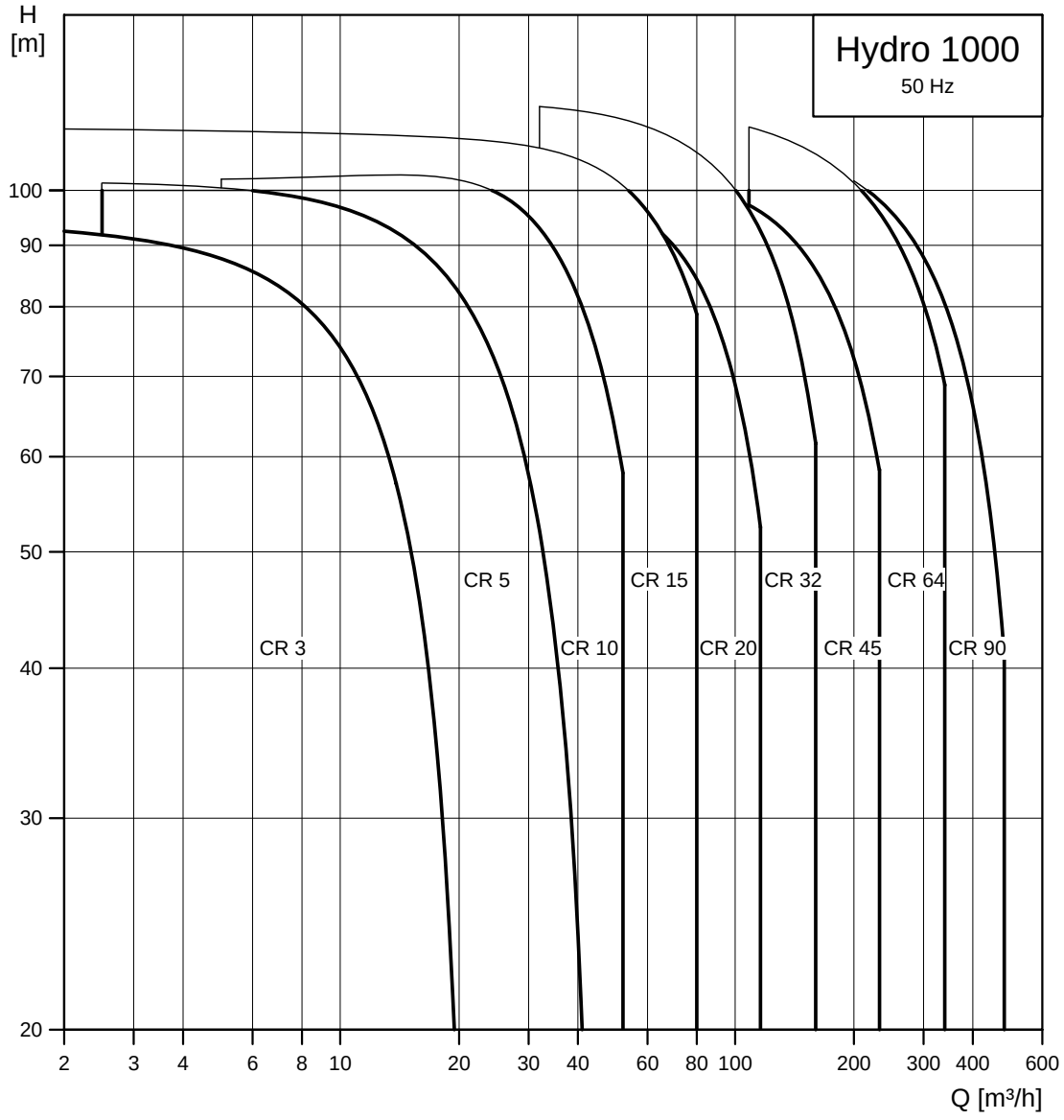
Hydro 1000

Grundfos Hydro 1000 booster sets with 1-4 CR pumps
50 Hz

Contents

Performance range



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Note: Performace exceding above area are available on request.

Hydro 1000

Grundfos **Hydro 1000** booster sets consist of 2 to 4 identical Grundfos CR pumps mounted in parallel on a common base frame and a control cabinet with motor protection and integrated **CS 1000** controller.

Pumps are automatically operated according to system demand by means of pressure switches (one for each pump). The setting of the pressure switches have to be within the optimal performance area of each pump model.

Hydro 1000 booster sets are supplied as complete, preassembled and tested systems including suction and discharge manifolds, isolating valves, non-return valves, pressure gauge and pressure switches.

A Hydro 1000 booster set with one pump is also available. The booster set is assembled with main mechanical components. However, the control cabinet is simpler and does not incorporate the **CS 1000**.

To ensure stable operation the booster set must be fitted with a suitable diaphragm tank. The size of the diaphragm tank can be calculated according to the section "Diaphragm tank selection" at page 27.

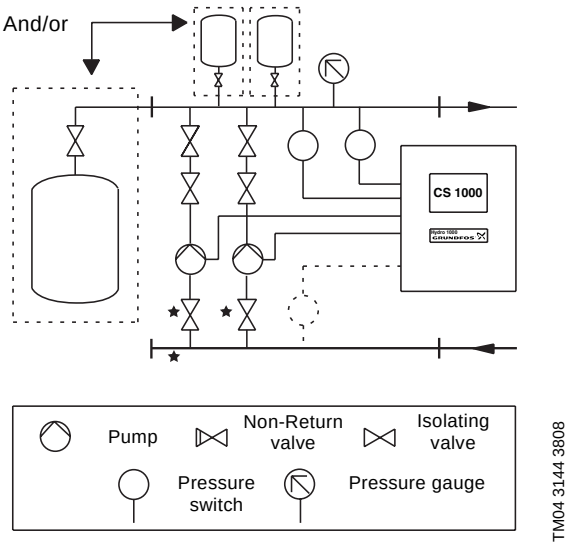


Fig. 1 Hydro 1000 pressure boosting system

★ Booster sets without suction manifolds (NOS version) are without these components.

Non-return valves can be fitted on the suction side on request.

Type key

Example	Hydro 1000	G	CS	3	CR 3-5	3 x 400 V

Type

/G: See chapter System Components
/P: See chapter System Components
/B: See chapter System Components
/L: See chapter System Components
/W: See chapter System Components
/N: See chapter System Components

On-off control

Number of pumps

Pump type

Voltage/frequency

Operating conditions

Flow:	up to 480 m^3/h
Operating pressure:	max. 16 bar
Liquid temperature:	0°C to +70°C
Ambient temperature:	+5°C to +40°C.

Maximum suction lift (H):
The maximum suction lift (H) can be calculated as follows:

H = 10.33 m -
NPSH of the pump -
other suction losses -
a safety margin of 0.5 metres.

Maximum inlet pressure:	6.0 bar
Power range:	up to 30 kW
DOL starting:	up to 7.5 kW
SD starting:	11 to 30 kW
Power supply:	3 x 400 V, 50 Hz, PE.

Other versions on request

The following versions are available on request:

- booster set with jokey pump
- booster set without suction manifold (NOS version)
- booster set with CRI, 3, 5, 10, 15, 20 pumps
- different material combination - see chapter System components
- performance exceeding the standard range
- characteristics other than those stated above
- single-phase power supply: 1 x 230 V, 50 Hz N, PE
- three-phase power supply: 3 x 230 V, 50 Hz N, PE
- starting configuration other than standard
- 60 Hz.

Function

When a tap is opened, water is taken from the diaphragm tank. Then the pressure drops to the first cut-in pressure, and the first pump is cut in.
As the consumption rises, more pumps will be cut in until the performance of the pumps in operation corresponds to the requirement.
When the water consumption falls, the discharge pressure rises to the cut-out pressure and the CS 1000 cuts out one pump.
As the consumption falls, more pumps will be cut out.

Example: Hydro 1000 3 pumps

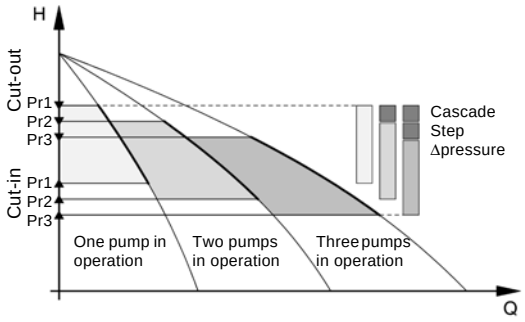


Fig. 2 Operation with cut-in and cut-out

Grundfos Control 1000 for 1 pump

The control panel for 1 pump offer the following functions:

- Front cover pump operation mode
  - AUTO
  - STOP
  - MANUAL (TEST)
- Front cover indication functions:
  - mains voltage - white indicator light on when mains is connected
  - overload protection - red light for thermal protection indication
  - pump running - green light for pump running indication

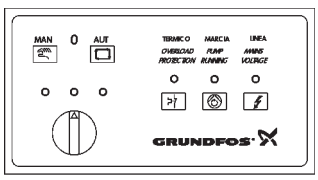


Fig. 3 Control 1000 display for 1 pump

Protection:

A pressure switch or a level switch at the suction side can be used as dry-running protection. When the water level or pressure has been restored, automatic or manual resetting is possible.

Grundfos Control 1000 for 2-4 pumps

The Grundfos **Control 1000** supervises a given number of mains-operated pumps.

The **Control 1000** offers the following functions, provided by the CS 1000 controller in case of two pumps and above:

- Automatic cascade control of pumps
- Automatic pump changeover at any start-up cycle
- Manual operation
- Pump- and system-monitoring functions:
  - maximum pressure
  - pre-pressure/level
  - motor protection
- Display and indication functions:
  - green indicator lights for mode of operation indications (automatic or manual) and red indicator lights for fault indications
  - potential-free changeover contact for fault signal.

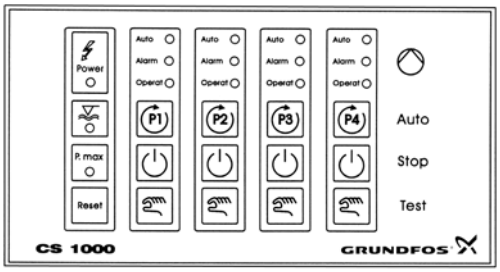


Fig. 4 Control 1000 display for 2-4 pumps

Protection

A pressure switch or a level switch at the suction side can be used as dry-running protection. When the water level or pressure has been restored, automatic or manual resetting is possible.

Time control

To adapt the booster set operation to the actual conditions, the following settings can be made:

Start-up delay: Prevents simultaneous start-up of all pumps.

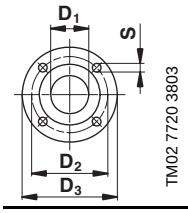
Stop delay: Prevents simultaneous stop of all pumps.

After-run delay: Keeps pumps in operation after cut-out pressure is reached.

Time control is particularly convenient to reduce the number of starts and stops per hour, to prevent water hammer and negative pressure in the suction manifold as well as other problems that can arise under certain conditions.

Flange dimensions

PN 16 flanges



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	Standard: EN 1092-2 PN 16 (1.6 MPa)					
	Nominal diameter (DN)					
DN	**80**	**100**	**125**	**150**	**200**	**250**
D_1	80	100	125	150	200	250
D_2	160	180	210	240	295	355
D_3	200	220	250	285	340	405
S	8x19	8x19	8x19	8x23	12x23	12x28

System components

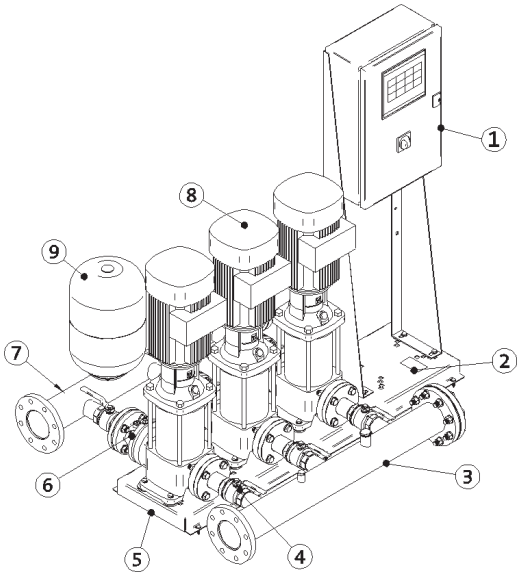

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Fig. 5 System components

Pos.	Description	Quantity	Versions					
			"G"	**"P"**	**"B"**	**"L"**	**"W"**	**"N"**
1	Control cabinet	1	Metal, painted	Metal, painted	Metal, painted	Metal, painted	Metal, painted	Metal, painted
2	Panel stand	2	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel	1.4301 (AISI 304)	1.4301 (AISI 304)
3	Suction manifold	1	Galvanized steel	1.4301 (AISI 304)	1.4301 (AISI 304)	1.4301 (AISI 304)	1.4571 (AISI 316 Ti)	1.4571 (AISI 316 Ti)
4	Isolating valve	2 per pump	Brass NiCr-plated or cast iron	Brass NiCr-plated or cast iron	"Belgaqua" approved	Brass NiCr-plated or cast iron	Brass NiCr-plated or cast iron	1.4401 (AISI 316) and cast iron
5	Base frame	1	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel	1.4301 (AISI 304)	1.4301 (AISI 304)
6	Non-return valve	1 per pump	POM or cast iron	POM or cast iron	POM or cast iron	POM or cast iron	POM or 1.4401 (AISI 316)	1.4401 (AISI 316)
7	Discharge manifold	1	Galvanized steel	1.4301 (AISI 304)	1.4301 (AISI 304)	1.4301 (AISI 304)	1.4517 (AISI 316 Ti)	1.4517 (AISI 316 Ti)
8	Pump	1-4	CR	CR*	CR	CRI	CR(I)	CRN
9	Diaphragm tank	1	Not in the standard scope of supply					

* Version ACS on request.

Available also version "Z" with all components listed above in 1.4401 (AISI 316), including ball and nuts and fittings.

Pump

The CR pump is a non-self-priming, vertical multistage centrifugal pump fitted with a Grundfos standard motor.

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 by means of staybolts. The base has suction and discharge ports on the same level (in-line).

All pumps are equipped with a maintenance-free mechanical shaft seal.

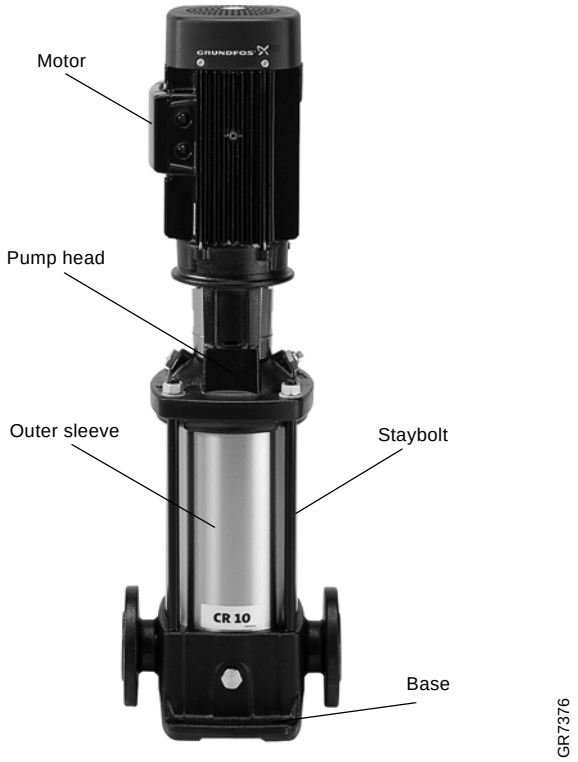


Fig. 6 CR pump

Shaft seal

As standard the CR pump is fitted with either a HQQE shaft seal (cartridge type).

Shaft seal	Description	Max. temp. range [°C]
HQQE	O-ring (cartridge) (balanced seal), SiC/SiC, EPDM	–30°C to +120°C

Motor

The motor is a totally enclosed, fan-cooled, 2-pole Grundfos standard motor with principal dimensions in accordance with the EN/IEC and DIN standards.

Electrical tolerances according to EN 60034/IEC 34.

Electrical data

Mounting **– up to 4 kW:** **– from 5.5 kW:**	 V 18 V 1.
Insulation class:	F.
Enclosure class	IP 55.
50 Hz **Standard voltages**	3 x 220-240/380-415 V, for $P_2 \leq 3$ kW. 3 x 380-415Δ V, for $P_2 \geq 4$ kW.

Motor protection

All motors are protected by the control panel of the booster set.

Three-phase Grundfos motors from 3 kW upwards have a built-in thermistor (PTC) according to DIN 44082.

Single-phase motors have a built-in thermal overload switch.

Features and benefits

The state-of-the-art features introduced into this new vertical multistage pump generation offer the following benefits:

High efficency	Minimised energy cost
Low NPSH	Improves suction capability
Air handling	Reduces risks of dry-running
New cartridge concept mechanical seal	Allows to service the pump directly on site without dismantling it from the booster set nor disassembling the liquid end
Spacer coupling	Allows to service the mechanical seal without disassembling the motor from the pump (for 11 kW motor onwards)
Sleeve sealing	Provices high resistance to pressure pulses and withstands temperature fluctuations as well as external forces
Silicon carbide bearings	Wear resistance, improved dry-running capability and handling of thermal shocks enable longer operating time
Reinforced shaft lock ring	Strong axial locking force and high torque lock system enable robust and reliable operation of rotating assembly

Materials CR 3, 5, 10, 15 and 20

Description	Materials	EN/DIN	AISI/ASTM
Pump head	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
Shaft	Stainless steel	1.4401	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 in pump	EPDM or FKM		

Materials CR 32, 45, 64 and 90

Description	Materials	EN/DIN	AISI/ASTM
Pump head	Cast iron EN-GJS-500-7	EN-351050	ASTM 80-55-06
Motor stool	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
Shaft	Stainless steel	1.4057	AISI 431
Impeller	Stainless steel	1.4301	AISI 304
Chamber	Stainless steel	1.4301	AISI 304
Outer sleeve	Stainless steel	1.4301	AISI 304
O-ring for outer sleeve	EPDM or FKM		
Base	Cast iron EN-GJS-500-7	EN-JL1050	ASTM 80-55-06
Neck ring	Carbon-graphite filled PTFE		
Bearing ring	Bronze		
Bottom bearing ring	TC/TC★		
Rubber parts	EPDM or FKM		

★ TC = Tungsten carbide (cemented).

Materials CRI, CRN

The base, the pump head cover as well as vital pump components of CRI and CRN pumps are made as follows:

Description	Materials	EN/DIN	AISI/ASTM
	CRI		
Impeller	Stainless steel	1.4301	AISI 304
Chamber	Stainless steel	1.4301	AISI 304
Outer sleeve	Stainless steel	1.4301	AISI 304
O-ring for outer sleeve	EPDM or FKM		
	CRN		
Impeller	Stainless steel	1.4401	AISI 316
Chamber	Stainless steel	1.4401	AISI 316
Outer sleeve	Stainless steel	1.4401	AISI 316
O-ring for outer sleeve	EPDM or FKM		
All other parts and components are as per the previous tables.			

Dimensions and weights

Dimensions and weights for **Hydro 1000** are stated on pages 19 to 26.

Please note that the dimensions stated may vary ±20 mm and that all systems are supplied without vibration dampers. The dimensions may vary according to the technological improvements of the components and/or materials used.

Construction

Hydro 1000 is built up on a common base frame. The pumps are fixed to the base frame by means of bolts. The control cabinets are divided into three groups based on construction:

- Systems with the control cabinet mounted on the pump base frame.
- Systems with the control cabinet mounted on a separate base frame.
- Systems with the control cabinet without a base frame. therefore suitable for floor mounting.

For further information, see the paragraph Dimensions

A discharge manifold is mounted on the discharge side of the pumps. An isolating valve and non-return valve are mounted between the discharge manifold and the individual pumps. The non-return valve may be mounted on the suction side on request.

A suction manifold is mounted on the suction side of the pumps. An isolating valve is mounted between the suction manifold and the individual pumps.

Mechanical installation

Location

The booster system must be installed in a well-ventilated room to ensure sufficient cooling of the control cabinet and pumps.

Note: Hydro MPC is not designed for outdoor installation and must not be exposed to direct sunlight.

The booster system should be placed with a 1-metre clearance in front and on the two sides for inspection and removal.

Pipework

Arrows on the pump base show the direction of flow of water through the pump.

The pipework connected to the booster system must be of adequate size.
The pipes are connected to the manifolds of the booster system.

To optimize operation and mimimise noise and vibration, it may be necessary to consider vibration dampening of the booster system.

Noise and vibration are generated by the rotations in the motor and pump and by the flow in pipework and fittings. The effect on the environment is subjective and depends on correct installation and the state of the remaining system.

If booster systems are installed in blocks of flats or the first consumer on the line is close to the booster system, it is advisable to fit expansion joints on the suction and discharge pipes to prevent vibration being transmitted through the pipework.

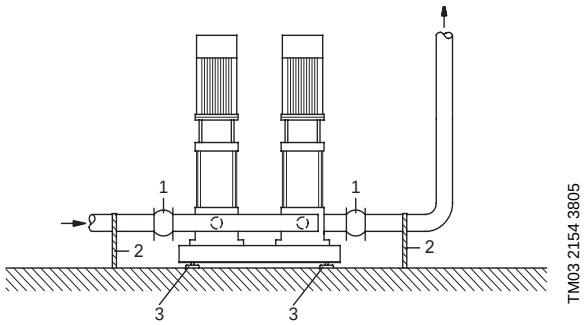


Fig. 7 Schematic view of hydraulic installation

Pos.	Description
1	Expansion joint
2	Pipe support
3	Machine shoe

Note: Expansion joints, pipe supports and machine shoes shown in the figure above are not supplied with a standard booster system.

All nuts should be tightened prior to start-up.

The pipes must be fastened to parts of the building to ensure that they cannot move or be twisted.

Foundation

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

Note: As a rule of thumb, the weight of a concrete foundation should be 1.5 x the weight of the booster system.

Dampening

To prevent the transmission of vibrations to buildings, it is advisable to isolate the booster system foundation from building parts by means of vibration dampers.

Which is the right damper varies from installation to installation, and a wrong damper may increase the vibration level. Vibration dampers should therefore be sized by the supplier.

If the booster system is installed on a base frame with vibration dampers, expansion joints should always be fitted on the manifolds. This is important to prevent the booster system from "hanging" in the pipework.

Electrical installation

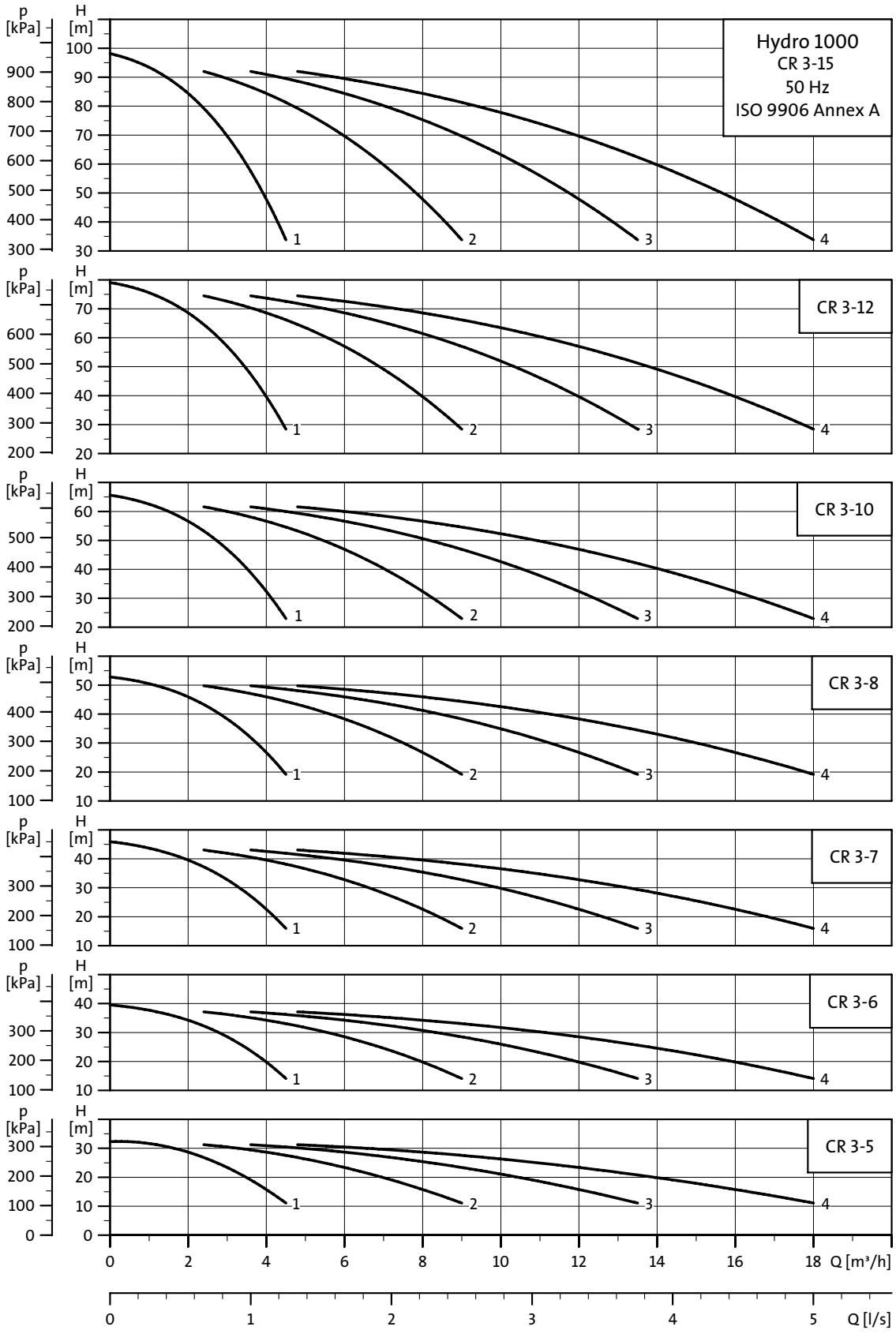
The electrical installation should be carried out by an authorized person in accordance with local regulations.

- The electrical installation of the booster set must be carried out in accordance with enclosure class IP 54.
- Make sure that the booster set is suitable for the electricity supply to which it is connected.
- Make sure that the wire cross-section corresponds to the specifications in the wiring diagram.

Note: The mains connection should be carried out as shown in the wiring diagram.

Performance curves

CR 3



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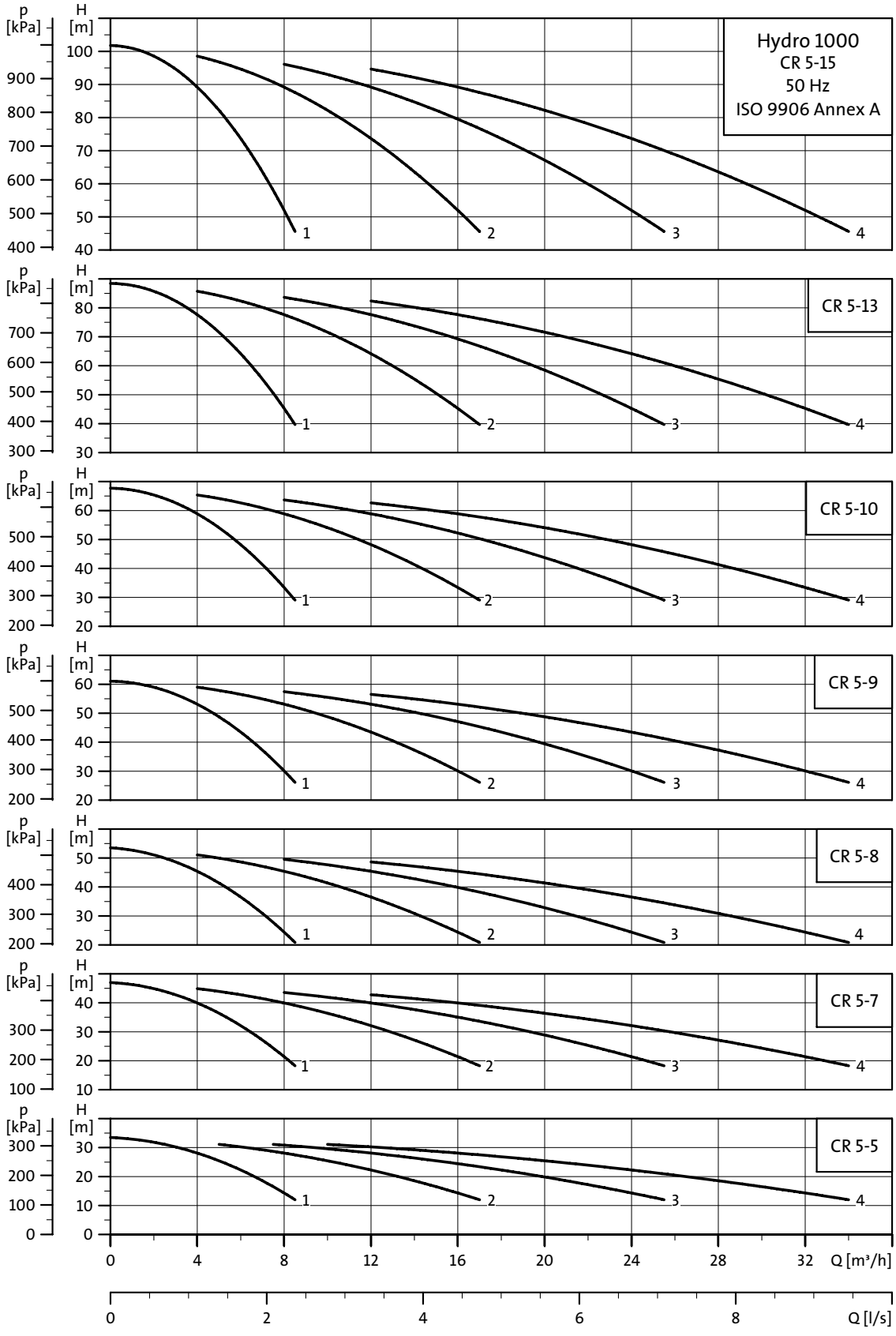
Performance curves

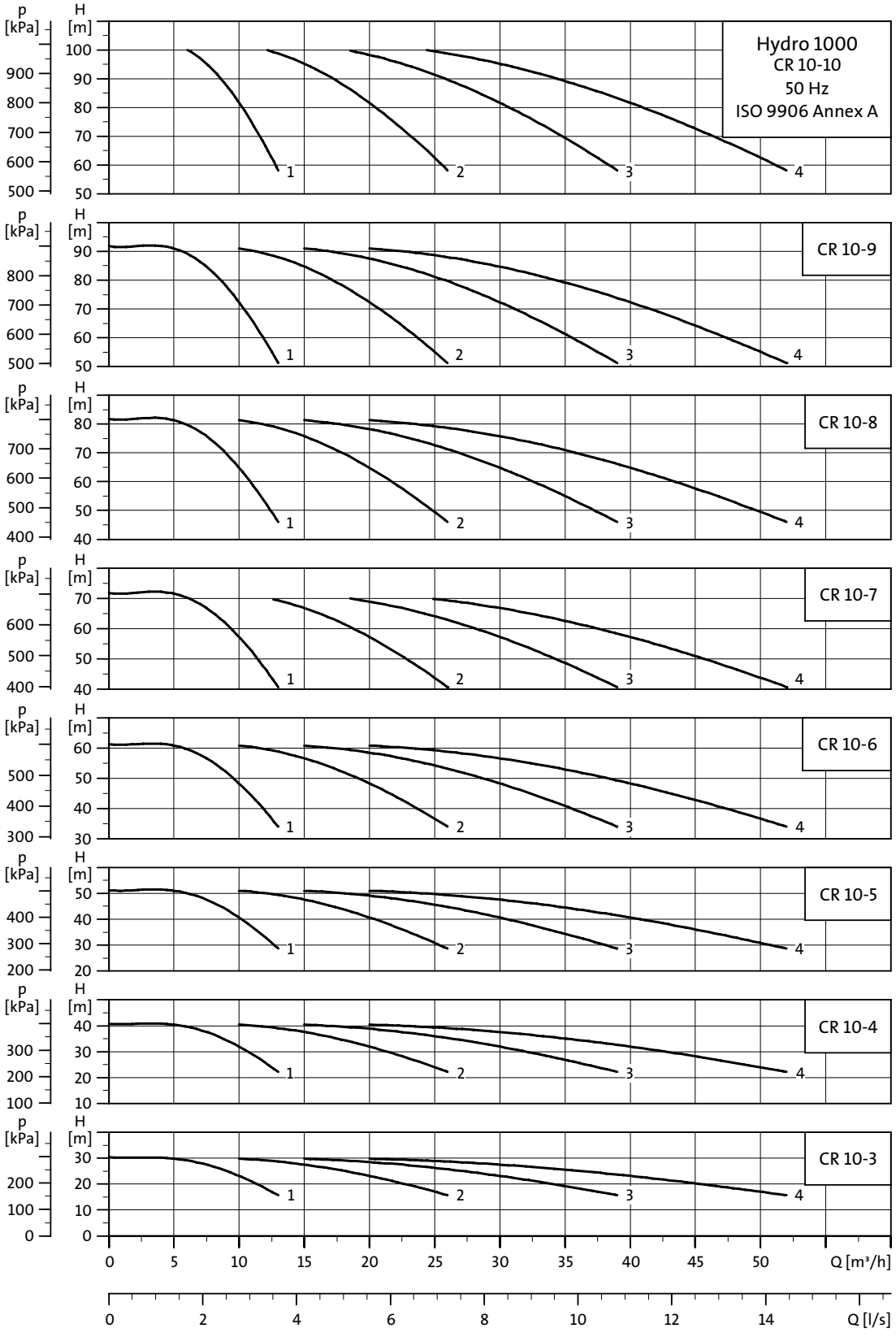
CR 5



TM02 2132 4003

Performance curves

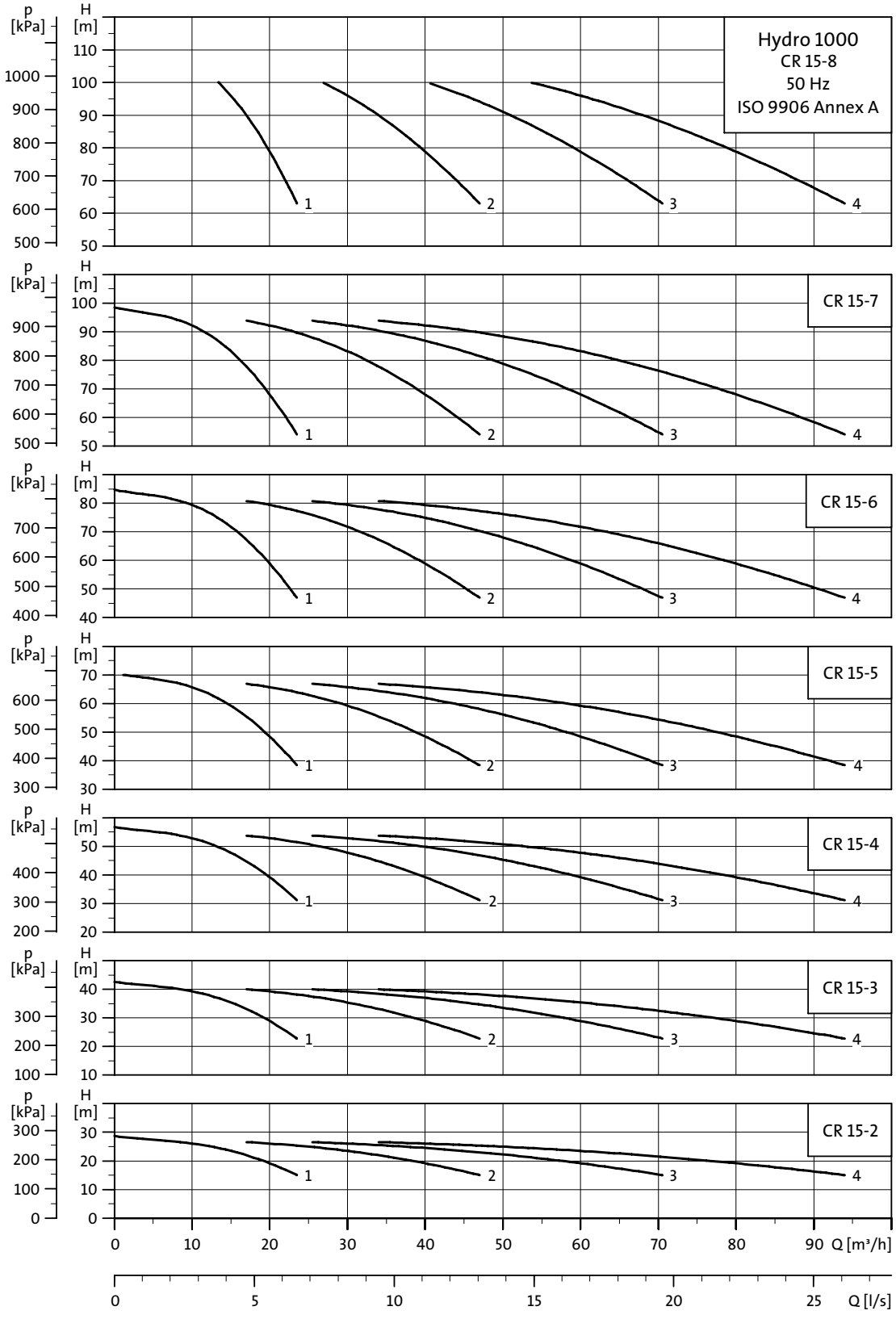
CR 10



TM02 7779 4003

Performance curves

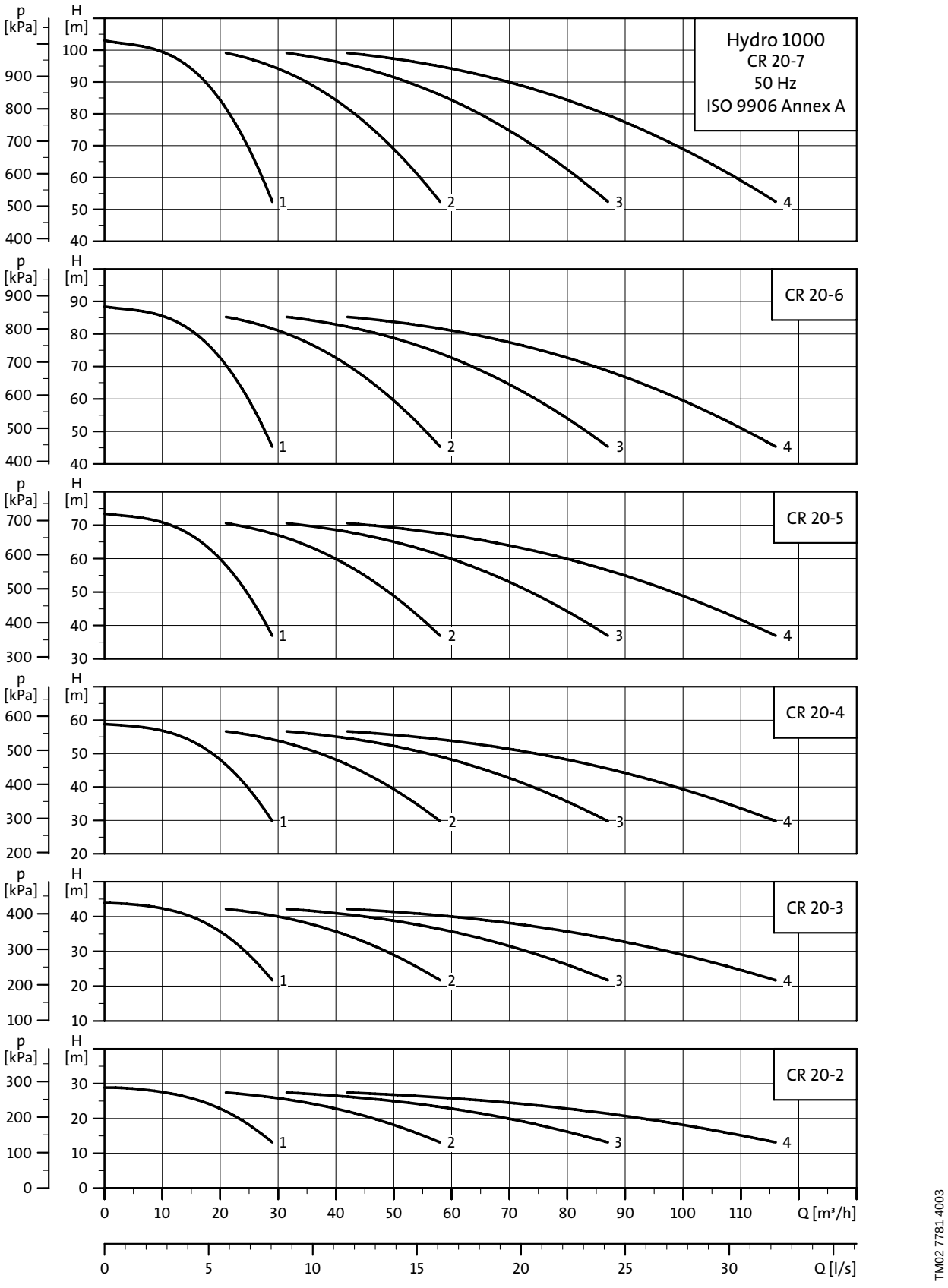
CR 15



TM02 7780 4003

Performance curves

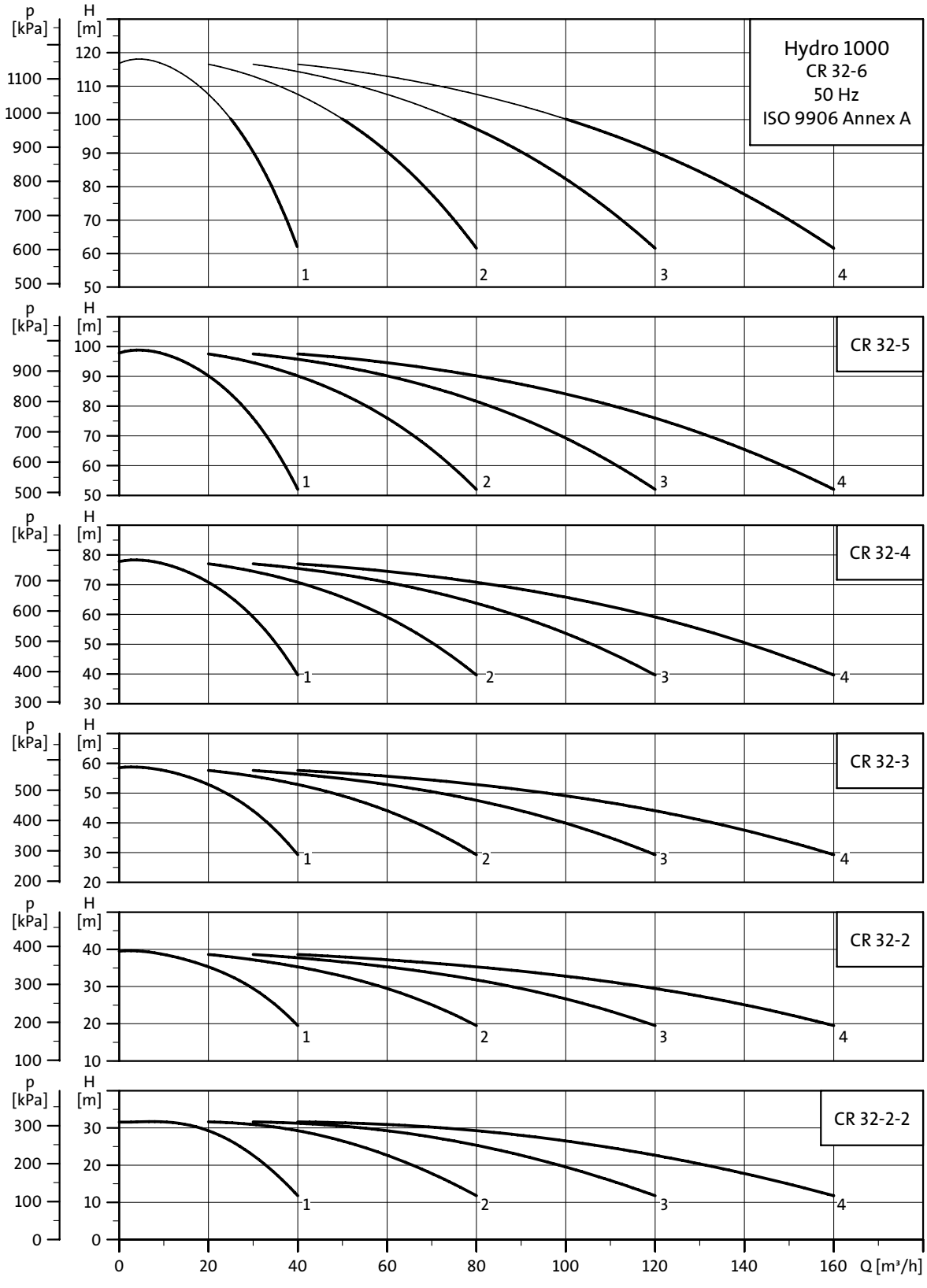
CR 20



TM02 7781 4003

Performance curves

CR 32



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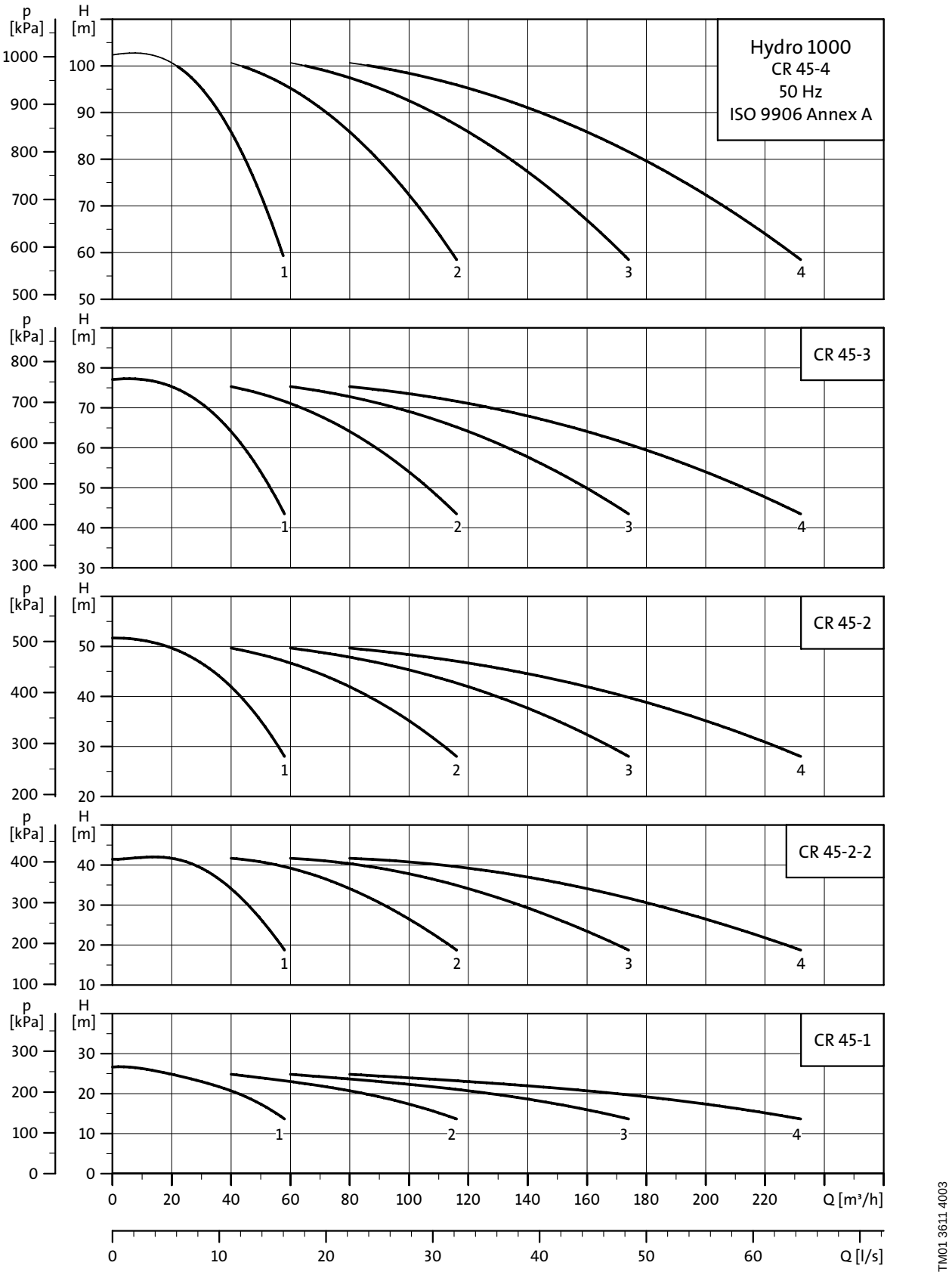
Performance curves

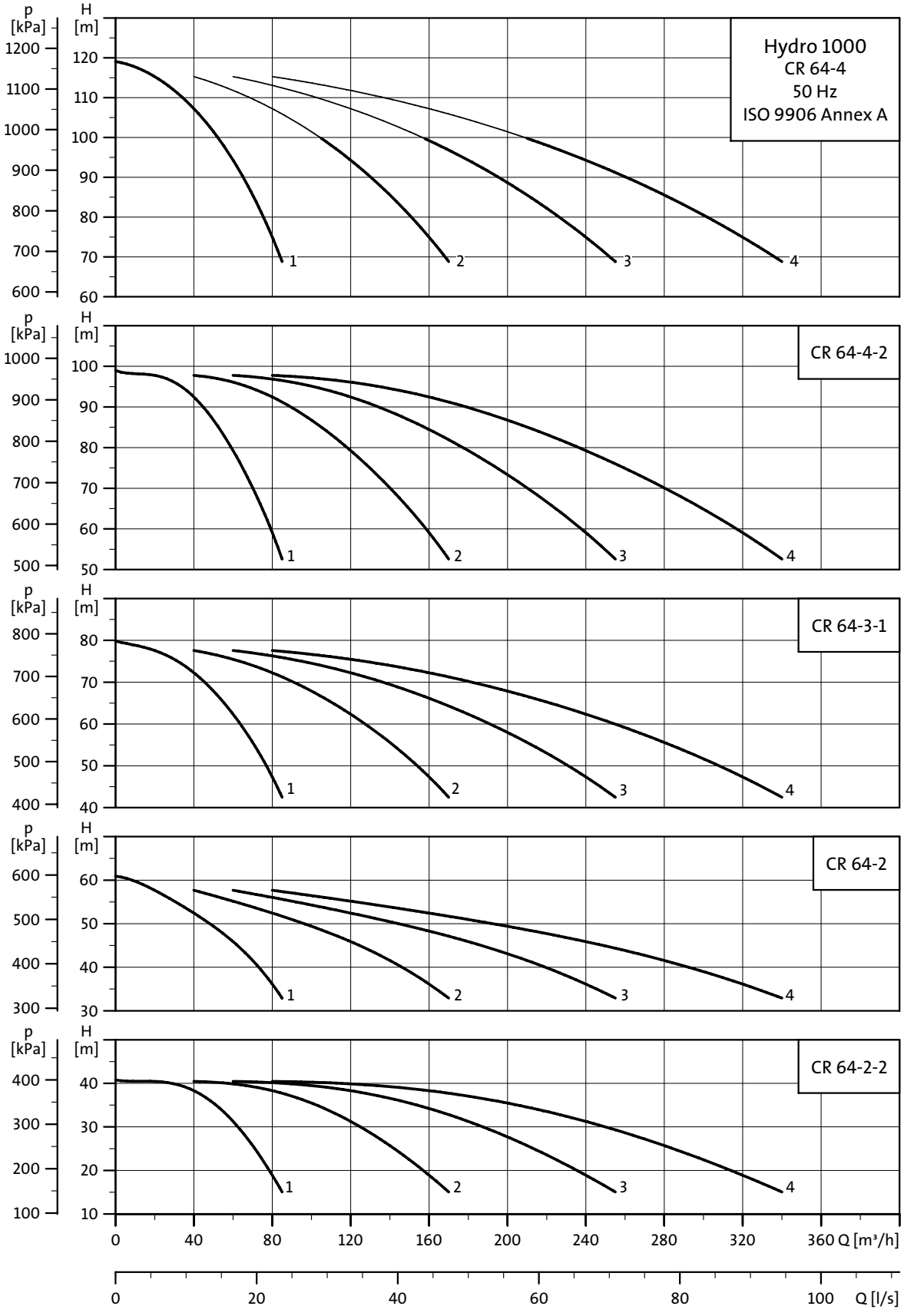
CR 45



TM01 3611 4003

Performance curves

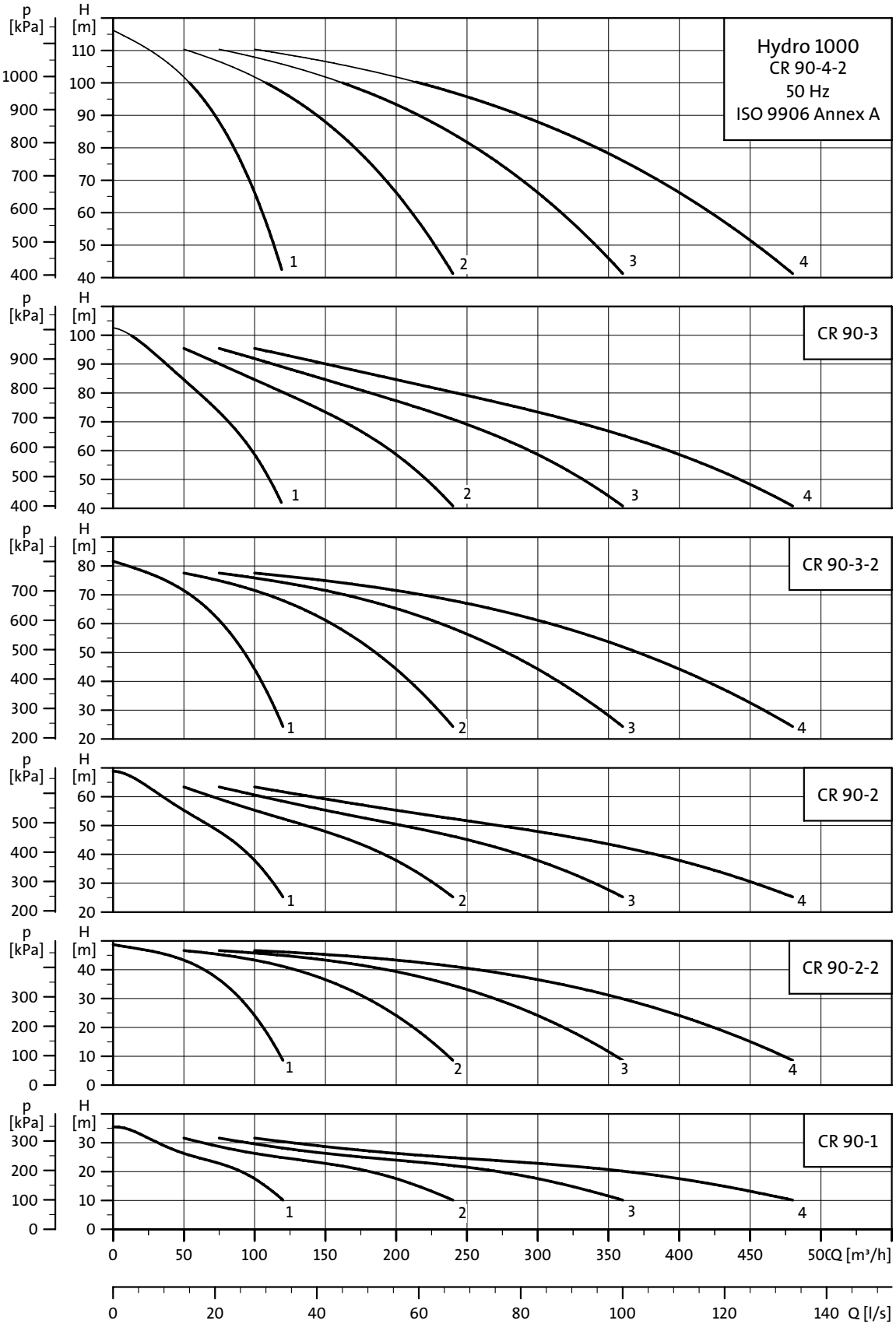
CR 64



TM01 3612 4003

Performance curves

CR 90



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Dimensions and weights

Booster set with 1 pump

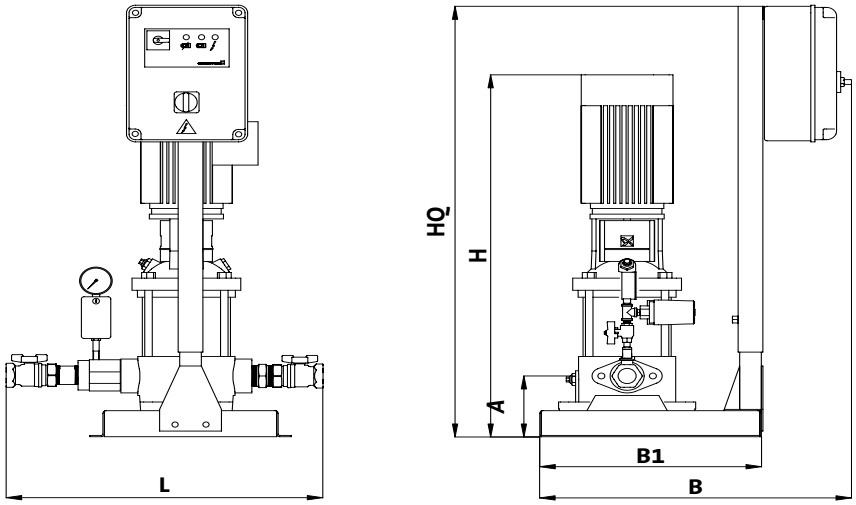

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Fig. 8 Dimensional sketch of a Hydro 1000 booster set with a control cabinet centred the base plate

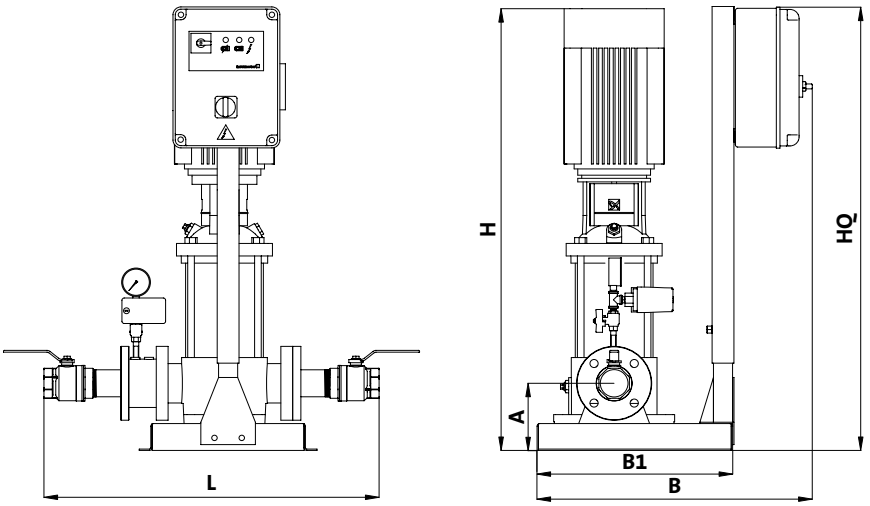

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Fig. 9 Dimensional sketch of a Hydro 1000 booster set with a control cabinet centred on the base plate

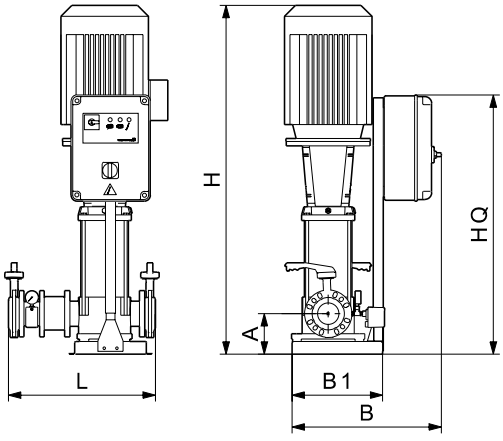

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Fig. 10 Dimensional sketch of a Hydro 1000 booster set with a control cabinet centred on the base plate

Dimensions and weights

Booster set with 1 pump

Pump type	Supply voltage [V]	Motor [kW]	Manifold Connection	A [mm]	B [mm]	B1 [mm]	L [mm]	H [mm]	HQ [mm]	Weight [kg]	Design
1CR 3-5	3x380-415V, PE	0.37	R 1"¼	120	580	430	514	551	1160-1500	41.4	B
1CR 3-6	3x380-415V, PE	0.55	R 1"¼	120	580	430	514	569	1160-1500	42.5	B
1CR 3-7	3x380-415V, PE	0.55	R 1"¼	120	580	430	514	587	1160-1500	43.5	B
1CR 3-8	3x380-415V, PE	0.75	R 1"¼	120	580	430	514	651	1160-1500	45.5	B
1CR 3-10	3x380-415V, PE	0.75	R 1"¼	120	580	430	514	687	1160-1500	46.5	B
1CR 3-12	3x380-415V, PE	1.1	R 1"¼	120	580	430	514	723	1160-1500	48.5	B
1CR 3-15	3x380-415V, PE	1.1	R 1"¼	120	580	430	514	777	1160-1500	50.5	B
1CR 5-5	3x380-415V, PE	0.75	R 1"¼	120	580	430	514	642	1160-1500	44.5	B
1CR 5-7	3x380-415V, PE	1.1	R 1"¼	120	580	430	514	696	1160-1500	48.5	B
1CR 5-8	3x380-415V, PE	1.1	R 1"¼	120	580	430	514	723	1160-1500	48.5	B
1CR 5-9	3x380-415V, PE	1.5	R 1"¼	120	580	430	514	816	1160-1500	56.5	B
1CR 5-10	3x380-415V, PE	1.5	R 1"¼	120	580	430	514	843	1160-1500	56.5	B
1CR 5-13	3x380-415V, PE	2.2	R 1"¼	120	580	430	514	964	1160-1500	59.5	B
1CR 5-15	3x380-415V, PE	2.2	R 1"¼	120	580	430	514	1018	1160-1500	60.5	B
1CR 10-3	3x380-415V, PE	1.1	R 1"½	150	580	430	587	678	1160-1500	60.21	B
1CR 10-4	3x380-415V, PE	1.5	R 1"½	150	580	430	587	774	1160-1500	68.21	B
1CR 10-5	3x380-415V, PE	2.2	R 1"½	150	580	430	587	804	1160-1500	69.21	B
1CR 10-6	3x380-415V, PE	2.2	R 1"½	150	580	430	587	834	1160-1500	70.21	B
1CR 10-7	3x380-415V, PE	3	R 1"½	150	580	430	587	923	1160-1500	75.21	B
1CR 10-8	3x380-415V, PE	3	R 1"½	150	580	430	587	953	1160-1500	76.21	B
1CR 10-9	3x380-415V, PE	3	R 1"½	150	580	430	587	983	1160-1500	77.21	B
1CR 10-10	3x380-415V, PE	4	R 1"½	150	580	430	587	1050	1160-1500	89.21	B
1CR 15-2	3x380-415V, PE	2.2	DN 50	160	580	430	750	806	1160-1500	76	B
1CR 15-3	3x380-415V, PE	3	DN 50	160	580	430	750	870	1160-1500	81	B
1CR 15-4	3x380-415V, PE	4	DN 50	160	580	430	750	952	1160-1500	94	B
1CR 15-5	3x380-415V, PE	4	DN 50	160	580	430	750	997	1160-1500	95	B
1CR 15-6	3x380-415V, PE	5.5	DN 50	160	580	430	750	1093	1160-1500	117	B
1CR 15-7	3x380-415V, PE	5.5	DN 50	160	580	430	750	1138	1160-1500	119	B
1CR 15-8	3x380-415V, PE	7.5	DN 50	160	580	430	750	1183	1160-1500	123	B
1CR 20-2	3x380-415V, PE	2.2	DN 50	160	580	430	750	806	1160-1500	76	B
1CR 20-3	3x380-415V, PE	4	DN 50	160	580	430	750	907	1160-1500	92	B
1CR 20-4	3x380-415V, PE	5.5	DN 50	160	580	430	750	1003	1160-1500	114	B
1CR 20-5	3x380-415V, PE	5.5	DN 50	160	580	430	750	1048	1160-1500	116	B
1CR 20-6	3x380-415V, PE	7.5	DN 50	160	580	430	750	1093	1160-1500	119	B
1CR 20-7	3x380-415V, PE	7.5	DN 50	160	580	430	750	1138	1160-1500	121	B
1CR 32- 2-2	3x380-415V, PE	3	DN 65	175	580	430	588	980	1160-1500	113	B
1CR 32- 2	3x380-415V, PE	4	DN 65	175	580	430	588	1017	1160-1500	124	B
1CR 32- 3	3x380-415V, PE	5.5	DN 65	175	580	430	588	1106	1160-1500	144	B
1CR 32- 4	3x380-415V, PE	7.5	DN 65	175	580	430	588	1176	1160-1500	154	B
1CR 32- 5	3x380-415V, PE	11	DN 65	215	630	430	588	1504	1160-1500	192	B
1CR 32- 6	3x380-415V, PE	11	DN 65	215	630	430	588	1574	1160-1500	195	B
1CR 45-1	3x380-415V, PE	4	DN 80	210	580	430	675	1001	1160-1500	133.8	B
1CR 45-2-2	3x380-415V, PE	5.5	DN 80	210	580	430	675	1100	1160-1500	150.8	B
1CR 45-2	3x380-415V, PE	7.5	DN 80	210	580	430	675	1100	1160-1500	152.8	B
1CR 45-3	3x380-415V, PE	11	DN 80	250	630	430	675	1438	1160-1500	191.8	B
1CR 45-4	3x380-415V, PE	15	DN 80	250	630	430	675	1497	1160-1500	211.8	B
1CR 64-2-2	3x380-415V, PE	7.5	DN 100	210	580	430	687	1105	1160-1500	165.2	B
1CR 64-2	3x380-415V, PE	11	DN 100	250	630	430	687	1323	1160-1500	200.2	B
1CR 64-3-1	3x380-415V, PE	15	DN 100	250	630	430	687	1424	1160-1500	225.2	B
1CR 64-4-2	3x380-415V, PE	18.5	DN 100	250	630	430	687	1547	1160-1500	265.2	B
1CR 64-4	3x380-415V, PE	22	DN 100	250	630	430	687	1639	1160-1500	296.2	B
1CR 90-1	3x380-415V, PE	7.5	DN 100	250	580	430	702	1072	1160-1500	160.2	B
1CR 90-2-2	3x380-415V, PE	11	DN 100	250	630	430	702	1382	1160-1500	201.2	B
1CR 90-2	3x380-415V, PE	15	DN 100	250	630	430	702	1361	1160-1500	215.2	B
1CR 90-3-2	3x380-415V, PE	18.5	DN 100	250	630	430	702	1493	1160-1500	265.2	B
1CR 90-3	3x380-415V, PE	22	DN 100	250	630	430	702	1585	1160-1500	296.2	B
1CR 90-4-2	3x380-415V, PE	30	DN 100	250	630	430	702	1713	1160-1500	377.2	B

Design A: Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.
Design B: Hydro 1000 booster set with a control cabinet centred on the base plate.
Design C: Hydro 1000 booster set with a floor-mounted control cabinet.
Design D: Hydro 1000 booster set with a control cabinet mounted on a separate base plate.
Dimensions may vary by ± 20 mm.

Dimensions and weights

Booster set with 2 pump

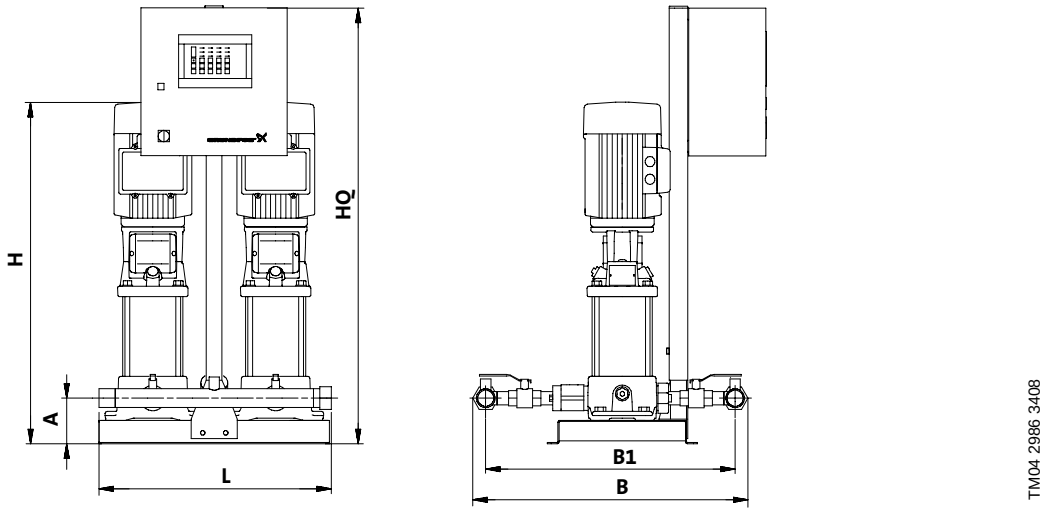


Fig. 11 Dimensional sketch of a Hydro 1000 booster set with a control cabinet centred the base plate

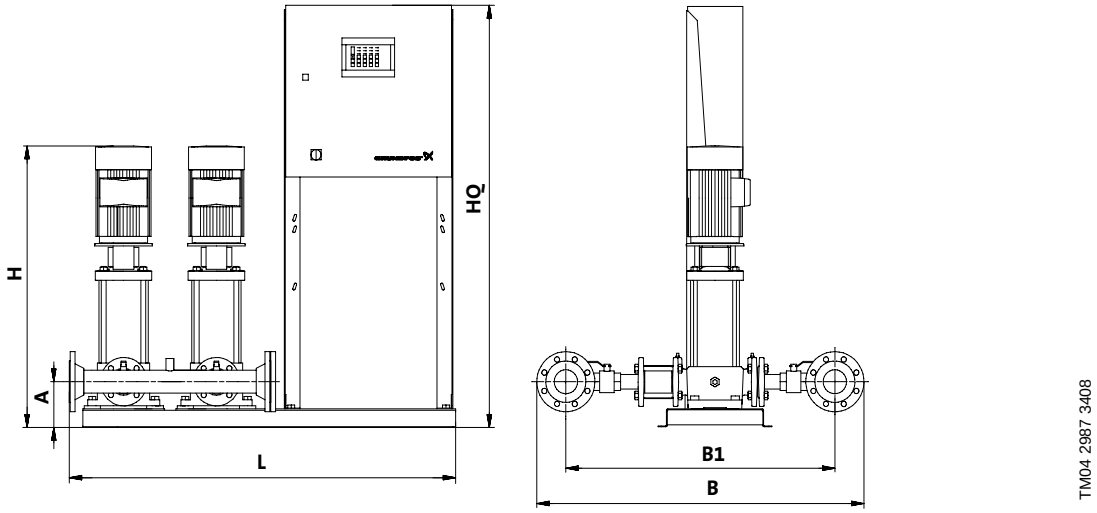


Fig. 12 Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.

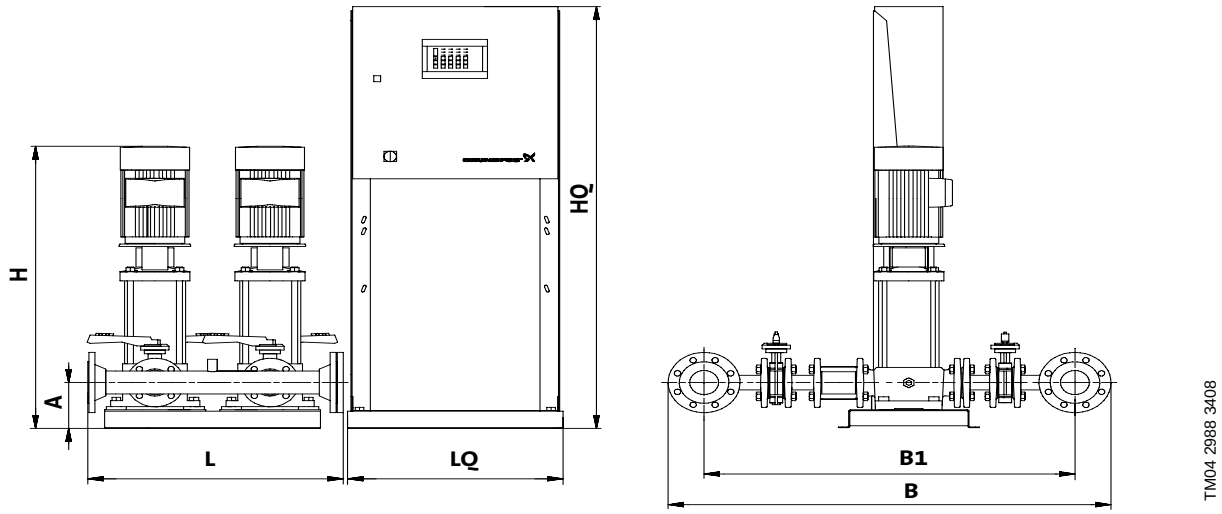


Fig. 13 Hydro 1000 booster set with a control cabinet mounted on a separate base plate.

Dimensions and weights

Booster set with 2 pump

Pump type	Supply voltage [V]	Motor [kW]	Manifold Connection	A [mm]	B [mm]	B1 [mm]	L [mm]	LQ [mm]	H [mm]	HQ [mm]	Weight [kg]	Design
2CR 3-5	3x380-415V, PE	0.37	R 2	120	710	650	610	-	551	1160-1500	110	B
2CR 3-6	3x380-415V, PE	0.55	R 2	120	710	650	610	-	569	1160-1500	112	B
2CR 3-7	3x380-415V, PE	0.55	R 2	120	710	650	610	-	587	1160-1500	112	B
2CR 3-8	3x380-415V, PE	0.75	R 2	120	710	650	610	-	651	1160-1500	118	B
2CR 3-10	3x380-415V, PE	0.75	R 2	120	710	650	610	-	687	1160-1500	118	B
2CR 3-12	3x380-415V, PE	1.1	R 2	120	710	650	610	-	723	1160-1500	126	B
2CR 3-15	3x380-415V, PE	1.1	R 2	120	710	650	610	-	777	1160-1500	126	B
2CR 5-5	3x380-415V, PE	0.75	R 2	120	710	650	610	-	642	1160-1500	114	B
2CR 5-7	3x380-415V, PE	1.1	R 2	120	710	650	610	-	696	1160-1500	122	B
2CR 5-8	3x380-415V, PE	1.1	R 2	120	710	650	610	-	723	1160-1500	122	B
2CR 5-9	3x380-415V, PE	1.5	R 2	120	710	650	610	-	816	1160-1500	138	B
2CR 5-10	3x380-415V, PE	1.5	R 2	120	710	650	610	-	843	1160-1500	138	B
2CR 5-13	3x380-415V, PE	2.2	R 2	120	710	650	610	-	964	1160-1500	146	B
2CR 5-15	3x380-415V, PE	2.2	R 2	120	710	650	610	-	1018	1160-1500	146	B
2CR 10-3	3x380-415V, PE	1.1	R 2½	150	876	800	670	-	678	1160-1500	144	B
2CR 10-4	3x380-415V, PE	1.5	R 2½	150	876	800	670	-	774	1160-1500	160	B
2CR 10-5	3x380-415V, PE	2.2	R 2½	150	876	800	670	-	804	1160-1500	166	B
2CR 10-6	3x380-415V, PE	2.2	R 2½	150	876	800	670	-	834	1160-1500	166	B
2CR 10-7	3x380-415V, PE	3	R 2½	150	876	800	670	-	923	1160-1500	180	B
2CR 10-8	3x380-415V, PE	3	R 2½	150	876	800	670	-	953	1160-1500	180	B
2CR 10-9	3x380-415V, PE	3	R 2½	150	876	800	670	-	983	1160-1500	180	B
2CR 10-10	3x380-415V, PE	4	R 2½	150	876	800	670	-	1050	1160-1500	209	B
2CR 15-2	3x380-415V, PE	2.2	DN 80	160	1150	950	755	-	806	1160-1500	211	B
2CR 15-3	3x380-415V, PE	3	DN 80	160	1150	950	755	-	870	1160-1500	221	B
2CR 15-4	3x380-415V, PE	4	DN 80	160	1150	950	755	-	952	1160-1500	250	B
2CR 15-5	3x380-415V, PE	4	DN 80	160	1150	950	755	-	997	1160-1500	250	B
2CR 15-6	3x380-415V, PE	5.5	DN 80	160	1150	950	1310	-	1093	1460	282	A
2CR 15-7	3x380-415V, PE	5.5	DN 80	160	1150	950	1310	-	1138	1460	288	A
2CR 15-8	3x380-415V, PE	7.5	DN 80	160	1150	950	1310	-	1183	1460	294	A
2CR 20-2	3x380-415V, PE	2.2	DN 80	160	1150	950	755	-	806	1160-1500	244	B
2CR 20-3	3x380-415V, PE	4	DN 80	160	1150	950	755	-	907	1160-1500	244	B
2CR 20-4	3x380-415V, PE	5.5	DN 80	160	1150	950	1310	-	1003	1460	282	A
2CR 20-5	3x380-415V, PE	5.5	DN 80	160	1150	950	1310	-	1048	1460	284	A
2CR 20-6	3x380-415V, PE	7.5	DN 80	160	1150	950	1310	-	1093	1460	290	A
2CR 20-7	3x380-415V, PE	7.5	DN 80	160	1150	950	1310	-	1138	1460	292	A
2CR 32- 2-2	3x380-415V, PE	3	DN 100	175	1170	950	1037	-	980	1160-1500	342	B
2CR 32- 2	3x380-415V, PE	4	DN 100	175	1170	950	1037	-	1017	1160-1500	342	B
2CR 32- 3	3x380-415V, PE	5.5	DN 100	175	1170	950	1037	600	1106	1460	365	D
2CR 32- 4	3x380-415V, PE	7.5	DN 100	175	1170	950	1037	600	1176	1460	381	D
2CR 32- 5	3x380-415V, PE	11	DN 100	215	1170	950	1037	600	1504	1460	504	D
2CR 32- 6	3x380-415V, PE	11	DN 100	215	1170	950	1037	600	1574	1460	510	D
2CR 45-1	3x380-415V, PE	4	DN 150	210	1335	1050	1042	-	1001	1160-1500	350	B
2CR 45-2-2	3x380-415V, PE	5.5	DN 150	210	1335	1050	1042	600	1100	1460	368	D
2CR 45-2	3x380-415V, PE	7.5	DN 150	210	1335	1050	1042	600	1100	1460	378	D
2CR 45-3	3x380-415V, PE	11	DN 150	250	1335	1050	1042	600	1438	1460	554	D
2CR 45-4	3x380-415V, PE	15	DN 150	250	1335	1050	1042	600	1497	1460	597	D
2CR 64-2-2	3x380-415V, PE	7.5	DN 150	210	1335	1050	1042	600	1105	1460	377	D
2CR 64-2	3x380-415V, PE	11	DN 150	250	1335	1050	1042	600	1323	1460	558	D
2CR 64-3-1	3x380-415V, PE	15	DN 150	250	1335	1050	1042	600	1424	1460	611	D
2CR 64-4-2	3x380-415V, PE	18.5	DN 150	250	1335	1050	1042	600	1547	1460	717	D
2CR 64-4	3x380-415V, PE	22	DN 150	250	1335	1050	1042	600	1639	1460	784	D
2CR 90-1	3x380-415V, PE	7.5	DN 150	250	1485	1200	1042	600	1072	1460	563	D
2CR 90-2-2	3x380-415V, PE	11	DN 150	250	1485	1200	1042	600	1382	1460	563	D
2CR 90-2	3x380-415V, PE	15	DN 150	250	1485	1200	1042	600	1361	1460	720	D
2CR 90-3-2	3x380-415V, PE	18.5	DN 150	250	1485	1200	1042	600	1493	1460	720	D
2CR 90-3	3x380-415V, PE	22	DN 150	250	1485	1200	1042	600	1585	1460	787	D
2CR 90-4-2	3x380-415V, PE	30	DN 150	250	1485	1200	1042	600	1713	1460	975	D

Design A: Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.
Design B: Hydro 1000 booster set with a control cabinet centred on the base plate.
Design C: Hydro 1000 booster set with a floor-mounted control cabinet.
Design D: Hydro 1000 booster set with a control cabinet mounted on a separate base plate.
Dimensions may vary by ± 20 mm.

Booster set with 3 pump

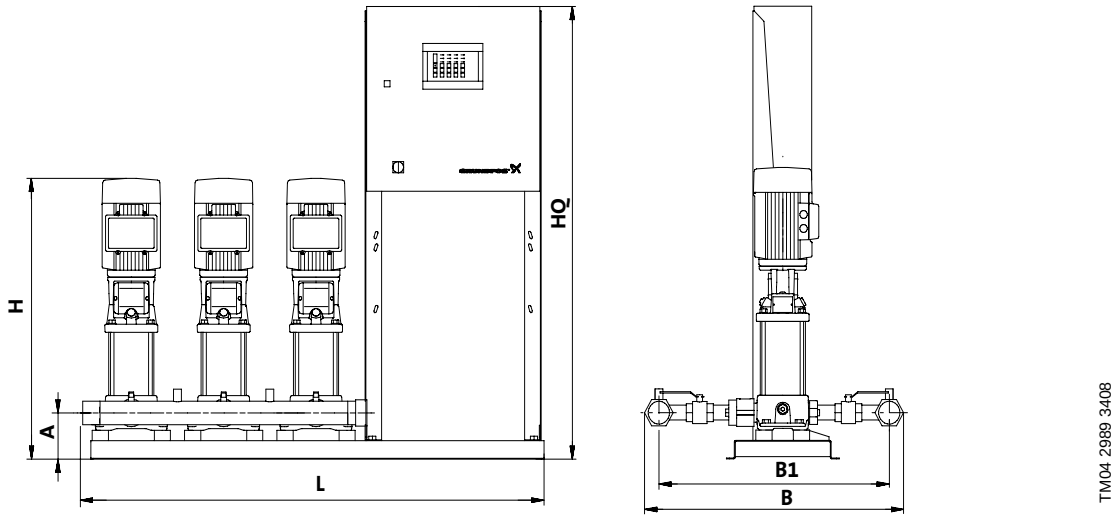


Fig. 14 Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.

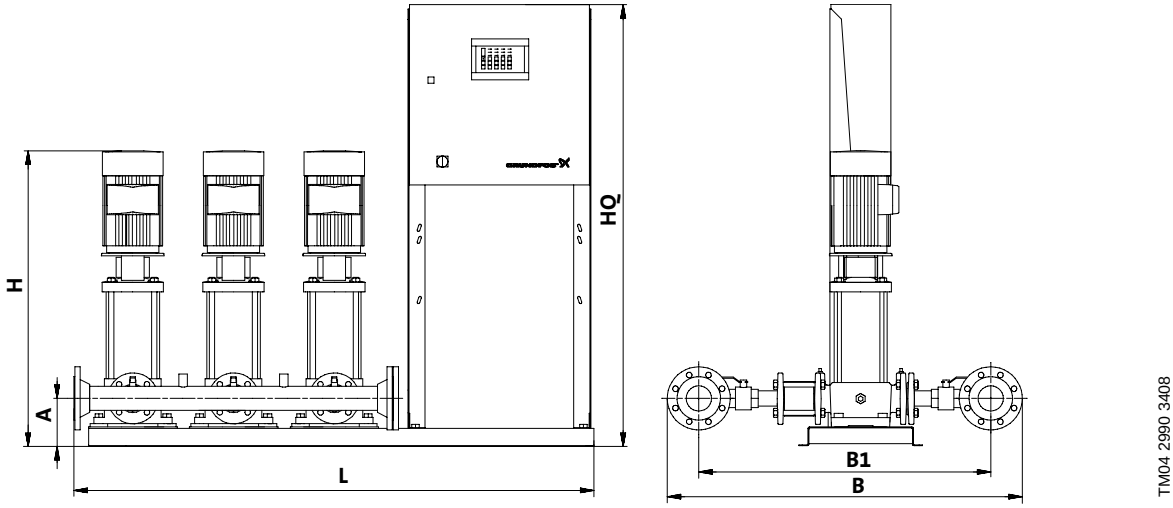


Fig. 15 Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.

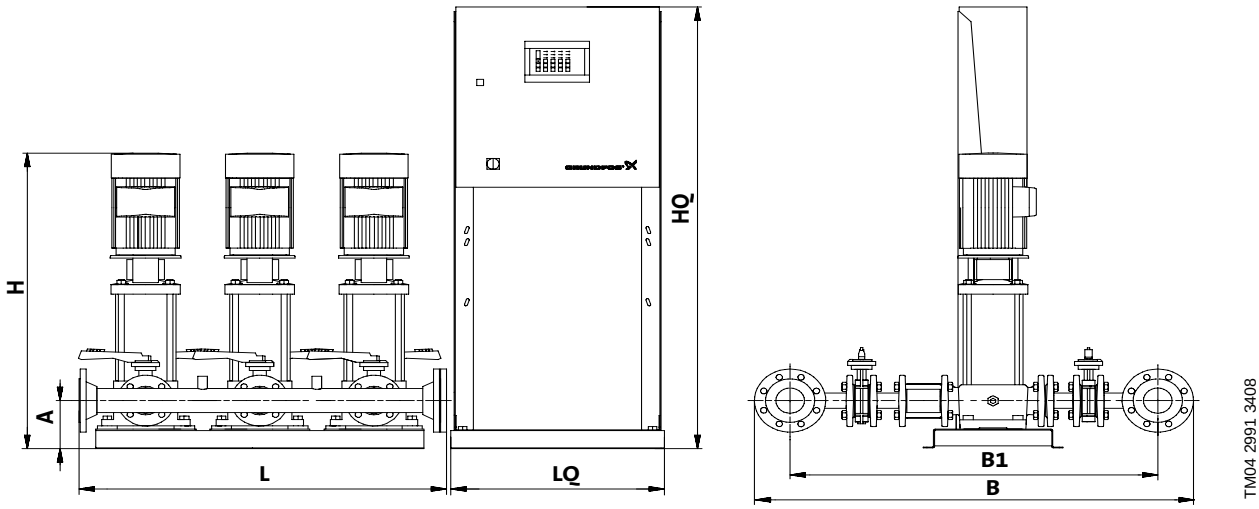


Fig. 16 Hydro 1000 booster set with a control cabinet mounted on a separate base plate.

Dimensions and weights

Booster set with 3 pump

Pump type	Supply voltage [V]	Motor [kW]	Manifold Connection	A [mm]	B [mm]	B1 [mm]	L [mm]	LQ [mm]	H [mm]	HQ [mm]	Weight [kg]	Design
3CR 3-5	3x380-415V, PE	0.37	R 2	120	710	650	1370	-	551	1460	172	A
3CR 3-6	3x380-415V, PE	0.55	R 2	120	710	650	1370	-	569	1460	175	A
3CR 3-7	3x380-415V, PE	0.55	R 2	120	710	650	1370	-	587	1460	175	A
3CR 3-8	3x380-415V, PE	0.75	R 2	120	710	650	1370	-	651	1460	184	A
3CR 3-10	3x380-415V, PE	0.75	R 2	120	710	650	1370	-	687	1460	184	A
3CR 3-12	3x380-415V, PE	1.1	R 2	120	710	650	1370	-	723	1460	196	A
3CR 3-15	3x380-415V, PE	1.1	R 2	120	710	650	1370	-	777	1460	196	A
3CR 5-5	3x380-415V, PE	0.75	R 2	120	710	650	1370	-	642	1460	179	A
3CR 5-7	3x380-415V, PE	1.1	R 2	120	710	650	1370	-	696	1460	191	A
3CR 5-8	3x380-415V, PE	1.1	R 2	120	710	650	1370	-	723	1460	191	A
3CR 5-9	3x380-415V, PE	1.5	R 2	120	710	650	1370	-	816	1460	215	A
3CR 5-10	3x380-415V, PE	1.5	R 2	120	710	650	1370	-	843	1460	215	A
3CR 5-13	3x380-415V, PE	2.2	R 2	120	710	650	1370	-	964	1460	227	A
3CR 5-15	3x380-415V, PE	2.2	R 2	120	710	650	1370	-	1018	1460	227	A
3CR 10-3	3x380-415V, PE	1.1	R 2½	150	876	800	1400	-	678	1460	223	A
3CR 10-4	3x380-415V, PE	1.5	R 2½	150	876	800	1400	-	774	1460	247	A
3CR 10-5	3x380-415V, PE	2.2	R 2½	150	876	800	1400	-	804	1460	256	A
3CR 10-6	3x380-415V, PE	2.2	R 2½	150	876	800	1400	-	834	1460	256	A
3CR 10-7	3x380-415V, PE	3	R 2½	150	876	800	1400	-	923	1460	277	A
3CR 10-8	3x380-415V, PE	3	R 2½	150	876	800	1400	-	953	1460	277	A
3CR 10-9	3x380-415V, PE	3	R 2½	150	876	800	1400	-	983	1460	277	A
3CR 10-10	3x380-415V, PE	4	R 2½	150	876	800	1400	-	1050	1460	320	A
3CR 15-2	3x380-415V, PE	2.2	DN 100	160	1170	950	1430	-	806	1460	322	A
3CR 15-3	3x380-415V, PE	3	DN 100	160	1170	950	1430	-	870	1460	337	A
3CR 15-4	3x380-415V, PE	4	DN 100	160	1170	950	1430	-	952	1460	380	A
3CR 15-5	3x380-415V, PE	4	DN 100	160	1170	950	1430	-	997	1460	380	A
3CR 15-6	3x380-415V, PE	5.5	DN 100	160	1170	950	1630	-	1093	1460	416	A
3CR 15-7	3x380-415V, PE	5.5	DN 100	160	1170	950	1630	-	1138	1460	425	A
3CR 15-8	3x380-415V, PE	7.5	DN 100	160	1170	950	1630	-	1183	1460	434	A
3CR 20-2	3x380-415V, PE	2.2	DN 100	160	1170	950	1430	-	806	1460	371	A
3CR 20-3	3x380-415V, PE	4	DN 100	160	1170	950	1430	-	907	1460	371	A
3CR 20-4	3x380-415V, PE	5.5	DN 100	160	1170	950	1630	-	1003	1460	416	A
3CR 20-5	3x380-415V, PE	5.5	DN 100	160	1170	950	1630	-	1048	1460	418	A
3CR 20-6	3x380-415V, PE	7.5	DN 100	160	1170	950	1630	-	1093	1460	428	A
3CR 20-7	3x380-415V, PE	7.5	DN 100	160	1170	950	1630	-	1138	1460	431	A
3CR 32- 2-2	3x380-415V, PE	3	DN 150	175	1235	950	1542	430	980	1460	522	D
3CR 32- 2	3x380-415V, PE	4	DN 150	175	1235	950	1542	430	1017	1460	522	D
3CR 32- 3	3x380-415V, PE	5.5	DN 150	175	1235	950	1542	600	1106	1460	511	D
3CR 32- 4	3x380-415V, PE	7.5	DN 150	175	1235	950	1542	600	1176	1460	589	D
3CR 32- 5	3x380-415V, PE	11	DN 150	215	1235	950	1542	600	1504	1460	771	D
3CR 32- 6	3x380-415V, PE	11	DN 150	215	1235	950	1542	600	1574	1460	780	D
3CR 45-1	3x380-415V, PE	4	DN 200	210	1390	1050	1544	430	1001	1460	562	D
3CR 45-2-2	3x380-415V, PE	5.5	DN 200	210	1390	1050	1544	600	1100	1460	576	D
3CR 45-2	3x380-415V, PE	7.5	DN 200	210	1390	1050	1544	600	1100	1460	713	D
3CR 45-3	3x380-415V, PE	11	DN 200	250	1390	1050	1544	600	1438	1460	808	D
3CR 45-4	3x380-415V, PE	15	DN 200	250	1390	1050	1544	600	1497	1460	872	D
3CR 64-2-2	3x380-415V, PE	7.5	DN 200	210	1390	1050	1544	600	1105	1460	615	D
3CR 64-2	3x380-415V, PE	11	DN 200	250	1390	1050	1544	600	1323	1460	840	D
3CR 64-3-1	3x380-415V, PE	15	DN 200	250	1390	1050	1544	600	1424	1460	919	D
3CR 64-4-2	3x380-415V, PE	18.5	DN 200	250	1390	1050	1544	600	1547	1460	1047	D
3CR 64-4	3x380-415V, PE	22	DN 200	250	1390	1050	1544	600	1639	1460	1167	D
3CR 90-1	3x380-415V, PE	7.5	DN 200	250	1540	1200	1544	600	1072	1460	848	D
3CR 90-2-2	3x380-415V, PE	11	DN 200	250	1540	1200	1544	600	1382	1460	848	D
3CR 90-2	3x380-415V, PE	15	DN 200	250	1540	1200	1544	600	1361	1460	1052	D
3CR 90-3-2	3x380-415V, PE	18.5	DN 200	250	1540	1200	1544	600	1493	1460	1052	D
3CR 90-3	3x380-415V, PE	22	DN 200	250	1540	1200	1544	600	1585	1460	1171	D
3CR 90-4-2	3x380-415V, PE	30	DN 200	250	1540	1200	1544	800	1713	1460	1422	D

Design A: Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.
Design B: Hydro 1000 booster set with a control cabinet centred on the base plate.
Design C: Hydro 1000 booster set with a floor-mounted control cabinet.
Design D: Hydro 1000 booster set with a control cabinet mounted on a separate base plate.
Dimensions may vary by ± 20 mm.

Dimensions and weights

Booster set with 4 pump

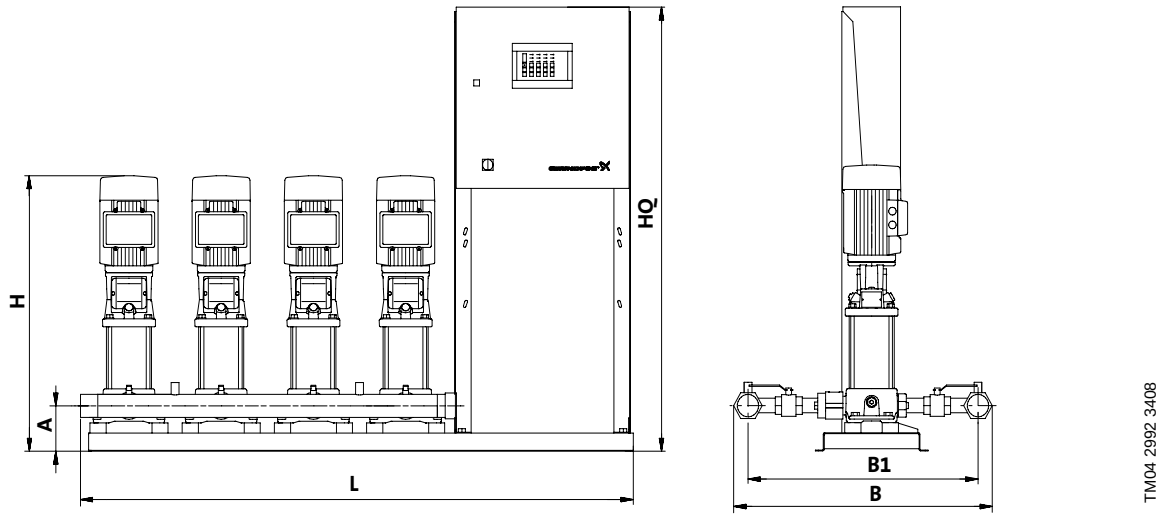


Fig. 17 Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.

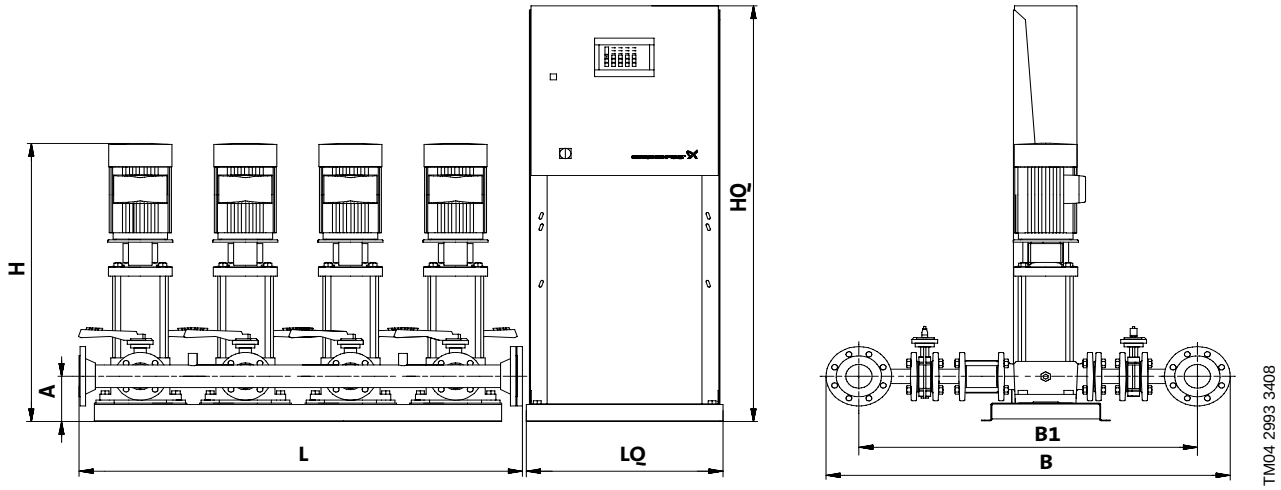


Fig. 18 Hydro 1000 booster set with a control cabinet mounted on a separate base plate.

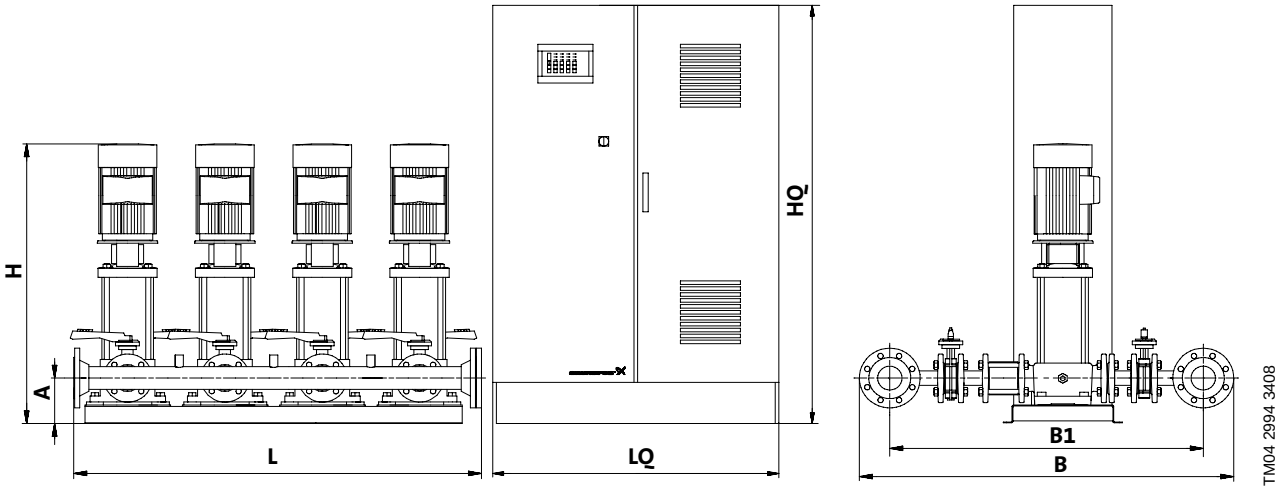


Fig. 19 Hydro 1000 booster set with a floor-mounted control cabinet.

Booster set with 4 pump

Pump type	Supply voltage [V]	Motor [kW]	Manifold Connection	A [mm]	B [mm]	B1 [mm]	L [mm]	LQ [mm]	H [mm]	HQ [mm]	Weight [kg]	Design
4CR 3-5	3x380-415V, PE	0.37	R 2½	120	726	650	1690	-	551	1460	217	A
4CR 3-6	3x380-415V, PE	0.55	R 2½	120	726	650	1690	-	569	1460	221	A
4CR 3-7	3x380-415V, PE	0.55	R 2½	120	726	650	1690	-	587	1460	221	A
4CR 3-8	3x380-415V, PE	0.75	R 2½	120	726	650	1690	-	651	1460	233	A
4CR 3-10	3x380-415V, PE	0.75	R 2½	120	726	650	1690	-	687	1460	233	A
4CR 3-12	3x380-415V, PE	1.1	R 2½	120	726	650	1690	-	723	1460	249	A
4CR 3-15	3x380-415V, PE	1.1	R 2½	120	726	650	1690	-	777	1460	249	A
4CR 5-5	3x380-415V, PE	0.75	R 2½	120	726	650	1690	-	642	1460	226	A
4CR 5-7	3x380-415V, PE	1.1	R 2½	120	726	650	1690	-	696	1460	242	A
4CR 5-8	3x380-415V, PE	1.1	R 2½	120	726	650	1690	-	723	1460	242	A
4CR 5-9	3x380-415V, PE	1.5	R 2½	120	726	650	1690	-	816	1460	274	A
4CR 5-10	3x380-415V, PE	1.5	R 2½	120	726	650	1690	-	843	1460	274	A
4CR 5-13	3x380-415V, PE	2.2	R 2½	120	726	650	1690	-	964	1460	290	A
4CR 5-15	3x380-415V, PE	2.2	R 2½	120	726	650	1690	-	1018	1460	290	A
4CR 10-3	3x380-415V, PE	1.1	DN 80	150	1000	800	1720	-	678	1460	305	A
4CR 10-4	3x380-415V, PE	1.5	DN 80	150	1000	800	1720	-	774	1460	337	A
4CR 10-5	3x380-415V, PE	2.2	DN 80	150	1000	800	1720	-	804	1460	349	A
4CR 10-6	3x380-415V, PE	2.2	DN 80	150	1000	800	1720	-	834	1460	349	A
4CR 10-7	3x380-415V, PE	3	DN 80	150	1000	800	1720	-	923	1460	377	A
4CR 10-8	3x380-415V, PE	3	DN 80	150	1000	800	1720	-	953	1460	377	A
4CR 10-9	3x380-415V, PE	3	DN 80	150	1000	800	1720	-	983	1460	377	A
4CR 10-10	3x380-415V, PE	4	DN 80	150	1000	800	1720	-	1050	1460	434	A
4CR 15-2	3x380-415V, PE	2.2	DN 100	160	1170	950	1750	-	806	1460	401	A
4CR 15-3	3x380-415V, PE	3	DN 100	160	1170	950	1750	-	870	1460	421	A
4CR 15-4	3x380-415V, PE	4	DN 100	160	1170	950	1750	-	952	1460	478	A
4CR 15-5	3x380-415V, PE	4	DN 100	160	1170	950	1750	-	997	1460	478	A
4CR 15-6	3x380-415V, PE	5.5	DN 100	160	1170	950	1950	-	1093	1460	560	A
4CR 15-7	3x380-415V, PE	5.5	DN 100	160	1170	950	1950	-	1138	1460	572	A
4CR 15-8	3x380-415V, PE	7.5	DN 100	160	1170	950	1950	-	1183	1460	584	A
4CR 20-2	3x380-415V, PE	2.2	DN 100	160	1170	950	1750	-	806	1460	466	A
4CR 20-3	3x380-415V, PE	4	DN 100	160	1170	950	1750	-	907	1460	466	A
4CR 20-4	3x380-415V, PE	5.5	DN 100	160	1170	950	1950	-	1003	1460	560	A
4CR 20-5	3x380-415V, PE	5.5	DN 100	160	1170	950	1950	-	1048	1460	568	A
4CR 20-6	3x380-415V, PE	7.5	DN 100	160	1170	950	1950	-	1093	1460	576	A
4CR 20-7	3x380-415V, PE	7.5	DN 100	160	1170	950	1950	-	1138	1460	580	A
4CR 32- 2-2	3x380-415V, PE	3	DN 150	175	1235	950	2042	430	980	1460	660	D
4CR 32- 2	3x380-415V, PE	4	DN 150	175	1235	950	2042	430	1017	1460	660	D
4CR 32- 3	3x380-415V, PE	5.5	DN 150	175	1235	950	2042	600	1106	1460	781	D
4CR 32- 4	3x380-415V, PE	7.5	DN 150	175	1235	950	2042	600	1176	1460	813	D
4CR 32- 5	3x380-415V, PE	11	DN 150	215	1235	950	2042	600	1504	1460	986	D
4CR 32- 6	3x380-415V, PE	11	DN 150	215	1235	950	2042	600	1574	1460	998	D
4CR 45-1	3x380-415V, PE	4	DN 200	210	1390	1050	2044	430	1001	1460	802	D
4CR 45-2-2	3x380-415V, PE	5.5	DN 200	210	1390	1050	2044	600	1100	1460	822	D
4CR 45-2	3x380-415V, PE	7.5	DN 200	210	1390	1050	2044	600	1100	1460	912	D
4CR 45-3	3x380-415V, PE	11	DN 200	250	1390	1050	2044	600	1438	1460	1028	D
4CR 45-4	3x380-415V, PE	15	DN 200	250	1390	1050	2044	600	1497	1460	1133	D
4CR 64-2-2	3x380-415V, PE	7.5	DN 200	210	1390	1050	2044	600	1105	1460	1040	D
4CR 64-2	3x380-415V, PE	11	DN 200	250	1390	1050	2044	600	1323	1460	1070	D
4CR 64-3-1	3x380-415V, PE	15	DN 200	250	1390	1050	2044	600	1424	1460	1196	D
4CR 64-4-2	3x380-415V, PE	18.5	DN 200	250	1390	1050	2044	600	1547	1500	1356	D
4CR 64-4	3x380-415V, PE	22	DN 200	250	1390	1050	2044	600	1639	1500	1488	D
4CR 90-1	3x380-415V, PE	7.5	DN 250	250	1605	1200	2051	600	1072	1460	1151	D
4CR 90-2-2	3x380-415V, PE	11	DN 250	250	1605	1200	2051	600	1382	1460	1151	D
4CR 90-2	3x380-415V, PE	15	DN 250	250	1605	1200	2051	600	1361	1500	1434	D
4CR 90-3-2	3x380-415V, PE	18.5	DN 250	250	1605	1200	2051	600	1493	1500	1434	D
4CR 90-3	3x380-415V, PE	22	DN 250	250	1605	1200	2051	600	1585	1500	1566	D
4CR 90-4-2	3x380-415V, PE	30	DN 250	250	1605	1200	2051	700	1713	1700	1898	C

Design A: Hydro 1000 booster set with a control cabinet mounted on the same base plate as the pumps.
Design B: Hydro 1000 booster set with a control cabinet centred on the base plate.
Design C: Hydro 1000 booster set with a floor-mounted control cabinet.
Design D: Hydro 1000 booster set with a control cabinet mounted on a separate base plate.
Dimensions may vary by ± 20 mm.

Diaphragm tank

Diaphragm tank selection

To ensure stable operation, the **Hydro 1000** booster set must be installed in combination with an adequate diaphragm tank.

The size of the obligatory diaphragm tank can be calculated by means of the followong formula:

$$V = \frac{Q \times 1000 \times (1 + (cut - in) + \Delta p)}{4 \times n_{max} \times \Delta p} \times \frac{1}{k}$$

V = Tank volume [litres]

Q = Mean flow [m^3/h]

Δp = Difference between cut-in and cut-out pressure

Cut-in = Cut-in pressure (lowest) [bar]

n_{max} = Max. number of starts/stops per hour

k = Constant for diaphragm tank pre-charge pressure: k = 0.9

The diaphragm tank pre-charge pressure is set to 0.9 times the lowest cut-in pressure.

The diaphram tank may also be selected on the basis of the below tables in which the following values have been used:

Motors up to and including 3.0 kW: n = 30 to 100
Motors above 3.0 kW: n = 10 to 30
Diff. between cut-in and cut-out: Δp = 1.5 [bar]

Grundfos pumps and motors are not subject to any particular limitations as they are tested up to 100 start/stops per hour.

However when dimensioning the diaphragm tank volume the following parameters may also be considered:

- maximum number of start/stops per hour allowed by local regulations
- maximum number of start/stops per hour described by the system designer
- temperature and ventilation conditions
- available space for diaphragm tank installation.

Minimum diaphragm tank volume [litres] at Δp = 1.5 [bar] and n_{max} = 30:

Pump type	Minimum diaphragm tank volume [litres]							
	Cut-in 1 [bar]	Cut-in 2 [bar]	Cut-in 3 [bar]	Cut-in 4 [bar]	Cut-in 5 [bar]	Cut-in 6 [bar]	Cut-in 7 [bar]	Cut-in 8 [bar]
CR 3	65	84	102	120	140	158	176	195
CR 5	108	135	170	200	232	263	294	324
CR 10	173	222	272	321	370	420	469	518
CR 15	346	444	543	642	741	839	938	1037
CR 20	432	556	679	802	926	1049	1173	1296
CR 32	691	889	1086	1284	1481	1679	1876	2074
CR 45	972	1250	1528	1805	2083	2361	2639	2916
CR 64	1383	1778	2173	2568	2963	3358	3753	4148
CR 90	1944	2500	3055	3611	4166	4722	5277	5833

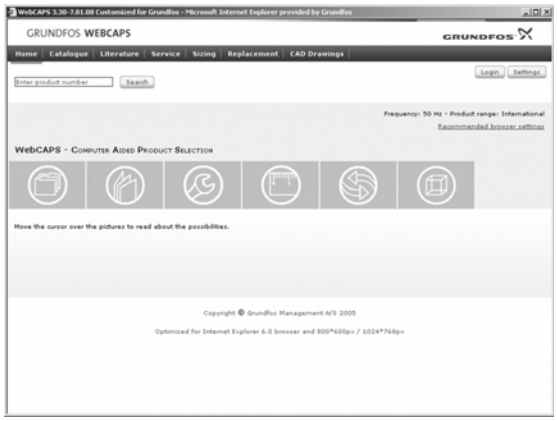
Minimum diaphragm tank volume [litres] at Δp = 1.5 [bar] and n_{max} = 100:

Pump type	Minimum diaphragm tank volume [litres]							
	Cut-in 1 [bar]	Cut-in 2 [bar]	Cut-in 3 [bar]	Cut-in 4 [bar]	Cut-in 5 [bar]	Cut-in 6 [bar]	Cut-in 7 [bar]	Cut-in 8 [bar]
CR 3	20	25	30	36	42	47	53	59
CR 5	33	41	51	60	70	78	88	98
CR 10	52	67	81	96	111	126	141	156
CR 15	104	133	163	193	222	252	281	311
CR 20	130	167	204	241	278	315	352	389
CR 32	207	267	326	385	444	504	563	622
CR 45	292	375	458	542	625	708	792	875
CR 64	415	533	652	770	889	1007	1126	1244
CR 90	583	750	917	1083	1250	1417	1583	1750

Refer to the cut-in pressure closest to the lowest setting of the selected booster set.

Further product documentation

WebCAPS



WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

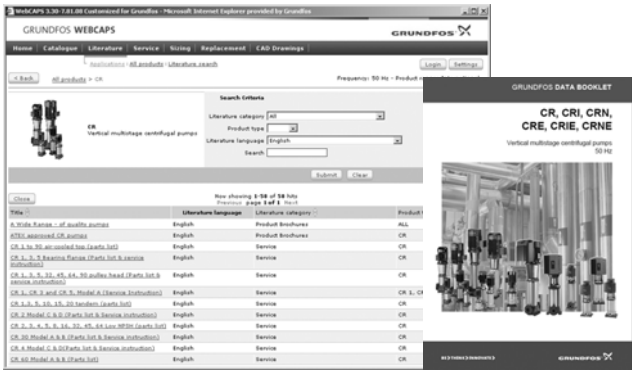
WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

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

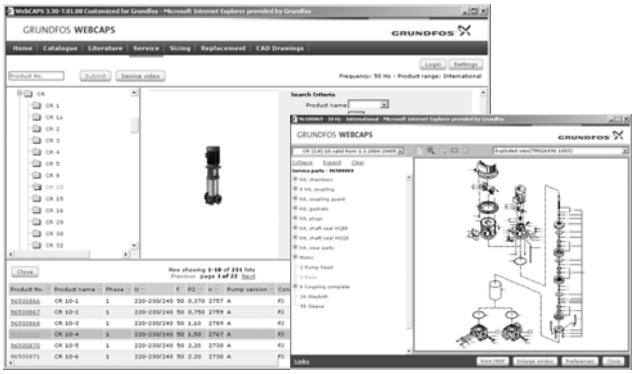
Catalogue

With a starting point in areas of applications and pump types, this section 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

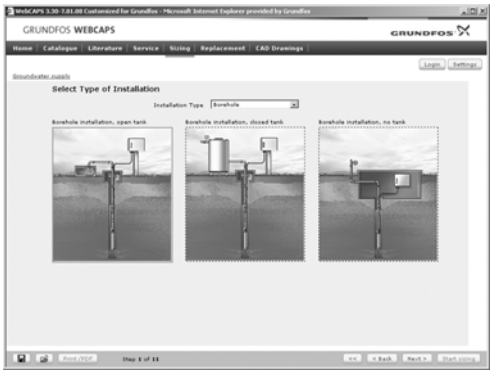
In this section you can access all the lastest documents of a given pump, such as
- data booklets
- Installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures, etc.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and cancelled Grundfos pumps.
Furthermore, this section contains service videos showing you how to replace service parts.

Further product documentation



Sizing

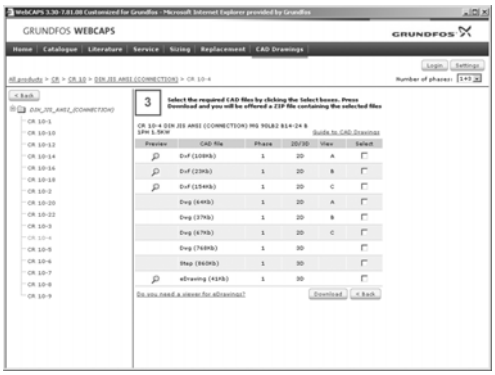
With a starting point in different application areas and installation examples, this section gives easy step-by-step instructions in how to

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

Replacement

In this section you find a guide to select and compare 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. After having specified the installed pump, the guide suggests 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.

The following formats are available in WebCAPS:

<u>2-dimensional drawings</u>

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

<u>3-dimensional drawings</u>

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

WinCAPS

Fig. 20 WinCAPS CD-ROM

WinCAPS is a **Win**dows-based **C**omputer **A**ided **P**roduct **S**election 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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