

# NO COMPROMISE

## UNMATCHED RELIABILITY AND EFFICIENCY



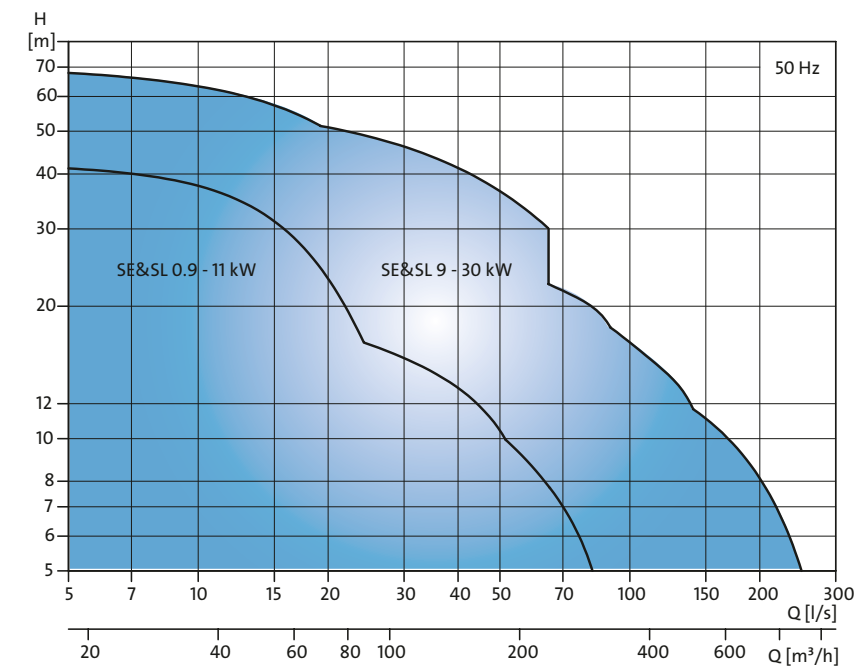


# Unmatched reliability and highest total efficiency

The SE/SL range of wastewater pumps combines operational reliability with high total efficiency and offers you lower costs of ownership:

- The optimised S-TUBE® hydraulic design offers even higher operational reliability, with improved non-clogging abilities
- Longer service intervals and improved durability from SmartRing, an easily-replaceable wear ring with improved wear rate
- Still with the highest wire-to-water efficiency currently available, with no compromise between high hydraulic efficiency and large spherical free passage

## HIGHEST EFFICIENCY OVER A WIDER RANGE



Performance range of the combined SE and SL pump program  
For more product information please visit [www.grundfos.com](http://www.grundfos.com)

## DESIGNED WITH STATE-OF-THE-ART HYDRAULICS

When we designed new hydraulics specifically for pumping wastewater, we looked at the technologies available on the market and decided that we had to keep things simple. We were not just chasing the highest efficiency at a specific duty point. Wastewater pumps always run with varying loads, and we wanted our new hydraulics to have extremely high efficiencies over a wider range of the curve, without compromising free passage and reliability.

The S-TUBE® impeller developed by Grundfos includes a tube-shaped impeller and a pump housing around it that matches the tube shape through the entire pump. This hydraulic solution contributes to making the SE and SL ranges the

most innovative, efficient and robust wastewater pumps available today.

The S-TUBE® impeller is wet-balanced. This lowers the vibration level dramatically.

### Highest efficiency and outstanding reliability

When you experience the S-TUBE®, you get the highest efficiency over a wider performance range and the largest free passage. We have created an impeller that is quite simply the best at fulfilling the core function for which a wastewater impeller is designed: providing the user with robust, efficient and trouble-free operation, and outstanding reliability.

## THE BEST TOTAL WIRE-TO-WATER EFFICIENCY

Although the pump system may not be the largest single investment in the wastewater installation, over the installation's lifetime, it is the component in the system that is the key element to ensuring long-term cost-effectiveness of the wastewater installation. Therefore it is important that we and our customers have a common understanding when we talk efficiencies.

When we say total efficiency, we mean the total, wire-to-water efficiency. In a wastewater pump there will be electrical, mechanical, and hydraulic losses. A pump manufacturer needs to master all of these without compromising reliability.

At Grundfos, we do precisely this and can therefore supply high efficiency products. We have listened to and understood our customers' concerns with the costs they incur for inefficient operation, maintenance and downtime.

All SE/SL wastewater pumps are built with high-efficiency motors using IE3 components, and to this we add the innovative and elegant S-TUBE® impeller, intelligent controls and smart solutions such as SmartRing, a replaceable wear ring. What you get are wastewater pumping solutions with the best performance and highest level of reliability currently available.



# Designed for the most demanding applications and tested to the highest standards

The key to optimising performance in your system is to minimise known risk factors and reduce maintenance requirements. The SE and SL ranges are available in multiple versions from 0.9 to 30 kW

The SL range is for submerged installation and the SE range for dry and submerged installation.

These pumps can handle drainage and surface water, domestic, municipal and industrial wastewater, and process water.

They are designed for water and wastewater transportation from water utility, industrial and commercial applications, and are ideal for network pumping stations and wastewater treatment plants.

The SE and SL ranges of wastewater pumps can be installed using an auto-coupling guide-rail system or with a fixed pipe connection, and are also for

freestanding installation as transportable utility pumps. SE pumps can in addition be vertically and horizontally dry-installed.

### Perfect for your refurbishment project

These products leave a small footprint on your existing installation. By this we mean that you can replace your wastewater pumps with new SE and SL pumps, without necessarily having to change your system or sump. This means the benefits of high total efficiency pump operation are immediately available to you on the basis of minimal investment.

A number of material variants are available for SE pumps, from variants with a stainless steel impeller to stainless steel variants for aggressive environments, meeting the standards EN 1.4408 and EN 1.4517/1.4539. A stainless steel impeller is available for SL pumps.

### Intelligent pumping solutions

At the heart of Grundfos iSOLUTIONS is our integrated intelligent controller in AUTOADAPT pumps, and the dedicated wastewater controller for larger wastewater pumps that works with motor protection or variable frequency drives. For local networks, SE/SL wastewater pumps and iSOLUTIONS can be configured and scaled precisely to match your requirements.

Find out more about the wide range of operational benefits offered by Grundfos iSOLUTIONS on [Grundfos.com/water-utility](http://Grundfos.com/water-utility) and see under 'wastewater transport'.

### Motor efficiency

Grundfos ensures the highest standards of motor efficiencies and substantial energy and cost savings. SE/SL pumps are fitted with motors built using high-efficiency IEC and IE3 components.



### Choice of impeller

The S-TUBE® impeller ensures no compromise between the highest efficiency over a wider performance range, and the largest free passage. Greater free passage means better solids handling and greater non-clogging abilities. All S-TUBE® impellers are wet-balanced to obtain a low vibration level. With the introduction of the two-channel S-TUBE® design for larger capacities, the vibration level is further reduced.



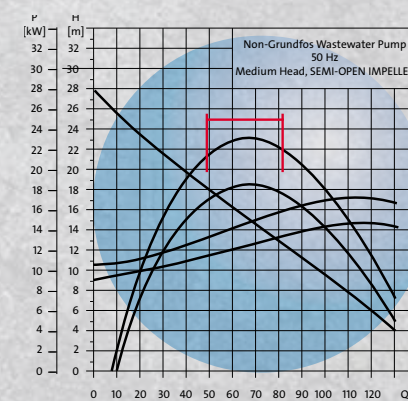
### Higher dry matter content – SE/SL pumps fitted with SuperVortex:

For applications with intermittent operation and where dry matter content is over 3 %, the SuperVortex impeller with spherical free passage up to 100 mm is ideal.

The S-TUBE® impeller is in a 'vaneless' closed channel-impeller design without leading edges that prevents clogging in the impeller. A threaded sealing system (patent pending) offers effective and robust sealing between the impeller and volute.

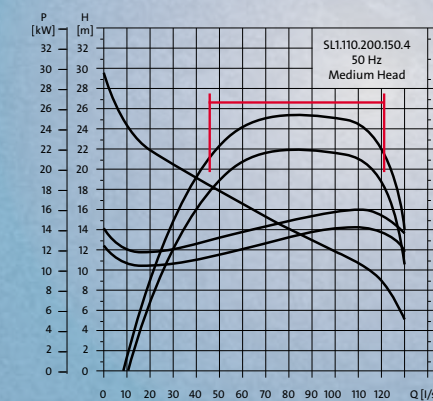
### Greater free passage – SE/SL pumps fitted with S-TUBE®:

For applications with continuous operation and where dry matter content is up to 3 %, the S-TUBE® impeller with spherical free passage up to 160 mm is perfect.



### SEMI-OPEN IMPELLER

- BEP = 78.9 % hydraulic efficiency
- BEP = 68.6 % overall efficiency
- Approximately 22 % of the curve is above 75 % hydraulic efficiency
- Free passage 50 mm (the blue circle above)



### S-TUBE®

- BEP = 83.3 % hydraulic efficiency
- BEP = 74.5 % overall efficiency
- Approximately 55 % of the curve is above 75 % hydraulic efficiency
- Free passage 110 mm (the blue circle above)

### Industry-leading product development

At Grundfos, we have decades of experience using simulations and testing to optimise pump reliability and efficiency and to ensure a quality product design that matches the customer's application requirements. Extensive field testing is carried out before a new product range is released to the market.

By combining test-driven development and simulation-driven development, we have increased our capacity to build Engineered-To-Order products, tailored to specific customer requirements. On leaving the factory, all our wastewater pumps are performance tested to ISO9906:2012 Acceptance Grade 3B as a minimum, and up to Grade 1U on request.



# Grundfos smart design provides reliability and efficiency benefits for your wastewater pumping system

Our decades of experience adapting and improving the durability, efficiency and operational reliability of our wastewater pumps builds more than 70 years of applying pump design, testing and technology to meet the requirements of the entire water cycle.

That is why Grundfos is uniquely placed to build a broadly-applicable wastewater pump and stay one step ahead of the constantly changing demands of wastewater today.



## **SmartRing - replaceable wear ring**

For higher operational reliability and durability, and to maintain high hydraulic efficiency, add SmartRing between the impeller and the volute. SmartRing works seamlessly with SmartTrim, ensuring optimal wear resistance and extending the lifetime of the pump.

## **SmartTrim**

Patented easy adjustment of the factory-set impeller clearance helps maintain maximum pump efficiency and increased reliability. No special tools are required for dismantling the pump.

## **Double mechanical shaft seal**

Primary and secondary seal in one cartridge unit providing longer seal lifetime and easy fail-proof replacement - even in the field. Replacement can be done without special tools.

## **Short rotor shaft**

Compact motor construction reduces vibrations to protect shaft seals and bearings, and this ensures longer operational lifetime with less maintenance.

## **Easy-to-remove cable entry**

The innovative and patented stainless steel cable entry ensures that liquid cannot penetrate through the cable inlet into the motor and is easy to dismantle in case of service.

## **One cable to the pump**

With just one cable to connect sensors and power supply, an important at-risk area is removed, simplifying pump installation, commissioning and maintenance.

## **Easy-to-open clamp (up to 11 kW)**

The stainless steel clamp assembly system requires no tools for the quick and easy disassembly of pump from motor unit, offers easy access for pump maintenance. The bolts used on larger pumps are easy to remove and do not require special tools.

## **Liquidless motor cooling (SE up to and including 11 kW)**

Solid-block stator housing with built-in cooling conduits efficiently transfer excess heat to the pumped liquid via a solid cast iron flange, for continuous operation, even in dry installations.

## **Patented SmartSeal**

The patented Grundfos SmartSeal auto-coupling gasket provides a completely leak-proof connection between the pump and the base unit of the auto-coupling system.

## **Lifting handle**

The lifting handle is designed for optimum point-of-balance, ensures correct lifting and will protect the auto-coupling sealing.

## **Smooth, easy-to-clean surface**

The extremely robust impact-resistant surface is smooth and easily cleaned.







### **Grundfos Water Utility**

Grundfos Water Utility is a full-range supplier of intelligent pumps and systems for all water supply and wastewater applications.

Grundfos products and solutions for wastewater transport, flood control and the wastewater treatment plant build on reliability, modularity and energy efficiency from optimised pump systems and modular solutions.

**Find out more at [grundfos.com/water-utility](http://grundfos.com/water-utility)**

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