

Solutions cont'd

High Temperature Impeller Adjustments

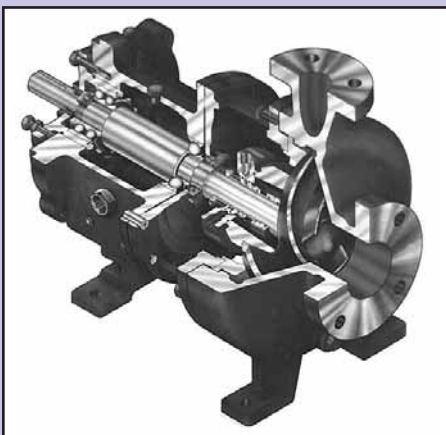
We all know the importance of keeping the Impellers properly adjusted in our end suction centrifugal pumps to maintain near new levels of performance and efficiency. One often overlooked influence on the Impeller adjustment is shaft growth due to thermal expansion.

Many end suction designs call for the thrust bearing to be the outboard bearing, furthest away from the Impeller. That bearing is fixed either by snap rings, retainers or machined shoulders to be able to resist thrust loads in either direction.

Because this bearing is furthest away from the Impeller and is fixed in place, any thermal expansion of the shaft as the unit comes up to operating temperature will cause the Impeller to move closer to the suction opening of the unit. Likewise, in applications involving high temperature liquids, heat is transferred into the shaft causes significant thermal growth. An allowance must be made in the Impeller adjustment to accommodate the growth and prevent the impeller from rubbing inside the casing.

Just raising the shaft temperature from ambient to 120° F can cause the shaft to grow quite a few thousandths of an inch depending on the materials and length. Since in many cases you only have a few thousandths of an inch clearance, the impeller rubs and causes problems.

Most manufacturers publish a chart or table to help you determine the correct allowance based on the ambient and the expected temperature rise, it's wise to refer to that table or chart when adjusting your impeller clearance. ■



Cross sectional of the Model 3196 pump.

New Products

The New PumpSmart PS 75



From Oversized to Right Sized

Right-sizing Pumping Systems in an industrial plant can have a substantial effect on your bottom line. Oversized pumps and valves burn unnecessary energy.

Most plant designs select larger pumps and valves to allow for anticipated peak demands or future expansions. These selections, however, are made without regard to the total life cycle costs that these practices create.

Right Sizing allows you to trim the performance of your pump electronically instead of physically trimming your impeller. This enables you to realize the energy saving benefits of a properly sized pump, while maintaining the ability to "up-size" your pump at the push of a button.

Reducing speed by 20% reduces head flow and power just like an impeller trim. It also lowers the impeller speed which improves NPSHr and reduces the risk of cavitation. You can now open your control valve increasing system efficiency and wear and tear on the valve. Also, a 20% reduction in speed results in a 50% reduction in energy.

Do the math. What can the PumpSmart® PS75 control system mean to your plant?

PumpSmart PS75...there's much more.

The PumpSmart PS75 is a pump and motor control system that provides right sizing and much more; integral starting, pump protection and process control for all pumping

applications. The PumpSmart PS75 crosses the gap between the basic benefits of conventional soft-starters with the advanced control found in contemporary Variable Frequency Drives. The PS75 also advances conventional load monitoring pump protection with the patent pending PumpSmart Torque-based Pump Protection (TPP).

The PumpSmart PS75 replaces the conventional motor starter and may be applied on both new and existing pump applications. The addition of a process transmitter is only required when operating in process control mode.

Why the PS75? In short, Capability, Cost and Ease of Installation and Operation.

The PS75 provides exceptional control over your pump and motor operation especially during starting and stopping sequences. Starting your pump/motor with a controlled ramp allows pressure to build smoothly preventing dangerous over-pressure situations and minimizing water hammer.

Likewise, gradual stoppage prevents check valve slamming and voltage imbalances which can damage other equipment in your plant.

PumpSmart's industry leading protection algorithms ensure that pumps will not fail due to process upsets such as dry running or operation at shutoff. In all, PumpSmart systems make your pumps more reliable and more effective.

Summary of Benefits:

Reduced Maintenance Costs

- Reduced wear on mechanical seals due to soft starting and lower Pressure-Velocity values due to rightsizing
- Reduced pump, valve, and system wear from reduced fluid velocity and pressure breakdown.
- Protection against process upsets (dry-run, dead head, and run-out)
- Reduced system damage from hydraulic hammer effects upon start-up and shut down

Improved System Reliability

- Protection against process upsets (dry run, dead head, and run-out)

Improved work environment

- Heat, noise, and vibration reduction as a result of Right-Sizing or Demand Regulation.
- Improved system safety from reduced hydraulic hammer effects.

Improved Utility Metrics

- Reduced peak demands from limiting in-rush current
- Total Power Factor improvement