



TECHNICAL SERVICE BULLETIN

ACCESSORY BELT DRIVE SYSTEM PULLEY ALIGNMENT & TENSION

Today's belt performs a specific job, transferring power from the crankshaft pulley to all accessories in the Serpentine system. Power-hungry alternators, A/C compressors, power steering and water pumps all try to rob the belt and keep it from transferring this power. To say the least, it's no small task to keep all these parts functioning properly, especially under extreme temperatures.

If regular preventive maintenance and inspection have been overlooked through the years, or at some point an incorrect part has been installed, the system may suffer. The customer who just purchased a new Gates belt expecting a long, worry-free motoring experience, may see a failure soon after belt replacement because their Serpentine system was not properly inspected and cleaned before installation.

A belt must have three items in order to perform optimally:

- **Pulleys** must be in good condition, clean and free of contaminants.
- Proper **alignment** of all components in the system is critical.
- If the drive belt does not have sufficient **tension**, it will begin to slip, causing heat to be inducted into the belt and the system. This heat build-up, if left unchecked, will result in a loss of system performance, noise, and possibly system failure.

PULLEYS

Just like V-belt pulleys, V-ribbed pulleys should be inspected and cleaned before a new belt is installed. Any buildup of contaminants in the pulley grooves must first be removed with an alcohol-based brake cleaner and a soft bristled brush. If these contaminants are not removed prior to new belt installation, the new belt will instantly become contaminated upon installation, and the failure will repeat itself.

BULLETIN TSB_054_US

PART NUMBER:

- All models with a serpentine belt

MODEL:

- All models with a serpentine belt

YEAR:

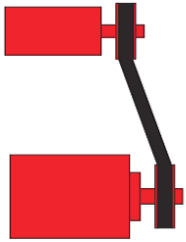
- All models with a serpentine belt

ENGINE:

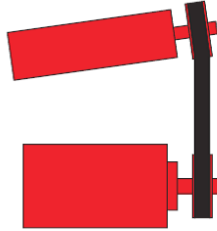
- All models with a serpentine belt

ALIGNMENT

There are two types of misalignment: parallel and angular.



Parallel misalignment



Angular misalignment

- Parallel misalignment refers to pulleys that are outside the plane of other pulleys in the drive system, but whose shafts remain parallel with the other components. Proper positioning of a pulley on a shaft will help ensure all pulleys are in a common plane.
- Angular misalignment refers to pulleys which are within the drive system plane, but are tilted because their shafts are not parallel.

Both misalignment conditions can create belt tracking problems, excessive wear, a chirping noise, and belt stability problems. Just a few degrees of misalignment can increase belt operating temperatures by 30° F, reducing belt life by as much as 50 percent. Belt noise due to misalignment usually occurs in the shortest spans the drive, and often arises between a backside pulley and an adjacent grooved accessory pulley. Proper pulley alignment is especially critical in these situations

TENSION

In addition to misalignment, the other major cause of belt noise is improper tension, which can be caused by a number of factors:

- Insufficient installation tension
- No run in and re-tension when the belt is new (manually tensioned drives)
- No continuing tension maintenance
- Insufficient take-up allowance in the drive
- Change in drive center distance
- Pulley groove wear
- Belt sidewall wear
- Belt permanent elongation



Use Gates DriveAlign® Laser Alignment Tool (Part #91075) to quickly identify pulley misalignment.

Without proper tension, a belt will slip, the sidewalls will wear smooth, and the belt will eventually harden through a glazing process known as “heat-aging.” The more glazed the belt surface is, the more likely it is to be noisy and lack sufficient ability to transmit power.

The cause of belt noise is often referred to as belt “stretch”. However, the use of the term “stretch” is actually an inaccurate identification for what is, in fact, a loss of tension caused by one of the factors listed above.

Belt deformation is usually not a sufficient reason for loss of tension. Belts tensioned too high may not cause noise, but can shorten pulley bearing life due to excessive hub loads. Too much tension can also result in excessive belt wear, increased belt temperatures, and premature belt failure.

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