

V-BELT MAINTENANCE COULD PREVENT DOWNTIME

A V-belt failure is a serious problem, which, on a pumping unit drive, can shut down a well for days.

Belts are used in a variety of applications within the petroleum industry, including heavy duty natural gas compressors and engines, centrifugal and saltwater pumps, production and secondary recovery pumping units, cooling tower drives, and belt drives for stationary gas engines.

Perhaps the best way to begin to reduce equipment downtime is by developing a sense for detecting early warning signs by watching and listening to your drives. Since one advantage of V-belt drives is that belts and sheaves wear gradually, potential problems can be spotted early, allowing a short, scheduled maintenance adjustment instead of a longer, more costly interruption when unexpected trouble occurs.

Think of V-belts as being much like electric fuses - their unexpected failure is usually a signal that something else in the system is wrong. Patterns of gradual wear can indicate conditions needing correction or improvement.

Before doing any maintenance work on power drives, the maintenance person should check to be sure that the control switch is in the "off" position and locked. Check your company's safety rules.

Remove the drive guard and relieve belt tension by loosening the drive takeup. Move the sheaves closer together to facilitate the removal of the old belts and to insure proper installation of new belts.

At this point an inspection of the drive elements is in order. It is a good time to service the takeup rails by removing rust and dirt. Lubricate if necessary so that tensioning of the new belts goes smoothly. Inspect and replace faulty or damaged machine elements, such as worn bearings and bent shafts. This procedure reduces the likelihood of future mechanical trouble

and insures maximum service from new belts that are installed.

Inspect the sheaves at this time. They should be carefully cleaned of any rust or foreign material with a wire brush followed by wiping with a clean shop cloth. It is important to note that sheave condition and alignment are vital to V-belt life and performance. Sheaves should be carefully checked whenever V-belts are replaced. Focus attention on the following conditions:

- worn groove sidewalls;
- shiny sheave groove bottom, a sign of belt "bottoming" out of loosening wedging action;
- wobbling sheaves; and
- damaged sheaves.

To insure proper sheave alignment, follow these recommendations:

- shafts of the drive and the driven sheaves should be parallel, horizontally and vertically;
- driver and driven sheaves must be in a straight line; and
- both sheaves must be properly mounted and as near to the bearings as practical.

Selection of the current belts for the drive also is very important. Several considerations should be taken when selecting the new V-belts:

- never mix new and used belts on a drive;
- never mix belts from more than one manufacturer
- remember that the replacement must be with the right type of V-belt. Don't mix constructions; and
- always observe the manufacturer's V-belt matching limits.

When installing new belts, place the new belts on the sheaves and be sure that the slack of each belt is on the same side. By pressing the belts with your hands, you can bring the slack to one side of the drive. Loosening the drive takeup in advance makes this easy.

Never force the belts on the sheaves by using the pry bar or by rolling the sheaves. This can break the cords in the belt. The sheaves should be moved apart until the belts are seated in the grooves. Then make the preliminary tightening of the drive until the slack is taken up.

Recheck your sheave alignment at this time. One of the great advantages of V-belt drives is that perfect alignment of sheaves is not critical to the operation of a drive. V-belts can tolerate minor misalignment of up to 1/16 in. per 12 inches of shaft center distance. Don't be

lulled into false security. Come as close as possible to perfect alignment for longer life.

Proper tension should be given careful consideration. All V-belt drives must operate under proper tension to produce the wedging action of the belt against the groove sidewalls. A good rule of thumb is that the best tension for a V-belt drive is the least tension at which the drive will not slip under peak load. A properly tensioned drive will feel alive and springy when struck with the palm of your hand.

An even more precise method of tensioning is by using a belt tensioning device, commonly referred to as a tensiometer. These devices insure correct tension when used in accordance with manufacturers' published tension tables for a properly designed drive.

When installation is complete it is recommended to run the drive for approximately 15 minutes. Then, apply a full load and check for slippage. If slippage occurs, apply more tension.

After the drive has operated under load long enough for the belts to become seated in the sheave grooves (approximately 24 hours), it is a good idea to make a final tension inspection.

Following these recommended steps should help operators reduce problems with V-belt drives. Here is a brief check list:

- Cut off and lock out power source. Observe all other safety procedure
- Remove belt guard
- Loosen motor or engine mounts
- Shorten center distance
- Remove old belts

•Inspect wear patterns for possible troubleshooting

•Inspect drive elements - bearings, shafts, etc.

•Inspect sheave grooves for wear

•Check sheave alignment (preliminary)

•Select proper replacement belts

•Install new belts

•Tension belts

•Check sheave alignment

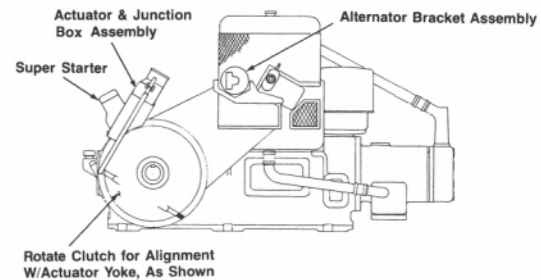
•Replace guard

•Start drive (look and listen)

•Retension after 24 hours

Following these recommended steps and planning a common sense belt maintenance program can reduce unexpected downtime.

CLUTCH ROTATION & ALTERNATOR BRACKET



CLUTCH PILOT BEARING REPLACEMENT

Quite often the life of a new clutch or a completely rebuilt clutch is shortened drastically by improper installation of the pilot bearing. On Arrow C-46, C-66, C-96, C-106, and C-255 engines, it is necessary to install the pilot bearing on the clutch shaft rather than in the pilot bearing recess or housing. This will assure correct positioning of the pilot bearing to give proper support to the clutch shaft.

If the bearing is installed first in the bearing housing, when the clutch shaft is pushed into the center race of the bearing, very often the bearing is shoved on back in the housing so that the shaft does not protrude all the way through the bearing. This, in turn, will result in failure of the clutch plates and pilot bearing.

After installation of the clutch is complete, rap the end of the clutch shaft with a block of wood and a heavy hammer. This will center the bearing races and relieve any undue stresses.