



***MSX***  
***Solids-Handling,***  
***Submersible***  
***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:

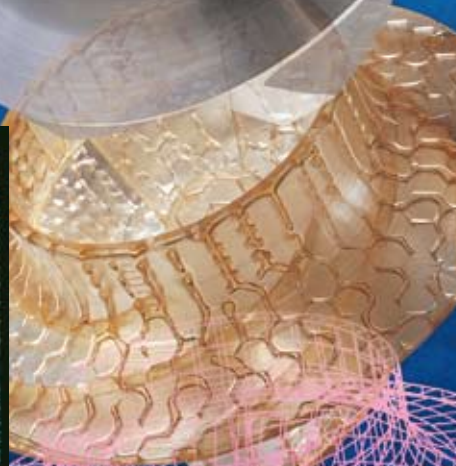
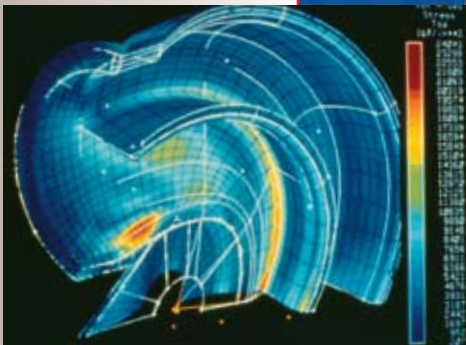
- Hydraulic engineering
- Mechanical design
- Materials science
- Intelligent pumping
- Manufacturing technology

### **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



**MSX  
Solids-Handling,  
Submersible  
Pumps**

**Rugged and Reliable**

The Flowserve MSX family of solids-handling, submersible pumps is engineered to perform efficiently in the most challenging environments, from pumping raw sewage to moving industrial wastewater and other solids laden liquids.

**Operating and  
Cost Saving Benefits**

MSX non-clog pumps reduce operating costs while providing long-life operation with minimal downtime.

- High efficiency
  - Superior hydraulic capability
  - Outstanding wire-to-water efficiency
  - EPACT rated high performance motors
  - Complete hydraulic and motor coverage
- Solid reliability
  - Long-lasting seal and bearing designs
  - Closed-loop cooling system for improved heat transfer
  - Spike-resistant windings for extended motor life
  - High-quality materials of construction

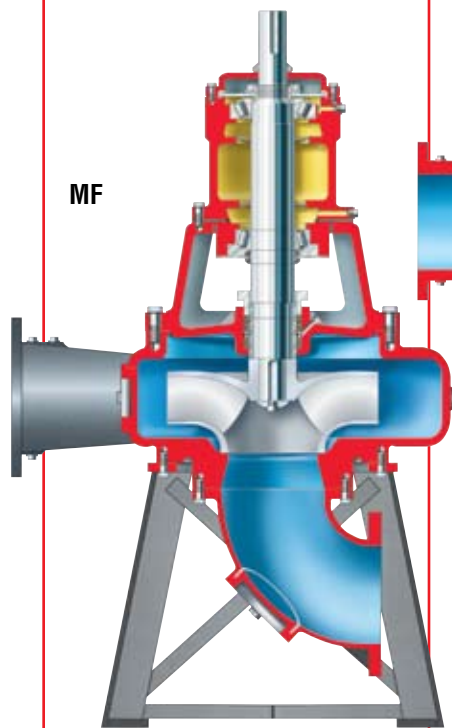
**Broad Application**

- Raw sewage
- Return-activated sludge
- Waste-activated sludge
- Mixed liquor
- Final effluent
- Filter backwash
- Dewatering
- Industrial process
- Industrial waste collection
- Flood protection

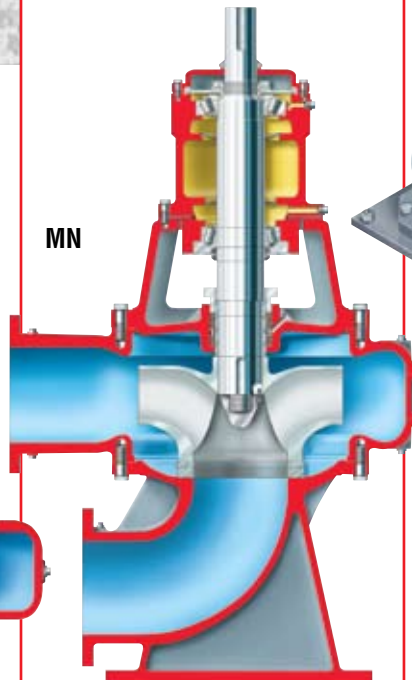
**Complementary  
Pump Designs**

Depending upon application requirements, Flowserve can also provide these pump designs:

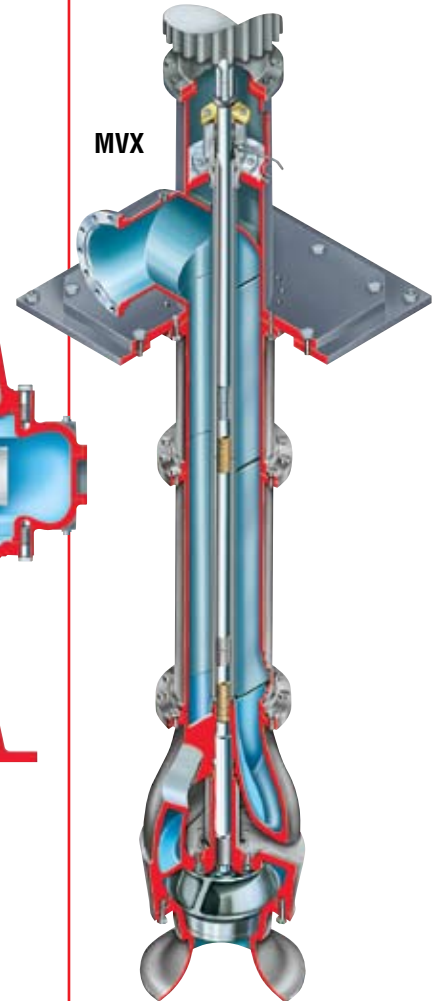
- End-suction, side-discharge, mixed-flow, non-clog pumps
- Vertical, wet-pit pumps



**MN**



**MVX**



## **MSX Solids-Handling, Submersible Pumps**

Flowserve MSX pumps are expressly designed to handle sewage and wastes of almost every form and description including both solids in solution and solids in suspension. Absolute reliability is the most critical requirement for these pumps. MSX-Series 1 medium-capacity and MSX-Series 2/3 high-capacity pumps provide that assurance along with long life, cost-efficient performance.

### **Operating Parameters**

- Flows to 4545 m<sup>3</sup>/h (20 000 gpm)
- Heads to 90 m (300 ft)
- Sizes 75 mm (3 in) to 500 mm (20 in)
- Motors to 224 kW (300 hp)
  - FM approved version available for explosion-proof service
  - Variable-speed drives available

### **Industries Served**

- Water resources
- Mining
- Agriculture
- General industry

### **Accessories**

- Control panels
- Lifting chains
- Access covers
- Guide rail assemblies
- Level control floats
- Telemetry devices
- Valves

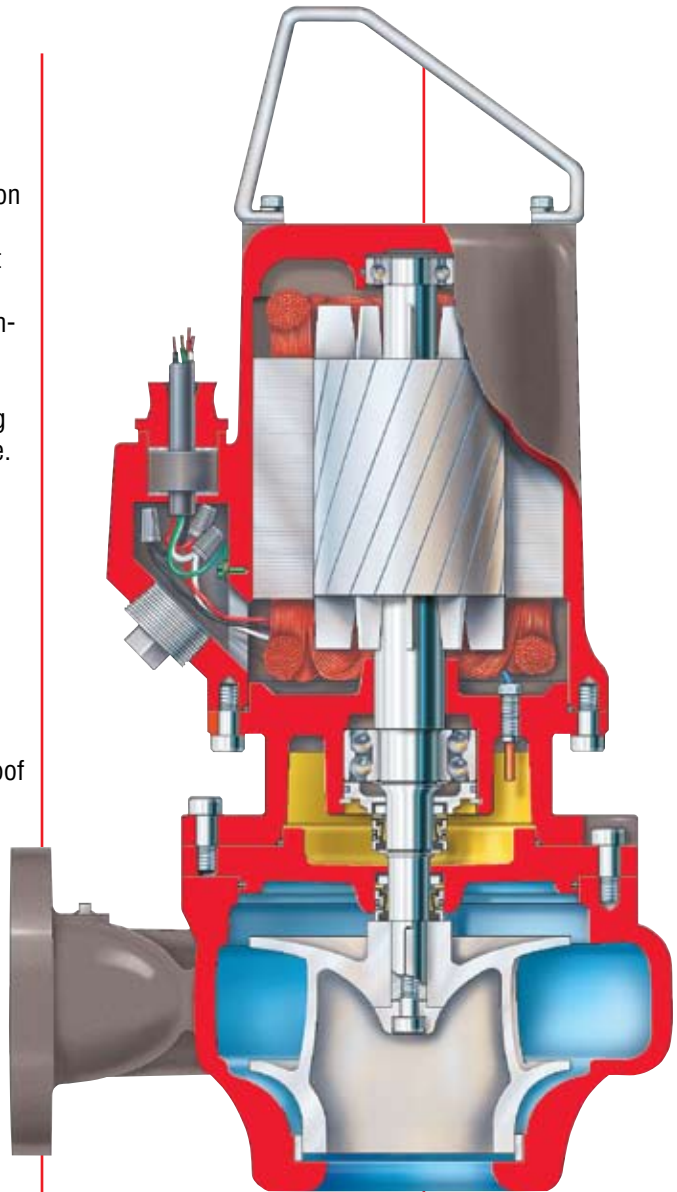
### **MSX-Series 1 Design Features**

**Solids-Handling** capability to 80 mm (3 in) spherical.

**EPACT Rated Motor\*** offers high-efficiency performance for impressive energy savings.

**Shaft and Rotor** are dynamically balanced for reduced vibration to assure smooth operation and long service life.

**Class H Rated Insulation System** significantly extends motor life.



**Watertight Cable Entry** protects motor from moisture and contamination, thus extending its operating life.

**Impeller Wear Ring** in stainless steel available as an option for extended impeller life.

**Spike-Resistant Windings** are standard. In addition to smooth, consistent motor performance, this feature permits the handling of voltage spikes with variable frequency drive motor option.

**Long-Life, Angular Contact Bearings** support axial and radial thrust loads for superior bearing and seal life.

**Sealing Fluid** is environmentally friendly to eliminate media contamination concerns.

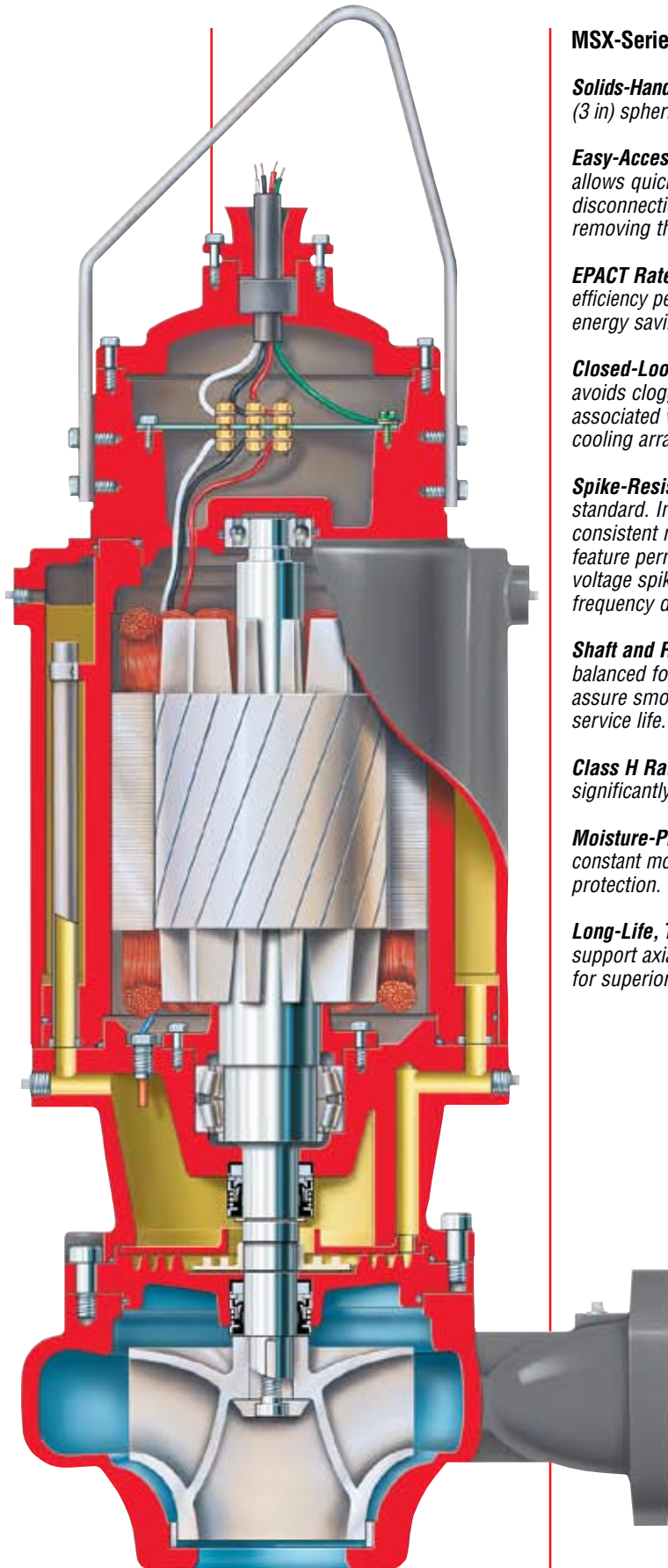
**Silicon Carbide Seal Faces** in the lower mechanical seals provide durability and reliability. Upper mechanical seal faces are carbon/ceramic.

**High-Efficiency Hydraulics** reduce energy consumption and operating cost while providing constant, predictable pumping performance.

**Extensive Hydraulic Coverage** is achieved with discharge sizes of 80 mm (3 in) through 150 mm (6 in).

**Higher Overall Wire-to-Water Efficiencies.**

\* First motor to meet U.S. Energy Policy Act's (EPACT) efficiency regulations



### **MSX-Series 2/3 Design Features**

**Solids-Handling** capability to 80 mm (3 in) spherical

**Easy-Access Terminal Chamber** allows quick power connection-disconnection without entirely removing the pump from service.

**EPACT Rated Motor\*** offers high efficiency performance for impressive energy savings.

**Closed-Loop Cooling Design** avoids clogging and hot spots associated with pumped media cooling arrangements.

**Spike-Resistant Windings** are standard. In addition to smooth, consistent motor performance, this feature permits the handling of voltage spikes with variable frequency drive motor option.

**Shaft and Rotor** are dynamically balanced for reduced vibration to assure smooth operation and long service life.

**Class H Rated Insulation System** significantly extends motor life.

**Moisture-Protection Probe** provides constant monitoring and motor protection.

**Long-Life, Tapered Roller Bearings** support axial and radial thrust loads for superior bearing and seal life.

**Circulating Impeller** in the cooling system effectively transfers heat to keep the motor running smoothly and to lubricate the upper mechanical seal faces.

**Sealing and Cooling Oil** are environmentally friendly to eliminate contamination concerns.

**Heat Exchanger** in the closed loop cooling system provides additional motor cooling protection.

**Impeller Wear Ring** supplied in hardened stainless steel as a standard for extended impeller life.

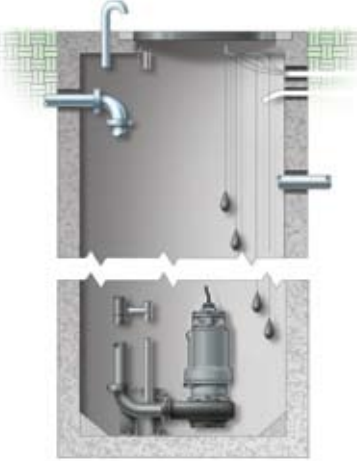
**Silicon Carbide Seal Faces** in the lower mechanical seals provide durability and reliability. Upper mechanical seal faces are carbon/ceramic.

**High-Efficiency Hydraulics** reduce energy consumption and operating costs while providing constant, predictable pumping efficiency.

**High Overall Wire-to-Water Efficiencies.**

## Technical Data and Options

### Wet-Pit Mounting Option



### Dry-Pit Mounting Option



### Transportable-Style Option

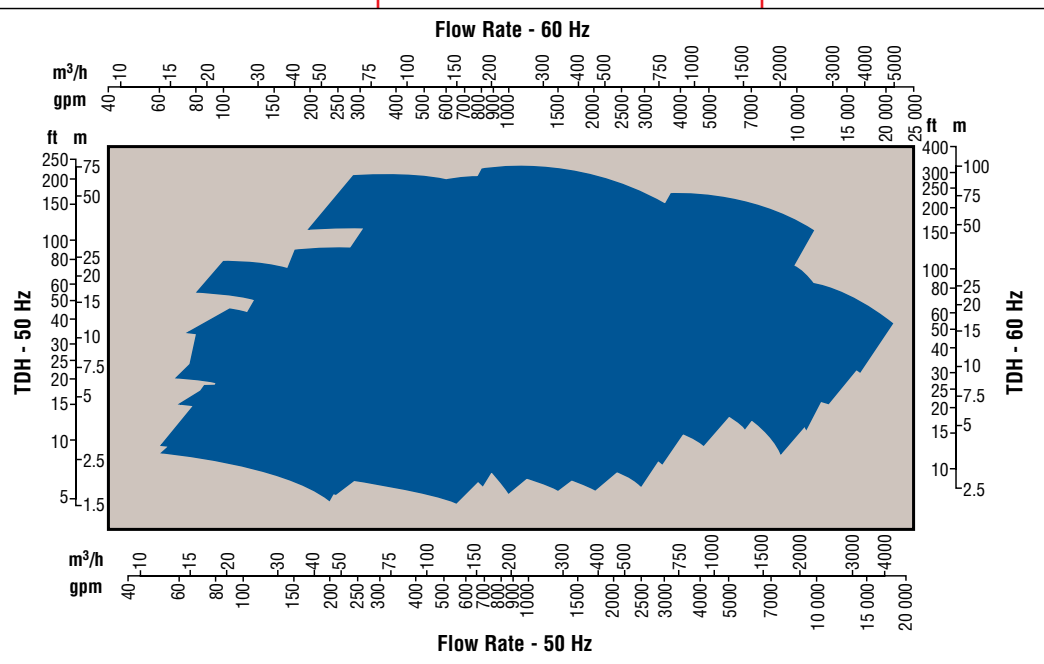


### Complementary Equipment

- Controls
- Level switches
- Valves
- Access covers
- Hoists
- Testing

| Component           | Standard Materials                  |
|---------------------|-------------------------------------|
| Pump Casing         | Cast Iron, ASTM A48, CL30           |
| Casing Wear Ring    | Cast Iron, ASTM A48, CL30           |
| Impeller            | Cast Iron, ASTM A48, CL30           |
| Impeller Wear Ring  | Hardened SS - 8 in -14 in Discharge |
| Motor Housing       | Cast Iron, ASTM A48, CL30           |
| Cooling Jacket      | Cast Iron, ASTM A48, CL30           |
| Seal Plate          | Cast Iron, ASTM A48, CL30           |
| Bearing Plate       | Cast Iron, ASTM A48, CL30           |
| Cable Entry         | Cast Iron, ASTM A48, CL30           |
| Hardware            | Type 316 SS                         |
| Shaft               | Type 416 SS                         |
| O-Rings             | Buna-N                              |
| Cable Entry Grommet | Neoprene                            |
| Seal Oil            | Environmentally friendly            |
| Exterior Coatings   | Corrosion resistant paint           |
| Impeller Key/Bolt   | Type 416 SS/Type 316 SS             |

### MSX Range Chart



**Global  
Engineered Services  
and Support**

- Total Cost Reduction*
- Asset Management*
- Product Life Cycle*
- Performance Re-rates*
- Site Diagnostics*
- Repair Services*
- Energy Management*
- Spare Parts*
- Maintenance Contracts*
- Materials Upgrades*
- Turnkey Services*
- Field Repairs*
- Installation*
- Project Supervision*
- Commissioning*
- Equipment Upgrades*
- Condition Monitoring*
- Systems Analysis*
- Field Machining*

**Service Dedication**

Flowserve Engineered Services is focused on providing customers with uncompromising service and support, where and when needed. Engineered Services is dedicated to delivering the highest quality support by integrating its extensive pump and materials engineering knowledge with creative service solutions. Engineered Services prides itself in understanding the business challenges facing customers and is prepared to manage solutions to succeed as a team.

A worldwide network of service and repair centers staffed by highly skilled engineers and technicians is available around the clock, seven days a week to respond to customer queries, to evaluate and troubleshoot problems and to provide reliable solutions.



**Strength of Experience,  
Commitment to Excellence**

Flowserve has long served industries requiring superior equipment performance and service life.

- Oil and gas production
- Hydrocarbon processing
- Chemical processing
- Water resources
- Power generation
- Nuclear
- Mining and mineral processing
- Pulp and paper
- General industry

Engineered Services is dedicated to maximizing equipment performance and providing reliability-centered maintenance programs for pumps and related equipment, regardless of manufacturer. Using the FlowStar™ asset management software, Engineered Services tracks performance and supports improvement programs using a service life cycle cost business approach. The results are improved reliability and increased profitability.

**Your Business Partner**

Flowserve partners with customers to respond to the dynamic business conditions that affect them. Flowserve will work with customers to drive efficiency, maximize throughput and control process quality. Whether your needs involve on-site technical assistance or broader project planning with full turnkey responsibility, you can rely on the strength of Flowserve Engineered Services to deliver professional, reliable results.



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



**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  
Martín Rodríguez 4460  
B1644CGN-Victoria-San Fernando  
Buenos Aires, Argentina  
Telephone: 54 11 4006 8700  
Telefax: 54 11 4714 1610

**Asia Pacific**

Flowserve Pte. Ltd.  
10 Tuas Loop  
Singapore 637345  
Telephone: 65 6771 0600  
Telefax: 65 6779 4607

*Your local Flowserve representative:*

**To find your local Flowserve representative  
please use the Sales Support Locator System  
found at [www.flowserve.com](http://www.flowserve.com)**

**Or call toll free: 1 800 728 PUMP (7867)**