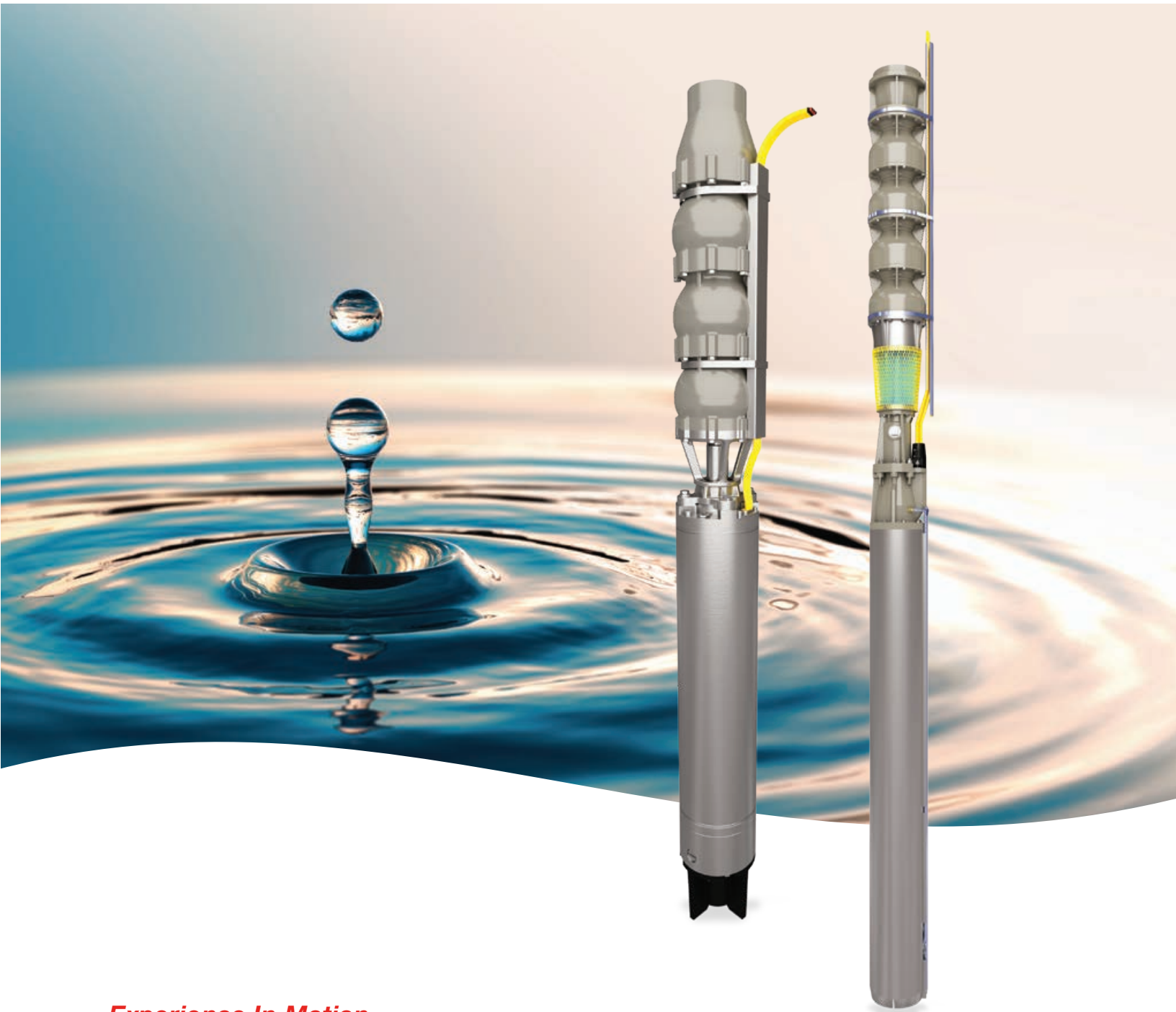




Byron Jackson® SUBM Submersible Pumps and Motors

Byron Jackson OIL oil-filled motors
Byron Jackson H2O water-filled motors



Experience In Motion

Versatility in design

With its SUBM suite of pumps, Flowserve offers one of the broadest range of deep-well submersible pumps in the world. Along with its extensive hydraulic coverage of pumps, Flowserve offers oil-filled or water-filled submersible motors, enabling you to specify the pumping system that best meets your needs in terms of application, specification and lifecycle costs.

Engineered for maximum value

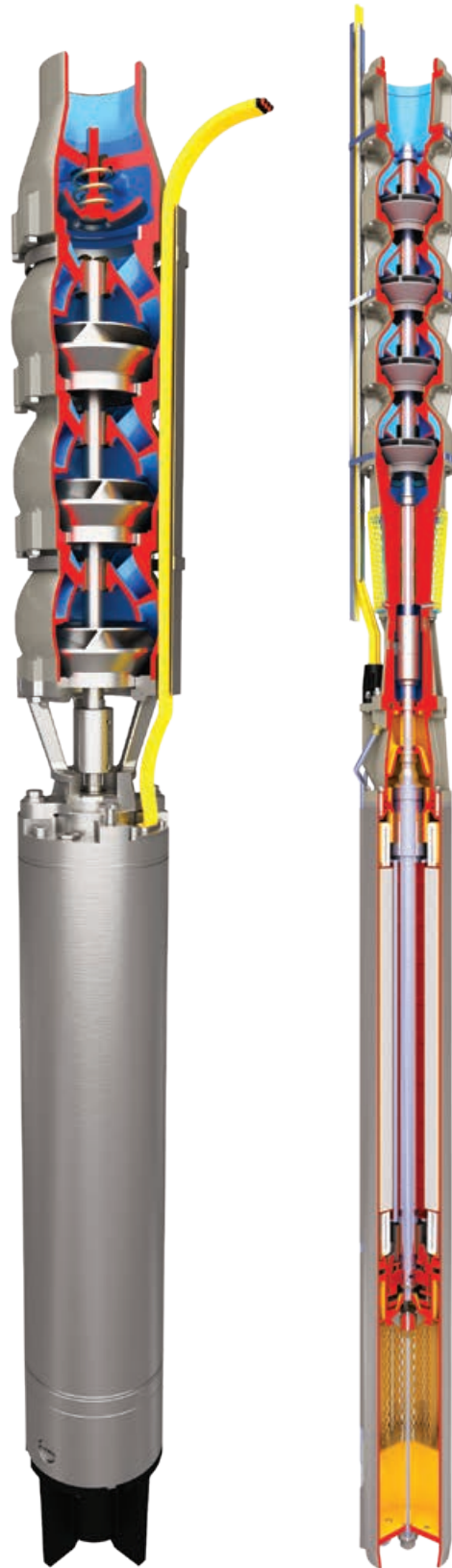
Flowserve SUBM submersible pumps are ruggedly designed to provide long service life in a variety of applications.

- **Quick delivery and engineered flexibility** — SUBM pumps come in standardized designs for quick turnarounds or can be configured to custom specifications.
- **Unsurpassed hydraulic coverage** — Through design innovation and multiple legacy brands, their extensive hydraulic coverage meets nearly any duty condition requirement.
- **Wide range of material options** — Customers can select from numerous materials — including iron, bronze, stainless steel and super duplex — to maximize pump life in a range of applications.
- **Maximum flow** — Pump hydraulics are designed to maximize flow rate per well size.
- **High efficiency** — Pump and motor are optimized to provide maximum efficiency, resulting in lower operating costs.
- **High-quality, cost-effective motors** — Rewindable oil- or water-filled motors provide long life and lower total lifecycle costs.

Submersible advantages

Submersible motor pumps from Flowserve are:

- Reliable
- Explosion-proof
- Cost-effective
- Vandal-proof
- Crooked-well compatible
- Safe from flooding and freezing
- Ideal for deep settings
- Low-maintenance



SUBM pump with H₂O motor

SUBM pump with OIL motor

Built to perform

With their optimized hydraulics and your choice of water-filled or oil-filled submersible motors along with numerous options and accessories, Flowsolve SUBM submersible pumps can be precisely configured to meet your specific application requirements. Special designs and materials are available for offshore, geothermal and other demanding applications.

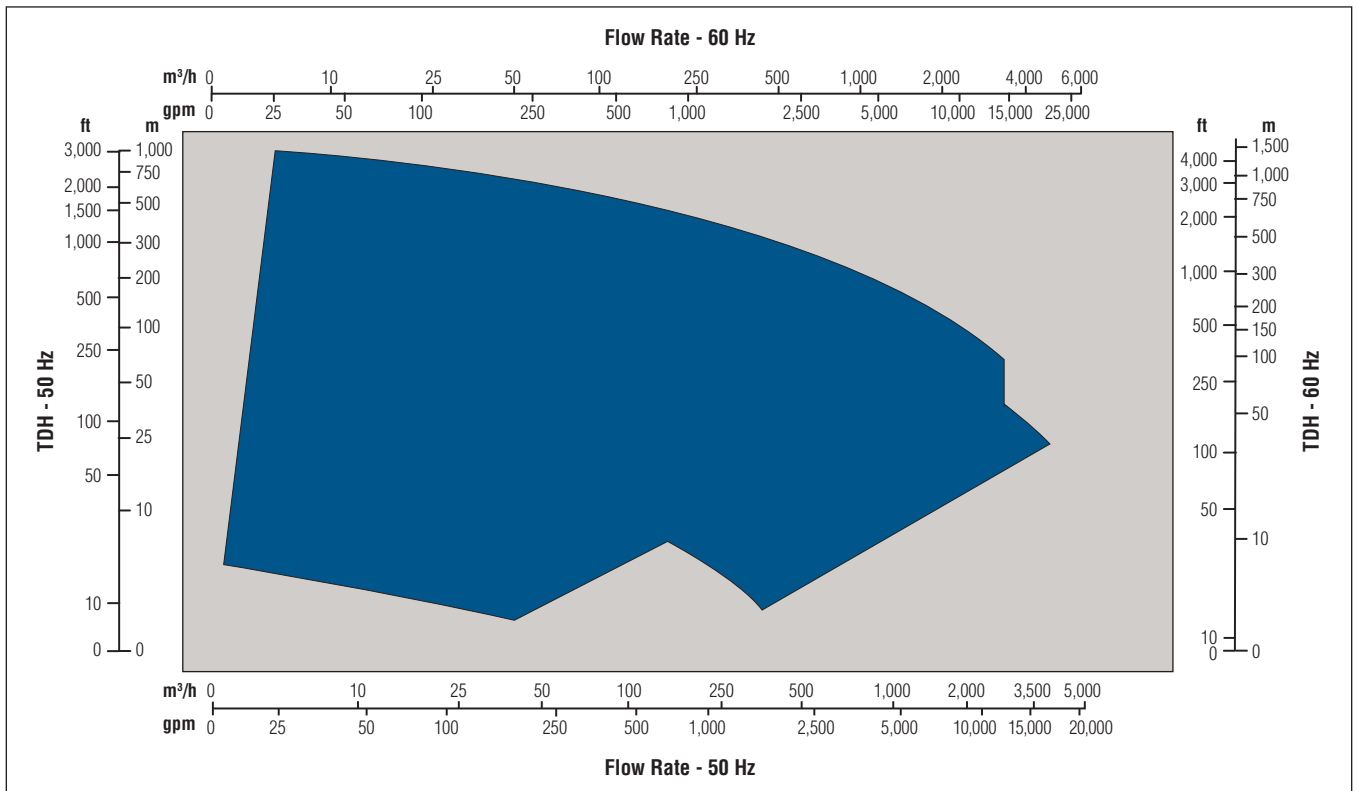
Operating parameters

- Flows to 6,000 m³/h (26,415 gpm)
- Heads to 800 m (2,625 ft)
- Motor sizes to 2,610 kW (3,500 hp)
 - Speeds from 1,000 to 3,600 rpm
 - Two-, four- and six-pole designs (others are also available)
 - 200 to 6,600 volt
 - 50 and 60 Hz frequency
 - Variable-frequency drive and high-temperature motor options

Typical applications

- Potable water
- Storage cavern
- Seawater (fire protection, ballast)
- Mine dewatering
- Pressure boosting (fountains)
- Geothermal
- Water injection
- Pipelines

Range chart



Broad hydraulic coverage and design flexibility

The Flowserve SUBM suite of submersible pumps offers an extraordinary range of performance. These robust pumps feature proprietary hydraulics along with optimized bowls and impellers to ensure efficient operation. Multiple design configurations and a broad hydraulic coverage ensure you get a cost-effective solution that precisely meets your application requirements. Heavy-duty construction extends both maintenance intervals and pump life to help you control lifecycle costs.

Pump certifications and standards

- NSF/ANSI Standards 61 and 372, according to criteria established jointly by NSF International and ANSI
- AWWA E102 design standard

Features and benefits

Heavy-duty impellers and bowls deliver maximum efficiency over a broad operating range. Impellers are dynamically balanced to minimize vibration and extend service life.

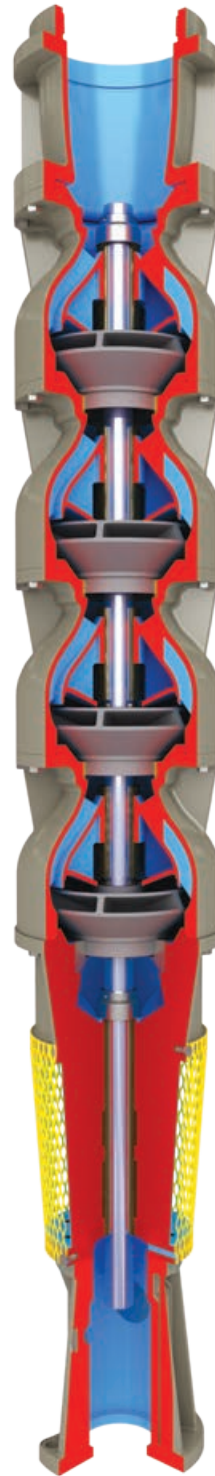
Enclosed impellers are engineered for close running clearances with the bowls to maintain efficiency over a broad operating range. A full offering of semi-open impellers is available for specific applications.

Bowl bearings with high length-to-diameter ratio on either side of the impeller provide rigid support for the bowl shaft.

Suction inlet flow path is maximized and optimally designed for efficiency.

Reliable adaption system between pump and motor provides maximum shaft support to reduce vibration and extend seal life.

Integral check valves, available on some models, offer protection against motor thrust bearing damage.



Pump end for OIL motor

Options

Impeller designs

- Low NPSHR for hydrocarbons and low-submergence applications
- Multiple specific speeds for optimum performance

Accessories

- Power cable assemblies
- Surface plates
- Junction boxes
- Suction sleeves
- Booster barrels
- Starters and control panels
- Monitoring instrumentation
- Lightning arresters
- Check valves
- Temperature sensors

Bottom intake

- Reduced civil cost (sump design)
- Minimum submergence design
- Modular construction
- Tank installation
- Open sump installation

Materials of construction

- Cast iron
- Bronze
- Stainless steel
- Ni-Al-Br
- Carbon steel
- Duplex and super duplex stainless steels



Proven cavern storage experience

SUBM submersible pumps with oil-filled motors are designed to handle explosive fluids, including low-pressure (LP) gas. The installation conditions must ensure that both the pump and motor are always totally submerged.

An oil-filled header tank, including 35 to 50 psi nitrogen on top of the wellhead, is provided to guarantee positive pressure in the motor. Filling additional nitrogen in the header tank guarantees that no moisture can enter the header tank.

Byron Jackson H2O water-filled submersible motors

Byron Jackson H2O water-filled, wet-wound motors are environmentally friendly, provide high efficiency, and offer outstanding reliability. Water-tight insulated windings ensure easy service, improve cooling, and extend motor life. Each unit is pre-filled with food-grade additives for freeze and rust protection, making them suitable for potable water applications. A heavy-duty thrust bearing design, a 100% pressure compensation system, rewindable stators, and a choice of materials suited for specific applications make Byron Jackson H2O water-filled submersible motors an exceptional value.

Features and benefits

Three-phase squirrel cage induction motor provides reliable operation and extends product life.

Pressure-balanced mechanical seal is available in many materials to best suit user applications.

Hydrodynamic carbon sleeve bearings are water-lubricated and maintenance-free.

Thrust bearings are heavy-duty, adjustable and self-aligning for extended motor life.

Non-toxic class Y winding insulation improves cooling and extends the life of the motor.

Internally connected lead cable eliminates potential leaks.

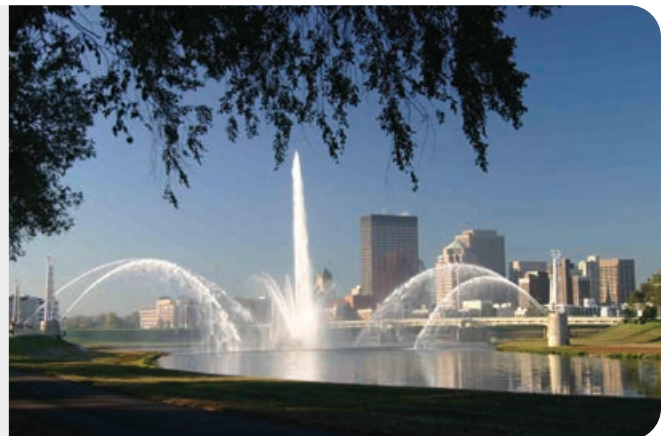
Pre-filled water and antifreeze motor lubrication simplifies installation and enables pump to operate over a wide range of ambient temperatures.

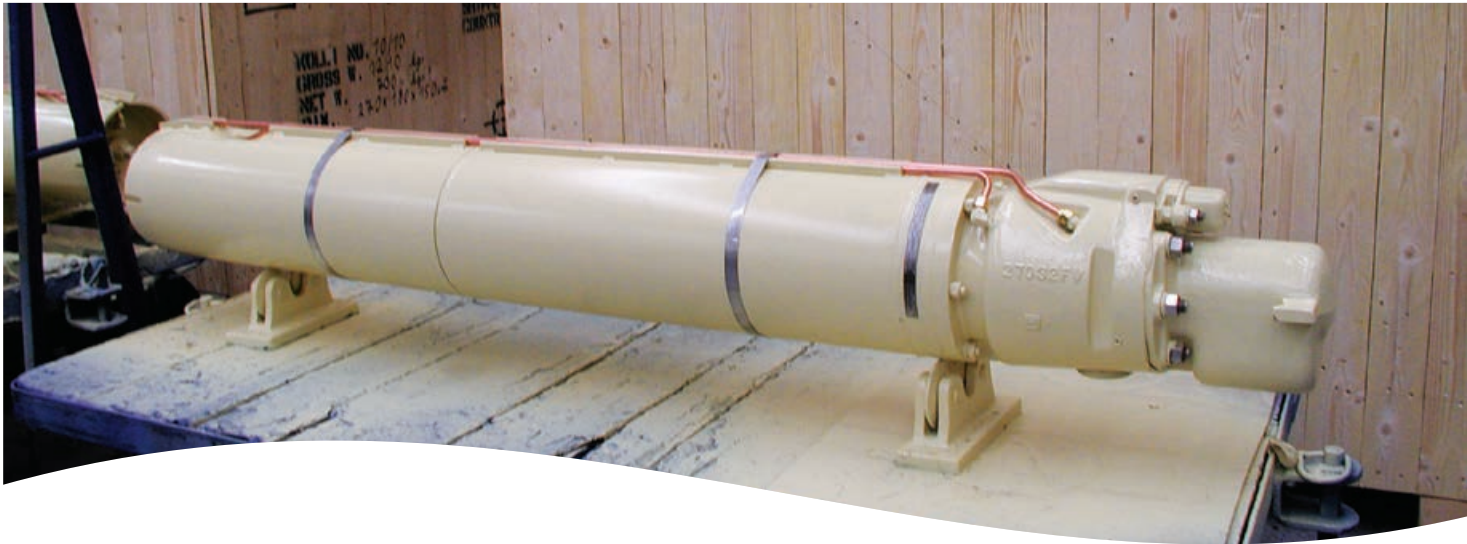
Temperature-monitoring sensors are available on all motors to prevent catastrophic motor failure and reduce repair costs.



Motor certifications and standards

Byron Jackson H2O water-filled motors are certified to NSF/ANSI Standards 61 and 372, according to criteria established jointly by NSF International and ANSI.





Byron Jackson OIL oil-filled submersible motors

Byron Jackson OIL submersible units are built for the most demanding deep well services. Their oil-filled design with internal self-contained force feed, filtered, cooled oil circulation system maintains continuous lubrication and provides excellent insulation and corrosion resistance. Known for their long-lasting performance — extending to 30 or more years — these rugged and reliable units offer outstanding sustainability along with significant total lifecycle cost savings.

Features and benefits

Three-phase squirrel cage induction motor provides reliable operation and extends product life.

Class F insulation system is designed with vacuum pressure impregnated (VPI) epoxy for superior insulation and long service life.

Double-acting thrust bearing system offers continuous up or down thrust capability.

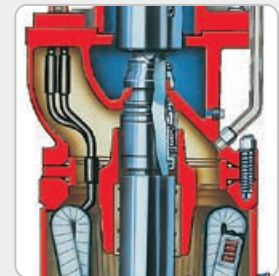
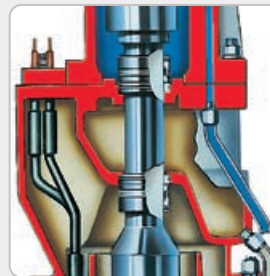
Dual bearings are provided between pump and motor for minimum bearing span and maximum shaft support.

Special metallurgy is available for corrosive services.

Sealed power cable plug-in feature ensures reliable operation and ease of installation by eliminating the need for field splicing.

Motor certifications and standards

Byron Jackson OIL motors are certified to NSF/ANSI Standards 61 and 372, according to criteria established jointly by NSF International and ANSI.



Mechanical seal options

Byron Jackson OIL motors are available with single or double mechanical seals to suit application requirements.

- The **double mechanical seal** incorporates two separate highly engineered bellows seals, providing dual protection for the motor.
- The **single, pressurized mechanical seal** is designed for hydrocarbon services and non-vertical applications.



Delivery in one to four weeks with the Byron Jackson H2O+ quick-delivery program

To meet deep well operators' requirements for quick delivery of high-efficiency, long-lasting submersible pumps, Flowserve developed the Byron Jackson H2O+ submersible pump quick-delivery program. Available in sizes 6 through 10 in, Byron Jackson H2O+ submersible pumps and motors are strategically stocked to assure speedy delivery in one to four weeks.

The "plus" means you get more

With Byron Jackson H2O+ submersible pumps and motors, you get more than just fast delivery. These cost-effective pumps feature upgraded materials, advanced hydraulics and reliable motors to provide the quality and performance you expect from Flowserve.

- Precision cast stainless steel impellers and bowls for high-efficiency operation
- Rugged construction that minimizes wear and extends lifecycles
- Broad hydraulic coverage that ensures a precise fit
- Byron Jackson H2O water-filled, wet-wound motors that are environmentally friendly, high-efficiency and extremely reliable
- Lightweight, modular construction that simplifies installation

Refer to flyer PUFly000207 for more information.



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PUBR000208-12 (EN/AQ) March 2021