

**Qty. Description**

1 CRN 120-2 A-F-A-E-HQQE



Note! Product picture may differ from actual product

Product No.: [95922184](#)

Vertical, multistage centrifugal pump with inlet and outlet ports on same the level (inline). Pump materials in contact with the liquid are in high-grade 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

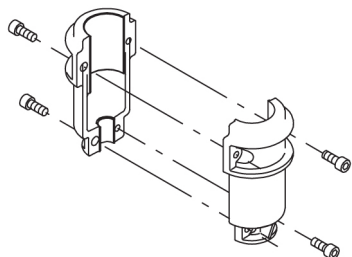
Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An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

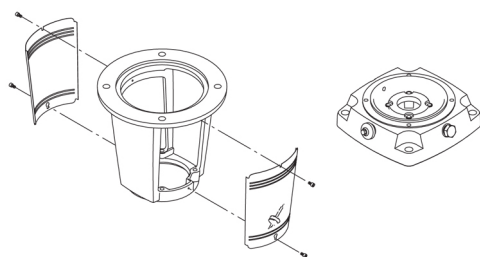
The colour code for the finished product is NCS 9000/RAL 9005.

### Pump

A long split coupling connects the pump and motor shaft. It is enclosed in the motor stool by means of two coupling guards. The long coupling makes it possible to replace the shaft seal without removing the motor from the pump.



The motor stool connects the pump head and motor. The pump head has a combined 1/2" priming plug and vent screw.



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)

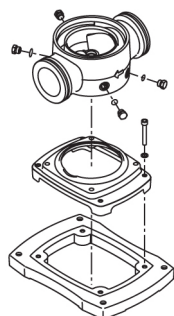
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



The shaft seal is retained in the pump head by a cover and screws. It can be replaced without removing the motor.

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 pump has a stainless-steel base mounted on a separate base plate. The base and base plate are kept in position by the tension of the staybolts which hold the pump together. Both the inlet and the outlet side of the base have two pressure gauge tapings. The pump is secured to the foundation by four bolts through the base plate. The flanges are fastened to the base by means of locking rings.



## 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: -40 .. 120 °C  
Liquid temperature during operation: 20 °C  
Density: 998.2 kg/m<sup>3</sup>

### Technical:

Pump speed on which pump data are based: 2947 rpm  
Rated flow: 120 m<sup>3</sup>/h  
Rated head: 43.4 m  
Pump orientation: Vertical  
Shaft seal arrangement: Single  
Code for shaft seal: HQQE  
Approvals on nameplate: CE, EAC, ACS  
Curve tolerance: ISO9906:2012 3B

### Materials:

Base: Stainless steel  
EN 1.4408  
AISI 316  
Impeller: Stainless steel  
EN 1.4401  
AISI 316  
Bearing: SIC  
Support bearing: Graflon

### Installation:

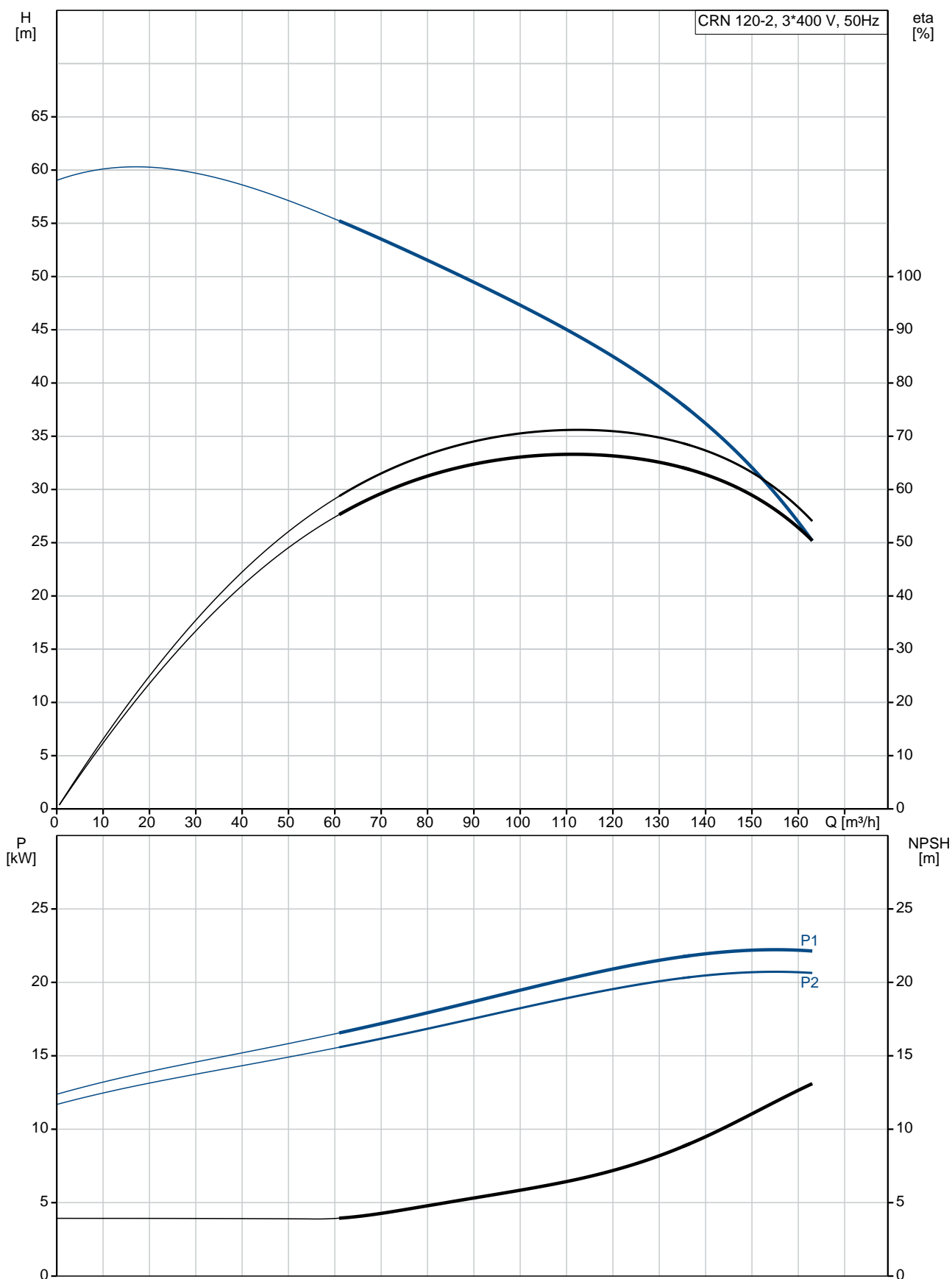
Maximum ambient temperature: 60 °C  
Maximum operating pressure: 30 bar  
Max pressure at stated temp: 30 bar / 120 °C  
30 bar / -40 °C  
Type of connection: DIN  
Size of inlet connection: DN 125  
Size of outlet connection: DN 125  
Pressure rating for pipe connection: PN 40  
Flange size for motor: FF300

### Electrical data:

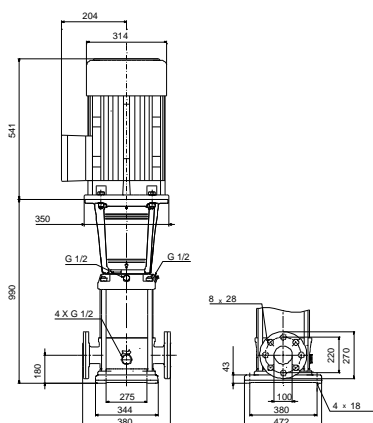
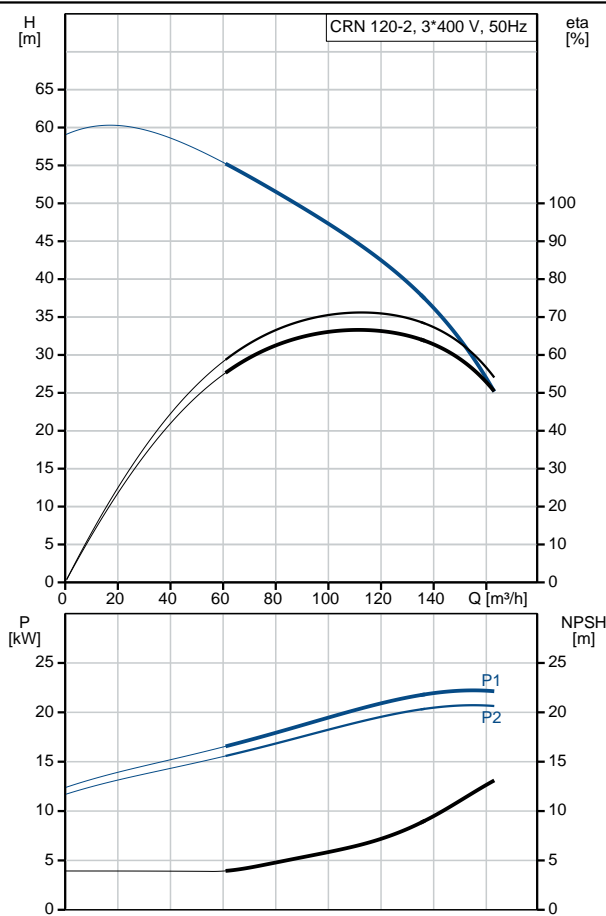
Motor standard: IEC  
Motor type: 180MB  
IE Efficiency class: IE3  
Rated power - P<sub>2</sub>: 22 kW  
Power (P<sub>2</sub>) required by pump: 22 kW  
Mains frequency: 50 Hz  
Rated voltage: 3 x 380-415D/660-690Y V  
Rated current: 39.5/22.8 A

Qty.	Description
	<p>Starting current: 830 %</p> <p>Cos phi - power factor: 0.90-0.90</p> <p>Rated speed: 2950 rpm</p> <p>Efficiency: IE3 92,7%</p> <p>Motor efficiency at full load: 92.7-92.7 %</p> <p>Motor efficiency at 3/4 load: 93.7 %</p> <p>Motor efficiency at 1/2 load: 94.4 %</p> <p>Number of poles: 2</p> <p>Enclosure class (IEC 34-5): 55 Dust/Jetting</p> <p>Insulation class (IEC 85): F</p> <p><b>Others:</b></p> <p>Minimum efficiency index, MEI <math>\eta_{\%}</math>: 0.70</p> <p>Net weight: 245 kg</p> <p>Gross weight: 306 kg</p> <p>Shipping volume: 1.02 m<sup>3</sup></p>

## 95922184 CRN 120-2 A-F-A-E-HQQE 50 Hz



Description	Value
<b>General information:</b>	
Product name:	CRN 120-2 A-F-A-E-HQQE
Product No:	95922184
EAN number:	5700838933932
<b>Technical:</b>	
Pump speed on which pump data are based:	2947 rpm
Rated flow:	120 m <sup>3</sup> /h
Rated head:	43.4 m
Head max:	59.4 m
Stages:	2
Impellers:	2
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
<b>Materials:</b>	
Base:	Stainless steel EN 1.4408 AISI 316
Impeller:	Stainless steel EN 1.4401 AISI 316
Material code:	A
Code for rubber:	E
Bearing:	SIC
Support bearing:	Graffon
<b>Installation:</b>	
Maximum ambient temperature:	60 °C
Maximum operating pressure:	30 bar
Max pressure at stated temp:	30 bar / 120 °C 30 bar / -40 °C
Type of connection:	DIN
Size of inlet connection:	DN 125
Size of outlet connection:	DN 125
Pressure rating for pipe connection:	PN 40
Flange size for motor:	FF300
Connect code:	F
<b>Liquid:</b>	
Pumped liquid:	Water
Liquid temperature range:	-40 .. 120 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m <sup>3</sup>
<b>Electrical data:</b>	
Motor standard:	IEC
Motor type:	180MB
IE Efficiency class:	IE3
Rated power - P2:	22 kW
Power (P2) required by pump:	22 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-415D/660-690Y V
Rated current:	39.5/22.8 A





Company name:

Created by:

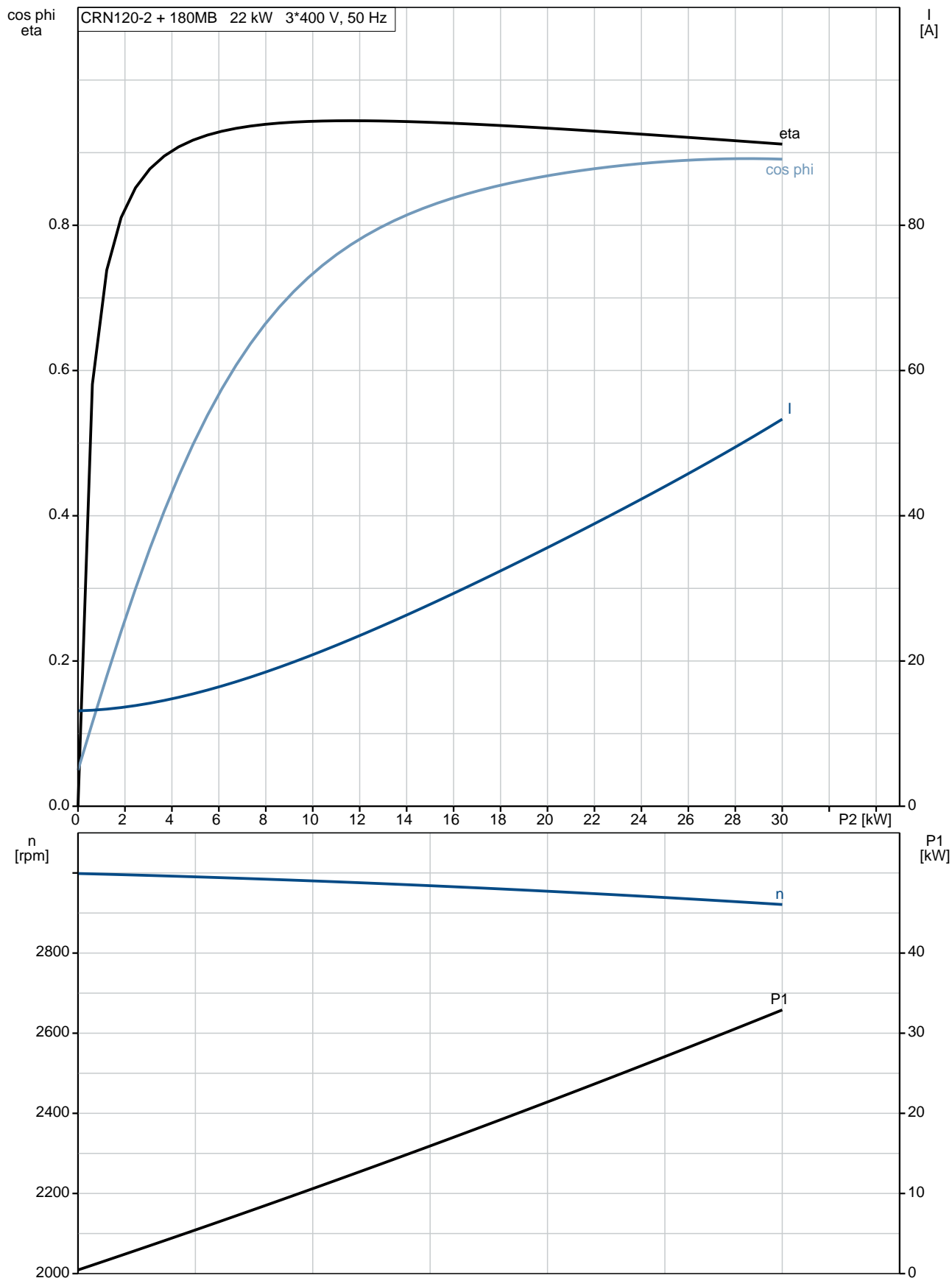
Phone:

Date:

18/02/2019

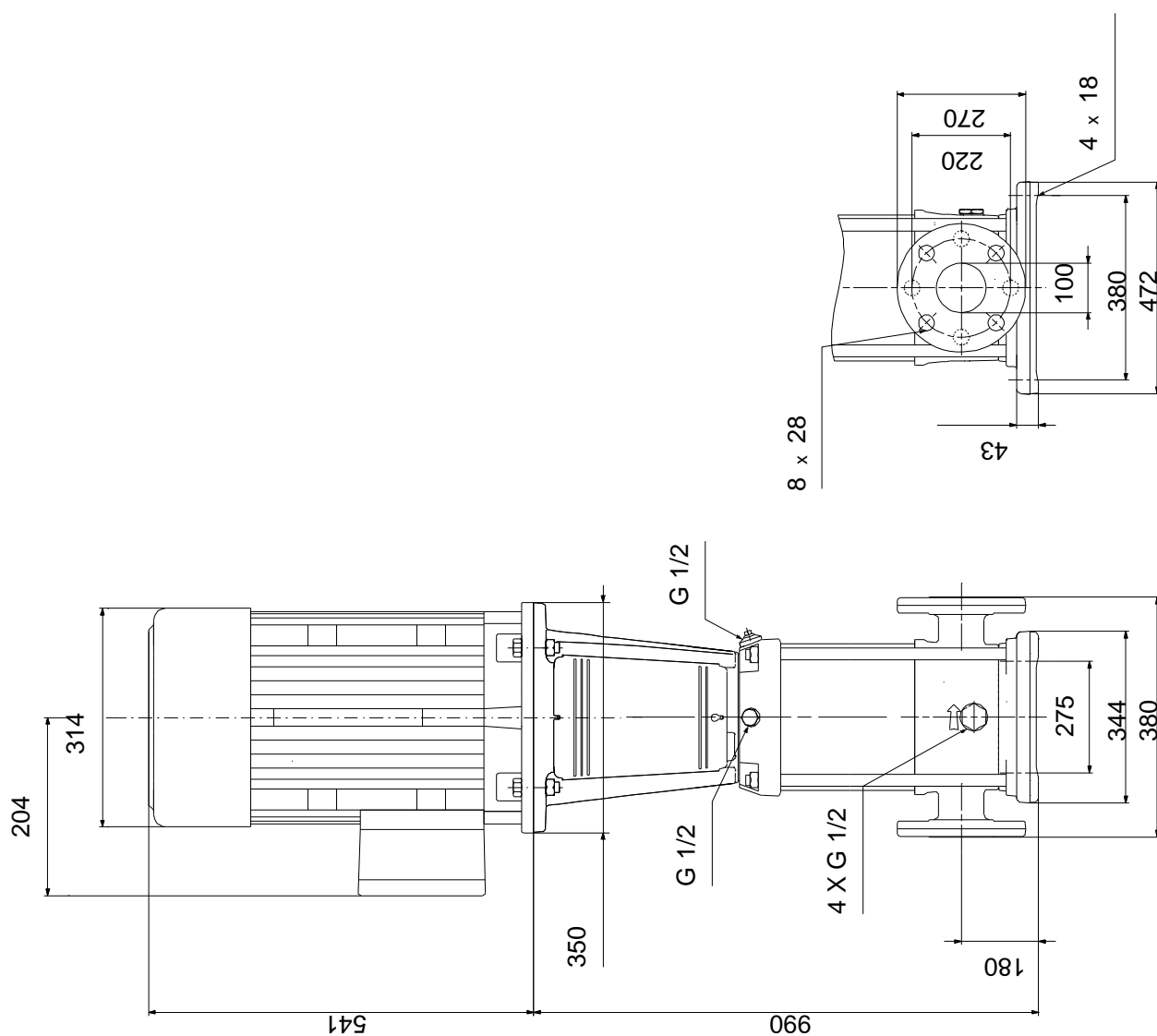
Description	Value
Starting current:	830 %
Cos phi - power factor:	0.90-0.90
Rated speed:	2950 rpm
Efficiency:	IE3 92,7%
Motor efficiency at full load:	92.7-92.7 %
Motor efficiency at 3/4 load:	93.7 %
Motor efficiency at 1/2 load:	94.4 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC
Motor No:	85U17530
<b>Controls:</b>	
Frequency converter:	NONE
<b>Others:</b>	
Minimum efficiency index, MEI $\eta_{\text{min}}$ :	0.70
Net weight:	245 kg
Gross weight:	306 kg
Shipping volume:	1.02 m <sup>3</sup>

## 95922184 CRN 120-2 A-F-A-E-HQQE 50 Hz





## 95922184 CRN 120-2 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.

## 95922184 CRN 120-2 A-F-A-E-HQQE 50 Hz

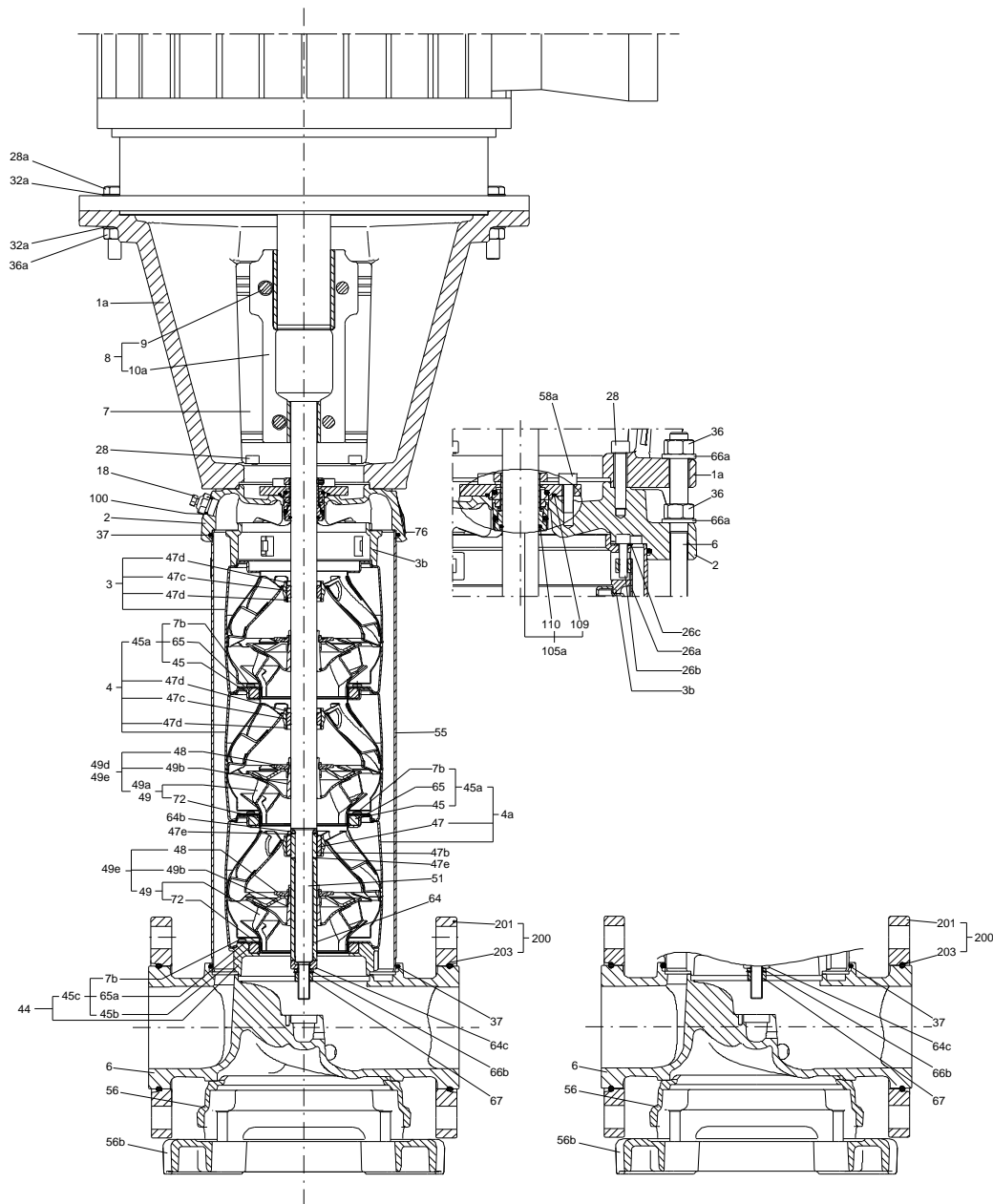


IEC TP211 THERMALLY PROTECTED WHEN THE THERMISTORS ARE  
CONNECTED TO AMPLIFIER RELAY FOR CONTROL OF MAIN SUPPLY  
THERMISTORS PTC ACCORDING TO DIN 44082

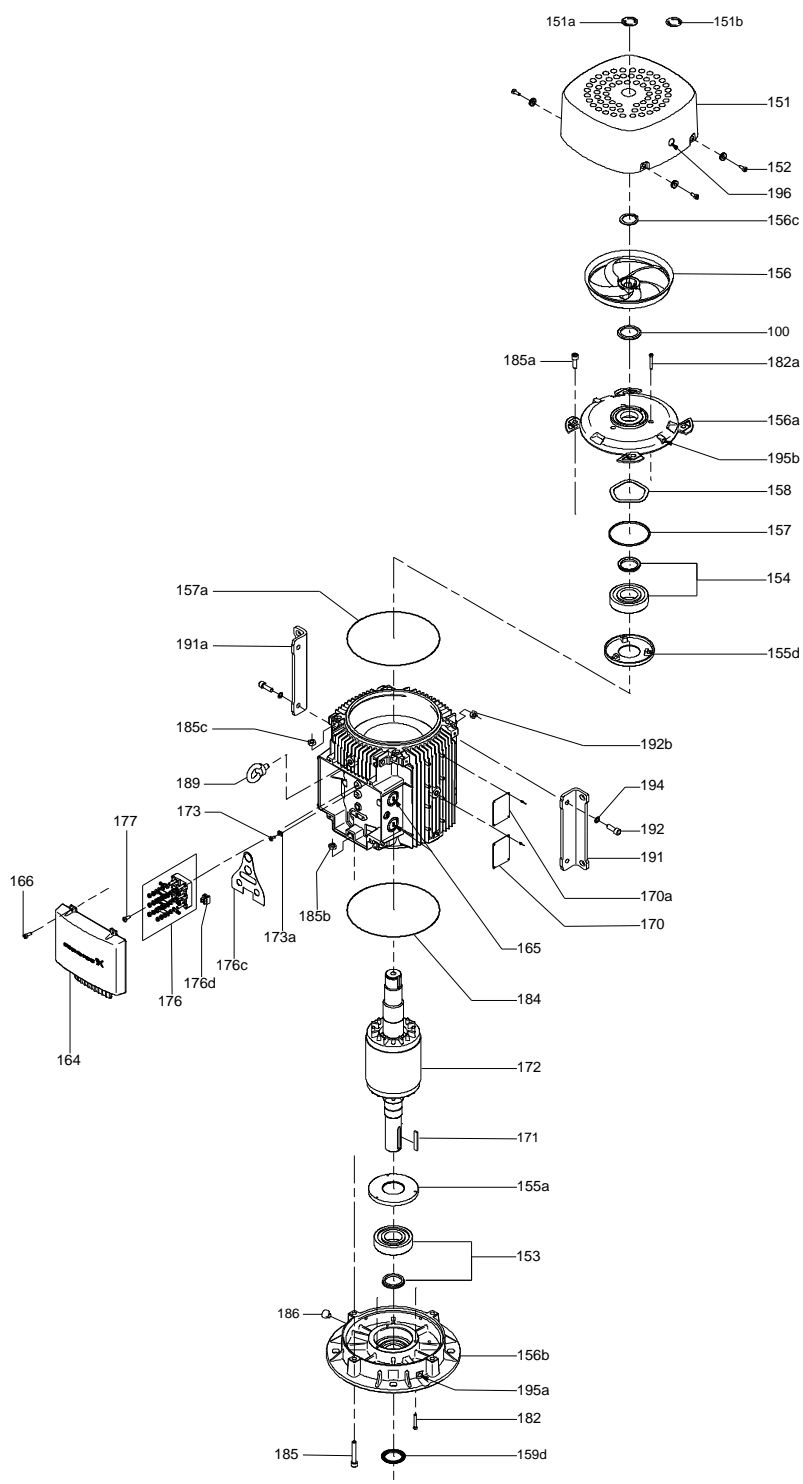
Note! All units are in [mm] unless others are stated.

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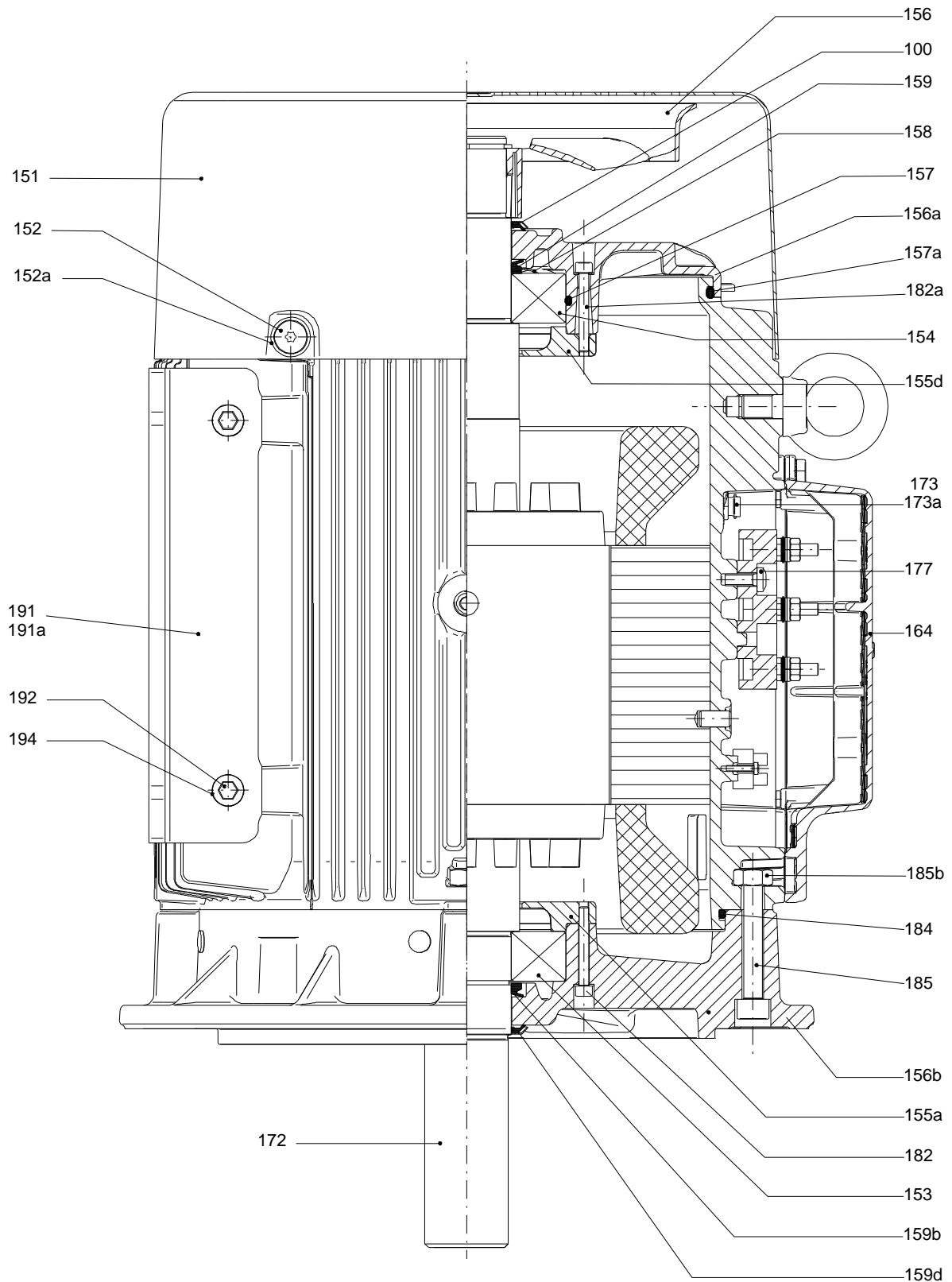
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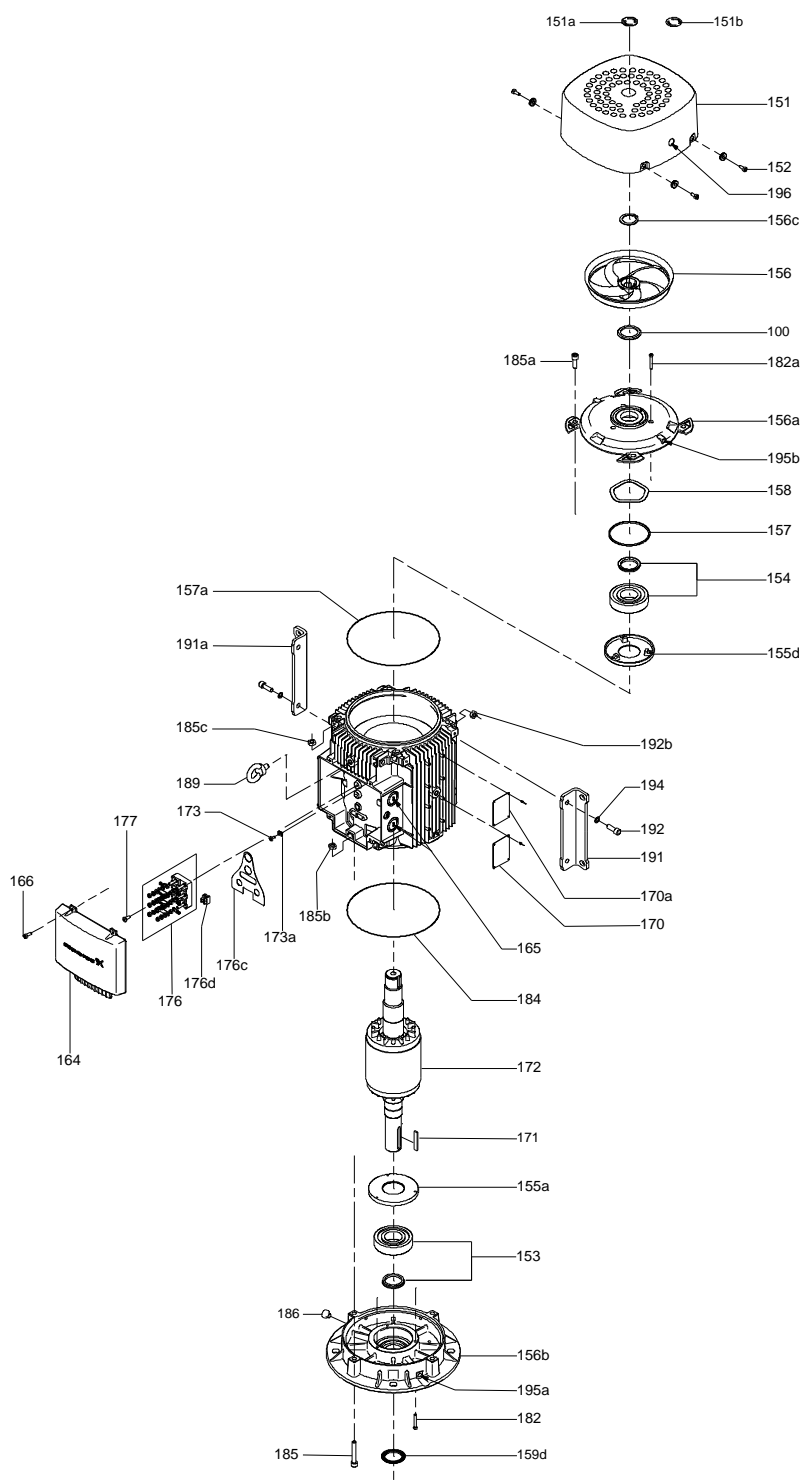
## Exploded view



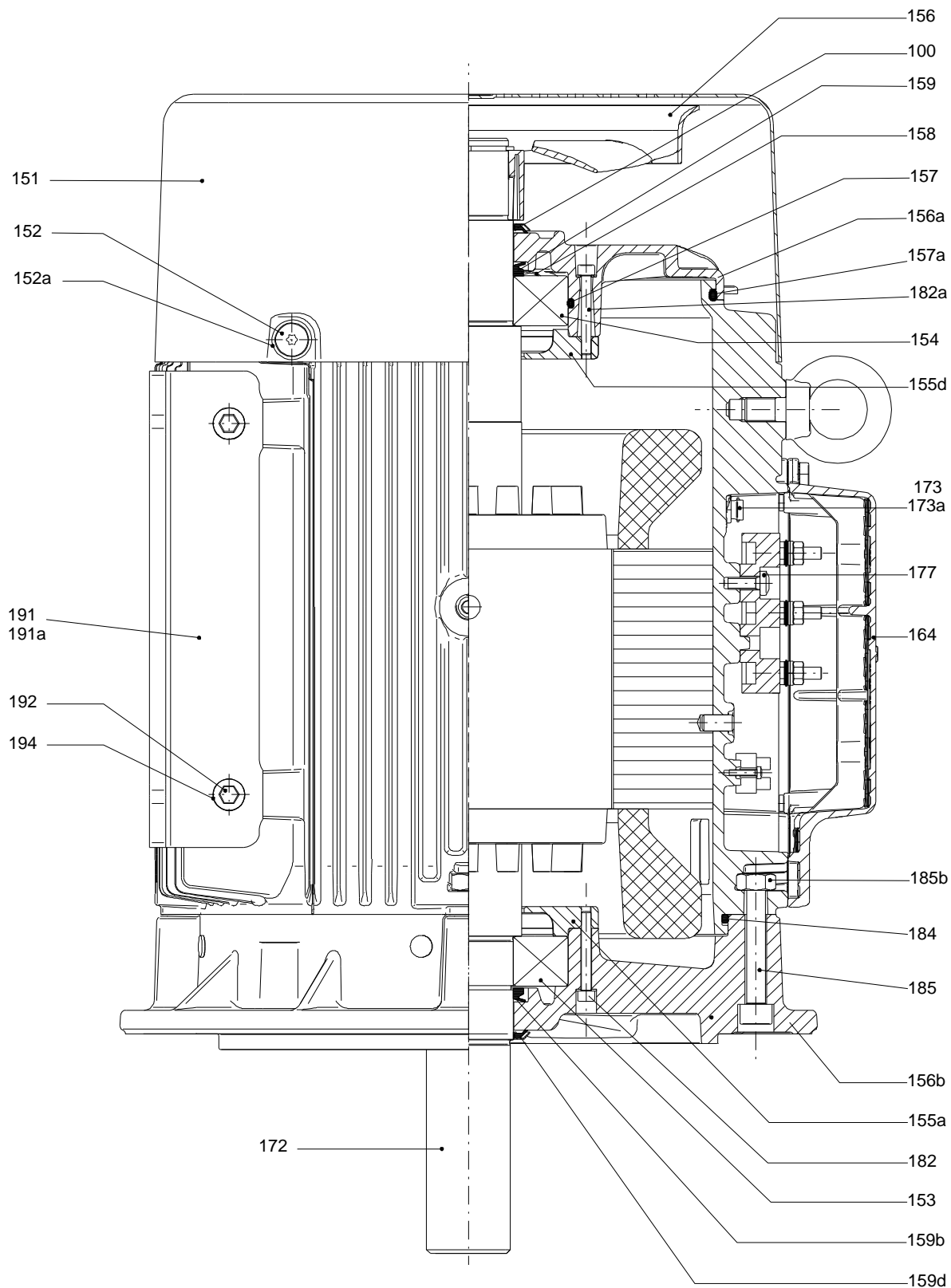
## Sectional drawing



## Exploded view



## Sectional drawing





**Spare parts CRN 120-2, Product No. 95922184**

**Valid from 1.1.2011 (1152)**

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
+	Base			96587699	1	pcs
-	Kit, bearing			96752215	1	pcs
	Adjusting fork				1	
	Adjusting fork				1	
47e	Washer		Internal diameter: D22		2	
			Outer diameter: D32			
47b	Bearing ring, rotating				1	
-	Kit, chamber stack			95059832	1	pcs
- 80	Chamber stack				1	
-	Shaft cpl.		Diameter: D22			
			Length (mm): 576			
47e	Washer		Internal diameter: D22			
			Outer diameter: D32			
47b	Bearing ring, rotating					
51	Pump shaft		Diameter: D22			
			Length (mm): 576			
64c	Spacer ring					
64b	Wedge lock washer					
64b	Lock washer					
64	Spacing bush					
67	Hex nut		Thread: M14			
-	Chamber cpl.					
47d	Locking ring					
47c	Bush					
- 4a	Chamber cpl.					
	O-ring		Diameter: 42			
			Material type: FKM			
			Thickness: 4			
7a	Cross recess Pan head screw					
45	Neck ring					
47	Bearing ring					
65	Retainer					
7a	Cross recess Pan head screw					
26c	Washer		Designation: DIN 125A			
			Thickness: 1,6			
26b	Hex socket head cap screw					
26a	Strap cpl.		Length (mm): 361			
44a	Discharge part					
- 44	Inlet part					
	Inlet part					
45b	Seal ring					
- 49e	Impeller cpl.					
48	Split cone nut					
49b	Split cone					
- 49	Impeller					
49c	Wear ring					
65a	Retainer					
-	Kit, chambers			96751983	1	pcs
	Adjusting fork				1	
	Adjusting fork				1	
- 4a	Chamber cpl.				1	
	O-ring		Diameter: 42			
			Material type: FKM			

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
			Thickness: 4			
7a	Cross recess Pan head screw					
45	Neck ring					
47	Bearing ring					
65	Retainer					
-	Kit, coupling			96416593	1	pcs
	Adjusting fork				1	
- 8	Coupling cpl.		Dimension: 22/48		1	
9	Hex socket head cap screw		Designation: DIN 912			
			Length (mm): 25			
			Thread: M10			
10a	Coupling half					
-	Kit, coupling guard			96505135	1	pcs
7a	Socket button head screw				4	
7	Coupling guard				2	
+	Kit, cover			98832448	1	pcs
-	Kit, gaskets			95059804	1	pcs
	Adjusting fork				1	
	Adjusting fork				1	
37	O-ring				2	
38	O-ring		Diameter: 16,3		4	
			Material type: EPDM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		2	
			Material type: EPDM			
			Thickness: 2,4			
60	Spring				4	
109	O-ring				1	
109	O-ring		Material type: EPDM		1	
110	O-ring				1	
110	O-ring		Diameter: 21,5		1	
			Material type: EPDM			
			Thickness: 4,25			
-	Kit, plug			96505136	1	pcs
- 18	Air vent screw				1	
	Spindle					
	Plug					
25	Plug				4	
25	Plug				1	
38	O-ring		Diameter: 16,3		2	
			Material type: FKM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		4	
			Material type: FKM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		6	
			Material type: FKM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		2	
			Material type: EPDM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		4	
			Material type: EPDM			
			Thickness: 2,4			
-	Kit, shaft			98368855	1	pcs
-	Shaft cpl.		Diameter: D22		1	
			Length (mm): 576			
47e	Washer		Internal diameter: D22			

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
			Outer diameter: D32			
47b	Bearing ring, rotating					
51	Pump shaft		Diameter: D22			
			Length (mm): 576			
64c	Spacer ring					
64b	Wedge lock washer					
64b	Lock washer					
64	Spacing bush					
67	Hex nut		Thread: M14			
47e	Washer		Internal diameter: D22		2	
			Outer diameter: D32			
47b	Bearing ring, rotating				1	
51	Pump shaft		Diameter: D22		1	
			Length (mm): 576			
64c	Spacer ring				1	
64b	Wedge lock washer				1	
64b	Lock washer				1	
64	Spacing bush				1	
67	Hex nut		Thread: M14		1	
-	Kit, shaft seal HQQE			96525458	1	pcs
	Grinding device				1	
- 105	Shaft seal		Material type: HQQE		1	
	Adjusting fork					
109	O-ring					
110	O-ring		Diameter: 21,5			
			Material type: EPDM			
			Thickness: 4,25			
-	Kit, wear parts			95059807	1	pcs
	Adjusting fork				1	
	Adjusting fork				1	
7a	Cross recess Pan head screw				12	
45b	Seal ring				1	
45	Neck ring				3	
47e	Washer		Internal diameter: D22		2	
			Outer diameter: D32			
47d	Locking ring				6	
47c	Bush				3	
47b	Bearing ring, rotating				1	
49c	Wear ring				4	
65a	Retainer				1	
65	Retainer				3	
	Bulk, Gasket (10 pcs)			99158755	1	pcs
+	Chamber cpl.			98371390	1	pcs
-	Motor			85904229	1	pcs
-	Kit, bearing cpl.			96796812	1	
153	Angular-contact bearing		Designation: 7310B			
154	Ball bearing					
158	Waved washer					
159	V-ring					
-	Kit, bearing plate			96796809	1	
155.a	Cover					
208a	Gasket					
208	Hex socket head cap screw		Designation: DIN912			
			Length (mm): 40			
			Thread: M5			
-	Kit, eyebolt			96796712	1	
189	Eyebolt					
-	Kit, fan			96796650	1	

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
156.c	Retaining ring					
156	Fan					
-	Kit, fan cover			96796647	1	
151	Fan cover					
152.a	Rubber bush					
152	Hex head cap screw					
196	Diaphragm					
-	Kit, flange			96796807	1	
156.b	Flange					
159.b	Seal ring					
185	Hex socket head cap screw					
186	Drain plug					
195.a	Grease nipple					
-	Kit, gaskets			96798508	1	
184	O-ring		Diameter: 235			
-	Kit, lubrication nipple			96796671	1	
195.b	Grease nipple					
195.a	Grease nipple					
-	Kit, ND-end shield cpl.			96796810	1	
156a	End shield NDE					
158	Waved washer					
159	V-ring					
185.c	Nut					
185.a	Hex socket head cap screw					
195.b	Grease nipple					
-	Kit, shaft seal			96843460	1	
159.b	V-ring					
159	V-ring					
-	Kit, terminal board			96796657	1	
	Terminal connection					
	Washer					
36	Hex nut					
173	Torx Screw					
176.d	Terminal board					
176	Terminal board					
177	Torx Screw					
-	Kit, terminal box cover			96796659	1	
164	Terminal box cover					
273a	Pan head thread forming screw					
-	Motor			85904037	1	pcs
-	Kit, bearing cpl.			96796812	1	
153	Angular-contact bearing		Designation: 7310B			
154	Ball bearing					
158	Waved washer					
159	V-ring					
-	Kit, bearing plate			96796809	1	
155.a	Cover					
208a	Gasket					
208	Hex socket head cap screw		Designation: DIN912			
			Length (mm): 40			
			Thread: M5			
-	Kit, eyebolt			96796712	1	
189	Eyebolt					
-	Kit, fan			96796652	1	
156.c	Retaining ring					
156	Fan					
-	Kit, fan cover			96796647	1	
151	Fan cover					

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
152.a	Rubber bush					
152	Hex head cap screw					
196	Diaphragm					
-	Kit, flange			96796807	1	
156.b	Flange					
159.b	Seal ring					
185	Hex socket head cap screw					
186	Drain plug					
195.a	Grease nipple					
-	Kit, gaskets			96798508	1	
184	O-ring		Diameter: 235			
-	Kit, lubrication nipple			96796671	1	
195.b	Grease nipple					
195.a	Grease nipple					
-	Kit, ND-end shield cpl.			96796810	1	
156a	End shield NDE					
158	Waved washer					
159	V-ring					
185.c	Nut					
185.a	Hex socket head cap screw					
195.b	Grease nipple					
-	Kit, shaft seal			96843460	1	
159.b	V-ring					
159	V-ring					
-	Kit, terminal board			96796657	1	
	Terminal connection					
	Washer					
36	Hex nut					
173	Torx Screw					
176.d	Terminal board					
176	Terminal board					
177	Torx Screw					
-	Kit, terminal box cover			96796659	1	
164	Terminal box cover					
273a	Pan head thread forming screw					
1a	Motor stool			98993921	1	pcs
2	Pump head			97789459	1	pcs
6	Base			97974018	1	pcs
7a	Bulk, Socket button head screw (10 pcs)			96549696	4	pcs
7	Bulk, Coupling guard (10 pcs)			96603279	2	pcs
+ 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
26c	Bulk, Washer (4 pcs)		Designation: DIN 125A	99262704	4	pcs
			Thickness: 1,6			
26c	Washer		Designation: DIN 125A	96586880	4	pcs
			Thickness: 1,6			
26b	Bulk, Hex socket head cap screw (10 pcs)			98931380	4	pcs
26a	Strap cpl.		Length (mm): 361	98984444	4	pcs
26	Staybolt		Length (mm): 590	98895072	4	pcs
			Thread: M 16			
28.a	Bulk, Hex head screw (20 pcs)			96620478	4	pcs
28	Bulk, Hex socket head cap screw (10 pcs)		Designation: DIN 912	96536147	4	pcs
			Length (mm): 50			
			Thread: M10			
32	Bulk, Washer (100 pcs)		Designation: DIN 125 A	98923051	8	pcs
			Internal diameter: 17			
			Outer diameter: 30			

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
			Thickness: 3			
36	Bulk, Hex nut (20 pcs)		Thread: M16	96620480	4	pcs
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			
44a	Discharge part			99052574	1	pcs
+ 44	Inlet part			99106112	1	pcs
- 49e	Bulk, Impeller cpl. (3 pcs)			98394377	2	pcs
48	Bulk, Split cone nut (10 pcs)			96551333	1	
- 49	Impeller			96591609	1	
49c	Wear ring			96551238		
+ 49e	Impeller cpl.			96903234	2	pcs
55	Outer sleeve		Outer diameter: 225	99051721	1	pcs
			Length (mm): 384,5			
56b	Base plate			99048161	1	pcs
56	Base plate			97789433	1	pcs
58	Cover			98893158	1	pcs
60	Bulk, Spring (20 pcs)			96536032	4	pcs
65a	Retainer			98461640	1	pcs
- 105	Bulk, Shaft seal (12 pcs)		Material type: HQQE	96984086	1	pcs
	Adjusting fork			96587896	1	
109	Bulk, O-ring (10 pcs)			96547586	1	
+ 105	Bulk, Shaft seal (12 pcs)		Material type: HQQE	96984070	1	pcs
440b	Bulk, Lock ring (4 pcs)			96547435	1	pcs