

# BoosterpaQ®

## Hydro MPC Controlled Booster Systems



# Superior boosting with Grundfos BoosterpaQ

*A Grundfos BoosterpaQ system fitted with Grundfos CRE – frequency converter-controlled pumps – ensures complete and instant control, optimum flexibility of booster output, and unbeatable efficiency.*



Grundfos BoosterpaQ systems are manufactured to the highest standards in the industry. Our MPC controllers can handle even the most difficult boosting applications with ease and accuracy.

## **COMMITTED TO QUALITY**

Commitment to quality is evident in every aspect of our BoosterpaQ systems. Based on the extremely reliable, high-efficiency CR pump range, BoosterpaQ solutions are fully integrated systems. Each component is made by Grundfos to meet the strictest quality requirements, so you can rest assured that all technologies involved in the process work perfectly together.

## **BOOSTERPAQ FEATURES**

- › Outstanding reliability
- › High efficiency
- › Fully integrated, all-in-one systems
- › Systems to match every need and requirement
- › Easy installation and operation
- › Technology based on decades of know-how and experience

# Grundfos CR pumps – state-of-the-art reliability and efficiency

Grundfos BoosterpaQ systems are based on the world-renowned CR range of multistage centrifugal pumps. Grundfos was the first to develop this pump type nearly 40 years ago, and the current generation of CR pumps remains unchallenged as the world's best. With their history of outstanding reliability and efficiency, CR pumps provide the best foundation for our booster systems.

BoosterpaQ systems equipped with intelligent CRE pumps offer an even higher rate of efficiency as well as reduced energy costs. CRE pumps are equipped with an integrated variable-frequency drive motor. The end result is complete control, optimum flexibility of booster output, and unbeatable efficiency at all times.

## THE COMPLETE SOLUTION

All components have been combined with focus on quality and efficiency. Grundfos BoosterpaQ systems are designed to last: sturdy, compact units with easy access to all service parts.



*The Grundfos CR/CRE pumps have been engineered for maximum efficiency and reliability. These advantages are incorporated into Grundfos BoosterpaQ systems.*



*The Grundfos Hydro MPC booster system ensures proper and constant water pressure at all times.*

Grundfos BoosterpaQ systems can be used wherever additional pressure is needed. Each booster model has been designed to meet the customer's specific needs and requirements for capacity and control.

## WATER SUPPLY

Our BoosterpaQ systems are ideal for water supply systems and pressure boosting in multi-story buildings, which can vary significantly throughout the day. These situations can place extraordinary demands on the equipment used. Grundfos booster systems make it easy to provide optimum comfort for the user by maintaining constant water pressure at all levels and at all times.

### › Industry

Industries can benefit greatly from using a Grundfos booster solution. If you require constant pressure in the face of highly variable flows, we have the solution. Even the most demanding applications will benefit from the accuracy and advanced pump control offered by our BoosterpaQ systems.

### › Irrigation

Grundfos BoosterpaQ systems can help conserve water and optimize crop yields by responding to pre-set minimum and maximum levels. BoosterpaQ systems go easy on piping networks in golf course irrigation systems and adapt performance automatically to any number of sprinklers at any pressure zone during the irrigation cycle. Benefits like these are what make Grundfos BoosterpaQ systems the perfect choice for your irrigation systems.

# The Multi-Pump Control – MPC

## THE “BRAINS” OF THE SYSTEM

The newly developed, highly advanced MPC control unit is the “brain” behind our BoosterpaQ systems. Specially designed for Grundfos boosters, the MPC is easy to operate and monitor.

The primary task of the MPC unit is to control the number of pumps in operation, as well as the speed of the individual pumps, in order to adjust the performance of the system to variations in demand. The MPC controller is capable of controlling up to six pumps connected in parallel.

Grundfos has used its experience with pump system controls to design the operation platform and control functions of the MPC to suit a wide range of application types.

The result is a highly advanced control system that offers multiple features and functions that can be used to improve the performance of the booster system while maintaining a user-friendly operator interface.

## INSTALLATION WIZARD GETS YOU STARTED

Correct installation and commissioning of any booster system is a prerequisite for attaining optimum performance of the system and trouble-free operation.

Grundfos created an installation wizard to make it simple and straightforward to operate the BoosterpaQ. The installation wizard guides the operator through a sequence of instructions to ensure that all settings are made in the correct order and that system performance, as well as required protection settings (e.g. water-shortage protection), are set up step by step.

## USER-FRIENDLY INTERFACE

Because ease of use was a top priority when developing the MPC controller, Grundfos designed a user interface that offers a wide range of features and functions that make operating the device intuitively simple.

- Large, backlit graphic display screen with overview of the system, including key measuring points
- Menu bar for easy navigation

- System information and status
- Control functions
- Cascade control
- Alternation
- Speed control
- Help function for each screen

## DATA COMMUNICATION

The MPC is set up for various communication systems to help you monitor and control the unit from a distance.

- BUS communication
- Ethernet via built-in web server
- Grundfos GENI Bus for interface with other Grundfos products

Via the Ethernet connection, the Grundfos BoosterpaQ system can be operated from a remote computer where

Step-by-step installation guide

9/15 - Water shortage monitoring device

Select what kind of water shortage monitoring device has been mounted and press the [ok] button to store.  
Then select "go to next page" and press the [ok] button.

See the wiring diagram for details about the terminals.

Go to next page ➡

Pressure transmitter at terminal no. 54 ☐

Pressure switch or float switch at terminal no. 12 ☐

2005-08-29 19:07

*The Hydro MPC control unit features an installation wizard, which guides the user through a series of dialogue boxes on its large graphic display screen.*



*The Hydro MPC control unit offers maximum user friendliness with a large graphic display screen and menu bar for easy navigation.*

the user will be able to view the control panel on their computer screen. This allows you to operate the booster system as easily as if you were standing in front of the actual control panel.

Remote monitoring and data acquisition is also possible. Status on individual pump and system levels, as well as operating conditions, settings, control mode, warnings, and alarms can be read out from a remote computer.

#### **LOG AND STATISTICS**

For full optimization of the booster system, it's important to ensure that valid operation data is obtained and continuously logged. The Grundfos MPC control offers easy access to a wide range of operating data and statistics, such as:

- System performance
- Energy consumption
- Alarm and warning log



# Reliability, efficiency and adaptability

Grundfos boosters represent reliability, efficiency, and adaptability. Our boosters are the obvious choice for any application: they're built to last and feature a wide range of user benefits.

## **TRIED AND TESTED**

At Grundfos, there are no compromises when it comes to quality. We use only the best materials and state-of-the-art technologies, so you can have every confidence in the finished product. All components, as well as the finished product, have been carefully tried and tested before leaving the factory.

## **EFFICIENCY YOU CAN COUNT ON**

Constant pressure at all levels is a vital feature of any booster system, whether it's installed in a multi-story building or in any industrial application. Grundfos booster systems offer constant-pressure control and can handle all

variations in water consumption. Harmful peak pressures are avoided, which means less stress on the piping network and reduced water loss in the distribution circuit as less water is forced through leakages.

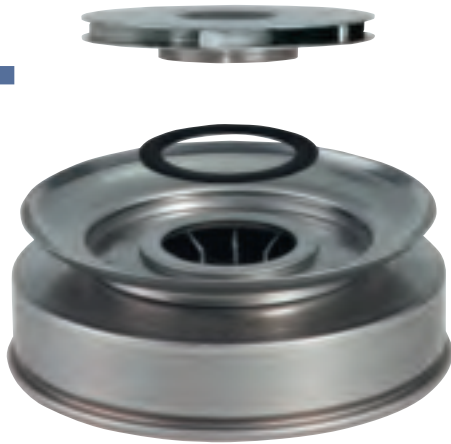
## **FULLY ADAPTABLE TO YOUR APPLICATION**

Grundfos BoosterpaQ systems adapt to variations in demand at all levels and at any time. Whether in residential buildings or in industrial applications, a Grundfos booster system is capable of maintaining pre-set constant-pressure or required water or temperature levels. This capability prevents undesirable fluctuations and keeps energy consumption at the lowest level possible while reducing wear and tear on pipes and valves.

*Grundfos BoosterpaQ systems offer constant-pressure control.*



# 1



Loss of efficiency has been reduced to a minimum in the impeller stack of the Grundfos CR pumps. A floating seal ring has been applied as a perfect seal between the individual chambers.

# 2



An enhanced impeller/chamber design ensures a more streamlined flow. Tiny margins determine the success of the final result, so Grundfos developed a highly specialized, laser-welding technology in order to achieve the highest efficiency on the market for any multi-stage centrifugal pump.

## Innovative technology

Only long-term savings are real savings, and Grundfos BoosterpaQ systems are created with this in mind. They combine innovative technology, exact capacity adjustment, low maintenance, and many other features that help to significantly reduce the total cost of owning a booster system over its lifetime.

### PUMP TECHNOLOGY FOR SUPERIOR EFFICIENCY

At the heart of every Grundfos booster system you'll find a Grundfos CR or CRE pump. Decades of engineering experience have been applied to take the efficiency and reliability of these pumps to the highest level.

### SUBSTANTIAL SAVINGS ON ENERGY COSTS

On average, the Grundfos CR pump models offer higher pump efficiency compared to any other multi-stage centrifugal pump on the market, which translates into energy savings for every CR pump. When pumps are in operation for several hours each day, improvements such as these provide substantial savings on energy costs year in and year out.

### FAST AND EASY MAINTENANCE

The CR pumps used in Grundfos BoosterpaQ systems incorporate many features that make maintenance work easy and fast, thereby saving you time and money. For example, the patented shaft seal is remarkably durable and can be replaced in a matter of minutes and without the use of special tools.

Similar care and consideration has gone into the overall design of the entire system in order to make our boosters easy to install and service-friendly. Over time, this adds up to a substantial savings for you.

# Unmatched reliability

BoosterpaQ systems are based on the Grundfos CR range of multi-stage centrifugal pumps, which offer efficiencies that are higher than any of our competitors models. This superior efficiency has been achieved through a unique hydraulic design that incorporates laser-welded impellers.

In addition, the Grundfos CR pumps are fitted with one of the industry's most reliable shaft seals, durable internal bearings, and most advanced rotating assembly available on the market today.

## GRUNDFOS MOTOR: A PERFECT MATCH FOR YOUR BOOSTERPAQ

Grundfos manufactures its own three-phase motors (up to 10 hp) to ensure maximum performance. Grundfos ML motors are remarkably silent and highly efficient.

## EASY-TO-REPLACE CARTRIDGE SEAL

CR pumps are fitted with a specially designed cartridge seal that increases reliability and enables easy access and quick service. For pumps with heavy motors (>10 hp), shaft seal replacement is possible without removing the motor.

## SELECT YOUR PREFERRED MATERIAL

The CR is available in three different materials: stainless steel AISI 316, stainless steel AISI 304, and AISI 304/cast iron so you can choose a solution that best meets your needs. The CR's bearings are extremely durable, made of hardwearing materials, and offer options for handling difficult liquids.

The quality of our equipment and the sophisticated, user-friendly MPC control unit will supply you with the pressure you need, when you need it. So don't sweat the details: let our pumps do the work for you.

*Grundfos CR pumps are available in three different materials: stainless steel AISI 316 or AISI 304, and an AISI 304/cast-iron combination for the handling of various types of media.*







## Find what you need

Depending on how complex the actual situation is, you can choose from our standard range, mix components to create a customized solution, or have us create an entirely unique booster system almost from scratch.

Grundfos BoosterpaQ systems are available in various configurations to ensure that there's a model available for every conceivable application and to meet your specific requirements. The end result is a product range with an unparalleled degree of flexibility.

### PRE-DEFINED SYSTEMS OR CUSTOMIZED SOLUTIONS?

The predefined range is comprised of our most popular BoosterpaQ models – and each one is exceptional in its own right.

Grundfos takes a unique mix-and-match approach to customized solutions: all the elements that make up a Grundfos booster system can be seen as modules which can be combined in countless ways to create the solution that is exactly right for the application at hand.

By combining the number and type of pumps, motor size, shaft seal materials, pump materials, control features, etc., it is possible to put together a booster system that fully matches the actual requirements of nearly all applications, regardless of the circumstances.

In the case of highly specific needs that cannot be met by our pre-defined range or customized solutions, which combine existing components, let us know. Our skilled team of engineers are available to create a solution unique to your application.

*Standard or customized solution? Our skilled team of engineers would be more than happy to assist you.*



*Grundfos CR pumps are equipped with a unique, easy-to-replace cartridge shaft seal that's available in a choice of materials. It can handle temperatures from -40°F to 250°F (consult factory for complete booster systems when the operating temperature is greater than 176°F).*

# Technical Information

## FULL-LINE SUPPLIER

Grundfos is a full-line supplier of pressure boosting systems for multiple purposes. Whether it's building services or industry, Grundfos offers highly reliable systems that ensure sufficient supply and pressure at all levels.

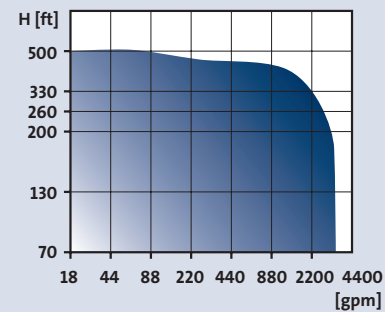
For commercial buildings or industrial applications, Grundfos recommends the BoosterpaQ series, which is available in seven different models.

## OTHER BOOSTER SYSTEMS

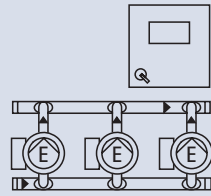
In addition to BoosterpaQ, Grundfos offers a range of other booster systems such as the CRE-Plus and Hydro Multi-E series. For further information and details on customization and accessories, please contact Grundfos.



## Performance Overview



## Speed control



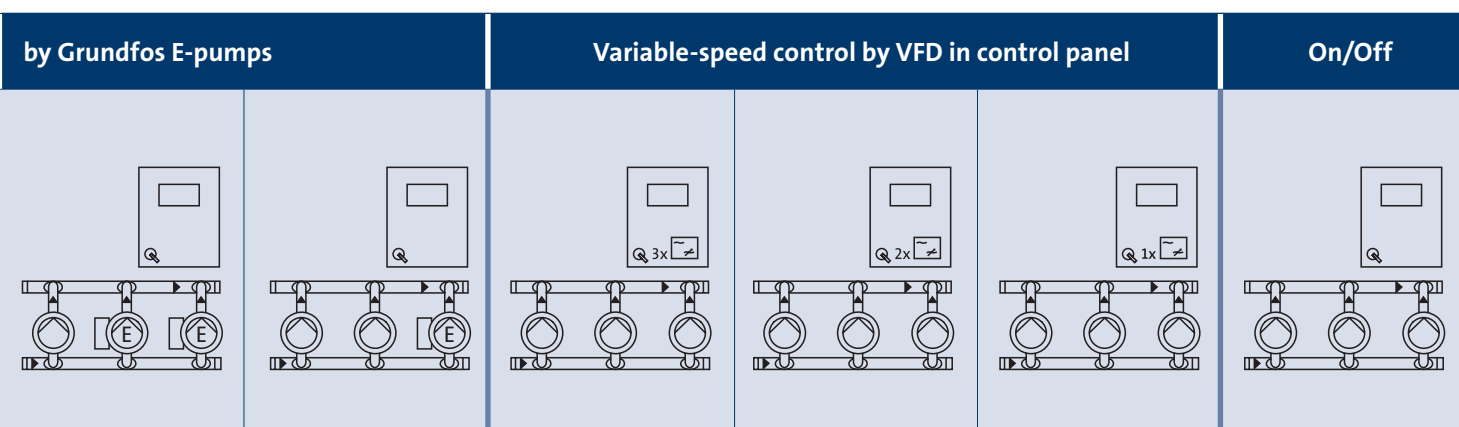
Range	Hydro MPC-E
Flow, gpm	1,800
Head, feet	520
Pump size, hp	1 - 10
Number of pumps	2 - 6

Mechanical version	
In-line piping	•
Cast iron/304SS pumps	• <sup>(1)</sup>
Stainless steel piping	•
Stainless steel base frame	•

Control	
Big graphical display VGA 240 x 320 pixels	•
Display with backlight	•
Installation wizard	•
Pump change over	•
Integrated VFD on pump	•
VFD in control cabinet	
Redundancy on VFD	•
Bus communication	•
Ethernet connection	•

Accessories	
Diaphragm tank	•
Dry-running protection	•

System type benefits	
	Constant pressure
	All pumps variable speed
	Controlled ramp up on all pumps



Hydro MPC-ED	Hydro MPC-ES	Hydro MPC-EF	Hydro MPC-EDF	Hydro MPC-F	Hydro MPC-S
1,800	1,800	3,800	3,800	3,800	3,800
520	520	520	520	520	520
1 - 10	1 - 10	1 - 50	1 - 50	1 - 50	1 - 50
3 - 6	2 - 6	2 - 6	3 - 6	2 - 6	2 - 6

•	•	•	•	•	•
• <sup>(1)</sup>	• <sup>(1)</sup>	• <sup>(1)</sup>	• <sup>(1)</sup>	• <sup>(1)</sup>	• <sup>(1)</sup>
•	•	•	•	•	•
•	•	•	•	•	•

•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

•	•	•	•	•	•
•	•	•	•	•	•

Constant pressure	Constant pressure	Constant pressure	Constant pressure	Constant pressure	Constant pressure with a band
Two pumps variable speed	One pumps variable speed	All pumps variable speed	Two pumps variable speed	One pump variable speed	All pumps are fixed speed
Controlled ramp up on two pumps	Controlled ramp up on one pumps	Controlled ramp up on all pumps	Controlled ramp up on two pumps	Controlled ramp up on one pump	

Notes: <sup>(1)</sup> All stainless steel wetted parts on request

**General data:** Liquid temperature: 32°F - 176°F · Operating pressure: max. 232 psi

**Grundfos boosters – in a class of their own**

Grundfos is one of the world's leading manufacturers of pumps and pumping systems and was the first company ever to develop a multistage in-line centrifugal pump. The current CR pump series remains second to none in terms of efficiency, reliability, and long-term operation costs.

These superior product features characterize the Grundfos range of BoosterpaQ systems and contribute to making Grundfos boosters the unrivaled market leaders, whether for commercial building projects or industrial applications.

Grundfos BoosterpaQ systems are fully integrated systems made to the very highest standards. The advanced MPC controller features a user-friendly interface, making these boosters capable of handling the most difficult jobs with ease and accuracy.

**U.S.A.**  
GRUNDFOS Pumps Corporation  
17100 West 118th Terrace  
Olathe, Kansas 66061  
Phone: (913) 227-3400  
Telefax: (913) 227-3500

**Canada**  
GRUNDFOS Canada Inc.  
2941 Brighton Road  
Oakville, Ontario  
L6H 6C9  
Phone: (905) 829-9533  
Telefax: (905) 829-9512

**Mexico**  
Bombas GRUNDFOS de Mexico S.A. de C.V.  
Boulevard TLC No. 15  
Parque Industrial Stiva Aeropuerto  
C.P. 66600 Apodaca, N.L. Mexico  
Phone: 011-52-81-8144 4000  
Telefax: 011-52-81-8144 4010



L-BPQ-SL-001 04/07 (US)  
Subject to alterations