› **Our technology. Your success.**
Pumps ▪ Valves ▪ Service

Get down to the job for years:
Submersible borehole pumps from KSB

Safe. Reliable. Powerful:
Submersible borehole pumps from KSB

Underwater expertise: KSB offers you a comprehensive range of reliable submersible borehole pumps and powerful submersible motors for a dependable water supply. As a leading supplier of pumps, valves, drive and automation solutions we know your requirements, and we assist you as our partner with our second-to-none engineering know-how and customer support: For extracting and transporting water the most reliable and efficient way.

We place top priority on making our products reliable and dependable. This is why we continuously optimise our submersible borehole pumps in all stages. From materials development and manufacturing in KSB's state-of-the art production facilities through to continuous test runs in our test fields and customer-specific individual on-site adjustments.

Demanding operating conditions are hardly a challenge for KSB's submersible borehole pumps. The proven pump design is wear-resistant, flexible to install and provides reliable operation, even when handling fluids containing sand. For continuous operation, for decades.

Our cooperation with you continues beyond this point. As a reliable partner we are always there for you, round the clock, with our comprehensive service, consultation and spare parts solutions. We accompany you through all stages of a project and optimise your system to produce what counts in the end: maximum performance for you.

www.ksb.com/upa

An expert for many applications

Whether they are used in municipal facilities or industry, for drinking water or liquefied gas, in open waters or in narrow pits – KSB's submersible borehole pumps are both reliable and efficient in handling and transporting fluids. A large range of material variants, ratings and the required voltages allows the pumps to be precisely matched to the individual requirements of your project. They are versatile in any situation.

- Water supply: drinking, service and cooling water
- Agriculture: general irrigation and spray irrigation
- Civil engineering: drawdown of groundwater levels
- Fire protection: fire-fighting and sprinkler systems
- Offshore: seawater lift, ballast and fire-fighting pumps, wind parks
- Caverns: transport of petroleum products and liquefied gas, drainage
- Mining: drawdown of groundwater levels in open and closed mines, maintenance of groundwater levels in underground mines, and drainage of open-pit mines
- Fountains
- Offshore wind parks
- Snow-making systems

Developed to take on anything, built to do so forever

KSB's submersible borehole pumps are known for their robust design that is outstanding in reliability and efficiency. Selected from our range of material variants and wear-resistant components, each and every pump is individually matched to the specific requirements and operating conditions.

- **Top operating reliability:**
  A spring-loaded lift check valve enables minimum closing times and provides protection against surge pressure.
- **Protected against wear in clearances:**
  By easily replaceable, servicefriendly wear rings made of wear-resistant and corrosion-resistant metal.
- **Fastening elements made of stainless steel:**
  All screws, nuts and bolts in contact with the fluid handled are made of CrNiMo steel. Removal and fitting is possible even after years of use.
- **Protected pump shaft:**
  Impeller hubs and sleeves protect the stainless steel shaft against wear caused by the fluid handled.
- **Approved for drinking water:**
  All wetted components have been tested for use with drinking water. They meet the most stringent of drinking water requirements.

Whatever the challenge, here's the right answer

KSB's powerful submersible borehole pumps cover the entire range. No matter what the flow rate and head required – our hydraulic selection chart covers every operating range with a perfectly suited submersible borehole pump.

UPA 100C	UPA 150C	UPA 200, UPA 200B, UPA 250C	UPA 300, UPA 350
Technical data:	**Technical data:**	**Technical data:**	**Technical data:**
DN 100	DN 150	DN 200–250	DN 300–350
Q [m³/h] 16 max.	Q [m³/h] 79 max.	Q [m³/h] 330 max.	Q [m³/h] 840 max.
H [m] 400 max.	H [m] 440 max.	H [m] 460 max.	H [m] 480 max.
T [°C] +30 max.	T [°C] +50 max.	T [°C] +50 max.	T [°C] +50 max.

The above data refers to 50 Hz models. 60 Hz models are also available.

Unbeatable from every angle

Vertical, horizontal and even at angles – our submersible borehole pumps provide reliable water supply in any position.

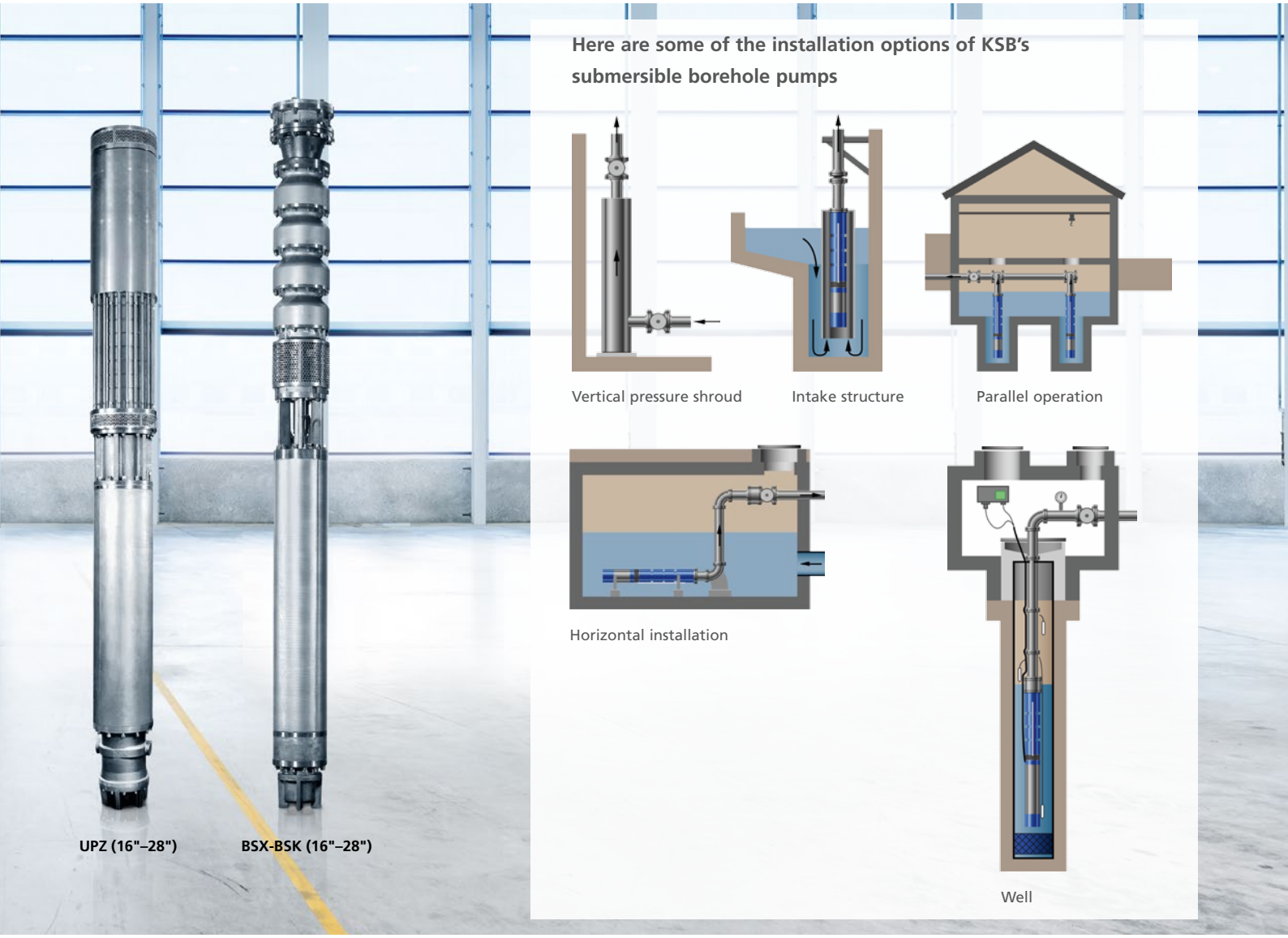
Our submersible borehole pumps are not only designed for vertical installation in wells. They can also be installed horizontally or even at angles anywhere between 0° and 90°. What all these options have in common is maximum versatility in delivering top performance. They are able to fulfill almost any requirements a customer may have.

Comprehensive accessories

- We offer a comprehensive range of accessories for both standard and engineered products. We will be pleased to help you choose!

Certifications

- KSB's submersible borehole pumps are manufactured in compliance with the international Standards ISO 9001, ISO 14001 and BS OHSAS 18001.



Here are some of the installation options of KSB's submersible borehole pumps

Vertical pressure shroud

Intake structure

Parallel operation

Horizontal installation

Well

UPZ, BSX-BSK

Technical data:

DN	>350
Q [m³/h]	2,700 max.
H [m]	1,500 max.
T [°C]	+50 max.

Driven to high-performance:
KSB's powerful submersible motors

Maximum efficiencies – minimum wear: The high efficiency of KSB's submersible motors keeps energy and operating costs to an absolute minimum. The motors are tailored to the specific operating conditions in materials and ratings. Even in continuous operation with fluid temperatures of up to 60 °C no flow past the motor is required. Have a close look: It's perfection in every detail.

Reliable, no matter what

- Stator, screws and bolts made of stainless steel
- Motor fill with antifreeze agent
- Connection to NEMA standard (4"–8")
- Complies with the VDE standards providing guaranteed high electrical reliability

	Power (kW)	0.37	4	37	90	150	190	400
4"	DN100							
6"	UMA 150E							
	UMA-S 150E							
8"	UMA 200D							
	UMA-S 200D							
10"	UMA 250D							
12"	UMA 300D							

UMA-S 150E / 200D: Synchronous submersible motors for maximum efficiency

The UMA-S synchronous motor has been designed as a powerful drive for KSB's submersible borehole pumps of 6" and above. The motor's energy efficiency is outstanding. Its efficiency advantages over asynchronous motors, at full compatibility, equal up to 12 %, resulting in major energy savings.

UMA-S achieves these savings by combining synchronous technology with a very high output per size. Operated on a frequency inverter, in an optimised operating mode, the motor can save an additional 40 % or more.

www.ksb.com/uma-s

Use the UMA-S efficiency calculator to see how much you could save: **www.ksb.com/uma-s-efficiency-calculator**

Mechanical design

- Material variants 304SS, 316SS or 904L (duplex)
- XLPE winding wire
- Easily rewindable; removable winding housing
- SiC mechanical seal
- NEMA connection
- Submersible motors pre-filled and checked 100 % for correct functioning

Highest efficiency and full-range service with KSB

Energy: we spend all ours to save lots of yours.
As part of our FluidFuture® energy efficiency concept, we look at the hydraulic system as a whole and show you all the options of optimising your system sustainably. For maximum efficiency and unique cost savings we support you right from the analysis and optimum selection of your system. Our unique product range is precisely matched to your requirements, featuring powerful pumps and valves as well as efficient drive solutions. One of them is KSB's UMA-S synchronous motor, which can save you more than 40 % in energy and thus significantly contributes to increased economic efficiency. To make sure potentials are used to their full extent, our service goes one step further. Well measurement gives us a clear picture of the pumps' efficiency and demonstrates where optimisation measures can further save on costs.

www.ksb.com/fluidfuture

We know our pumps inside out – and from start to finish

Customer-specific support – 100 percent, round the clock: You can rely on KSB's comprehensive service range and advice during the entire life cycle of your product. Already in the planning and project engineering phase our service experts support you in finding solutions. In addition, more than 3,000 professionally trained service engineers in more than 160 service centres around the world ensure maximum operating reliability, the highest level of system availability and trouble-free operation at all times.

Commissioning:

- Whether you´re installing pumps and valves or complete systems, we supervise your system being commissioned, making sure it is a smooth process from start to finish: from examining the existing conditions in detail, thoroughly monitoring all of the individual installation processes, right through to the system being ready for operation. We also train and supervise your staff.

Optimisation and repair:

- If system conditions change over time we re-adjust your pump to the new conditions. We also regularly check the entire pump set and carry out any required repairs – regardless of the make.

Pump and motor analysis:

- We take measurements on site for a comprehensive as-is analysis of your system. Based on the information gained we calculate the optimum operating point and select the ideal pump set for your operating conditions.

Transient flow analysis:

- We conduct precise surge calculations during the planning stage and recommend optimum protective measures to maximise the operating reliability of your system.

Well measurement with KSB:
A prime example of added efficiency

Whether or not groundwater extraction is economical strongly depends on the efficiency of your submersible borehole pump. We use calibrated measuring equipment to gain a clear picture of the current operating mode. On this basis we provide you with a detailed assessment of energy saving potentials and a free quote, complete with payback analysis. Based on the knowledge gained, we either optimise the existing pumps or replace them with more efficient models. Given the individually adapted selection, such an upgrade is often paid back within a year – with savings made every year thereafter.

For more information, please do not hesitate to contact us.
www.ksb.com/well_pump_measurement

Reducing energy costs

Energy costs for a submersible borehole pump
at different efficiencies:
Operating hours: 5,000 hours per year, over a period of 10 years
Energy costs: 0.12 €/kWh

		Example 1: Flow rate = 100 m³/h Head = 45 m	Example 2: Flow rate = 30 m³/h Head = 70 m
Energy costs	$\eta_{overall}$ **before = 40 %**	181,200 €	85,700 €
	$\eta_{overall}$ **after = 61 %**	–120,600 €	–56,300 €
Savings after	10 years	= 60,600 €	= 29,400 €
	1 year	6,060 €	2,940 €
Payback period for the investment in one pump		< 1 year	< 1 year

Technology that **makes its mark**

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