

# Hydro Multi-S

Grundfos booster sets with two or three CH or CR pumps  
50 Hz



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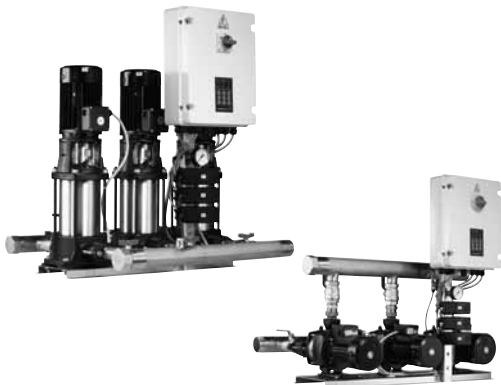
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### Introduction



Gr/A5733 - Gr/A5734

**Fig. 1** Hydro Multi-S booster sets

The Grundfos Hydro Multi-S booster sets are designed for pressure boosting of clean water.

Examples:

- blocks of flats
- hotels
- schools.

Grundfos Hydro Multi-S booster sets consist of two or three identical Grundfos CH or CR pumps connected in parallel and mounted on a common base frame and a control cabinet with motor protection and integrated controller.

Hydro Multi-S booster sets are supplied as complete, pre-assembled and tested systems including suction and discharge manifolds, isolating valves, non-return valves, pressure gauge and pressure switches.

To ensure reliable operation, the booster set must be fitted with a suitable diaphragm tank. The size of the diaphragm tank can be found on page 15.

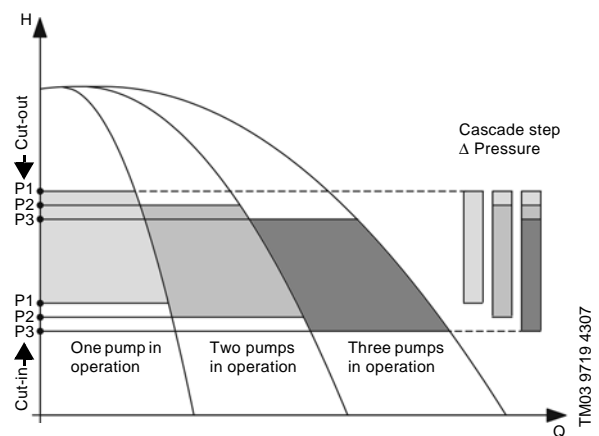
The pumps are automatically operated according to system demand by means of pressure switches (one for each pump).

### How does the Hydro Multi-S work?

When a tap is opened, water is drawn from the diaphragm tank. The pressure drops to the first cut-in pressure, and the first pump cuts in.

As the consumption rises, more pumps will cut in until the performance of the pumps in operation corresponds to the demand.

When the water consumption falls, the discharge pressure rises to the cut-out pressure and the pressure switch cuts out one pump and as the consumption falls, more pumps will be cut out.

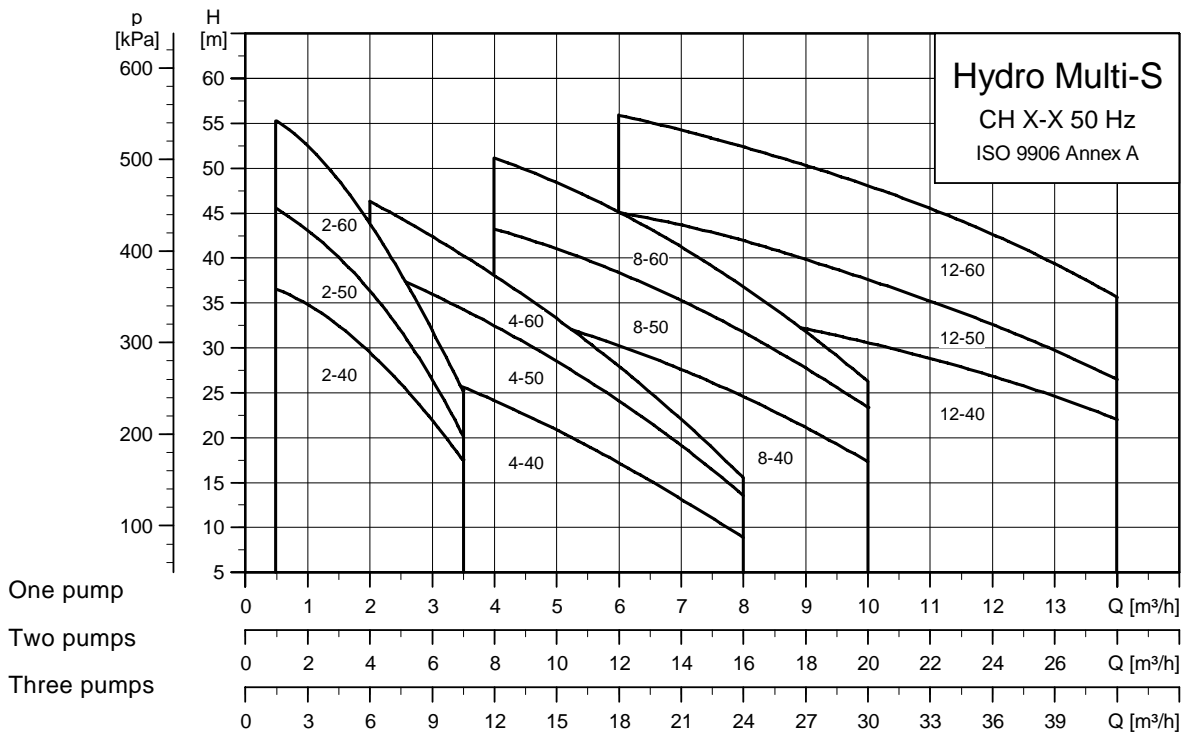


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**Fig. 2** Operation with cut-in and cut-out

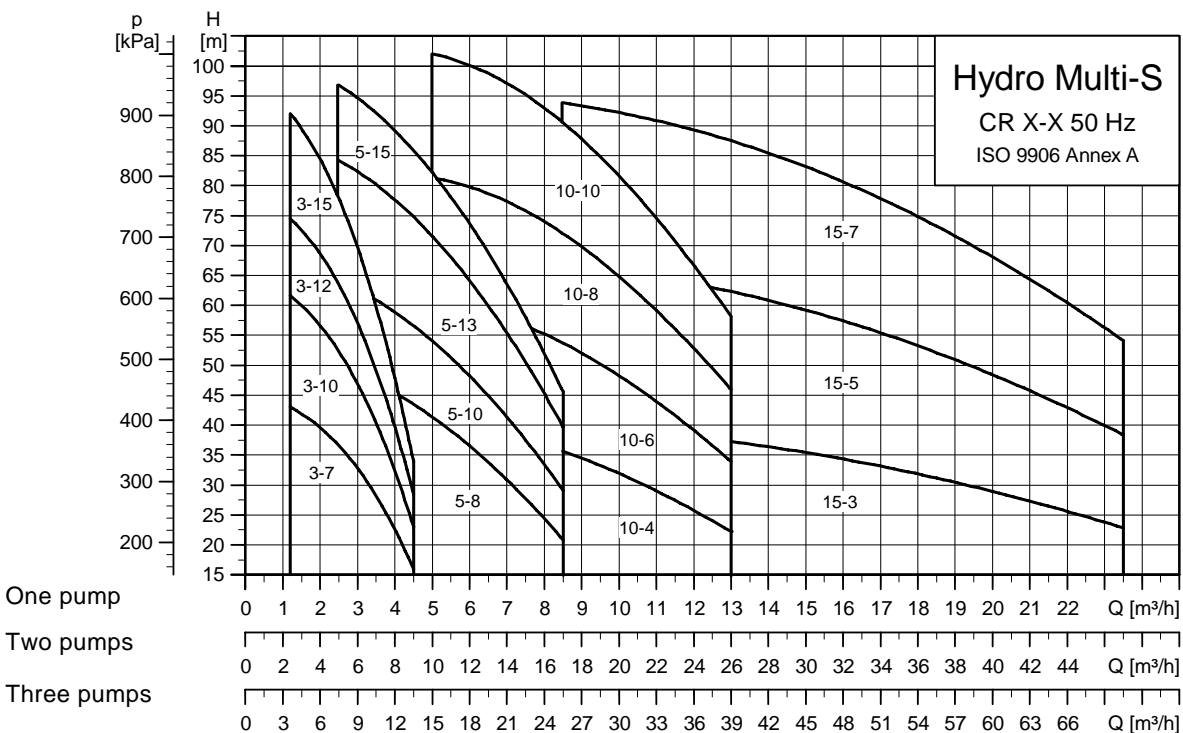
## Performance range

### Hydro Multi-S with CH pumps



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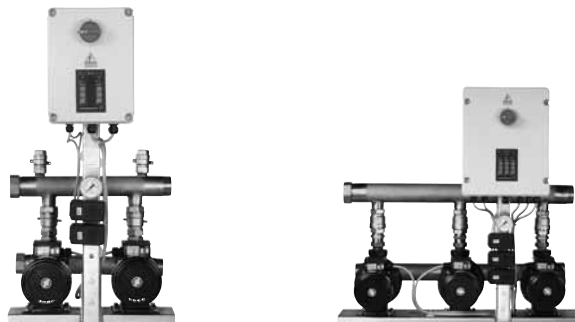
### Hydro Multi-S with CR pumps



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### Product range

#### Hydro Multi-S with CH pumps



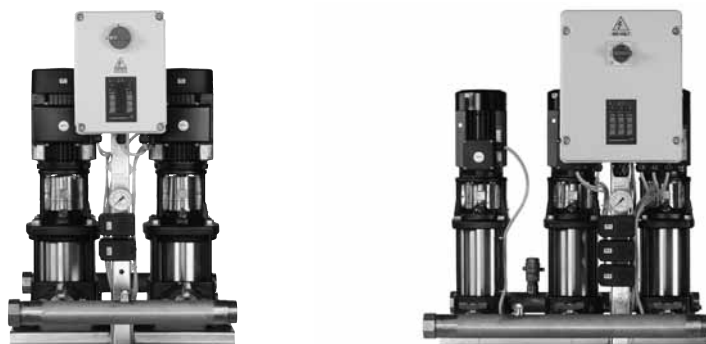
GIA5738 - GIA5735

Pump type	CH 2			CH 4			CH 8			CH 12		
	-40	-50	-60	-40	-50	-60	-40	-50	-60	-40	-50	-60
<b>Hydraulic data</b>												
Maximum head [m]	37	47	56	34	45	54	37	47	56	39	50	59
Maximum flow rate [m <sup>3</sup> /h]	10.5			24			30			42		
Liquid temperature [°C]	+5 to +40			+5 to +40			+5 to +40			+5 to +40		
Maximum operating pressure [bar]	10			10			10			10		
Maximum inlet pressure [bar]	6.2	5.2	4.3	6.5	5.4	4.5	6.2	5.2	4.3	6.2	5.2	4.3
<b>Motor data</b>												
Number of pumps	2 or 3			2 or 3			2 or 3			2 or 3		
Motor power [kW]	Single-phase motor	0.37	0.45	0.56	0.69	0.92	1.05					
	Three-phase motor	0.40	0.56	0.58	0.66	1.00	1.17	1.04	1.32	1.60	1.92	2.15
Supply voltage	1 x 220 V	●	●	●	●	●	●	●	●	●	●	●
	3 x 400 V	●	●	●	●	●	●	●	●	●	●	●
<b>Shaft seal</b>												
CVBE	●	●	●	●	●	●	●	●	●	●	●	●
<b>Materials</b>												
All stainless steel	●	●	●	●	●	●	●	●	●	●	●	●
Galvanised-steel base frame and manifolds	●	●	●	●	●	●	●	●	●	●	●	●
Galvanised-steel base frame and AISI 304 manifolds	●	●	●	●	●	●	●	●	●	●	●	●
<b>Pipework connections</b>												
Rp 2	●	●	●	●	●	●	●	●	●			
Rp 2 1/2							●	●	●			
Rp 3										●	●	●
<b>Functions</b>												
Automatic cascade control	●	●	●	●	●	●	●	●	●	●	●	●
Automatic pump changeover	●	●	●	●	●	●	●	●	●	●	●	●
Dry-running protection	●	●	●	●	●	●	●	●	●	●	●	●
Emergency operation	●	●	●	●	●	●	●	●	●	●	●	●
Automatic resetting of dry-running fault	●	●	●	●	●	●	●	●	●	●	●	●
Start-up delay between pumps	●	●	●	●	●	●	●	●	●	●	●	●
Motor protection by means of a thermal overload relay	●	●	●	●	●	●	●	●	●	●	●	●
Short-circuit protection by means of fuses	●	●	●	●	●	●	●	●	●	●	●	●

● Available as standard.

### Product range

#### Hydro Multi-S with CR pumps



GrA5737 - GrA5736

Pump type	CR 3				CR 5				CR 10				CR 15		
	-7	-10	-12	-15	-8	-10	-13	-15	-4	-6	-8	-10	-3	-5	-7
<b>Hydraulic data</b>															
Maximum head [m]	46	66	79	98	54	68	88	102	40	61	82	103	42	70	98
Maximum flow rate [m <sup>3</sup> /h]	13.5				25.5				39				69		
Liquid temperature [°C]	+5 to +50				+5 to +50				+5 to +50				+5 to +50		
Maximum operating pressure [bar]	10	10	16	16	10	10	16	16	10	10	16	16	10	10	16
Maximum inlet pressure [bar]	5.3	3.3	8.0	6.1	4.5	3.1	7.1	5.7	5.9	3.8	7.7	5.6	5.7	2.9	6.1
<b>Motor data</b>															
Number of pumps	2 or 3				2 or 3				2 or 3				2 or 3		
Motor power [kW]	0.55	0.75	1.10	1.10	1.1	1.5	2.2	2.2	1.5	2.2	3.0	4.0	3.0	4.0	5.5
Supply voltage	1 x 220 V				●				●				●		
	3 x 400 V				●				●				●		
<b>Shaft seal</b>															
HQQE	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Materials</b>															
All stainless steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Galvanised-steel base frame and manifolds	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Galvanised-steel base frame and AISI 304 manifolds	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Pipework connections</b>															
Rp 2	●	●	●	●	●	●	●	●	●	●	●	●			
Rp 2 1/2									●	●	●	●			
Rp 3													●	●	●
<b>Functions</b>															
Automatic cascade control	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Automatic pump changeover	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Dry-running protection	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Emergency operation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Automatic resetting of dry-running fault	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Start-up delay between pumps	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Motor protection by means of a thermal overload relay	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Short-circuit protection by means of fuses	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● Available as standard.

### Type key

Example	Hydro Multi-S	/P	2	CR 3-7	3 x 400 V	50 Hz	DOL
Type range							
Materials: : all stainless steel /G : galvanised-steel base frame and manifolds /P : galvanised-steel base frame and AISI 304 manifolds							
Number of pumps							
Pump type							
Supply voltage							
Frequency							
Starting method: DOL: direct on line							

### Operating conditions

Data	Pump type	
	CH	CR
Maximum flow rate	Up to 42 m <sup>3</sup> /h	Up to 69 m <sup>3</sup> /h
Maximum operating pressure	10 bar	10/16 bar
Liquid temperature	+5 to +40 °C <sup>1)</sup> +5 to +55 °C <sup>2)</sup>	+5 to +50 °C
Ambient temperature	+5 to +55 °C	+5 to +40 °C <sup>3)</sup> +5 to +60 °C <sup>4)</sup>
Power range	Up to 5.5 kW	
Starting method	DOL (direct on line)	
Supply voltage	1 x 220 V ± 10 %, 50 Hz 3 x 400 V ± 10 %, 50 Hz	
Relative air humidity	Max. 95 %	
Enclosure class	IP54	

1) Applies to CH 2 and CH 4 pumps.

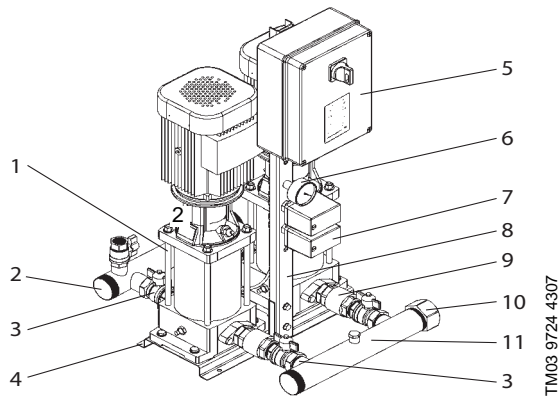
2) Applies to CH 8 and CH 12 pumps.

3) Applies to motor sizes of 0.37 kW and up to and including 0.75 kW.

4) Applies to motor sizes of 1.1 kW and up to and including 5.5 kW.

### Construction

Hydro Multi-S booster sets consist of two or three identical CH or CR pumps connected in parallel and mounted on a base frame provided with a control cabinet and all the necessary fittings.



**Fig. 3** Hydro Multi-S with CR 5 pumps

Pos.	Components	Number
1	Pump	2 or 3
2	Discharge manifold	1
3	Isolating valve (brass)	2 per pump
4	Base frame	1
5	Control cabinet	1
6	Pressure gauge	1
7	Pressure switch	1 per pump
8	Stand	1
9	Non-return valve (brass)	1 per pump
10	Screw cap	2
11	Suction manifold	1



## CH pump

The CH pump is a non-self-priming, horizontal, multistage centrifugal pump with mechanical shaft seal and through-going pump-motor shaft. The pump has axial suction port and radial discharge port and is mounted on a base plate. All movable parts in contact with the pumped liquid are made of stainless steel.



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Fig. 4 CH pump

### Shaft seal

All pumps have a maintenance-free mechanical CVBE shaft seal.

### Materials CH 2, 4, 8, 12

Components	Materials	EN/DIN
Suction chamber	Cast iron	0.6020
Drain and priming plug	Steel	1.0718
Chamber	Stainless steel	1.4301
Pump shaft	Stainless steel	1.4057
Impeller	Stainless steel	1.4301
Shaft seal faces	Carbon/ceramics	
Spring	Stainless steel	1.4310
Discharge chamber	Cast iron	0.6020
Base plate	Painted steel	1.0330.3
O-rings	NBR rubber	

### Motor

The CH pump is fitted with a totally enclosed, fan-cooled, squirrel-cage Grundfos motor.

### Electrical data

Enclosure class: IP55  
 Insulation class: F  
 Supply voltages: 1 x 220-240 V, 50 Hz  
 3 x 220-240/380-415 V, 50 Hz.

Motor protection is incorporated in the control cabinet.

Single-phase motors have a built-in thermal relay to IEC 34-11, TP 211 (slow overload and locked rotor).

### CR pump

The CR pump is a non-self-priming, vertical, multistage centrifugal pump.

The pump consists of a base and a pump head. The chamber stack and the outer sleeve are secured between the pump head and the base with staybolts. The base has suction and discharge ports on the same level (in line).



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Fig. 5 CR pump

### Shaft seal

All pumps have a maintenance-free mechanical HQQE shaft seal of the cartridge type.

### Materials CR 3, 5, 10 and 15

Components	Materials	EN/DIN	AISI/ASTM
Pump head	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
Shaft	Stainless steel	1.4401 <sup>1)</sup> 1.4057 <sup>2)</sup>	AISI 316 AISI 431
Impeller	Stainless steel	1.4301	AISI 304
Chamber	Stainless steel	1.4301	AISI 304
Outer sleeve	Stainless steel	1.4301	AISI 304
Base	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
Neck ring	PTFE		
Rubber parts	EPDM		

<sup>1)</sup> CR 3, 5

<sup>2)</sup> CR 10, 15

### Motor

The CR pump is fitted with a totally enclosed, fan-cooled, 2-pole Grundfos standard motor with principal dimensions to EN standards.

Electrical tolerances according to EN 60034.

### Electrical data

Enclosure class:	IP55
Insulation class:	F
Supply voltages:	1 x 220-240 V, 50 Hz 3 x 220-240/380-415 V, 50 Hz.

Motor protection is incorporated in the control cabinet.

Single-phase motors have a built-in thermal relay to IEC 34-11, TP 211 (slow overload and locked rotor).

Three-phase Grundfos motors of 3 kW and upwards have a built-in thermistor (PTC) according to DIN 44082 (IEC 34-11: TP 211).

## Description of functions

The Hydro Multi-S offers the following features:

- Automatic cascade control of pumps by means of two or three pressure switches.
- Automatic pump changeover at any start/stop cycle.
- If a pump is in fault status, it is automatically taken out of operation.
- Automatic resetting of dry-running fault.
- Manual resetting of overload trip.
- Possibility of emergency operation.
- Pump and system protection:
  - Short-circuit protection by means of fuses.
  - Motor protection by means of a thermal overload relay.
  - Dry-running protection by means of an additional pressure switch or level switch.
  - Start-up delay between two pumps: Prevents simultaneous start-up of more than one pump.

## Installation

A Hydro Multi-S booster set must be installed in a well-ventilated room to ensure sufficient cooling of the pumps. Hydro Multi-S is not suitable for outdoor installation.

The booster set should be placed with sufficient clearance around it.

Enclosure class: IP54.

## Motor cooling

To ensure adequate cooling of motor and electronics, the following must be observed:

- Place the Hydro Multi-S in such a way that adequate cooling is ensured.
- Motor cooling fins, holes in fan cover and fan blades must be kept clean.

## Maximum ambient temperature

### Hydro Multi-S with CH pumps

All motor sizes: Max. +55 °C.

### Hydro Multi-S with CR pumps

0.37 - 0.75 kW: Max. +40 °C.

1.1 - 5.5 kW: Max. +60 °C.

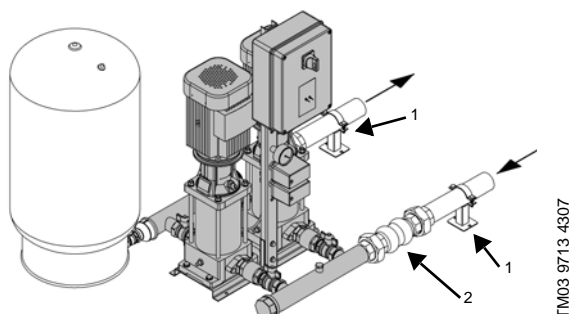
## Pipework

The pipes connected to the booster set must be of adequate size. To avoid resonance, expansion joints should be fitted in the suction and discharge manifolds.

The pipes are to be connected to the suction and discharge manifolds.

The booster set should be tightened up prior to start-up.

It is advisable to fit pipe supports both on the suction and discharge sides.



**Fig. 6** Example of installation with expansion joints and pipe supports (Grundfos standard scope of supply in grey colour)

Pos.	Description
1	Pipe support
2	Expansion joint

## How to size a booster set

### General

When sizing a booster set, it is important to ensure the following:

- That the capacity of the booster set can meet the maximum duty demand, both in flow rate and pressure.
- That the booster set is not over-sized due to its effect on installation and operating costs.
- The appropriate size and number of pumps related to their performance, inclusive of stand-by pump, if any.
- The adequate number and size of the diaphragm tanks.
- The dry-running protection.

### Pump size

The booster set should be capable of meeting the maximum duty demand. But as this will occur for a comparatively short part of the day only, it is important to select a type of pump which can meet the varying demand throughout the duty period.

It is not recommended to select a pump type with a performance lower than the lowest possible consumption, nor to select a pump type with a performance higher than the highest possible consumption.

### Number of pumps

In most applications, constant water supply is a major factor. Often it is not acceptable if the system does not maintain its maximum flow rate even during pump maintenance or repairs. In order to prevent any disruption of the supply in such a situation, the system is sized with a standby pump, i.e. Hydro Multi-S with two or three pumps in installations where the demand can be met just by one or two pumps, respectively.

### NPSH

In order to avoid cavitation, in the case of operation with a suction lift, long or winding suction line, always check the NPSH value of the pump at the highest duty flow rate (see the pump performance curve in the specific technical literature).

## System flow rate demand

The graph in fig. 7 allows determining the flow rate demand for typical applications where water is supplied by the Hydro Multi-S booster set.

The y-axis shows the flow rate (Q) in m<sup>3</sup>/h. The x-axis shows the number of units, i.e. the number of:

- A: flats in a block of flats
- B: beds in a hotel
- C: clerks in an office or pupils/students in a school.

The curves in the graph correspond to flow rate demand in:

- A1: flats with one bathroom
- A2: flats with two bathrooms
- B1: hotels
- C1: schools
- C2: offices.

**Note:** In the case of summer cottages or holiday resorts, increase the number of flats or beds by 20 %.

To find the required flow (Q) in m<sup>3</sup>/h, proceed as follows:

1. Draw a vertical line from the actual number of units out of the corresponding scale on the x-axis to its intersection point with the selected application curve.
2. Draw a horizontal line from the intersection point to the y-axis and read the value of the flow (Q) in m<sup>3</sup>/h.

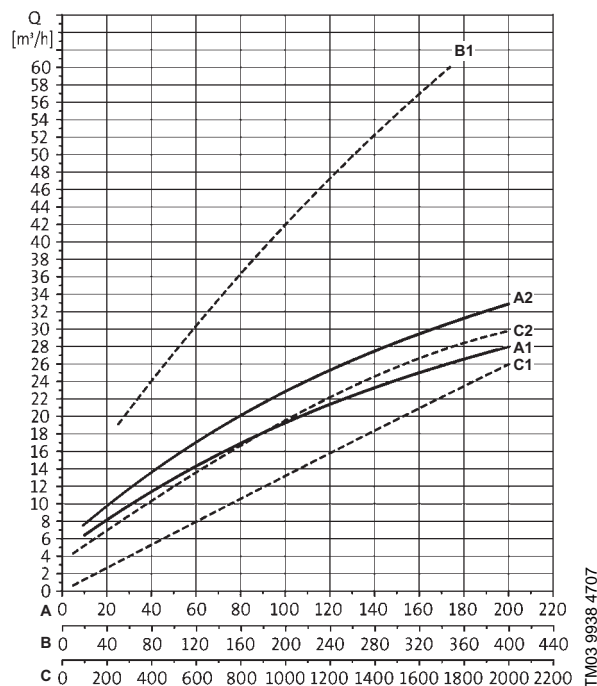


Fig. 7 System flow rate

## Calculation of system head demand

To determine the system head demand, the following, calculated in metres, is to be considered:

**H<sub>d</sub> delivery head:** difference in level between the booster set and the highest draw-off point to be served.

**H<sub>ld</sub> pressure loss:** friction loss in the delivery line.

**H<sub>f</sub> final pressure:** the pressure required at the highest and/or most remote draw-off point to be served.

**H<sub>s</sub> suction lift:** difference in level between the booster set suction port and the free surface of water in the lower reservoir, if the case.

**H<sub>i</sub> inlet pressure:** pressure available on the suction side of the booster set, due to water intake from a pressurised line or higher-level water break tank.

**H<sub>ls</sub> pressure loss:** friction loss in the suction line.

The total head (H<sub>t</sub>) in metres of water column to be delivered by the booster set is obtained as follows:

- In the case of water from a pressurised line or break tank at a higher level than the booster set:  
 $H_t = H_{ls} + H_d + H_{ld} + H_f - H_i$ .
- In the case of water from a break tank at the same level as the booster set:  
 $H_t = H_{ls} + H_d + H_{ld} + H_f$ .
- In the case of water from a reservoir at a lower level than the booster set:  
 $H_t = H_{ls} + H_s + H_d + H_{ld} + H_f$ .

The total of actual inlet pressure and delivered head must not exceed the maximum system pressure.

This total head can be used in connection with the required flow rate, with respect to the coverage of performance on page 16, for the selection of the booster set model.

## How to select a Hydro Multi-S

The required flow rate (Q), pressure (H) and number of pumps in the booster set can be provided by the system designer or determined by following the procedure as described on page 13.

The y-axis on the right side of the graph gives the head (H) in metres and in kPa. The x-axis consists of three scales which give the flow (Q) in m<sup>3</sup>/h. The top axis indicates single-pump performance, the middle axis cumulated two-pump-performance and the bottom axis cumulated three-pump-performance.

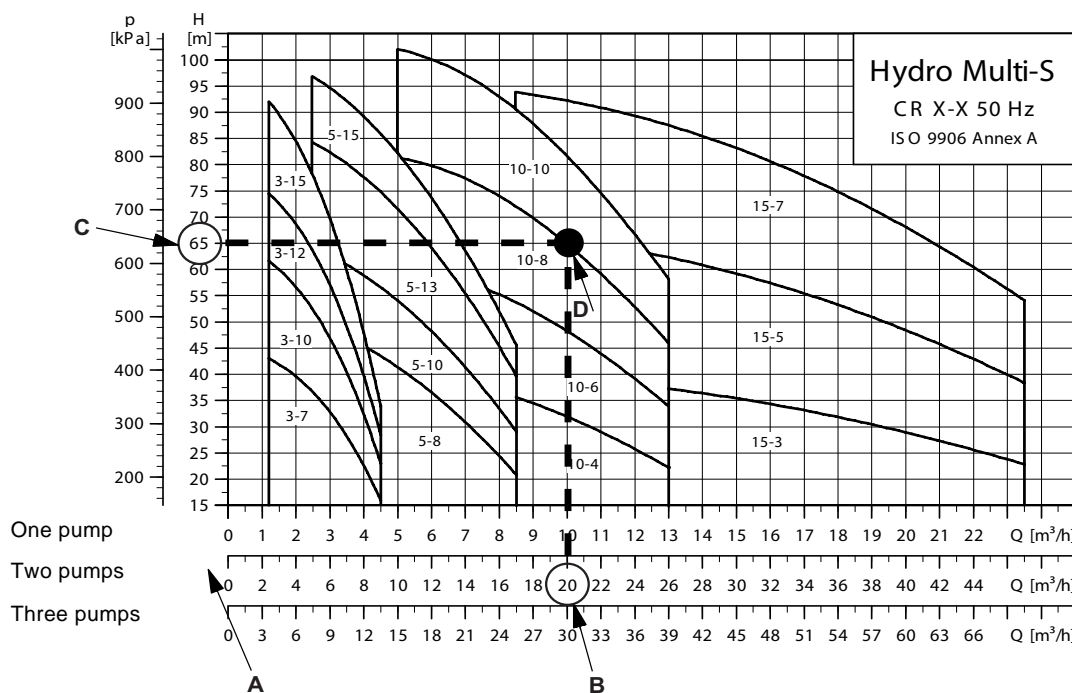


Fig. 8 Hydro Multi-S performance range

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## Example

To select the booster set, follow the procedure below and use the performance curves on page 4.

- A Two pumps are required in the booster set.
- B A flow rate of 20 m<sup>3</sup>/h is required.  
Draw a vertical line from the specified flow starting from the intermediate scale of the x-axis.
- C A head of 65 m is required.  
Draw an horizontal line from the head required. The intersection point of the two lines gives the best pump type meeting this specification.
- D The booster set to be selected is:  
Hydro Multi-S 2 CR 10-8.  
Choose the Hydro Multi-S with three pumps if a standby pump is required as back-up.
- E Complete the sizing by selecting a diaphragm tank and dry-running protection. See the following section "Diaphragm tank sizing" and section "Accessories" on page 19.

## Diaphragm tank sizing

To ensure reliable automatic operation, the Hydro Multi-S booster set must be fitted with a diaphragm tank. The tank should be connected to the discharge manifold or pipeline to meet the system requirement.

The minimum suggested tank volume is indicated in the tables below:

### Hydro Multi-S with CH pumps

Pump type	Tank volume [litres]		
	Cut-in 2 bar	Cut-in 3 3 bar	Cut-in 4 bar
CH 2*	24	24	24
CH 4*	24	33	33
CH 8	33	50	50
CH 12	50	50	80

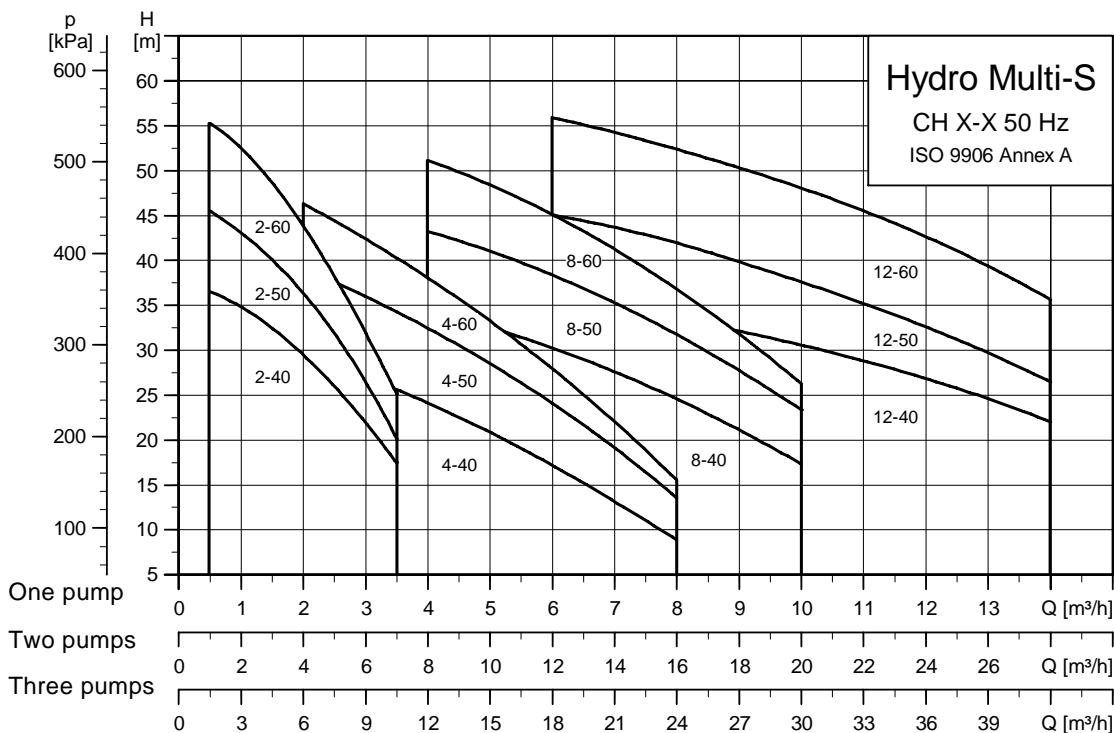
### Hydro Multi-S with CR pumps

Pump type	Tank volume [litres]			
	Cut-in 3 bar	Cut-in 4 bar	Cut-in 5 bar	Cut-in 6 bar
CR 3*	24	24	24	24
CR 5*	33	33	50	50
CR 10	50	50	80	80
CR 15	80	100	100	200

\* The booster sets with these pump sizes allow the mounting of the diaphragm tank on the discharge manifold.

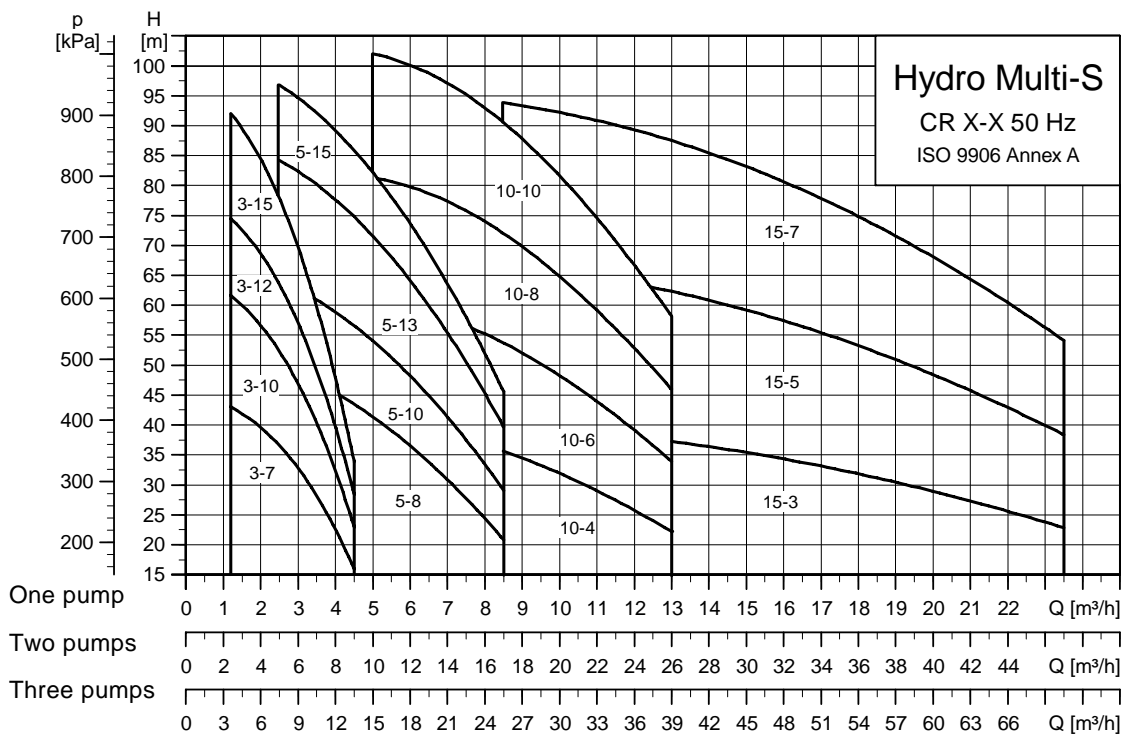
\*\* The tables above refer to volumes in the Grundfos GT tanks which are available on request.

## Hydro Multi-S with CH pumps



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## Hydro Multi-S with CR pumps



TM03 9905 4407



## Hydro Multi-S with two or three CH pumps

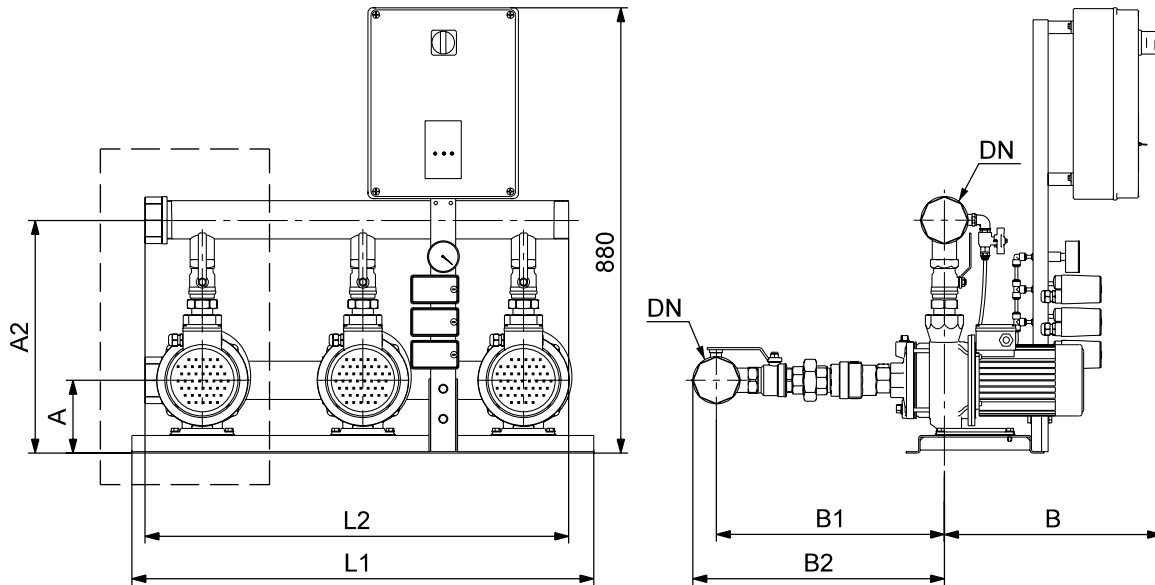


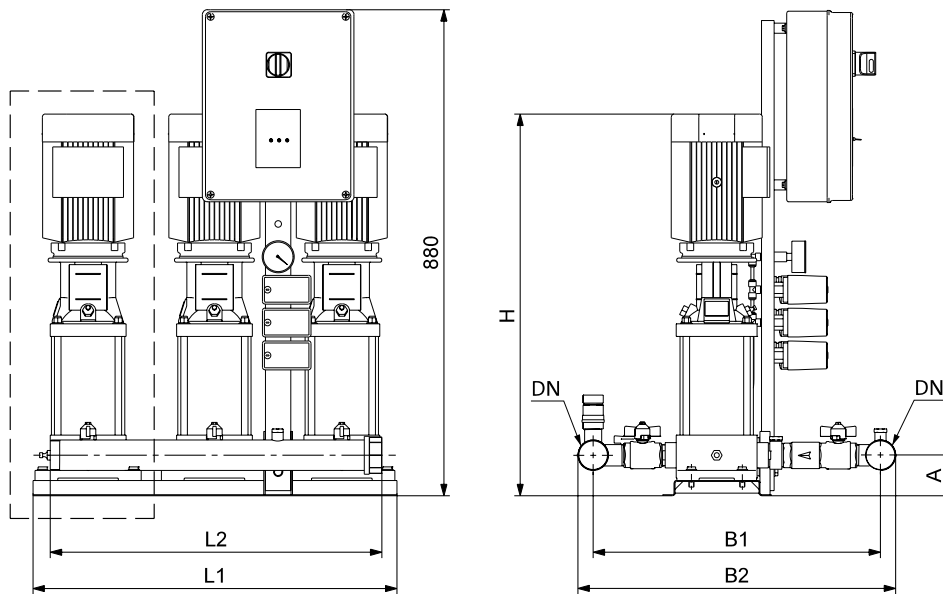
Fig. 9 Dimensional sketch of a Hydro Multi-S booster set with CH pumps

Pump type	U [V]	P <sub>2</sub> [kW]	I <sub>1/1</sub> [A]	A [mm]	A2 [mm]	B [mm]	Hydro Multi-S with two pumps					Hydro Multi-S with three pumps																					
							Dimensions [mm]					[kg]	Dimensions [mm]					[kg]															
							DN	B1	B2	L1	L2		DN	B1	B2	L1	L2																
CH 2-40	1 x 220	0.37	2.60	122	360	391	2"	413	442	470	410	44	2"	413	442	720	660	66															
CH 2-50	1 x 220	0.45	2.90					432	461					45	432				461	67													
CH 2-60	1 x 220	0.56	3.70					450	479					45	450				479	68													
CH 2-40	3 x 400	0.40	1.10					413	442					46	413				442	69													
CH 2-50	3 x 400	0.56	1.25					432	461					47	432				461	70													
CH 2-60	3 x 400	0.58	1.35					450	479					47	450				479	71													
CH 4-40	1 x 220	0.69	3.90					448	477					47	448				477	71													
CH 4-50	1 x 220	0.92	5.80					475	504					51	475				504	76													
CH 4-60	1 x 220	1.05	6.70					502	531					52	502				531	78													
CH 4-40	3 x 400	0.66	1.60					448	477					49	448				477	74													
CH 4-50	3 x 400	1.00	2.30					475	504					53	475				504	79													
CH 4-60	3 x 400	1.17	2.50					502	531					54	502				531	81													
CH 8-40	3 x 400	1.04	2.70	147	445	437	2"	456	484	600	510	69	2 1/2"	467	500	920	830	107															
CH 8-50	3 x 400	1.32	3.00					486	514					71	497				530	110													
CH 8-60	3 x 400	1.60	3.40		456			484	79					467	500				125														
CH 12-40	3 x 400	1.92	4.10		498			437	2"					600	510				79	85	85	2 1/2"	467	500	920	830	122						
CH 12-50	3 x 400	2.15	4.80																									486	514	85	497	530	131
CH 12-60	3 x 400	2.56	6.00																									486	514	85	497	530	131

Please note that the dimensions stated may vary by ± 20 mm.

Due to improvements or modifications of the components, the dimensions may change without any previous notification.

## Hydro Multi-S with two or three CR pumps



TM03 9721 4307

Fig. 10 Dimensional sketch of a Hydro Multi-S booster set with CR pumps

Pump type	U [V]	P <sub>2</sub> [kW]	I <sub>1/1</sub> [A]	A [mm]	H [mm]	Hydro Multi-S with two pumps					Hydro Multi-S with three pumps																
						Dimensions [mm]					[kg]	Dimensions [mm]					[kg]										
						DN	B1	B2	L1	L2		DN	B1	B2	L1	L2											
CR 3-7	1 x 220	0.55	4.0	85	598	2"	620	680	470	410	64	2"	620	680	720	660	100										
CR 3-10	1 x 220	0.75	5.10		652													71	110								
CR 3-12	1 x 220	1.10	7.40		754													76	117								
CR 3-15	1 x 220	1.10	7.40		808													78	120								
CR 3-7	3 x 400	0.55	1.44		552													64	100								
CR 3-10	3 x 400	0.75	1.86		652													71	110								
CR 3-12	3 x 400	1.10	2.65		688													76	117								
CR 3-15	3 x 400	1.10	2.65		742													78	120								
CR 5-8	1 x 220	1.10	7.40		754													76	117								
CR 5-8	3 x 400	1.10	2.65		688													76	117								
CR 5-10	3 x 400	1.50	3.40		808													89	137								
CR 5-13	3 x 400	2.20	4.75		929													96	147								
CR 5-15	3 x 400	2.20	4.75		983													99	151								
CR 10-4	3 x 400	1.50	3.40		120													739	600	510	117	2 1/2"	714	790	920	830	182
CR 10-6	3 x 400	2.20	4.75															839									
CR 10-8	3 x 400	3.00	6.40	918		137	212																				
CR 10-10	3 x 400	4.00	8.00	1015		161	248																				
CR 15-3	3 x 400	3.00	6.40	835		145	224																				
CR 15-5	3 x 400	4.00	8.00	130	962	2 1/2"	759	835	171	3"	789	877	263														
CR 15-7	3 x 400	5.50	11.00											1103	219	335											

Please note that the dimensions stated may vary by ± 20 mm.

Due to improvements or modifications of the components, the dimensions may change without any previous notification.

## Diaphragm tank

A diaphragm tank must always be installed on the discharge side of the booster set.

**Note:** The diaphragm tanks are separate tanks without valve, fittings and pipes.

### Diaphragm tank, 10 bar

Capacity [litres]	Connection	Product number
8	G 3/4	96528335
12	G 3/4	96528336
18	G 3/4	96528337
24	G 1	96528339
33	G 1	96528340
60	G 1	96528341
80	G 1	96528342
100	G 1	96528343
130	G 1	96528344
170	G 1	96528345
240	G 1	96528346

### Diaphragm tank, 16 bar

Capacity [litres]	Connection	Product number
8	G 3/4	96573347
12	G 3/4	96573348
25	G 3/4	96573349
80	DN 50	96573358
120	DN 50	96573359
180	DN 50	96573360
300	DN 50	96573361

## Dry-running protection

Description	Product number
Dry-running protection by means of electrode relay (without electrodes and electrode cable)	96020079

## Audible alarm

The audible alarm sounds in case of a system alarm.

Description	Sound pressure level	Location	Product number
Audible alarm	80 dB(A)	In control cabinet	96020178
	100 dB(A)		96020179




## Machine shoe

Machine shoes reduce any vibrations from the system to the floor, allowing the system to be height-adjusted by  $\pm 20$  mm.

Description	Hydro Multi-S with	Product number
Machine shoe	CR 3 to CR 5	96412344
	CR 10 to CR 15	96412345

**Note:** The product number covers one (1) machine shoe.

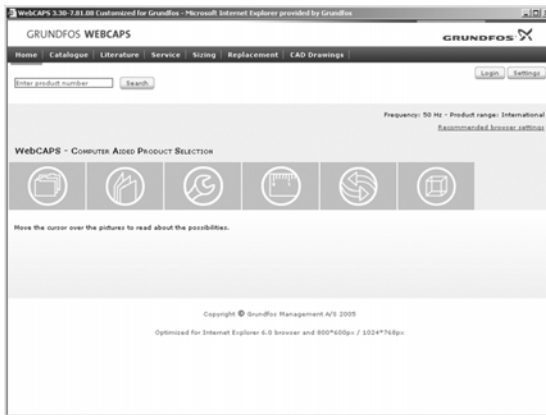
## Alternative booster sets

Booster set	Data and features	
<b>Hydro MPC</b> 	Maximum head	10 to 150 m
	Flow rate	2 to 725 m <sup>3</sup> /h
	Maximum operating pressure	16 bar
	Number of pumps	2 to 6
	Pump types	CRIE, CRE, CRI, CR
	Features	<ul style="list-style-type: none"> <li>• Optimised for your application!</li> <li>• Easy to install and commission with the built-in start-up wizard</li> <li>• Many communication options</li> <li>• Very user-friendly</li> <li>• Large LCD display for setting and monitoring</li> <li>• Modular design.</li> </ul>
<b>Hydro Multi-E</b> 	Maximum head	10 to 100 m
	Flow rate	2 to 85 m <sup>3</sup> /h
	Maximum operating pressure	16 bar
	Number of pumps	2 or 3
	Pump type	CRE
	Features	<ul style="list-style-type: none"> <li>• Specially designed for water supply in buildings</li> <li>• 100 % adaptation to consumption</li> <li>• Easy to install and commission</li> <li>• Small foot print</li> <li>• Data communication via Grundfos R100 remote control.</li> </ul>
<b>Hydro Solo-E/-S</b> 	Maximum head	10 to 100 m
	Flow rate	2 to 55 m <sup>3</sup> /h
	Maximum operating pressure	16 bar
	Number of pumps	1
	Pump types	CRE, CR*
	Features	<ul style="list-style-type: none"> <li>• Easy to install and commission</li> <li>• Constant pressure</li> <li>• Data communication via Grundfos R100 remote control.**</li> </ul>

\* Hydro Solo-E incorporates a CRE pump and Hydro Solo-S a CR pump.

\*\* Applies only to Hydro Solo-E.

## WebCAPS

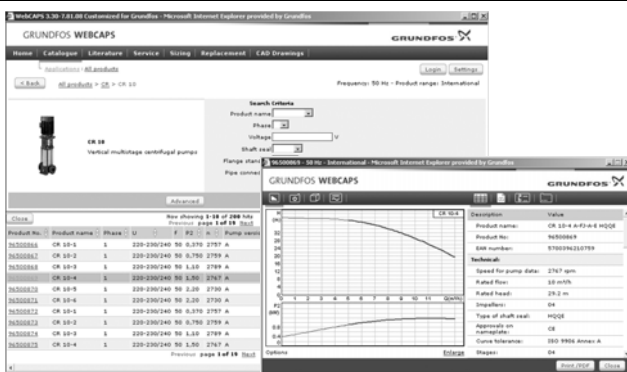


WebCAPS is a **Web-based Computer Aided Product Selection** program available on [www.grundfos.com](http://www.grundfos.com).

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

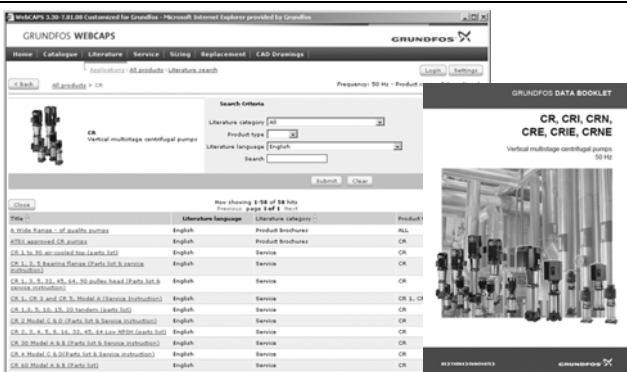
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



### Catalogue

This section is based on fields of application and pump types, and contains

- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



### Literature

In this section you can access all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



### Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.

Furthermore, this section contains service videos showing you how to replace service parts.



## Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, etc.

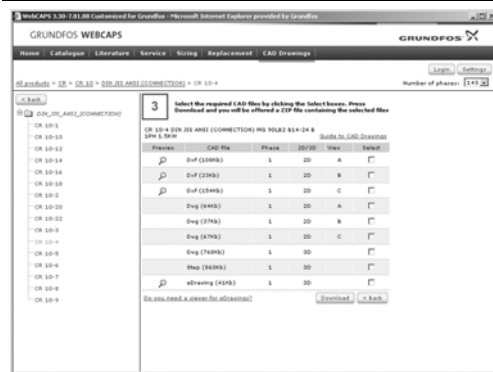


## Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.

The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



## CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

## WinCAPS



Fig. 11 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.



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Subject to alterations.