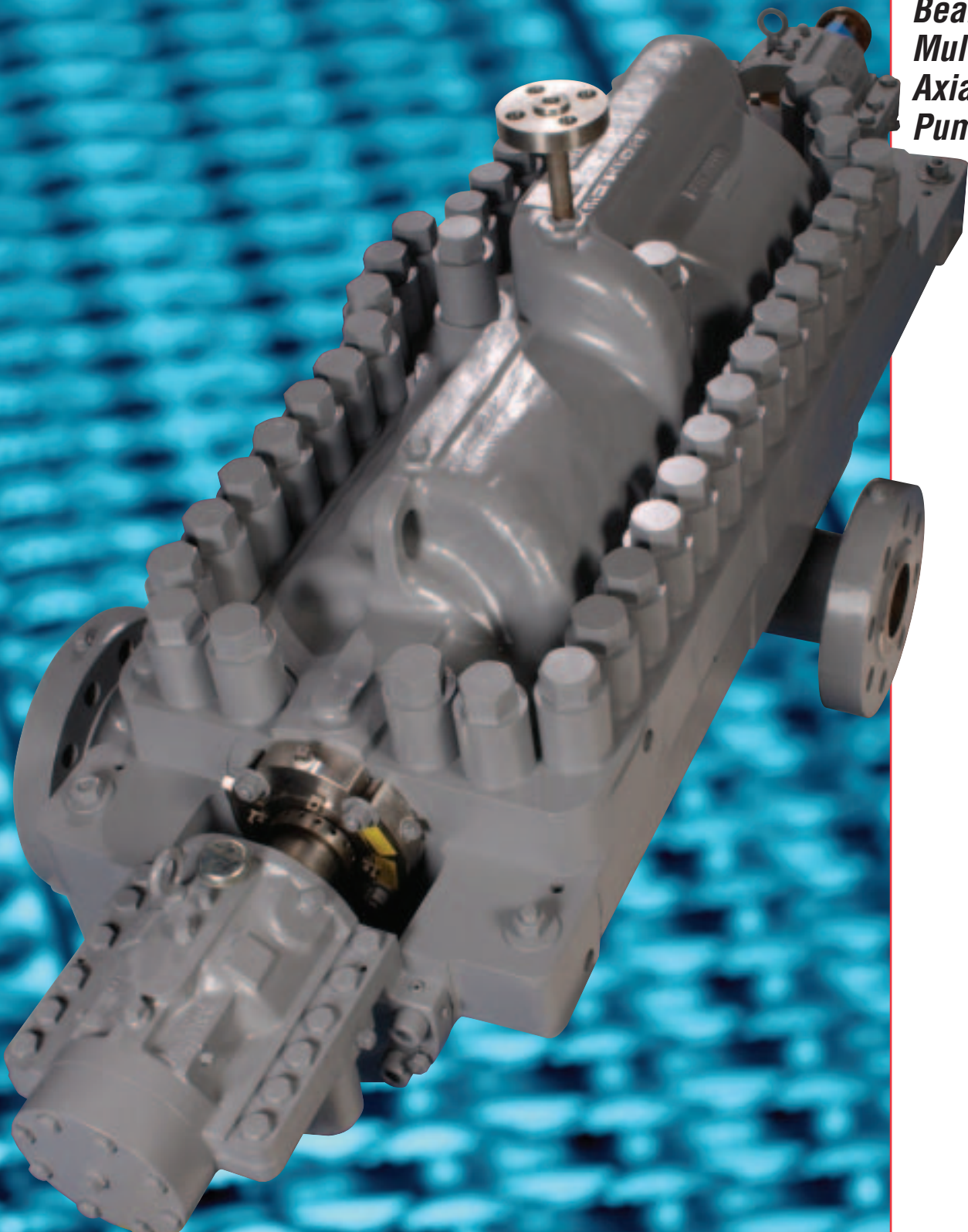




Pump Division

***DMX  
Between  
Bearings,  
Multistage,  
Axially Split  
Pumps***



## **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:

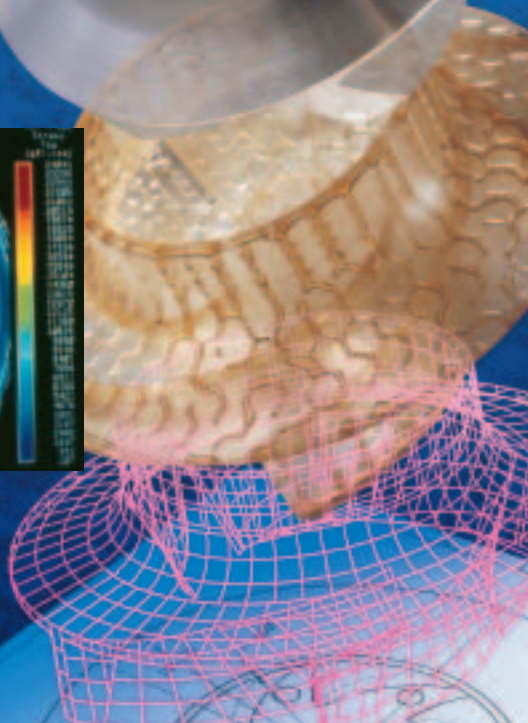
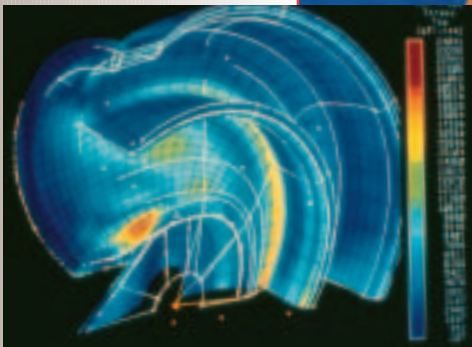
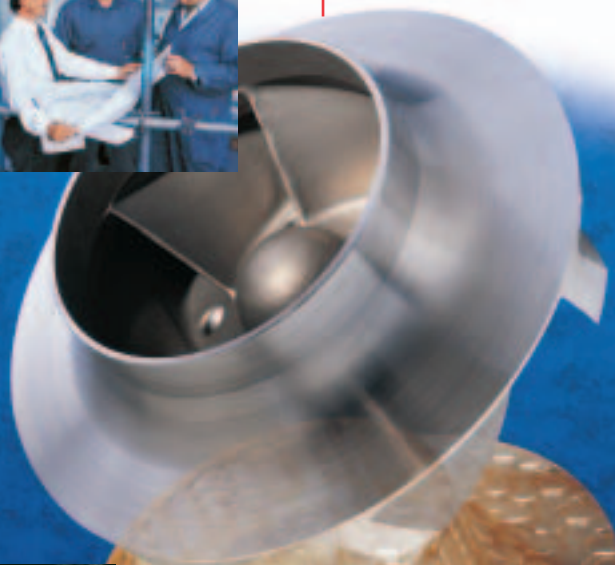
- Hydraulic engineering
- Mechanical design
- Materials science
- Intelligent pumping
- Manufacturing technology

### **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



**DMX Pumps**  
**For High Pressure**  
**Water and**  
**Hydrocarbon**  
**Services**

**Number One in the Industry**  
 With more than 10 000 units supplied, the fully compliant API 610, latest edition DMX pump is a horizontal, multistage, axially split, near centerline-mounted pump. Flowserve's DMX pump is the first choice of users for applications involving high-flow, high-pressure movement of water, crude oil, CO<sub>2</sub> and other hydrocarbons.

Available in numerous sizes, hydraulics and material combinations, DMX pumps are particularly well suited for use in process charge, pipeline and injection services where uncompromising reliability over wide flow ranges is of utmost importance.

The basic pump design, consisting of back-to-back mounted impellers operating in heavy-duty double volute casings, inherently results in optimum axial thrust and radial thrust balance over the full operating range.

- First-stage impellers are available with single- or double-suction inlets depending on NPSH available for a given application.
- Inherent hydraulic balance allows both seal chambers to operate at pump suction pressure.

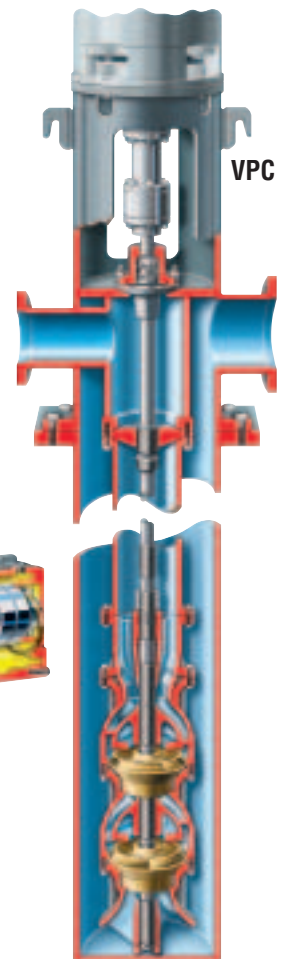
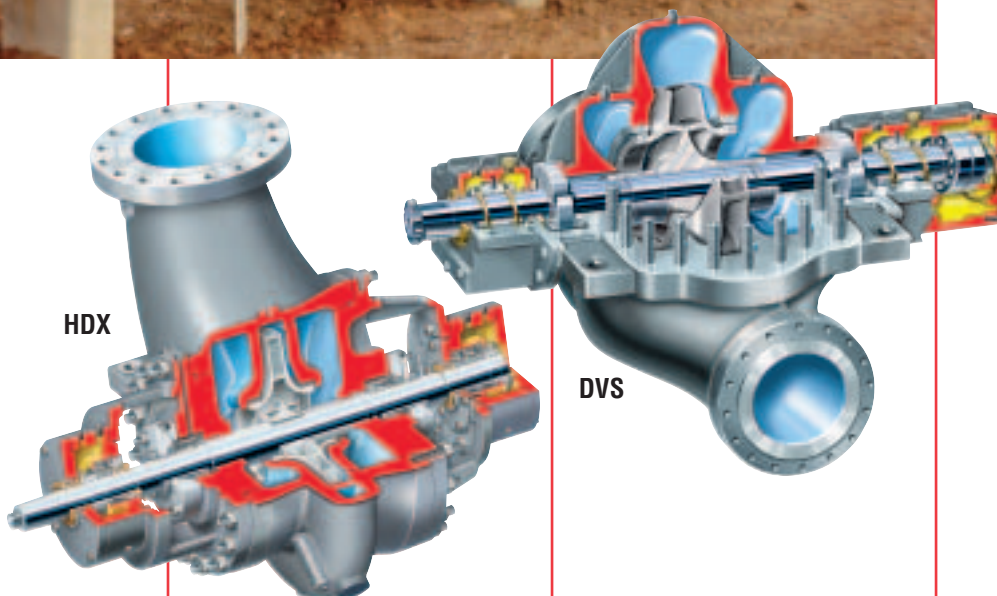
**Broad Application**

- Pipeline
- Boiler feed
- Water injection
- CO<sub>2</sub> injection
- Process charge
- Descaling
- Mine dewatering

**Complementary Pump Designs**

Type DMX pumps may be used with other Flowserve models of the following designs:

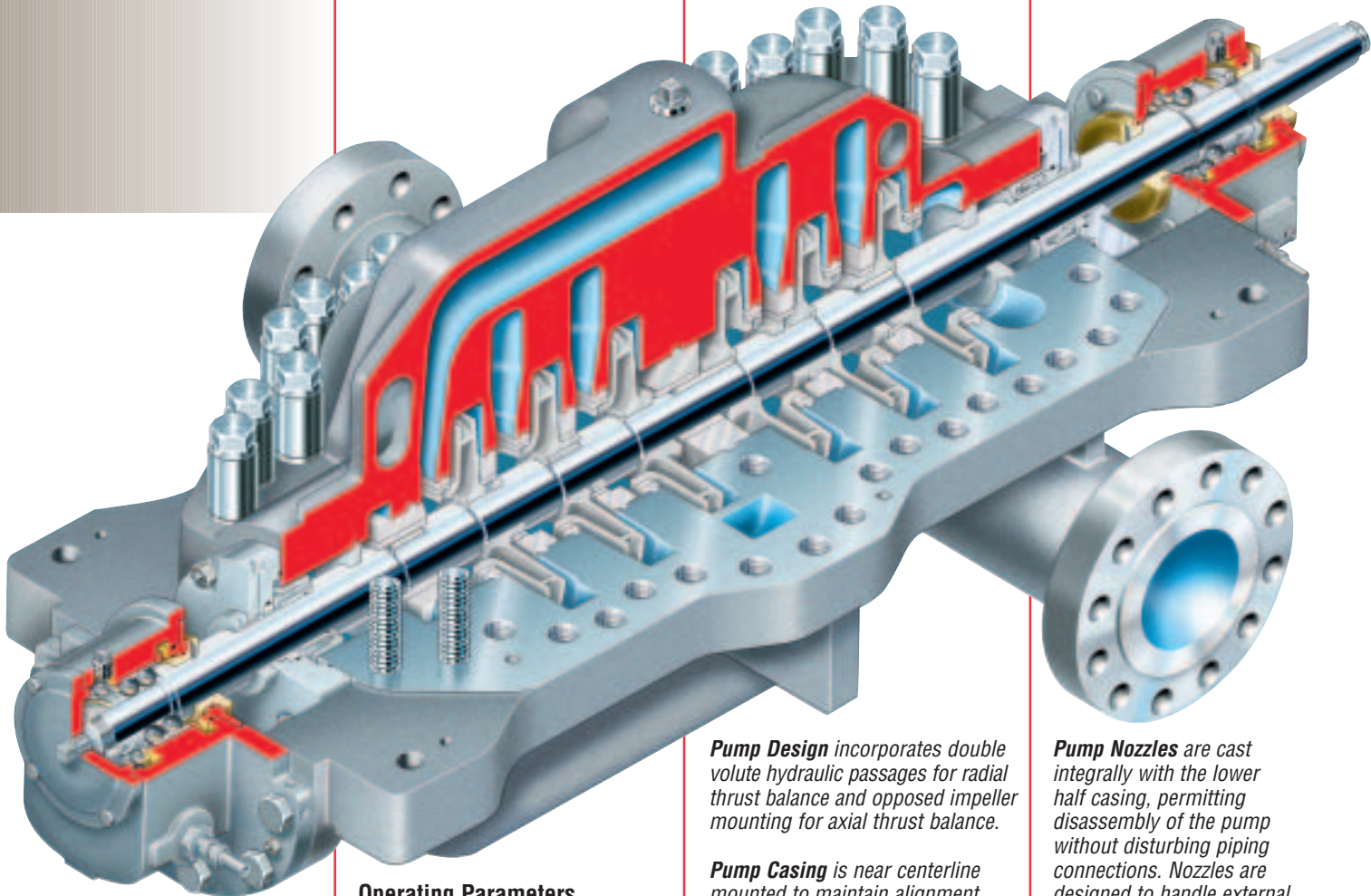
- Single stage, double suction, axially split pumps
- Multistage, double casing
- Radially-split, single- and two-stage pumps



**DMX**  
**Heavy-Duty,**  
**Between Bearings,**  
**Multistage Axially**  
**Split Pumps**

Flowserve's DMX pump is fully compliant with API 610, latest edition. The DMX is engineered and built for high-pressure heavy-duty applications.

Further, the DMX represents the most comprehensive range of hydraulic coverage available to industry, thereby permitting precise selection for best hydraulic fit, operating efficiency and stability. This helps to minimize operating expenses and extend mean time between repair.



**Operating Parameters**

- Flows to 2950 m<sup>3</sup>/h (13 000 gpm)
- Heads to 2130 m (7000 ft)
- Pressures to 275 bar (4000 psi)
- Temperatures to 205°C (400°F)
- Speeds to 8000 rpm
- Specific gravities down to 0.35

**Pump Design** incorporates double volute hydraulic passages for radial thrust balance and opposed impeller mounting for axial thrust balance.

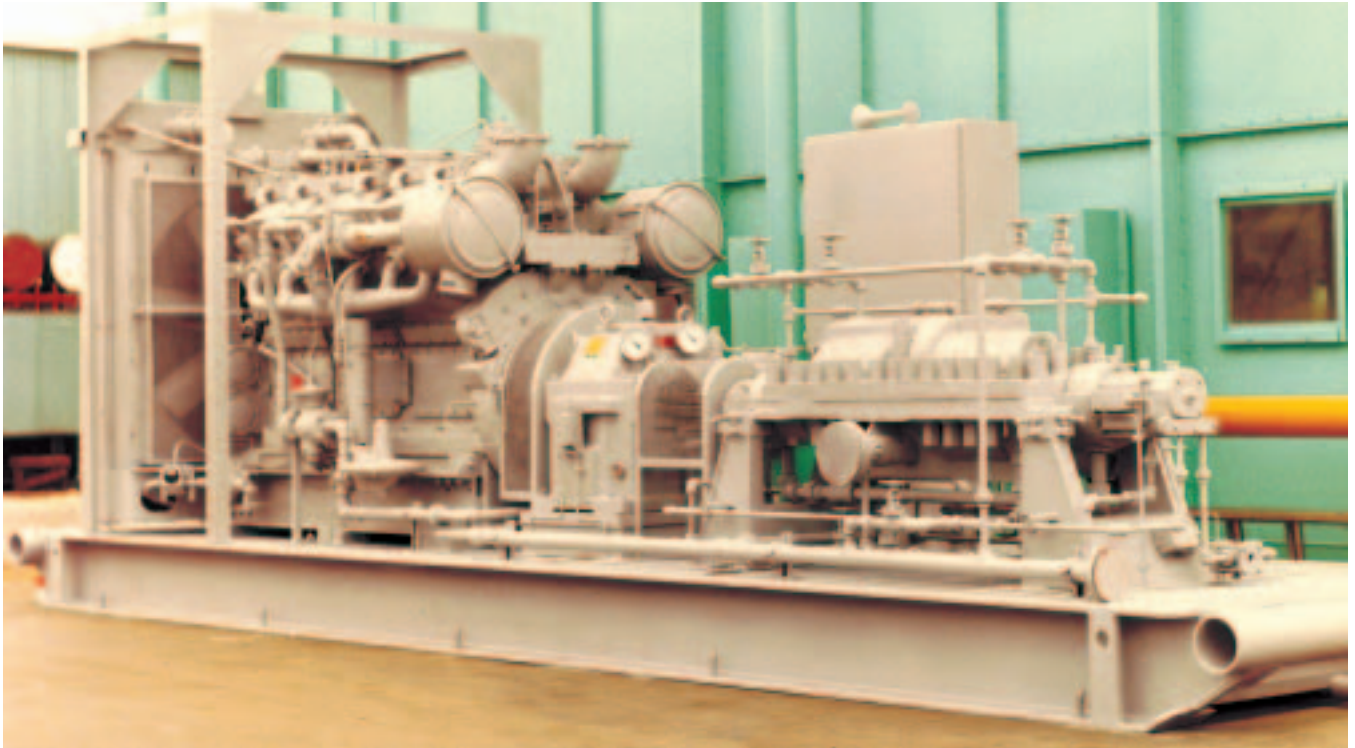
**Pump Casing** is near centerline mounted to maintain alignment during operation at elevated temperatures. Raised face flanges meet ASME B16.5 dimensional requirements.

**Casing** is supplied with minimum flange ratings of ASME B16.5 Class 600 suction and discharge. Class 900 and 1500 are also available to meet the required operating pressures.

**Pump Nozzles** are cast integrally 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 610 specified figures.

**Cap Nuts** are arranged on the top half casing parting flange, allowing easy casing removal for rotor inspection and maintenance.

**Seal Chambers** to API 682 dimensional criteria allow for installation of cartridge design single, dual unpressurized and dual pressurized mechanical seals to meet the required safety and environmental requirements.



**Rotating Elements** include 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. Pumps mounted with engine or turbine drivers and multiple pump modules are also available.

**Shaft Options** include double extension for connection to auxiliary pumps or hydraulic turbines, and special shaft end machining for hydraulic fitted couplings.

**Renewable Casing and Impeller Rings** control interstage leakage and provide hydraulic stability during operation. Optional laser hardened or non-metallic wear rings in Graphalloy®, PEEK® and other materials may be specified.

**Axially Split Center Bushing** facilitates replacement while simplifying inspection and dynamic balancing of rotor without dismantling. Split stationary rings on the back of impellers are available as an option.

**Casing and Internal Material Combinations** available to meet service requirements include carbon steel, 12% chrome, austenitic stainless steels, Monel® and duplex.

**Standard Ring Oil-Lubricated Bearings** assure complete oil penetration into the bearings without foaming, for increased bearing life. Optional bearing arrangements and lubrication systems are available to meet the requirements of any speed or application.

**Baseplate Designs**, engineered to contract requirements, include conventional welded steel with drain rim, sub base under pump only, 3-point design, pre-grouted and skid type non-grouted.



**Pump Packages** are provided to specifications, and include lube oil piping, seal systems, monitoring instruments and drive train mounting.

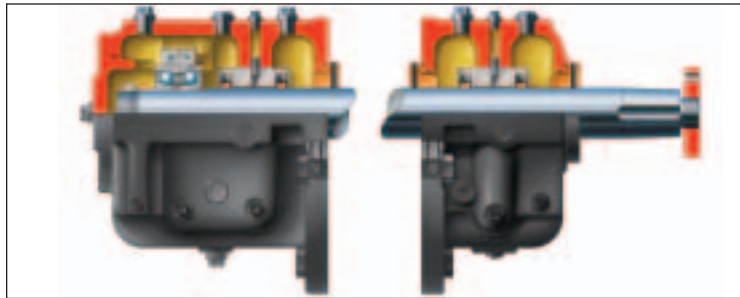
**Certified Testing** is performed on each pump prior to shipment.

© Graphalloy is a registered trademark of the Graphite Metallizing Corporation  
 © PEEK is a registered trademark of Victrex plc Corp.  
 © Monel is a registered trademark of International Nickel Co.

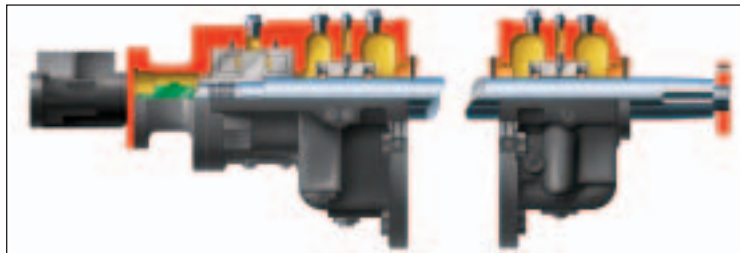
**Options and Technical Data**

**Bearing Design Options**

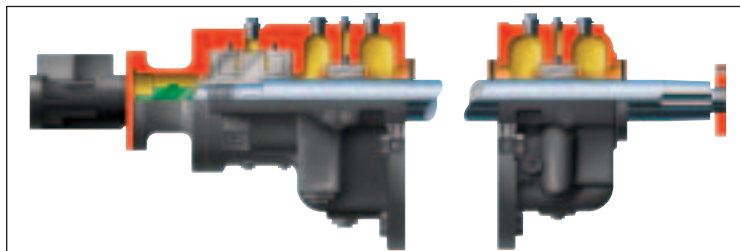
Split Sleeve Radial and Ball Thrust



Split Sleeve Radial and Tilting Pad Thrust



Tilting Pad Radial and Tilting Pad Thrust



**Bearing Cooling Options**

- Air cooling
- Water cooling
- Product cooling

**Bearing Lubrication Options**

- Ring oil
- Pressure lubricated

**Non-metallic Rings**

- Case wear rings
- Center bushing

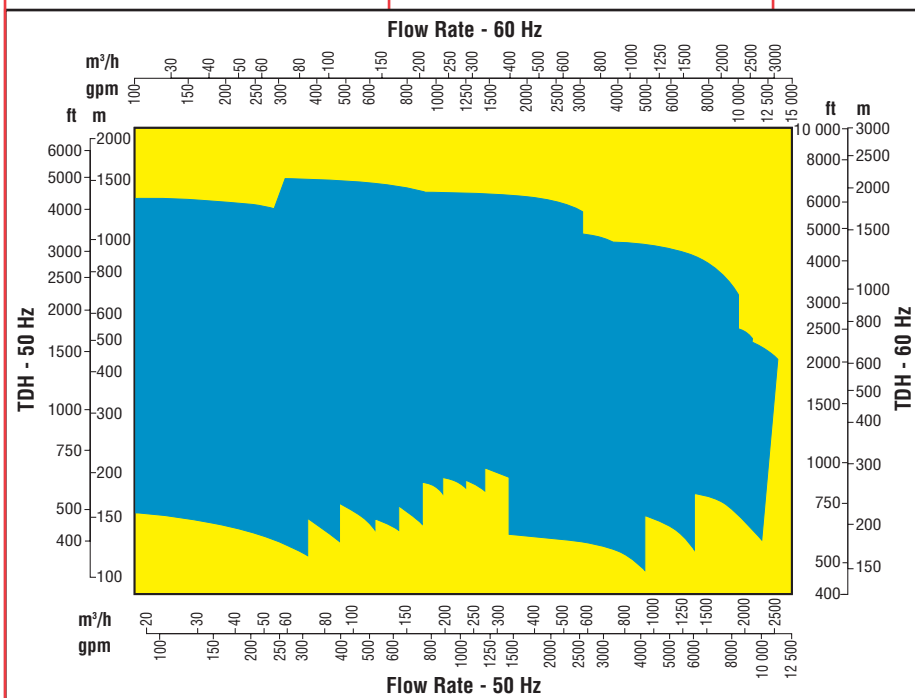


**Interstage Take-Off**

- Secondary fluid take-off line sized for pressure and flow required



**DMX Range Chart**

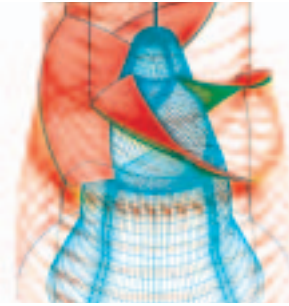


**Global Service and Technical Support**

**Advanced Technologies**

Few if any pump companies can match Flowserve's capabilities in hydraulic and mechanical design or in materials engineering. These capabilities include:

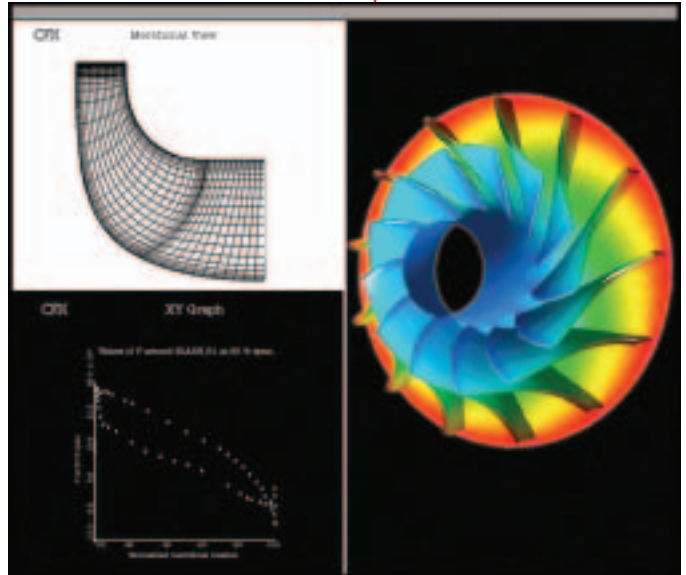
- Computational fluid dynamics
- Flow visualization
- Cavitation studies
- Efficiency optimization
- Finite element analysis
- Rapid prototyping
- Captive high nickel alloy and light reactive alloy foundries
- Non-metallic materials processing and manufacturing



**Service and Repair Group**

Flowserve's Service and Repair Group is dedicated to maximizing equipment performance and reliability-centered maintenance programs. Pump related services include:

- Startup and commissioning
- Diagnostics and prognostics
- Routine and repair maintenance
- ANSI and ISO power end exchange program
- Re-rates, upgrades and retrofits
- Spare parts inventory and management programs
- Training



**Pump Improvement Engineering Services**

Flowserve is committed to helping customers obtain the best possible return on their pump equipment investment. Engineering assistance and technological solutions for pumping problems are readily available.

These services include:

- Field performance testing
- Vibration analysis
- Design analysis and root-cause problem solving
- Material improvements
- Pump and system audit
- Advanced technology solutions
- PumpTrac™ remote pump monitoring and diagnostic services
- Instruction manual updates
- Training courses

**Flowserve... Supporting Our Customers  
With The World's Leading  
Pump Brands**



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