


Industrial centrifugal pumps

Difference between footing support type pump and centerline support type pump

A. Structural characteristics

1.Pump with centerline support

Pump centerline support is a support structure that uses the centerline of the pump as the support method. It mainly consists of supports, bearings, lifting ears, couplings. etc. The queue structure of the pump is vertical, with bearings installed inside the upper support and able to rotate freely. The lower support is suspended from the support by lifting ears.

2. Pump with foot support

Pump foot support is a support structure that uses the bottom base of the pump as the support method. It directly supports the pump body through the base, which is set on the ground.

B. Usage application

1.Application of pump with centerline support

The pump with centerline support is suitable for vertical pumps such as water pumps, petroleum pumps, chemical pumps, and sewage pumps.

2.Usage application of pump with foot support type

The pump with foot support is suitable for high-power pumps such as large centrifugal pumps, plunger pumps, mixed flow pumps, and self-priming centrifugal pumps.

3. Advantages and disadvantages

1. Advantages and disadvantages of pump with centerline support

Advantages: The pump with centerline support has a simple composition, high stability, convenient installation and adjustment, and high cost-effectiveness.

Disadvantages: High vibration, easy to generate resonance, leading to equipment damage.

2.Advantages and disadvantages of pump with foot support

Advantages: The pump with foot support directly supports the pump body through the base, making the pump's operation more stable and able to withstand greater torque.

Disadvantages: The manufacturing and installation of the base require more materials and processes, resulting in high costs.

So why is it recommended to use center support under high temperature conditions?

After high temperature is transmitted to the pump body or pump cover, the pump body undergoes deformation. If foot support is used, the bottom is fixed and cannot be moved. Heat can cause the pump body to deform in any direction (especially upwards), which will directly cause the center of the rotor to deviate from the center of the motor, leading to ineffective alignment. The intuitive problem is that the bearing heats up, increases vibration, and in severe cases, may cause shaft breakage.

The centerline supported pump positions the pump as a whole at the center of the rotor, and uses sufficiently thick rib plates to ensure that the center of the rotor does not shift or slightly deviates when the pump body is heated and expands (mainly up and down expansion to achieve balance), and is not affected by centering.

For pumps with higher temperatures (above 250 degrees Celsius), in addition to using a centerline support for the pump body, guide sliders and guide positioning pins need to be added.