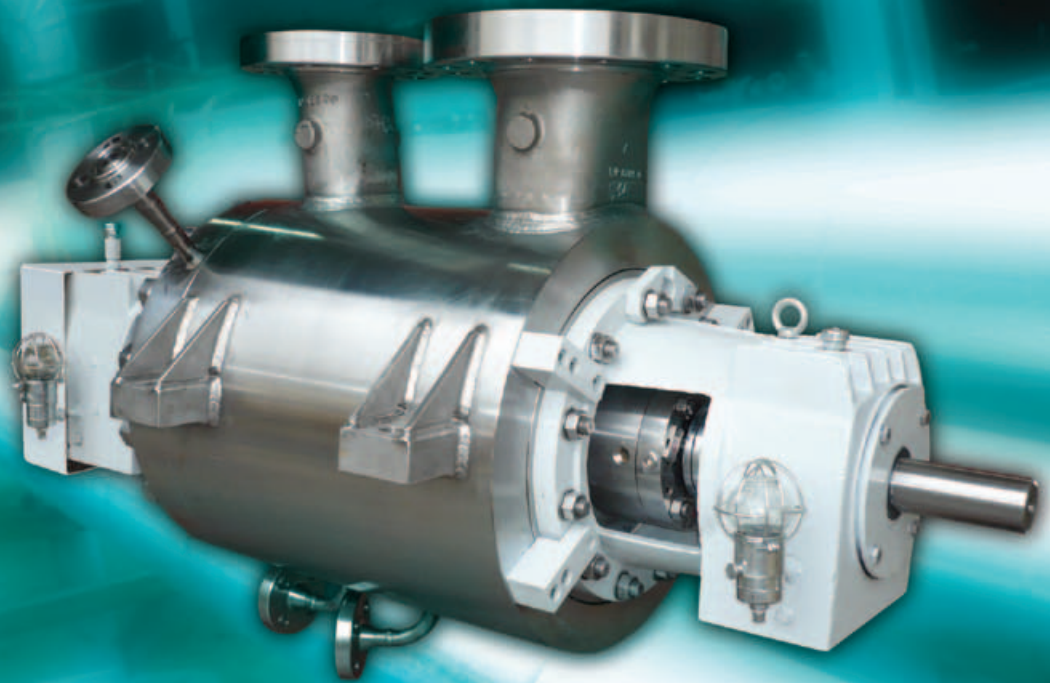
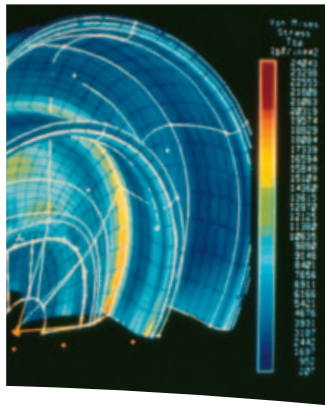




WXB
*Barrel Pump for the Refinery
and Petrochemical Industries*



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

Calder™ Energy Recovery Devices

Cameron™ Pumps

Durco® Process Pumps

Flowserve® Pumps

IDP® Pumps

Lawrence 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

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The Preferred Supplier of Process Barrel Pumps

For over 150 years, Flowserve has pioneered virtually every significant advancement in petroleum-related pumping technology. Its ability to understand the industry's high-pressure pumping needs is evidenced by its numerous innovative pump designs and the WXB pump is no exception.

WXB pumps are manufactured to individual customer specifications, which are often based on ISO 13709/API 610 (BB5). Rated for discharge pressures up to 150 bar (2175 psi), they are ideal for general barrel pump applications and incorporate many of the features commonly found on pumps designed for more stringent conditions.

A Foundation of Innovation and Leadership

Since 1926 when it developed the first double-case pump for hot oil, Flowserve has been in the vanguard of pump development for the refinery industry. This leadership position was reinforced in 1934 with the introduction of the first high-pressure water and CO₂ injection pumps.

Reflecting its leadership position, Flowserve was heavily involved in establishing the ISO and API (BB5) standard governing the construction of double-case pumps and continues to play a critical role in the committee as the standard evolves. From water injection and pipeline to charge and decoking, Flowserve is the preferred provider of double-case pump technology worldwide.

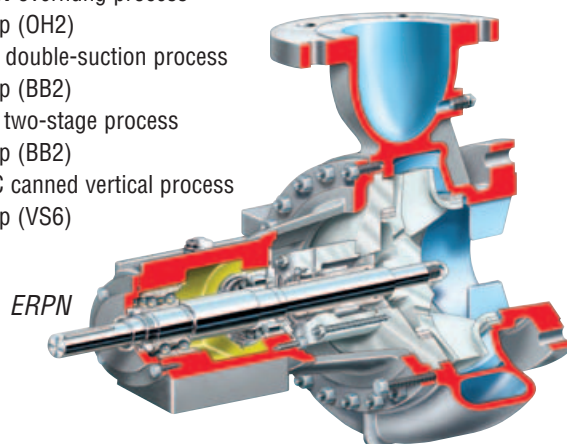
Typical Applications

- Pipeline transfer
- Lean amine
- Reactor product transfer
- Boiler feed
- Ethylene feed
- Refinery charge
- Column bottoms recycle

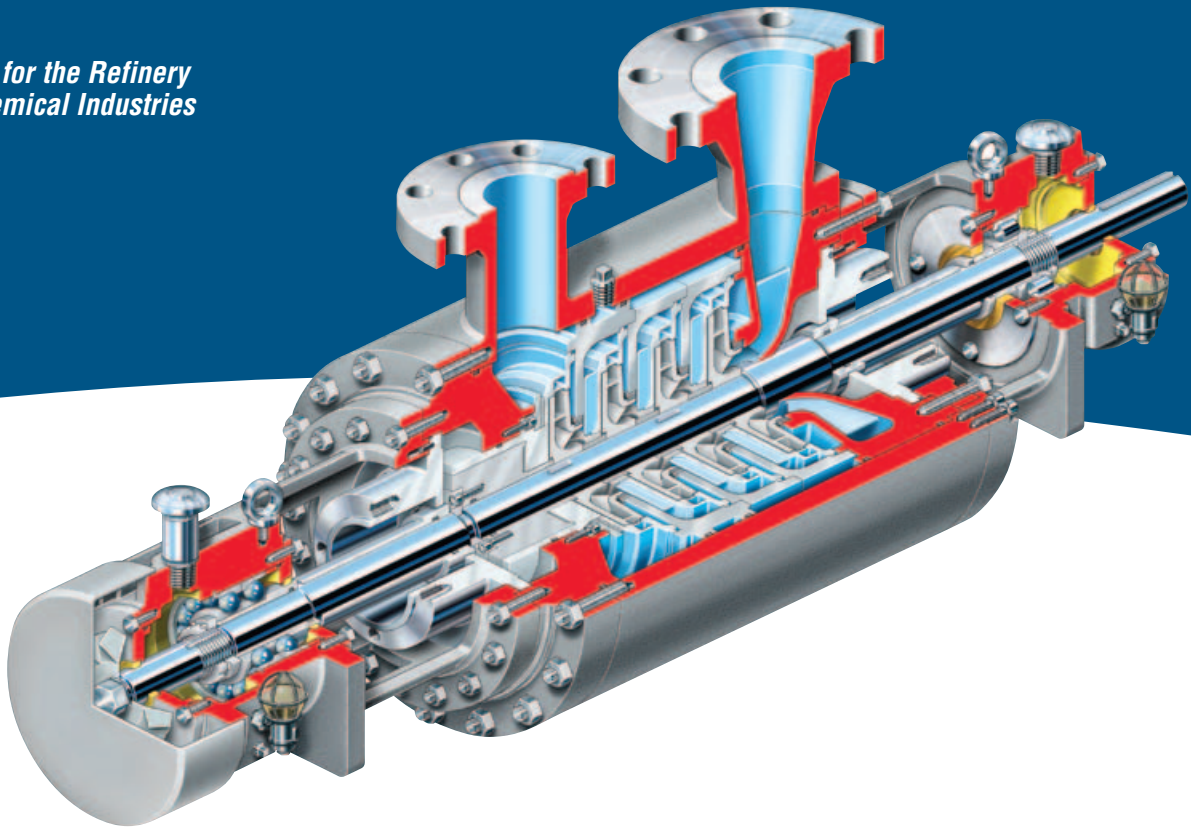
Complementary Pump Designs

Flowserve offers a full range of horizontal and vertical process pumps for the refinery and petrochemical industries. These pumps are CE and ATEX compliant. Examples include:

- ERPN overhung process pump (OH2)
- HDX double-suction process pump (BB2)
- HED two-stage process pump (BB2)
- WUC canned vertical process pump (VS6)



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The WXB is an API style barrel pump that offers maintenance-friendly features such as a cartridge design and renewable wear rings. It is designed for users looking for a cost-effective high-pressure process pump with the safety attributes of a double-case design.

Boasting a compact, space-saving design and convenient cartridge-style construction, the WXB is field proven in oil refineries and petrochemical plants throughout the world. It is an ideal choice for medium capacity and intermediate pressure barrel pump services.

Operating Parameters

- Flows to 300 m³/h (1320 US gpm)
- Heads to 1200 m (3940 ft)
- Pressures to 150 bar (2175 psi)
- Temperatures to 200°C (390°F)

Features and Benefits

Generous Shaft Diameter results in low shaft deflection, thereby increasing bearing, mechanical seal and wear ring life

Renewable Wear Rings are standard on all casings and impellers to permit economical restoration of running clearances

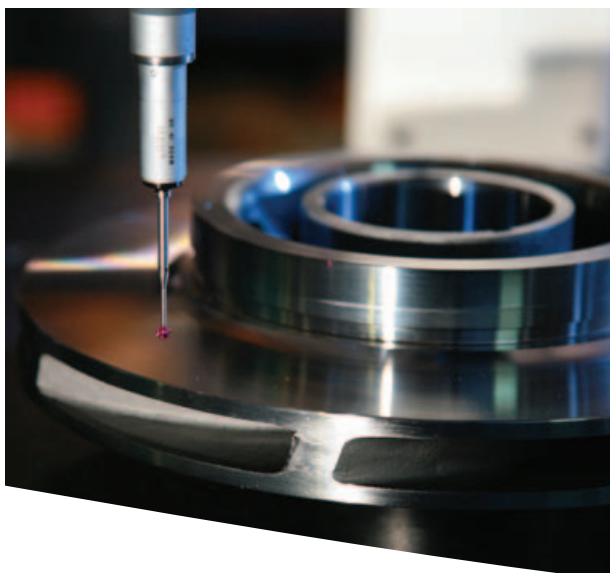
Radially Split Inner Case Sub-Assembly consists of diffusers and channel rings. This design allows for balanced radial loads and produces a compact configuration

Barrel Casing is designed to ASME pressure vessel code and meets API requirements to withstand twice the rated nozzle loads. The casing design incorporates centerline mounting for symmetrical thermal expansion around mounting points

Nozzles are top suction, top discharge as standard or can be configured side suction, side discharge as an alternate

DIN or ANSI Flange Connections are available to meet customer and application requirements. Other flange standards available upon special request

Cartridge-Type Mechanical Seals are standard and minimize downtime



Barrel Casing

The barrel casing houses the pump cartridge and is a single pressure level design. The pressure containment parts are provided in the following materials:

- Standard construction: forged carbon steel
- Optional construction
 - Centrifugally cast stainless steel
 - Centrifugally cast duplex stainless steel
 - Centrifugally cast low-temperature carbon steel

Alternative materials are available as required to suit individual service requirements.

Precision Cast Impellers

Impellers are precision cast and dynamically balanced to ensure hydraulic efficiency and performance repeatability. Other notable features include:

- Multiple hydraulic selections within the same frame size allow pumps to be sized to operate in the best efficiency range
- Large-eye first-stage impeller optimizes NPSH characteristics
- Individual impellers are statically and dynamically balanced to minimize vibration

ISO 21049/API 682 Seal Chamber

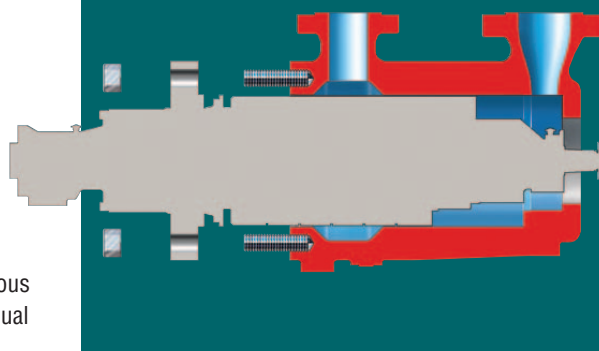
The seal chamber of the WXB is fully compliant with ISO 21049/ API 682. It readily accommodates numerous types of mechanical seals, including: normal single, dual pressurized and unpressurized seals.

Multivane Diffuser Construction

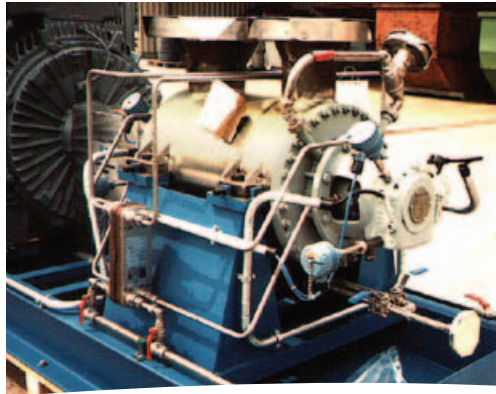
With its radially split inner case sub-assembly, the diffuser construction results in near-balanced radial loads over the entire flow range, including partial-load operation. Ceramic core casting technology produces exceptionally smooth surfaces, enhancing hydraulic efficiency and extending operational life.

Standard Back Pull-Out, Cartridge-Style Construction

The standard construction cartridge-style inner case sub-assembly includes the rotor, diffusers, discharge head, suction head, seals and bearing assemblies. This cartridge-style construction eases maintenance by allowing quick replacement of the entire sub-assembly. Major assembly, disassembly and mechanical seal and rotor setting can then be performed in the shop rather than in the field.



*Options and
Technical Data*



Tested To Ensure Performance

Each WXB pump is performance tested in accordance with ISO, API and Hydraulic Institute standards to ensure the unit meets the specified design conditions. Pumps can be tested at full flow, pressure and speed.

Hydraulic Options

With the industry's most extensive and sophisticated library of hydraulic designs, Flowserve can offer customized and optimized pump performance for the most difficult applications. Flowserve engineers employ leading-edge techniques that can extend the operating range of the pump or mitigate the risks of damage caused by cavitation.

Axial Thrust Balancing Device

The WXB pump employs an innovative balancing device that creates nearly constant axial thrust throughout the pump's operating range. This results in minimal balance line flow leading to improved efficiency and performance at all loads.

Anti-Friction Bearings

Radial bearings are anti-friction rolling element type and thrust bearings are back-to-back angular contact type. Bearings are sleeve mounted to facilitate removal when service for the bearings or the mechanical seals is required.

Bearing Lubrication

The WXB's bearing lubrication system includes an oil bath, a constant level oiler and an oil sight glass. Each bearing housing also is equipped with replaceable seal rings and deflectors. This system enables:

- Complete oil penetration without foaming
- Proper oil level in the housing
- Visual oil level verification

Purge oil and pure oil mist lubrication systems are optional.

Pump Diagnostics and Prognostics

With a new series of intelligent pump products, Flowserve is on the pioneering frontier of pump intelligence. Flowserve has developed pre-engineered solutions that integrate electronics, computer technology, sensors and actuating equipment. These easy-to-use, pump-specific solutions allow barrel pump operators to benefit from monitoring, equipment protection and control, diagnostics and predictive tools that significantly decrease overall pump life cycle costs. Intelligent Pump Solutions from Flowserve help end users eliminate costly downtime and repairs caused by:

- Cavitation
- Pump overloads
- Excessive wear or rubbing
- Blocked lines
- Dry running



**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

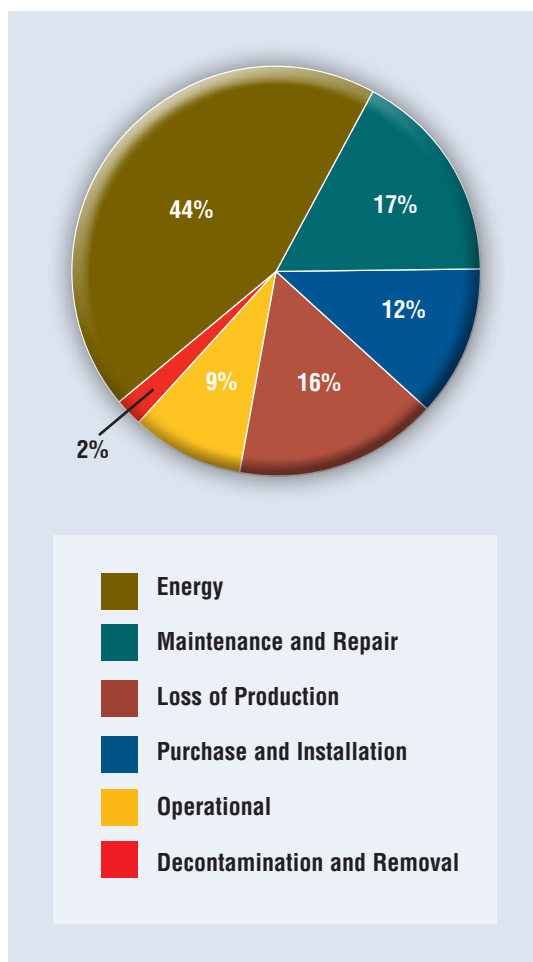
Operating Expenses

- 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.



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