

CRE, CRIE, CRNE

Vertical multistage centrifugal E-pumps

50/60 Hz



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Pump

The CR and CRE pumps are non-self-priming, vertical multistage centrifugal pumps.

The pumps are available with a Grundfos standard motor (CR pumps) or a Grundfos frequency-controlled motor (CRE pumps).

The pump consists of a pump head and a base. The chamber stack and the 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 fitted with a maintenance-free mechanical shaft seal of the cartridge type.

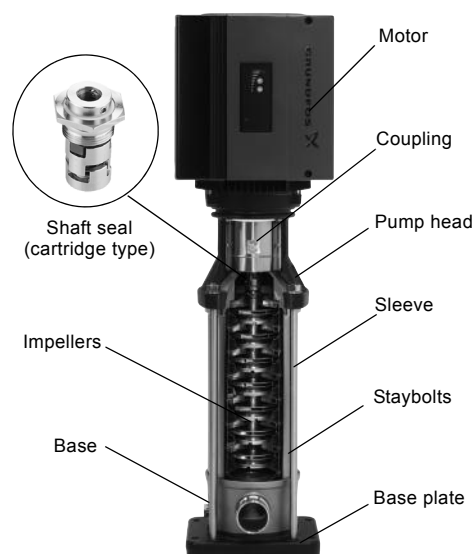


Fig. 3 CR pump

GR1003281 - GR33395

Motor

MGE motors

MGE motors incorporate thermal protection against slow overload and blocking (IEC 34-11: TP 211).

CRE, CRIE and CRNE pumps require no external motor protection.

Grundfos blueflux®

Grundfos blueflux® technology represents the best from Grundfos within energy-efficient motors and frequency converters. Grundfos blueflux® solutions either meet or exceed legislative requirements, such as the EuP IE3 and IE4 grades.



Fig. 4 Grundfos blueflux® label

TM04 9901 0814

To read more about the energy challenge and Grundfos blueflux®, please visit grundfos.com/energy

Frequency-controlled MGE motors

CRE, CRIE and CRNE pumps are fitted with a totally enclosed, fan-cooled, frequency-controlled MGE motor with principal dimensions to EN standards.

Electrical tolerances comply with EN 60034.

CRE, CRIE, CRNE pumps from 0.37 to 1.1 kW are fitted with single-phase MGE motors as standard.

The 1.5 kW single-phase MGE motors are available on request.

CRE, CRIE, CRNE pumps from 1.5 to 22 kW are fitted with three-phase MGE motors as standard. The 0.37 to 1.1 kW three-phase MGE motors are available on request.

See WinCAPS or WebCAPS on www.grundfos.com.

Electrical data

MGE motor CRE, CRIE, CRNE	
Mounting designation	Up to 4 kW: V18 5.5 kW and up: V1
Insulation class	F
Efficiency class	0.75 to 2.2 kW: above IE4 level 3 to 22 kW: IE3 0.37 and 0.55 kW motors are not covered by the IE classification.
Enclosure class	0.37 to 2.2 kW: IP55 (IP66 optional) 3-22 kW: IP55
Supply voltage Tolerance: - 10 %/+ 10 %	P2: 0.37 - 1.5 kW: 1 x 200-240 V P2: 0.37 - 2.2 kW: 3 x 380-500 V P2: 3-22 kW: 3 x 380-480 V
Supply frequency	50/60 Hz

Optional motors

The Grundfos standard range of motors meets a wide variety of system requirements.

For special applications or operating conditions, we offer custom-built motors, such as:

- ATEX-approved motors
- MG motors with anti-condensation heating unit
- motors with thermal protection.

MGE 3 to 7.5 kW

Advanced I/O module

The Advanced I/O module is the standard functional module in all MGE motors from 3 to 7.5 kW.

The module has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required.

The Advanced I/O module has these connections:

- start/stop terminals
- three digital inputs
- one setpoint input
- one sensor input
- one analog output
- GENIbus connection.

Connection terminals

As a precaution, the wires to be connected to the following connection groups must be separated from each other by reinforced insulation in their entire lengths.

Inputs

- Start/stop (terminals 2 and 3)
- digital inputs (terminals 1 and 9, 10 and 9, 11 and 9)
- setpoint input (terminals 4, 5 and 6)
- sensor input (terminals 7 and 8)
- GENIbus (terminals B, Y and A).

All inputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits.

All control terminals are supplied with protective extra-low voltage (PELV), thus ensuring protection against electric shock.

Output (relay signal, terminals NC, C, NO)

The output is galvanically separated from other circuits.

Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.

- analog output (terminal 12 and 13).

Mains supply (terminals L1, L2, L3)

A galvanic separation must fulfil the requirements for reinforced insulation including creepage distances and clearances specified in EN 60335.

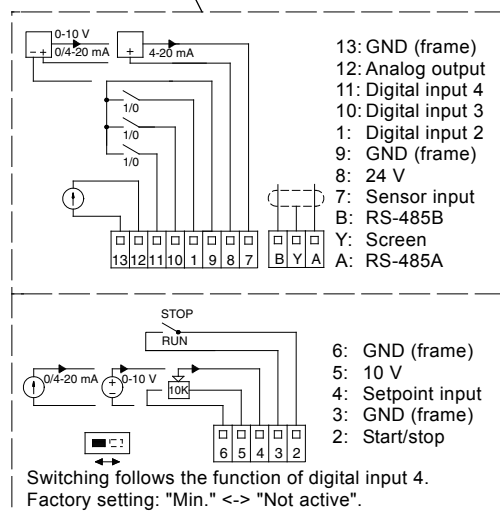
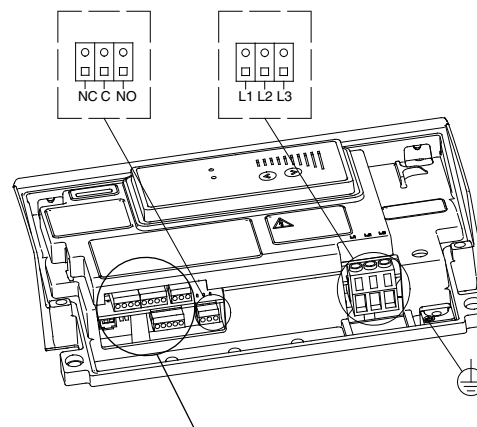


Fig. 6 Connection terminals, Advanced I/O module

TM02 9032 0904

Terminal box positions

As standard, the terminal box is fitted on the suction side of the pump.

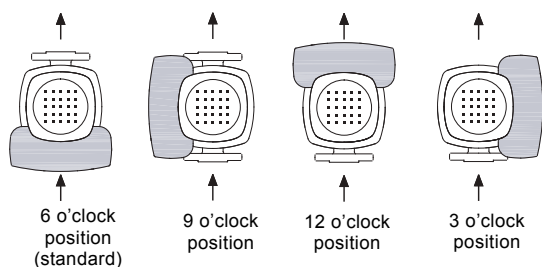


Fig. 8 Terminal box positions

TM03 3658 0606

Ambient temperature

Motor power [kW]	Motor make	Phase	Motor efficiency class	Maximum ambient temperature [°C]	Maximum altitude above sea level [m]
0.37 - 1.5	MGE	1	-*	50	1,000
0.37 - 2.2	MGE	3	-*	50	
3-22	MGE	3	IE3	40	

* Even though the MGE motor (0.37 to 2.2 kW) has no defined efficiency class, the efficiency is still above the IE4 level including both motor and electronics.

If the ambient temperature exceeds the above maximum ambient temperatures or the pump is installed at an altitude exceeding 1,000 metres, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

Viscosity

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

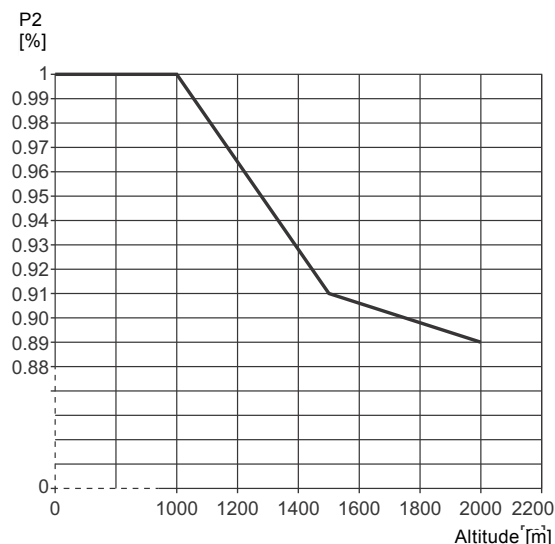
In such situations, the pump should be fitted with a larger motor. If in doubt, contact Grundfos.

Installation altitude

Installation altitude is the height above sea level of the installation site. Motors installed up to 1,000 metres above sea level can be loaded 100 %.

Motors installed more than 1,000 metres above sea level must not be fully loaded due to the low density and consequently low cooling effect of the air.

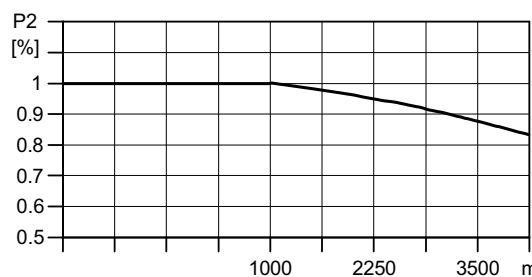
MGE 0.37 to 2.2 kW



TM05 6400 4712

Fig. 9 Derating of motor output (P2) in relation to altitude above sea level

MGE 3 to 22 kW



TM01 6728 3299

Fig. 10 Derating of motor output (P2) in relation to altitude above sea level

Control options

It is possible to communicate with CRE, CRIE, CRNE pumps via the following:

- control panel on the pump
- Grundfos R100 remote control
- Grundfos GO Remote
- central management system.

The purpose of controlling an E-pump is to monitor and control the pressure, temperature, flow and liquid level of the system.

Control panel on pump

The control panel on the E-pump terminal box makes it possible to change the setpoint settings manually.

MGE 0.37 to 2.2 kW

The operating condition of the pump is indicated by the Grundfos Eye on the control panel. See fig. 11, pos. A.

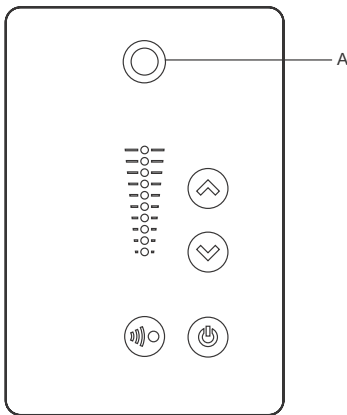


Fig. 11 Control panel on CRE pump, 0.37 to 2.2 kW

MGE 3 to 22 kW

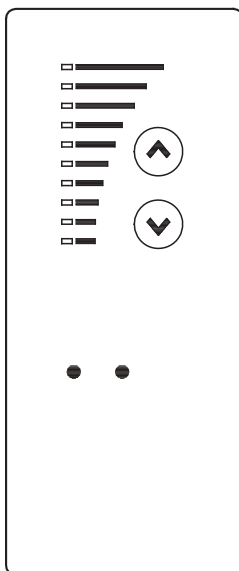


Fig. 12 Control panel on CRE pump, 3 to 22 kW

Grundfos GO Remote

The pump is designed for wireless radio or infrared communication with the Grundfos GO Remote.

The Grundfos GO Remote enables setting of functions and gives access to status overviews, technical product information and actual operating parameters.

The Grundfos GO Remote offers the following mobile interfaces (MI). See fig. 13.

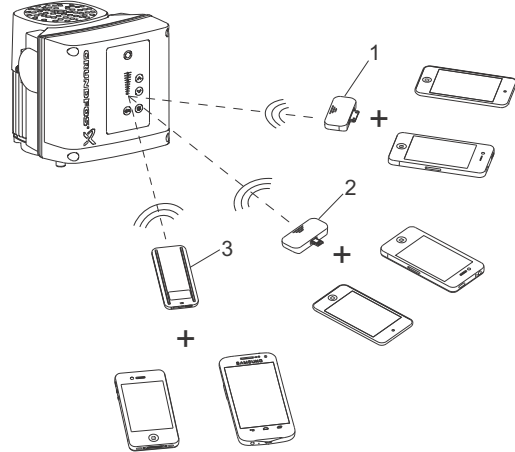


Fig. 13 Grundfos GO Remote communicating with the pump via radio or infrared connection (IR)

TM06 0744 0914

Pos.	Description
1	Grundfos MI 202: Add-on module which can be used in conjunction with an Apple iPhone or iPod with 30-pin connector and iOS 5.0 or later, e.g. fourth generation iPhone or iPod.
2	Grundfos MI 204: Add-on module which can be used in conjunction with an Apple iPhone or iPod with Lightning connector, e.g. fifth generation iPhone or iPod. (The MI 204 is also available together with an Apple iPod touch and a cover.)
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 device with Bluetooth connection.

TM05 5993 4312

TM02 8513 0304

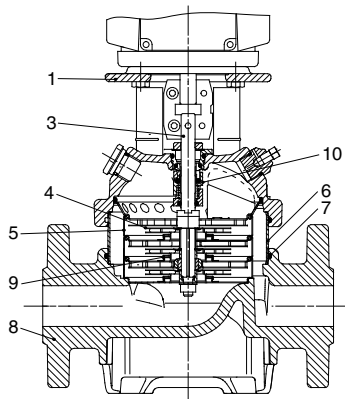
3. Construction

CRE 1, 3, 5, 10, 15 and 20



TM02 1198 0601 - GR7377 - GR7379

Sectional drawing



TM02 1194 1403

Materials, CRE

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	Cast iron EN-GJL-200	EN-JL 1030	ASTM 25B
3	Shaft	Stainless steel	1.4401 ¹⁾ 1.4057 ²⁾	AISI 316 AISI 431
4	Impeller	Stainless steel	1.4301	AISI 304
5	Chamber	Stainless steel	1.4301	AISI 304
6	Sleeve	Stainless steel	1.4301	AISI 304
7	O-ring for sleeve	EPDM or FKM	-	-
8	Base	Cast iron EN-GJL-200	EN-JL 1030	ASTM 25B
9	Neck ring	PTFE	-	-
10	Shaft seal		-	-
	Rubber parts	EPDM or FKM	-	-

1) CRE 1, 3, 5.

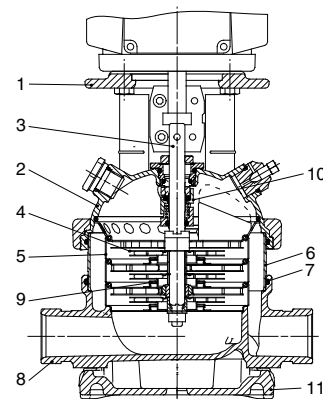
2) CRE 10, 15, 20.

CRIE, CRNE 1, 3, 5, 10, 15 and 20



TM02 1808 2001 - GR7373 - GR7375

Sectional drawing



TM02 1195 1403

Materials, CRIE and CRNE

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	Cast iron EN-GJL-200 ¹⁾	EN-JL1030	ASTM 25B
2	Pump head cover	Stainless steel	1.4408	CF 8M equal to AISI 316
3	Shaft	Stainless steel	1.4401 ²⁾ 1.4460 ³⁾ 1.4057 ⁴⁾	AISI 316 AISI 329
8	Base	Stainless steel	1.4408	CF 8M equal to AISI 316
9	Neck ring	PTFE	-	-
10	Shaft seal	Cartridge type	-	-
11	Base plate	Cast iron EN-GJL-200 ¹⁾	EN-JL 1030	ASTM 25B
	Rubber parts	EPDM or FKM	-	-
CRIE				
4	Impeller	Stainless steel	1.4301	AISI 304
5	Chamber	Stainless steel	1.4301	AISI 304
6	Sleeve	Stainless steel	1.4301	AISI 304
7	O-ring for sleeve	EPDM or FKM	-	-
CRNE				
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM or FKM	-	-

1) Stainless steel available on request.

2) CRIE, CRNE 1, 3, 5.

3) CRNE.

4) CRIE 10, 15, 20.

4. Type key

Pump

Example	CR	E	32	s	-4	-2	-A	-F	-G	-E	-HQQE
Type range: CR, CRI, CRN, CRT											
Pump with integrated frequency converter											
Flow rate [m ³ /h]											
Undersize impeller (all impellers) CR 1s, CRI 1s, CRN 1s											
Number of impellers											
Number of reduced-diameter impellers CR(E), CRN(E) 32, 45, 64, 90, 120, 150											
Code for pump version											
Code for pipe connection											
Code for materials											
Code for rubber parts											
Code for shaft seal											

Key to codes

Code	Description
Pump version	
A	Basic version
B	Oversize motor
D	Pump with pressure intensifier*
DW	Deep-well pump with ejector*
E	Pump with certificate or ATEX approval
F	Pump for high temperatures (with air-cooled top)
G	Multi-E slave*
H	Horizontal version
HS	High-pressure pump with high-speed MGE motor*
I	Different pressure rating
J	Pump with a different maximum speed
K	Pump with low NPSH
M	Magnetic drive
N	With sensor
P	Undersize motor
R	Horizontal version with bearing bracket
SF	High-pressure pump
V	Multi-E master*
X	Special version
Pipe connection	
A	Oval flange
B	NPT thread
CA	FlexiClamp
CX	Triclamp*
F	DIN flange
G	ANSI flange
J	JIS flange
N	Changed diameter of ports
P	PJE coupling
X	Special version
Materials	
A	Basic version
AD	Carbon-graphite-filled PTFE (bearings)
G	Wetted parts EN 1.4401/AISI 316
GI	All parts stainless steel, wetted parts EN 1.4401/AISI 316
I	Wetted parts EN 1.4301/AISI 304
II	All parts stainless steel, wetted parts EN 1.4301/AISI 304
K	Bronze (bearings)
S	SiC bearings + PTFE neck rings
X	Special version
SX	Carbon free

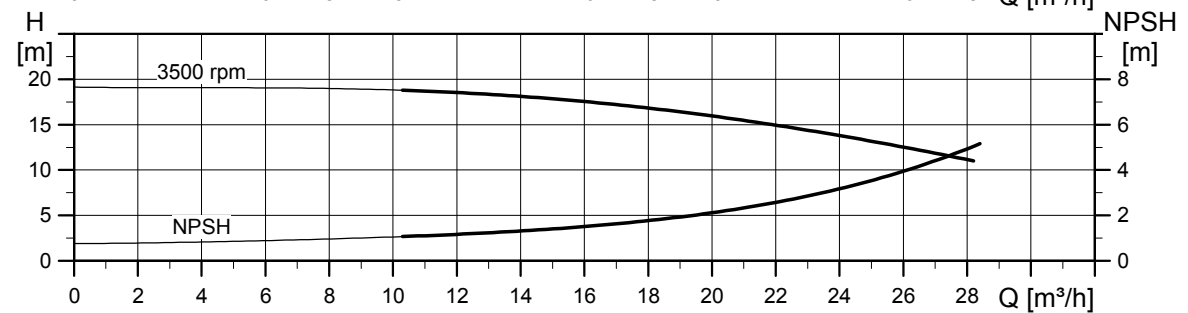
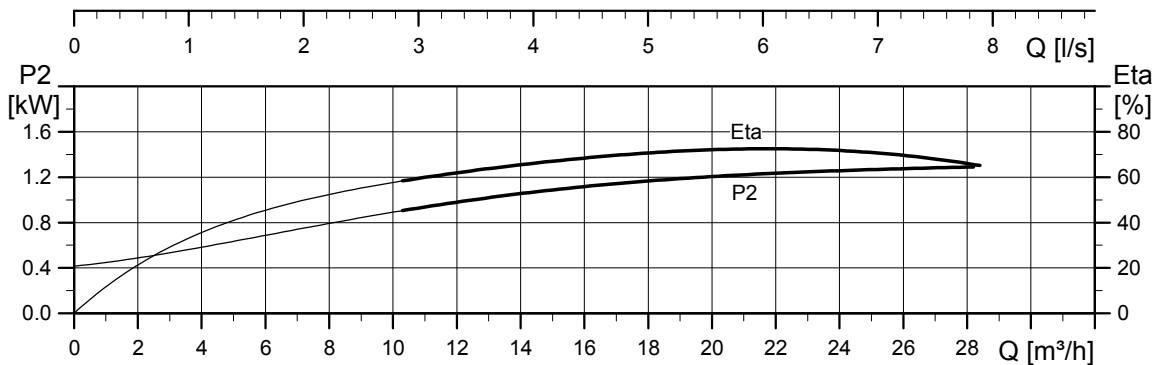
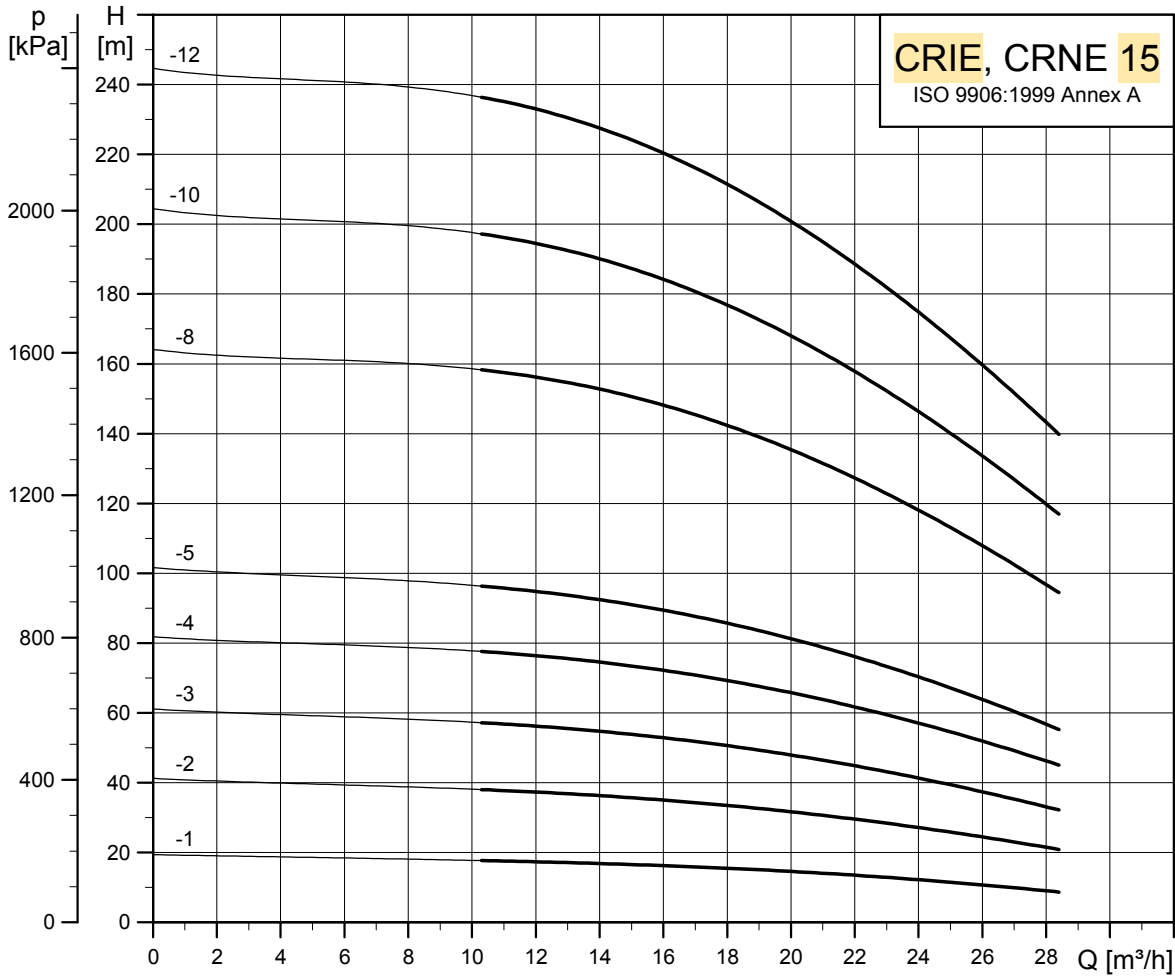
Code	Description
Code for rubber parts in pump	
E	EPDM
F	FXM (Fluoraz [®])
K	FFKM (Kalrez [®])
V	FKM (Viton [®])
Shaft seal type designation	
A	O-ring seal with fixed driver*
D	Balanced O-ring seal*
H	Balanced cartridge seal with O-ring
K	Type M as cartridge seal*
O	Double seal, back-to-back*
P	Double seal, tandem*
X	Special version*
Seal face material	
B	Carbon, synthetic resin-impregnated
C	Other types of carbon*
H	Cemented tungsten carbide, embedded (hybrid)*
U	Cemented tungsten carbide
Q	Silicon carbide
X	Other ceramics*
Secondary seal material (rubber parts)	
E	EPDM
F	FXM (Fluoraz [®])
K	FFKM (Kalrez [®])
V	FKM (Viton [®])

* Option. See the CR "Custom-built pumps" data booklet available on www.grundfos.com (WebCAPS).

Shaft seal

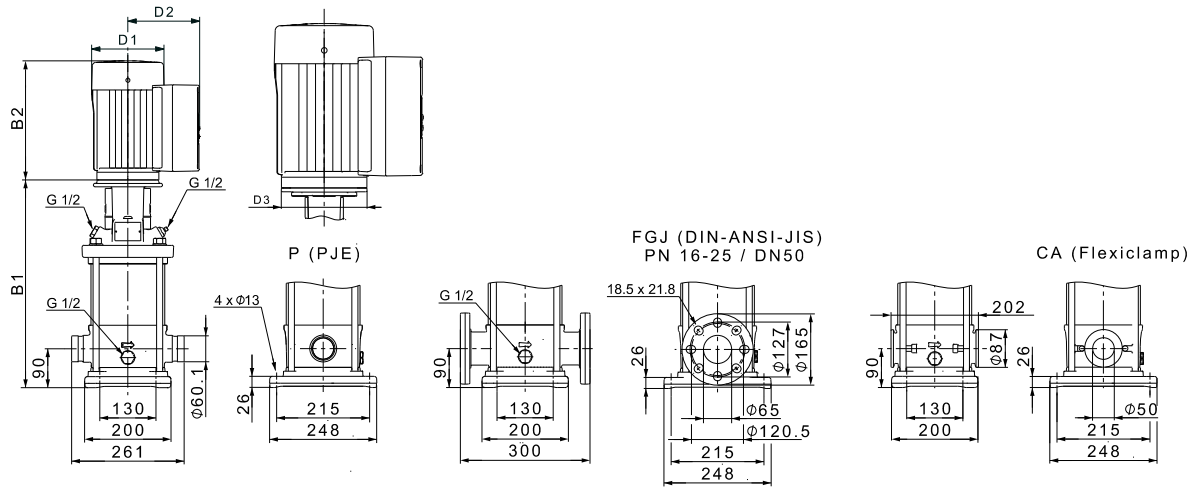
Example	-H	-Q	-Q	-E
Shaft seal type designation				
Material of rotating seal face				
Material of stationary seal face				
Material of secondary seal (rubber parts)				

CRIE, CRNE 15



TM50 6842 0313

Dimensional sketches



TM05 9400 3713

Dimensions and weights

Pump type	P ₂ [kW]	CRIE/CRNE								
		Dimension [mm]						Net weight [kg]		
		PJE/CA		DIN flange		D1	D2	D3	PJE/ CA	DIN flange
		B1	B1+B2	B1	B1+B2					
CRIE/CRNE 15-1	1.5	413	687	413	687	122	158	135	39	43
CRIE/CRNE 15-2	3	418	753	418	753	198	177	160	57	61
CRIE/CRNE 15-3	4	463	835	463	835	220	188	160	69	74
CRIE/CRNE 15-4	5.5	540	931	540	931	220	188	300	87	92
CRIE/CRNE 15-5	7.5	585	976	585	976	260	213	300	92	97
CRIE/CRNE 15-8	11	812	1283	812	1283	314	308	350	184	189
CRIE/CRNE 15-10	15	902	1373	902	1373	314	308	350	203	207
CRIE/CRNE 15-12	18.5	992	1507	992	1507	314	308	350	218	223

Pumps fitted with 1.5 kW three-phase MGE motors can as an option be fitted with single-phase MGE motors. See WinCAPS or WebCAPS for dimensions.

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ECM: 1131854

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