



Pleuger® Electrical Submersible Pumps and Water-Filled Motors



Experience In Motion

Trusted Supplier of Choice for Water Resources

For more than a century and a half, Flowserve has been in the forefront of virtually every significant advancement in pumping technology to meet water-handling challenges. Today, Flowserve offers the world's most complete line of submersible pumps with water-filled motors and systems (Pleuger design) for water applications along with a full menu of technical and service support.

Product Brands of Distinction

Byron Jackson® Pumps

Flowserve® Pumps

IDP® Pumps

Pleuger® Pumps

Worthington® Pumps



Assembling and Service Center – Newark, UK



***Manufacturing, Assembling and Service Center
– Arganda, Spain***



***Headquarters and Design Center for Submersible
Motors – Hamburg, Germany***



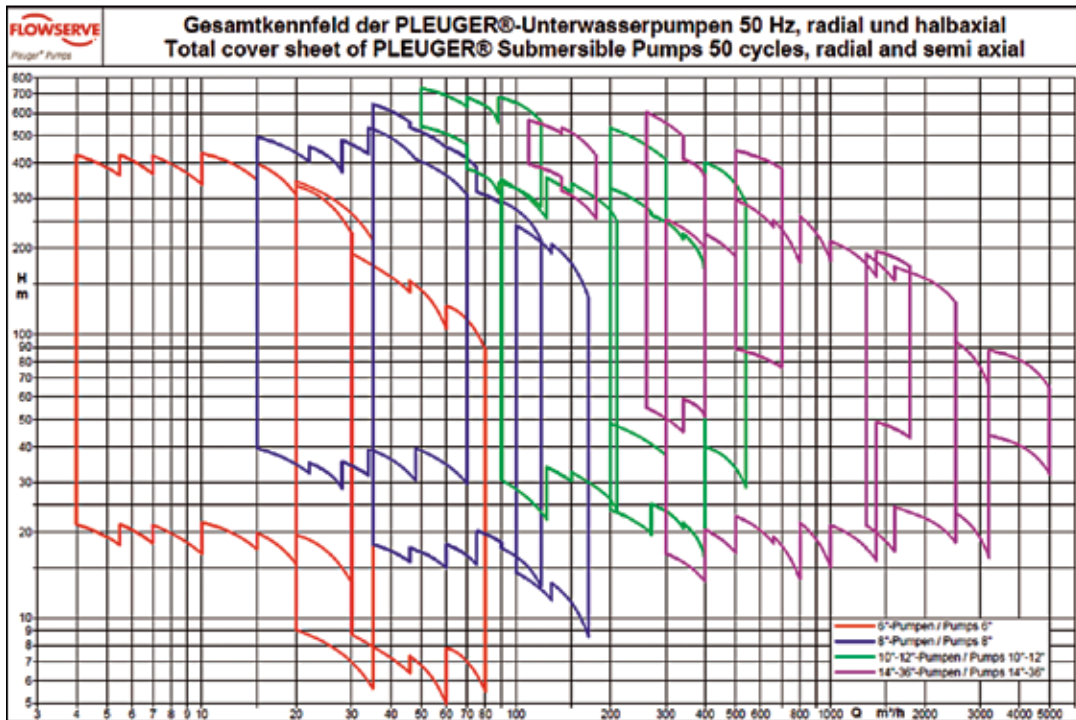
***Submersible Motor Center of Excellence (MCO)
– Maryland, USA***



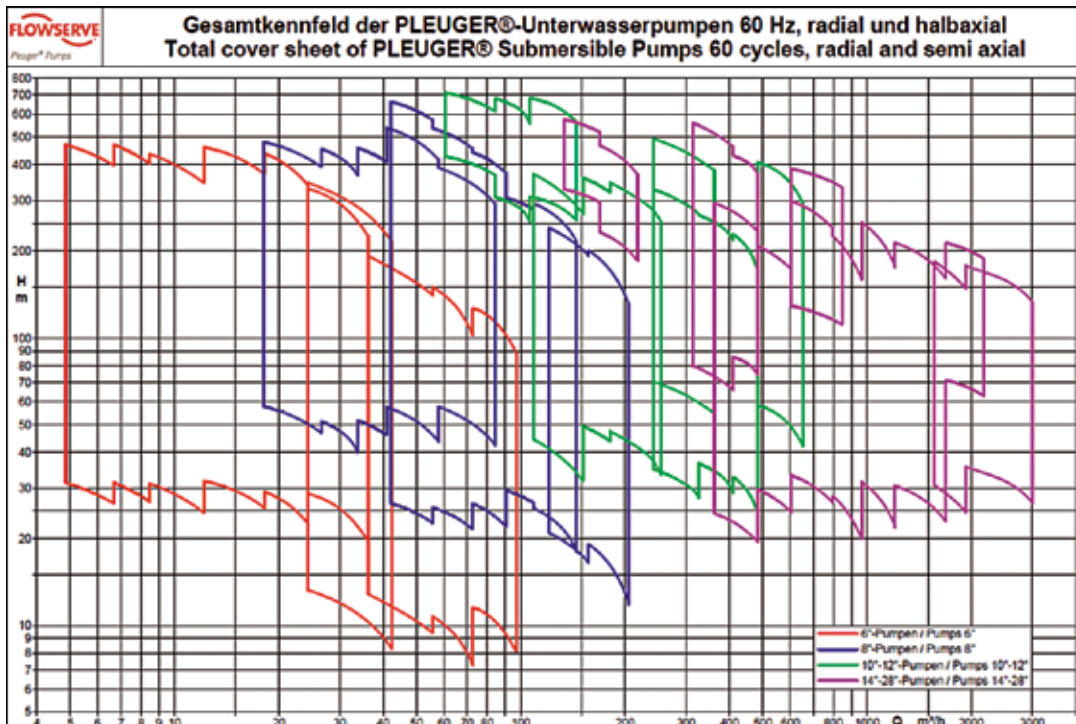
Assembling and Service Center – Orleans, France

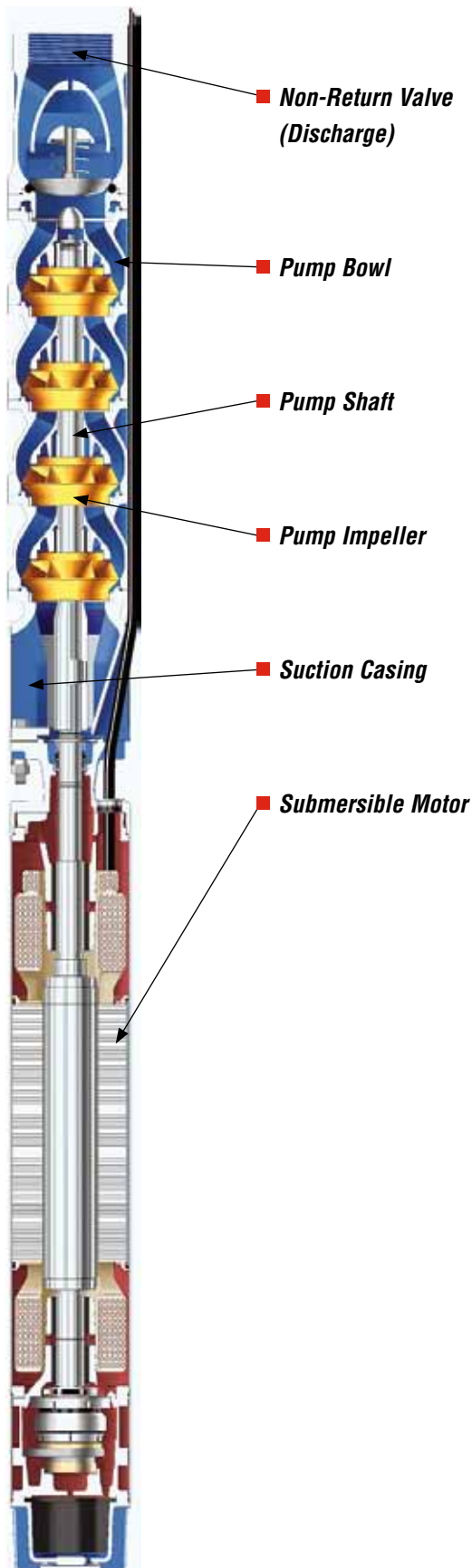
Submersible Pumps

50 Hz Flow / Head Chart



60 Hz Flow / Head Chart





Submersible Pump End Feature

Flowserve submersible pump units are multistage centrifugal units which operate below water level and are driven by water-filled AC three-phase induction submersible motors.

Pumps and motors form a single enclosed unit which when installed vertically in a water well is held in position by the connected discharge pipe at the non-return valve or discharge casing.

Flowserve submersible pump units are offered in a wide range of applications. Pumps are available from 4" to 48" bowl diameter with capacities up to 6000 m³/h (25000 gpm) and heads up to 800 m (2600 ft).

Pump units are designed and manufactured to the highest quality with high pump efficiency and long working life under the most adverse conditions. They are extensively tested and inspected to ensure operational safety.

Flowserve pump units are designed on the principle of a modular structure. Thus, with a limited number of parts, different tailor-made requests can be achieved. Pumps are equipped with non-return valves to guarantee optimal functional safety (water hammer).

Flowserve submersible pump units provide economic solutions for almost every user's requirements.

To produce high-quality submersible pumps and motors requires both specialized know-how and continually evolving manufacturing processes. All submersible pump products are produced using the most advanced manufacturing techniques – from initial development base CAD to quality-controlled CNC production equipment. It is not by chance that among experts Flowserve has been a byword for top product quality for decades.

Advanced Material Concept

Tested and proven over many years, Flowserve pumps can ensure a high degree of reliability and suitability for a wide range of applications. For more specialized requirements and applications, special materials and combinations of materials are available that are designed to ensure optimum efficiency and a long service life.

Material – Sample Combination Pump

- Bowls cast iron – Noryl impeller
- Bowls stainless st. – Noryl impeller (only special pump type)
- Bowls cast iron – Bronze impeller or NiAlBz
- Bowls bronze or NiAlBz – Bronze impeller or NiAlBz
- Bowls stainless st. (316 Ti) – Stainless st. (316 Ti) impeller
- Bowls stainless st. super duplex – Stainless st. super duplex impeller
- Stator stainless st. (316 Ti) – Cast iron housings
- Stator stainless st. (316 Ti) – Stainless st. (316 Ti) housings
- Stator stainless st. (SMO) – Stainless st. super duplex housings

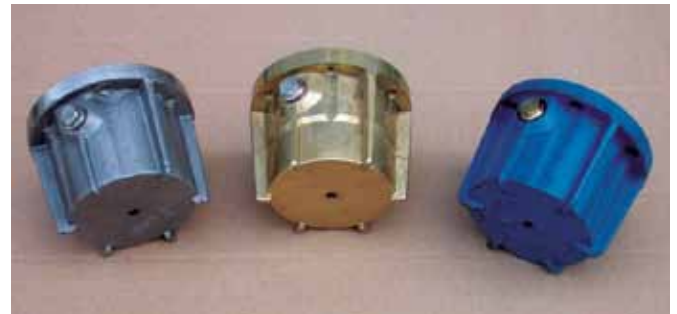
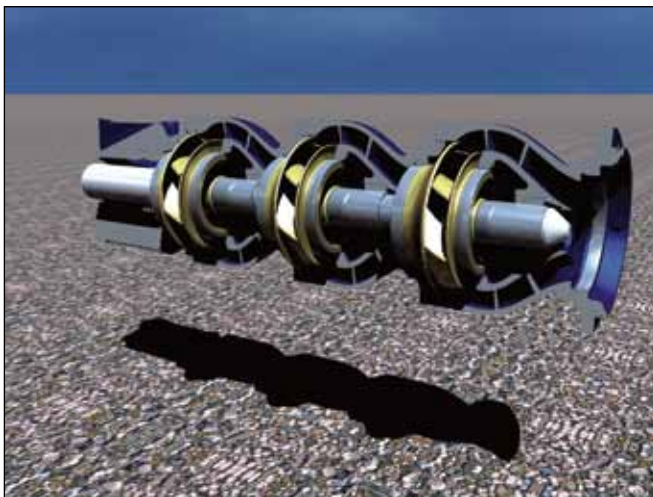
Pump Shaft

- Stainless st. (1.4057); stainless st. (duplex) or stainless st. (super duplex)

Motor Shaft End

- Stainless st. duplex or stainless st. super duplex

Pump End Cross Sectional



Sample Materials

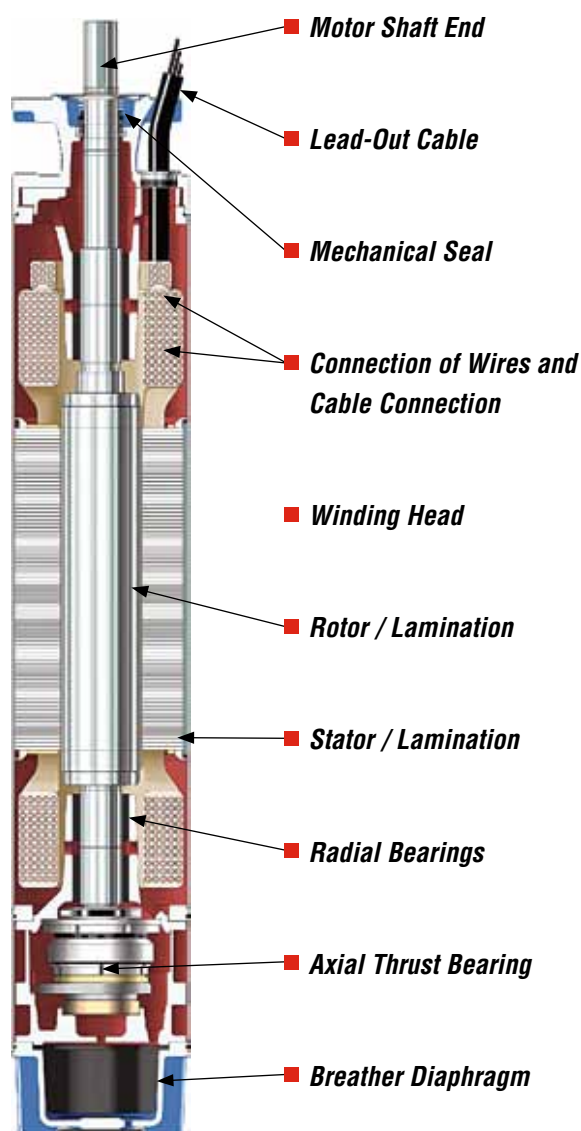


Submersible Water-Filled Motor Feature (Pleuger Design)

Power Output Range Two-Pole Submersible Water-Filled Motors						
Motor Type	M6	M8	MI10	VNI12	VNI14	MI16
50 Hz Power Output (kW)	5,5 - 37	33 - 90	75 - 230	165 - 270	185 - 400	300 - 670
60 Hz Power Output (kW)	6,4 - 45	40 - 106	90 - 265	185 - 315	215 - 435	345 - 770

Two-Pole Water-Filled Motors on Request

Power Output Range Two-Pole Submersible Water-Filled Motors						
Motor Type	M6	M8	MI10	VNI12	VNI14	MI16
50 Hz Power Output (HP)	7,5 - 50	45 - 120	100 - 310	220 - 360	250 - 540	400 - 900
60 Hz Power Output (HP)	8,5 - 60	55 - 140	120 - 355	250 - 425	290 - 585	460 - 1050



Submersible Motor (Water-Filled) Description

Pleuger submersible motors have been providing successful and reliable service since 1929. The three-phase AC squirrel cage induction motors are water / glycol filled (65 volume % potable water and 35 volume % glycol).

The water / glycol motor filling provides lubrication of motor bearings and motor cooling. The admixture of glycol is environmentally safe. The admixture prevents freezing of the motor filling liquid to cool components while mitigating corrosion.

The motor windings consist of fully waterproof / high di-electric strength windings (PVC or PE2+PA) insulation class Y (90°C).

The motor windings are fully rewindable. The electrical power supply is provided by a uniquely developed waterproof submersible motor lead-out cable. The cable(s) are sealed at the motor with special designed cable glands.

The dynamically balanced rotor rotates in oversized twin bearings on each bearing housing (top and bottom of motors). An installed diaphragm in the lower motor housing provides pressure / volume compensation of the motor during internal motor temperature changes.

At different water submergence ranges, the diaphragm produces pressure compensation, i.e., to get the same pressure outside and inside (no pressure difference). A high-quality mechanical seal prevents the ingress of ambient liquid to the motor, fully protecting the motor against internal contamination. A high-quality adjustable, self-aligning thrust bearing allows high thrust service life, even under the heaviest pump duty conditions. Pleuger submersible motor designs are available for vertical or horizontal installations. In maintaining our reputation as a leading supplier of pumping systems for the water industry, Flowserve continues to update and improve Pleuger submersible motors.

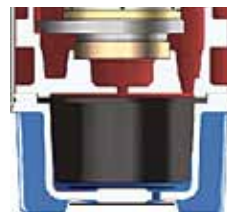
Motor Features Continued

Special Designed Mechanical Seal:

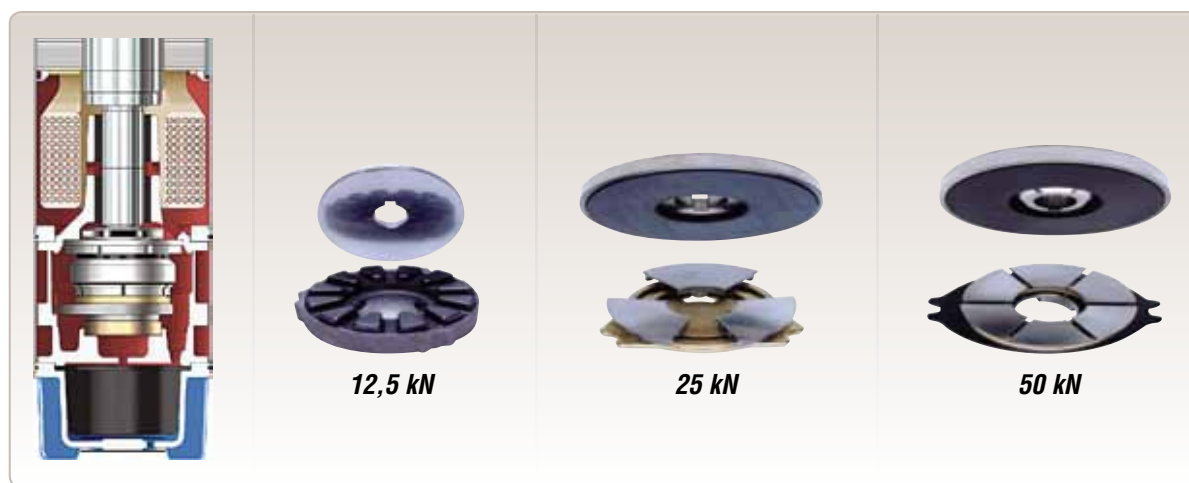
(Different Material Combinations Available – sic / sic, etc.)



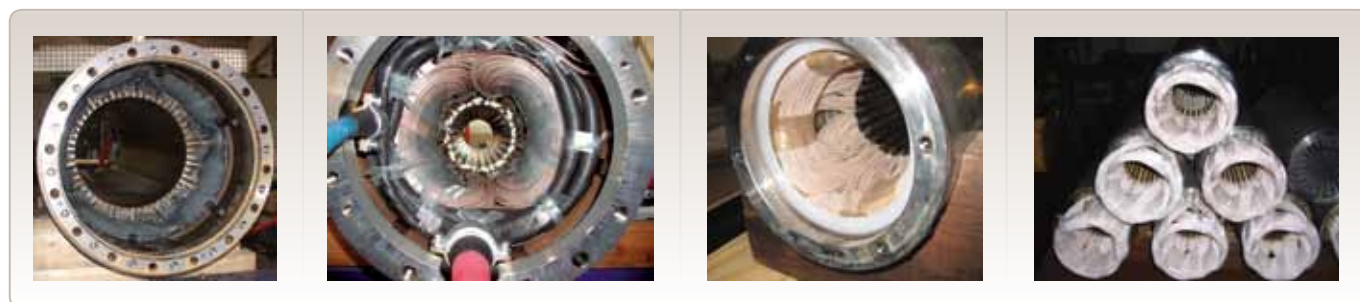
Breather Diaphragm



Motor Carbon / Hard Carbon Thrust Bearings / Stainless Steel Pads



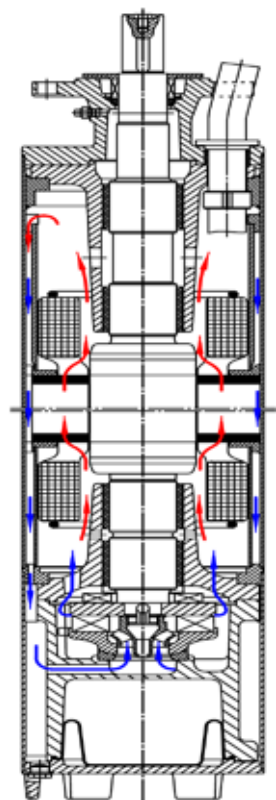
Motor Winding With PVC / PE2+PA



Motor Features Continued

(From 10" Motor and Larger Size)

Submersible Motors With Internal Forced Cooling System



Internal Forced Cooling System (MI):

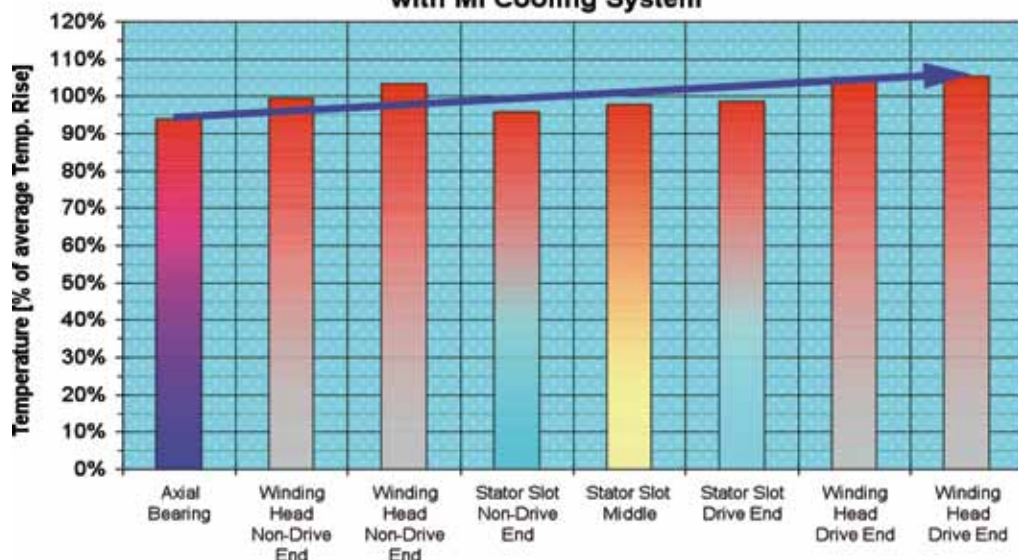
The internal cooling system is manufactured with a highly efficient cooling impeller. The design provides an efficient cooling circuit, which ensures sufficient thermal motor reserves and low cooling losses.

Motor Rotor With Special Designed Cooling Impeller



Impeller Temperature Distribution With Special Cooling System

**PLEUGER Submersible Motors
with MI Cooling System**



Application of Pleuger Electric Submersible Pumps With Water-Filled Submersible Motors

Potable Water Supply



Irrigation



Dewatering (Mines)



Offshore Application***Pump Unit Ready for Shipment******Gas Platform in Qatar******Seawater Submersible Lift Pump******Pump Unit Installation******Pump Unit With Pipes Installed******Pump Units Running***



Bulletin FPD-1362a (E/A4) Printed in USA. March 2011. © Flowserve Corporation

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