

Horizontal Split-Case Centrifugal Pumps

Five advantages help achieve efficiency, quality, and low first costs

The horizontal split-case centrifugal (HSC) pump is more than 100 years old, yet still is the workhorse of the HVAC pump industry. If a lot of water has to be moved efficiently with a minimum of fuss, no other pump can outperform it. This article describes five reasons why an HSC pump is useful.

- An HSC pump takes up less space than other pumps when taking into consideration the room needed for repairs.
- An HSC pump can be checked without

removing its rotating element or bothering the electric motor or piping.

- Only one person is needed to repair an HSC pump for most HVAC sizes.
- An HSC pump has a longer useful life than other pumps.
- An HSC pump's efficiency is equal to, or better than, that of other pumps.

By **JAMES B. (BURT) RISHEL, PE**
Pumping Solutions LLC
Cincinnati, Ohio

FOOTPRINT

An HSC pump requires less total space than other pumps. If space is critical, an HSC pump can be reversed to reduce the total room required for several pumps. Just because suction and discharge nozzles stick out of the sides of an HSC pump does not mean the total room needed is greater. Most HVAC pump manufacturers can provide suction diffusers for their pumps so that the five suction diameters normally recommended are not needed.

INSPECTION

A common complaint is, "My pump is noisy or not producing."

An HSC pump can be opened for inspection over the lower casing without disturbing the motor or piping (Figure 1). Flip the lid on an HSC pump, and the entire rotating element is exposed. The element can be turned in place to see if dirt or damage has affected the pump. This way, a problem can be found before the element is disassembled.

ONE-PERSON REPAIR

Usually, only one person is required to repair an HSC pump.

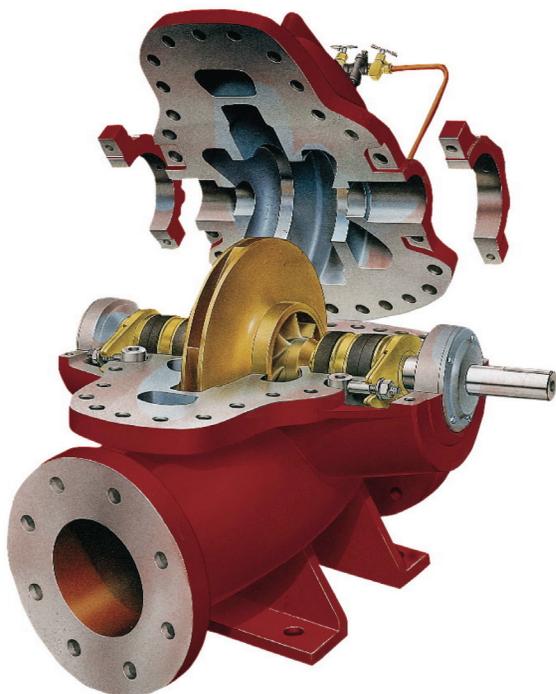


FIGURE 1. HSC pump with open top.

James B. (Burt) Rishel, PE, is owner and manager of Pumping Solutions LLC, a firm devoted to the evaluation of water systems and the development of variable-speed pumping stations to achieve efficient pumping with reduced wear on centrifugal pumps. He also is the director of mechanical operations for tekWorx of Cincinnati. Former chairman and chief executive officer of Sysstecon Inc., he holds two U.S. patents related to the determination of pump head and the programming of centrifugal pumps. He is the author of three books, 11 papers, and more than 40 articles.

Carefully consider an HSC pump's advantages before a pump is specified. It is possible to achieve the ultimate in pump quality and first cost on a project.

LONGER LIFE

Radial and axial thrusts wear out pumps. One manufacturer has a unique design for extending the useful life of an HSC pump. The manufacturer has shortened the distance between the inboard and outboard bearings to reduce the cantilever effect on the pump shaft and cut deflection at the seal faces (Figure 2). The results are a longer seal life and fewer problems with case rings.

An HSC pump's double-suction impeller can reduce the axial thrust

on its rotating element compared with the greater axial thrusts of other end-suction pumps. Many HSC pumps have been in operation for more than 75 years and still are performing efficiently.

EFFICIENCY

A double-suction impeller and half as much flow through each suction area are the foundation for high pump efficiency. A survey of sales catalogs shows HSC pumps have efficiencies as high or higher than other pumps

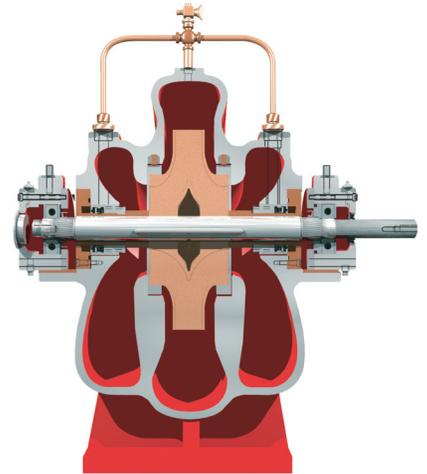


FIGURE 2. Cutaway of an HSC pump.

normally used in the HVAC field.

SUMMARY

These advantages should be considered carefully before a pump is specified. It is possible to achieve the ultimate in pump quality and first cost on a project with an HSC pump.