

Pump

2 x CR, CRN is a double-pump system capable of generating up to 40 bar.

The system consists of two pumps connected in series. One pump is a standard pump for feeding. The other pump is a high-pressure pump.

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

CR

The base and pump head are made of cast iron.

CRN

The base, pump head and all components in contact with the pumped liquid are made of stainless steel.

Operating conditions

Liquid temperature, CR:	-30 to +120 °C.
Liquid temperature, CRN:	-40 to +120 °C.
Ambient temperature:	See page 12.
Minimum inlet pressure:	See page 14.
Maximum inlet pressure:	20 bar.
Maximum operating pressure:	40 bar.

Materials

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	CR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		CRN: Stainless steel	1.4408	A 351 CF8M
2	Motor stool (11-45 kW)	Cast iron EN-GJL-200	EN-JL1030	A48-30 B
		Motor stool (55-75 kW)	Cast iron EN-GJS-500-7	EN-JS1050
3	Shaft	Stainless steel	CR: 1.4057 CRN: 1.4462	AISI 431 SAF 2205
4	Impeller	Stainless steel	CR: 1.4301	CR: AISI 304
5	Chamber		CRN: 1.4401	CRN: AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, FXM		
8	Base	CR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		CRN: Stainless steel	1.4408	A 351 CF8M
9	Base plate	Cast iron EN-GJS-500-7 ¹⁾	EN-JS1050	A 536 65-45-12
10	Neck ring	PTFE		
11	Shaft seal ²⁾	SiC/SiC (∅22) Carbon/SiC (∅32)		
12	Support bearing	PTFE		
13	Bearing ring	SiC/SiC		
14	Base plate, CRN only	Cast iron EN-GJS-500-7 ¹⁾	EN-JS1050	A 536 65-45-12
		Other rubber parts	EPDM, FKM, FFKM, FXM	

¹⁾ Stainless steel available on request.

²⁾ ∅22 mm shaft, 11-45 kW.
∅32 mm shaft, 55-75 kW.

Type keys

CRNE 1 and 3 HS

Example	CRNE 3 -23 HS -P -G -E -HQQE
Type range: CRNE	
Flow rate [m ³ /h]	
Number of impellers	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

CRN 3, 5, 10, 15 and 20 SF

Example	CRN 5 -34 -SF -P -G -E -HQQE
Type range: CRN	
Flow rate [m ³ /h]	
Number of impellers	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

CRN 32, 45, 64, 90, 120 and 150

Example	CRN 32 -2 -1 -A -F -G -E -HQQE
Type range: CR, CRN	
Flow rate [m ³ /h]	
Number of stages	
Number of reduced-diameter impellers, if any	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

Codes

Example	A	-F	-A	-E	-H	QQ	E
Pump version							
A	Basic version						
B	Oversize motor						
E	Pump with certificate/approval						
F	CR pump for high temperatures (air-cooled top assembly)						
H	Horizontal version						
HS	High-pressure pump with high-speed MGE motor						
I	Different pressure rating						
J	Pump w/different max. speed ¹⁾						
K	Pump with low NPSH						
M	Magnetic drive						
N	Fitted with sensor						
P	Undersize motor						
R	Horizontal version with bearing bracket						
SF	High-pressure pump						
X	Special version						
Pipe connection							
A	Oval flange						
B	NPT thread						
CA	FlexiClamp (CRN(E) 1, 3, 5, 10, 15, 20)						
F	DIN flange						
G	ANSI flange						
J	JIS flange						
N	Changed diameter of ports						
P	PJE coupling						
X	Special version						
Materials							
A	Basic version, cast iron/1.4301						
D	Carbon-graphite-filled PTFE (bearings)						
G	Wetted parts 1.4401/AISI 316						
GI	All parts of stainless steel, wetted parts 1.4401/AISI 316						
I	Wetted parts 1.4301/AISI 304						
II	All parts of stainless steel, wetted parts 1.4301/AISI 304						
K	Bronze (bearings)						
S	SiC bearings + PTFE neck rings						
X	Special version						
Rubber parts							
E	EPDM						
F	FXM						
K	FFKM						
V	FKM						
Shaft seal							
H	Balanced cartridge seal						
B	Carbon						
Q	Silicon carbide						
U	Tungsten carbide						
E	EPDM						
F	FXM						
K	FFKM						
V	FKM						

¹⁾ The output frequency of the frequency converter of the motor differs from the standard 50 Hz. In this situation, the frequency is approximately 75 Hz.

Operating range of shaft seal for high-pressure pump

The actual operating range of the shaft seal for the high-pressure pump depends on operating pressure, type of shaft seal and liquid temperature.

The following temperature ranges apply to clean water.

Standard shaft seal	Motor size [kW]	Description	Temperature range [°C]
HQQE	0.37 - 45	O-ring, cartridge, balanced seal, SiC/SiC, EPDM	-40 to +120
HBQE ¹⁾	55 - 75	O-ring, cartridge, balanced seal, carbon/SiC, EPDM	0 to +120
HQQV	0.37 - 45	O-ring, cartridge, balanced seal, SiC/SiC, FKM	-20 to +90
HBQV ¹⁾	55 - 75	O-ring, cartridge, balanced seal, carbon/SiC, FKM	0 to +90

¹⁾ Available as HQQE and HQQV on request.

Motor protection

Grundfos MG and Siemens motors

Single-phase Grundfos motors have a built-in thermal overload switch (IEC 34-11: TP 211).

Three-phase Grundfos motors from 3 to 22 kW have a built-in thermistor (PTC) according to DIN 44082 (IEC 34-11: TP 211).

Three-phase motors **must** be connected to a motor-protective circuit breaker according to local regulations.

Grundfos MGE motors

The MGE motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).

CRNE pumps require no external motor protection.

Terminal box positions

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

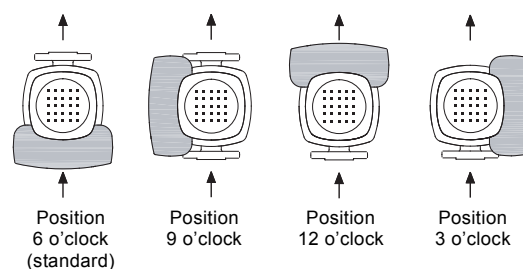


Fig. 9 Terminal box positions

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