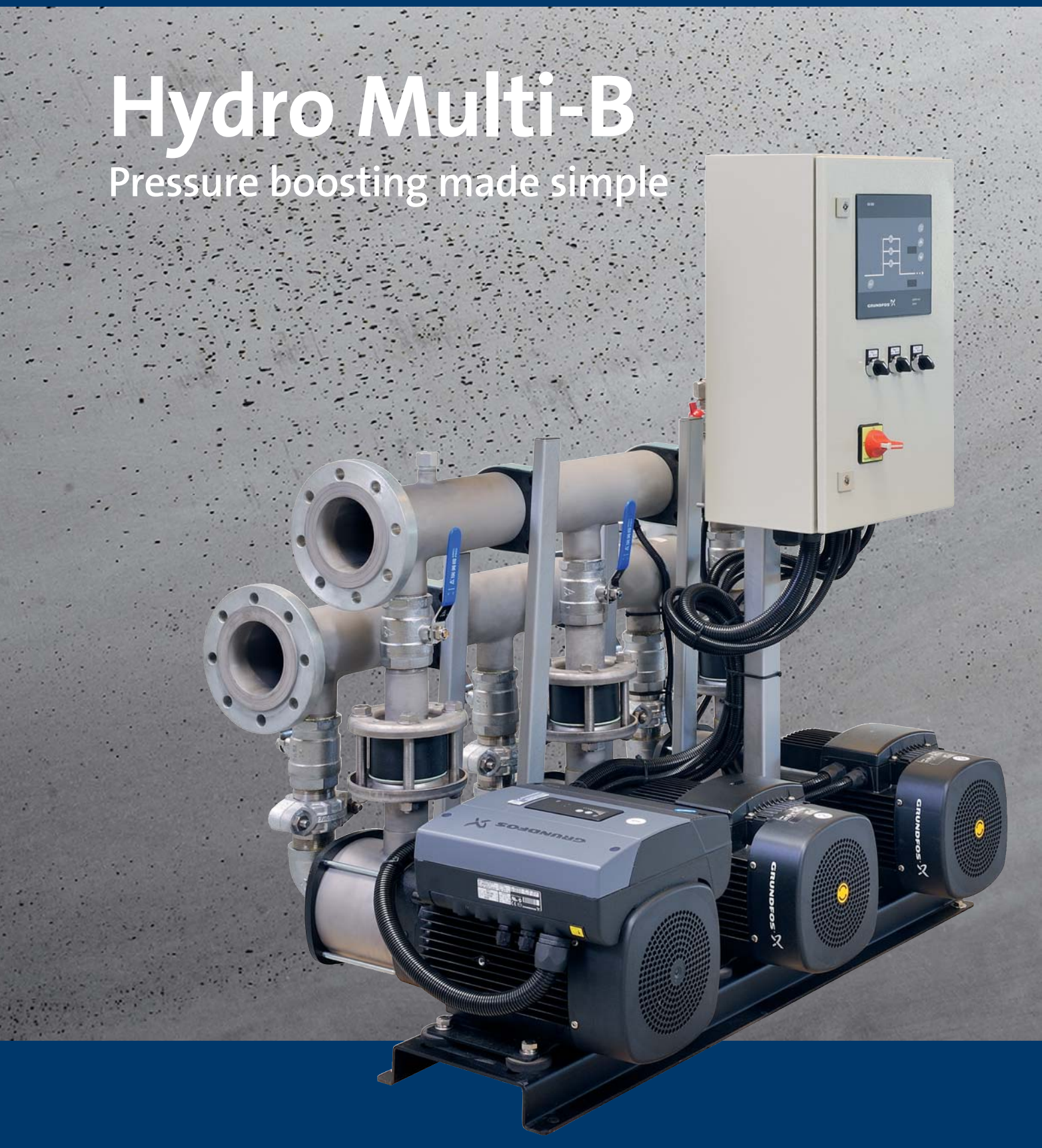
Hydro Multi-B

Pressure boosting made simple



BE > THINK > INNOVATE >

GRUNDFOS

What our customers are looking for in a pressure booster pump system

Building manager:
I am not familiar with all the complex figures and calculations that some advanced booster sets require. I would always prefer a pressure booster system that automatically calculated this for me.

Facility technician:
The simpler a system is, the fewer things can go wrong –.For me it is most important that it is easy to operate and control. Just set the pressure and leave the rest to the system!

Installer:
Installing a system with a few simple settings that automatically adapts it output to demand, makes my life easier. At the same time, it reduces the time spent on installation significantly and ensures optimal operation at all times.

If you can say yes to the following statements, then Grundfos Hydro Multi-B is probably what you are looking for in a pressure booster system;

1. Reliable operation is top priority
2. High performance and efficiency are vital.
3. The less settings the better
4. An automated system will make my life easier.
5. Simplicity and automation reduce the risk of mistakes.
6. Compactness is an issue to be considered

If you require the option to monitor, collect data and fine tune your system to your specific demands, then a more advanced system, like the Hydro MPC, is probably required.

The Benefits of Multi-B

Finding the right system
Not all buildings require highly advanced pressure boosting systems. However, most building managers do not want to settle for a simple standard system.

Instead, they want a system that can adapt to changes in demand and is ready for future expansions – all without compromising high reliability and energy efficiency of course.

Effective yet VERY simple
The Hydro Multi-B is a unique combination of an effective water supply and an extreme simple user interface. Due to the simplicity of the CU 323 controller unit, all daily operations can be handled in a safe and simple manner, which makes the system ideal for water supply in any large complex or multi-storey building.

Compact and designed to last
The high quality components and the design of the Hydro Multi-B booster system have been chosen with a focus on sturdiness and compactness. As a result, the user gets the benefits of a complete solution, with components optimised for this specific task.

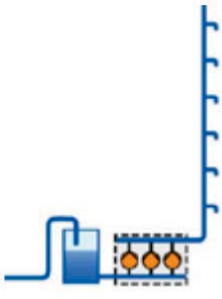
Reliability
The CM pump has high reliability built-in. Clamping of the pumps impeller has been greatly improved by implementing a new stop ring to form a well-defined base. Combining this feature with a Nordlock© washer at the other end of the pump stack creates a robust and reliable design.

Ready... Set... Pump!
At Grundfos, Quality comes first. So before leaving the factory, every unit is completely assembled and thoroughly tested and inspected. This means that the only thing our customers has to do when they receive their Multi-B booster system, is plug it in and start it up.

Pressure boosting or Tank filling

A Hydro Multi-B booster system has been optimised for both pressure boosting and filling of roof tanks.

The difference in operation is handled entirely by the CU323 control unit. Therefore, the controller unit comes in two software versions, designed for the specific application.



PRESSURE BOOSTING

Pressure boosting
Water demand in multi-storey buildings varies greatly during a day – and ultimately depends on what a building is used for.

The control unit of the Hydro Multi-B accurately controls the speed of the pumps and the number of pumps running according to the feedback signal from the pressure transmitter mounted on the discharge pipe of the system.

Therefore, the system delivers a adequate and constant water pressure regardless of large fluctuations in demand.

TANK FILLING

Tank filling
Pumping fresh water into a roof tank must be done in a controlled and efficient way to protect the piping.

The Hydro Multi-B controller ensures that tank filling is carried out in a controlled manner that prevents accident and minimises wear on the pipes. This is possible due to the combination of fixed speed pumps and pumps with integrated variable frequency drive, making it possible for the system to be both effective and flexible at once.

A small pump with gigantic potential
It was once said that great things come in small packages. When you see and experience the Grundfos CM pump in the Hydro Multi-B booster system you will know what this means.

The horizontal multistage pump has been created with compactness reliability and quiet operation as its central features.

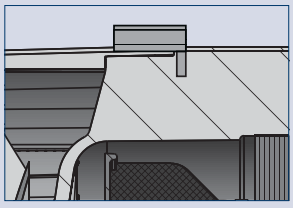
Data communication
The Hydro Multi-B features the possibility to communicate with the most commonly used BUS protocols.

This allows users to operate and monitor the system remotely from i.e. building manager office.

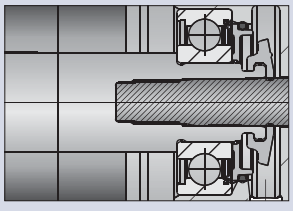
Compactness
The compactness of the Hydro Multi-B is only achievable due to the unique combination of size and performance that the Grundfos CM pump offers.

The CM pump is in certain dimensions 30% smaller than corresponding pumps that offer the same performance.

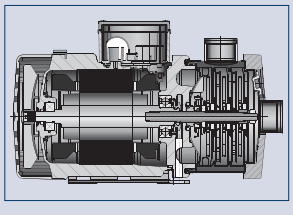
Cut through



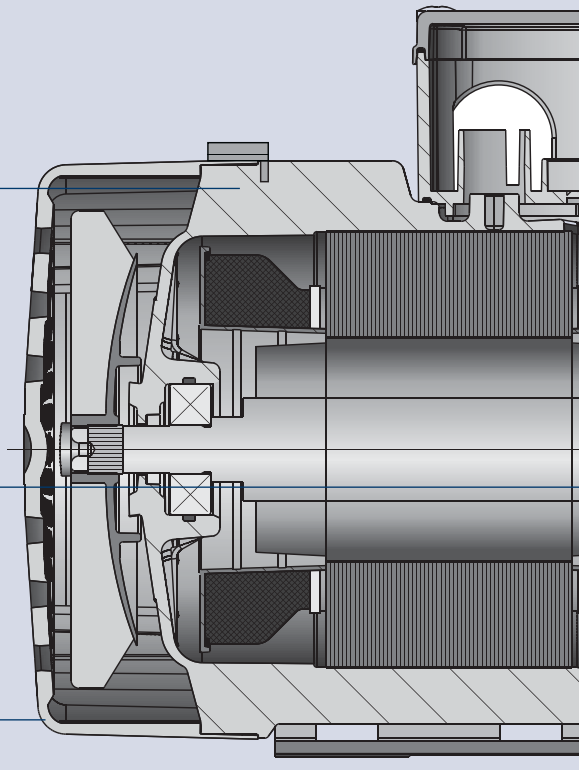
Installation indicator
A standard feature on all three-phase CM pumps. It shows whether the motor has been connected properly.
Remember: Your installation runs better when the pump rotates in the right direction.

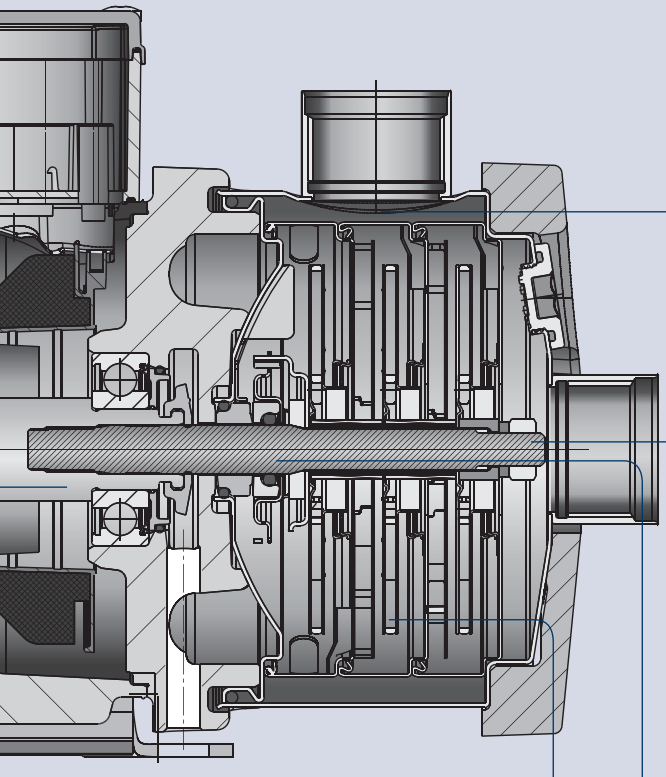


A double protection device
for our motor bearings is in place to keep maintenance to a minimum.
Remember: You can rely on Grundfos for top performance, even within harsh environments.

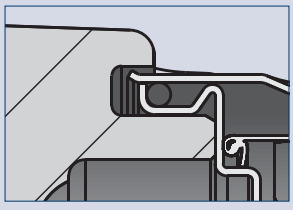


Our goal of compact and easy handling
comes to life in the new CM pump's design.
Remember: Compactness allows the CM pump to fit in everywhere.

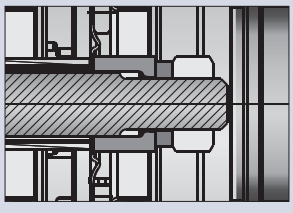




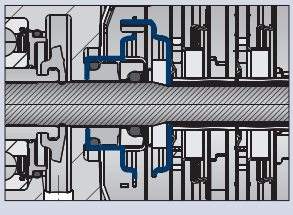
Our sleeve O-ring
assembly device features a safe and simple design for temperatures from –30 to +120 °C. Remember: Grundfos CM can handle applications from chilling to heating.



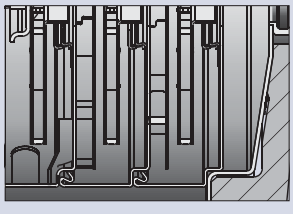
A highly reliable combination of joint elements
keeps the pump in shape, and makes assembly and disassembly possible from the pump side only. Remember: Scheduled service takes place easy and fast.



A unique o-ring shaft seal
is designed to provide excellent dry running, non-sticking capabilities. Remember: Under tough conditions, Grundfos CM provides extra high reliability.



Stainless steel hydraulics
across the entire range provides the highest performance in the long term. Pump variants are available in AISI 304/DIN 1.4301 and AISI 316/DIN 1.4401 stainless steel.



Benefits of E motor

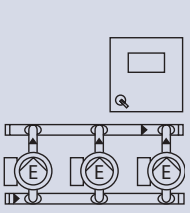
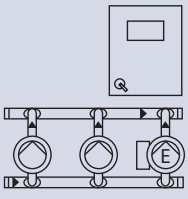
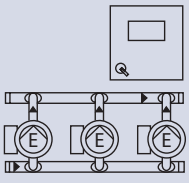
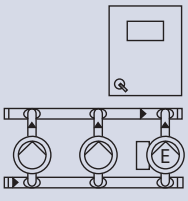
The E! - The closer, The better
A variable-speed solution with a separate frequency converter placed in the control cabinet is common in many applications today.

However, Grundfos E-pumps take systems integration one step further by offering an integrated solution with a built-in variable-speed drive mounted directly on the motor.

Benefits of E-pumps with MGE motor over frequency converter solutions:

- Total systems integration – one unit
- Optimum interface between motor and drive
- Space-saving installation – no need for control cabinets/ rooms or space on a wall
- Reduced logistics costs – one product, one supplier

Technical information

Application	Pressure Boosting		Tank Filling	
Control variant	**E**	**ES**	**E**	**ES**
				
Range				
Flow, m³/h	105	105	105	105
Head, meter	120	120	120	120
Pump size, kW	0.25 - 7.5	0.25 - 7.5	0.25 - 7.5	0.25 - 7.5
Number of pumps	2 - 3	2 - 3	2 - 3	2 - 3
Mechanics				
In-line piping	YES	YES	YES	YES
Stainless steel pumps	•	•	•	•

	Constant-pressure		Tank Filling	
	E	**ES**	**E**	**ES**
Functions via the CU 323 control panel				
Automatic cascade control	•	•	-	-
Automatic pump changeover	•	•	•	•
Standby pumps	○	○	○ [1]	○ [1]
Reduant sensor	○	○	○	○
Digital input for external start/stop relay	•	•	•	•
Water shortage protection	○	○	○	○
Alarm and operation outputs	•	•	•	•
Motor protection	•	•	•	•
Maximum pressure protection	•	•	-	-
Sensor fault protection	•	•	•	•
High tank level protection	-	-	•	•
Button lock function	•	•	•	•
Communication				
CIM (Communication Interface Module)	○	○	○	○
External GENIbus correction (option)	○	○	○	○

• Standard
○ On request
- Not available
1) For systems with more than 2 pumps, one is standby as standard

SIZING THE BOOSTER

1. Maximum flow requirement
Total consumption and maximum flow rate depend on the application in question. The maximum flow requirement can be calculated by means of the table below which is based on statistical data.

Consumer	Unit	Q year	Consumption period d	Qday	fd	Q(m)day	ft	Max. flow rate
		m^3/year	m^3/year	m^3/year		m^3/year		m^3/year
Residence building	Residence (2.5 persons	183	365	0.5	1.3	0.65	1.7	0.046
Office building	Employee	25	250	0.1	1.2	0.12	3.6	0.018
Shopping Centre	Employee	25	300	0.08	1.2	0.1	4.3	0.018
Supermarket	Employee	80	300	0.27	1.5	0.4	3.0	0.05
Hotel	Bed	180	365	0.5	1.5	0.75	4.0	0.125
Hospital	Bed	300	365	0.8	1.2	1.0	3.0	0.12
School	Pupil	8	200	0.04	1.3	0.065	2.5	0.007

Example: Hotel with 540 beds

Number of beds:	n
Total annual consumption:	Qyear x n
Consumption period:	d
Average consumption per day:	(Qyear x n)/d
Year maximum consumption:	Q(m)day = fd x Qday
Maximum flow requirement per hour:	Qmax = Max. flow rate/hour x number of beds

Calculation

n = 540 beds
Qyear x n = 180 x 540 = 97,200 m^3/year
d = 365 days/year
(Qyear x n)/d = 97,200/365 = 266.3 m^3/day
Q(m)day = fd x Qday = 1.5 x 266.3 = 399.4 m3/day
Qmax = Max. flow rate/hour x number of beds = 0.125 x 540 = 67.5 m^3/h.

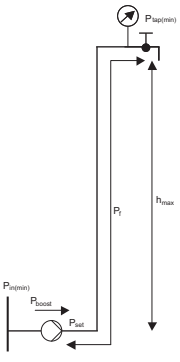
2. Required discharge pressure
The required discharge pressure, Pset, of the Hydro MPC can be calculated with the following equation:

Pset = Ptap(min) + Pf + (hmax/10.2) ;
Pboost = Pset – Pin(min).

Key

Pset = Required discharge pressure in bar
Ptap(min) = Required minimum pressure at the highest tapping point in bar
Pf = Total pipe friction loss in metre
hmax = Height from booster discharge port to highest tapping point in metre
Pin(min) = Min. inlet pressure in bar
Pboost = Required boost in bar.

Calculation
Ptap(min) = 2 bar
Pf = 1.2 bar
hmax = 41.5 metres
Pin(min) = 2 bar
Pset = 2+1.2+(41.5/10.2) = 7.3 bar
Pboost = 7.3-2 = 5.3 bar.



Grundfos boosters – in a class of their own

Grundfos is one of the world's leading manufacturers of pumps and pump systems and was the first company ever to develop a multistage in-line centrifugal pump.

With the new compact and efficient CM pumps, Grundfos has developed a solution that meets the needs of users, who require simplicity and compactness, without compromising reliability and efficiency.

The Grundfos Hydro Multi-B boosters are fully integrated systems made to the very highest standards and thanks to the easy-to-operate controller these boosters are simple to install and operate, without the need for complex calculations.

Combining advanced product features with simplicity and user-friendliness characterise the Grundfos range of Hydro boosters – and contribute to making Grundfos boosters the unrivalled market leaders, whether for commercial building projects or industrial applications.

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