

# Hydro Solo-E

Complete pressure boosting systems  
50/60 Hz

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**GRUNDFOS** 

<b>1. Product description</b>	<b>3</b>
Introduction	3
Features	3
Applications	3
Construction	3
Type key	4
Operating conditions	4
Pressure	4
Installation	5
Pressure tank	5
Electrical connection	5
Reset after water shortage	6
<b>2. Control of CRE pumps</b>	<b>7</b>
Communication with CRE pumps	7
Overview of functions	9
<b>3. Performance range</b>	<b>12</b>
Curve conditions	12
Performance range	13
<b>4. Technical data</b>	<b>14</b>
Hydro Solo-E with CRE 1	14
Hydro Solo-E with CRE 3	15
Hydro Solo-E with CRE 5	16
Hydro Solo-E with CRE 10	17
Hydro Solo-E with CRE 15	18
Hydro Solo-E with CRE 20	19
Hydro Solo-E with CRE 32	20
Hydro Solo-E with CRE 45	21
<b>5. Motor data</b>	<b>22</b>
<b>6. Product numbers</b>	<b>23</b>
International product range	23
Southern European product range	23
<b>7. Accessories</b>	<b>24</b>
R100	24
Grundfos GO	24
Dry-running protection	24
<b>8. Further product information</b>	<b>25</b>
WebCAPS	25
WinCAPS	26
GO CAPS	27

# 1. Product description

## Introduction

Grundfos Hydro Solo-E booster set is a turnkey solution that enables to keep a constant pressure in your system at all time. It is suitable for example in multi-storey buildings or water supply systems for industries.

The Hydro Solo-E is composed of a Grundfos CRE pump fitted with isolating valve, non-return valve, discharge pipe, pressure transmitter, pressure gauge and a pressure tank.

Upon delivery, The Hydro Solo-E is ready for operation.

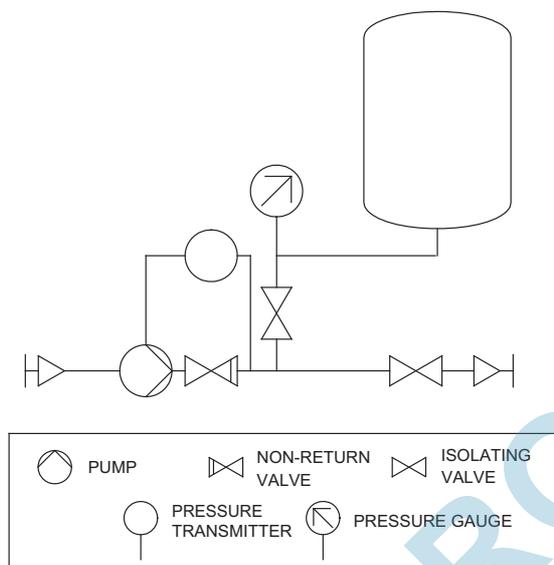


Fig. 1 Principal sketch of Hydro Solo-E

## Features

- Easy installation
- constant pressure
- speed-controlled pump
- low energy consumption
- no need for motor protection
- compact solution.

## Applications

The Hydro Solo-E has been developed for systems where keeping constant pressure is crucial. This makes it suitable for these applications:

- cluster homes
- blocks of flats
- schools
- hotels/guest houses
- office buildings
- water treatment systems
- water filtration systems
- small industries
- washing and cleaning systems.

## Construction

The discharge side of the pump is fitted with a non-return valve, a stainless steel discharge pipe (EN/DIN 1.4401 or EN/DIN 1.4571) and an isolating valve.

The discharge pipe is fitted with a pressure transmitter and an isolating valve for the pressure gauge and the pressure tank.

The pump is fitted with an on/off switch for the supply voltage.

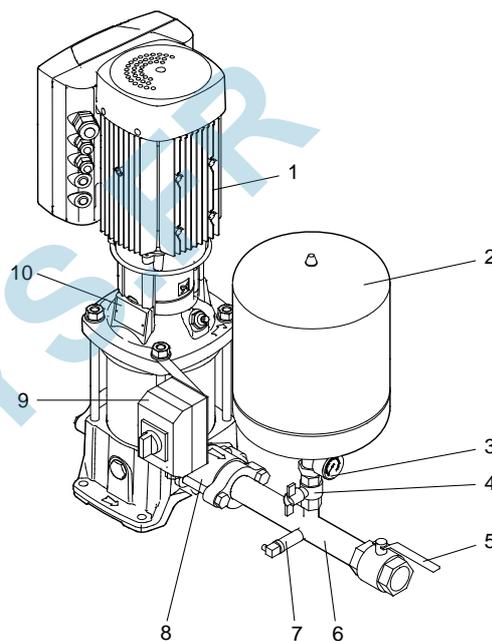


Fig. 2 Hydro Solo-E construction

Pos.	Designation	Quantity
1	CRE pump	1
2	Pressure tank	1
3	Pressure gauge	1
4	Isolating valve for pressure tank and pressure gauge	1
5	Isolating valve	1
6	Discharge pipe (stainless steel)	1
7	Pressure transmitter	1
8	Non-return valve	1
9	On/off switch	1
10	Nameplate	1

## Type key

			1-phase	3-phase
Example:	Hydro	Solo-E	CRE 5-9	
			1 x 200-240 V	3 x 400 V
Type range				
Subgroup				
Pump type				
Supply voltage				

## Operating conditions

Liquid temperature		0-70 °C
Ambient temperature	CRE 0.37 - 2.2 kW	0-50 °C
	CRE 2.2 - 7.5 kW	0-40 °C

## Pressure

### Minimum inlet pressure

The minimum inlet pressure H in metres head required to avoid cavitation in the pump is calculated as follows:

H	=	$p_b \times 10.2 - \text{NPSH} - H_f - H_v - H_s$
$p_b$	=	Barometric pressure in bar. Barometric pressure can be set to 1, if required.
NPSH	=	Net Positive Suction Head in metres head. NPSH can be read from the NPSH curve at the maximum capacity at which the pump will run.
$H_f$	=	Friction loss in suction pipe in metres head.
$H_v$	=	Vapour pressure in metres head.
$H_s$	=	Safety margin of min. 0.5 metres head.

### Maximum inlet and system pressure

#### International range

Pressure max [bar]	Inlet			System	
	4	8	10	10	16
CRE 1-4, 1-9			•	•	
CRE 1-13, 1-17			•		•
CRE 3-4, 3-8, 3-11			•	•	
CRE 3-11, 3-15			•		•
CRE 5-2, 5-5, 5-9			•	•	
CRE 5-12			•		•
CRE 10-1, 10-3		•		•	
CRE 10-5			•	•	
CRE 15-2		•		•	
CRE 15-3, 15-4			•	•	
CRE 20-2, 20-3			•	•	
CRE 32-2-2	•			•	
CRE 45-1	•			•	

#### Southern Europe range

Pressure max [bar]	Inlet				System	
	4	8	10	15	10	16
CRE 1-4, 1-6, 1-9, 1-13, 1-17			•			•
CRE 3-4, 3-5, 3-8, 3-11, 1-15			•			•
CRE 5-2, 5-4, 5-5, 5-9			•		•	•
CRE 5-12				•		•
CRE 10-1, 10-2, 10-3, 10-5		•				•
CRE 10-6				•		•
CRE 15-2		•				•
CRE 15-3, 15-4			•			•
CRE 20-2, 20-3			•			•
CRE 32-2-2	•					•
CRE 45-1	•					•

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

### Example of system and inlet pressures

According to the inlet pressure, the discharge pressure is automatically adjusted by means of the pressure tank so that the system pressure remains constant and does not exceed the maximum system pressure.

#### Example:

A CRE 10-3 A-A-A has been selected and the system has the following characteristics:

Max. system pressure:	10 bar
Inlet pressure:	7 bar
Desired system pressure:	9 bars

In this case, the pressure tank will create a discharge pressure of  $9 - 7 = 2$  bars, so that the system pressure remains 9 bars, and does not exceed the maximum system pressure of 10 bars.

## Installation

A Hydro Solo-E booster set must be installed in a well-ventilated room to ensure sufficient cooling for the pump. Hydro Solo-E is not suitable for outdoor installation.

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

Enclosure class: IP55

Insulation class: F.

## Mechanical installation

The system in which the Hydro Solo E is incorporated must be designed for the maximum pump pressure.

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

The pipes are to be connected to the discharge pipe and the pump suction port.

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

It is always advisable to fit pipe hangers both on the suction and discharge side.

The system should be positioned on an even and solid surface, e.g. a concrete floor or foundation. If the booster set is not fitted with vibration dampers, it must be bolted to the floor or foundation.

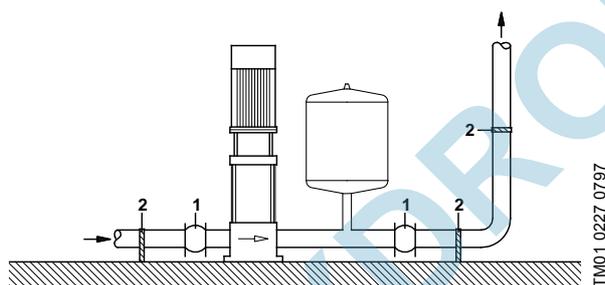


Fig. 3 Mechanical installation

Pos.	Description
1	Expansion joints
2	Pipe hangers

The expansion joints and pipe hangers shown are not included in a standard booster set.

## Pressure tank

The pressure tank is pre-charged to correct pressure. If the setpoint is altered, a new pre-charge pressure should be calculated to obtain optimum duty.

Calculation of pre-charge pressure:

Pre-charge pressure = 0.7 x setpoint

The pressure tank's pre-charge pressure must be measured in a pressureless system.

It is recommended to refill the tank with nitrogen.

## Electrical connection

The electrical connection and protection should be carried out in accordance with local regulations.

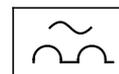
- The pump must be connected to an external mains switch.
- The pump must always be correctly earthed.
  - Note:** The 4.0 - 7.5 kW motors must be connected to especially reliable/sturdy earth connections due to an earth leakage current above 3.5 mA.
- The pump requires no external motor protection. The motor incorporates thermal protection against slow overloading and blocking.

**Note:** Do not switch the power on/off more than four times a day.

## Additional protection

Connecting the pump to an electric installation with an earth leakage circuit breaker (ELCB) is not a requirement. However, if you choose to use this additional protection, the earth leakage circuit breakers must be marked with the following symbols:

### Single-phase



The earth leakage circuit breakers must trip out when earth fault currents with DC content (pulsating DC) occur.

1 x 200-240 V, +/- 10 %

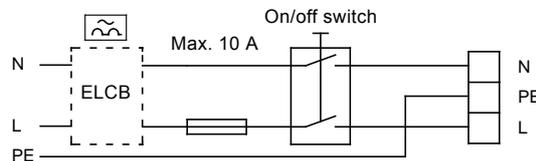


Fig. 4 Wiring diagram, single-phase

### Three-phase



The earth leakage circuit breakers must trip out when earth fault currents with DC content (pulsating DC) and smooth DC earth fault currents occur.

3 x 400 V, +/- 10 %

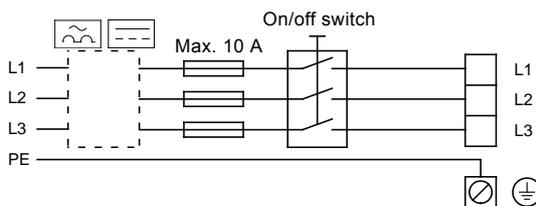
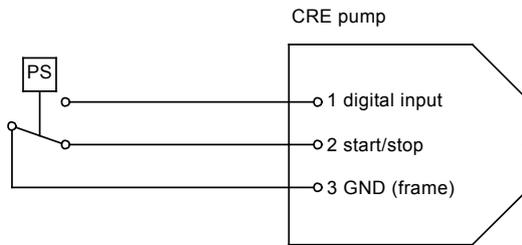
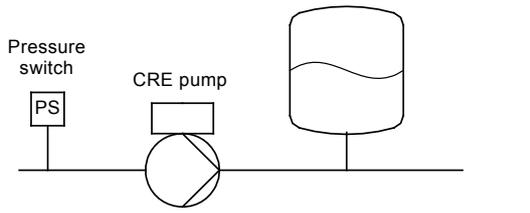


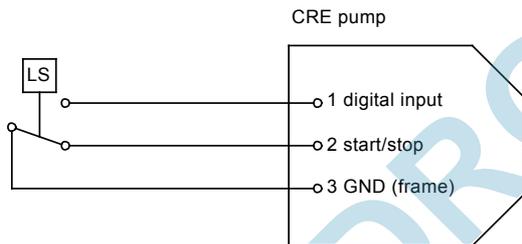
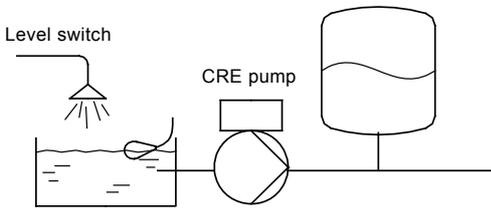
Fig. 5 Wiring diagram, three-phase, 2.2 - 7.5 kW

## Reset after water shortage

### Automatic reset

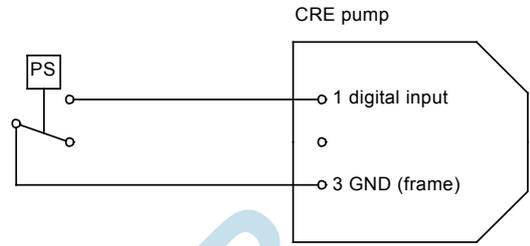
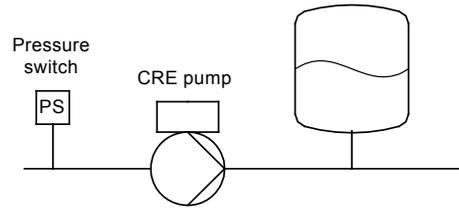


TM02 2560 4003

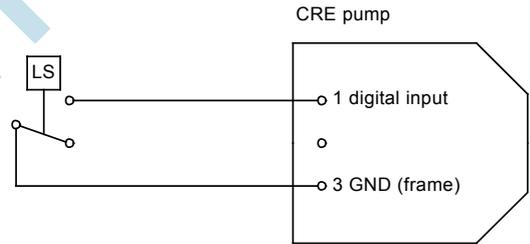
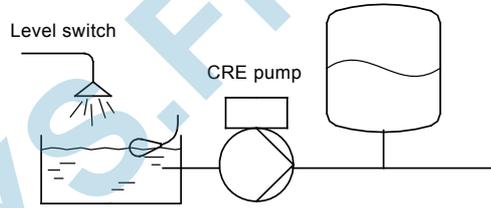


TM02 2589 4003

### Manual reset



TM02 2561 4003



TM02 2590 4003

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## 2. Control of CRE pumps

### Communication with CRE pumps

Communication with CRE pumps is possible via

- a central building management system
- remote controls (Grundfos R100 and Grundfos GO Remote)
- a control panel.

#### Central building management system

The operator can communicate with a CRE pump at a distance. Communication can take place via a central building management system allowing the operator to monitor and change control modes and set point settings.

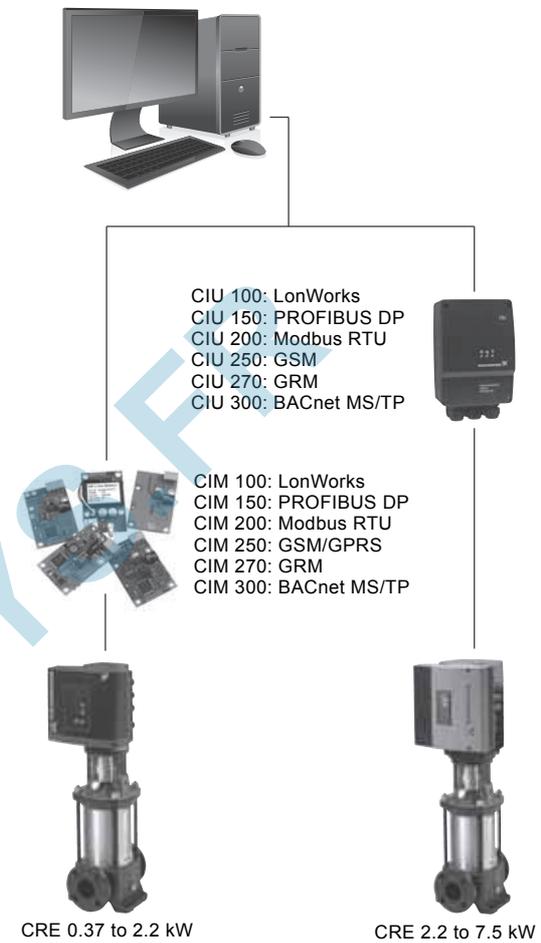
The communication interface between the CRE pump and central building management systems varies, depending on pump size.

#### New-generation CRE 0.37 to 2.2 kW

This range of CRE pumps can be fitted with a communication interface module (CIM). This means that no external communication interface is required.

#### CRE 2.2 to 7.5 kW

This range of CRE pumps communicates via an external communication interface unit (CIU).



**Fig. 6** Communication via a central building management system

## Control panel

The operator can change the setpoint settings manually on the control panel of the CRE pump terminal box.

The design and functionality of the control panels vary, depending on the MGE motor fitted to the CRE pump.

The control panel of the new-generation CRE pumps enables radio communication. The Grundfos Eye at the top of the control panel is a pump status indicator light providing information about the pump operating status. Less or more advanced control panels are available on request.

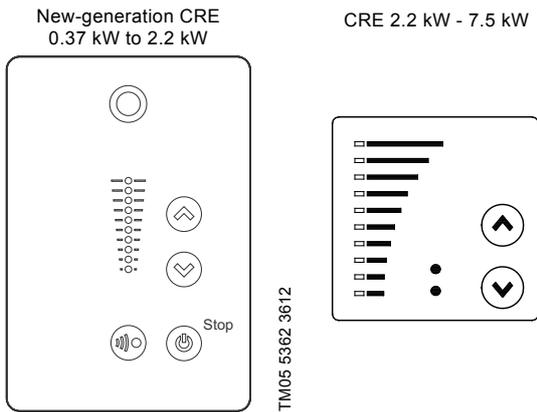


Fig. 7 Standard control panels of CRE pumps

## Remote control

The operator can monitor and change control modes and settings of the CRE pump with the R100 or Grundfos GO Remote.

### R100

The operator can communicate with the CRE pump by pointing the IR-signal transmitter at the control panel of the terminal box.

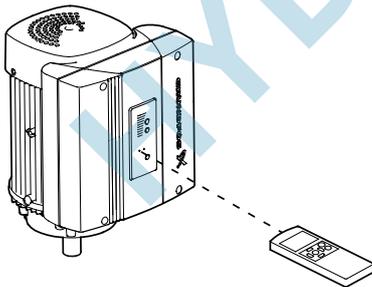


Fig. 8 R100 remote control

## Grundfos GO Remote

The new-generation CRE pumps (supply voltages S, T, U, V) can communicate with the Grundfos GO Remote via radio and infrared light. The Grundfos GO Remote will replace the R100 remote control which is no longer available.

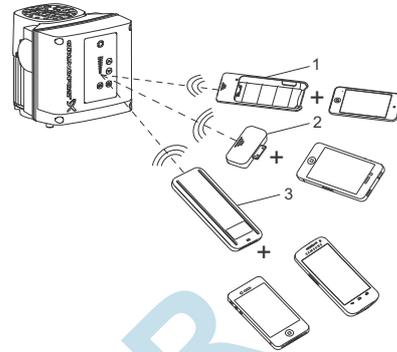
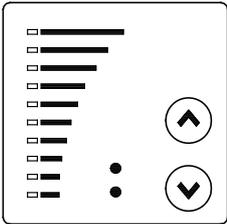
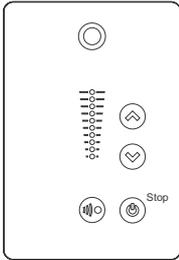
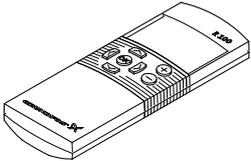


Fig. 9 Grundfos GO Remote

Pos.	Description
1	Grundfos MI 201: Consists of an Apple iPod touch 4G and a Grundfos cover.
2	Grundfos MI 202: Add-on module which can be used in conjunction with Apple iPod touch 4, iPhone 4G or later. Grundfos MI 204: For iPod Touch 5 and iPhone 5
3	Grundfos MI 301: Separate module enabling radio or infrared communication. The module can be used in conjunction with an Android or iOS-based Smart phone with Bluetooth connection.

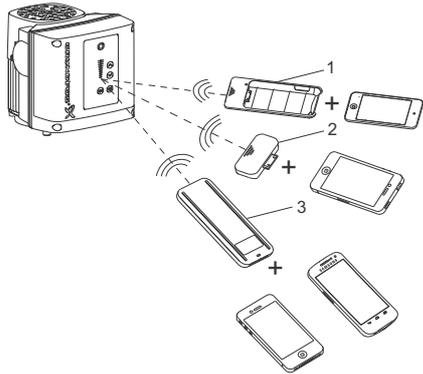
The Grundfos GO Remote is available as an accessory.

## Overview of functions

E-pump functions	
	<p><b>Setting via control panel (2.2 - 7.5 kW)</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Start/stop</li> <li>Max. curve</li> <li>Min. curve</li> </ul> <p><b>Reading via control panel (2.2 - 7.5 kW)</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Operating indication</li> <li>Fault indication</li> </ul> <p>TM00 7600 0404</p>
	<p><b>Setting via control panel (0.37 - 2.2 kW)</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Activate/deactivate radio communication</li> <li>Start/stop</li> </ul> <p><b>Reading via control panel (0.37 - 2.2 kW)</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Power on/off</li> </ul> <p><b>Grundfos Eye</b></p> <ul style="list-style-type: none"> <li>Motor running modes (normal, manual, stop)</li> <li>Warnings and alarms</li> <li>Connection with Grundfos Go via radio/infrared light</li> </ul> <p>TM05 5362 3612</p>
	<p><b>Setting via R100</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Start/stop</li> <li>Max. curve</li> <li>Min. curve</li> <li>Controlled/uncontrolled</li> <li>PI-controller</li> <li>Signal relay</li> <li>Operating range</li> <li>Stop function</li> </ul> <p><b>Reading via R100</b></p> <ul style="list-style-type: none"> <li>Setpoint</li> <li>Operating indication</li> <li>Pump status</li> </ul> <p>TM00 4498 2802</p>

HYDRONEX SYSTEM

## E-pump functions

**Setting via Grundfos Go**

Setpoint/predefined setpoint/external setpoint function  
 Control mode (constant pressure, curve, temperature, etc.)  
 Start/stop  
 Operating mode (normal, stop, manual, etc.)  
 Activate/deactivate buttons on product  
 Activate/deactivate LIQTEC  
 Stop function (low flow stop,  $\Delta H$ , tank volume, min. flow)  
 PID controller  
 Operating range  
 Ramps  
 GENIbus number  
 Activate/deactivate radio communication  
 Analog input/output (inlet pressure, actual speed)  
 Digital input/output  
 Pulse flowmeter  
 Activate/deactivate standstill heating  
 Activate/deactivate motor bearing monitoring  
 Service (date to next service, number of bearing replacements)

**Reading via Grundfos Go**

Operating indications via Grundfos Eye  
 Flow rate  
 Head  
 Speed  
 Power consumption  
 Operating hours  
 Motor speed  
 Power consumption  
 Actual controlled value  
 Energy consumption  
 Accumulated flow  
 Operating hours  
 Analog input/output (inlet pressure, actual speed)  
 Digital input/output  
 Fitted modules

TM05 5383 4312

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## 3. Performance range

### Curve conditions

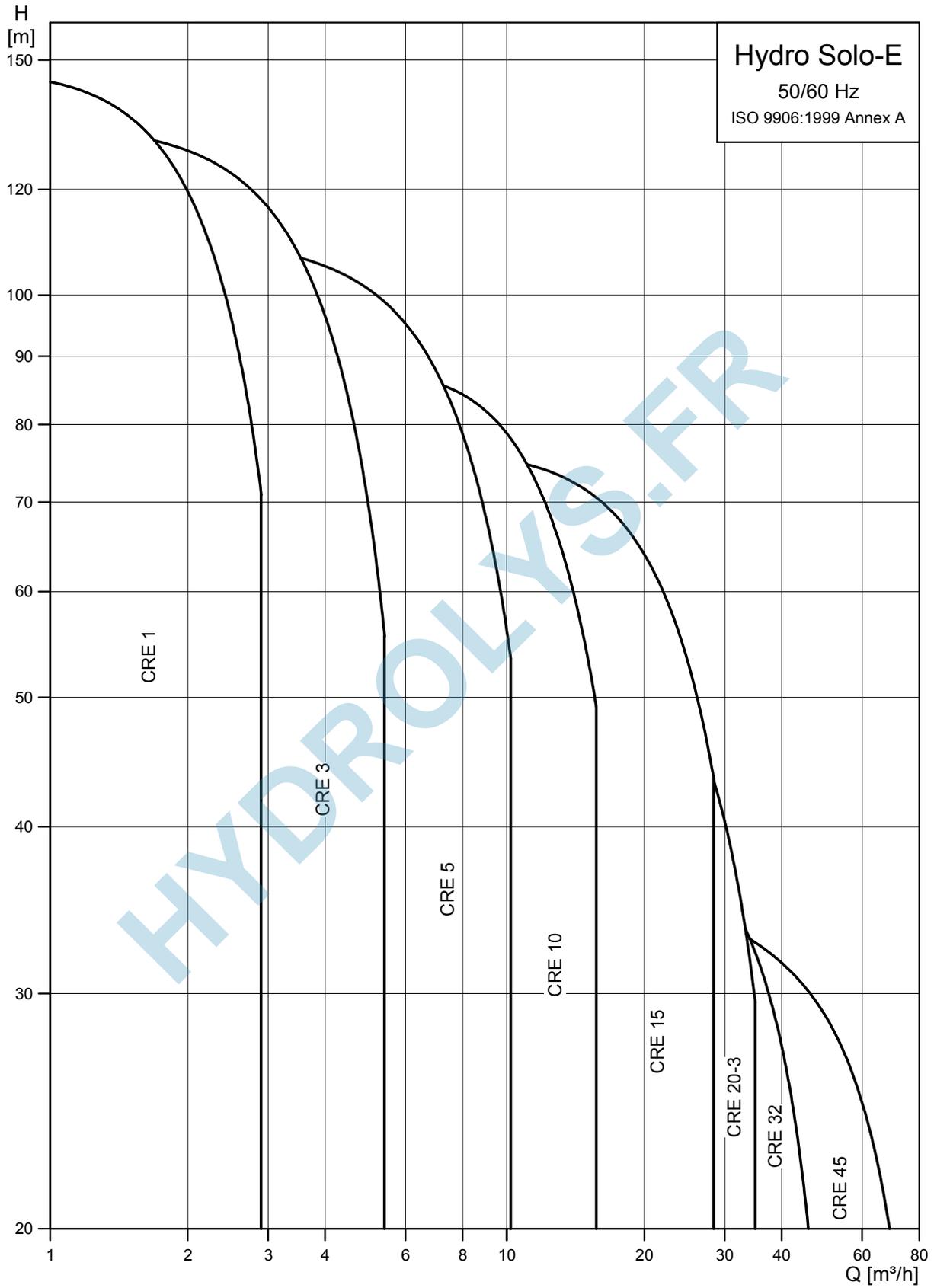
The following curves are subject to the following guidelines:

- Performance measurement is made at a water temperature of +20 °C.
- Test liquid: Pure water.
- The curves describe the pump mean values.
- The curves should not be used as guarantee curves.
- Curve tolerance: ISO 9906:1999 Annex A, if indicated.
- The conversion between head  $H$  (m) and pressure  $p$  (kPa) has been made for water with a density of  $\rho = 1000 \text{ kg/m}^3$ .
- The curves apply to a kinematic viscosity of  $1 \text{ mm}^2/\text{s}$  (1 cSt).
- The QH curves apply to fixed speeds of  $3480 \text{ min}^{-1}$  (60 Hz).

**Note:** The actual speed will in most cases deviate from the above-mentioned speeds. So for realistic curves, please refer to WebCAPS where the pump curves include the characteristic of the selected motor and therefore show curves at actual speeds. In WebCAPS, it is also possible to adjust the curves depending on the density and viscosity.

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Performance range

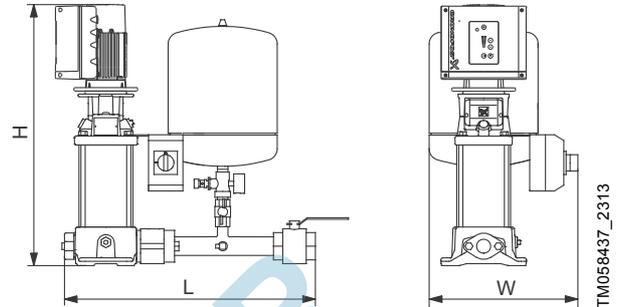
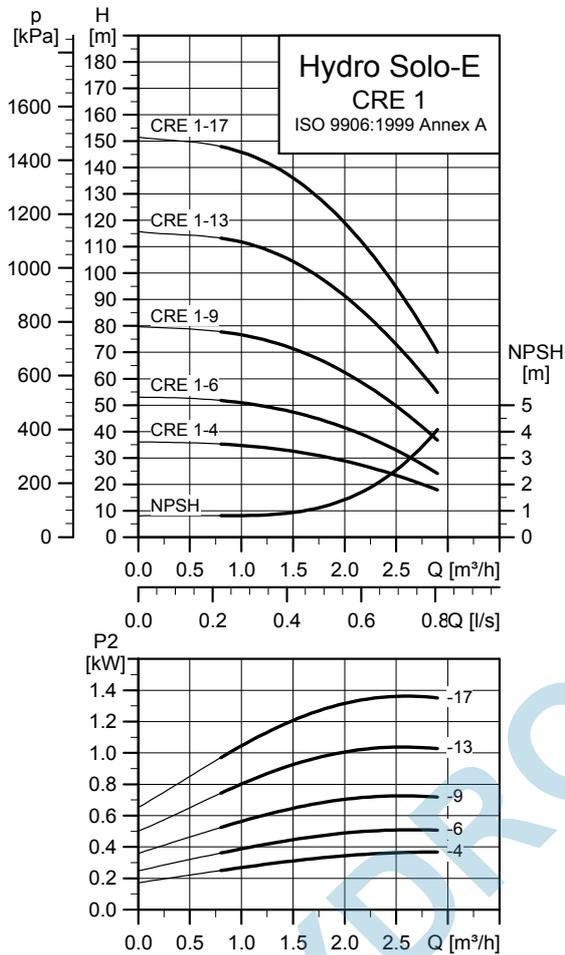


**Note:** Irrespective of the input frequency, the 100 % speed of CRE pumps is approximately 3400 min<sup>-1</sup>.

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## 4. Technical data

### Hydro Solo-E with CRE 1



### Electrical data, dimensions and weights

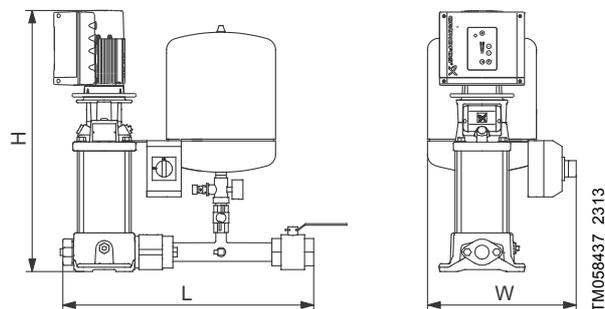
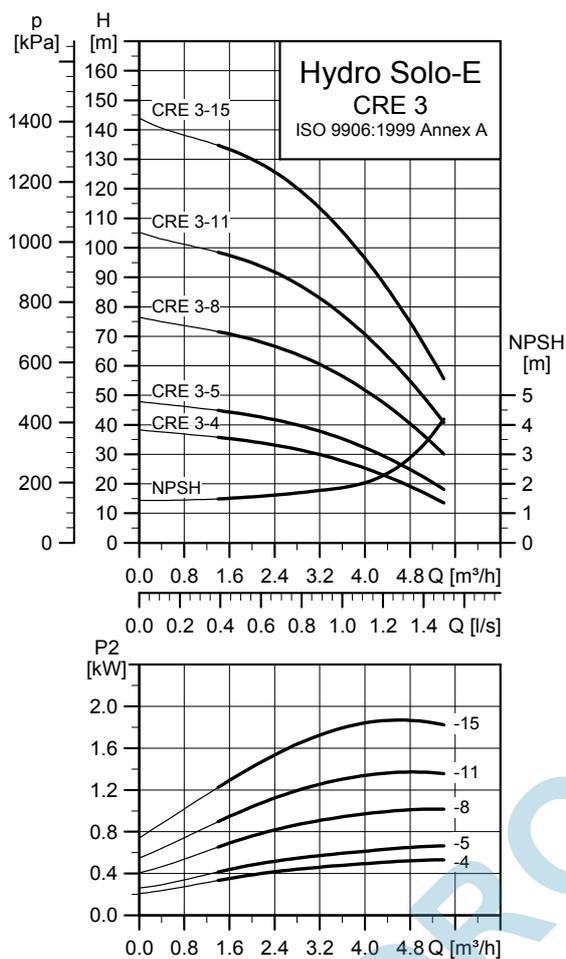
#### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 1-4	0.37	2.40 - 2.10	1 x 200-240	8	Rp 1" 1/4	38	41	0.6	486	420	486	600
CRE 1-9	0.75	4.60 - 3.80	1 x 200-240	8	Rp 1" 1/4	41	44	0.6	582	420	582	600
CRE 1-13	1.1	6.55 - 5.45	1 x 200-240	8	Rp 1" 1/4	43	46	0.6	654	420	654	600
CRE 1-17	1.5	8.90 - 7.45	1 x 200-240	8	Rp 1" 1/4	48	51	0.6	762	420	802	600

#### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 1-4	0.37	1.9 - 2.3	1 x 200-240	8	Rp 1" 1/4	56	76	0.6	486	420	486	600
CRE 1-6	0.55	2.8 - 3.3	1 x 200-240	8	Rp 1" 1/4	57	77	0.6	522	420	522	600
CRE 1-9	0.75	3.8 - 4.5	1 x 200-240	8	Rp 1" 1/4	59	79	0.6	582	420	582	600
CRE 1-13	1.1	5.4 - 6.5	1 x 200-240	8	Rp 1" 1/4	62	82	0.6	654	420	654	600
CRE 1-17	1.5	7.3 - 8.7	1 x 200-240	8	Rp 1" 1/4	68	88	0.6	762	420	802	600

## Hydro Solo-E with CRE 3



## Electrical data, dimensions and weights

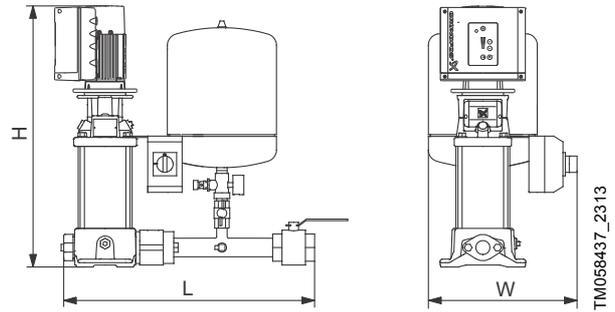
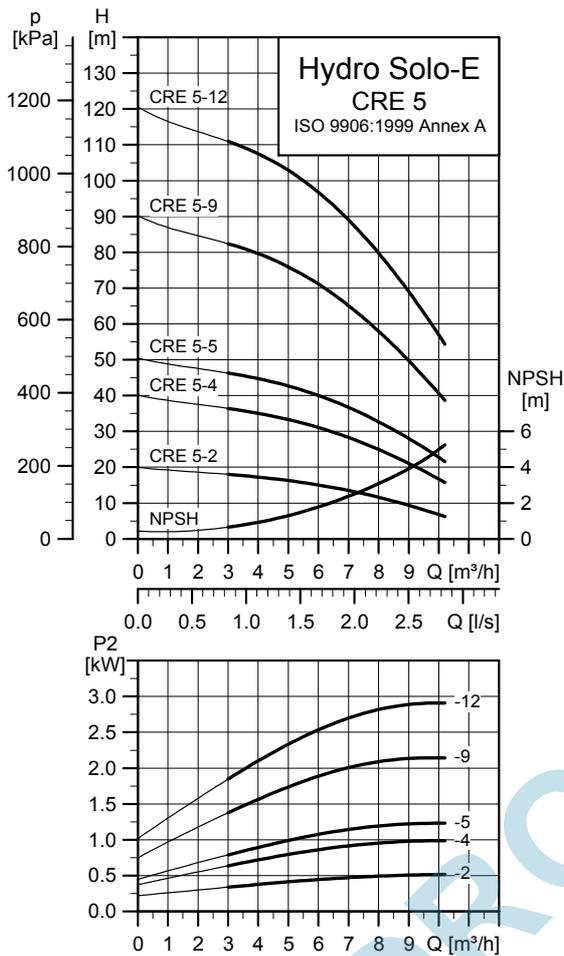
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 3-4	0.55	3.40 - 2.90	1 x 200-240	18	Rp 1" 1/4	38	41	0.6	486	420	486	600
CRE 3-5	0.75	4.60 - 3.80	1 x 200-240	18	Rp 1" 1/4	41	44	0.6	510	420	510	600
CRE 3-8	1.1	6.55 - 5.45	1 x 200-240	18	Rp 1" 1/4	43	46	0.6	564	420	564	600
CRE 3-11	1.5	8.90 - 7.45	1 x 200-240	18	Rp 1" 1/4	48	51	0.6	654	420	694	600
CRE 3-15	2.2	4.15 - 3.40	3 x 380-500	18	Rp 1" 1/4	58	64	0.6	766	420	813	600

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 3-4	0.55	2.8 - 3.3	1 x 200-240	25	Rp 1" 1/4	56	76	0.6	486	420	486	600
CRE 3-5	0.75	3.8 - 4.5	1 x 200-240	25	Rp 1" 1/4	57	77	0.6	510	420	510	600
CRE 3-8	1.1	5.4 - 6.5	1 x 200-240	25	Rp 1" 1/4	59	79	0.6	564	420	564	600
CRE 3-11	1.5	7.3 - 8.7	1 x 200-240	25	Rp 1" 1/4	65	85	0.6	654	420	694	600
CRE 3-15	2.2	3.3 - 4.0	3 x 380-415	25	Rp 1" 1/4	69	89	0.6	766	420	813	600

## Hydro Solo-E with CRE 5



## Electrical data, dimensions and weights

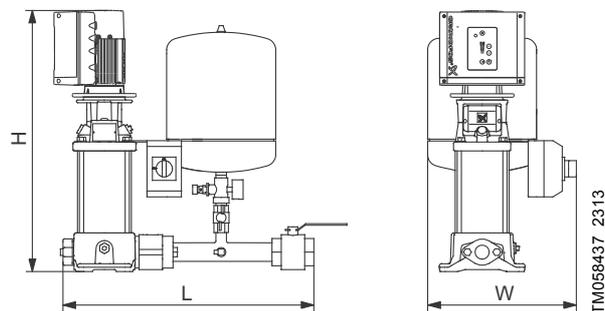
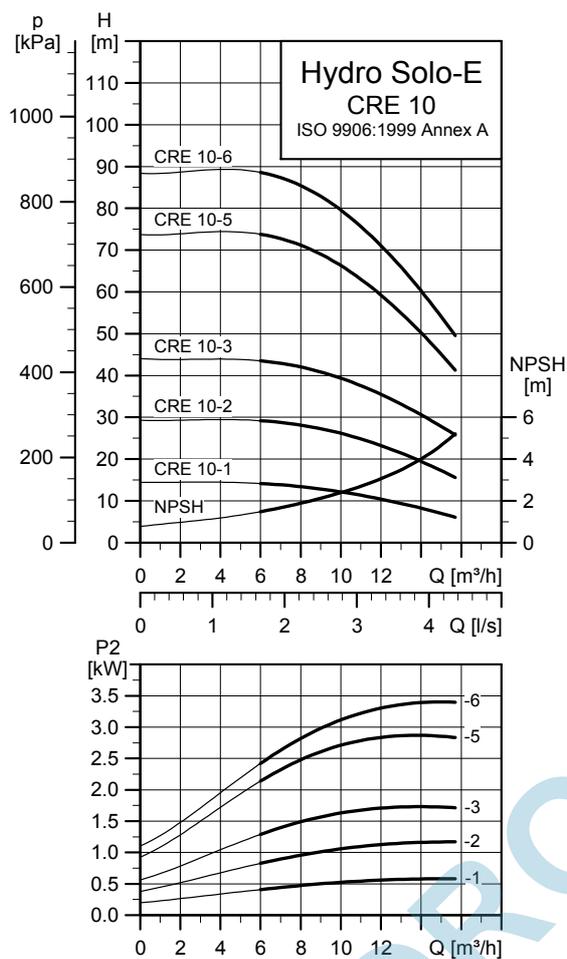
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 5-2	0.55	3.40 - 2.90	1 x 200-240	18	Rp 1" 1/4	44	47	0.6	468	420	468	600
CRE 5-5	1.5	8.90 - 7.45	1 x 200-240	18	Rp 1" 1/4	46	49	0.6	591	420	631	600
CRE 5-9	2.2	4.15 - 3.40	3 x 380-415	18	Rp 1" 1/4	56	59	0.6	739	420	739	600
CRE 5-12	3	6.20 - 5.00	3 x 380-415	18	Rp 1" 1/4	73	76	0.6	885	420	885	600

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 5-2	0.55	2.8 - 3.3	1 x 200-240	25	Rp 1" 1/4	56	76	0.6	468	420	468	600
CRE 5-4	1.1	5.4 - 6.5	1 x 200-240	25	Rp 1" 1/4	58	78	0.6	528	420	528	600
CRE 5-5	1.5	7.3 - 8.7	1 x 200-240	25	Rp 1" 1/4	64	84	0.6	591	420	631	600
CRE 5-9	2.2	3.3 - 4.0	3 x 380-415	25	Rp 1" 1/4	67	87	0.6	739	420	739	600
CRE 5-12	3	6.2 - 5.0	3 x 380-415	25	Rp 1" 1/4	85	105	0.6	885	420	885	600

## Hydro Solo-E with CRE 10



## Electrical data, dimensions and weights

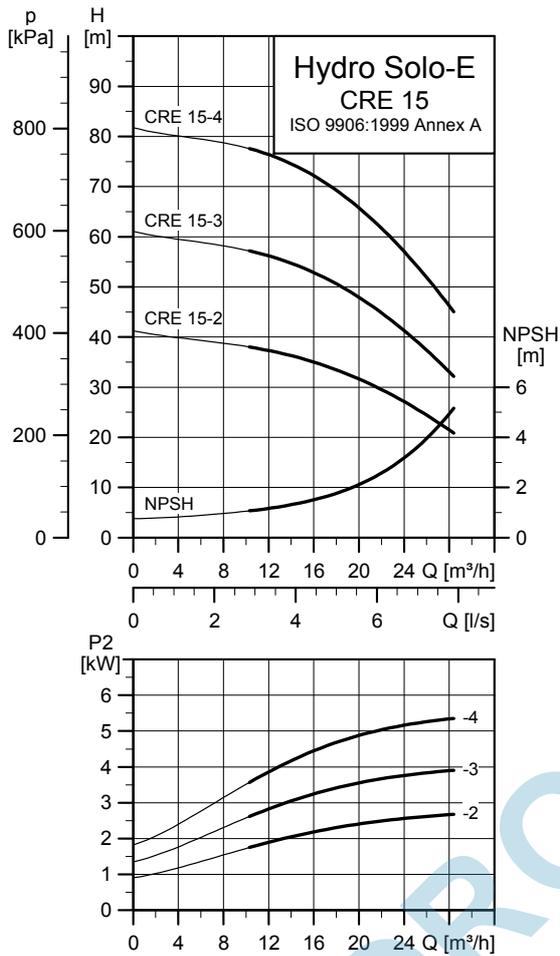
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 10-1	0.75	4.60 - 3.80	1 x 200-240	33	Rp 1" 1/2	58	61	0.6	561	425	561	650
CRE 10-3	2.2	4.15 - 3.40	3 x 380-415	33	Rp 1" 1/2	66	69	0.6	667	425	667	650
CRE 10-5	3	6.20 - 5.00	3 x 380-415	33	Rp 1" 1/2	83	86	0.6	793	425	793	650

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 10-1	0.75	3.8 - 4.5	1 x 200-240	33	Rp 1" 1/2	67	87	0.6	561	425	561	650
CRE 10-2	1.5	7.3 - 8.7	1 x 200-240	33	Rp 1" 1/2	73	93	0.6	597	425	637	650
CRE 10-3	2.2	3.3 - 4.0	3 x 380-415	33	Rp 1" 1/2	75	95	0.6	667	425	667	650
CRE 10-5	3	6.2 - 5.0	3 x 380-415	33	Rp 1" 1/2	93	113	0.6	793	425	793	650
CRE 10-6	4	8.1 - 6.6	3 x 380-415	33	Rp 1" 1/2	105	125	0.6	860	425	860	650

## Hydro Solo-E with CRE 15



## Electrical data, dimensions and weights

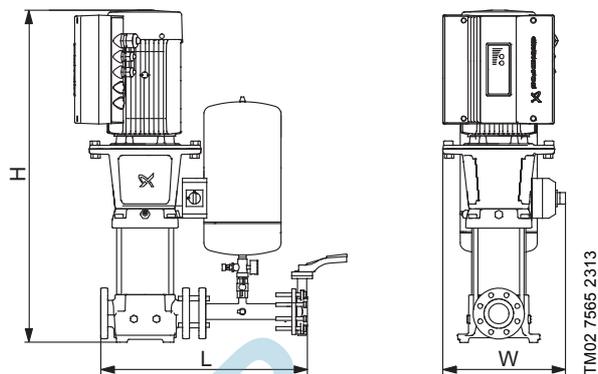
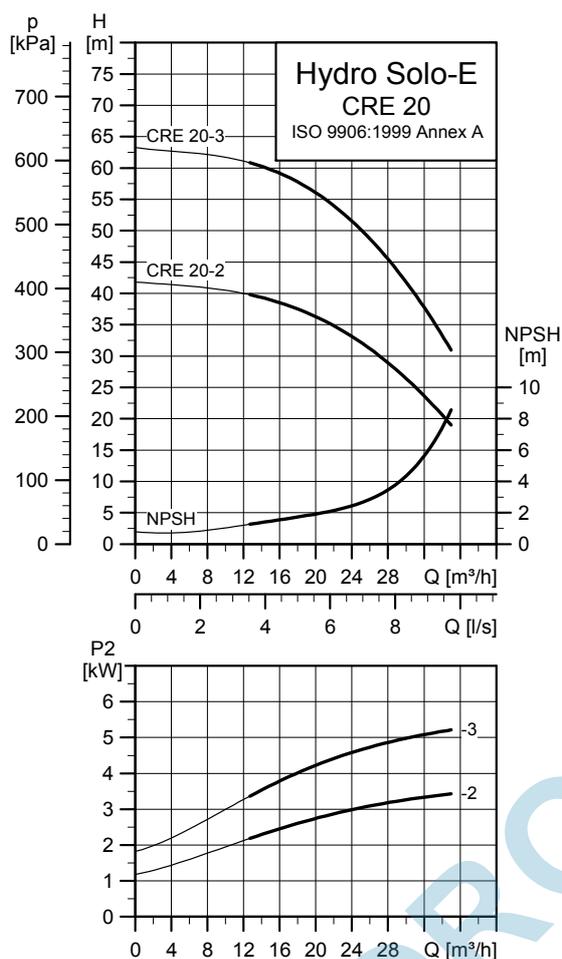
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection		Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
					Inlet	Outlet	Net weight	Gross weight			A	H	L
CRE 15-2	3	6.20 - 5.00	3 x 380-415	33	DN 50	Rp 2"	86	89	0.6	755	425	755	700
CRE 15-3	4	8.10 - 6.60	3 x 380-415	33	DN 50	Rp 2"	98	101	0.6	837	425	837	700
CRE 15-4	5.5	11.0 - 8.80	3 x 380-415	33	DN 50	Rp 2"	110	121	0.6	933	425	933	700

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection		Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
					Inlet	Outlet	Net weight	Gross weight			A	H	L
CRE 15-2	3	6.2 - 5.0	3 x 380-415	33	DN 50	Rp 2"	99	119	0.6	755	425	755	700
CRE 15-3	4	8.1 - 6.6	3 x 380-415	33	DN 50	Rp 2"	111	131	0.6	837	425	837	700
CRE 15-4	5.5	11.0 - 8.8	3 x 380-415	33	DN 50	Rp 2"	130	150	0.6	933	425	933	700

## Hydro Solo-E with CRE 20



## Electrical data, dimensions and weights

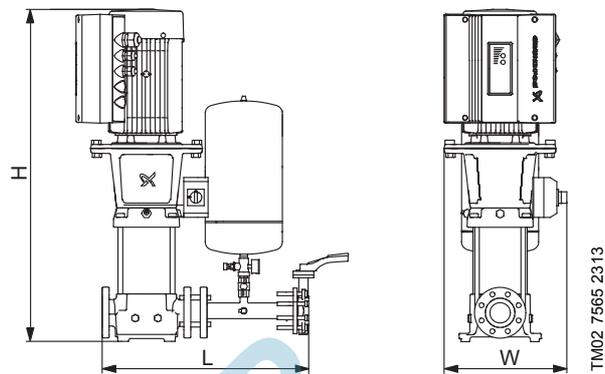
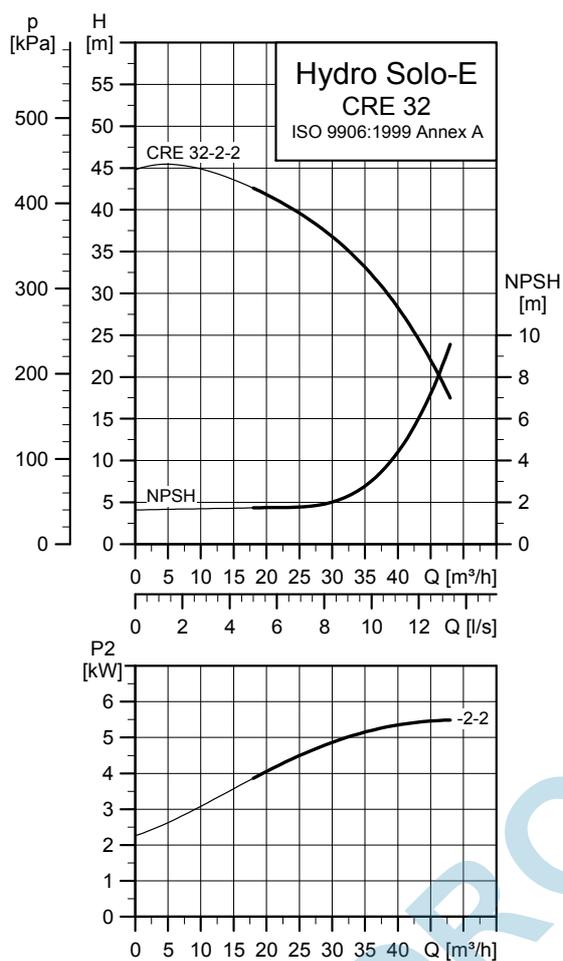
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection		Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
					Inlet	Outlet	Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 20-2	4	8.10 - 6.60	3 x 380-415	33	DN 50	Rp 2"	94	105	0.6	792	425	792	700
CRE 20-3	5.5	11.0 - 8.80	3 x 380-415	33	DN 50	Rp 2"	113	124	0.6	888	425	888	700

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection		Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
					Inlet	Outlet	Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 20-2	4	8.1 - 6.6	3 x 380-415	33	DN 50	Rp 2"	110	130	0.6	792	425	792	700
CRE 20-3	5.5	11.0 - 8.8	3 x 380-415	33	DN 50	Rp 2"	128	148	0.6	888	425	888	700

## Hydro Solo-E with CRE 32



## Electrical data, dimensions and weights

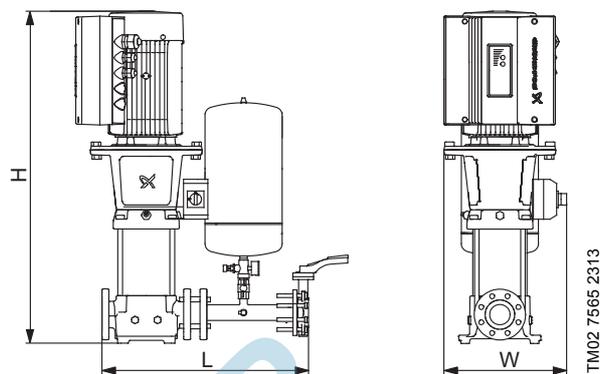
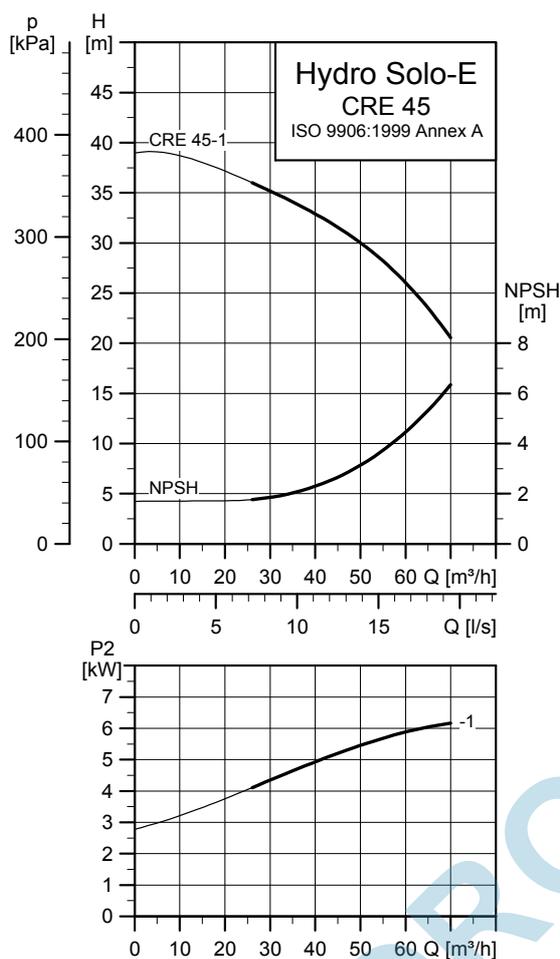
### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m³]	Connection inlet/outlet [mm]	Weight [kg]		Packing [m³]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 32-2-2	5.5	11.0 - 8.80	3 x 380-415	33	DN 65	118	129	0.6	966	430	966	670

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m³]	Connection inlet/outlet [mm]	Weight [kg]		Packing [m³]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 32-2-2	5.5	11.0 - 8.8	3 x 380-415	33	DN 65	143	163	0.6	966	430	966	670

## Hydro Solo-E with CRE 45



## Electrical data, dimensions and weights

### International range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet [mm]	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 45-1	7.5	14.8 - 11.6	3 x 380-415	33	DN 80	133	144	0.6	938	430	988	715

### Southern European range

Pump type	Motor [kW]	Full load current [A]	Supply voltage [V]	Tank volume [m <sup>3</sup> ]	Connection inlet/outlet [mm]	Weight [kg]		Packing [m <sup>3</sup> ]	Total height [mm]	Dimensions [mm]		
						Net weight	Gross weight			A [mm]	H [mm]	L [mm]
CRE 45-1	7.5	14.8 - 11.6	3 x 380-415	33	DN 80	150	170	0.6	938	430	988	715

## 5. Motor data

### E-motors for CRE 50/60 Hz

Motor P <sub>2</sub> [kW]	Frame size	Phases	Standard voltage [V]	I <sub>1/1</sub> [A]	Cos φ <sub>1/1</sub>	Efficiency class	η [%]	Motor type
0.37	71	1	200-240	2.40 - 2.10	0.96	IEC	81	
0.55	71			3.40 - 2.90	0.98		84	
0.75	80			4.60 - 3.80	0.99		85	
1.1	80			6.55 - 5.45	0.99		87.5	
1.5	90			8.90 - 7.45	0.99		86.5	
2.2	90	3	380-500	4.15 - 3.40	0.93 - 0.87	IEC	89	MGE Saver
3.0	100			6.2 - 5.0	0.94 - 0.92		83	
4.0	112			8.1 - 6.6	0.94 - 0.92		85	
5.5	132			11.0 - 8.8	0.94 - 0.93		85.5	
7.5	132			14.8 - 11.6	0.94 - 0.95		86	

TM05 6383 4612

TM03 1712 2805

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## 6. Product numbers

### International product range

Pump type	Motor [kW]	Tank volume	Product numbers	
			1 x 200-240 V	3 x 400 V
CRE 1-4	0.37	8	98453506	
CRE 1-9	0.75	8	98453546	
CRE 1-13	1.1	8	98453507	
CRE 1-17	1.5	8	98453508	
CRE 3-4	0.55	18	98453542	
CRE 3-5	0.75	18	98453509	
CRE 3-8	1.1	18	98453510	
CRE 3-11	1.5	18	98453543	
CRE 3-15	2.2	18		98453544
CRE 5-2	0.55	18	98453511	
CRE 5-5	1.5	18	98453512	
CRE 5-9	2.2	18		98453513
CRE 5-12	3	18		98453514
CRE 10-1	0.75	33	98453519	
CRE 10-3	2.2	33		98453520
CRE 10-5	3	33		98453521
CRE 15-2	3	33		98453524
CRE 15-3	4	33		98453523
CRE 15-4	5.5	33		98453525
CRE 20-2	4	33		98453526
CRE 20-3	5.5	33		98453541
CRE 32-2-2	5.5	33		98453516
CRE 45-1	7.5	33		98453517

### Southern European product range

Pump type	Motor [kW]	Tank volume	Product numbers	
			1 x 200-240 V	3 x 400 V
CRE 1-4	0.37	8	98478500	
CRE 1-6	0.55	8	98488802	
CRE 1-9	0.75	8	98478534	
CRE 1-13	1.1	8	98478535	
CRE 1-17	1.5	8	98478536	
CRE 3-4	0.55	25	98478537	
CRE 3-5	0.75	25	98478539	
CRE 3-8	1.1	25	98478540	
CRE 3-11	1.5	25	98478541	
CRE 3-15	2.2	25		98478542
CRE 5-2	0.55	25	98478544	
CRE 5-4	1.1	25	98488805	
CRE 5-5	1.5	25	98478545	
CRE 5-9	2.2	25		98478546
CRE 5-12	3	25		98478547
CRE 10-1	0.75	33	98478549	
CRE 10-2	1.5	33	98488808	
CRE 10-3	2.2	33		98478550
CRE 10-5	3	33		98478551
CRE 10-6	4	33		98488810
CRE 15-2	3	33		98478552
CRE 15-3	4	33		98478553
CRE 15-4	5.5	33		98478554
CRE 20-2	4	33		98478555
CRE 20-3	5.5	33		98478556
CRE 32-2-2	5.5	33		98478557
CRE 45-1	7.5	33		98478558

## 7. Accessories

### R100

R100 is used for wireless communication. The communication takes place by means of infrared light.

Product	Product number
R100	625333

### Grundfos GO

Grundfos GO Remote variant	Product number
Grundfos MI 201	98140638
Grundfos MI 202	98046376
Grundfos MI 204	98424092
Grundfos MI 301	98046408

### Dry-running protection

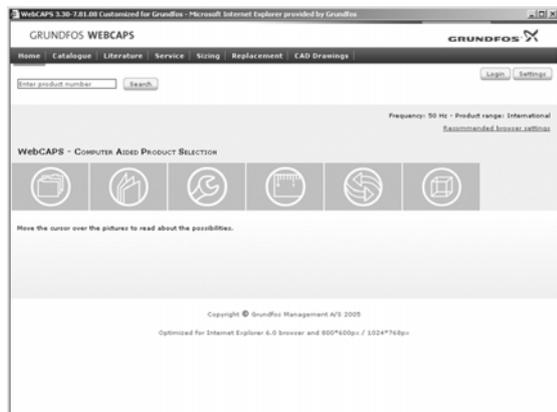
Type	Pressure [bar]	Product number
Hydro Solo-E	0.11 - 2	96421253
	0.22 - 4	96421254
	0.5 - 8	96421255

To protect the booster set against dry running, dry-running protection is required. The dry-running protection unit must be mounted at the site.

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# 8. Further product information

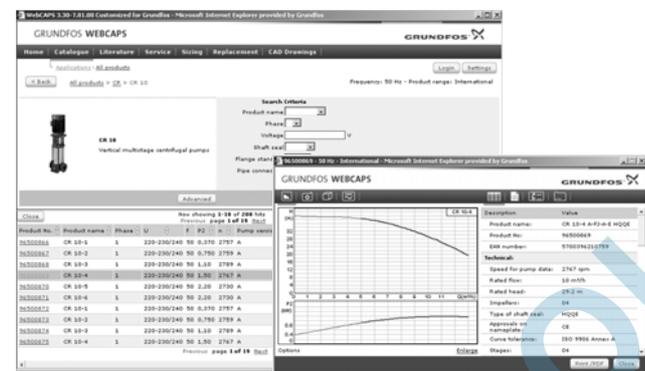
## WebCAPS



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 220,000 Grundfos products in more than 30 languages.

Information in WebCAPS is divided into six sections:

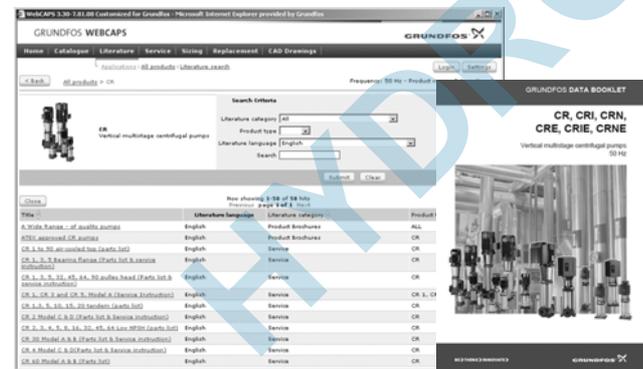
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



### Catalogue

Based on fields of application and pump types, this section contains the following:

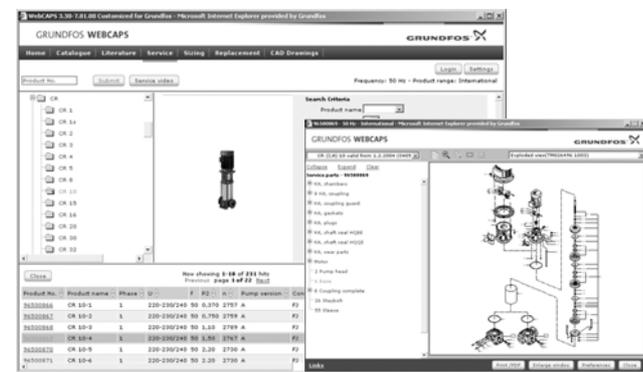
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



### Literature

This section contains 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, the 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 size a product:

- 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.

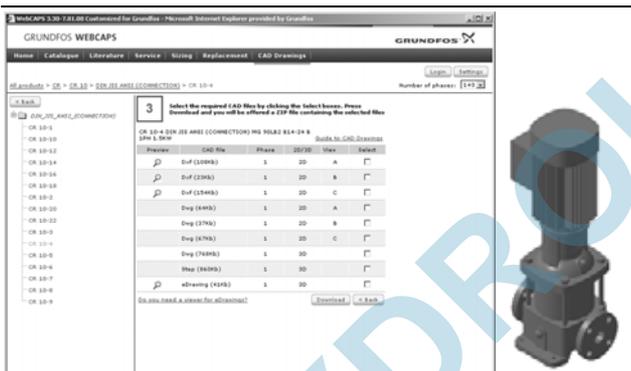


### Replacement

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. 10 WinCAPS DVD

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 220,000 Grundfos products in more than 30 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 DVD and updated once a year.

## GO CAPS

Mobile solution for professionals on the GO!



CAPS functionality on the mobile workplace.



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Subject to alterations.

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ECM: 1119757
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