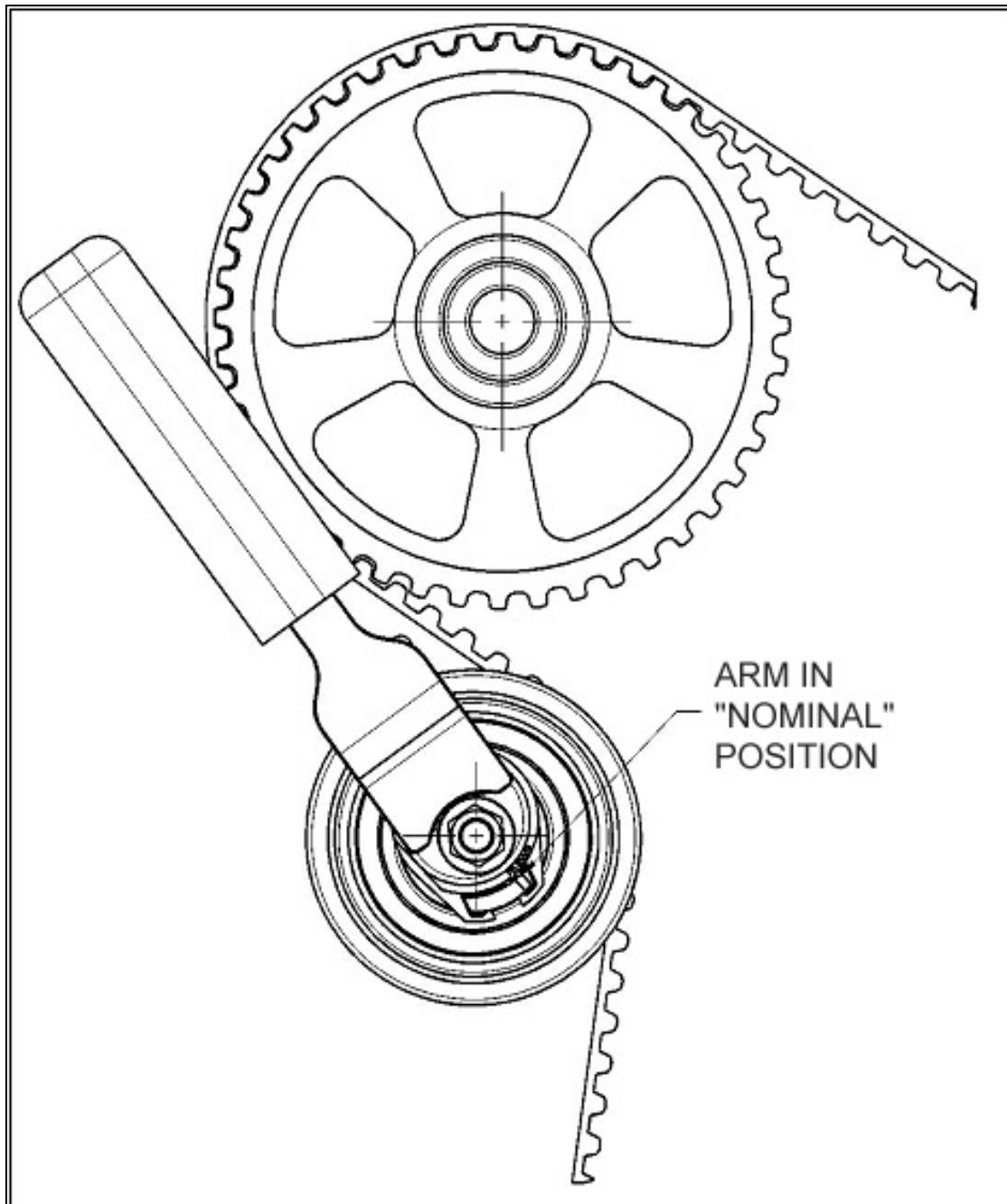


Figure 7: Continue to turn the installation shaft until the arm indicator is aligned with the slot in the front plate, indicating that the tensioner reached the nominal position.



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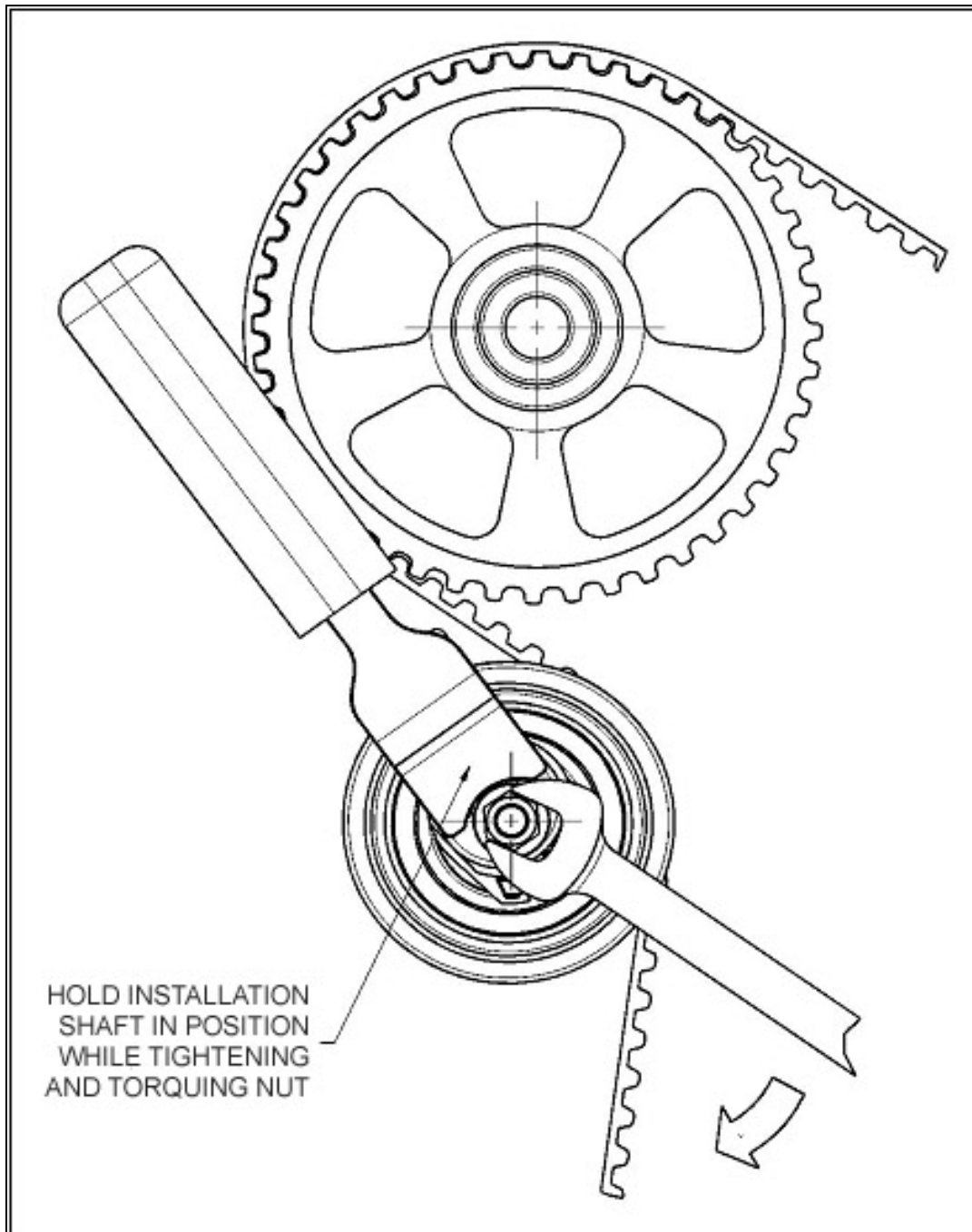


Figure 8: Tighten the nut to the specified torque, while holding the installation shaft in position.

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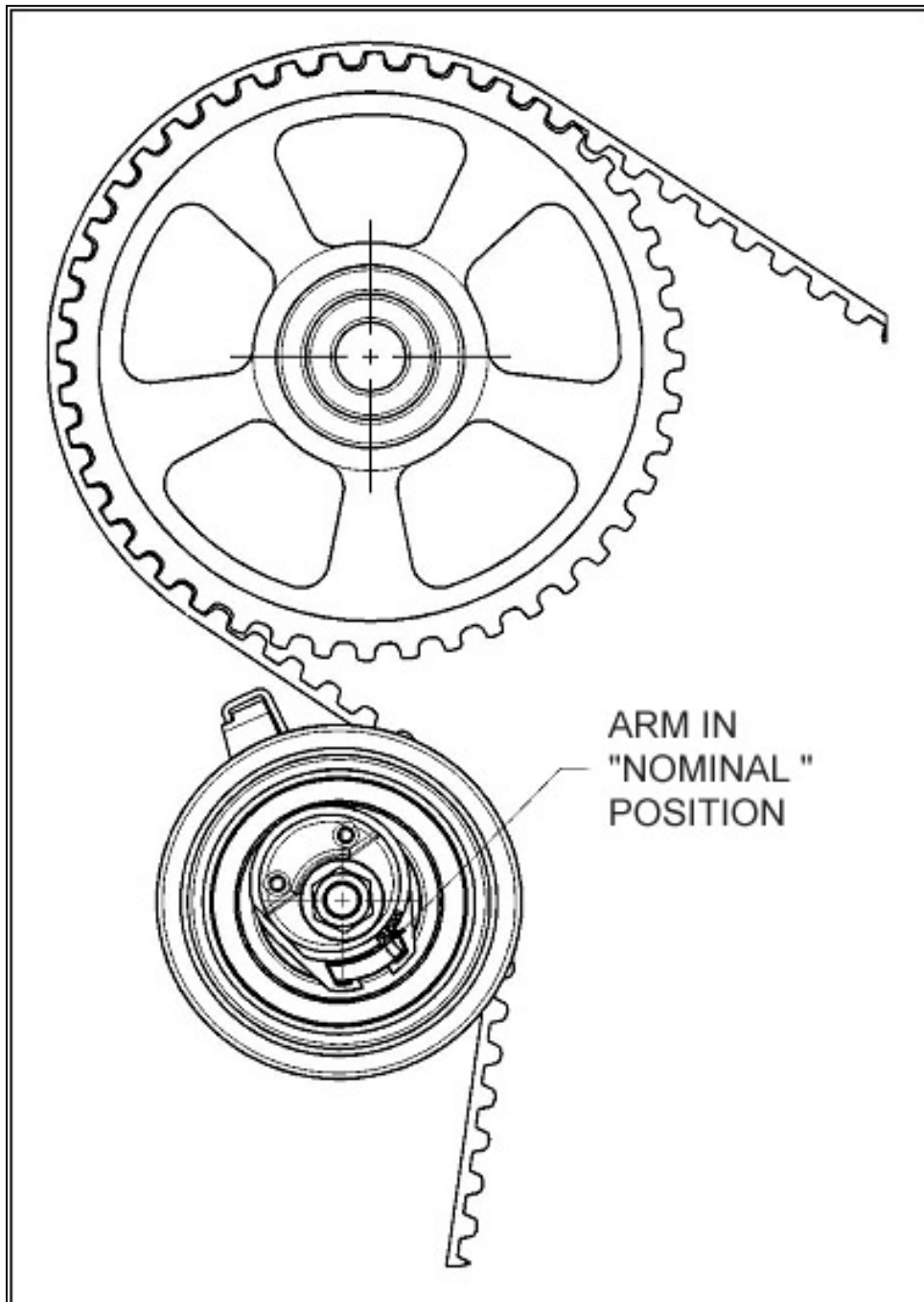


Figure 9: Remove camshaft block. Rotate the engine two complete turns and re-align the crankshaft to T.D.C. Check the nominal position of the tensioner and readjust if needed.

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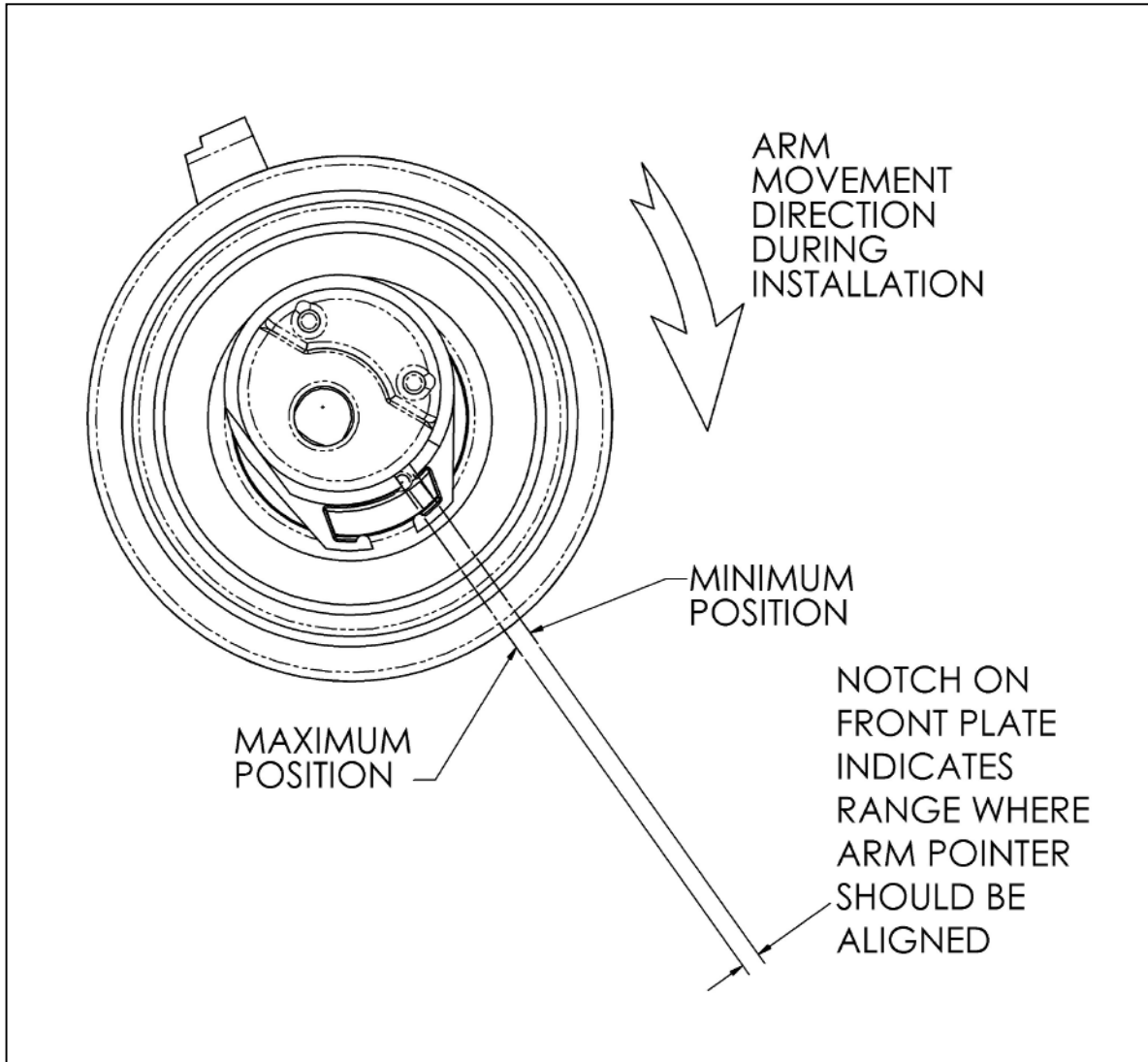


Figure 10: Indicator Alignment Range