

**Grundfos submersible pumps  
– the complete solution**

# Grundfos

## Submersible Pumps

– designed for longevity and efficiency

### › Wide Range of Sizes

Grundfos offers a complete range of submersible pumps and motors to fit virtually any application, with flow rates of 0 - 1100 gpm

### › State-of-the-art Hydraulics

Pump efficiency is maximized by constant improvement of the high-performance hydraulic design, and precise manufacturing process

### › 100% High-grade Stainless Steel

Rugged stainless steel construction inside and out resists corrosion and attack from aggressive liquids

### › Wear-resistant Design

Designed to flush abrasive particles from the pump, and made from stainless steel to resist wear caused by abrasives

### › Motors

Grundfos manufactures it's own line of quality submersible motors in a broad variety of sizes. With the same stainless steel construction and quality design as our pumps, Grundfos can provide the complete solution for your submersible pumping needs

### › Motor Controls and Protection

Available controls to protect the motor against burnout and dry-running, plus the ability to monitor the system allowing the user to optimize settings



# Whatever your needs, Grundfos Submersible Pumps provide efficient, reliable solutions



The Grundfos range of submersible pumps is well-known for efficiency and reliability. Made primarily of corrosion-resistant stainless steel, Grundfos pumps are ideal for a wide variety of applications, such as raw water supply, pressure boosting, irrigation, and dewatering – in addition to a variety of industrial applications.

## **State-of-the-art technology**

Grundfos pumps are made of the very best materials and offer state-of-the-art hydraulic design. Built to deliver optimum efficiency during periods of high demand, all Grundfos pumps provide low long-term operating costs and high operating reliability regardless of the application.

Grundfos submersibles offer unique user benefits such as high efficiency, high resistance to sand and other abrasives, and easy maintenance. In addition, a complete monitoring and control system is available for constant optimization of the pumping system. In fact, no other submersible pump offers you as many advantages as you will get with a submersible pump from Grundfos.

## Reduce your operating costs

The total cost of owning and operating a pump over its entire lifespan covers much more than just the initial cost – it covers the total sum of the Life Cycle Costs of the pumping system.

Electricity is the most expensive part of any pump – a fact that is often overlooked when pumps and prices are compared. It maybe surprising that the purchase price and maintenance costs account for less than 15% of the total lifetime cost of a pump. Electricity accounts for a staggering 85% or more of the total costs. If you want to save money, that's where you should look.



### Typical lifetime cost-split for a groundwater installation

Simple calculations will demonstrate that increased pump efficiency translates into major, long-term savings. Example: Pumping 450 gpm at a head of 250 ft over 10 years, operating 8 hours a day at an energy cost of \$0.10/kWh – a savings of approximately \$12,000 can be achieved by choosing a pump with a 10% higher efficiency rate.

- **Initial cost 5%**
- **Maintenance cost 10%**
- **Energy cost 85%**

### Grundfos WinCAPS for an optimum system selection

It all starts with the selection of the pumping system. In order to get the full benefit of the more than \$55 million that Grundfos spends on research and development every year, actual installation conditions must be fully analyzed and the most effective pumping system selected to match those conditions.

Grundfos WinCAPS is a highly advanced software tool designed to help our customers assess wire-to-water efficiency and to compare Life Cycle Costs between alternative pumping solutions.



# There's more to it than meets the eye...

Cost of Ownership is about thinking ahead and knowing what lies beneath the surface – maintenance costs, energy costs, and the benefits of having a business relationship with Grundfos.

## Maximum reliability

Reliability is an important overall parameter in system operations – and thus in Cost of Ownership assessment. Grundfos pumps, motors and control systems are designed to provide maximum reliability under all operating conditions. This eliminates costly unscheduled shutdowns and ensures trouble-free operation at all times.

## Keeping up performance

Made primarily of stainless steel components, the Grundfos submersible range offers resistance to abrasives and corrosive agents in the pumped water. Contributing to this are features such as octagonal bearings and built-in sand shields, which ensure that particles are removed from the pump and motor by the water itself.

Erosion and corrosion of a pump mean loss of material and, consequently, a drop in performance and efficiency of the pump. In terms of Cost of Ownership, high-efficiency in a brand new pump is useless if the efficiency starts to drop the moment the pump is brought into operation. Grundfos pumps are made from high-grade stainless steel, which ensures high efficiency and low energy costs during the entire lifetime of a pump.



Grundfos WinCAPS contains complete information about all Grundfos pumps, including performance curves, drawings and installation and service information. An optimisation feature in WinCAPS enables you to fine-tune each important part in your pumping system and to find the most effective way of operation. Using the dimensioning features of the program, we help you to illustrate the consequences of changing parameters in the system or in the mode of operation.

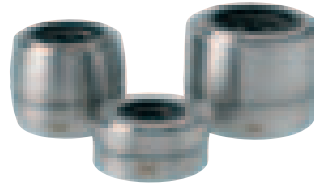


## 6, 8 and 10-Inch Submersibles

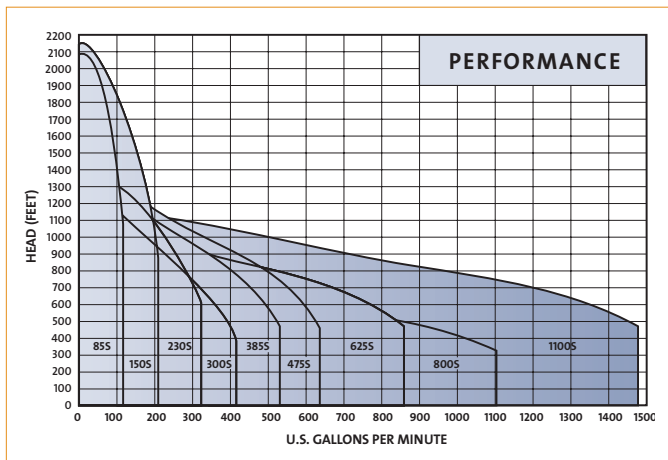
Grundfos large submersible pumps are designed to reduce operating costs and improve efficiencies. The new high efficiency line is designed to deliver during periods of high demand with better efficiencies and fewer losses, to reduce your overall “cost of ownership”.

Built with the same high-quality, corrosion-resistant stainless steel components as other Grundfos groundwater products, these pumps feature a state-of-the-art impeller design which allows for outstanding performance at depths over 2000 feet.

Grundfos 6”, 8” and 10” submersibles are supplied with a rugged Grundfos submersible motor. Manufactured of stainless steel, the two units together result in a quality pumping unit built to last.



Internal leakage caused by pressure differentials within the pump was minimized. Tests have shown that an impeller seal clearance gap of just 0.4 mm between the impeller and the chamber causes a 5% drop in efficiency. When liquid seeps out into the pump, precious energy is wasted on circulating that liquid. Grundfos uses a floating seal ring between chambers, providing a nearly perfect seal.



## 4-Inch Submersibles

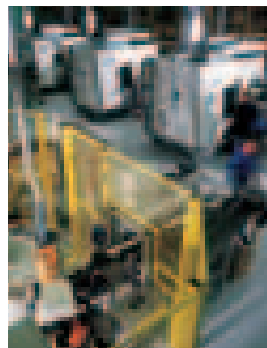
Grundfos' 4" submersibles feature corrosion-resistant stainless steel construction and are designed to provide years of trouble-free performance.

With built-in sand bearing protection, the 4" submersible can handle the sandy conditions often found in domestic wells. Built-in, jam-free check valves and special upthrust protection guarantee smooth running, fail-safe operation. A user friendly cable guard aids in ease of installation.

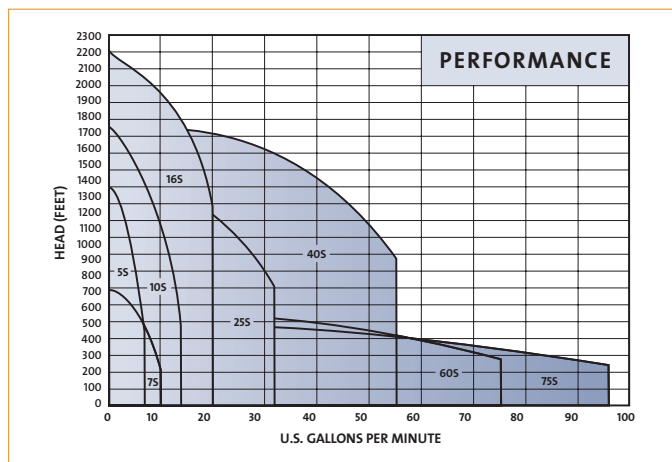
Grundfos 4" submersibles are supplied with a rugged Grundfos submersible motor manufactured of stainless steel. The two units together result in a quality pumping unit built to last.



Radial Thrust Top Bearing handles sand and increases pump life.



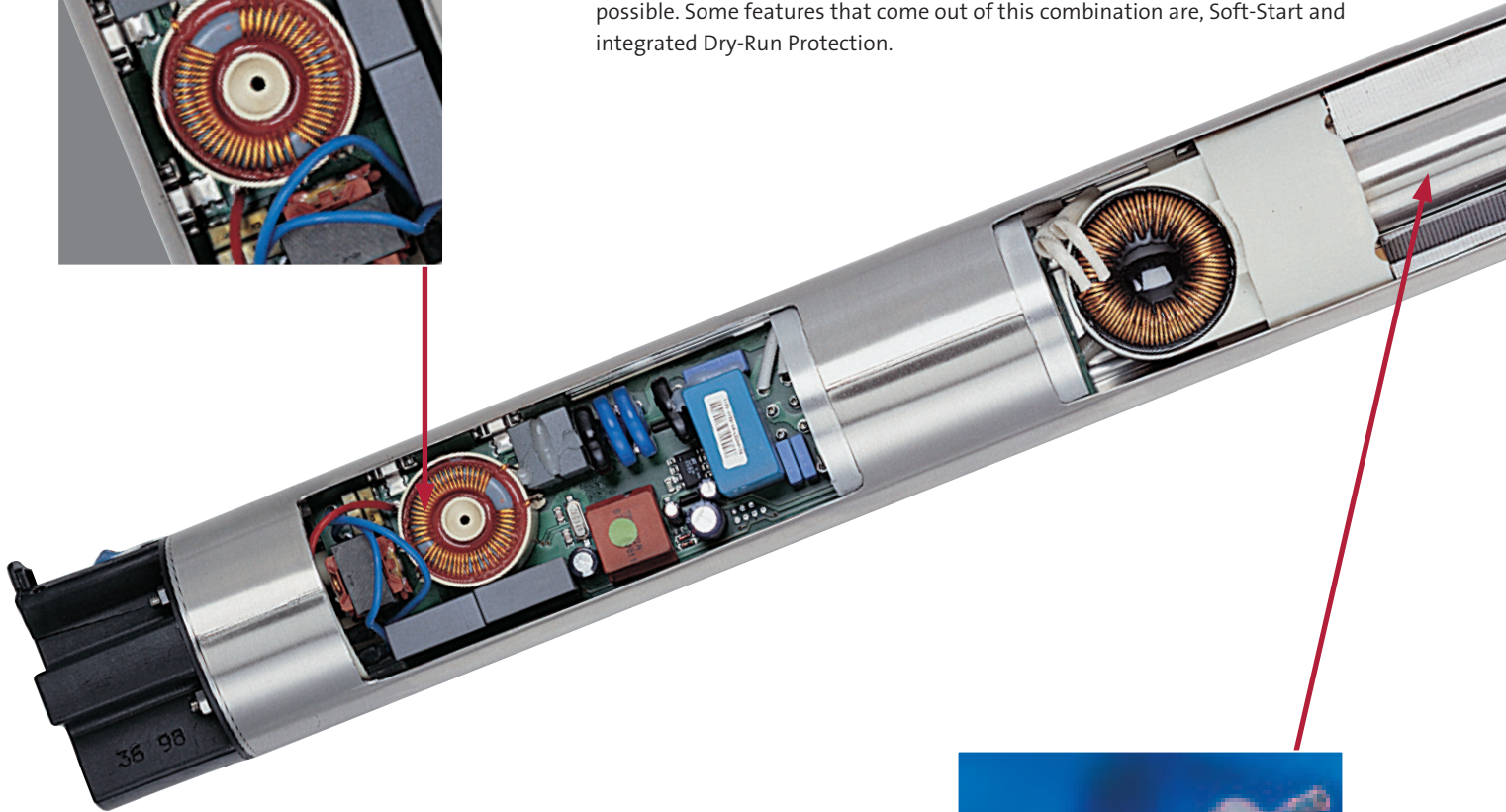
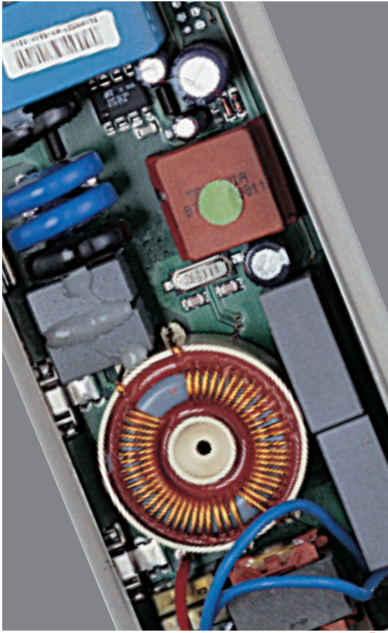
State-of-the-art production technology guarantees the best possible results and gives the SP pumps the final edge. At Grundfos, we develop our own tools and processes to ensure a perfect match between what we want to do and the tools we use to do it. The final outcome is products with near-perfect geometries and tolerances, reflecting the care that has gone into the research and development stages.



### 3-Inch SQ Submersibles

Grundfos 3" SQ pumps combine state-of-the-art design with rugged, quality construction. Designed to go into the same applications as standard 4" pumps, SQ's light weight and small size make for fast, easy installation, especially in less-than ideal wells. With a host of advanced features, Grundfos' 3" SQ pumps set a new standard for what a submersible pump should be.

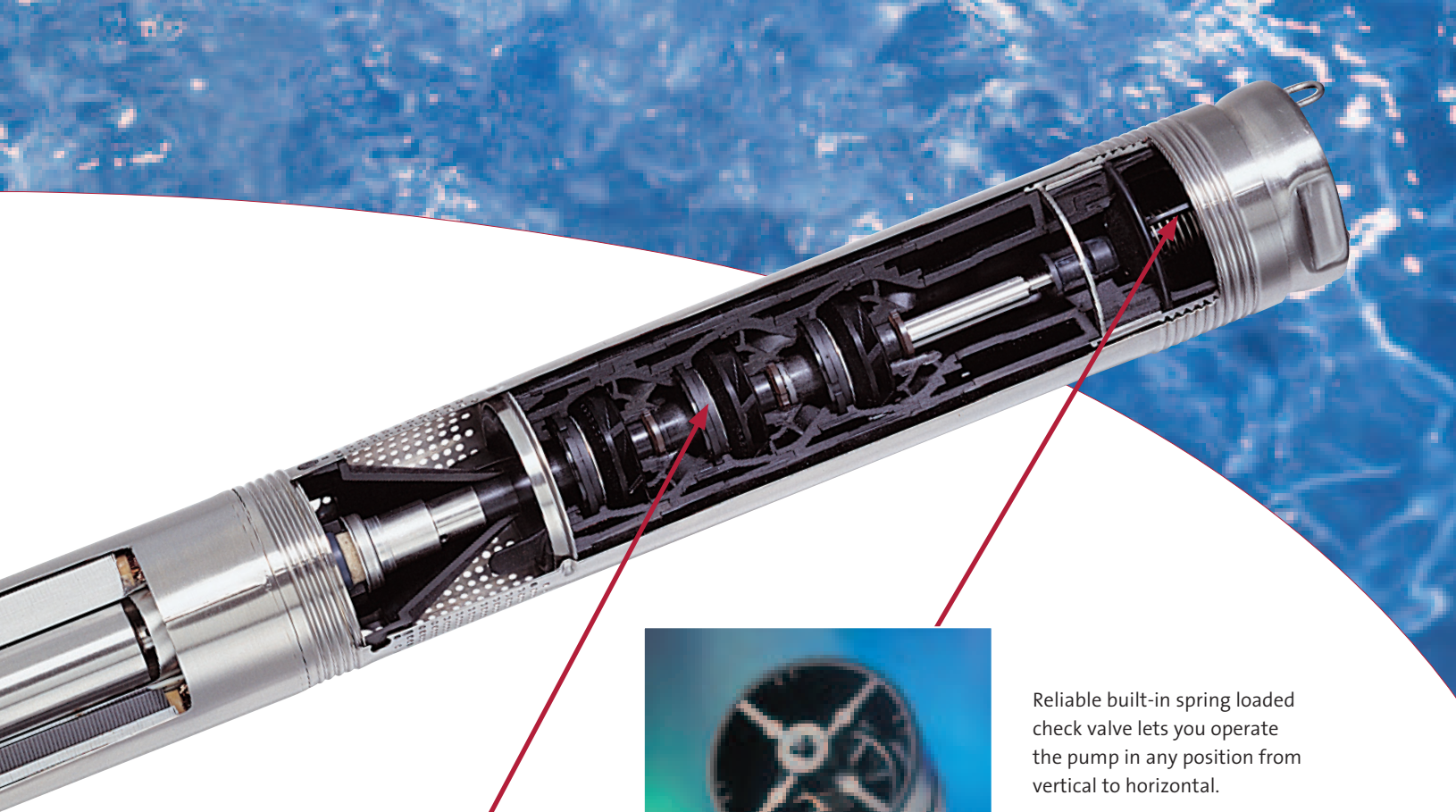
By combining advanced electronics with permanent-magnet motors, we are now able to control and communicate with pumps in ways never before possible. Some features that come out of this combination are, Soft-Start and integrated Dry-Run Protection.



The SQ and SQE motors are based on a permanent-magnet rotor which produces high efficiency output within a wide load range. Other benefits include reduced heat production and start-up torques comparable to 3-phase motors, in a simple-to-install 2-wire format



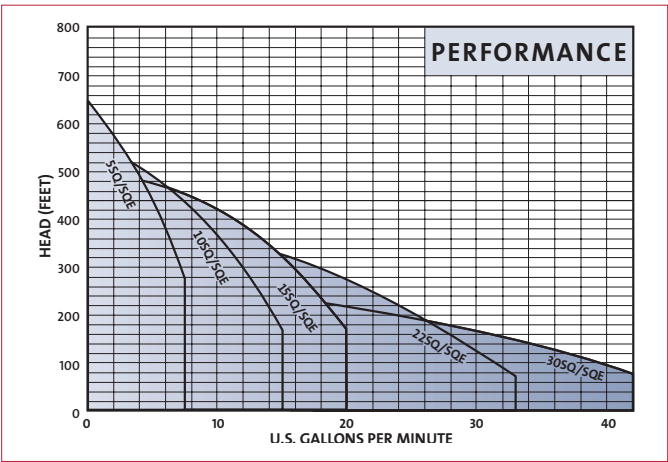




Reliable built-in spring loaded check valve lets you operate the pump in any position from vertical to horizontal.



The SQ/SQE pump design uses “floating” impellers. Each impeller has its own tungsten carbide/ceramic bearing. This design and the high quality of materials make the pump very wear resistant.



## More than 30 years' experience

Grundfos has been manufacturing quality submersible motors for more than 30 years, and Grundfos motors are rated among the very best on the market. From 1/2 hp 3" SQ motors to 150 hp 8" MMS motors and everything in between, Grundfos motors are designed for high efficiency, reliability, and long operating life.

As one of the world's leading pump producers, we know better than anyone what is required of a reliable submersible motor. Every motor we produce reflects the experience gained and commitment to making nothing but the highest quality pumping systems in the world.

### Low Motor Temperatures

Due to a unique thin rotor can and close rotor to stator tolerances in the MS & MMS motors, internal rotor losses are minimized. Large cooling surfaces and internal fill fluid circulation ensures efficient heat transfer, resulting in cooler operating temperatures. Lower motor temperatures mean longer lifetimes.

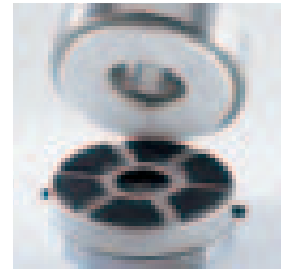


### Surge Protection

Grundfos MS motors are capable of withstanding transients as defined by IEEE and UL surge suppression standards. This natural immunity makes motors resistant to damage from high voltage surges.

### High thrust capacity

The Mitchell-type thrust bearings feature 4 to 6 carbon pads and a ceramic thrust runner to ensure high thrust capacity. This type of bearing is unique in the way that the lapping of the rotation parts allows a quick build-up of water film in the bearing during start up.



High efficiency, reliability, and long operating life.





## Get in Complete Control

In order to get the full benefit from your Grundfos pumping system, the system should be maintained at the ideal operating conditions. Access to reliable data is essential in determining the ideal range for efficiency and energy consumption; without this data, you are out of control.

Grundfos offers a complete range of controls for pumping systems, from control boxes for small submersible pumps to full control units which allow for adjustments in system settings and online monitoring. All Grundfos controls are made to the same exacting standards and advanced design as our pumps and motors, helping you maintain a reliable and efficient pumping system.

With sensors installed in the well, the water table and cost per pumped volume of water can be monitored, making it possible to operate at the best wire to water efficiency points. Your analysis may even tell you that it is time to pull the old pump – or the incorrectly selected pump – and replace it with a new high-efficiency pump, selected based on the actual operating conditions.

Grundfos MP204 control units help protect your investment by protecting the pump against:

- Dry running
- Overload operating against a closed valve or blocked pipe
- Insufficient flow of liquid past the motor
- Too high temperature of the pumped liquid
- Deposits on the motor
- Over- or under-voltage
- Phase asymmetry
- Onset of motor failure
- Motor overheating or burnout



With the use of a Grundfos MP204 and R100 infrared remote control, you can monitor your pump's operational data, including: current consumption, voltage, running hours, power input, and fault indications.



## Grundfos has a complete line of motor control boxes, making installation *fast and easy*

**Product Range**  
 Standard: .33HP to 5HP  
 Deluxe: 1.5HP to 5HP  
 CSCR: .33HP to 1HP

Become a Grundfos certified WaterPro – for details, visit:  
[www.grundfos.us/waterpro](http://www.grundfos.us/waterpro)

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