

## JP Vertical Propeller Pumps



# Sulzer Pumps

Sulzer Pumps combines more than 135 years of experience in pump development and manufacturing with a deep commitment to fully understand the needs of our customers.

Our detailed process and application knowledge has allowed us to develop innovative pumping

solutions for our focus segments including tailor made systems if required. Our active research & development supports this customer-oriented approach.

Sulzer Pumps has sales and service facilities in all the major markets of the world to provide fast and flexible response and support.

## Extensive Product Range

Sulzer pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

- Oil & Gas
- Hydrocarbon Processing
- Pulp & Paper
- Power Generation
- Water & Wastewater
- Food, Metals & Fertilizers

### Vertical Propeller Pumps

The propeller pump was initially developed in the late 1800's for agricultural pumping. Since then, continuous improvements, special designs and new materials have made it ideal for municipal water supply, drainage, flood control, power plant intake and industrial uses of all types. There is an ever increasing demand for the efficient management of the world's water resources. A better understanding of water application problems, increased production demands plus sophisticated facility and equipment design have created the need for superior high capacity low head pumping capabilities.

### Applications

Vertical propeller pumps are typically used wherever a liquid needs to be pumped upward at low pressure from open bodies of liquid such as oceans, rivers, lakes, cooling ponds, tanks and sumps.

### Advantages

- Minimum use of floor space.
- The NPSH available can be the lowest level to satisfy the NPSH requirements of the pump.
- No priming required, the pump bowl assembly is submerged in the fluid being pumped.

- The variety of materials and construction possibilities to meet special requirements (such as corrosion resistance) is virtually unlimited.
- The vertical propeller pump is adaptable to various design codes.
- Easily modified for changing hydraulic conditions.
- Low operating speeds.
- Sulzer hydraulics deliver high pump efficiencies.





### Design

The JP has a capacity range up to 57,200 m<sup>3</sup>/h (252,000 USGPM) with a total maximum single stage head up to 8.2 m (27 ft) in sizes ranging from 200 to 1,800 mm (8 to 72 inches) in bowl diameter. Sulzer industrial vertical propeller pumps are high capacity, low head units widely used for raw water supply to process plants or refineries, circulating service in nuclear or conventional power plants, large irrigation projects and numerous other applications. Common types of fluids handled

include water, service water, and waste water. The JP can be manufactured from a variety of metallurgies to extend pump life and performance. Above and below base discharge connections are available to suit all existing pipe design variants. Performance and hydro testing are in accordance with the Hydraulic Institute Standards and can be witnessed or non-witnessed, depending on customer preference. The JP pump is engineered to balance high efficiency, low submergence and NPSH considerations.

### Materials

A wide range of standard materials are available including;

- Cast parts – cast iron, carbon steels, 316SS, duplex, super duplex and bronze
- Shafts – 316SS, 416SS, Monel, K-Monel and Nitronic 60
- Fabrications – carbon steel, duplex and 316SS
- Bearings – carbon, cast iron, epoxy, Nitronic 60, bronze and rubber



# Design Features and Benefits

## Driver

The pump is driven by electric motors, fixed or variable speed drives, right angle gear drives or steam turbines. Drives are designed to carry the rotor weight and thrust loads plus rigid construction requirements to provide satisfactory operation.

## Seal

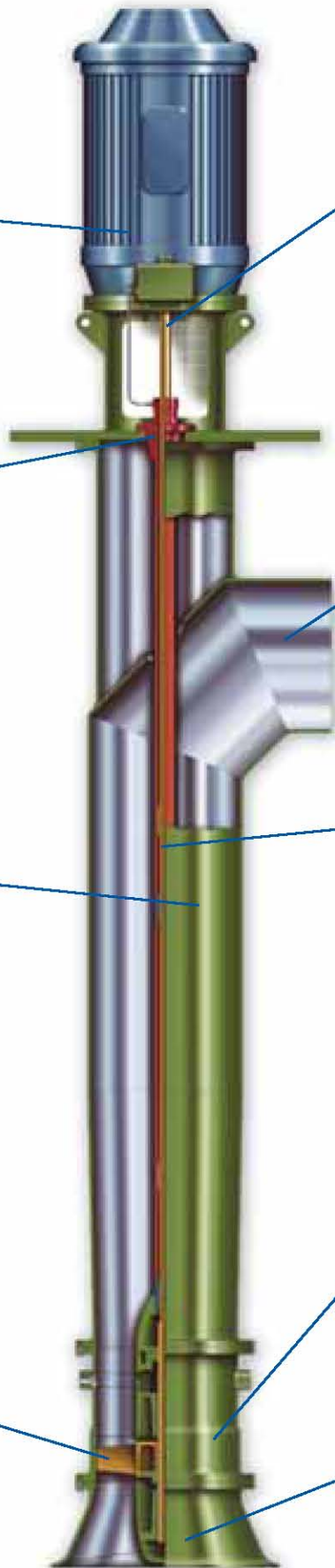
Various seal options are available including gland packing, shaft tube (oil), shaft tube (water flush), grease lubrication or internal/external balanced and non-balanced mechanical seals.

## Column Assembly

The pump column pipe is connected by flanges and supports the bowl plus any intermediate lineshaft bearings. Lubrication is by the pumped fluid or oil. Product lubricated bearing materials are selected to suit the application. Oil lubrication uses column pipe tubes to deliver oil direct to the bearings. Rubber spiders stabilize and support the column pipe tube.

## Propellers

Heavy duty cast propellers are balanced to assure vibration free operation and hand-finished for maximum performance. The propeller is secured for positive drive and adequate locking. The axial flow propeller has a single inlet, available in numerous pitches to allow the flow to enter axially and discharge nearly axially for maximum capacity handling.



## Headshaft

The headshaft can be supplied with a nut or flanged coupling for impeller adjustment to maximize sustained efficiency. Headshaft material is selected to suit the pumped fluid.

## Discharge Elbow

Elbows are available in both above or below base configuration. Both styles are three-section, full diameter elbows designed to obtain the smoothest flow from vertical to the horizontal plane with minimum possible losses. Elbows are manufactured from fabricated steel plate. The discharge opening can be either plain-end or flanged, Victaulic® grooves and couplings are also available.

## Pumpshaft

The shaft is manufactured from 416SS. Careful design and tight machining tolerances ensure the pump runs smoothly, with low levels of vibration. Shaft design complies with ANSI B58.1 and AWWA E101 standards.

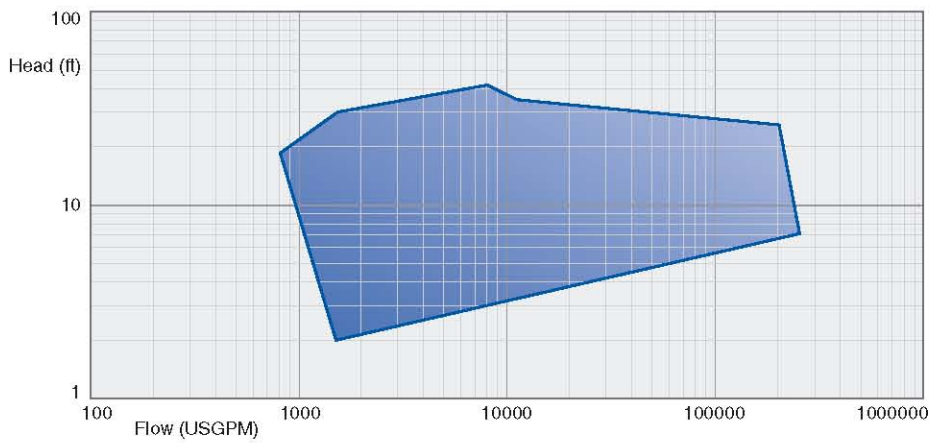
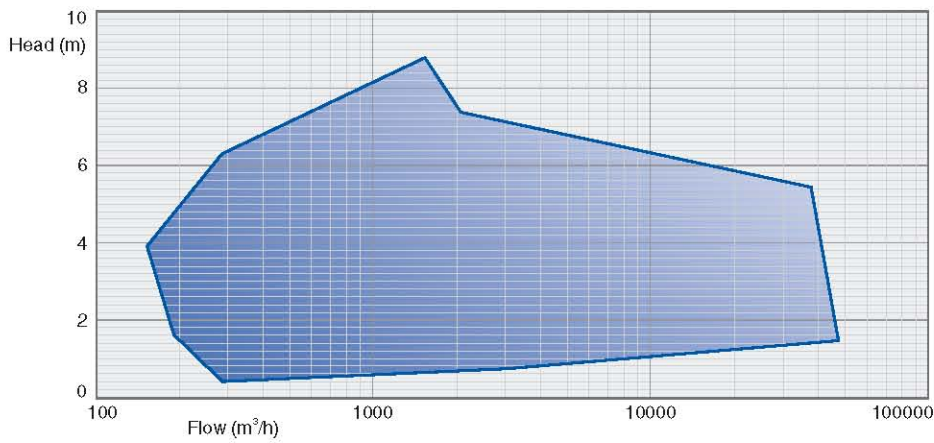
## Bowl

The bowl is flanged and bolts directly to the column pipe. The design combines the energy conversion and diffusion functions of the intermediate bowl and discharge case all in one casing. Bowl bearings are provided to extend bowl and shaft life. A replaceable liner mounted in the discharge bowl is also available to increase pump life.

## Suction Bell

Fluid enters through a suction bell that is reinforced by vanes, lending support to the bell while guiding the liquid flow parallel to the drive shaft for maximum efficiency. An optional strainer restricts entry of any foreign object during pump operation.

# Performance Range



# Operating Data

	JP 50 Hz	JP 60 Hz
Pump sizes	200 to 1,800 mm	8 to 72 inches
Capacity	227 to 57,204 m <sup>3</sup> /h	1,000 to 252,000 USGPM
Head	12.8 m	42 ft
Pressure (size dependant)	17 bar	250 psi
Temperature	-45,56 to 135 °C	-50 to 275 °F