Belt Tensioning Products
Mechanic/Counterman Training Program
Presentation Topics

• What’s a tensioner – what does it do?
• How long do they last – when do they need replaced?
• How do you tell when a tensioner needs replaced?
• Should I replace the tensioner or tensioner pulley?
• Are tensioners serviceable?
• How do you tension a Poly-V belt?
• How do you replace a tensioner?
• How to identify the tensioner to be replaced?
• Are these tensioners as good or better than the OE?
What’s a Tensioner?

- Required as a result of the introduction of serpentine Poly-V belts in 1979 on the Ford Mustang
- Keeps belt tight and in contact with accessory drive pulleys – P/S, A/C, Crank
- Dampens out vibrations in the belt drive system
- Internal spring tensions; damping pack dampens. Similar to a suspension spring and shock absorber.
Tensioner Replacement

When changing a serpentine belt, how often do you change the tensioner?

Current National average is the replacement of 1 tensioner for every 8 Poly-V belts.
How long should a Tensioner Last?

- Design life is the same as a belt – on average 80,000 miles (layout and service dependant)
- Factors that reduce life
  - Highway vs. off-road (dirt, dust, debris)
  - Highway vs. start/stop city driving
  - Long Idle periods (heavy traffic)
  - Long Exposure to high temperatures

**Tech Tip** – *In most cases replace the tensioner when replacing the belt - reduces the labor charge of removing the belt when replacing the tensioner*
How can you tell when to replace the belt and tensioner?

- The Belt “jumps” off the drive
- The Belt breaks
- The Belt or tensioner squeals
- The Belt is slipping on one or more pulley

Tech Tip – Inspect all belt drive components – belts, tensioner, & idler pulleys for wear, noise, alignment, & vibration.

LOOK – LISTEN - FEEL
Why Do These Things Happen?

- System Misalignment
- Worn Pulleys – Idlers, P/S, W/P, Alt
- Belt deteriorated due to Oil Damage
- Worn Belt
- Worn Tensioner
- Foreign object (stone, dirt) in system
How to tell when the belt has reached its service life limit

- Cracks in the belt ribs (3 adjacent ribs)
- Chunks of belt ribs missing
- Belt edges worn
- Belt top material split or worn through
- Foreign material trapped in belt ribs
- A shiny belt = slipping

*Oil damage is the leading cause of hose & belt deterioration – inspect for damage & replace*

Tech Tip – Always note belt routing prior to removal
How to tell when the Belt or Tensioner has reached its service life limit - **Noise**

- Chirp & Squeal – Can be caused by a number of factors (whining at start-up)
  - Pulley misalignment
  - Poor belt tension
  - Worn Belt
  - Worn bearing at W/P, P/S, Alt
  - Worn tensioner pulley bearing

Did you know – more than 80% of vehicles have automatic tensioners near failure
Worn Pulleys
Cause belts to wear excessively

- Top of Pulley should be smooth
- Check for cracks or chuck-out on plastic pulleys
- Grooves should be clear of dirt & debris
- Grooves should be smooth – no nicks
- Steel pulley should be round and not show signs of “pealing” (metal splitting)

Did you know – a worn tensioner can result in poor alternator performance
Pulleys

- Plastic or steel “grooved”
- V-Belt Steel Pulley
- Plastic or steel Backside
- Split Steel (European style)
Replace the Tensioner or Just the Tensioner Pulley?

- Tensioners are not serviceable.
- Never attempt to open the tensioner casing – the spring is under pre-tension and dangerous!
- If the pulley bearing fails, it’s best to replace the entire unit – unless the tensioner is not available and you need to get the vehicle back in service.
How to tell when a tensioner has reached its service life limit.

- Cycle the tensioner arm – does it operate smoothly under tension?  *If it catches, lacks response, wobbles or makes noise the spring is bound, broken, or loose*
How to tell when a tensioner has reached it service life limit.

- Spin the tensioner pulley – does it spin smoothly, but not excessively due to lack of grease fill? *If it does not spin smoothly, the pulley bearings are worn*
How to tell when a tensioner has reached its service life limit.

- **Inspect the tensioner’s arm, housing & bracket for cracks and signs of rust.** The most common areas for cracks to occur are around the mounting bolts and at the tensioner stops.
How to tell when a tensioner has reached it service life limit.

- Inspect the tensioner arm and base for “rust bleed”. This is a common sign of failure on ‘Flat Spring” type tensioners.

TIP: Avoid aftermarket flat spring tensioners if possible. In many cases, the damping mechanism has been removed or the original design modified.
How to tell when a tensioner has reached its service life limit.

- The tensioner arm is tilted – examine the gap between the arm and body - is the spacing consistent? *If tilted, the pivot bearing is worn* – Replace the tensioner.
How to tell when a tensioner has reached its service life limit.

- The tensioner is tilted – examine the tensioner pulley surface – is the wear mark in the center of the pulley? *If belt mark is not centered, the tensioner is tilted due to the pivot bearing wear.*
Damping

Most tensioners have damping components which reduce the tensioner movement. Excessive movement may be the result of failed damping components – replace the tensioner.

Tensioner damping levels differ by application, & manufacturer. The most severe stress on the system occurs at: A/C ON, VEHICLE IN DRIVE, AT IDLE.
Tensioner Replacement

- Remove the Belt
  - Note Routing of Belt through idlers and pulleys
  - Relieve Tension by rotating tensioner arm
  - Slide belt off tensioner – Do Not Pry
- Remove the tensioner bolt (usually only one bolt)
- Remove old tensioner (note part number)
- Replace tensioner with locating pin correctly inserted in block
TENSIONER INSTALLATION

INDEX PIN ON TENSIONER

INDEX HOLE IN BLOCK

MOUNTING PAD ON ENGINE

MATE TENSIONER TO BLOCK
Tensioner Replacement

- Replace tensioner with locating pin correctly inserted in block
- Tighten Tensioner bolt (see instructions for torque values)
- Re-install belt (with tensioner rotated)
- Check that belt “V”s align with pulley grooves
- Run engine for 20 seconds
- Turn off engine
- Recheck routing and belt/pulley engagement

Tech Tip – Most tensioner replacements should take less than half an hour.
Follow instructions included with each tensioner.
How do you tension a belt when using an automatic tensioner

• You don’t need to tension the belt
• The tensioner will adjust to compensate for belt stretch
• The tensioner will apply constant belt tension to the accessory drive system
• Do not attempt to use “cricket” or “Clavis” gauges as with V-belts or other locked center belt drives
How to Identify the part to be replaced

• Order by Make, Model, Year, & Engine
• Note “With” or “Without” AC

Other Options

- Look for OE part number located on the tensioner being replaced – consult application guide

- Order by VIN number – Use a VIN code decoder to identify engine
Original Equipment Numbers

Original Equipment Part Numbers and replacement tensioner Part numbers are usually located on the engine side of the tensioner. All numbers are interchanged in the Goodyear application guide.
OE Parts Supplied

Professional mechanics prefer to install parts that look, perform, and fit (without modification) like the part removed. Where Goodyear tensioners are produced by the original equipment supplier, the part number if identified in the catalog with a “black oval” background.

Determining Your Source of Quality

If it has a **black** part number oval by the image, that part was designed, engineered and produced by the Original Equipment supplier. In other words, IT’S THE SAME AS OE.

No matter what, you’re getting only the highest quality part from Goodyear. These parts feature design, engineering and components that make them superior to the competition.

Accessory Drive Belt Tensioners

If it has a **gray** part number oval by the image, it means that part was reverse-engineered to look, install and perform just like an OE part. In other words, IT HAS THE SAME FIT AND FUNCTION AS OE.
Ease of Installation Guide

Tensioner replacement is a relatively simple maintenance procedure. The degree of difficulty, based on the application, is noted in the front of the Goodyear catalog.

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For a quick reference, you can find images of the automotive parts these numbers correspond to within this catalog. In addition, these images are labeled to their degree of installation difficulty.
Customer Information

- All Tensioners include detailed instructions for each specific application in English, Spanish and French
- Tensioner bolts are usually reusable. If not, a new bolt will be provided in the box with the tensioner
- Tensioners & Idlers are warranted against defects in material and workmanship for 1 year after date on purchase (see warranty details)
What’s Inside an ADT?

**PULLEY BOLT**: Fastens pulley to arm. Can also be used as a lift feature, for belt installation.

**DUST SHIELD**: Prevents contaminants from entering pulley ball bearing.

**BALL BEARING**: Maintenance free and sealed for life.

**PULLEY**: Steel or plastic construction, depending on application. Due to belt length considerations, pulley diameters are application specific.

**FRONT PLATE**: Retains the complete tensioner assembly. Due to mechanical staking feature, tensioners are non-serviceable and cannot be disassembled safely.

**THRUST WASHER**: Provides additional damping and alignment.

**ARM**: Robust and precision aluminum diecasting. Transmits torque from spring to pulley to provide constant belt tension. Arm also provides environmental protection for internal components.

**PIVOT BUSHING**: Self-lubricating, highly wear resistant polymer component. Function is to ensure proper tensioner arm alignment relative to belt and counters tilting.

**CAST LOCATING PIN**: Incorporates into the diecasting for exact OE fit and accuracy. The purpose of the pin is to accurately locate the tensioner on the engine and does not have torque transmitted through it, after the mounting bolt is torqued down.

**SPINDLE or BRACKET**: Robust and precision aluminum diecasting with integral locating pin. Keeps the arm ‘true’ to belt. Provides a pivot center for arm and anchors spring. Ensures angular alignment or proper placement on engine. Other accessories or passages for engine coolant may be integrated.

**SPRING SUPPORT/DAMPING ELEMENT**: Provides primary damping for smooth tensioner and accessory drive system operation. Damping varies with spring torque for consistent level of damping throughout operating range. Engineered, highly wear resistant polymer.

**SPRING**: Critical part of tensioner. Designed to provide constant, trouble-free tension to belt for life of tensioner. Round wire design not affected by corrosion or coil-to-coil contact. Does not require a PTFE filler strip to prevent spring ‘lock-up’.