

Recommended Installation Procedure

ATech Timing Belt Tensioner (979143) --- GM/DAEWOO 1.5/1.6L DOHC --- (03MAR04)

Initial Preparation:

- ◆ **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 to stabilize to room 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).

Crankshaft and Camshaft TDC position setup:

2. Rotate the crankshaft **CLOCKWISE ONLY** to **TDC** (Top Dead Center) position (i.e. #1 cylinder firing position), follow car manufacturer's guidelines. For reference only see Fig.4.

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. Also, DO NOT at anytime rotate the crankshaft and the camshaft when the timing belt is removed.

Removal of the Timing Belt (In case of a new engine build, skip steps #3~5)

3. Loosen the three (3) Water Pump Clamping Bolts just slightly so that the Water Pump Housing can be rotated (Figure 2).
Warning: Engine coolant may leak during this process.
4. Rotate the Water Pump Housing COUNTERCLOCKWISE with a 42mm Wrench (Figure 2). The Wrench should fit around the Hex-shaped Collar beneath the Water Pump Sprocket (Figure 3).
5. Keep rotating the Water Pump Housing until the belt becomes loose. Remove the belt and the OLD TBT. It is always recommended to replace the timing belt during the replacement of the tensioner.

Installation of the Timing Belt Tensioner

6. Install a new tensioner (Figure 1) onto the engine and tighten the three (3) M8 Tensioner Mounting Bolts with **28.0 ± 5.5 Nm** of torque.
7. Install a new timing belt being careful to engage the appropriate teeth of all the corresponding sprockets as per drive layout (Figure 4) starting with the crankshaft and working counterclockwise. **(Caution: Do not disturb the position of the crankshaft or camshaft sprockets during this procedure.)**
8. Rotate the Water Pump Housing CLOCKWISE with the 42mm Wrench. The tensioner pulley will move against the belt and the Arm Pointer "indicator" will eventually start to move CLOCKWISE (Figure 5).
9. Continue rotating the Water Pump Housing until the Moving Indicator* aligns with the Stationary Indicator** on the tensioner bracket assembly, then tighten the three Clamping Bolts (25Nm) around the Water Pump Housing (See Figure 6).

Verification of the Nominal Position

10. Remove the Wrench and any other tools used for the alignment of the TDC position, then rotate the crankshaft two (2) complete revolutions manually for proper seating of the belt until the crankshaft is repositioned at the TDC position.
 - ◆ Check the **TDC** alignment of the crankshaft and the camshaft, Figure 4. If the alignment of all the sprockets is within the guidelines, the installation is complete.
 - ◆ 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 3.

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11. Check the position of the Moving Indicator.
 - If the Moving Indicator aligns with the Stationary Indicator, the installation is complete (See Figure 7).
 - If not, go to step #12. The installation must be repeated until the proper position is achieved.

Readjustment

12. Loosen the three (3) Water Pump Clamping Bolts around the Water Pump Housing for readjustment. Rotate the Water Pump Housing in the appropriate direction to align the tensioner's Arm Moving Indicator with the Stationary Indicator on the bracket.
13. Tighten the three (3) Water Pump Clamping Bolts (25Nm) around the Water Pump Housing and re-verify the tensioner position (repeat steps #10 and #11).

Disclaimer

Every step of this installation **MUST** be properly followed or engine damage can occur.

Note: * "Moving Indicator" is often called "Arm Pointer".

** "Stationary Indicator" is often called "Nominal Position Indicator".

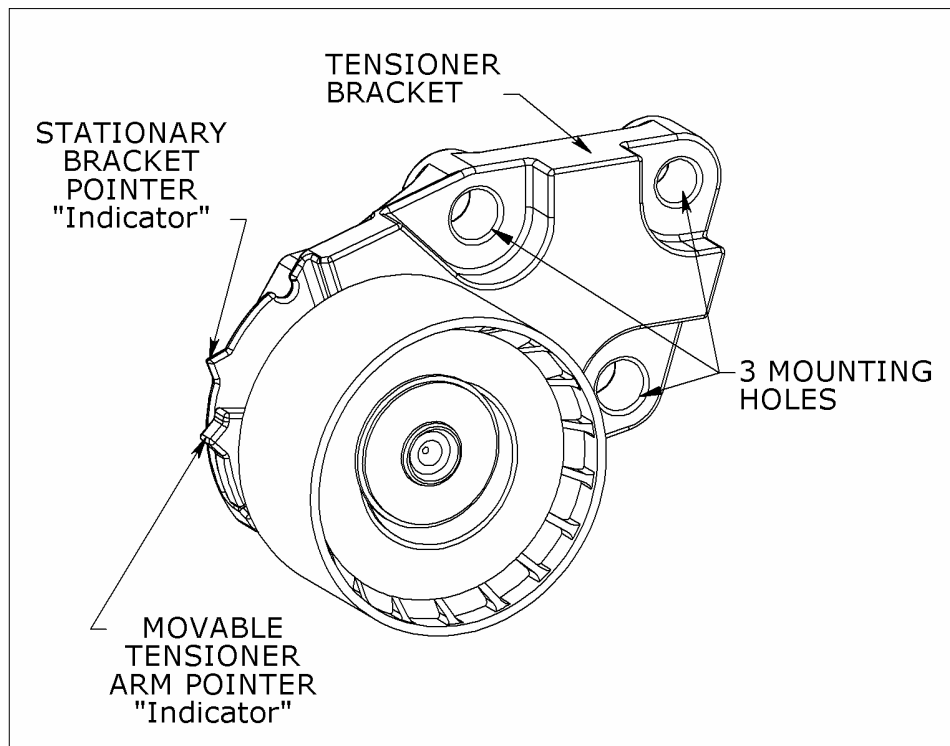


Figure 1. Timing Belt Tensioner

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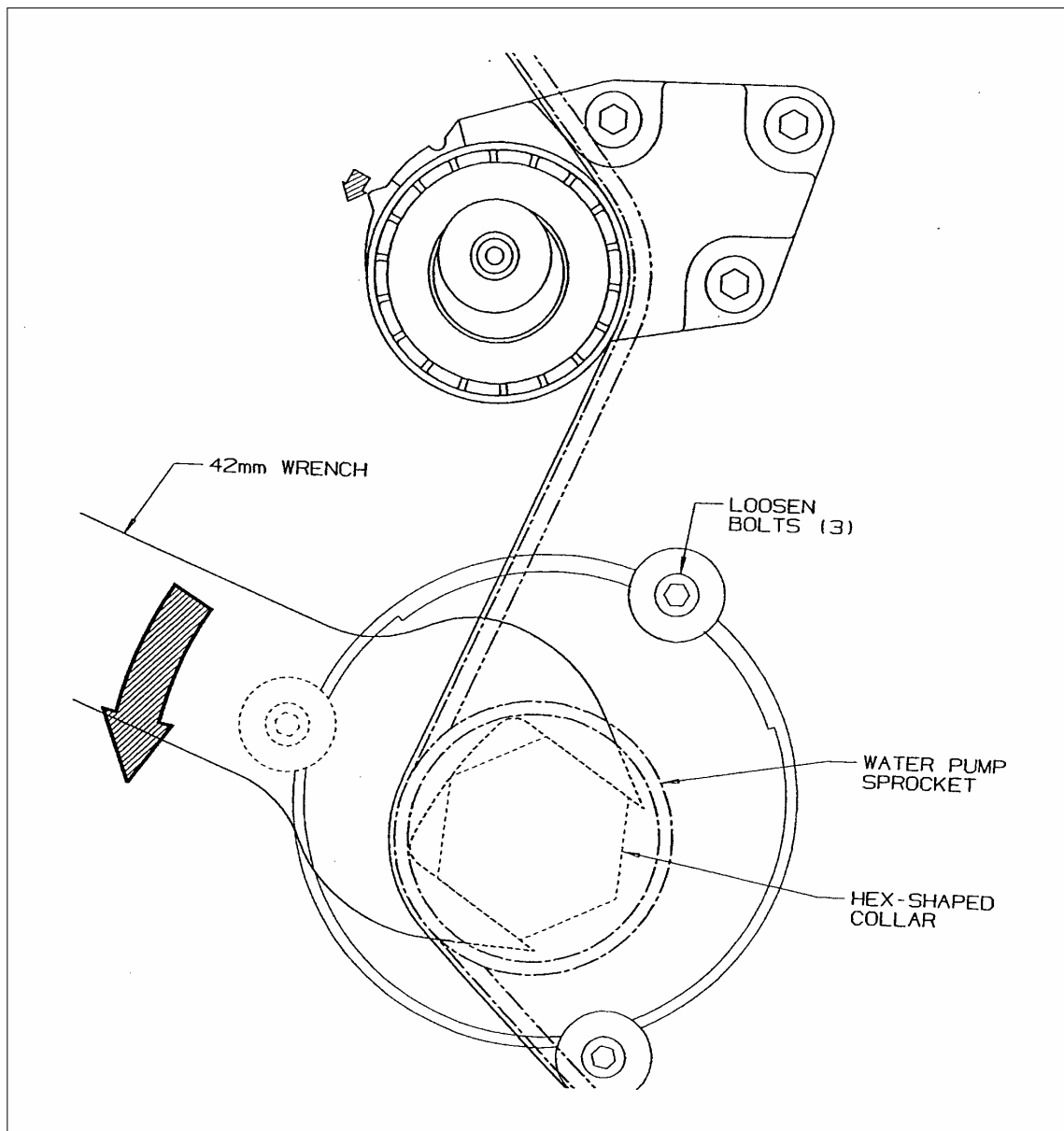


Figure 2: Rotating Water Pump Housing for Timing Belt Removal

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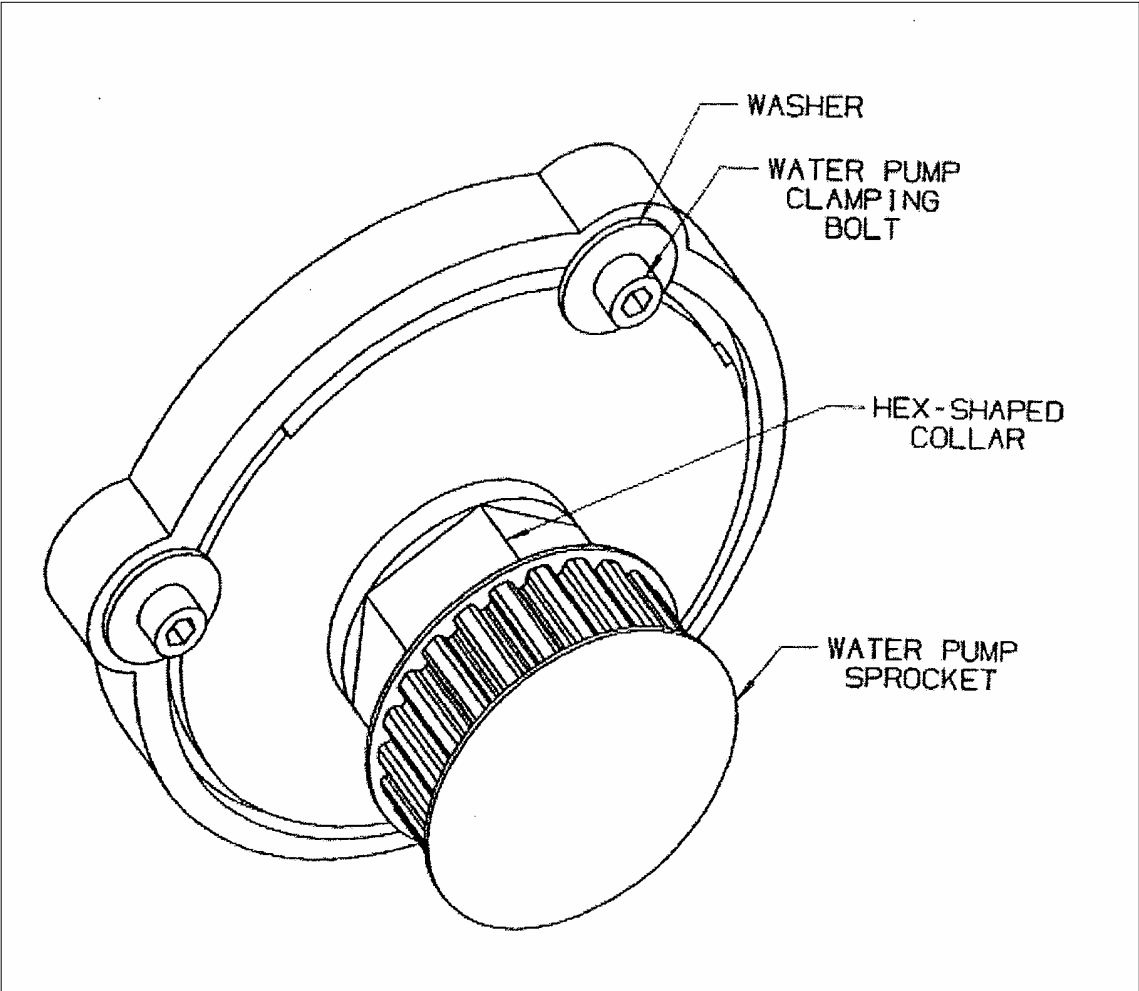


Figure 3: Water Pump Housing

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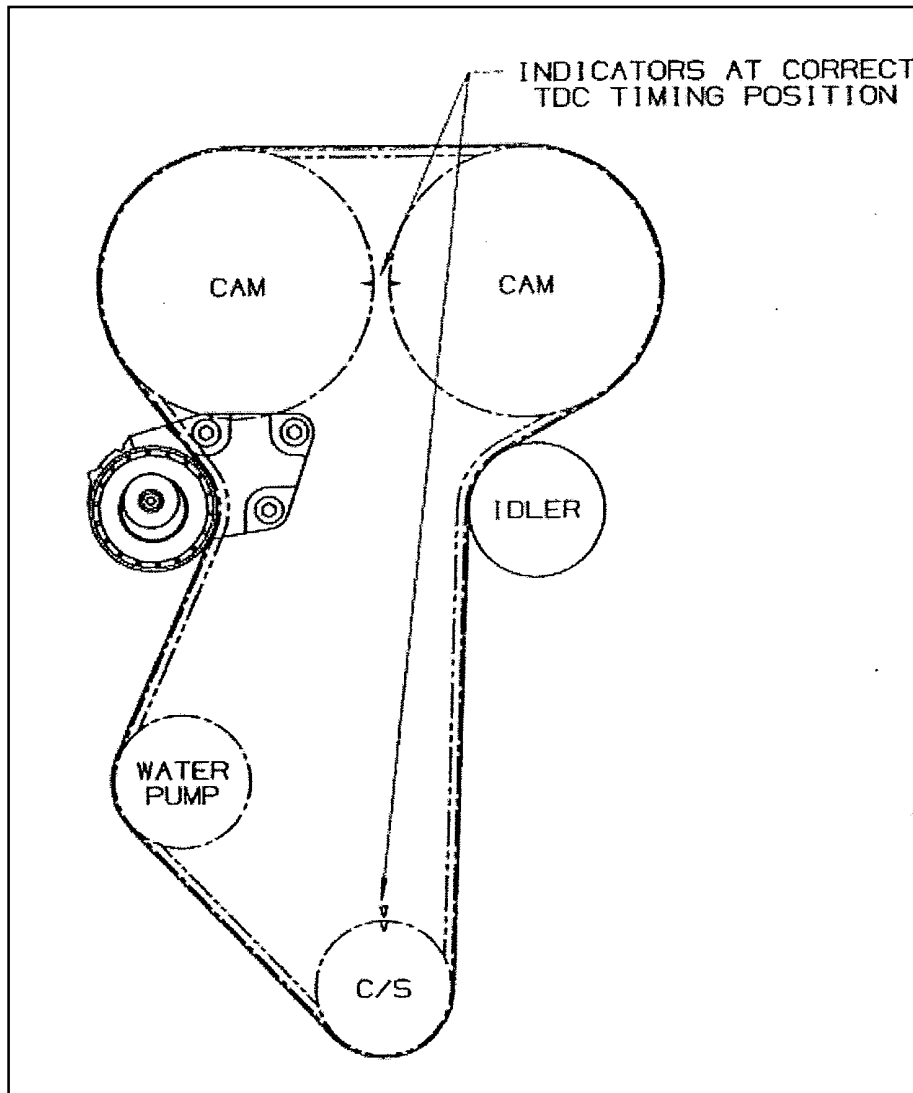


Figure 4: Belt layout for 979143 (GM/DAEWOO 1.5/1.6L DOHC)

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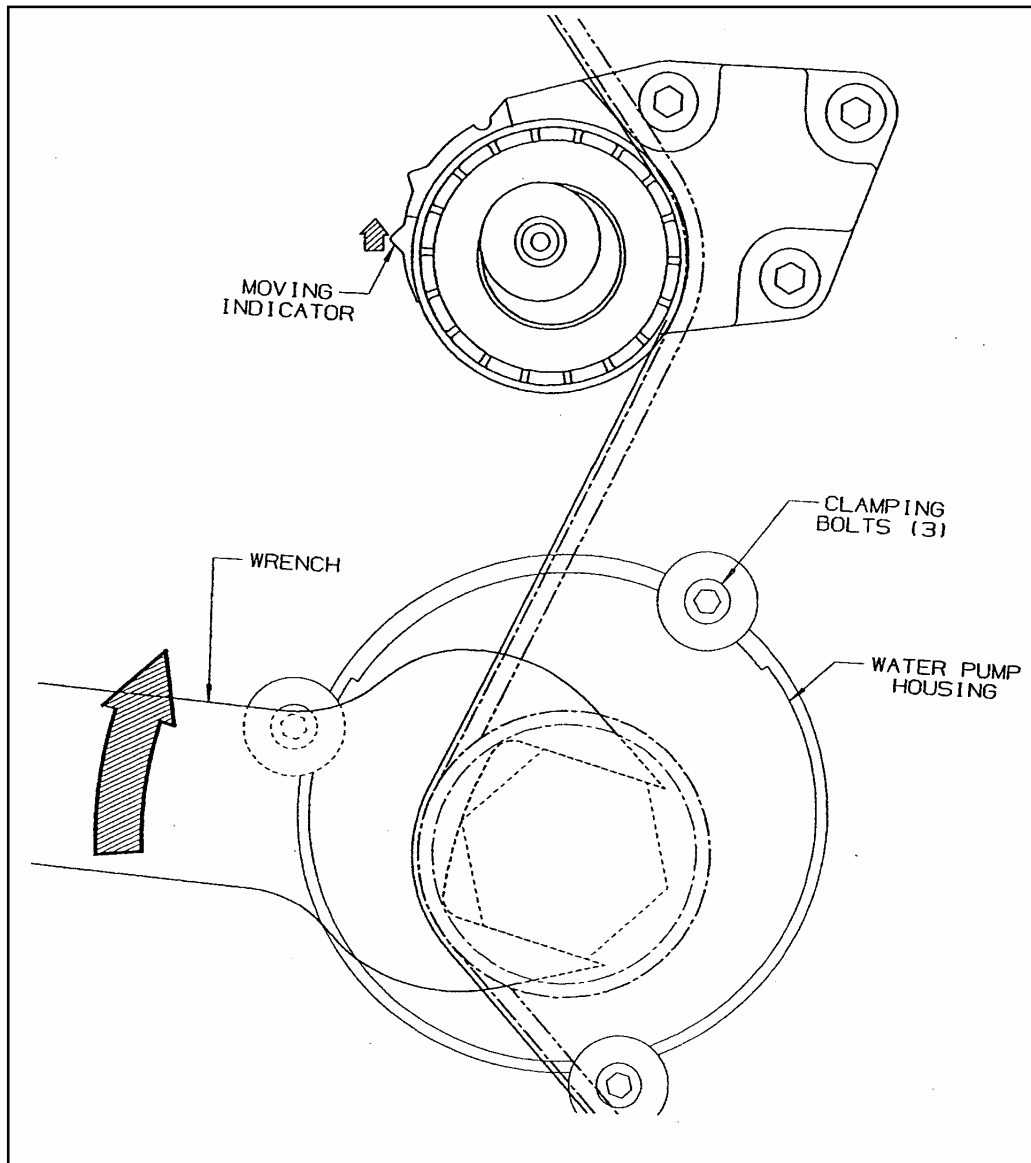


Figure 5: Rotation of Water Pump Housing for Tensioner Adjustment

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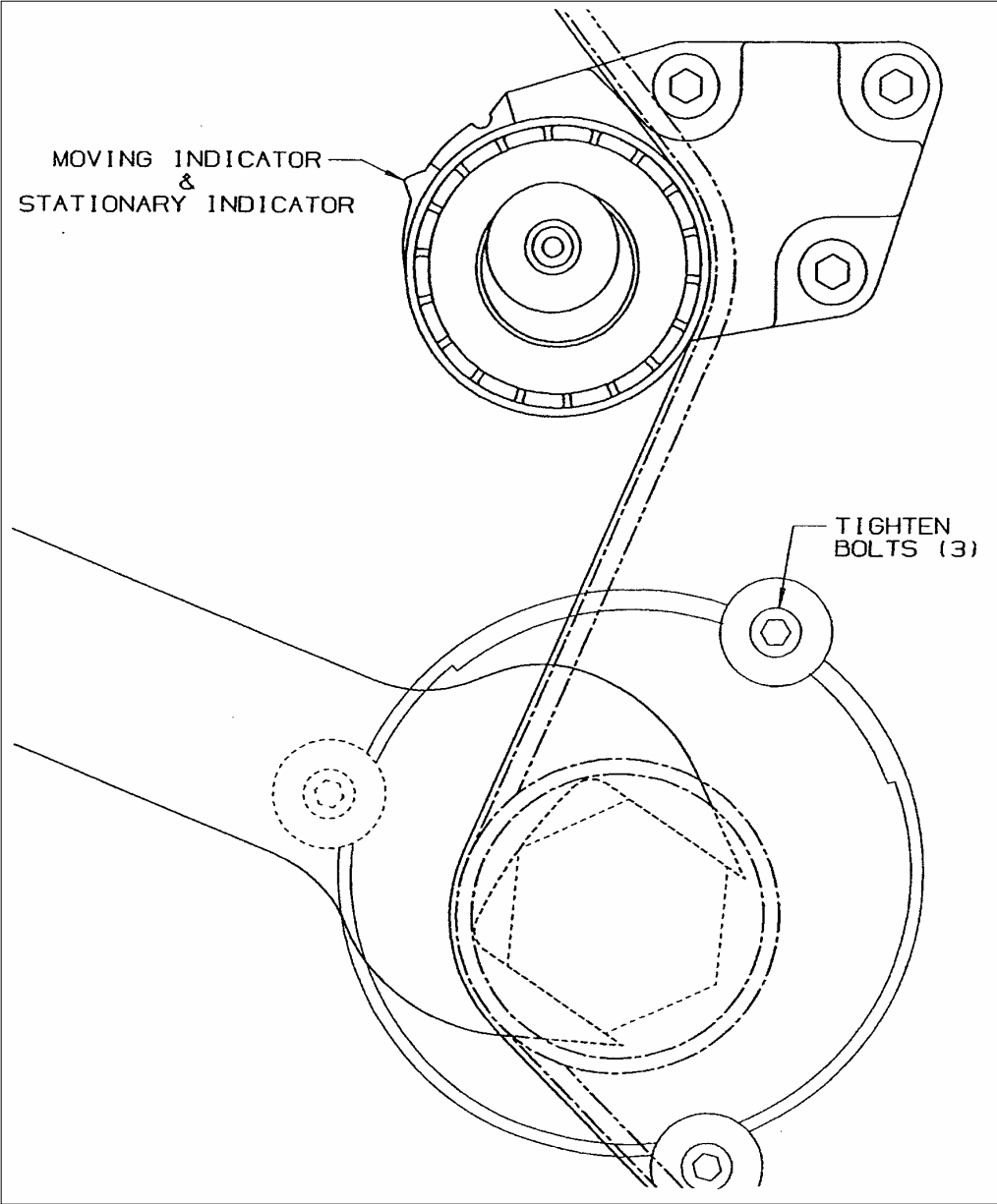


Figure 6: Tensioner at Nominal Position

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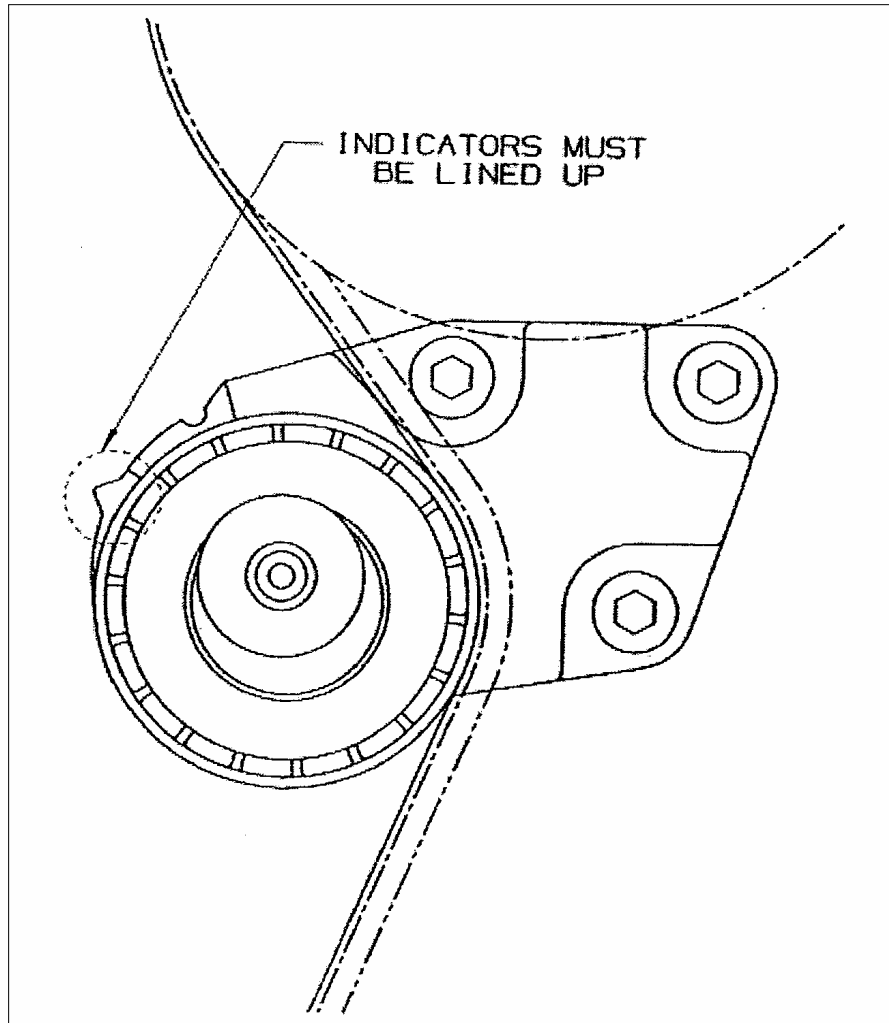


Figure 7: Verification of the alignment of the Tensioner's Movable Indicator with the Stationary Indicator