Pump Supplier
To The World

Flowserve is the driving force in the global industrial pump marketplace. No other pump company in the world has the depth or breadth of expertise in the successful application of pre-engineered, engineered and special purpose pumps and systems.

Pumping Solutions
Flowserve is providing pumping solutions which permit customers to continuously improve productivity, profitability and pumping system reliability.

Market Focused
Customer Support
Product and industry specialists develop effective proposals and solutions directed toward market and customer preferences. They offer technical advice and assistance throughout each stage of the product life cycle, beginning with the inquiry.

Dynamic Technologies
Flowserve is without peer in the development and application of pump technology, including:
• Hydraulic engineering
• Mechanical design
• Materials science
• Intelligent pumping
• Manufacturing technology

Broad Product Lines
Flowserve offers a wide range of complementary pump types, from pre-engineered process pumps, to highly engineered and special purpose pumps and systems. Pumps are built to recognized global standards and customer specifications.

Pump designs include:
• Single stage process
• Between bearing single stage
• Between bearing multistage
• Vertical
• Submersible motor
• Rotary
• Reciprocating
• Nuclear
• Specialty
VTP - Vertical Turbine Pump

Comprehensive Product Line
Flowserve manufactures one of the world’s most comprehensive lines of vertical turbine, mixed and axial flow pumps. With more than 300 bowl and impeller medium and high capacity designs, Flowserve provides unsurpassed hydraulic coverage, with specific speeds from 1500 to 5500, to ensure the best pump selection for a wide variety of services.

Offered in a wide range of configurations, construction and materials, Flowserve VTP pumps are typically installed in a wet pit or deep well where NPSH available is usually not a problem. When a wet well is not available or there is insufficient NPSH available, the VTP pump with low NPSH impellers can be mounted in a suction barrel or can, which serves as the holding vessel for the liquid.

Models Available
Flowserve offers several models to best suit application needs, including:
- VTP for general industrial service
- VTP double casing with optional API 610, latest edition design
- VTP-WUC double casing to API 610, latest edition, ASME Code Section VIII and IX, German Pressure Vessel Association (AD) and other international standards
- VTP engineered models for capacities through 160 000 m³/h (750 000 gpm)

Typical Applications
- Municipal water
- Irrigation
- General industrial
- Snow making
- Power generation
- Oil and gas production
- Hydrocarbon processing
- Mining
- Storm water
- Sump service

Complementary Pump Designs
Depending upon application requirements, Flowserve can also provide these designs:
- Vertical, double casing
- Vertical, mixed and axial flow
- Vertical, double suction
- Horizontal, double suction, single stage
The Flowserve vertical turbine pump is a diffuser type, single or multiple stage, heavy duty pump designed for continuous duty in a variety of wet pit and deep well applications. Its extraordinarily broad hydraulic coverage is well complemented by its versatility.

**Operating Parameters**
- Flows to 13,600 m³/h (60,000 gpm)
- Heads to 700 m (2300 ft)
- Pressures to 150 bar (2175 psi)
- Temperatures from -200°C (-328°F) to 300°C (570°F)
- Sizes 150 mm (6 in) to 1375 mm (55 in)
- Settings to 365 m (1200 ft)

**Discharge Head** with ASME Class 125 or 250 flat face flange provides a smooth transition of the pumped liquid into the discharge piping. It also functions as a mounting base for the driver.

**Prelubrication Connection** allows connection to an external lubrication source for deep set pumps.

**Discharge Case** with hydraulic adapter ensures efficient transfer of flow to various column sizes.

**Impellers, Enclosed and Semi-open** designed for maximum coverage of all applications.

**Lock Collet** provides an interference fit between the bowl shaft and impeller to hold the impeller securely in place. Keyed impellers are standard for 500 m (20 in) and larger models and optional on other sizes.

**Suction Bell** is designed to provide efficient flow of the liquid into the eye of the first stage impeller. A suction case is provided for well pump applications.

**Basket Strainer** prevents unwanted debris from getting into the pump. It is designed to exceed Hydraulics Institute parameters. Cone strainers are provided for deepwell installations.

**Vertical Hollow Shaft Motor** allows the pump headshaft to extend through the motor and provides impeller clearance adjustment with an adjusting nut located at the top of the motor. A two-piece headshaft with a motor stand is available when overhead clearance is inadequate to remove the motor.

**Vertical Solid Shaft Motor** supplied by customer request to provide superior shaft support for mechanical seal applications.

**High Pressure Stuffing Box** for working pressures up to 20 bar (300 psi). Other stuffing box options are also available.

**Open Lineshaft Construction** allows the lineshaft bearings to be lubricated by the pumped liquid.

**Column Pipe** available flanged as shown or threaded to minimize well pump casing diameter.

**Bowl Bearings** with high length to diameter ratio on either side of the impeller provide rigid support for the bowl shaft.

**Bearing Bracket with Rubber Lineshaft Bearing** fits integrally between the column sections to maintain alignment and is spaced to provide adequate shaft support. Alternate bearing materials available to suit application.

**Wear Rings**, available as an option for enclosed impellers only, provide a method to renew clearances and pump efficiency.

**Sand Collar** prevents grit from entering the suction bell bearing.

**Bell Bearing** with permanent grease lubrication for maximum shaft support and reliability.
Enclosed Oil Lubrication isolates the lineshaft and bearings from the pumped liquid minimizing maintenance in abrasive services. Alternative lubricants such as clean water or grease can also be used with enclosed lineshaft construction.

Heavy Duty Discharge Head with ASME Class 150, 300, or 600 raised face flange provides a rigid and stable support for high horsepower drivers. The mitred elbow reduces the internal friction loss and reduces turbulence in the discharge head. Cast iron discharge heads are available up to 500 mm (20 in) discharge.

Rigid Adjustable Coupling provides accurate impeller clearance adjustment and overall shafting stability.

Tension Bearing holds the enclosing tube and lineshaft bearings in alignment. It also provides a chamber for the lubricant as it enters the enclosing tube.

Separate Steel Soleplate allows grouting and leveling of the pump discharge head without permanently anchoring the head. The pump can be removed for service without disturbing the grout.

Flanged Column Pipe contains the pressure being generated by the pump and has a rabbet fit between the flanges to maintain alignment.

Keyed Impellers positively locked to the shaft eliminate shaft to impeller movement. Stainless steel slotted keys prevent radial movement while the stainless steel split-ring keys prevent axial movement. Collet mounted impellers are standard for impellers up to 460 mm (18 in), with keyed impellers as an option.

Enclosed Impeller provides close running clearance between the bowl to maintain efficiency over a broad operating range. Full range of semi-open impellers are available for particular applications.

Alignment Screws allow positioning of the larger frame size motor on the discharge head for final alignment of the pump and motor shafts.

Polished Steel Lineshaft, in AISI C-1045 for maximum strength and reliability, transmits the torque from the motor to the bowl shaft and impeller. Other shaft materials are provided to suit application.

Enclosing Tube Stabilizer is integrally welded to the column pipe to maintain the rigidity and alignment of the enclosing tube. Rubber stabilizer for up to 355 mm (14 in) column size and steel stabilizer for 400 mm (16 in) and larger.

Enclosing Tube provides lineshaft protection from the pumped liquid. The lineshaft bearings are spaced at 1.5 m (5 ft) intervals to support the lineshaft.

Keyed Lineshaft Coupling positively locks the sections of shafting together. This is optional for all pump sizes. Threaded coupling is available up to 65 mm (2.5 in) lineshaft.

Discharge Case with Bypass Port allows positive flow of the lubricant into the enclosing tube to lubricate the lineshaft bearings.

Bowl Bearing and Suction Bell Bearing with high length to diameter ratio support the bowl shaft above and below the impeller for maximum reliability.

Bowl and Impeller Wear Rings, optional for enclosed impellers only, provide a method to renew clearances and pump efficiency. Semi-open impellers maintain efficiency by impeller adjustment without dismantling the pump.
VTP pumps can be supplied with:
- Enclosed, open or semi-open impellers
- Open lineshaft construction, or enclosed for better lubrication of the lineshaft bearings in abrasive services
- Product or oil bearing lubrication
- Flanged or threaded column pipe
- Cast iron or fabricated steel discharge head
- Above or below ground discharge variations
- Dry or submersible electric motors, variable speed drive, engines with right angle gears, steam turbines
- Variety of mechanical seals
- Motor steady bushings for a two-piece headshaft

**Thrust Balanced Impeller**
- For extremely high pressure or deep settings to reduce thrust loads
- Integral or separate wear ring

**Key and Thrust Ring Construction for Impellers**
- Optional on 450 mm (18 in) bowls and smaller
- Split radial key for thrust load
- Axial key for torque
- For extreme temperature applications

**O-Ring Bowl**
- For high pressure applications
- Wear rings for bowls and enclosed impeller

**Adjustable Flanged Coupling**
- For easy maintenance of mechanical seal

**Bearings Materials**
- Metal
- Rubber
- Carbon
- Composite

**VPC Double Casing**
- General Industrial
- API 610, latest edition
- Diffuser type design
- Services with limited NPSH available
- Single or multiple stage
- Large eye first stage impeller for low NPSH characteristic

**VTP Range Chart**

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Flowserve Engineered Services is focused on providing customers with uncompromising service and support, where and when needed. Dedicated to delivering the highest quality support, Engineered Services integrates its extensive pump and materials engineering knowledge with creative service solutions. Engineered Services fully understands the business challenges facing customers and is prepared to manage solutions to succeed as a team.

A worldwide network of service and repair centers staffed by highly skilled engineers and technicians is available around the clock, seven days a week to respond to customer queries, to evaluate and troubleshoot problems and to provide reliable solutions.

Flowserve has long served industries requiring superior equipment performance and service life. Whether user needs involve on-site technical assistance or broader project planning with full turnkey responsibility, Flowserve Engineered Services will deliver professional, reliable results.