



# TECH NOTE



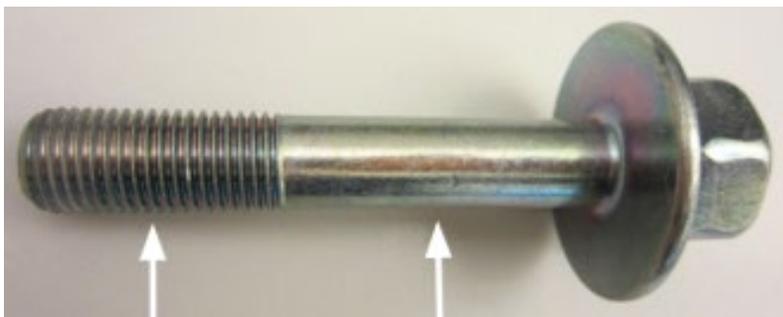
## AUTOMOTIVE –SYNCHRONOUS BELT DRIVE SYSTEM

# TIMING SYSTEM FAILURE DUE TO IMPROPER SERVICING

Extensive research on these applications has led Gates Engineers to identify multiple mistakes to avoid when inspecting and servicing any timing system components. Prior to reassembly of the timing belt drive system, it is vital to inspect the following components.

First, carefully inspect the crankshaft pulley bolt shank and threads for any indication of stretching or “necking”. The bolt’s profile should be unchanged along the entire length of the bolt.

### Crankshaft Pulley Bolt



**Inspect the crankshaft pulley bolt and threads for ANY Indication of Stretching!**

The crankshaft pulley bolt on these applications is a Torque to Yield Bolt which means that it is torqued in two stages. The first stage requires the technician to torque the bolt to a nominal newton meter specification. This torque spec identifies the bolt’s elastic deformation point, or the point at which the shape or length of the bolt has not been changed. The second stage requires the technician to observe the degree of rotation the bolt turns while torquing to an increased newton meter specification. If the bolt does not turn the required number of degrees prior to the torque spec being reached, then the bolt has entered a state of plastic deformation. Plastic deformation is the permanent change of the bolt’s shape or length which requires that the bolt be replaced as it cannot be reused.

**BULLETIN:** TSB014\_AU

**PART NUMBER:**  
▪ GHT-09

**MAKE:**  
▪ Saab  
▪ Subaru

**ENGINE:**  
▪ 2.0L  
▪ 2.2L  
▪ 2.5L

**YEAR:**  
▪ 1997 – On

**MODEL:**  
▪ All (Post 1997)

**KITS:**  
▪ Included in all Subaru Kits Post 1997



## TECH NOTE



**For vehicles with the 2.0L or the 2.2L engine the torque procedure is as follows:**

Oil the threads and face of the crankshaft pulley bolt and torque to 44Nm. Then torque bolt to 127Nm. lbs. checking that the bolt turns 45°-60°, if not, remove and fit new bolt.

**For vehicles with the 2.5L engine the torque procedure is as follows:**

Oil the threads and face of the crankshaft pulley bolt and torque to 44Nm. Then torque bolt to 180Nm. checking that the bolt turns 65°-75°, if not, remove and fit new bolt.

Failure to follow these manufacturer recommended torque procedures for the crankshaft pulley bolt may result in timing belt drive failure and catastrophic engine damage!

In addition to the inspection of the crankshaft pulley bolt, the timing belt tensioner bracket needs to be examined as well. This bracket is constructed of aluminum and as a result the threads are considerably softer than a cast version. This means that the threads are easily susceptible to damage and deformation. It is prudent to thread the tensioner pivot bolt in by hand to ensure the threads are not damaged or deformed. If the pivot bolt will not thread in by hand then the threads will have to be repaired or the bracket will have to be replaced before installing the hydraulic tensioner. Furthermore, the bracket must be properly secured and flush up against the engine block prior to installation of the hydraulic timing belt tensioner.

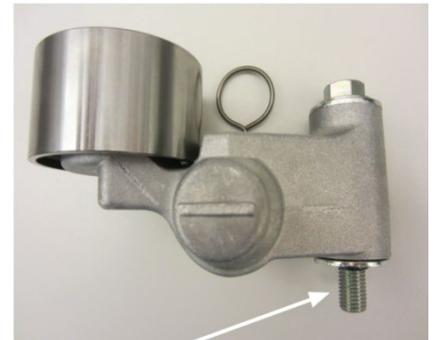
Once the tensioner bracket is carefully inspected, the hydraulic timing belt tensioner may be installed. **It is essential for the pivot bolt as well as the bracket threads to be CLEAN & DRY before continuing!**

The tensioner pivot bolt **MUST** be torqued to 39Nm. **NEVER USE ANY AIR TOOLS TO TIGHTEN THE PIVOT BOLT!**

Although this bulletin outlines the procedures for inspecting and servicing various components in the timing system, always follow all manufacturer recommended procedures and torque specifications.

**IT IS IMPERATIVE TO FOLLOW THE MANUFACTURER'S RECOMMENDED TORQUE PROCEDURES!**

### Hydraulic Timing Belt Tensioner



**Apply Threadlocker to tensioner pivot bolt threads prior to installation.**



**Apply several drops of Threadlocker to the first few threads.**