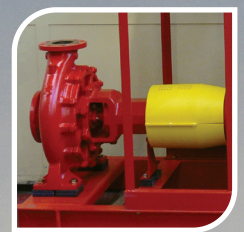
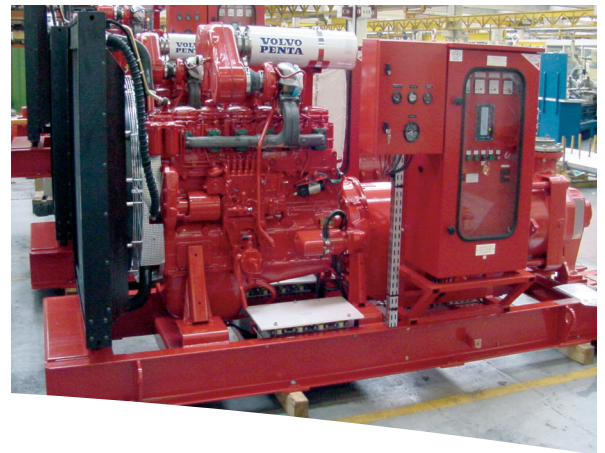




# *Fire Protection Pumps*



*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.*

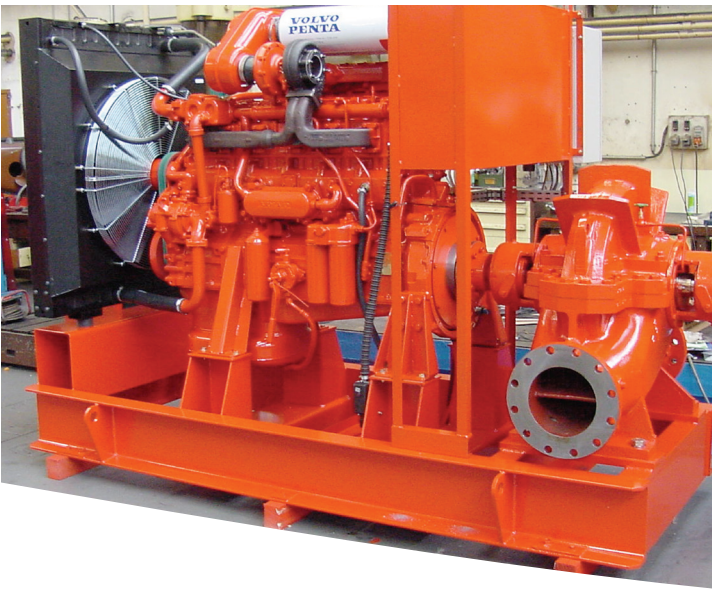
### ***The Trusted Partner for Complete Fire Protection Pump Systems***

For more than 30 years, Flowserve has supplied fire protection pumps and systems in compliance with French, European and international standards. Various configurations of Flowserve pumps are designed to provide water to stand pipe, sprinkler, foam mitigation, and hydrant systems for fire protection in industrial and commercial facilities as well as refineries and offshore platforms.



### ***Product Brands of Distinction***

- ACEC™*
- Aldrich™*
- Byron Jackson®*
- Calder™ Energy Recovery Devices*
- Cameron™*
- Durco®*
- Flowserve®*
- HALBERG™*
- IDP®*
- INNOMAG®*
- Lawrence Pumps®*
- Niigata Worthington™*
- Pacific®*
- Pleuger®*
- Scienco™*
- Sier-Bath®*
- SIHI®*
- TKL™*
- United Centrifugal®*
- Western Land Roller™*
- Wilson-Snyder®*
- Worthington®*
- Worthington Simpson™*



### ***Recognized International Standards***

Flowserve offers a broad selection of proven, reliable pumps for fire protection services, ranging from commercial applications to the most demanding oil and gas, hydrocarbon processing, chemical plant and power generation services.

Pumps are designed in accordance with APSAD R1, NFPA20, NFEN 12845, CEPREVEN-UNE, API, ISO, ANSI, HI and other recognized international standards as well as Flowserve standards and customer specifications.

Designs include:

- Axially split, one- and two-stage between bearings pumps for high- and low-pressure services
- Radially split multistage pumps for high-pressure service
- Compactly designed vertical in-line pumps for lower flow ranges
- Frame mounted and close coupled end suction design pumps for low and medium pressure services
- Vertical turbine pumps for high-capacity service and when operating under static suction lift conditions

### ***Committed to the Complete Pump System Life Cycle***

For more than two centuries, Flowserve has served industries requiring solutions that add value and reduce costs throughout the life cycle of a pumping system.

- Water
- Oil and gas
- Power generation
- Chemical
- General industry

Flowserve partners with customers to respond to the dynamic business conditions that affect them. Flowserve works with customers to improve efficiency, maximize throughput and control process quality. Whether customer needs involve on-site technical assistance, equipment upgrades or broader project planning with full turnkey responsibility, Flowserve delivers professional, reliable results.





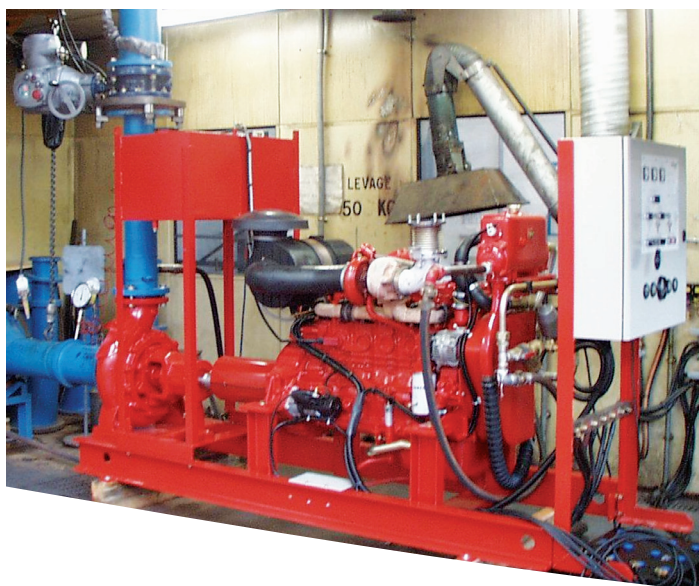
## Complete Systems Reliability

Globally recognized for quality and reliability, Flowserve offers pump, equipment and systems for virtually all fire suppression applications. All components meet or exceed applicable standards. Control panels comply with APSAD, NFEN, NFPA, CEPREVEN-UNE or FM standards, as required by customer specifications.

### Standard Product Offerings

- **Jockey and Source A (APSAD)** – Compact electrical packaged skids include one or two close coupled pumps, all electrical panels, pressure switches and over pressure tank.
- **Source B Electrical Units (APSAD)** – Baseplate mounted, main pump available with an electric motor, semi-flexible transmission and control panels.
- **Diesel Units** – Compact pump packages include diesel motor with universal joint (Cardan shaft), control panels and cooling system (heat exchanger or radiator). Units are performance tested prior to shipment.
- **RIA (Fire Hose Reels)** – Packaged units include two close coupled pumps, collectors, valves, pressure switches and start-up control panel.
- **Foam Mitigation Systems** – Units are designed for low and medium viscosity applications. Packages include pump and electrical motor or diesel engine.





*Custom-engineered containerized unit with automatic CO<sub>2</sub> suppression system*

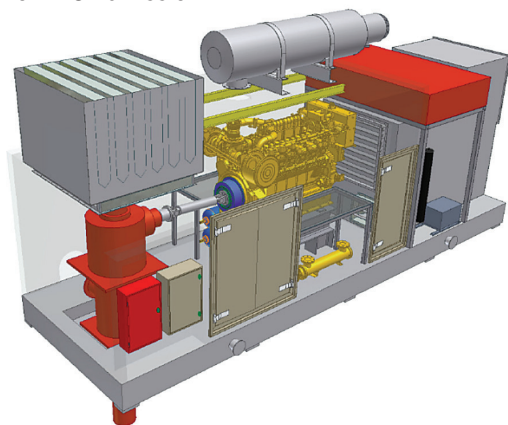
### **Performance Testing**

Flowserve provides certified performance curves for all its fire suppression pumps. All units are hydrostatically and electrically tested at the factory for performance to specification. Flowserve test facilities include:

- Multiple test loops with flows to 25 000 m<sup>3</sup>/h (5680 gpm)
- Electrical power testing to 4.6 MW (6168 hp)
- Test pits for vertical pumps
- Dedicated stands for engine tests

### **Available Accessories**

- Electric motor controller accessories
- Diesel engine controller accessories
- Ventilation systems
- Noise reduction systems
- Pneumatic and hydraulic motor starters
- Fuel tank configurations
- CO<sub>2</sub> fire suppression
- Low NOx emission



### **Custom-Engineered Systems**

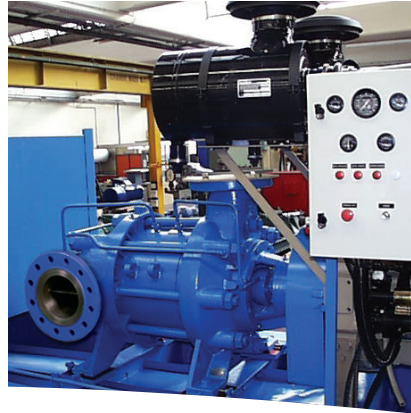
Custom-engineered and self-contained fire protection pump systems are available as either skid-mounted packages or as fully containerized units. These pre-packaged configurations include pumps, drives, controls, headers, pipes, fittings and electrical wiring to meet or exceed all applicable codes. An electrical test verifies component integrity. On-site installation only requires piping and electrical connection.

A selection of electric, diesel or dual-drive configurations is available from recognized suppliers to best meet installation and reliability requirements or customer preference. Pump materials are available to handle fresh water, brackish or seawater applications.

### **Design Services and Upgrades**

Flowserve applications engineers possess the systems and specifications knowledge along with real world experience to develop safe, reliable systems and system upgrades to meet client needs.

- Start-up and commissioning (Field Service National, International)
- On-site maintenance and repair
- Pump and installation upgrades
- Hydraulic and electrical assessments
- Training



## Broad Application Coverage

- Jockey and Source A
- Source B Electrical Units
- Diesel Units
- RIA
- Foam Mitigation

- ● ● ● ○ **Single-Stage, End Suction Pumps**  
(MEN and MENBLOC)

Frame mounted (MEN) or close coupled (MENBLOC) pumps compliant with DIN 24255 and EN 733

### Operating Parameters

- Flows to 800 m<sup>3</sup>/h (3520 gpm)
- Heads to 140 m (450 ft)
- Pressures to 16 bar (230 psi)

- ● ● ● ○ ○ **Horizontal Multistage Pumps**  
(FP and NM)

Between bearings and overhung designs available in numerous horizontal and vertical configurations

### Operating Parameters

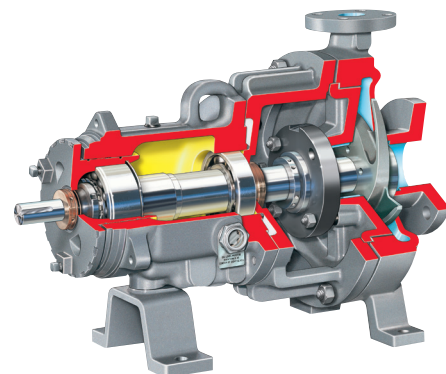
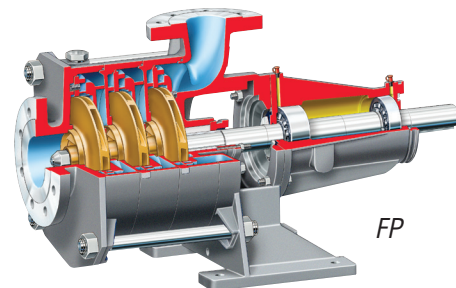
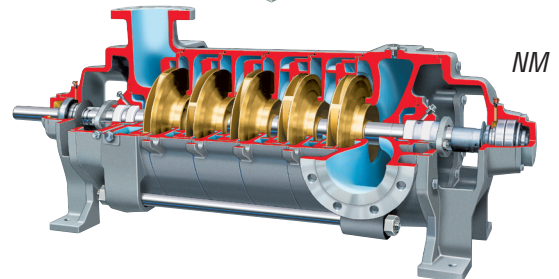
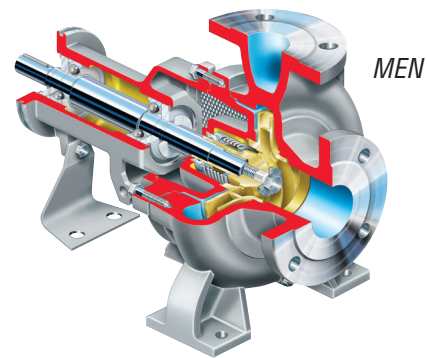
- Flows to 500 m<sup>3</sup>/h (2200 gpm)
- Heads to 250 m (820 ft)
- Pressures to 25 bar (365 psi)

- ● ● ● ● **ASME and ISO Process Pumps**  
(Durco Mark 3™ and CPX)

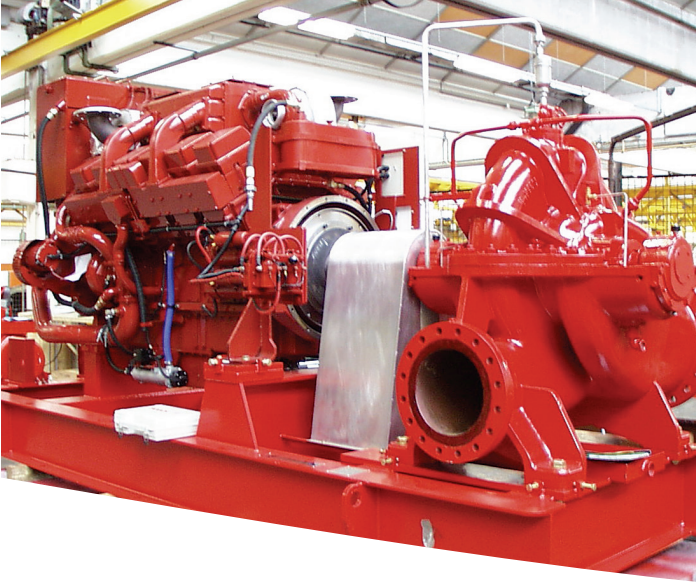
Compliant with ASME B73.1 (Durco Mark 3) or ISO 2858 and 5199 (Durco Mark 3 ISO); self-priming, in-line and close-coupled configurations available

### Operating Parameters

- Flows to 1680 m<sup>3</sup>/h (7400 gpm)
- Heads to 220 m (720 ft)
- Pressures to 27 bar (400 psi)



Durco Mark 3



● ● ○ ○ ○ **Vertical Submersible Motor Pumps**  
(Pleuger SUBM)

Multistage, vertical pumps featuring wet type motors with watertight insulated windings

**Operating Parameters**

- Flows to 3000 m<sup>3</sup>/h (13 210 gpm)
- Heads to 500 m (1640 ft)
- Pressures to 60 bar (870 psi)

● ● ● ○ ○ **Vertical Turbine Wet Pit Pumps**  
(VTP)

Single or multistage designs with enclosed or semi-open impellers; numerous drive options available

**Operating Parameters**

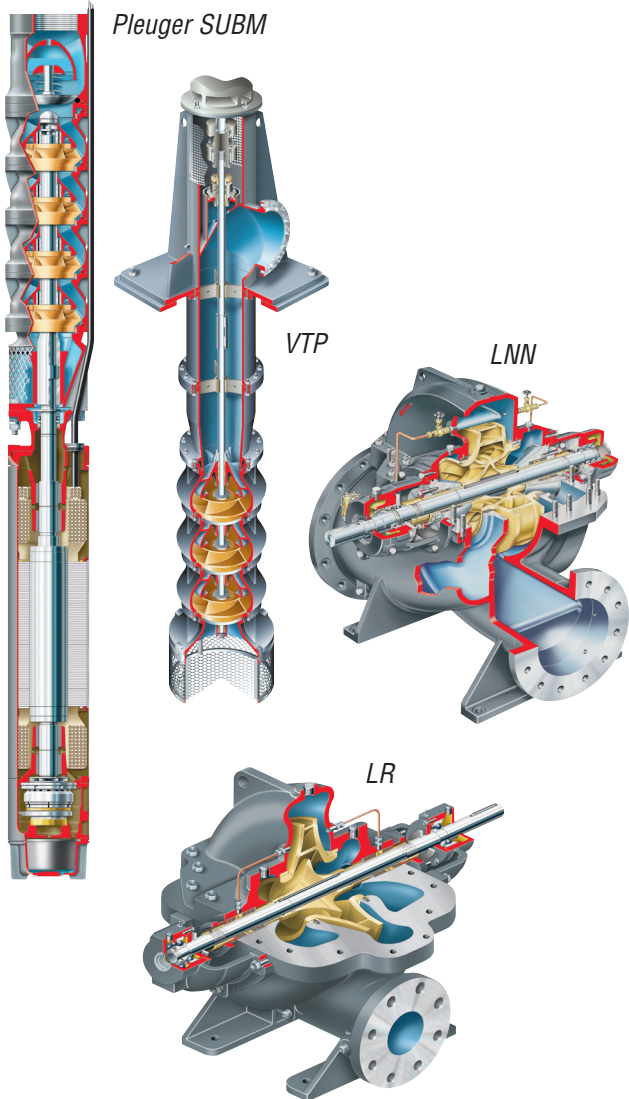
- Flows to 13 600 m<sup>3</sup>/h (60 000 gpm)
- Heads to 700 m (2300 ft)
- Pressures to 100 bar (1450 psi)

● ● ● ○ ○ **Axially Split Pumps**  
(LR, LLR and LNN)

Double-suction, between bearings designs with ANSI, DIN or ISO flanges. Vertical, bottom-suction and two-stage configurations available

**Operating Parameters**

- Flows to 30 000 m<sup>3</sup>/h (132 000 gpm)
- Heads to 300 m (980 ft)
- Pressures to 40 bar (580 psi)





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