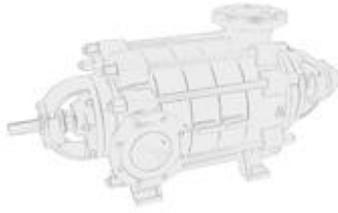


Multistage Centrifugal Pump



This kind of pump is divided into HM series horizontal multistage pump and VM series vertical stainless steel multistage pump.

HM pump is horizontal multistage section centrifugal pump. It can deliver heat water, oil, the corrosive or wearable medium by changing the material, seal or adding cooling system.

- HMD pump can deliver water without solid particle or the liquid which the chemical and physical feature is similar with water and temperature is $\leq 80^{\circ}\text{C}$. It's suitable for delivering water in mine and urban water project etc.
- HMG pump can delivery clean water without solid particle of the liquid which the chemical and physical feature are similar with water, and temperature is $\leq 105^{\circ}\text{C}$. It's suitable for delivering boiler feed water of heat water.
- HMM pump can deliver the neuter mineral water which solid particles percent is below 1.5%(Solid Dia. $< 0.5\text{mm}$) and other similar sewage, the temperature of the liquid is $\leq 80^{\circ}\text{C}$. It's suitable for steel works, mines, city projects etc.
- HMF pump can deliver the corrosive liquid without solid particle, which temperature is from -20°C to 150°C .
- HMO pump can deliver oil or oil products without solid grain, viscosity $\leq 120\text{ct}$, the range of temperature is from -20°C to 150°C .
- VM pump is vertical multistage stainless steel inline pump. All the components contacted with water is of stainless steel material. It's widely used in urban water supply system, industrial circulating system, water supply for a boiler of condensation system, environmental protection water treatment system and agriculture irrigation.

[HM Type Horizontal Multistage Centrifugal Pump](#)



HM series is the horizontal multistage ring section pumps and high pressure pump. all the impellers are stacked in single direction on the same pump shaft. The rotors are perfectly dynamically balanced and the maximum stages can be up to 12stages.

RAP Series Stainless Steel Vertical Multistage Centrifugal Inline Pump

RAP series closed coupled stainless steel vertical multistage centrifugal inline pumps are driven by standard motors. All parts contact with water made of SS304. The pump head, suction and discharge part can be made in cast iron on request too. The pressure-resistant cylinder and flow passage components are fixed between the pump head and inlet & outlet section with four stay-bolts.

How to Improve the Efficiency of Horizontal Multistage Centrifugal Pump?

The diameter of horizontal multistage centrifugal pump pipe is reasonably determined

The diameter of the pipeline affects the efficiency of the pump station. It has been proved that too large or small diameter is not economical. When the pipe length and the flow rate are certain, the diameter of the tube is large, the flow rate is small, the head loss is small, and the energy consumption is small, but the pipeline investment is high. If the diameter of the tube is small, the situation is the opposite. In order to reduce pipeline loss, the horizontal multistage centrifugal pump should be reasonable to determine the diameter of pipe. If the diameter of the tube is too small, the head loss will be increased, in order to improve pipeline efficiency, the pipeline should be replaced by economic pipe.

Shorten the length of horizontal multi-stage centrifugal pump tube

The length of the outlet pipe should be shortened maximum. But when the terrain between the water and the sink is flat. Shortening the pipeline will inevitably increase the drainage of the channel, the pool and the pump room, or the filling of the pool and the canal. The small pump station should be installed in a flat recliner, or the pump should be well down and half well installed, the line layout of is changed, and it can save elbow and reduce head loss. According to the condition, the inner wall of the pipeline can be improved to reduce the loss of pipeline resistance. Generally the high lift centrifugal pump pumping unit should be used to reduce the main drag resistance.

Reducing the pipe fittings

The local resistance coefficient of pipeline accessories is very large, which will cause a large loss of water head, which must consume a lot of energy during operation. Therefore, it is necessary to minimize unnecessary internal pipe fittings. The bottom valve has the maximum drag coefficient in the pipeline accessories and should be replaced with other water filling equipment and cut-off facilities. According to the relevant information, the energy loss of the bottom valve accounts for 50% ~ 70% of the total energy loss of the water pipe, and accounts for 10% ~ 50% of total energy loss of water pipe. The lower the head of the pump station, the larger the power loss of the



bottom valve. In addition, the existence of the bottom valve also causes a lot of trouble to the operation management, so it is very early to call the end valve. Now some pump stations have cancelled the bottom valve, and the vacuum pump has been used to fill the water, which has achieved better energy saving effect. But in small pumping devices, the bottom valve is still ubiquitous, which is one of the reasons for its low efficiency.

In order to reduce the loss of water head of pipe inlet and outlet, it can be added in the pipeline inlet. For the inclined pipe line, it can be used to install the flat or special speaker tube in the inlet and the outlet of the pipe is used for the diffusion tube, and the energy saving effect is obvious.

Eliminate "antiaircraft gun" type outflow

The so-called "anti-aircraft gun" type flow is a horizontal multi-stage centrifugal pump that pumps out the outlet of the water above the water surface of the sink. This kind of flow method artificially elevates the actual lift of the pump station, the operating point of the pump moves to the left, the flow of water pump decreases and the efficiency decreases. At the same time, due to the turbulence of water flow in the pool, the head loss and the length of the water head loss and the building (or structure) are increased. In order to increase the amount of water, improve the efficiency of the water pump and reduce the energy consumption, the outlet of the water pump should be installed below the surface of the water outlet building (or structure).

The established "anti-aircraft gun" pump station can be converted into siphon flow. In order to prevent the water flow in the water during the shutdown, there is a facility to destroy the siphon vacuum. The small pump station can be located in the rise section of the siphon, corresponding to the design of the water level at the height of the water tank to install a windpipe. When it is down, the water is rapidly leaking under the force of gravity, which creates a vacuum in which the air is sucked in and the siphon is destroyed. The area of the vent pipe is generally 5 ~ 8% of the total area of the water pipe.