



Fleet and Heavy Duty TECHTIPS



How To Maintain and Replace Belts To Keep Your Rig On The Road

Industry statistics suggest that 10-15% of vehicles in the average fleet will spend some time at the side of the road during any given month.

One way to prevent costly breakdowns is to make sure that proper, routine maintenance is performed on each vehicle. By adhering to a strict preventive maintenance program a fleet can experience up to 75% fewer breakdowns than a fleet that does not perform regular preventive maintenance.

A heavy-duty truck is a complex piece of machinery that relies on supporting systems to keep it running. Today's engines, pulling greater payloads over longer distances, have increased the loads and stresses on the cooling, electrical, power steering, compressor and other heavy-duty vehicle systems. Belts are vital parts of these systems.

Following is some information that will help fleet maintenance managers improve the performance of their engine belt drive systems.

Types of Belts

There are basically two types of belts found on truck engines: V-belts and serpentine belts.

- V-shaped is the traditional belt found on most drives. Typically, it has a notch pattern across the bottom to help it run cooler, quieter and with less bending stress. It may also have fiber-loaded stock that provides added flexibility along the belt's length, yet affords greater lateral stability.
- Gates newest variation of the V-shaped design is the Green Stripe® FleetRunner™ belt, manufactured with proprietary rubber compounds that greatly prolong service life and resist belt failures due to the effects of engine heat. The rubber compounds allow Gates FleetRunner to retain its flexibility on drives where extended high operating temperatures cause other belts to harden, crack and ultimately fail. Fibers built into the belt improve stability and reduce belt turnover, while also lessening premature failures due to drive misalignment.



- The molded notch V-belt has a deep notch pattern that allows greater flexibility over smaller diameter pulleys. The notches also have a greater surface area that helps dissipate heat. Gates product is the Green Stripe II Truck and Bus Series V-belt.
- The serpentine belt is a very thin belt, flat on one side with a series of small V-ribs on the bottom. It is used to drive very small sheaves from either side of the belt, and generally has automatic tensioning. Gates serpentine belt is the Green Stripe® Micro-V® belt.
- The joined belt is designed for maintenance-free service on heavy-duty engine drives subject to violent pulsations and extreme shock loads. The belt is made by joining two or more premium V-belts with a permanent, high strength tie band. It bends over pulleys as easily as multiple V-belts, but the tie band increases stability to keep the belt from turning over or coming off the drive. The belt will solve problems on high load, high horsepower drives that abruptly start and stop, adding stress and heavy vibrations to the drive. Gates product is the Green Stripe® PowerBand® belt.

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Maintenance

It is very important that belt tension be checked as a regular part of maintenance, recommends Gates. Too little tension allows belt slippage, which results in early belt failure through overheating. This heat can also be transferred from the pulley rim to the accessory drive shaft and overheat the bearings.

Belts should also be checked for excessive wear. A worn belt rides low in the pulley and may easily become loose and slip. Loose belts, generating high temperatures through slippage, damage more drive systems than any other single cause.

If a belt squeals, check for tension or look for foreign material like grease, dirt or paint in the sheave grooves. Never use a belt dressing. It can cause belts to slip or collect dirt and grit. It also deteriorates belt materials.

Watch the drive while it runs. Although multiple-belt drives run with some variation, all the belts should be running at the same tension. If one or more appear loose or tight, check for worn pulleys, improper tension, a damaged belt or improperly matched belts.

Mismatched belts, caused by replacing only one of a pair of belts, are also a cause of premature belt failure.

It's also important to check for sheave wear. Remove all oil and grease with a solvent, remove any rust with a wire brush and dress down burrs with a small file. Burrs accelerate belt wear.

A worn sheave may be visually evident, but it's best to use a sheave gauge. Insert the proper gauge into the groove and if the wear is excessive, replace it. The most frequent source of V-belt drive trouble is worn sheaves that cause excessive belt wear and tension differences. Worn sheaves create instability in the drive, which can cause the belt to flip or turnover.

Replacement

The first step in replacing a worn belt is to obtain the correct replacement. Belt lengths are determined while

they are mounted on standard pulleys and subjected to a standard tension. The relationship between cross-section and over-all length (outside circumference) is such that it is very difficult for a technician to properly fit a drive from physical belt dimensions alone. Even when a belt does go on the drive and apparently fits the pulleys, Gates warns that the belt angle, thickness and ride (or all three) may be unsatisfactory and result in shortened belt life.

It is much safer to replace belts by application (year, make, model, drive, original part number, etc.) by referring to the manufacturer's catalog. If in doubt, go to an aftermarket heavy duty distributor.

After the correct belt has been obtained and the drive components have been cleaned and inspected for wear, the belts are ready to be installed.

Installation

Belts should never be pried on, rolled on, powered on, or otherwise forced on a drive. Although V-belts are somewhat elastic, they are not rubber bands. Forcing a belt on a drive usually damages the tensile cords and shortens belt life. Also, the methods of forcing a belt onto a drive are quite dangerous. Gates says that the only way to properly install a V-belt is to release the drive take-up completely and slip the belt into the pulley.

The final installation step is to tension the belt. It is important to maintain tension within the established tension limits as specified by the manufacturer.

Tension a new belt to the highest value as listed in the manufacturer's recommendations. "Run in" the belt for 5 to 10 minutes. Shut down the engine and re-tension the belt to approximately the mid-point in the tension range.

For additional information go to www.gatesaustralia.com.au/transportation