

CRNE 1 and 3 HS



Fig. 3 CRNE 3-HS pump

TM02 8470 0204

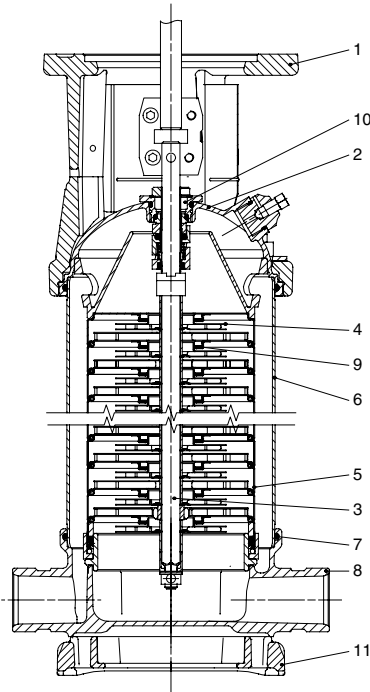


Fig. 4 Sectional drawing of CRNE 1 and 3-HS

TM02 1688 2803

Pump

CRNE-HS is a single pump solution capable of generating up to 692 psi.

The CRNE-HS pump is a non self-priming, vertical multistage centrifugal pump fitted with a high speed Grundfos motor with integrated frequency converter, type MLE.

The pump consists of a base and a pump head. The pump body and the outer sleeve are secured between the base and the pump head by means of staybolts.

The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down, resulting in the pumped liquid flowing in the opposite direction.

This (special) design ensures that the shaft seal is not affected by the pump discharge pressure.

The base, the pump head cover as well as vital pump components are made from stainless steel. The base has in-line suction and discharge ports.

The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions

- Liquid temperature: -4°F to +248°F.
- Maximum ambient temperature: +104°F.
- Minimum inlet pressure: 29 psi.
- Maximum inlet pressure: 145/362 psi.
(static/operation).
- Maximum operating pressure: 725 psi.

Materials

Pos.	Description	Materials	AISI/ASTM
1	Pump head	Cast iron EN-GJL-200	A 48-30 B
2	Pump head cover	Stainless steel	CF8M ¹⁾
3	Shaft	Stainless steel	AISI 316
4	Impeller	Stainless steel	AISI 316
5	Chamber	Stainless steel	AISI 316
6	Outer sleeve	Stainless steel	AISI 316
7	O-ring for outer sleeve	EPDM or FKM	
8	Base	Stainless steel	CF8M ¹⁾
9	Neck ring	PTFE	
10	Shaft seal	Cartridge type	
11	Base plate	Cast iron EN-GJL-200 ²⁾	ASTM 25B
	Rubber parts	EPDM or FKM	
	Bearing rings	Silicon carbide	

¹⁾ CF8M is cast equivalent of AISI 316 stainless steel.

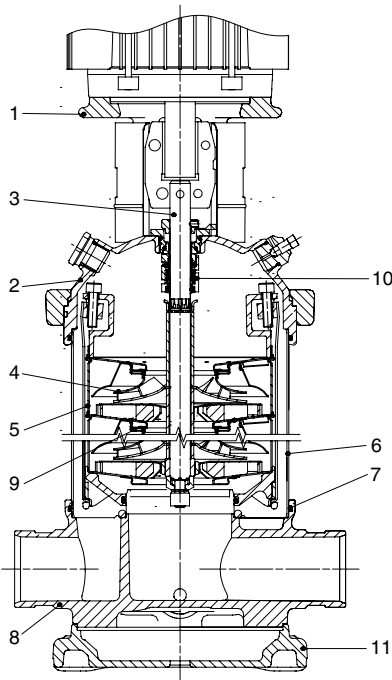
²⁾ Stainless steel is available on request.

CRN 5, 10, 15, 20 SF



GR7767

Fig. 5 CRN 15 SF



TM02 7336 3203

Fig. 6 Sectional drawing of CRN 5, 10, 15, 20 SF

Pump

CRN-SF is a double pump system capable of generating up to 696 psi.

The system consists of two pumps in series. The first pump is a standard pump for feeding. The second pump is a high pressure pump especially designed for high pressures. This data booklet covers technical information about the high pressure pump.

The CRN-SF pump is a non self-priming, vertical multi-stage centrifugal pump fitted with a Grundfos specified TEFC-motor.

The pump consists of a base and a pump head. The pump body and the outer sleeve are secured between the base and the pump head by means of staybolts.

The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down, resulting in the pumped liquid flowing in the opposite direction.

The base, the pump head cover as well as vital pump components are made from stainless steel. The base has in-line suction and discharge ports.

The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions

Liquid temperature:	-4°F to +248°F.
Maximum ambient temperature:	+104°F.
Minimum inlet pressure:	29 psi.
Maximum inlet pressure:	145/362 psi (static/operation).
Maximum operating pressure:	725 psi.

Materials

Pos.	Description	Materials	AISI/ASTM
1	Pump head	Cast iron	
2	Pump head cover	Stainless steel	CF8M ¹⁾
3	Shaft	Stainless steel	AISI 316 ³⁾ AISI 329 ⁴⁾
4	Impeller	Stainless steel	AISI 316
5	Chamber	Stainless steel	AISI 316
6	Outer sleeve	Stainless steel	AISI 316
7	O-ring for outer sleeve	EPDM or FKM	
8	Base	Stainless steel	CF8M ¹⁾
9	Neckring	PTFE	
10	Shaft seal	Cartridge type	
11	Base plate	Cast iron EN-GJL-200 ²⁾	A 48-30 B
	Rubber parts in pump	Same as in shaft seal	EPDM or FKM
	Bearing rings	Silicon carbide	

¹⁾ CF8M is cast equivalent of AISI 316 stainless steel.

²⁾ Stainless steel is available on request.

³⁾ CRN 5.

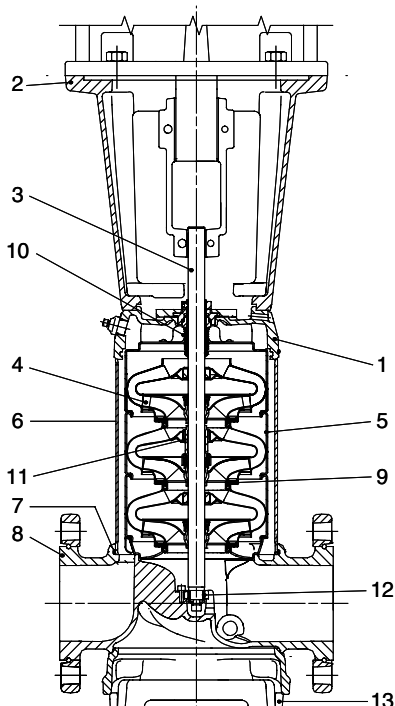
⁴⁾ CRN 10, 15, 20.

2 x CR 32, 45, 64 and 90 2 x CRN 32, 45, 64 and 90



TM02 1724 1801

Fig. 7 2 x CR, CRN double pump system



TM01 1837 1403

Fig. 8 Sectional drawing of a CR(N) 32, 45, 64, 90 pump

Pump

2 x CR, CRN is a double pump system capable of generating up to 557 psi. The system consists of two pumps in series. The first pump is a standard pump for feeding. The second pump is a high pressure pump and can be a specially designed pump for high pressures. This data booklet covers technical information about the high pressure pump.

The CR, CRN high pressure pump is a non-self-priming, vertical multistage centrifugal pump fitted with a Grundfos specified motor and a specially developed high-pressure shaft seal. When necessary it includes a special pump sleeve and a bearing flange which make the pump capable of handling higher pressures.

CRN

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

CR

The base and the pump head are made of ductile cast iron.

Operating conditions

Liquid temperature: -22°F to $+248^{\circ}\text{F}$.
 Maximum ambient temperature: $+104^{\circ}\text{F}$.
 Maximum inlet pressure: 218/362 psi.
 (with bearing flange if necessary) (static/operation)
 Maximum operating pressure: 580 psi.

Materials

Pos.	Description	Materials	AISI/ASTM
1	Pump head	CR: Ductile iron	ASTM EN-GJS-500-7
		CRN: Stainless steel	CF8M ¹⁾
2	Motor stool	Cast iron EN-GJL-200	ASTM 25B
3	Shaft	Stainless steel	AISI 431 ³⁾
			SAF 2205 ⁴⁾
4	Impeller	Stainless steel	AISI 316
5	Chamber	Stainless steel	AISI 316
6	Outer sleeve	Stainless steel	AISI 316
7	O-ring for outer sleeve	EPDM or FKM	
8	Base	CR: Ductile iron	ASTM EN-GJS-500-7
		CRN: Stainless steel	CF8M ¹⁾
9	Neck ring	Carbon-graphite filled PTFE	
10	Shaft seal	Cartridge type	
11	Bearing ring	Bronze/carbon- graphite filled PTFE	
12	Bottom bearing ring	TC/TC	
13	Base plate	Ductile iron ²⁾	ASTM EN-GJS-500-7
		Stainless steel	CF8M ¹⁾
	Rubber parts	EPDM or FKM	

¹⁾ CF8M is cast equivalent of AISI 316 stainless steel.

²⁾ Stainless steel is available on request.

³⁾ CR32,45,64,90.

⁴⁾ CRN 32,45,64,90.

Operating range of the shaft seal for the 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.

Operating conditions of the shaft seal for the CR high pressure pump

Shaft seal	Description	Max. temp. range [°F]
HQQE	O-ring (cartridge) (balanced seal), SiC/SiC, EPDM	-22 to +248
HQQV	O-ring (cartridge) (balanced seal), SiC/SiC, FKM	-4 to +194
HUBE	O-ring (cartridge) (balanced seal), TC/carbon, EPDM	+32 to +248
HUBV	O-ring (cartridge) (balanced seal), TC/carbon, FKM	+32 to +194

Pumped liquids

Thin, non-explosive liquids, not containing solid particles or fibers. The liquid must not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than that of water, oversized motors must be used, if required.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH value, temperature and content of chemicals, oils, etc.

Please note that aggressive liquids (e.g. sea water and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

Performance curves

The guidelines below apply to the curves shown on the following pages:

1. The motors used for the measurements are standard TEFC or MLE motors.
2. Measurements have been made with airless water at a temperature of 68°F.
3. The curves apply to a kinematic viscosity of $\nu = 1 \text{ cSt} (1 \text{ mm}^2/\text{s})$.
4. Due to the risk of overheating, the pumps should **not** be used at a flow below the minimum flow rate.

The curve below shows the minimum flow rate as a percentage of the nominal flow rate in relation to the liquid temperature.

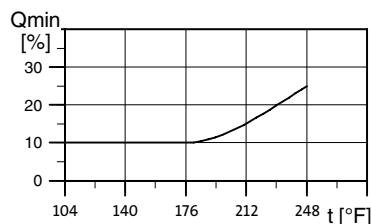


Fig. 9 Minimum flow rate

TM03 2912 5105