

CR, CRN

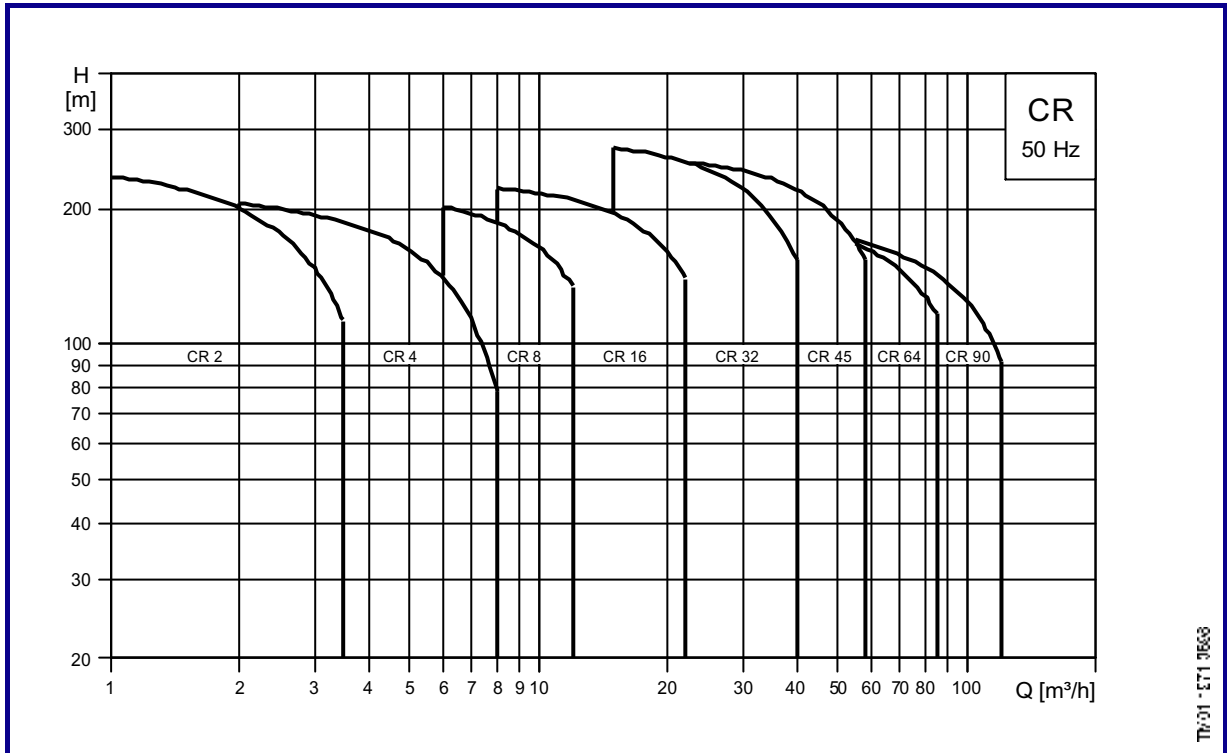
Vertical Multistage Centrifugal Pumps

50 Hz

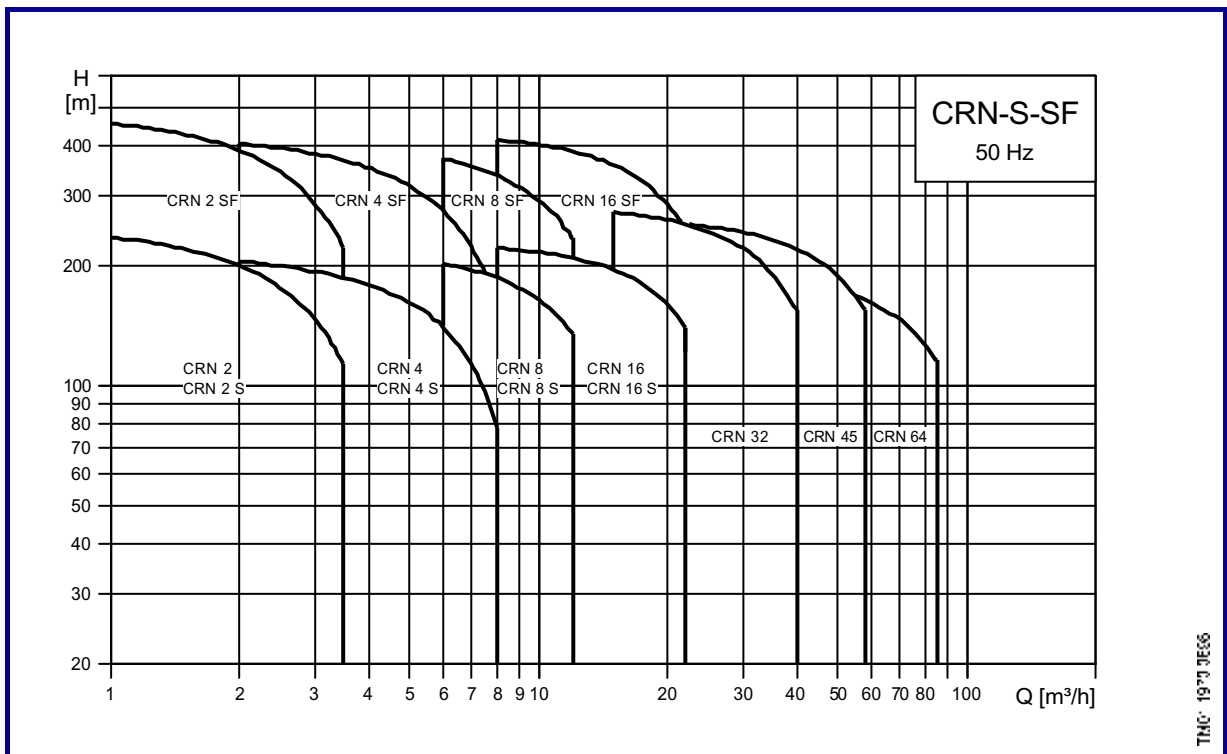


TR-321 2' 51' 2008









CR Performance Range



CRN Performance Range



Product Range

								
Description	CR 2	CR 4	CR 8	CR 16	CR 32	CR 45	CR 64	CR 90
Range								
Nominal flow rate [m ³ /h]	2	4	8	16	32	45	64	90
Flow range [m ³ /h]	1 - 3.5	2 - 8	6 - 12	8 - 22	15 - 40	22 - 60	30 - 85	50 - 120
Max. pressure [bar]*	45	44	42	44	28	26	20	19
Motor power [kW]	0.37 - 3	0.37 - 4	0.37 - 7.5	2.2 - 15	1.5 - 30	3 - 37	4 - 37	5.5 - 45
Temperature range [°C]**	-20 to +120	-20 to +120	-20 to +120	-20 to +120	-30 to +150	-30 to +150	-30 to +150	-30 to +150
Max. efficiency [%]	48	59	64	70	78	79	80	81
Version								
CR	●	●	●	●	●	●	●	●
CRN	●	●	●	●	●	●	●	●
CRN-S	●	●	●	●				
CRN-SF	●	●	●	●				
Material Variant								
CR: Cast iron GG20/ Stainless Steel AISI 304/DIN 1.4301	●	●	●	●				
CR: Cast iron GGG50/ Stainless Steel AISI 304/DIN 1.4301					●	●	●	●
CRN: Stainless steel AISI 316/DIN 1.4401	●	●	●	●	●	●	●	●
CR Pipe Connection								
BSP (Oval flange)	1"	1½"	1½" and 2"					
DIN flange	DN25	DN32	DN40	DN50				
Flexible DIN flange					DN65	DN80	DN100	DN100
DIN flange on request					DN80	DN100	DN125	DN125
CRN Pipe Connection								
DIN flange	DN25	DN32	DN40	DN50				
Flexible DIN flange					DN65	DN80	DN100	
DIN flange on request					DN80	DN100	DN125	
PJE coupling	●	●	●	●				
Clamp coupling	●	●	●	●				
Union (+GF+)	●	●	●	●				
Shaft Seal								
DIN standard seal	●	●	●	●				
DIN Cartridge seal					●	●	●	●
Long coupling (>7,5 kW)					●	●	●	●
Hybrid seal surface **					●	●	●	●
Miscellaneous Features								
Prepared for sensors					●	●	●	●
Sleeve sealed by O-ring					●	●	●	●
Sleeve sealed by gasket	●	●	●	●				
Impeller locked by spline	●	●	●	●				
Impeller locked by split cone					●	●	●	●
Variable speed motor (≤ 7,5 kW)	●	●	●	●	●	●	●	●
Service by standard tools	●	●	●	●	●	●	●	●

* depending on temperature, see page 13

** depending on shaft seal, see page 12

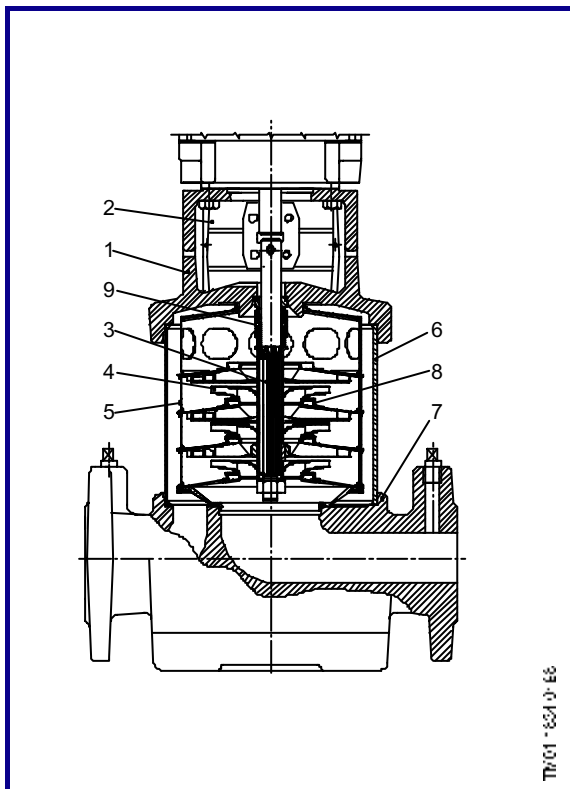
Overview of Applications

Typical applications	CR 2-16	CR 32-90	CRN 2-16	CRN 32-64	CRN-S 2-16	CRN-SF 2-16
Water supply						
Filter and transfer pumps for Waterworks	•	•				
Distribution from Waterworks	•	•				
Pressure boosting in mains	•	•				
Pressure boosting in high-rise buildings, hotels etc.	•	•				
Pressure boosting for industrial water supply	•	•				
Industry						
Pressure boosting in						
- process water systems	•	•	•	•		
- washing and cleaning systems (CIP)	•	•	•	•	•	•
- high-pressure wash-down systems					•	•
- vehicle washing tunnels	•	•				
- fire fighting systems	•	•				
Liquid transfer in						
- cooling and air-conditioning systems (refrigerants)	•	•				
- boiler feed and condensate systems	•	•				
- machine tools (cooling lubricants)	•	•	•	•		
- aquafarming	•	•				
Transfer of						
- oils and alcohols	•	•	•	•		
- Acids and alkalis			•	•		
Water treatment						
Ultra filtration systems			•	•	•	•
Reverse osmosis systems			•	•	•	•
Softening, ionising, demineralizing systems			•	•	•	•
Distillation systems			•	•		
Separators	•	•	•	•		
Swimming baths			•	•		
Irrigation						
Field irrigation (flooding)	•	•				
Sprinkler irrigation	•	•				
Drip-feed irrigation	•	•				

CR 2, CR 4, CR 8 and CR 16



Sectional Drawing



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 pump body and the outer sleeve are fixed between the base and the pump head by means of staybolts. The base has in-line suction and discharge ports.

The pump has a maintenance-free mechanical shaft seal with dimensions to DIN 24960.

Pipework Connection

Pump Type	Oval Flange Max. 16 bar	DIN Flange Max. 25 bar
CR 2	Rp 1	DN 25
CR 4	Rp 1½	DN 32
CR 8	Rp 1½ & Rp 2	DN 40
CR 16		DN 50

Operating Conditions

Liquid Temperature: -20°C to +120°C, depending on shaft seal, see page 12.

Ambient Temperature: Maximum +40°C.

Minimum Inlet Pressure: According to the NPSH curve + a safety margin of minimum 0.5 metres head

Materials

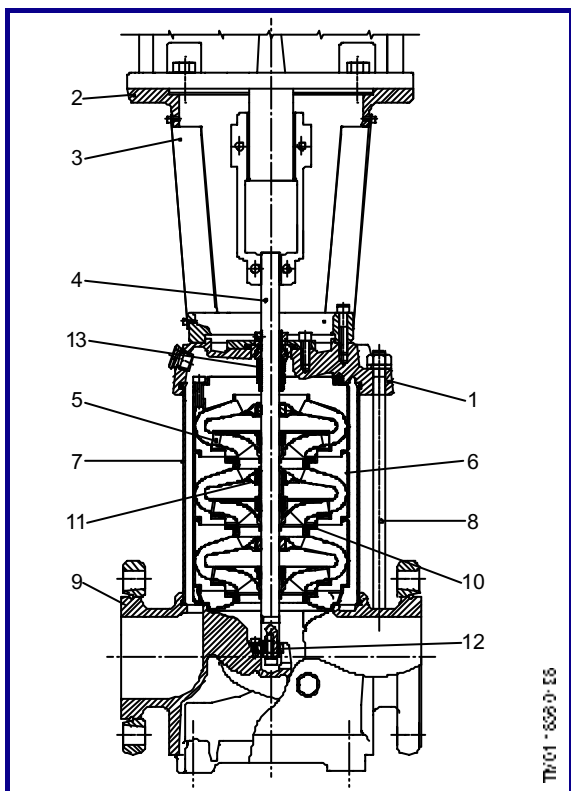
Pos. no.	Description	Materials	DIN W.-No.	AISI/ASTM
1	Pump head	Cast iron GG20	0.6020	ASTM 25B
2	Coupling guard	Stainless steel	1.4301	AISI 304
3	Shaft	Stainless steel	1.4401 1.4057	AISI 316 AISI 431
4	Impeller	Stainless steel	1.4301	AISI 304
5	Intermediate chamber	Stainless steel	1.4301	AISI 304
6	Outer sleeve	Stainless steel	1.4301	AISI 304
	Staybolts	Stainless steel or steel 50	1.4057 1.0531	AISI 431
7	Base	Cast iron GG 20	0.6020	ASTM 25B
8	Neck ring	Teflon		
9	Shaft seal	RUUE, RUUV, AUUE, AUUV, AUAE, BUBE, BUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

CR 32, CR 45, CR 64 and CR 90



TR/01 2150 - 208

Sectional Drawing



TR/01 - 688 0 - E6

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, a motor stool 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). The motor stool houses the pump-motor coupling.

The pump is equipped with a maintenance-free mechanical shaft seal of the cartridge type.

Pipework Connection

Pump Type	Flexible DIN flange	DIN Flange Option
CR 32	DN 65	DN 80
CR 45	DN 80	DN 100
CR 64	DN 100	DN 125
CR 90	DN 100	DN 125

Operating Conditions

Liquid Temperature: -30°C to $+150^{\circ}\text{C}$, depending on shaft seal, see page 12.

Ambient Temperature: Maximum $+40^{\circ}\text{C}$.

Minimum Inlet Pressure: According to the NPSH curve + a safety margin of minimum 0.5 metres head.

Materials

Pos. no.	Description	Materials	DIN W. -No.	AISI/ASTM
1	Pump head	Cast iron GGG50	0.7050	ASTM 80-55-06
2	Motor stool	Cast iron GG20	0.6020	ASTM 25B
3	Coupling guard	Stainless steel	1.4016	AISI 430
4	Shaft	Stainless steel	1.4057	AISI 431
5	Impeller	Stainless steel	1.4301	AISI 304
6	Intermediate chamber	Stainless steel	1.4301	AISI 304
7	Outer sleeve	Stainless steel	1.4301	AISI 304
8	Staybolts	Steel ETG 25		AISI 304
9	Base	Cast iron GGG50	0.7050	ASTM 80-55-06
10	Neckring	Acoflon 215		
11	Bearing	Bronze		
12	Bottom Bearing	TC/TC *		
13	Shaft seal	EUUE, EUUV, EUHE, EUHV, EUBV, EUBE, HUBE, HUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

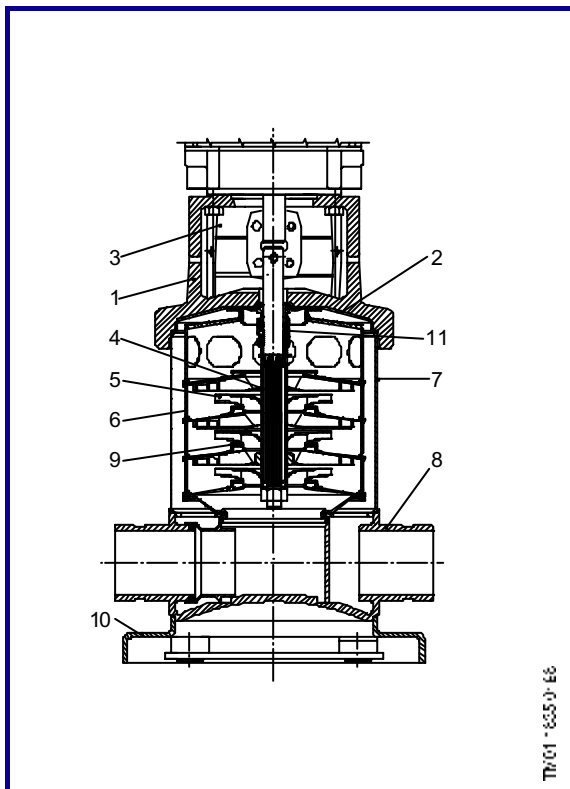
* TC= Tungsten Carbide

CRN 2, CRN 4, CRN 8 and CRN 16



TR/01 - 6350-EG

Sectional Drawing



TR/01 - 6350-EG

Pump

The CRN 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 pump body and the outer sleeve are fixed between the base and the pump head by means of staybolts. 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 shaft seal with dimensions to DIN 24960.

Pipework Connection

Pump Type	PJE Coupling with Socket for Welding/Threaded Socket	CLAMP Coupling with Socket for Welding/Threaded Socket
CRN 2	ø32 mm/1¼"	ø28.5 mm/1"
CRN 4	ø32 mm/1¼"	ø37.2 mm/1½"
CRN 8	ø50 mm/2"	ø43.1 mm/1½"
CRN 16	ø50 mm/2"	ø54.5 mm/2"

Pump Type	DIN flange	Union
CRN 2	DN 25	G 2
CRN 4	DN 32	G 2
CRN 8	DN 40	G 2½
CRN 16	DN 50	G 2½

Operating Conditions

Liquid Temperature: -20°C to +120°C, depending on shaft seal, see page 12.

Ambient Temperature: Maximum +40°C.

Minimum Inlet Pressure: According to the NPSH curve + a safety margin of minimum 0.5 metres head.

Materials

Pos. no.	Description	Materials	DIN W.-No.	AISI/ASTM
1	Pump head	Cast iron GG20	0.6020	ASTM 25B
2	Pump head cover	Stainless steel	1.4401	AISI 316
3	Coupling guard	Stainless steel	1.4301	AISI 304
4	Shaft	Stainless steel	1.4401 1.4460	AISI 316 AISI 329
5	Impeller	Stainless steel	1.4401	AISI 316
6	Intermediate-chamber	Stainless steel	1.4401	AISI 316
7	Outer sleeve	Stainless steel	1.4401	AISI 316
	Staybolts	Stainless steel	1.4057	AISI 431
8	Base	Stainless steel	1.4401	AISI 316
9	Neckring	Teflon		
10	Baseplate	Cast iron GG20*	0.6020	ASTM 25B
11	Shaft seal	RUUE, RUUV, AUUE, AUUV, AUAE, BUBE, BUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

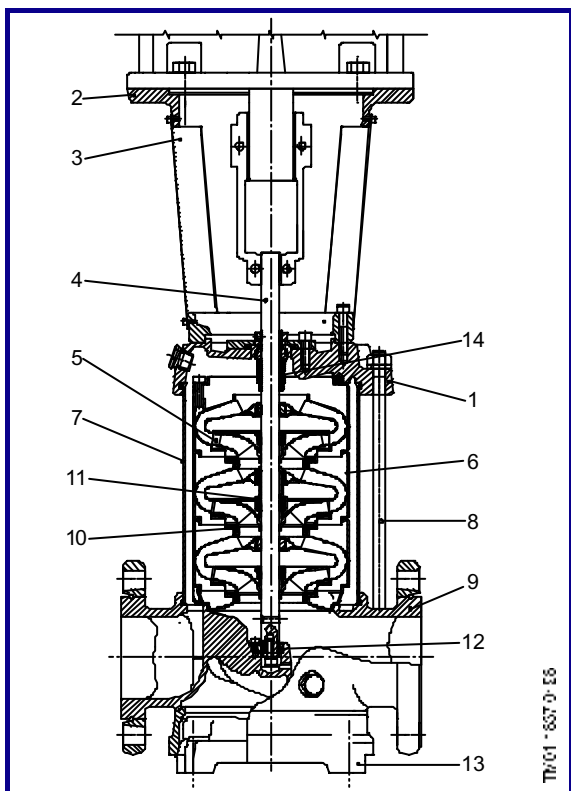
* Stainless steel on request

CRN 32, CRN 45 and CRN 64



TIP: 01 211 0 208

Sectional Drawing



TIP: 01 687 0 156

Pump

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

The pump consists of a base, a motor stool 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, the pump head cover and all components in contact with the pumped liquid are made of stainless steel. The base has suction and discharge ports on the same level (in-line). The motor stool houses the pump-motor coupling.

The pump is equipped with a maintenance-free mechanical shaft seal of the cartridge type.

Pipework Connection

Pump Type	Flexible DIN flange	DIN flange Option
CRN 32	DN 65	DN 80
CRN 45	DN 80	DN 100
CRN 64	DN 100	DN 125

Operating Conditions

Liquid Temperature: -30°C to $+150^{\circ}\text{C}$, depending on shaft seal, see page 12.

Ambient Temperature: Maximum $+40^{\circ}\text{C}$.

Minimum Inlet Pressure: According to the NPSH curve + a safety margin of minimum 0.5 metres head.

Materials

Pos. no.	Description	Materials	DIN W- No.	AISI/ASTM
1	Pump head	Stainless steel	1.4408	AISI 316 LN
2	Motor stool	Cast iron GG20	0.6020	ASTM 25B
3	Coupling guard	Stainless steel	1.4016	AISI 314
4	Shaft	Stainless steel	1.4462	
5	Impeller	Stainless steel	1.4401	AISI 316
6	Intermediate chamber	Stainless steel	1.4401	AISI 316
7	Outer sleeve	Stainless steel	1.4401	AISI 316
8	Staybolts	Stainless steel	1.4057	AISI 431
9	Base	Stainless steel	1.4401	AISI 316
10	Neckring	Acoflon 215		
11	Bearing	HY 49		
12	Bottom Bearing	TC/TC *		
13	Baseplate	Cast iron GGG50 **	0.7050	ASTM 80-55-06
14	Shaft seal	EUUE, EUUV, EUHE, EUHV, EUBV, EUBE, HUBE, HUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

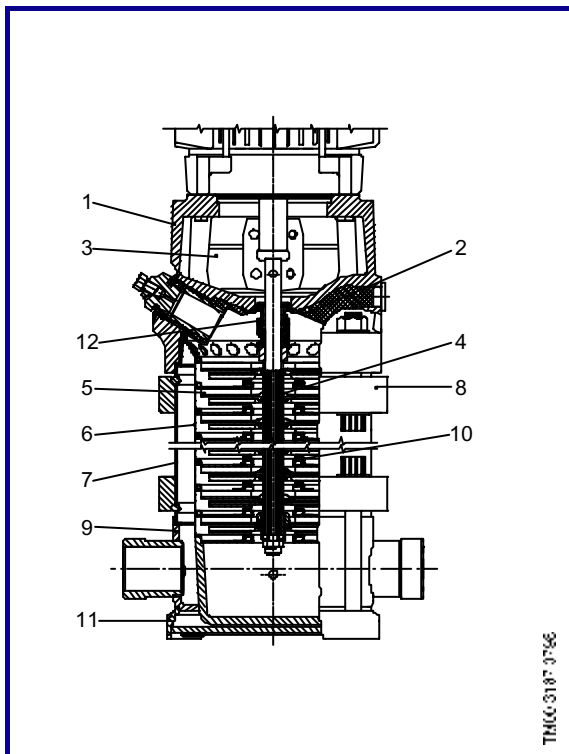
* TC= Tungsten Carbide

** Stainless steel on request

CRN-S



Sectional Drawing



Pump

The CRN-S 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 pump body and the outer sleeve are fixed between the base and the pump head by means of clamping plates. 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 shaft seal with dimensions to DIN 24960.

Pipework Connection

Pump Type	PJE Coupling with Socket for Welding/ Threaded Socket	DIN Flange
CRN 2-S	ø32 mm/1¼"	DN 25
CRN 4-S	ø32 mm/1¼"	DN 32
CRN 8-S	ø50 mm/2"	DN 40
CRN 16-S	ø50 mm/2"	DN 50

Operating Conditions

Liquid Temperature: -20°C to +120°C, depending on shaft seal, see page 12.

Ambient Temperature: Maximum +40°C.

Minimum Inlet Pressure: According to the NPSH curve + a safety margin of minimum 0.5 metres head.

Materials

Pos. no.	Description	Materials	DIN W- No.	AISI/ASTM
1	Pump head	Cast iron GG20	0.6020	ASTM 25B
2	Pump head cover	Stainless steel	1.4401	AISI 316
3	Coupling guard	Stainless steel	1.4301	AISI 304
4	Shaft	Stainless steel	1.4401 1.4460	AISI 316 AISI 329
5	Impeller	Stainless steel	1.4401	AISI 316
6	Intermediate-chamber	Stainless steel	1.4401	AISI 316
7	Outer sleeve	Stainless steel	1.4401	AISI 316
8	Clamping plate	Cast iron 37-2	1.0037	
9	Base	Stainless steel	1.4401	AISI 316
10	Neckring	Teflon		
11	Baseplate	Cast iron GG20*	0.6020	ASTM 25B
12	Shaft seal	RUUE, RUUV, AUUE, AUUV, AUAE, BUBE, BUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

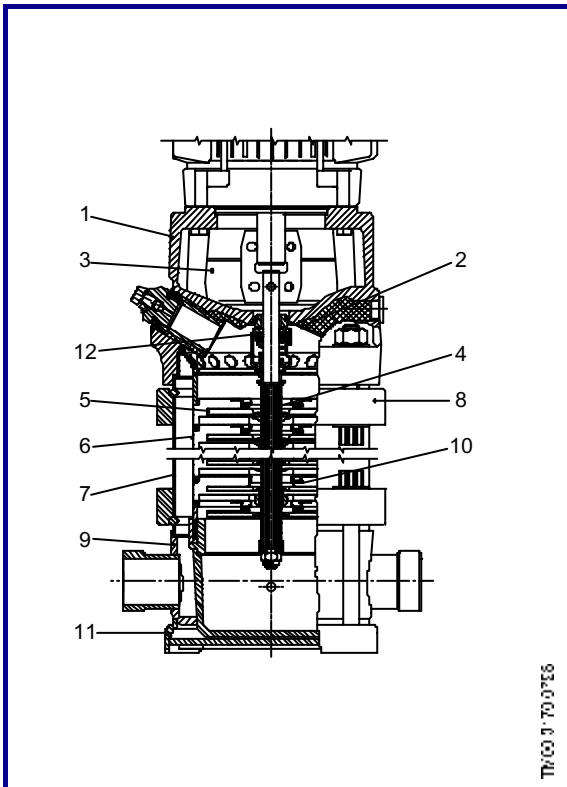
* Stainless steel on request

CRN-SF



TR:CC 38065 2108

Sectional Drawing



TR:CC 38065 2108

Pump

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

The pump consists of a base and a pump head. The pump body and the outer sleeve are fixed between the base and the pump head by means of clamping plates.

The direction of rotation is opposite to that of the other pumps, and the pump body is upside-down, thus giving the opposite direction of flow of liquid.

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 shaft seal with dimensions to DIN 24960.

Pipework Connection

Pump Type	PJE Coupling	
	with Threaded Socket	with Socket for Welding
CRN 2-SF	1 1/4"	ø32 mm
CRN 4-SF	1 1/4"	ø32 mm
CRN 8-SF	2"	ø50 mm
CRN 16-SF	2"	ø50 mm

Operating Conditions

Liquid Temperature: -15°C to +90°C, depending on shaft seal, see page 12.

Ambient Temperature: Maximum +40°C.

Minimum Inlet Pressure: 2 bar during operation.

Materials

Pos. no.	Description	Materials	DIN W.- No.	AISI/ASTM
1	Pump head	Cast iron GG20	0.6020	ASTM 25B
2	Pump head cover	Stainless steel	1.4401	AISI 316
3	Coupling guard	Stainless steel	1.4301	AISI 304
4	Shaft	Stainless steel	1.4401 1.4460	AISI 316 AISI 329
5	Impeller	Stainless steel	1.4401	AISI 316
6	Intermediate-chamber	Stainless steel	1.4401	AISI 316
7	Outer sleeve	Stainless steel	1.4401	AISI 316
8	Clamping plate	Steel 37-2	1.0037	
9	Base	Stainless steel	1.4401	AISI 316
10	Neckring	Acoflon 215		
11	Baseplate	Cast iron GG20*	0.6020	ASTM 25B
12	Shaft seal	RUUE, RUUV, AUUE, AUUV, AUAE, BUBE, BUBV		
	Rubber parts in pump	Same as in shaft seal EPDM or FPM (Viton)		

Pumped Liquids

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

When pumping liquids with a density and/or viscosity higher than that of water, motors with correspondingly higher outputs 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 chloride content, pH value, temperature and content of solvents, oils etc.

Please note that aggressive liquids (e.g. sea water) may destroy the oxide film which protects the stainless steel and thus cause corrosion.

CR, CRN

For liquid transfer, circulation and pressure boosting of cold or hot clean water.

CRN

In systems where all parts in contact with the liquid must be made of stainless steel, CRN pumps must be used.

Motor

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

Electrical tolerances according to IEC 34/EN 60034.

Mounting:

- up to 4 kW: V 18,
- from 5.5 kW: V 1

Insulation Class: F.

Enclosure Class: IP 55, On request: IP 44 and IP 54.

50 Hz Standard-

- Voltages:
- 3 x 200/346 V,
 - 3 x 200-220/346-380V,
 - 3 x 220-240/380-415V,
 - 3 x 380-415Δ V,
 - 1 x 220-230/240 V,
 - 1 x 110/220 V.

Motors for other voltages are available on request.

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

Three-phase motors must be connected to a motor starter in accordance with local regulations.

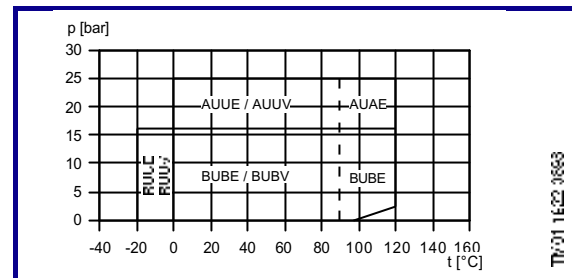
Three-phase Grundfos motors from 3 kW upwards have a built-in thermistor (PTC) according to DIN 44082.

Max. Operating Pressure and Liquid Temperature for the Shaft Seal

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

The following curves apply to clean water and water containing glycol.

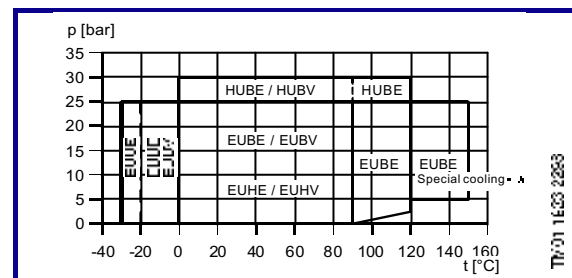
CR, CRN 2, 4, 8 and 16



Shaft Seal	Description	Max. Press. [bar]	Max. Temp. Range [°C]
RUUE	O-ring (balanced seal), TC/TC*, EPDM	16	-20 to +90
RUUV	D-ring (balanced seal), TC/TC, Viton	16	-20 to +90
AUUE	D-ring, TC/TC, EPDM	25	0 to +90
AUUV	D-ring, TC/TC, Viton	25	0 to +90
AUAE	O-ring, TC/metal-impregnated carbon, EPDM	25	0 to +120
BUBE	Bellows, TC/carbon, EPDM	16	0 to +120
BUBV	Bellows, TC/carbon, Viton	16	0 to +90

* TC = Tungsten Carbide

CR, CRN 32, 45, 64 and 90



Shaft Seal	Description	Max. Press. [bar]	Max. Temp. Range [°C]
EUUE	D-ring (Cartridge), TC/TC*, EPDM	25	-30 to +90
EUUV	D-ring (Cartridge), TC/TC, Viton	25	-20 to +90
EUHE	D-ring (Cartridge), TC/hybrid, EPDM	25	0 to +90**
EUHV	D-ring (Cartridge), TC/hybrid, Viton	25	0 to +90**
EUBE	D-ring (Cartridge), TC/carbon, EPDM	25	0 to +120
EUBV	D-ring (Cartridge), TC/carbon, Viton	25	0 to +90
EUBE	D-ring (Cartridge), TC/carbon, EPDM	25	+120 to +150**
HUBE	O-ring (Cartridge), (balanced seal), TC/carbon, EPDM	30	0 to +120
HUBV	O-ring (Cartridge), (balanced seal), TC/carbon, Viton	30	0 to +90

* TC = Tungsten Carbide

** On request