

**Date:** 16/02/2019

Qty. | Description

1 | CR 20-7 A-F-A-E-HQQE



Note! Product picture may differ from actual product

Product No.: 96500513

Vertical, multistage centrifugal pump with inlet and outlet ports on same the level (inline). The pump head and base are in cast iron – all other wetted parts are in stainless steel. A cartridge shaft seal ensures high reliability, safe handling, and easy access and service. Power transmission is via a rigid split coupling. Pipe connection is via DIN flanges.

The pump is fitted with a 3-phase, fan-cooled asynchronous motor.

#### **Further product details**

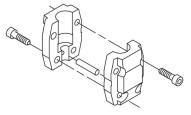
Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An integral part of the process is a pretreatment. The entire process consists of these elements:

- 1) Alkaline-based cleaning.
- 2) Zinc phosphating.
- 3) Cathodic electro-deposition.
- 4) Curing to a dry film thickness 18-22 my m.

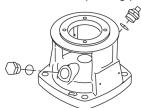
The colour code for the finished product is NCS 9000/RAL 9005.

### **Pump**

A standard split coupling connects the pump and motor shaft. It is enclosed in the pump head/motor stool by means of two coupling guards.



The pump head, pump head cover and flange for motor mounting is made in one piece. The pump head has a combined 1/2" priming plug and vent screw.





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The pump is fitted with a balanced O-ring seal unit with a rigid torque-transmission system. This seal type is assembled in a cartridge unit which makes replacement safe and easy. Due to the balancing, this seal type is suitable for high-pressure applications. The cartridge construction also protects the pump shaft from possible wear from a dynamic O-ring between pump shaft and shaft seal.

#### Primary seal:

- Rotating seal ring material: silicon carbide (SiC)
- Stationary seat material: silicon carbide (SiC)

This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles.

Secondary seal material: EPDM (ethylene-propylene rubber)

EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



The shaft seal is screwed into the pump head.

The chambers and impellers are made of stainless-steel sheet. The chambers are provided with a PTFE neck ring offering improved sealing and high efficiency. The impellers have smooth surfaces, and the shape of the blades ensure a high efficiency.

The base is made of cast iron. The flanges and base are cast in one piece. The outlet side of the base has a drain plug. The pump is secured to the foundation by four bolts through the base plate.



#### Motor

The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. The motor is flange-mounted with free-hole flange (FF).

Motor-mounting designation in accordance with IEC 60034-7: IM B 5 (Code I) / IM 3001 (Code II). Electrical tolerances comply with IEC 60034.

The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.

The motor has thermistors (PTC sensors) in the windings in accordance with DIN 44081/DIN 44082. The protection reacts to both slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.

Thermal switches must be connected to an external control circuit in a way which ensures that the automatic reset cannot cause accidents. The motors must be connected to a motor-protective circuit breaker according to local regulations.

The motor can be connected to a variable speed drive for adjustment of pump performance to any duty point. Grundfos CUE offers a range of variable speed drives. Please find more information in Grundfos Product Center.

### **Technical data**

Controls:

Frequency converter: NONE

Liquid:

Pumped liquid: Water
Liquid temperature range: -20 .. 120 °C
Liquid temperature during operation: 20 °C



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Density: 998.2 kg/m<sup>3</sup>

Technical:

Pump speed on which pump data are based: 2919 rpm

Rated flow:

Rated head:

Pump orientation:

Shaft seal arrangement:

Code for shaft seal:

Approvals on nameplate:

Curve tolerance:

21 m³/h

81.7 m

Vertical

Single

HQQE

CE, EAC,ACS

ISO9906:2012 3B

Materials:

Base: Cast iron

EN 1561 EN-GJL-200

**ASTM A48-25B** 

Impeller: Stainless steel

EN 1.4301 AISI 304

Bearing: SIC

Installation:

Maximum ambient temperature: 60 °C Maximum operating pressure: 16 bar

Max pressure at stated temp: 16 bar / 120 °C

16 bar / -20 °C

Type of connection: DIN
Size of inlet connection: DN 50
Size of outlet connection: DN 50
Pressure rating for pipe connection: PN 25
Flange rating inlet: 300 lb
Flange size for motor: FF265

Electrical data:

Motor standard: IEC
Motor type: 132SB
IE Efficiency class: IE3
Rated power - P2: 7.5 kW
Power (P2) required by pump: 7.5 kW
Mains frequency: 50 Hz

Rated voltage: 3 x 380-415D/660-690Y V Rated current: 14,4-14,0/8,30-8,10 A

Starting current: 780-910 %

Cos phi - power factor: 0.88-0.82

Rated speed: 2910-2920 rpm

Efficiency: IE3 90,1%

Motor efficiency at full load: 90.1-90.4 %

Motor efficiency at 3/4 load: 90.8 %

Motor efficiency at 1/2 load: 90.8 %

Number of poles: 2

Enclosure class (IEC 34-5): 55 Dust/Jetting

Insulation class (IEC 85): F

Others:

Minimum efficiency index, MEI ≥: 0.70
Net weight: 103 kg
Gross weight: 125 kg
Shipping volume: 0.285 m³
Danish VVS No.: 385905370

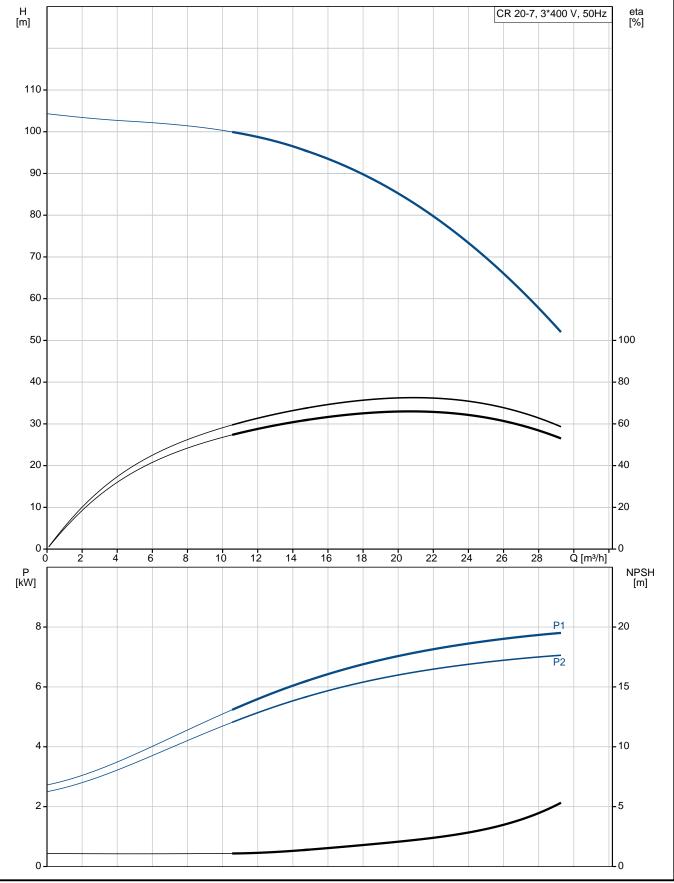


			Date:	16/02/2019	
Qty.	Description				
	Swedish RSK No.:	5823491			



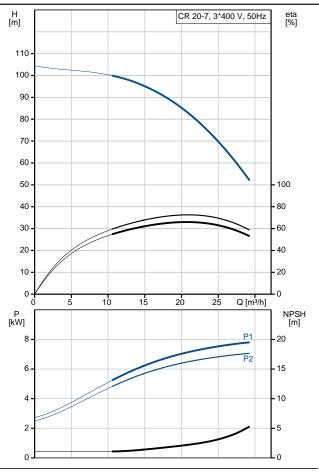
**Date:** 16/02/2019

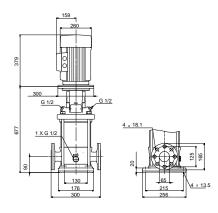
## 96500513 CR 20-7 A-F-A-E-HQQE 50 Hz

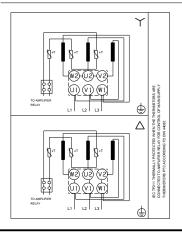




Description	Value
General information:	
Product name:	CR 20-7
	A-F-A-E-HQQE
Product No:	96500513
EAN number:	5700396203324
Technical:	
Pump speed on which pump data are based:	2919 rpm
Rated flow:	21 m³/h
Rated head:	81.7 m
Head max:	103 m
Stages:	7
Impellers:	7
Number of reduced-diameter impellers:	0
Low NPSH:	N
Pump orientation:	Vertical
Shaft seal arrangement:	Single
Code for shaft seal:	HQQE
Approvals on nameplate:	CE, EAC,ACS
Curve tolerance:	ISO9906:2012 3B
Pump version:	A
Model:	A
Materials:	
Base:	Cast iron
	EN 1561 EN-GJL-200
	ASTM A48-25B
Impeller:	Stainless steel
·	EN 1.4301
	AISI 304
Material code:	A
Code for rubber:	E
Bearing:	SIC
Installation:	
Maximum ambient temperature:	60 °C
Maximum operating pressure:	16 bar
Max pressure at stated temp:	16 bar / 120 °C
	16 bar / -20 °C
Type of connection:	DIN
Size of inlet connection:	DN 50
Size of outlet connection:	DN 50
Pressure rating for pipe connection:	PN 25
Flange rating inlet:	300 lb
Flange size for motor:	FF265
Connect code:	F
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-20 120 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	000.2 Ng/111
Motor standard:	IEC
Motor type:	132SB
IE Efficiency class:	IE3
Rated power - P2:	7.5 kW
Power (P2) required by pump:	7.5 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-415D/660-690Y V
Rated current:	14,4-14,0/8,30-8,10 A
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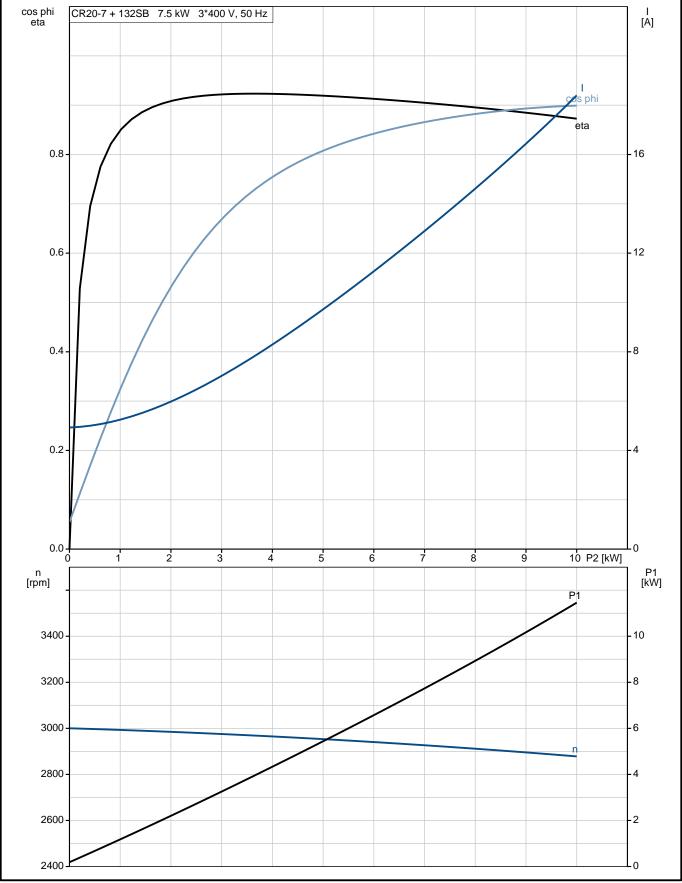


Description	Value
Starting current:	780-910 %
Cos phi - power factor:	0.88-0.82
Rated speed:	2910-2920 rpm
Efficiency:	IE3 90,1%
Motor efficiency at full load:	90.1-90.4 %
Motor efficiency at 3/4 load:	90.8 %
Motor efficiency at 1/2 load:	90.8 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC
Motor No:	85U17522
Controls:	
Frequency converter:	NONE
Others:	
Minimum efficiency index, MEI ≥:	0.70
Net weight:	103 kg
Gross weight:	125 kg
Shipping volume:	0.285 m <sup>3</sup>
Danish VVS No.:	385905370
Swedish RSK No.:	5823491



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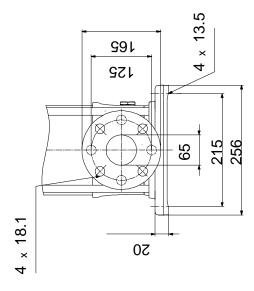
## 96500513 CR 20-7 A-F-A-E-HQQE 50 Hz

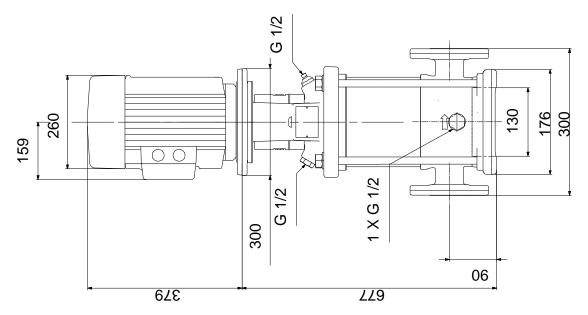




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# 96500513 CR 20-7 A-F-A-E-HQQE 50 Hz



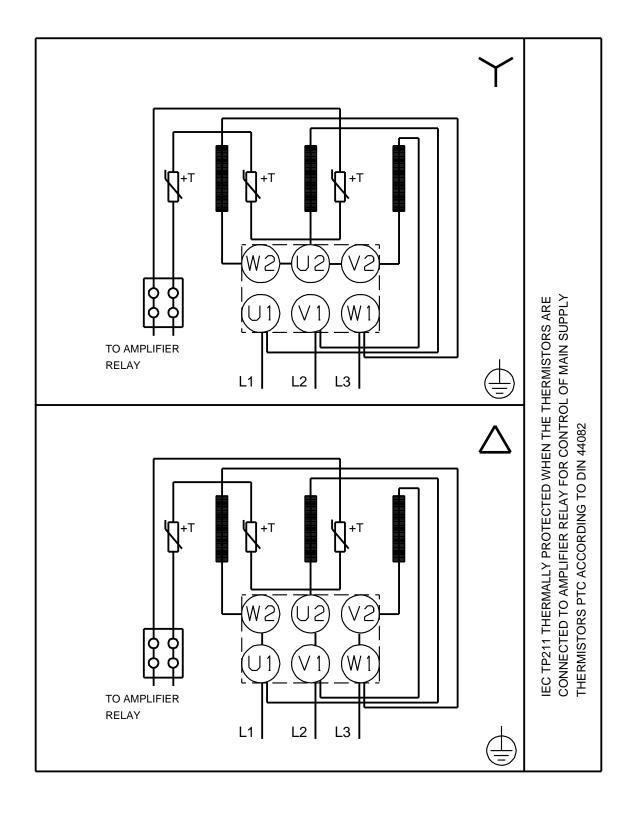


Note! All units are in [mm] unless others are stated. Disclaimer: This simplified dimensional drawing does not show all details.



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## 96500513 CR 20-7 A-F-A-E-HQQE 50 Hz

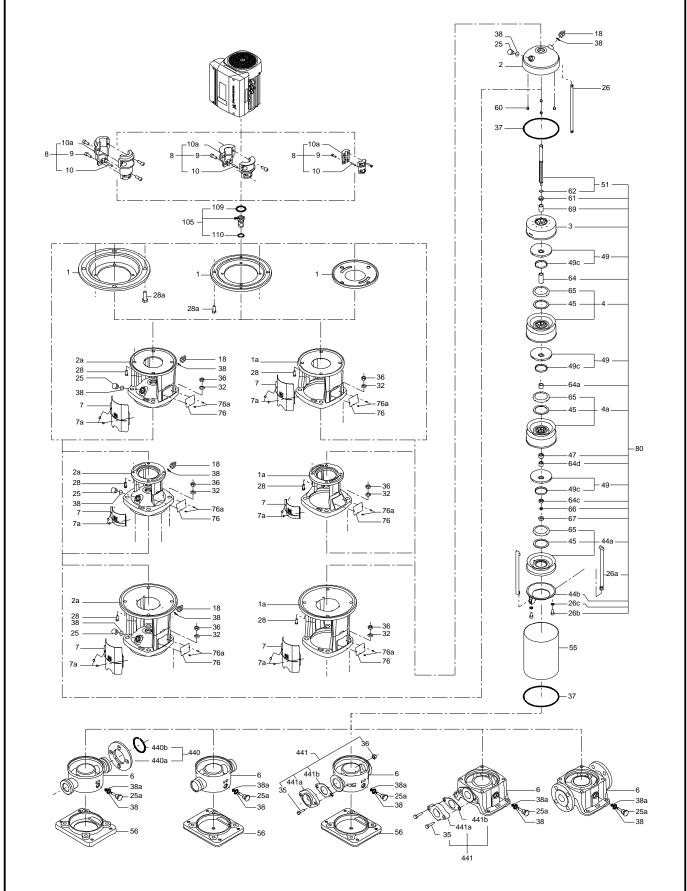


Note! All units are in [mm] unless others are stated.



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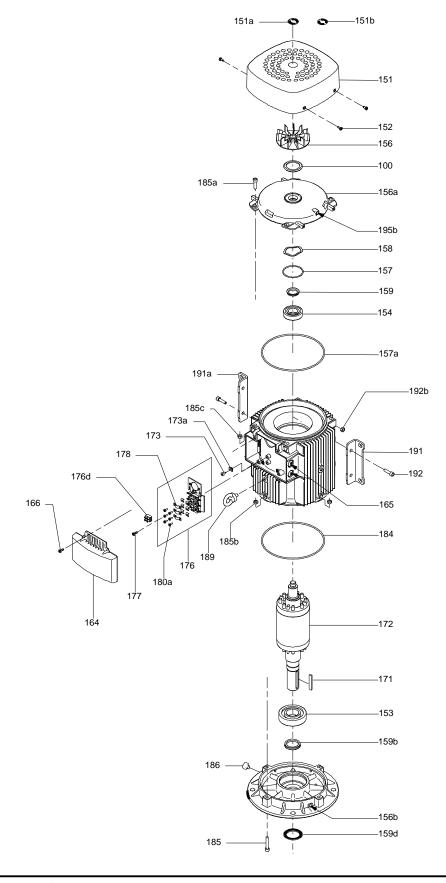
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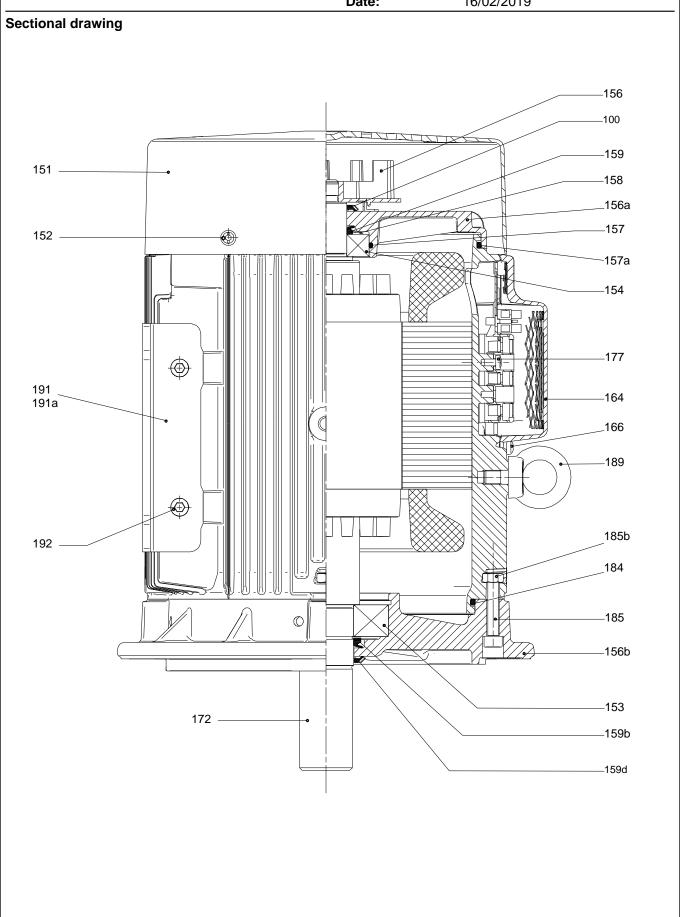


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### **Exploded view**



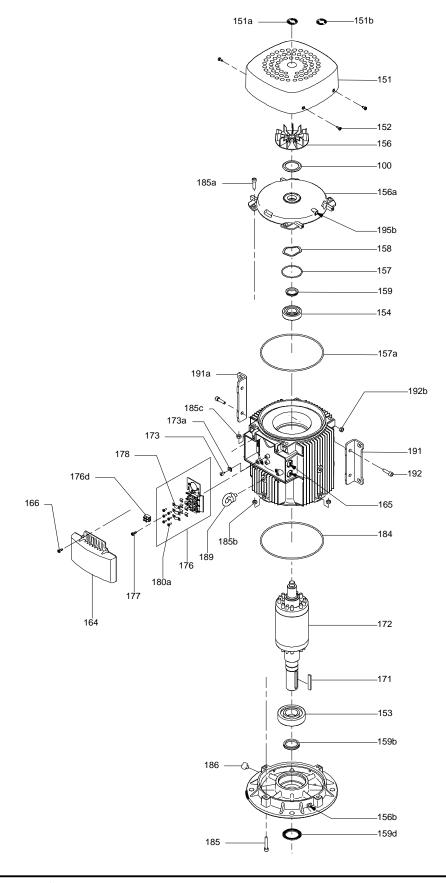






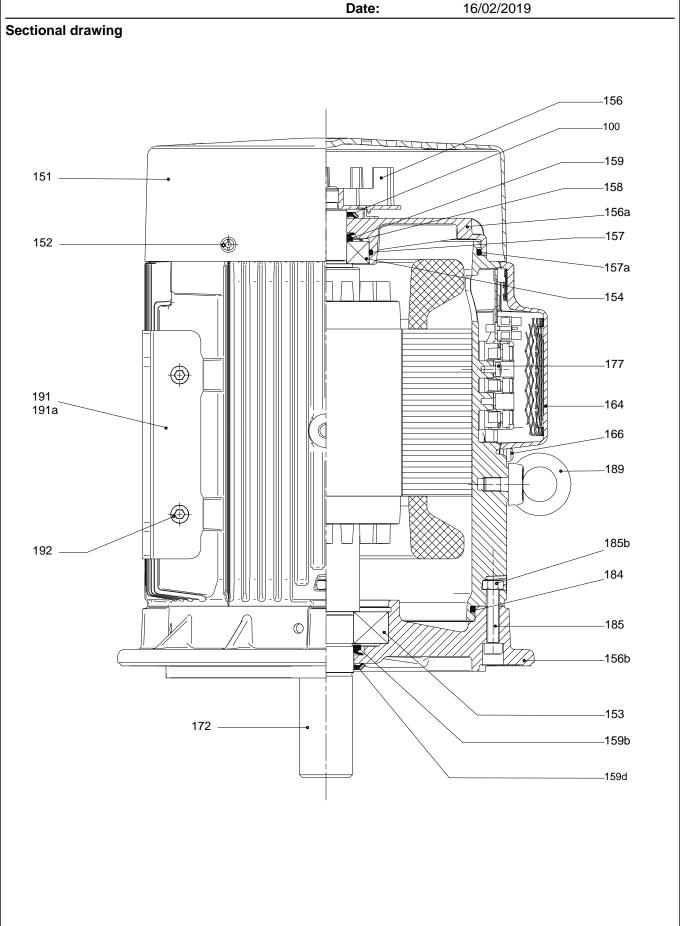
**Date:** 16/02/2019

### **Exploded view**





Date:





**Date:** 16/02/2019

### Spare parts CR 20-7, Product No. 96500513 Valid from 1.1.2011 (1152)

Pos	Description  Kit shamber steel	Ailliotation	Classification Data	Part no.	Qty.	
00	Kit, chamber stack			96508547	1	рс
80	Chamber stack					1
3	Top intermediate chamber					
	Front plate					
	Spare, turbulence optimizer KP					
	Guide vane					
4a	Intermediate chamber cpl.					
	Bearing plate					
3	Intermediate chamber					
45a	Neck ring cpl.					
47	Bearing bush					
65	Retainer for upper seal ring					
4	Intermediate chamber cpl.					
45a	Neck ring cpl.					
65	Retainer for upper seal ring					
26a	Strap cpl.		Length (mm): 314MM			
26.c	Washer		Designation: DIN 125A			
			Thickness: 1,6			
26.b	Hex head screw					
44b	Inlet part					
44a	Inlet part cpl.					
45a	Neck ring cpl.					
65	Retainer for upper seal ring					
47	Bearing ring					
49	Impeller cpl.					
	Impeller blade					
	Impeller plate					
	Impeller plate					
49c	Wear ring					
51	Shaft, spline, cpl.					
01	Bar					
62	Stop ring					
64d	Spacing bush					
64c	Spacing pipe		Length (mm): 12.7			
64a	Spacing pipe		Internal diameter: 17,5			
υ <del>τ</del> α	Ораспід рірс		Length (mm): 17			
64	Spacing pipe		Length (mm): 43.6			
66	Wedge lock washer		Longar (min). 43.0			
67	Lock nut		Thread: M8			
69	Spacing bush		TITEAU. IVIO			
บฮ				06544254	1	
	Kit, coupling			96511351		po 1
0	Adjusting fork					1
8	Coupling		D : (: DIN 040			1
9	Hex socket head cap screw		Designation: DIN 912			
			Length (mm): 25			
			Thread: M10			
10a	Coupling half					
10	Shaft pin		Diameter: 5			
			Length (mm): 26			
	Kit, coupling guard			96509613	1	po
7.a	Combi Slot Torx screw					4
7	Coupling guard				2	2
	Kit, gaskets			96509609	1	р



Pos	<b>Description</b> Gasket	Annotation Classification Data Part I	10.	<b>Qty.</b> 2	
24					
24	O-ring			2	
37	O-ring			2	
38a	O-ring	Diameter: 5,3		1	
		Material type: EPDM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		1	
		Material type: EPDM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		2	
30	O-ning	Material type: EPDM			
		Thickness: 2,4			
60	Spring			4	
415	Gasket			2	
441b	Gasket	Internal diameter: 49		2	
		Outer diameter: 92			
		Thickness: 2			
	Kit, plug		1311	1	рс
18	Air vent screw	0001	•	1	•
. •	Spindle			'	
	Plug				
<b>~</b> =					
25a	Drain plug			1	
25	Plug			1	
38a	O-ring	Diameter: 5,3		1	
		Material type: FKM			
		Thickness: 2,4			
38a	O-ring	Diameter: 5,3		1	
	- 5	Material type: EPDM		•	
		Thickness: 2,4			
20	O ring				
38	O-ring	Diameter: 16,3		1	
		Material type: FKM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		2	
		Material type: FKM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		1	
-	- 5	Material type: EPDM		•	
		Thickness: 2.4			
20	O ring	,		^	
38	O-ring	Diameter: 16,3		2	
		Material type: EPDM			
		Thickness: 2,4			
	Kit, shaft seal HQQE	9651	1844	1	pc
	Emery cloth			1	
	Grinding device			1	
105	Shaft seal	Material type: HQQE		1	
	Kit, wear parts		1827		рс
4a	Intermediate chamber cpl.	3031		2	
<b>→</b> α				2	
	Sand Lifter				
	Guide cup				
	Bearing plate				
	Guide vane				
3	Intermediate chamber				
45a	Neck ring cpl.				
47	Bearing bush				
65	Retainer				
65 26.c	Washer	Decimation: DIN 4254		2	
∠0.C	vvasilei	Designation: DIN 125A		2	
		Thickness: 1,6			
26.b	Hex head screw			2	
45a	Neck ring cpl.			8	



Pos	Description	Annotation Classification Data Part no. Q	ty. Un
47	Bearing ring		2
49c	Wear ring		10
62	Retaining ring		1
64d	Spacing bush		2
64c	Spacing pipe	Length (mm): 12.7	1
64b	Spacing bush	Length (mm): 5.00	1
64a	Spacing pipe	Internal diameter: 17,5	2
		Length (mm): 17	
65	Retainer		8
66	Wedge lock washer		1
67	Lock nut	Thread: M8	1
	Motor	91333038 1	pcs
	Kit, bearing cpl.	96796642	1
111	Ball bearing	Designation: 6206.2Z.C3.SYN	
153	Angular-contact bearing	•	
157	O-ring	Diameter: 62	
		Material type: NBR	
		Thickness: 3	
158	Waved washer		
159.b	V-ring		
159	V-ring		
	Kit, eyebolt	96279874	1
189	Lifting eye		
100	Kit, fan	96796189	1
156	Fan	30700100	•
100	Kit, fan cover	96796188	1
151	Fan cover	30730100	
152	Pan head thread forming screw		
102	Kit, flange	96796224	1
156.b	Flange	90790224	
150.b	V-ring		
185c	Nut		
185	Hex socket head cap screw		
186	Drain plug	00700540	
101	Kit, gaskets	96798510	1
184	O-ring	00700500	
	Kit, ND-end shield cpl.	96796598	1
156.a	End shield NDE		
157	O-ring	Diameter: 62	
		Material type: NBR	
		Thickness: 3	
158	Waved washer		
159	V-ring		
185.c	Nut		
185.a	Hex socket head cap screw		
	Kit, shaft seal	96843458	1
159.b	V-ring		
159	V-ring		
	Kit, terminal board	96030209	1
176	Terminal		
176	Terminal board		
178	Connecting piece		
179	Cable shoe		
180a	Slot cheese head screw	Designation: COMBI TORX T25	
		Length (mm): 10	
		Thread: M5	
180	Wire clamp		
	Kit, terminal box cover	96796215	1
164	Terminal box cover w/gasket		



<b>Pos</b> 166	Pan head thread forming screw	Annotation Classification Data Part no. Qty	. Ur
100	Motor	85903585 1	рс
		96796642	
444	Kit, bearing cpl.		1
111	Ball bearing	Designation: 6206.2Z.C3.SYN	
153	Angular-contact bearing	D' 1 00	
157	O-ring	Diameter: 62	
		Material type: NBR	
		Thickness: 3	
158	Waved washer		
159.b	V-ring		
159	V-ring		
	Kit, eyebolt	96279874	1
189	Lifting eye		
	Kit, fan	96796189	1
156	Fan		
	Kit, fan cover	96796188	1
151	Fan cover		
152	Pan head thread forming screw		
	Kit, flange	96796224	1
156.b	Flange		
159.b	V-ring		
185c	Nut		
185	Hex socket head cap screw		
186	Drain plug		
100	Kit, gaskets	96798510	1
184	O-ring	90790310	'
104	Kit, ND-end shield cpl.	06706500	1
156.0	End shield NDE	96796598	1
156.a		Diameter: CO	
157	O-ring	Diameter: 62	
		Material type: NBR	
450	<b>M</b>	Thickness: 3	
158	Waved washer		
159	V-ring		
185.c	Nut		
185.a	Hex socket head cap screw		
	Kit, shaft seal	96843458	1
159.b	V-ring		
159	V-ring		
	Kit, terminal board	96030209	1
176	Terminal		
176	Terminal board		
178	Connecting piece		
179	Cable shoe		
180a	Slot cheese head screw	Designation: COMBI TORX T25	
		Length (mm): 10	
		Thread: M5	
180	Wire clamp		
	Kit, terminal box cover	96796215	1
164	Terminal box cover w/gasket		
166	Pan head thread forming screw		
1	Flange	99104283 1	рс
' 2а	Pump head	98770239 1	pc
2a 3			
	Bulk, Top intermediate chamber (3 pcs)	96538971 1	pc
3	Top intermediate chamber	98371105 1	pc
4a	Bulk, Intermediate chamber cpl. (10 pcs)	96538842 2	pc
3	Bulk, Intermediate chamber (3 pcs)		1
4a	Intermediate chamber cpl.	98371109 2	рс
4	Bulk, Intermediate chamber cpl. (10 pcs)	96538817 4	рс



	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
	65	Bulk, Retainer for upper seal ring (20 pcs)			97699527 1		
	65	Retainer for upper seal ring			965879	13 1	
+	4	Intermediate chamber cpl.			98371107	4	pcs
	6	Base			98681111	1	pcs
	7.a	Bulk, Combi Slot Torx screw (1000 pcs)			96886324	4	pcs
	10	Bulk, Shaft pin (10 pcs)		Diameter: 5	96536473	1	pcs
				Length (mm): 26			
+	18	Bulk, Air vent screw (5 pcs)			96547461	1	pcs
+	18	Air vent screw			95061351	1	pcs
	25	Bulk, Plug (10 pcs)			96536013	1	pcs
	25a	Bulk, Drain plug (10 pcs)			96535881	1	pcs
	26a	Strap cpl.		Length (mm): 314MM	98925044	2	pcs
	26.c	Bulk, Washer (4 pcs)		Designation: DIN 125A	99262704	2	pcs
				Thickness: 1,6			
	26.c	Washer		Designation: DIN 125A	96586880	2	pcs
				Thickness: 1,6			
	26	Staybolt			98982847	4	pcs
	32	Bulk, Washer (100 pcs)		Designation: DIN 125 A	98923051	4	pcs
				Internal diameter: 17			
				Outer diameter: 30			
				Thickness: 3			
	36	Bulk, Hex nut (20 pcs)		Thread: M16	96620480	4	pcs
l	37	Bulk, O-ring (20 pcs)			96538857	2	pcs
	38a	Bulk, O-ring (10 pcs)		Diameter: 5,3	99198791	1	pcs
				Material type: EPDM			
				Thickness: 2,4			
	38	Bulk, O-ring (10 pcs)		Diameter: 16,3	99198815	2	pcs
				Material type: EPDM			
╙				Thickness: 2,4			
	38	Bulk, O-ring (50 pcs)		Diameter: 16,3	99412727	2	pcs
				Material type: EPDM			
				Thickness: 2,4			
	44b	Inlet part			98814595		pcs
+	44a	Inlet part cpl.			98818924		pcs
	47	Bulk, Bearing ring (10 pcs)			96538795		pcs
-	49	Bulk, Impeller cpl. (5 pcs)			98394308		pcs
	49c	Bulk, Wear ring (10 pcs)			965473		
+	49	Bulk, Impeller cpl. (10 pcs)			96538799		pcs
+	49	Impeller cpl.			98394458		pcs
+	51	Shaft, spline, cpl.			97941030		pcs
	60	Bulk, Spring (20 pcs)			96538963		pcs
	64d	Bulk, Spacing bush (20 pcs)			96538947		pcs
	64c	Bulk, Spacing pipe (5 pcs)		Length (mm): 12.7	97980241		pcs
	64a	Bulk, Spacing pipe (10 pcs)		Internal diameter: 17,5	98417487	2	pcs
				Length (mm): 17			
╽	64	Bulk, Spacing pipe (20 pcs)		Length (mm): 43.6	96535107		pcs
	66	Bulk, Wedge lock washer (10 pcs)			96536157		pcs
	67	Bulk, Lock nut (10 pcs)		Thread: M8	98277008		pcs
	69	Bulk, Spacing bush (20 pcs)			96538949		pcs
	76a	Bulk, Rivet (100 pcs)			96620489		pcs
	105	Bulk, Shaft seal (11 pcs)		Material type: HQQE	96538914	1	pcs