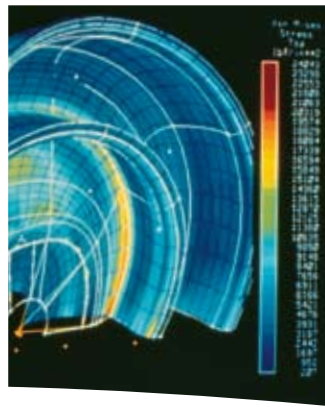




VPC
Vertical Turbine, Double Casing Pump



Experience In Motion



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.

Life Cycle Cost Solutions

Flowserve is providing pumping solutions which permit customers to reduce total life cycle costs and 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.

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

Product Brands of Distinction

ACEC™ Centrifugal Pumps

Aldrich® Pumps

Byron Jackson® Pumps

Cameron® Pumps

Durco® Pumps

Flowserve® Pumps

IDP® Pumps

Jeumont-Schneider™ Pumps

Niigata Worthington Pumps

Pacific® Pumps

Pleuger® Pumps

Scienco® Pumps

Sier-Bath® Rotary Pumps

TKL™ Pumps

United® Centrifugal Pumps

Western Land Roller® Irrigation Pumps

Wilson-Snyder® Pumps

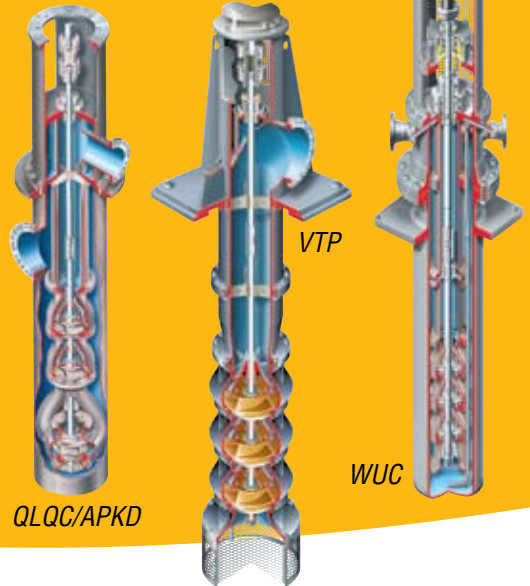
Worthington® Pumps

Worthington Simpson® Pumps

VPC
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Double Casing
Pump



Complementary Pump Designs



Unequaled Hydraulic Coverage
and Design Flexibility

The Flowserve VPC is a double casing, diffuser type vertical turbine pump. Available in single or multistage construction, as well as standard and API 610 compliant designs, the VPC incorporates the proven hydraulics of the Flowserve VTP vertical turbine pump into a double casing configuration. It is designed for continuous duty applications and is particularly well suited for services with limited NPSH.

Engineered Flexibility

VPC pumps are available in a wide variety of configurations, constructions and materials to suit application requirements. Among the options are:

- Standard and API 610 (VS6), latest edition configurations
- Enclosed or semi-open impellers, keyed or collet mounted
- Bowl and enclosed impeller wear rings
- Fabricated steel discharge head and suction can
- Sealing configurations
 - Packed box with flexible graphite packing
 - Single or dual mechanical seal
- Above or below ground suction flanges
- Multiple drivers
 - Electric motors, solid or hollow shaft
 - Engines with right angle gears
 - Steam turbines
- Internal and external suction can drains
- Separate axial thrust bearing assembly

Applications

- Hydrocarbon booster
- Hydrocarbon transfer
- Pipeline booster
- Petrochemical transfer
- Condensate
- Water supply
- Water transfer
- Snowmaking
- Brine injection
- Heater drain

Complementary Pump Designs

Flowserve also can provide the following complementary pumps:

- VTP vertical turbine, wet pit pump
- APKD, QLC and QLQC double casing, double suction, twin volute pumps
- WUC API 610 (VS6) vertical, multistage double casing process pump
- VCT vertical mixed flow pump
- LNN between bearing, axially split, single stage, double suction pump

VPC
Vertical Turbine,
Double Casing
Pump

The VPC is designed for a variety of applications where a wet well is not available or there is limited NPSH available. Its broad hydraulic coverage is well complemented by its versatility in applications. The VPC meets the design requirements of international standards, including ANSI, AWWA, ASME and Hydraulic Institute.

Operating Parameters

- Flows to 13 600 m³/h (60 000 gpm)
- Heads to 1070 m (3500 ft)
- Pressures to 100 bar (1450 psi)
- Temperatures from -45°C (-50°F) to 230°C (450°F)

Solid Shaft Motor includes thrust bearing to withstand the total hydraulic thrust as well as the rotor weight. Shaft extension allows motor to be coupled to the pump

Fabricated Steel Discharge Head with ASME Class 150 or 300 slip-on flanges. Functions as a mounting base for the motor or other driver combination

Rigid, Adjustable Flanged Coupling provides the proper impeller clearance adjustment

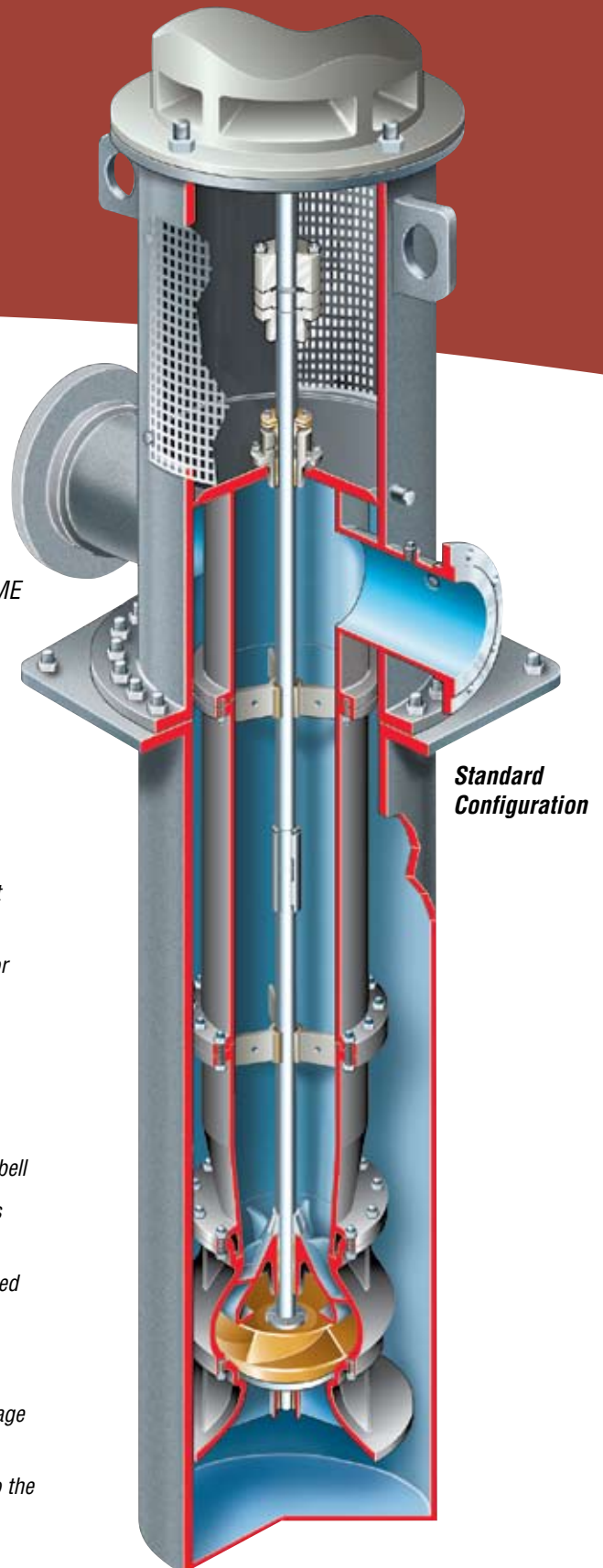
Fabricated Steel Suction Can creates optimum hydraulic conditions through the suction flange inlet into the suction bell

Open Lineshaft Construction allows the lineshaft bearings to be lubricated by the pumped fluid

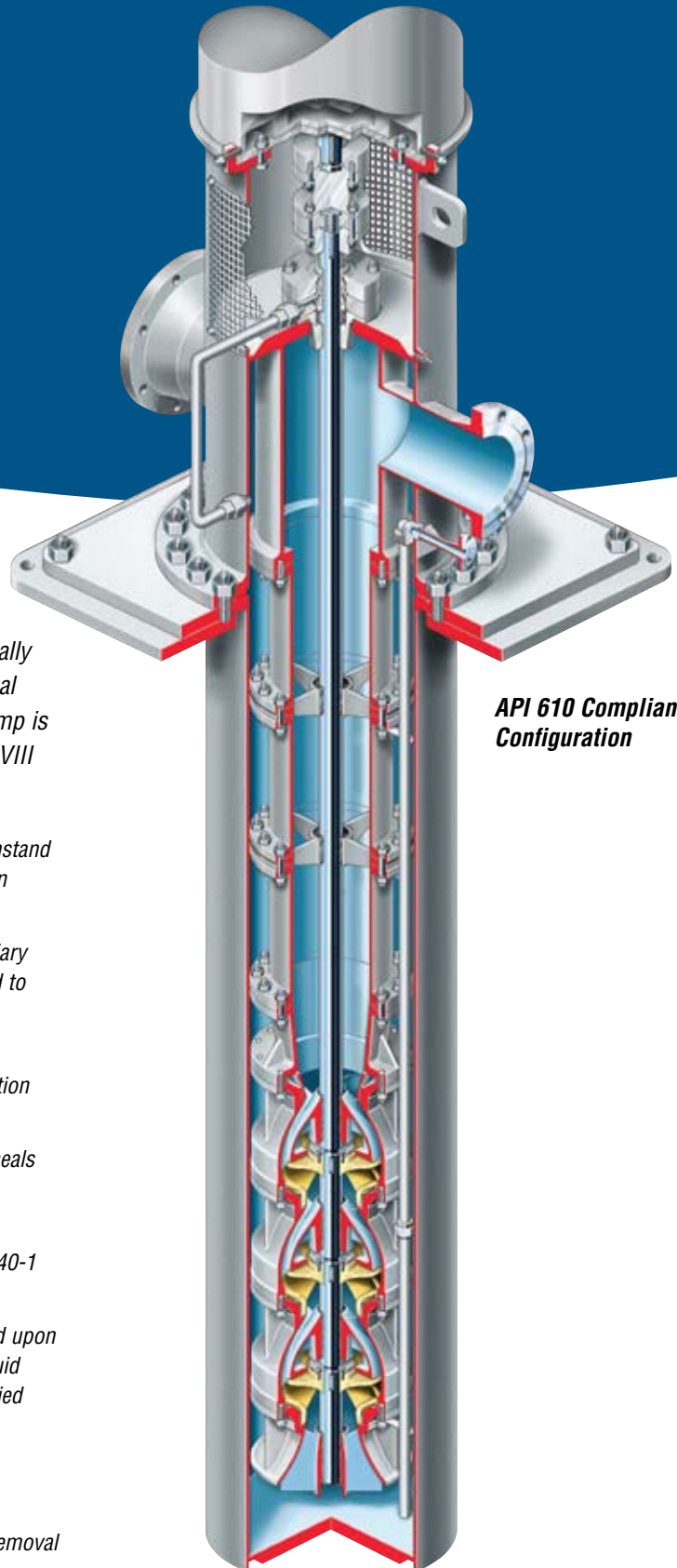
Bowls are designed with multiple diffuser vanes and flanged construction. Bowl bearings on either side of the impeller provide rigid support to the shaft

Enclosed or Semi-Open Impellers are cast to provide smooth passageways for more efficient fluid flow. First stage impeller available with low NPSH design

Suction Bell is designed to provide efficient fluid flow into the eye of the first stage impeller



**VPC
API 610 (VS6)
Vertical Turbine,
Double Casing
Pump**



**API 610 Compliant
Configuration**

Design flexibility makes the VPC ideal for process applications. For the aggressive applications typically found in the oil and gas, hydrocarbon and chemical industries, a heavy-duty VPC is available. This pump is compliant with API 610 (VS6) and ASME Section VIII and IX design requirements.

Heavy-Duty ASME Pressure Casing is designed to withstand the maximum allowable working pressure (MAWP) even under API's specified corrosion conditions

Weld-Neck Flanges on all suction, discharge and auxiliary connections provide increased MAWP and are designed to withstand API nozzle loadings

One-Piece Pump Shaft eliminates threaded lineshaft couplings and the increased shaft run-out, higher vibration and weaker joints associated with them

Seal Chamber with jackscrews accepts single or dual seals and enables mating parts to be separated easily during disassembly. Plan 13 provides continuous venting

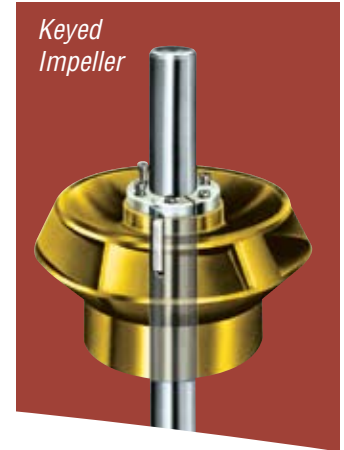
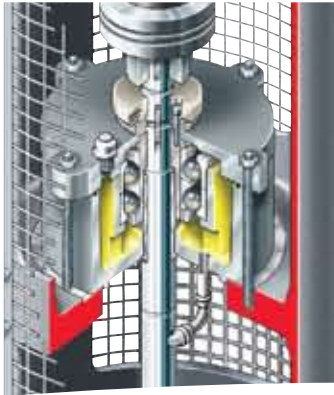
Dynamically Balanced Enclosed Impellers per ISO 1940-1 grade G2.5

Flanged Vent Connection allows the pump to be vented upon initial operation. It can also be pressurized to purge liquid from the suction can when a suction can drain is supplied

Studs and Nuts prevent thread damage common with capscrew removal

Precision Rigid, Adjustable Flanged Spacer Coupling provides easy impeller lift adjustment and allows seal removal without disturbing the motor

Options and Technical Data



Integral Axial Thrust Bearing Assembly

The axial thrust bearing assembly withstands the total hydraulic thrust as well as the rotor weight. Self-lubricating anti-friction bearings are utilized for standard applications. The integral axial thrust bearing assembly is available on VPC pumps with IEC motors.

Mechanical Seal

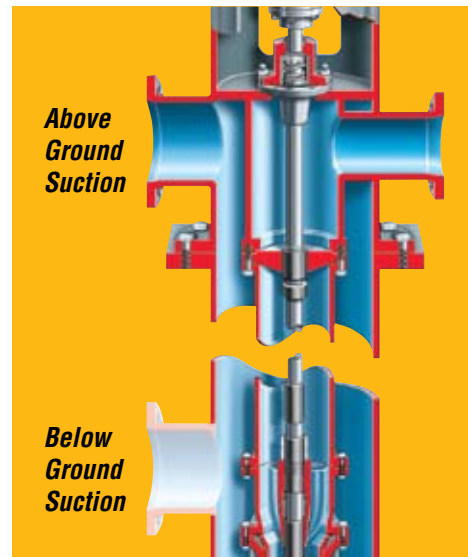
- Pressures to 105 bar (1500 psi)
- No leakage
- Easy access for maintenance and parts replacement
- Single and dual arrangements available
- Multiple seal piping plans available

Available Options

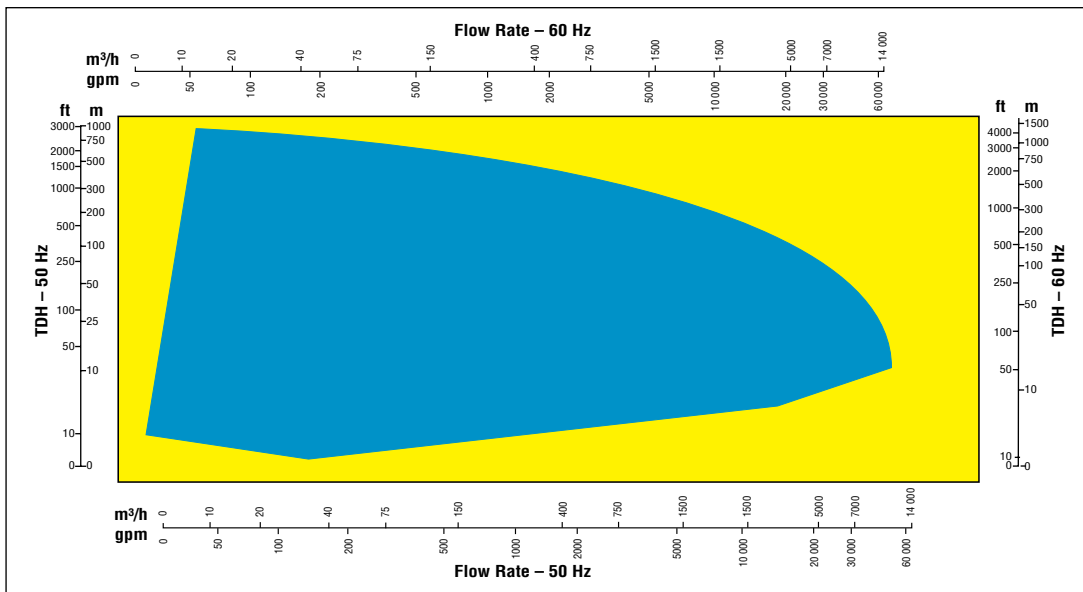
- O-ring construction
- Bowl and impeller wear rings
- Keyed impellers

Suction Configurations

VPC pumps are available with above or below ground suction flanges to suit site conditions.



VPC Range Chart



Global Service
and Technical
Support



Life Cycle Cost Solutions

Typically, 90% of the total life cycle cost (LCC) of a pumping system is accumulated after the equipment is purchased and installed. Flowserve has developed a comprehensive suite of solutions aimed at providing customers with unprecedented value and cost savings throughout the life span of the pumping system. These solutions account for every facet of life cycle cost, including:

Capital Expenses

- Initial purchase
- Installation

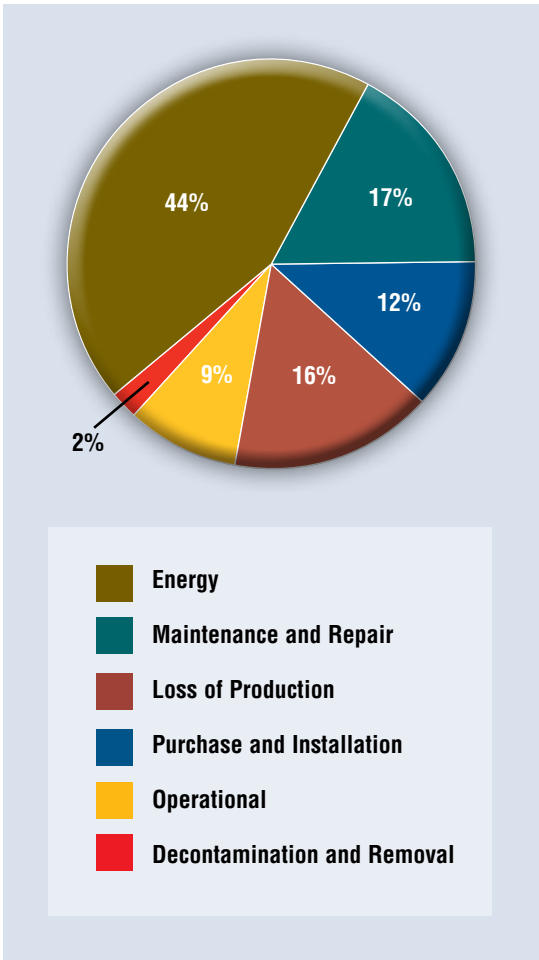
Operating Expenses

- Energy consumption
- Maintenance
- Production losses
- Environmental
- Inventory
- Operating
- Removal

Innovative Life Cycle Cost Solutions

- New Pump Selection
- Turnkey Engineering and Field Service
- Energy Management
- Pump Availability
- Proactive Maintenance
- Inventory Management

Typical Pump Life Cycle Costs¹



¹ While exact values may differ, these percentages are consistent with those published by leading pump manufacturers and end users, as well as industry associations and government agencies worldwide.



USA and Canada

Flowserve Corporation
5215 North O'Connor Blvd.
Suite 2300
Irving, Texas 75039-5421 USA
Telephone: 1 937 890 5839

Europe, Middle East, Africa

Flowserve Corporation
Gebouw Hagepoint
Westbroek 39-51
4822 ZX Breda
Netherlands
Telephone: 31 76 502 8920

Latin America

Flowserve Corporation
Boulevard del Cafetal
Edificio Ninina, Local 7
El Cafetal - Caracas
Venezuela 1061
Telephone: 58 212 985 3092
Telefax: 58 212 985 1007

Asia Pacific

Flowserve Pte. Ltd.
200 Pandan Loop #06-03/04
Pantech 21
Singapore 128388
Telephone: 65 6771 0600
Telefax: 65 6779 4607

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To find your local Flowserve representative:

For more information about Flowserve Corporation,
visit www.flowserve.com or call USA 1 800 728 PUMP (7867)