GRUNDFOS **NB/NK**

PERFORMANCE PERFECTION

BE › THINK › INNOVATE ›

GRUNDFOS

Sprinting into the **WORLD ELITE**

Combining tradition with forward thinking

Despite their somehow sturdy build and solid appearance, the Grundfos end-suction pumps are ready to sprint into the top of their field with eminent skills, strategic timing, innovative moves and amazing performance and flexibility.

Introducing an array of new superior components and increased performance and reliability, all wrapped in a more refined body and interior, the Grundfos end-suction pumps are well prepared for the future race.

Survival of the fittest

The Grundfos end-suction pumps are designed to work hard in the most demanding industrial environments, where only the fittest pumps will survive in the long run. The pumps are ultra reliable and efficient, making them extremely suitable for a wide range of applications pumping large volumes of water or other liquids for industrial processes, cooling, heating, water supply, air-conditioning, cleaning and fire systems.

COMPLETE END-SUCTION RANGE

The Grundfos end-suction range comprises a complete series of close-coupled and long-coupled pumps in full compliance with EN733 and ISO2858 standards.

Grundfos end-suction pumps offer you a future-oriented pump solution based on the fundamental principles and advantages of modularity. They are built around standard modular components, enabling easy configuration, customised solutions, and facilitated service. A multitude of different pump variants are available to suit your requirements to performance, application and environment.

RELIABILITY IN FOCUS PAGE 4-5

With Grundfos end-suction pumps you are guaranteed outstanding reliability and performance during their entire lifetime. NB/NK pumps radiate quality inside out, because we never compromise when it comes to selecting quality materials.

By introducing surface treatment of all pump parts, stainless steel shafts, closed ball bearings and refined casting processes, the new end-suction pump is simply the best around.

LCC – THE TOTAL PERSPECTIVE PAGE 6-7

Choosing the most energy-efficient solution paves the way for dramatic savings on operating costs. As Grundfos is a frontrunner for global energy-saving ideas within the pump industry, all Grundfos end-suction pumps are now available with the market's most energy-efficient EFF1 motors.

Other cost-saving factors such as extensive component modularity, high-quality materials, improved hydraulics and impeller design, and integrated frequency converters also add positively to the total Life Cycle Cost calculation.

CUSTOMISED TO YOUR NEEDS PAGE 8-9

A Grundfos end-suction pump solution can be configured and customised for seamless operation in your industry-specific application.

The optimum solution with regard to performance and energy consumption can be designed by using Grundfos' intelligent product configurator Web/WinCAPS. It contains extensive information about the entire end-suction range, different components and materials, performance curves, energy consumption rates and more. So whatever your need, we have the solution.

The partner you can **RELY ON**

Extensive R&D behind it all

Grundfos has one of the largest R&D departments in the pump industry, employing nearly 500 engineers and technicians. Absolutely nothing is left to chance when we release a new pump series into the market, the Grundfos end-suction range being no exception.

Extensive research and development lie behind the improved end-suction range to ensure unsurpassed reliability and performance during the lifetime of the pump. Our dedicated R&D engineers have looked into every aspect of pump technology to optimise pump performance and find innovative and energy-saving solutions.

Laboratory research has been backed by in-depth field testing in representative industrial installations to verify that the pump performs satisfactorily in demanding applications and environments.

Step-by-step quality control

Grundfos pumps are renowned for their high quality and superior performance all over the world, and rightly so. We focus on quality in the entire value chain – from initial purchase of raw materials to final logistics and service. Grundfos end-suction pumps are manufactured and quality tested in accordance with ISO 9001 and ISO 14001 standards, which is your guarantee for meticulous attention to every detail.

Quality management is applied not only in-house but also to every link in the supply chain. This means that all our specialist suppliers are rigorously evaluated with regards to material quality, production processes, supply security and environmental standards.

Before being dispatched to the customer, the pump is subject to a thorough factory acceptance test (FAT) at our high-technology production and testing facilities. Factory acceptance tests are performed in accordance with ISO 9906, Annex A, and all test data are logged for subsequent documentation and generation of test certificates.

Innovative new design

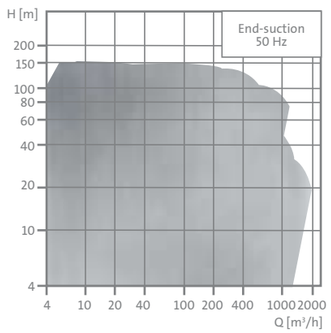
It is an indisputable fact that extreme conditions call for extreme reliability. That is why all the new end-suction pumps are designed to demonstrate unsurpassed reliability and endurance in demanding applications, no matter how hard and how long you make them run.

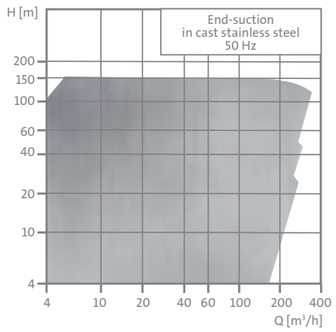
We have optimised the design in a number of ways, which make a notable difference. Surface treatment of all pump components means an altogether better look and feel coupled with improved durability and corrosion resistance. Other new and strong design features are improved housing and impeller design, all stainless steel shafts, closed ball bearings and different pump materials for different applications and environments.

Fine-tuned flow geometries

Keeping the hydraulic friction as low as possible is a vital parameter for overall pump performance and efficiency. To allow essentially unimpeded liquid flow through the pump, the flow geometries of both the impeller and the pump casing have been fine-tuned by means of special 3D simulations and computer calculations. Maximum compatibility between these two key components means a minimum of aquadynamic disturbance and thus reduced backflow and energy consumption.

Performance curves





Optimised hydraulics in housing and impeller
= unimpeded liquid flow

O-ring seal between pump housing and cover
= no risk of leakage

Housing, impeller and wear ring in different materials
= improved corrosion resistance

All stainless steel shafts
= improved corrosion resistance, no sticking elements

Closed ball bearings
= correct lubrication, no dust instrusion

LIFE CYCLE COSTS are what really matters

Thinking ahead is a good investment

Focusing exclusively on the purchase price when selecting your pumps is most certainly an unwise approach. An overlooked rule of thumb is that the initial investment represents only 5% of the total cost of owning a pump during its lifetime. Maintenance costs swallow about 5% of the total life cycle costs – and energy costs a staggering 90%.

This is to say that the long-term cost reduction that results from making the right purchase is so significant that it will affect the profitability of your installation as a whole. By looking at the total cost of ownership, the payback time of the investment will be much shorter than you think.

Cost efficiency that speaks for itself

Dramatic savings on operating costs can be gained by selecting the most energy-efficient pump solution. Cost efficiency and innovation have been the ultimate goals and the driving forces behind the development of the new Grundfos end-suction range, as energy costs are a crucial factor for all industries and a major component of an end-suction pump's Life Cycle Costs.

Cost-reducing factors

Higher efficiency rates of pumps and motors have been achieved partly by improving housing and impeller design and partly by incorporating high-efficiency motors in the pumps.

We have analysed and refined the casting mould for the housing, as all tests show that the better the casting mould, the better the pump performance. Optimised flow geometries of the impeller and pump casing have reduced the hydraulic friction and thus the amount of energy consumed.

The third crucial cost-reducing factor of the new Grundfos end-suction range is the use of Efficiency 1 motors, as Efficiency 1 motors consume a minimum of electrical power while keeping a high level of performance.

All the pumps in the Grundfos NB/NK range are available with high efficiency Eff1 motors. Being an environmentally responsible company, Grundfos attaches great importance to supply clients with low energy-consuming products that meet the strict demands stated in EU's CEMEP agreement concerning the reduction of harmful impacts on the environment.

Savings from day one

Demonstrating significantly better efficiency and operating performance than its predecessors, the new end-suction pumps will bring you substantial energy savings from day one.

Grundfos' software tool WinCAPS enables you to select and fine-tune each important part in your pump system. Based on these input data, the configurator suggests the most effective way of operation and selects the motor with the highest efficiency for the specific task. The dimensioning features of the configurator illustrate the consequences of changing parameters in your pump system or mode of operation, and compares Life Cycle Costs between alternative solutions.

Correct dimensioning makes all the difference

Another important factor, when we talk money, is correct dimensioning of the pump. Getting the best possible overall efficiency out of your pump is a matter of reducing the gap between pump capacity and the required pressure and volume – or in other words avoiding over-dimensioning of the pump.

The extensive range of end-suction models, selected by means of intelligent product configuration, makes it possible to find the best pump for the job at hand, thus eliminating the efficiency drop associated with over-dimensioned pumps. Your pump solution can be configured and dimensioned to your exact needs and requirements – no more, no less.

With the pump configuration software it is possible to select the rigth solution from more than 1 million variants of the same pump.

Efficiency and LCC calculations clearly demonstrate how much difference a Grundfos end-suction pump will mean to your business.

Selecting the right **SOLUTION**

Getting it right from the start

Grundfos can make a significant contribution to your decision-making process and answer your questions about which factors to consider. Our specialists have a sound knowledge of the pumps and the systems they are used in. They are therefore equipped to discuss the bigger picture with you and help find the best combination of components and materials for your specific application.

Multiple choices

The configuration possibilities of the Grundfos end-suction pumps are many. Available in different variants and basic materials and a number of configurations near the one million mark, the end-suction programme is one of the most extensive and comprehensive on the market.

Take advantage of intelligent product configuration

We have developed an intelligent product configurator that makes it even easier for you and us to find the optimum pump for your application. While discussing requirements with the Grundfos sales technician, he can use the software to find the appropriate pump and place your order immediately.

You can also mix and match between the various components yourself, until you find the end-suction pump that best suits your application in no time at all. Use Grundfos WinCAPS to do the configuration, or contact our specialists, who are ready with expert advice and configuration assistance.

Every year we execute more than 11,000 orders on special pump variants, so do not hesitate to challenge us!

Correct installation is a must

Correct installation and alignment of your pump is equally important to finding and sizing the right pump for your application. Optimised pump operation is achieved only if the pump is aligned correctly. Perfect alignment is ensured by means of a special laser alignment tool, which can be made available from your local Grundfos service partner.

If you are in any doubt of how to install or service your Grundfos pump, a comprehensive selection of information material is just a few keystrokes away. From our on-line catalogue, WebCAPS, you can download product brochures, installation and operating instructions, CAD drawings, data booklets and service manuals.

Maintenance made simple and cost effective

The Grundfos end-suction pumps are designed with a 'back pull-out' system, which makes maintenance and servicing simple and cost-effective. Both models allow for removal of the impeller without dismantling the pump housing or pipework.

On the NB close-coupled models, motor and impeller can be removed as one unit without dismantling the pump. On the long-coupled NK pump models, the use of a spacer coupling enables the motor to remain in place when impeller and shaft section are removed for maintenance and service checks. This eliminates the need for realigning the installation afterwards.

Maintenance is further facilitated by a unique system with impeller wear rings which means that you only need to change the high-wear pump parts. The easily replaceable wear rings also significantly prolong the life of the pump.

Global service network

The Grundfos name is synonymous with dependable, high-quality pumps that are unlikely ever to cause any trouble. However, if you do need service, rest assured that the global Grundfos service network is geared to move fast and efficiently.

Grundfos is represented by own sales and service companies in 39 countries around the world, and more than 350 authorised Grundfos service partners supplement our presence and offer effective global service coverage. There is a Grundfos approved service partner near you – and you can get in touch with one around the clock.

MIX AND MATCH

NEXT PAGES

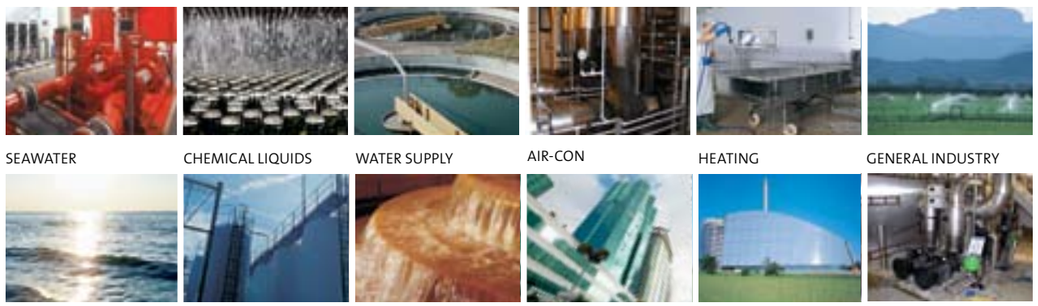
With Grundfos' intelligent pump configurator software it is possible to select the right solution from more than 1 million variants of the same pump. The tool contains extensive amounts of technical pump data that ensures pump design is in accordance with over 1,500 regulations.

FULL OVERVIEW

On the next page you can get a full overview of the many configuration possibilities that your Grundfos end-suction pump offers.

So many **CHOICES** – and yet so simple

WIDE RANGE OF APPLICATIONS



MOTORS

NB/NK motors are available in many different configurations to meet the requirements presented by the power supply, the pumping environment and/or the pumped liquid itself.

- Power supply systems vary in terms of frequency, voltage and protection methods.
- Your environment may be explosive, very hot and/or very humid. Special conditions also apply at great altitudes.
- The liquid pumped can call for a special motor solution. High or low viscosities and/or high or low densities may require non-standard motor sizes. You may also need an explosion-proof variant.

MOTOR

SHAFT SEALS

A range of shaft seals suitable for different liquids, liquid temperatures or pressure areas is available. All shaft seals comply with the EN 12 756 standard. The end-suction pumps are available for liquids up to 140°C without need for external cooling of the seal.
Many seal face materials and a variety of rubber materials are available for media temperatures from -25 to +140°C. Also, stuffing boxes are available for a variety of media.

SHAFT SEAL

PUMP MATERIALS

As a standard, the end-suction pumps are equipped with cast iron impellers, however, as an option, impellers made of bronze and stainless steel are also available. These improve corrosion resistance when pumping chlorinated water or other aggressive liquids. For high-salinity water, such as brackish or seawater, or other corrosive liquids, all stainless steel models are available.

Likewise, the pump housing is available in cast iron and two stainless steel grades.

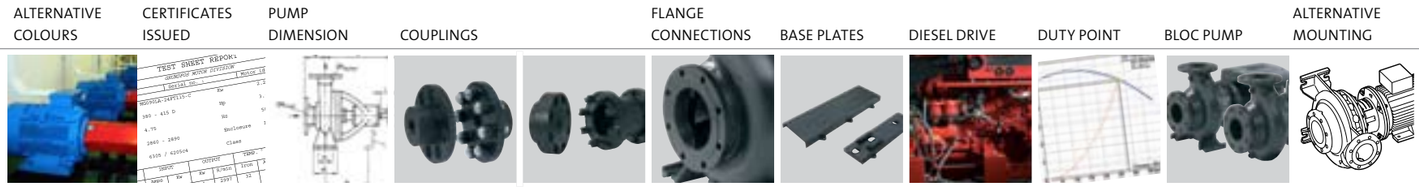
The easily replaceable wear rings come in different materials depending on your needs.

PUMP

PUMP OPTION

You can specify your Grundfos end-suction pump with a specific duty point, order it in alternative colours, with different flange connections, with or without certificates, with standard or spacer coupling, with special mounting devices and so on. We guarantee that we can meet your every need.

SELECTION



Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

BE

Being responsible is our foundation. We know that we have a responsibility towards the people who are Grundfos, towards the innovative soul of Grundfos, as well as towards the surrounding world. Whatever we do, we make sure that we have a firm and sustainable basis for doing it.

THINK

Thinking ahead makes innovation possible. We encourage a certain Grundfos way of thinking that is founded on the belief that everyone must contribute by using his or her judgment and foresight. We are looking for commitment and ideas in everything we do in order to make the best solutions. We think – and then we act.

INNOVATE

Innovation is the essence. It is the innovations that make Grundfos unique. We stand out because of our ability to constantly create new solutions to the ever-changing demands of the pump business. We meet every challenge, and we are never afraid of taking the initiative – remaining true to our ideals is the basis for our ongoing renewal. Innovation is the soul of Grundfos.