



# **WXB** **Medium-duty Barrel Pump for** **Refinery and Petrochemical Applications**



*Experience In Motion*

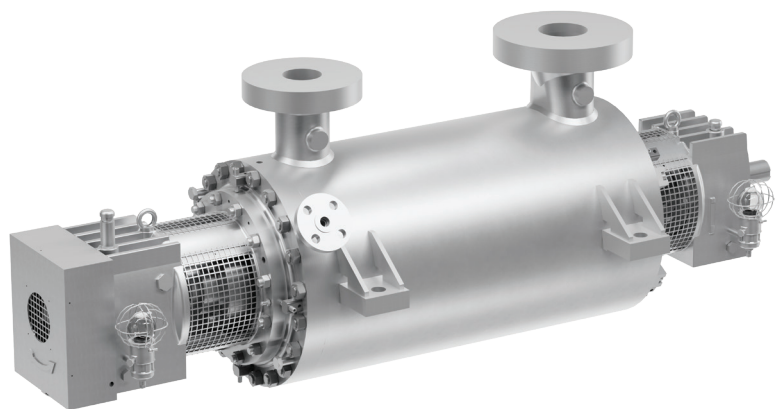


## Reliable, cost-effective barrel pump performance

The WXB pump is an API-style barrel pump that offers features common to API 610 latest edition pumps, such as a cartridge design and renewable wear rings. It is designed for users who need the hydraulic range of a ring section pump, but demand the safety and maintenance attributes of a barrel pump.

Boasting a compact, space-saving design, the WXB pump is field-proven in oil refineries and chemical, power and hydrocarbon plants throughout the world. It is an ideal choice for lower-capacity and lower- to medium-pressure services. Multiple hydraulic selections allow pumps to be sized to operate in the best efficiency range.

The WXB pump is manufactured to individual customer specifications, based on API 610 (BB5). Rated for discharge pressures up to 200 bar (2,900 psi), it is ideal for general barrel pump applications and incorporates many of the features commonly found on pumps designed for more stringent conditions.



## Optimal hydraulic performance

With the industry's most extensive and sophisticated library of hydraulic designs, Flowserve can offer the WXB pump with customized and optimized pump performance, even in 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.

## Operating parameters

- Flows to 300 m<sup>3</sup>/h (1,320 US gpm)
- Heads to 1,200 m (3,940 ft)
- Pressures to 150 bar (2,175 psi) as standard; to 200 bar (2,900 psi) on back-to-back configuration
- Temperatures to 300°C (572°F)

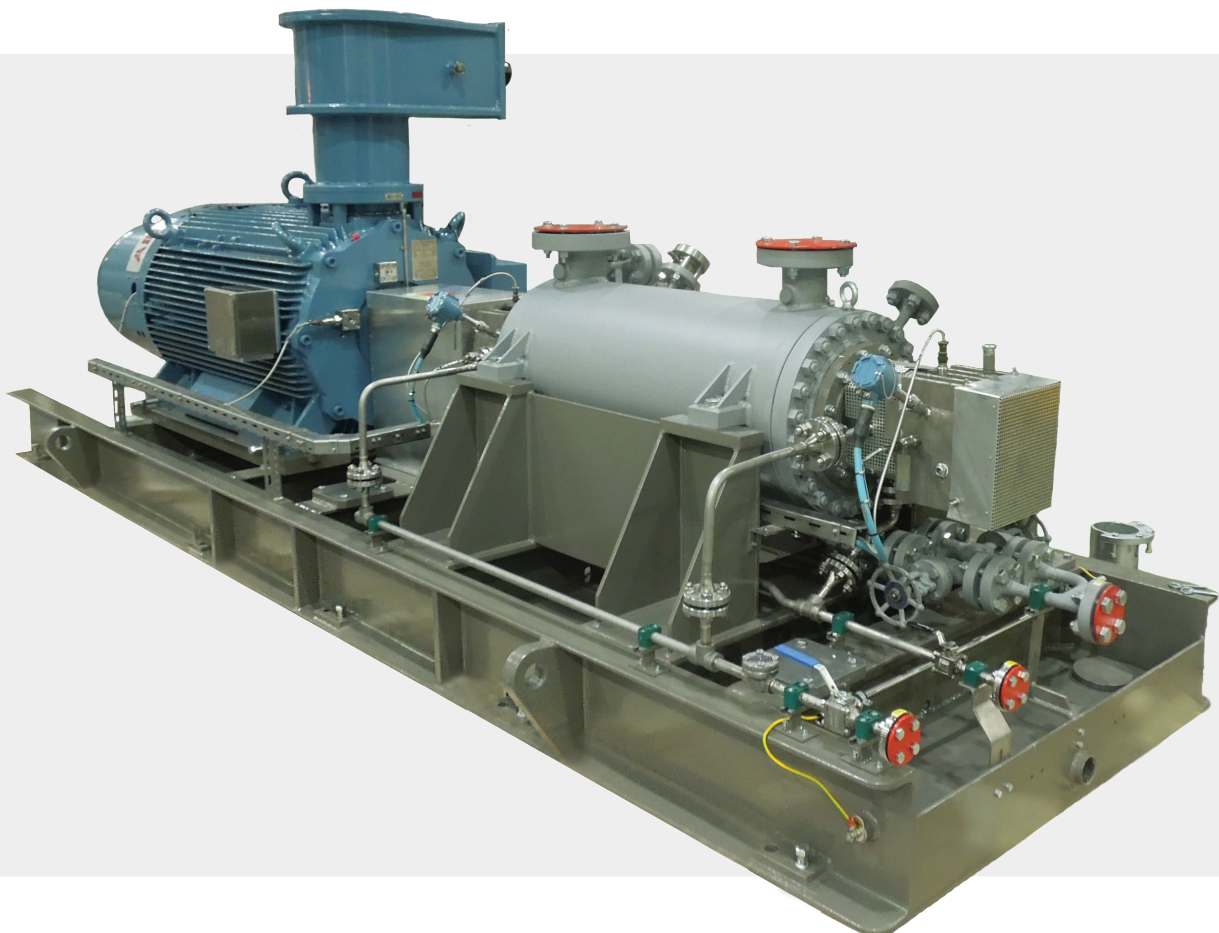
## Typical applications

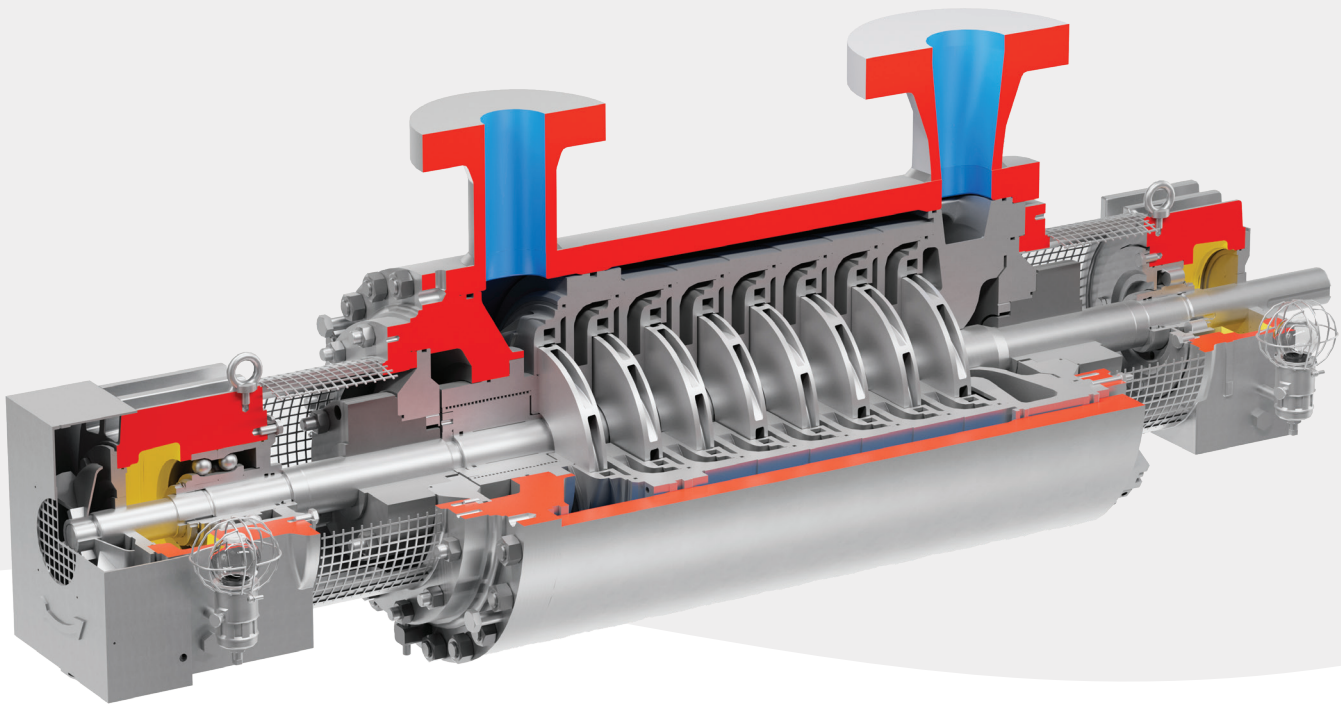
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|----------------------------|-------------------------------|-------------|------------------------|
| • Pipeline transfer        | • Ethylene feed               | • Crude oil | • Hydrocarbon charge   |
| • Lean amine               | • Refinery charge             | • Solvents  | • Condensate           |
| • Reactor product transfer | • Column bottoms recycle      | • Naphtha   | • Refinery boiler feed |
| • Boiler feed              | • Produced water re-injection | • Wash oil  | • Booster and recycle  |

## A foundation of innovation and leadership

Since 1926 when the company developed the first double case pump for hot oil, Flowserve has been in the vanguard of pump development for the oil and gas industry. This leadership position was reinforced in 1934 with the introduction of high-pressure water and CO<sub>2</sub> injection pumps and later cemented in 1982 when it built the world's largest water injection pump: a 17,900 kW (24,000 hp) behemoth.

Reflecting its leadership position, Flowserve was heavily involved in establishing the API 610 (BB5) standard governing the construction of double case pumps. From water injection and pipeline to charge, decoking and many other applications, Flowserve is the preferred provider of double case pump technology worldwide.





## Double case dependability and safety

**Robust 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.

**Multi-vane diffuser construction** produces balanced radial loads over the entire flow range, including partial load operation.

**Compact radially split inner case subassembly** includes radial and thrust bearings to facilitate field maintenance.

**Innovative thrust balancing device** creates nearly constant axial thrust, resulting in minimal balance line flow and improving efficiency at all loads.

**Generous shaft diameter** results in low shaft deflection, thereby increasing bearing, mechanical seal and wear ring life.

**Precision cast impellers** are dynamically balanced to ensure hydraulic efficiency and performance repeatability. A large-eye, first-stage impeller optimizes NPSH characteristics. Each assembled rotor is checked for run-out to minimize vibration.

**ASME or DIN flanges** are available to meet application requirements. Other flange standards available upon special request.

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

**API 682-compliant seal chambers** readily accommodate numerous types of mechanical seals, including: normal single, dual pressurized and unpressurized seals. Cartridge-type mechanical seals are standard and minimize downtime.

**Renewable wear rings** are standard on all casings and impellers to permit economical restoration of running clearances.

## Rated for maximum safety

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

- Standard construction: centrifugally cast carbon steel
- Optional construction
  - Centrifugally cast stainless steel
  - Centrifugally cast duplex or super duplex stainless steel
  - Centrifugally cast low-temperature carbon steel

Alternative materials are available as required to suit service requirements.

## Robust bearing system

The standard bearing system is robust and capable of meeting a wide range of application requirements. It consists of anti-friction, rolling element type radial bearings and back-to-back angular contact thrust bearings. Bearings are sleeve mounted to facilitate removal when service for the bearings or the mechanical seals is required.

API-compliant, direct shaft-mounted bearings are available as an option.

## Bearing lubrication

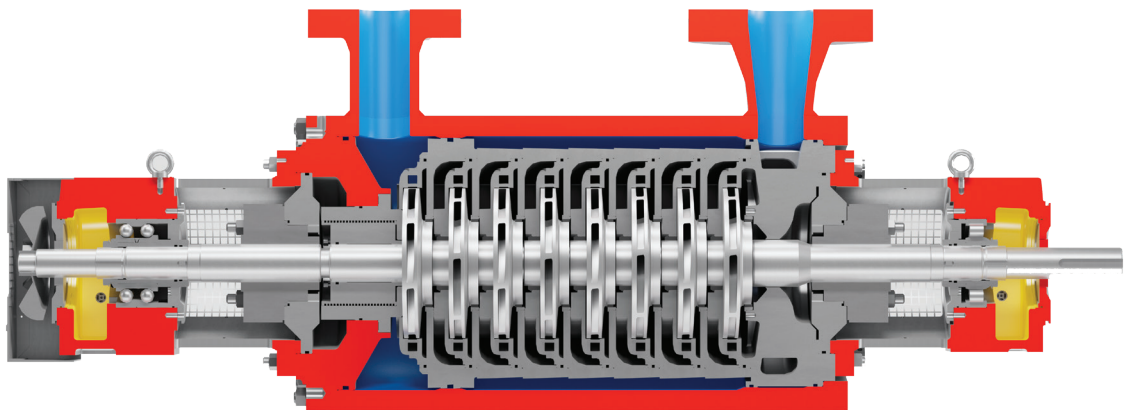
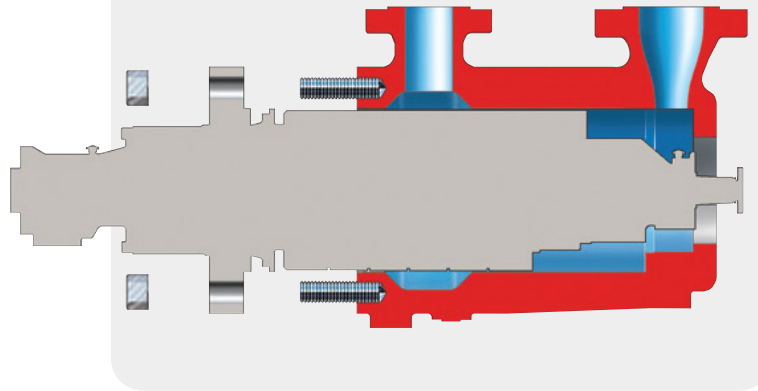
The standard lubrication system includes an oil bath, a constant level oiler and an oil sight glass. Each bearing housing also is equipped with replaceable seal rings and deflectors. This system enables:

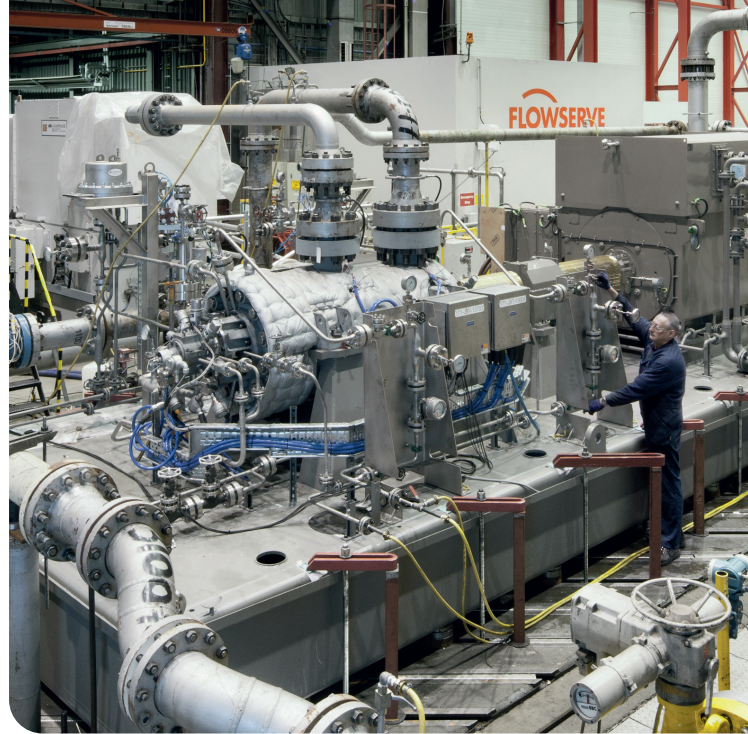
- Complete oil penetration without foaming
- Proper oil level in the housing
- Visual oil level verification

Purge oil and pure oil mist lubrication systems are optional.

## Standard back pullout cartridge-style construction

The standard construction cartridge-style inner case subassembly 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 subassembly. Major assembly, disassembly, and mechanical seal and rotor setting can be performed in the shop, rather than in the field.

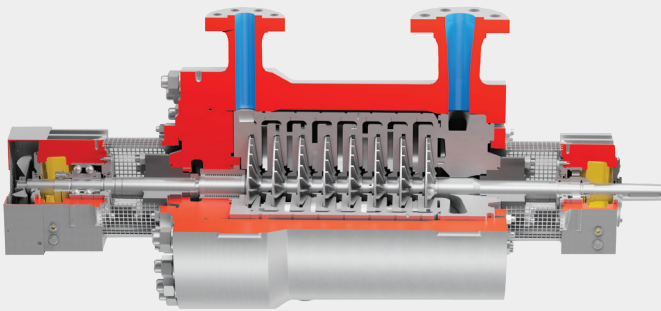




## Available low-flow configuration

An extension of the well-proven WXB product range, the WXBB pump incorporates Barske-style impellers to minimize axial thrust and provide stable low-flow performance. It is a reliable, direct-drive solution for low-flow, high-head applications.

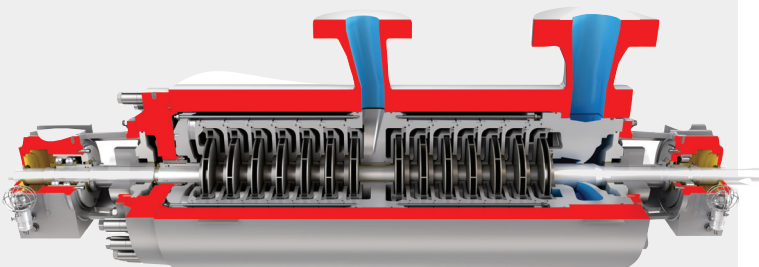
- Constantly rising head curve induces stable operation at low flows.
- API-compliant vibration levels result in high reliability and extended mean time between planned maintenance.
- Direct drive operation at two-pole running speed eliminates the need for V-belts or gearboxes



*WXBB low-flow, high-head pump*

## Optional opposed impeller configuration

A back-to-back impeller configuration is available for applications requiring higher discharge pressure. The center bushing and sleeve improve rotor dynamics and ensure rotor stability for pumps with higher stage counts.



## 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.

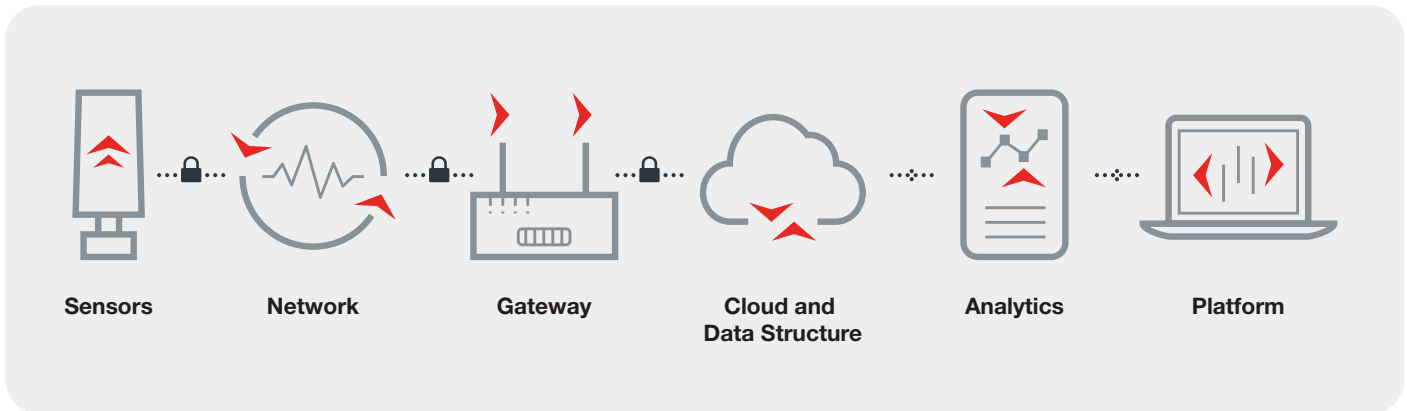
## Global network for engineering, repair and reliability services

When you need maintenance or repairs — planned or unplanned, after-hours or during an emergency — Flowserve can help. Our team can quickly join you on-site at your plant or remotely to provide diagnostic services as well as critical parts, management and support.

The Flowserve global network of Quick Response Centers (QRCs) enables customers to quickly turn around any repair or remanufacturing project, including plant shutdowns. Our technicians and engineers are fluid motion and control experts. We specialize in repairing and upgrading engineered pumps, valves, seals and automation equipment. Flowserve Quick Response Centers provide machining, repair, assembly, testing, automation packages and inventory. As a result, you can minimize downtime and carrying costs.

And, we service most types of rotating equipment, regardless of the original manufacturer.

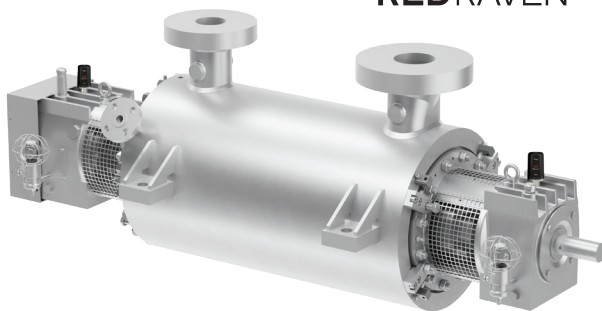
Contact the nearest Quick Response Center to extend service life and optimize performance.



## Increase uptime with predictive maintenance

Flowserve WXB and WXBB barrel pumps are RedRaven Ready. RedRaven is a predictive maintenance service from Flowserve that improves plant performance by detecting anomalies in pumps, valves and seals. It enables you to predict when and why your critical assets may experience issues so you can take preventive action.

RedRaven is a complete end-to-end proactive maintenance solution. It enables you to leverage the internet of things (IoT) for a connected platform of smart products, software and services. It gives you the tools you need to monitor, analyze and predict the performance of your pumps, seals and valves, as well as the insights you need to make more informed decisions for improving your plant's reliability, efficiency, productivity and bottom line.



### A ready-to-deploy, scalable solution

Most Flowserve fluid motion and control equipment is RedRaven Ready. That means it's designed and built to accept RedRaven wired or wireless sensors using cloud architecture for condition monitoring and predictive analytics services.

RedRaven Ready pumps, seals and valves securely connect to an IoT platform that includes hazardous area-certified equipment sensors, secure communication, performance analytics and trend reporting tools — all tailored to your plant's unique needs.

Options include:

**Condition monitoring:** Enables you to capture asset performance data for analysis

**Predictive analytics:** Applies data analysis software and algorithms to help you identify and diagnose equipment problems

For more information on RedRaven, contact your Flowserve representative or visit [www.flowserve.com/redraven](http://www.flowserve.com/redraven)



Flowserve Corporation  
5215 North O'Connor Blvd.  
Suite 700  
Irving, Texas 75039-5421 USA

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