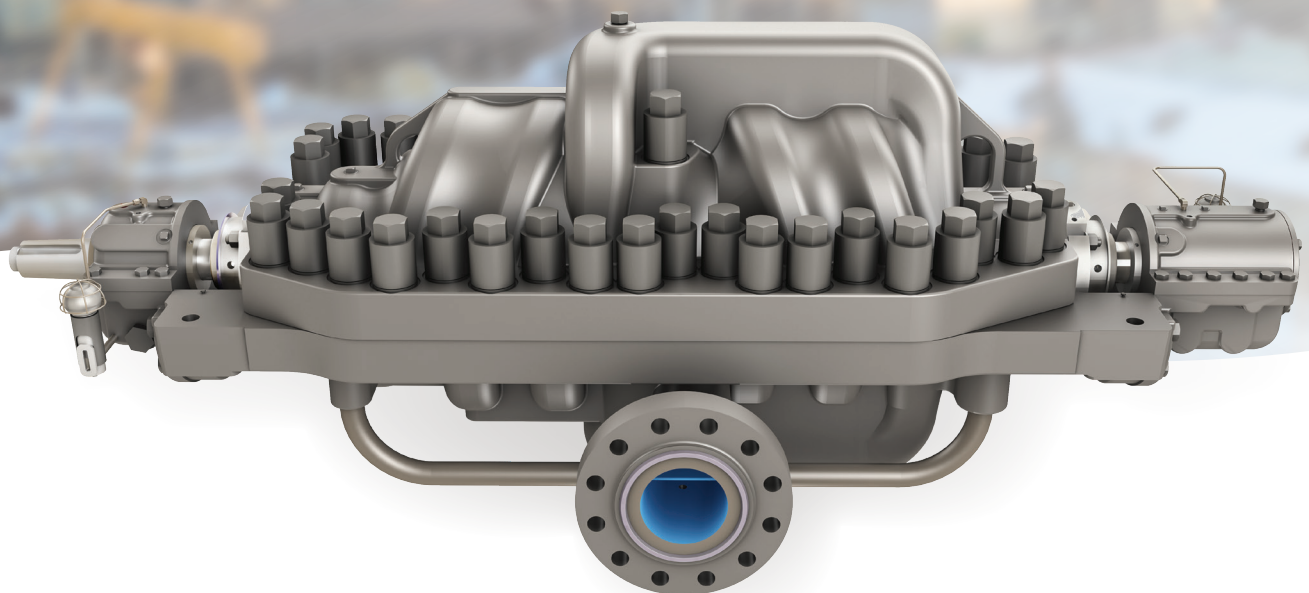




# DMX Between Bearings, Axially Split, Multistage Pump

API 610 (BB3)



*Experience In Motion*

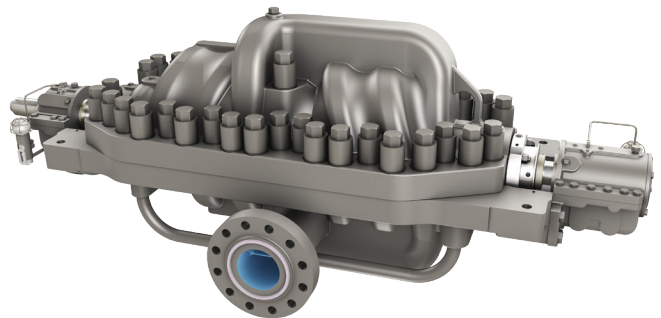


## Number one in the industry

Compliant with API 610 (BB3), latest edition, the Flowserve DMX multistage, axially split pump is engineered and built for long-lasting performance in high-pressure, heavy-duty applications. Its comprehensive hydraulic range, along with numerous materials, bearings and lubrication options, allow precise selection to ensure the best hydraulic fit, high operating efficiency and stability for each application. This helps to minimize operating expenses and extend mean time between repair (MTBR).

With more than 10,000 units supplied, the Flowserve DMX pump is the first choice of users for applications involving high-flow, high-pressure movement of water, hydrocarbons,

CO<sub>2</sub> and other process liquids. It is particularly well suited for use in refinery process, pipeline, boiler feed water and amine services, where high-efficiency operation and uncompromising reliability over a wide flow range are of the utmost importance.



## Engineered to perform

The DMX pump is engineered to provide many practical application advantages.

- **Increased uptime** is made possible by opposed-mounted impellers operating in a heavy-duty, double volute casing, which inherently provide axial and radial thrust balance over the full operating range.
- **To accommodate varying NPSH requirements**, first-stage impellers are available with single- or double-suction designs.
- **Emissions control** is provided by API 682 seal chambers.
- **Improved seal performance** and life are enabled by the pump's inherent hydraulic balance, which allows both seal chambers to operate at suction pressure.
- **Application versatility** is enabled by the numerous sizes, materials, bearings and lubrication options that allow for precise configuration for a variety of service requirements.
- **Broad hydraulic coverage** provides multiple capacity ranges within each pump size for optimized fit.
- **High-temperature performance** is supported by a near centerline mounting design.
- **Maintenance is simplified** by cap nuts on the top half casing parting flange.

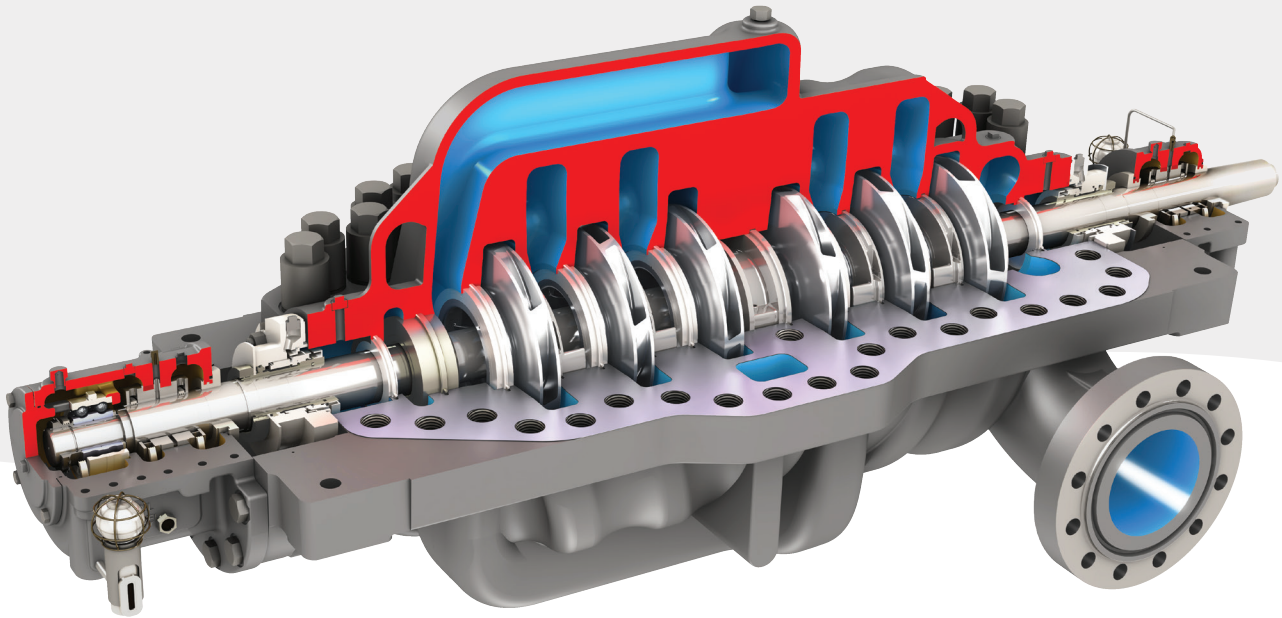
## Broad application versatility

- Pipeline
- Boiler feed
- Water injection
- CO<sub>2</sub> pipeline, storage and injection
- Refinery process
- Amine treatment
- Biofuel process
- Mining
- Power recovery
- Reverse osmosis (RO) feed

## Operating parameters

- Flows to 5,678 m<sup>3</sup>/h (25,000 gpm)
- Heads to 2,712 m (8,900 ft)
- Pressures to 275 bar (4,000 psi)
- Temperatures to 200°C (400°F)
- Speeds to 6,000 rpm
- Specific gravities down to 0.35





## Uncompromised reliability and versatility

**Near centerline mounted pump casing** maintains alignment during operation at elevated temperatures.

**Casing and internal material combinations** are selected to meet service requirements. Available materials of construction include carbon steel, chromium steel, austenitic stainless steels and super duplex stainless steels.

**Raised face flanges** meet ASME B16.5 dimensional criteria. Class 600 suction and discharge minimum. High-pressure casings and Class 900, 1500 and 2500 are also available.

**Nozzles** are integral with the lower half casing, permitting disassembly of the pump without disturbing piping connections. Nozzles are designed to handle external forces and moments equal to or in excess of API specified figures.

**Cap nuts** on the top half casing parting flange allow easy casing removal for inspection and maintenance.

**Axially split center bushing and channel rings** enable inspection and dynamic balancing of the rotor without dismantling.

**Seal chamber** is compliant with API 682 dimensional criteria. This design allows for installation of cartridge type single, dual unpressurized, and dual pressurized mechanical seals to meet the required safety and environmental requirements.

**Replaceable casing and impeller wear rings** control interstage leakage and provide hydraulic stability. Optional laser-hardened, HVOF overlaid or non-metallic wear rings in Graphalloy®, PEEK® and other materials may be specified.

**Certified testing** is performed on each DMX pump prior to shipment.

® Graphalloy is a registered trademark of Graphite Metallizing Corporation.

® PEEK is a registered trademark of Victrex plc Corp.

## Double volute and opposed impeller construction

The DMX pump features a heavy-duty, axially split casing with double volute hydraulic passages for radial thrust balance. Furthermore, its opposed impeller mounting provides axial thrust balance. Consequently, detrimental shaft deflection and vibration are significantly reduced.

## Robust rotating element ensures optimum performance

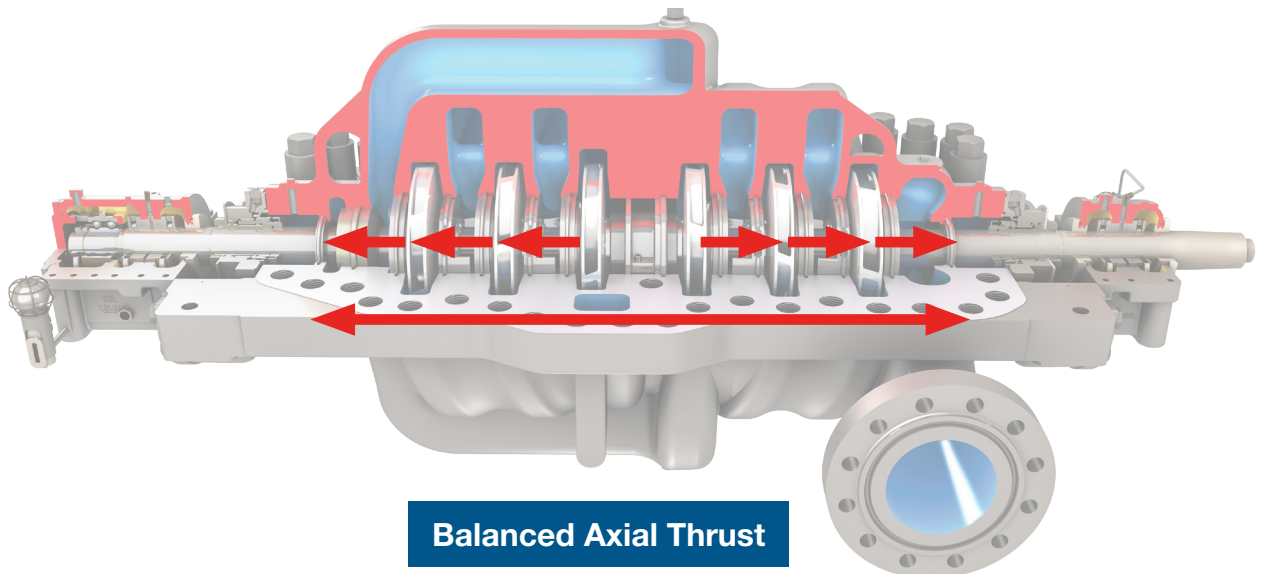
The DMX pump's robust rotating element includes large-diameter shafts and short bearing spans to minimize deflection. Final two-plane dynamic balancing and TIR verifications are conducted on assembled rotors to assure optimum mechanical performance throughout the operating range. Shaft size is selected to suit power and speed requirements.



## Scalable IoT monitoring and control

All Flowserve DMX pumps are RedRaven-ready. RedRaven is the internet of things (IoT) solution from Flowserve that enables remote monitoring and predictive analytics for flow motion equipment and systems. RedRaven gives you the scalable abilities to monitor and predict equipment failures, take preventive actions, and avoid unnecessary disruptions.

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



# Options and technical data

## Multiple bearing designs to suit application needs

The DMX pump is offered with a variety of bearing designs to meet application requirements. The standard radial bearing is self-aligning, anti-friction type. The thrust bearing consists of two single row, angular contact antifriction bearings.

Standard lubrication is via an oil ring system and incorporates a constant level oiler and a sight glass. This system prolongs bearing life by ensuring oil penetrates the bearings without foaming.

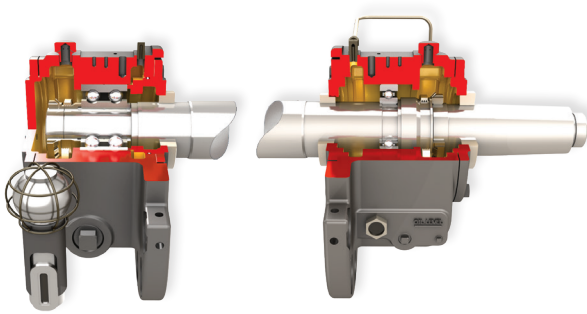
Other bearing designs include the following:

- Split sleeve radial and ball thrust
- Split sleeve radial and tilting pad thrust

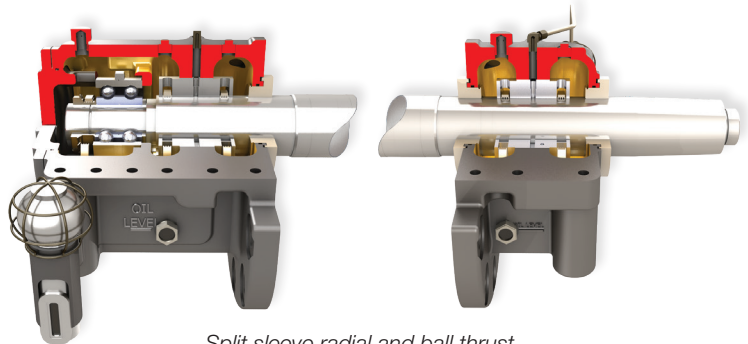
## Bearing options

Flowserve offers several bearing options to ensure long-lasting and reliable performance. These include:

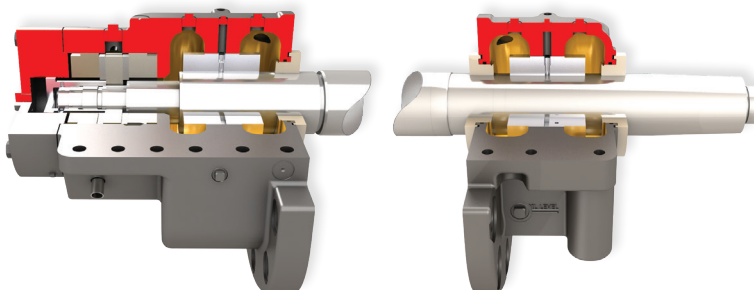
- Bearing cooling — air, water or product cooling systems
- Bearing lubrication — ring oil, pressure lubricated or oil mist systems
- Bearing isolation — Bearing Gard™ bearing isolators from Flowserve
- Bearing monitoring instrumentation



*Ball radial and ball thrust*



*Split sleeve radial and ball thrust*



*Split sleeve radial and tilting pad thrust*

## Available pump packages

Pump packages are provided to specification and may include lube oil piping, seal systems, cooling piping plans, monitoring instruments and drive train mounting.

## Baseplate designs

Engineered to contract requirements, baseplate designs may include any of the following:

- Conventional welded steel with sloped gutter drain
- Sub-base under pump only
- Three-point design
- Skid type, non-grouted

Pumps mounted with engine or turbine drivers and multiple pump modules are also available.

## Shaft options

The DMX pump is available with an optional double extension for connecting to auxiliary pumps or hydraulic turbines. Additionally, special shaft end machining is available for hydraulic fitted couplings.

## Hydraulic power recovery turbine (HPRT)

The push to reduce CO<sub>2</sub> emissions and increase energy efficiency has renewed interest in HPRTs. The DMX pump is a highly efficient and stable HPRT that can be used to capture hydraulic energy in the process stream that would otherwise be wasted. The recovered energy reduces the plant's total power consumption and correspondingly lessens CO<sub>2</sub> emissions.

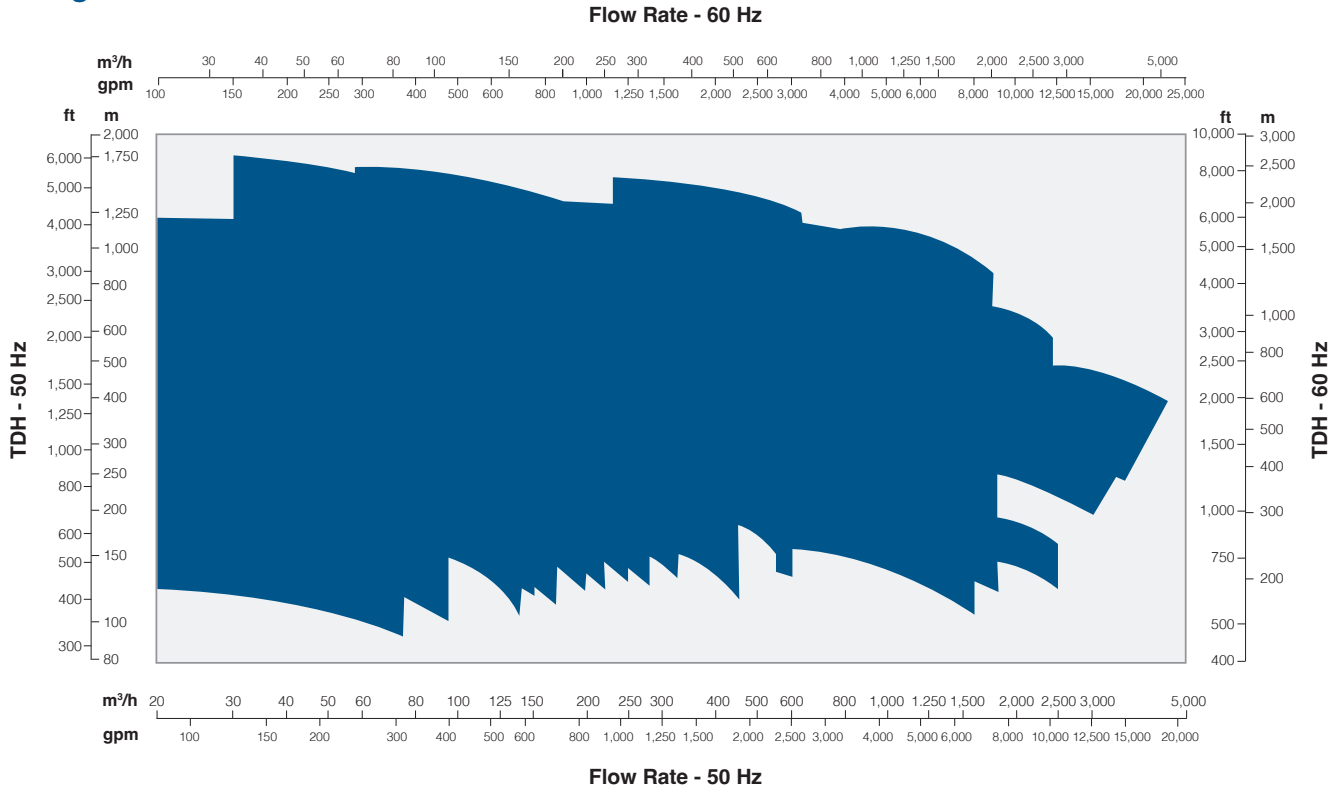
Contact your Flowserve representative to explore options.



*Charge pump train with a 12-stage 6x8x13L HDO barrel pump and an 11-stage 3x10 DMX pump serving as HPRT*



## Range chart



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**PUBR000406-13 (EN/AQ)** November 2022  
 (Formerly PS-30-3)