Company name:
Created by:
Phone:

Date: 16/02/2019

Qty.	Description
1	**CR 15-4 A-F-A-E-HQQE**

Note! Product picture may differ from actual product

Product No.: 96501895

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

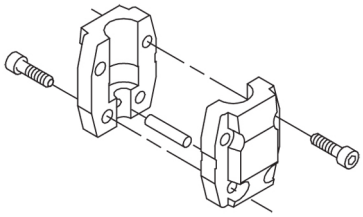
Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An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

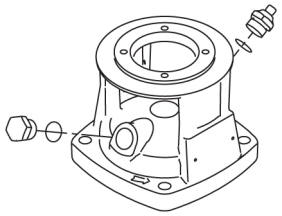
The colour code for the finished product is NCS 9000/RAL 9005.

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.



Qty.	Description

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.

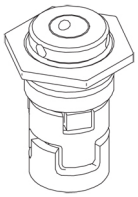
Primary seal:

- 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)

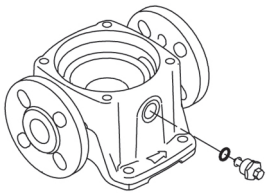
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



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 tapped-hole flange (FT).

Motor-mounting designation in accordance with IEC 60034-7: IM B 14 (Code I) / IM 3601 (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

GRUNDFOS

Company name:
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Phone:

Date: 16/02/2019

Qty.	Description	
	Density:	998.2 kg/m³
	Technical:	
	Pump speed on which pump data are based:	2917 rpm
	Rated flow:	17 m³/h
	Rated head:	44.8 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:	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:	FT130
	Electrical data:	
	Motor standard:	IEC
	Motor type:	112MC
	IE Efficiency class:	IE3
	Rated power - P2:	4 kW
	Power (P2) required by pump:	4 kW
	Mains frequency:	50 Hz
	Rated voltage:	3 x 380-415D V
	Rated current:	7.9 A
	Starting current:	1000-1110 %
	Cos phi - power factor:	0.87-0.87
	Rated speed:	2920-2940 rpm
	Efficiency:	IE3 88,1%
	Motor efficiency at full load:	88.1 %
	Motor efficiency at 3/4 load:	88.6 %
	Motor efficiency at 1/2 load:	85.2 %
	Number of poles:	2
	Enclosure class (IEC 34-5):	55 Dust/Jetting
	Insulation class (IEC 85):	F
	Others:	
	Minimum efficiency index, MEI â‰¥:	0.70
	Net weight:	72 kg
	Gross weight:	94 kg
	Shipping volume:	0.234 m³
	Danish VVS No.:	385904341

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Company name:
Created by:
Phone:

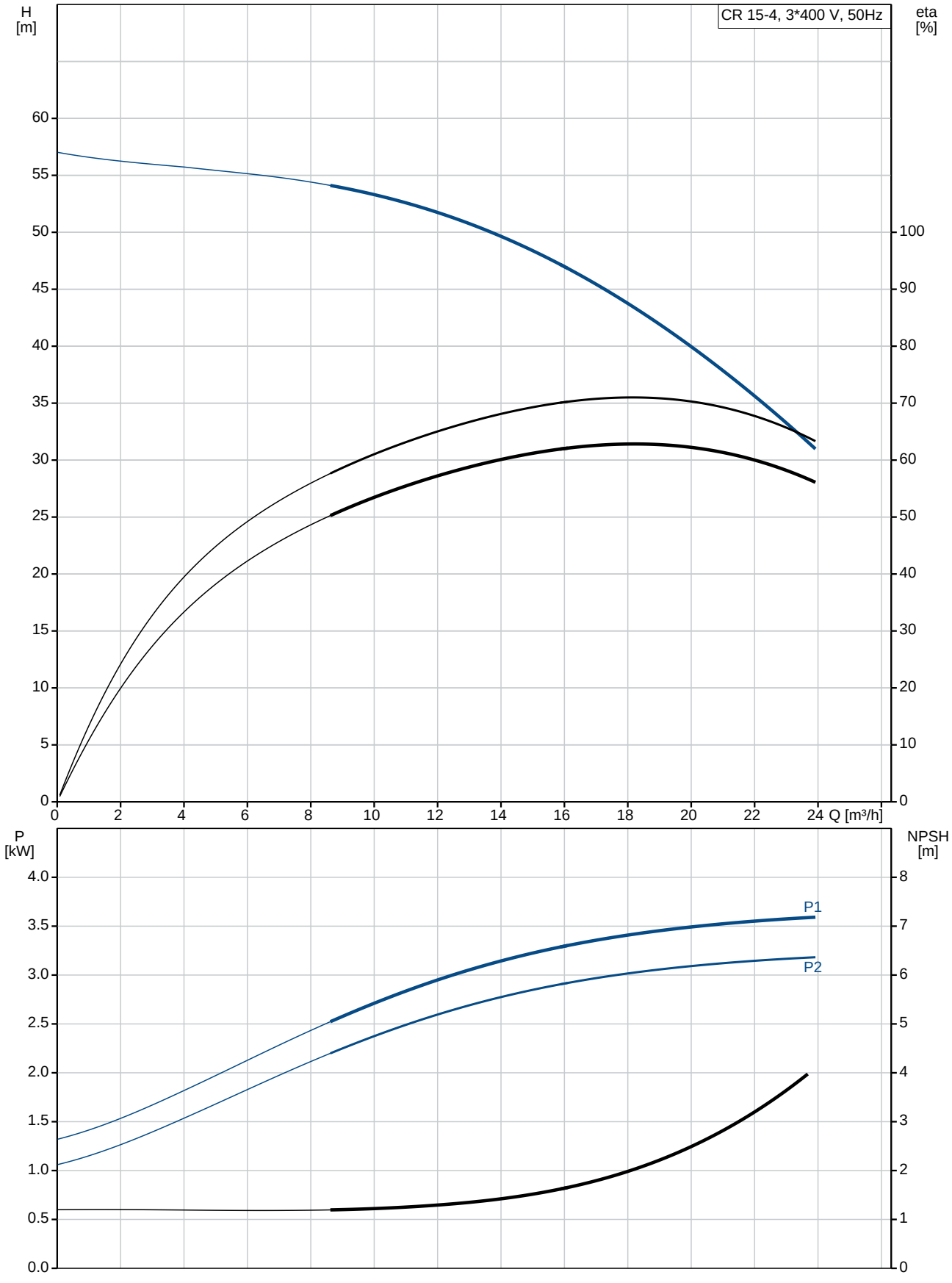
Date: 16/02/2019

Qty.	Description
	Swedish RSK No.: 5823475

Company name:
Created by:
Phone:

Date: 16/02/2019

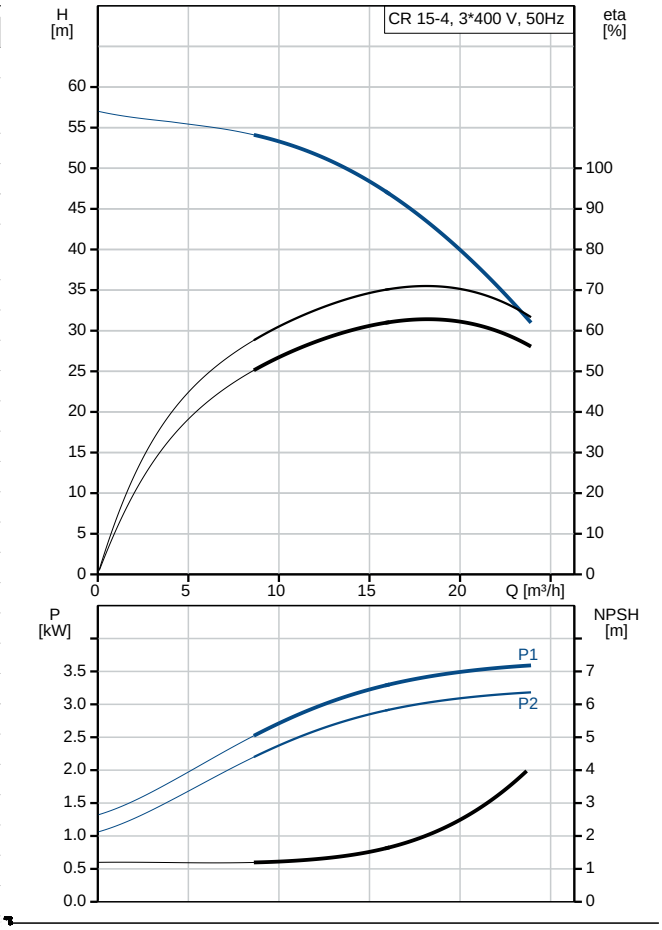
96501895 CR 15-4 A-F-A-E-HQQE 50 Hz

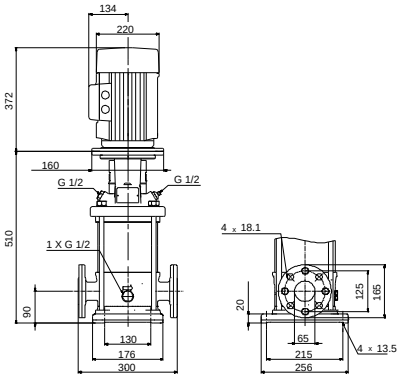


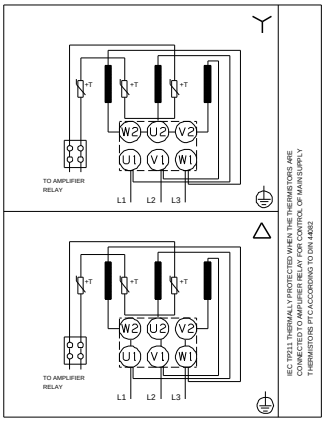
Company name:
Created by:
Phone:

Date: 16/02/2019

Description	Value
General information:	
Product name:	CR 15-4 A-F-A-E-HQQE
Product No:	96501895
EAN number:	5700396231365
Technical:	
Pump speed on which pump data are based:	2917 rpm
Rated flow:	17 m³/h
Rated head:	44.8 m
Head max:	56.8 m
Stages:	4
Impellers:	4
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:	FT130
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:	
Motor standard:	IEC
Motor type:	112MC
IE Efficiency class:	IE3
Rated power - P2:	4 kW
Power (P2) required by pump:	4 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-415D V
Rated current:	7.9 A
Starting current:	1000-1110 %







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Company name:
Created by:
Phone:

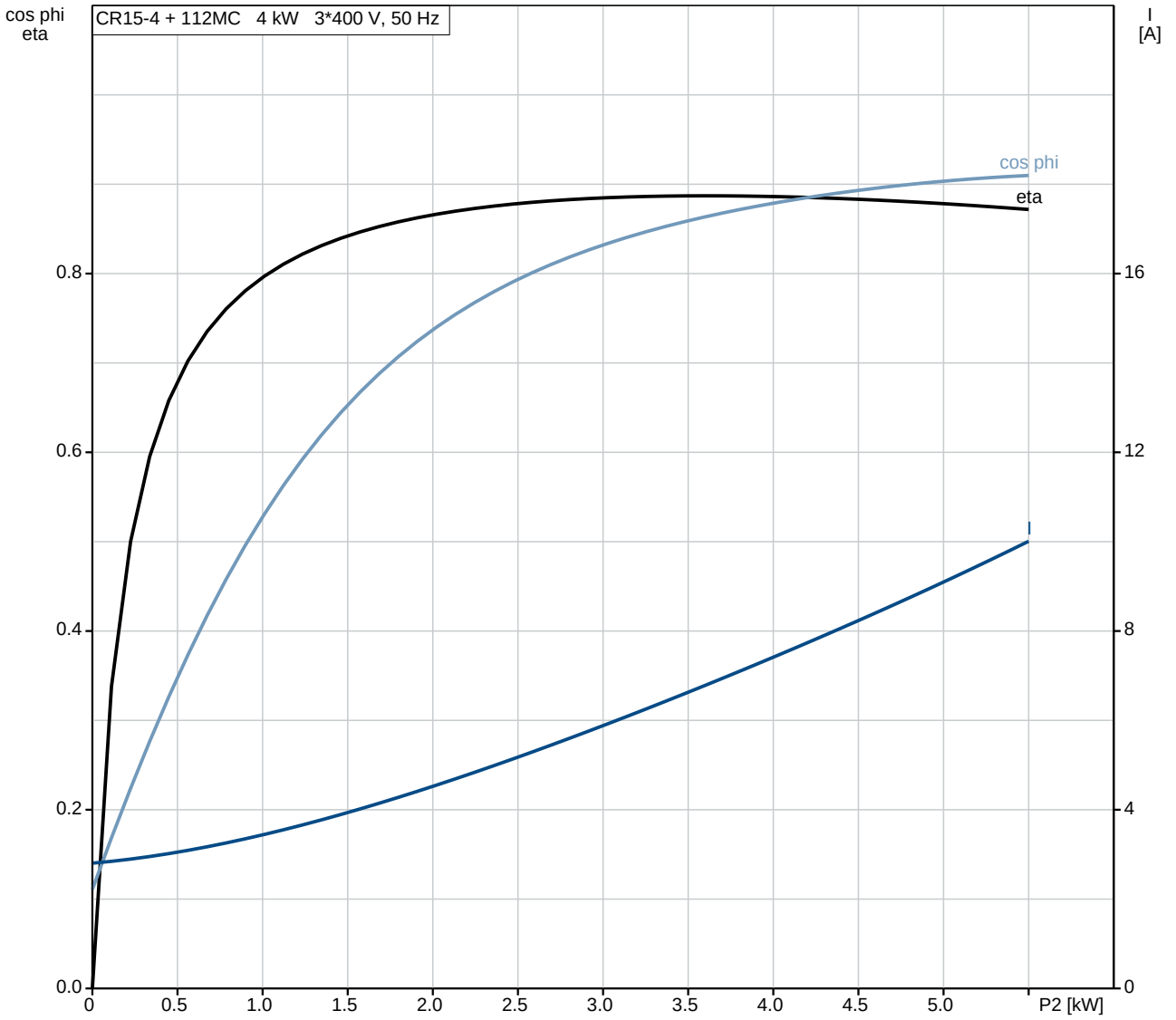
Date: 16/02/2019

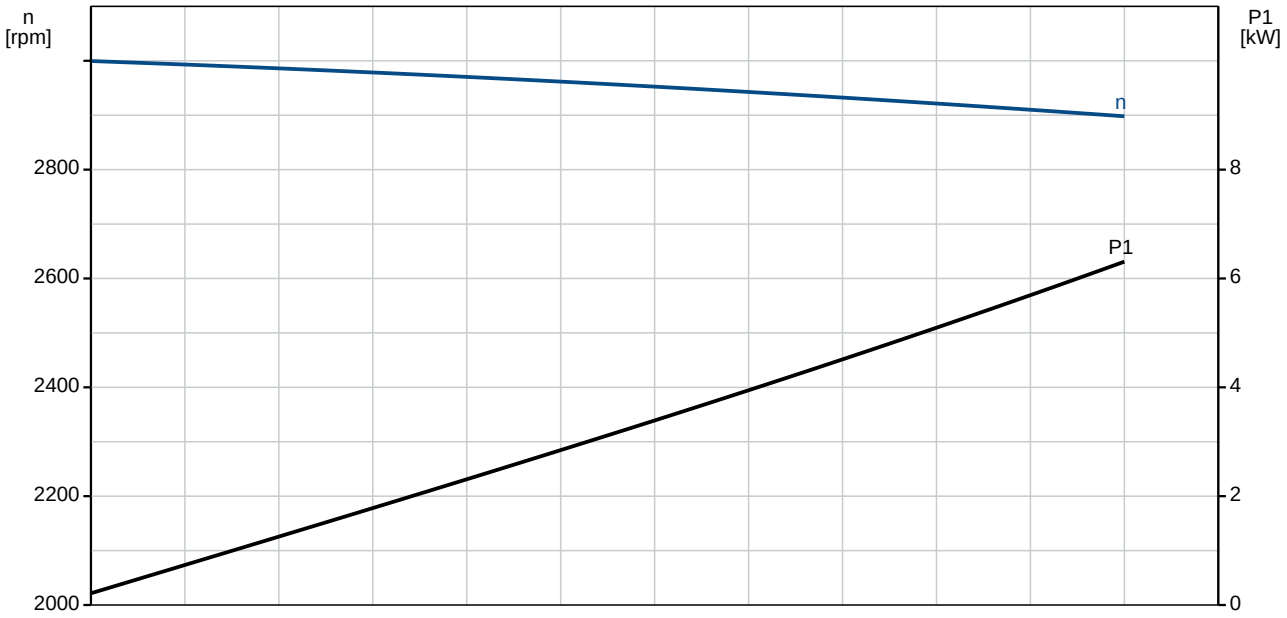
Description	Value
Cos phi - power factor:	0.87-0.87
Rated speed:	2920-2940 rpm
Efficiency:	IE3 88,1%
Motor efficiency at full load:	88.1 %
Motor efficiency at 3/4 load:	88.6 %
Motor efficiency at 1/2 load:	85.2 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC
Motor No:	85U15413
Controls:	
Frequency converter:	NONE
Others:	
Minimum efficiency index, MEI â‰¥:	0.70
Net weight:	72 kg
Gross weight:	94 kg
Shipping volume:	0.234 m³
Danish VVS No.:	385904341
Swedish RSK No.:	5823475

Company name:
Created by:
Phone:

Date: 16/02/2019

96501895 CR 15-4 A-F-A-E-HQQE 50 Hz

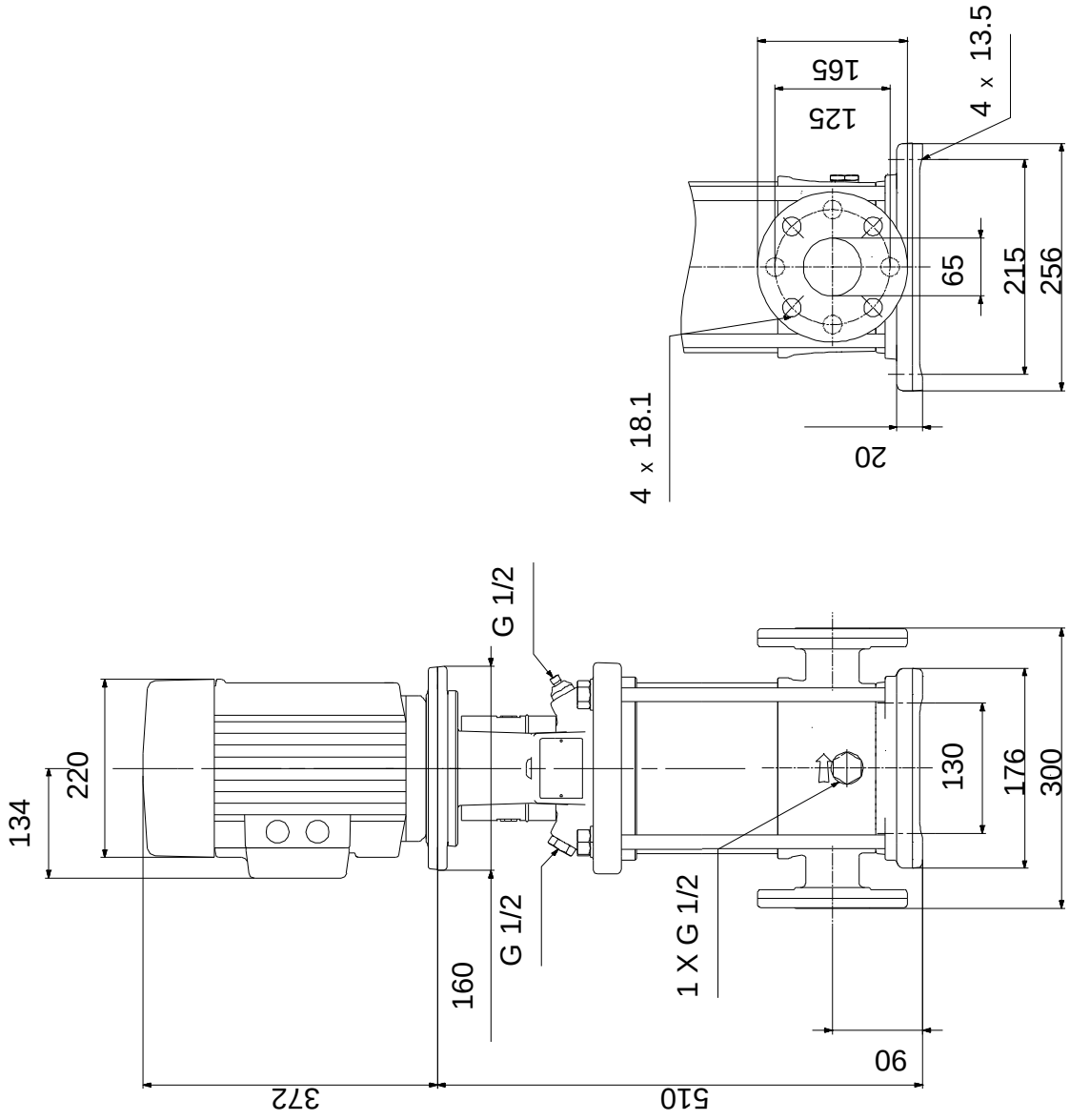




Company name:
Created by:
Phone:

Date: 16/02/2019

96501895 CR 15-4 A-F-A-E-HQQE 50 Hz

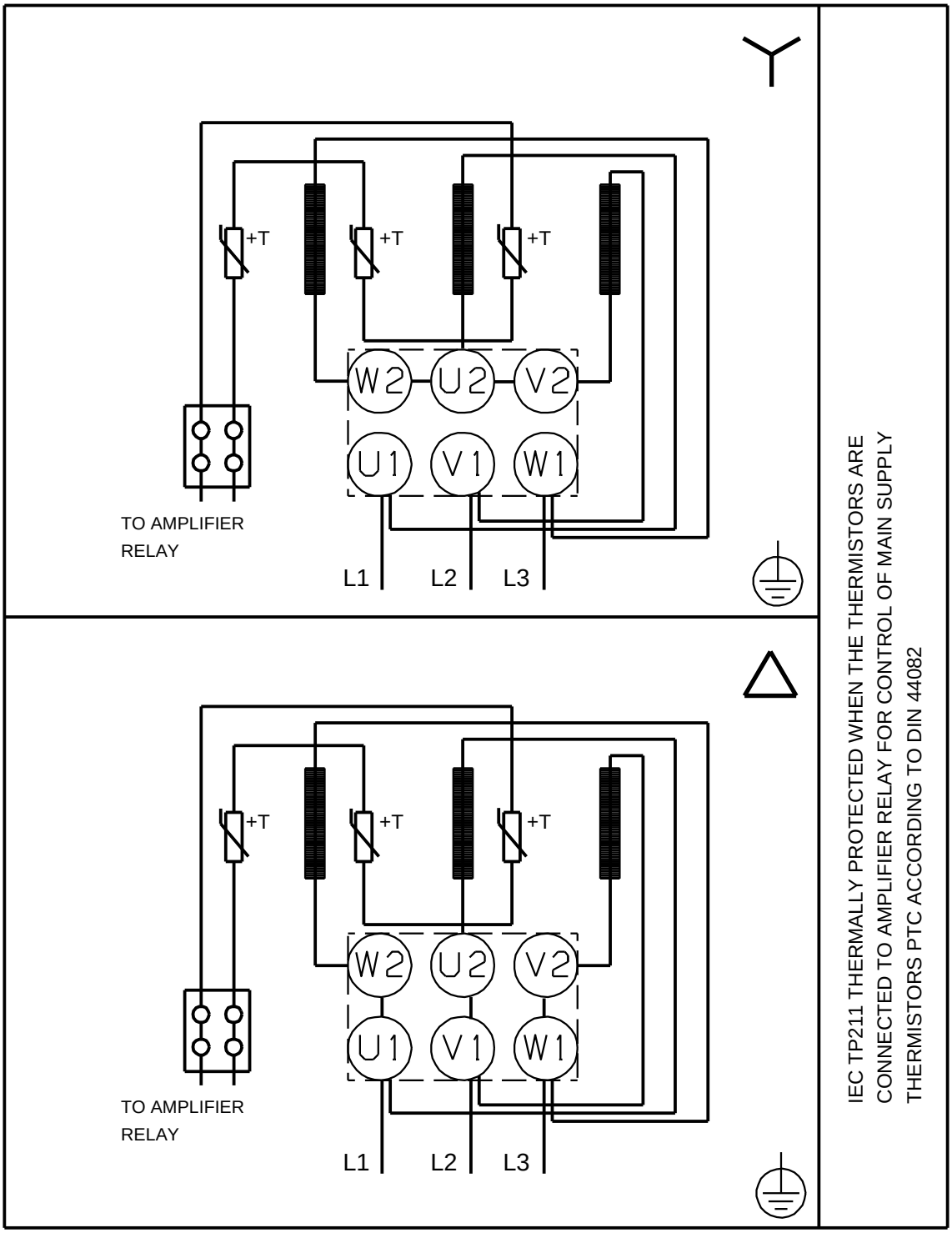


Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

Date: 16/02/2019

96501895 CR 15-4 A-F-A-E-HQQE 50 Hz

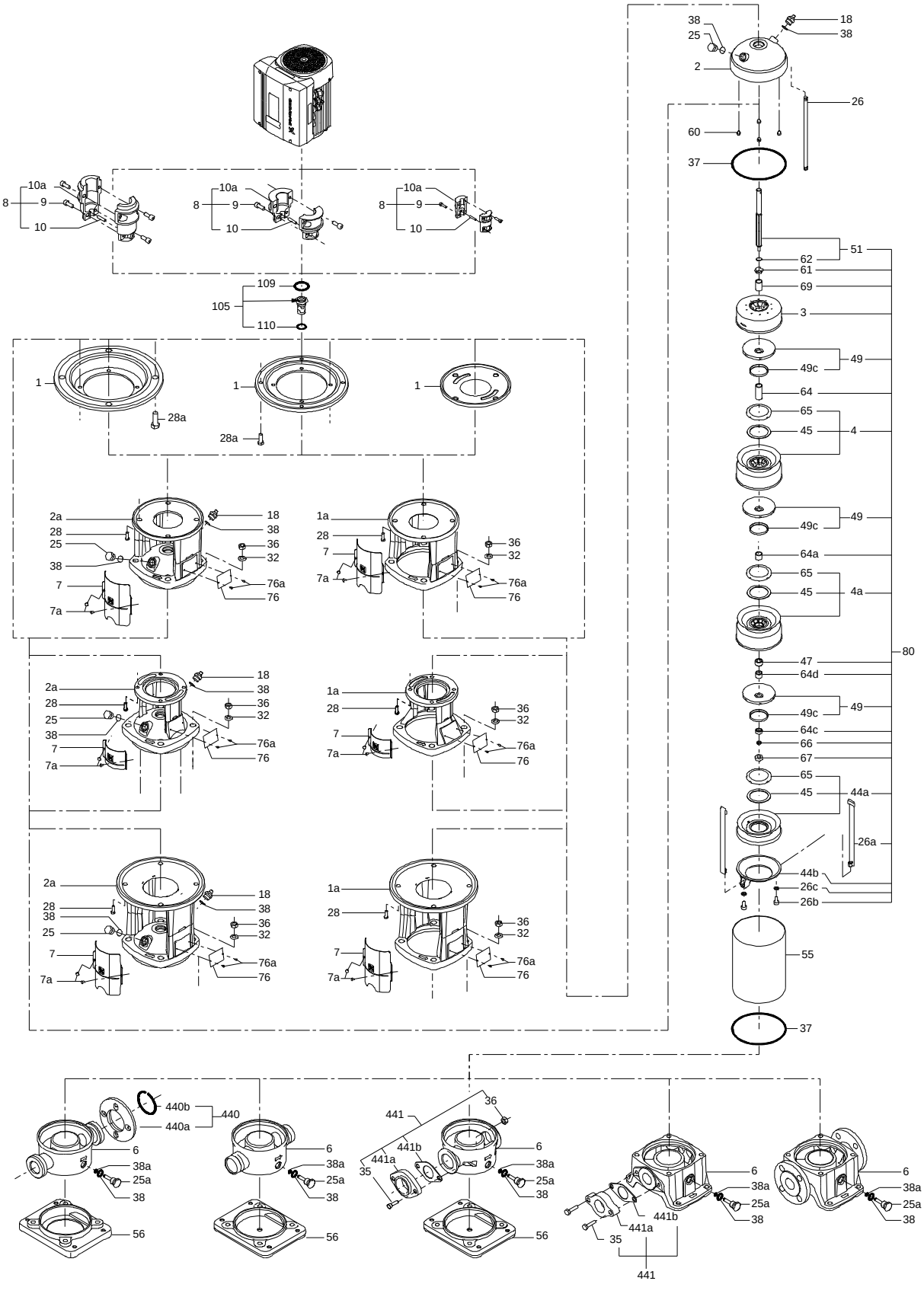


Note! All units are in [mm] unless others are stated.

Company name:
Created by:
Phone:

Date: 16/02/2019

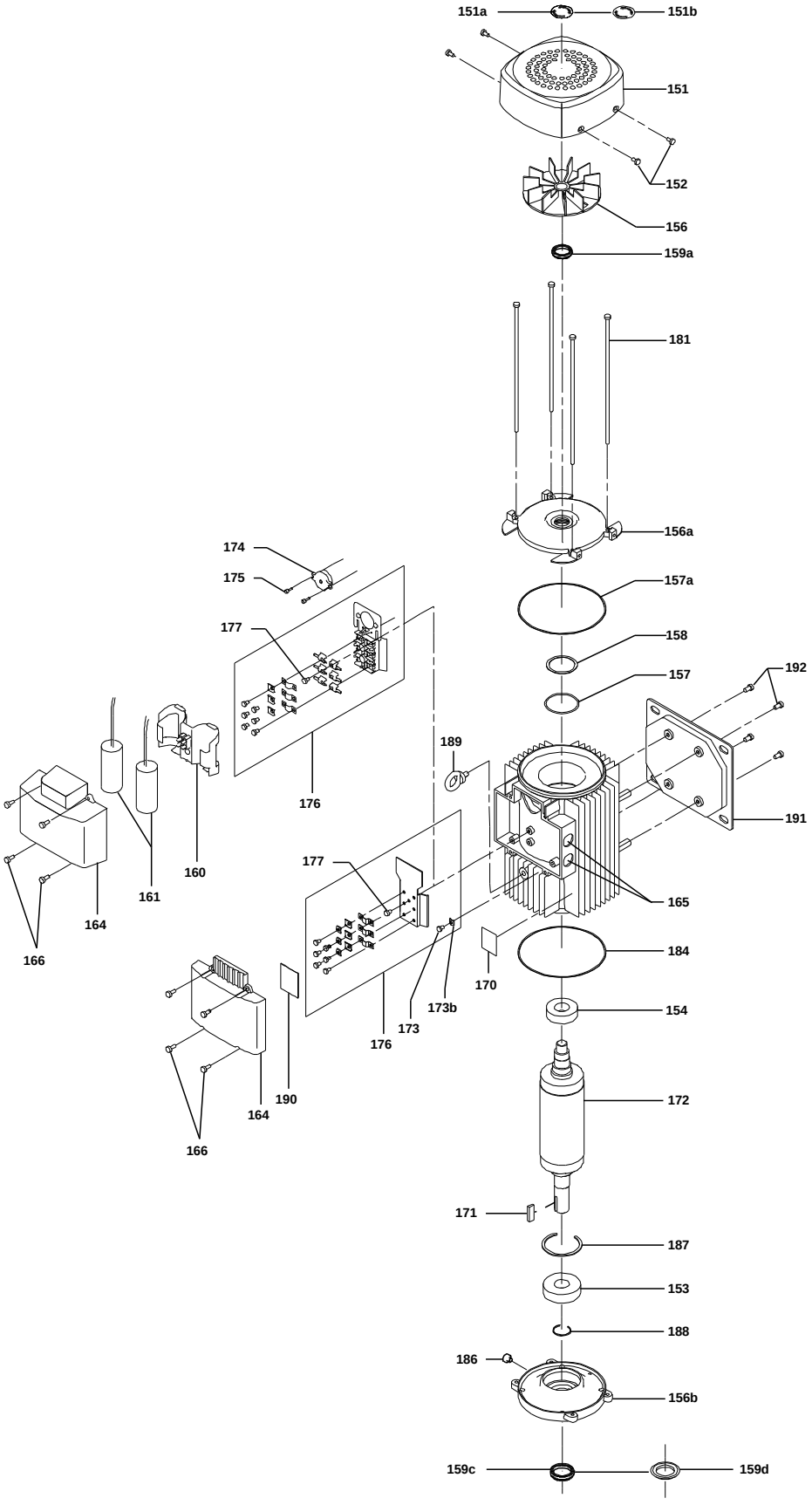
(tm069469 for MECR15,20 standard)



Company name:
Created by:
Phone:

Date: 16/02/2019

(tm029184 0505)



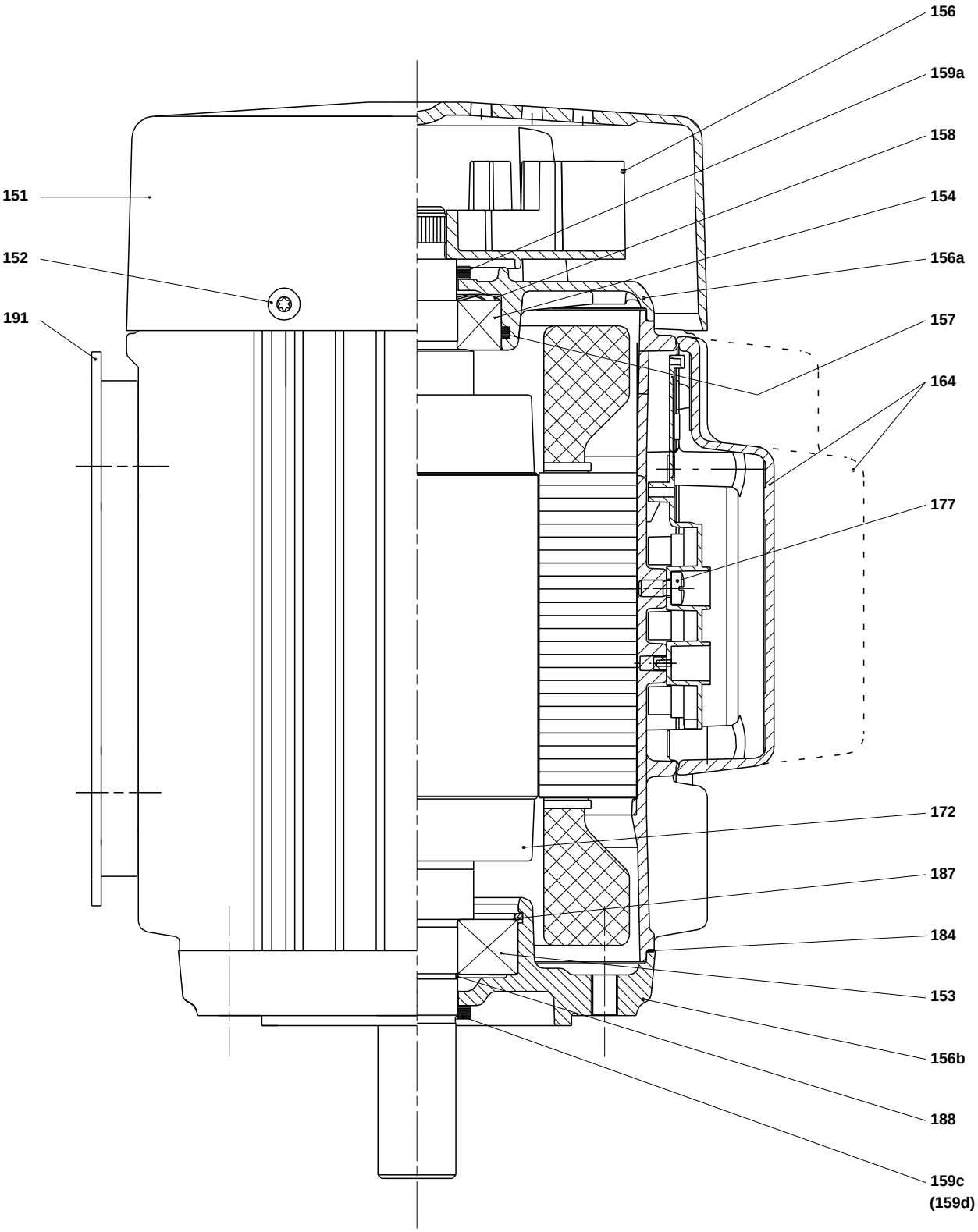
TM029184

GRUNDFOS

Company name:
Created by:
Phone:

Date: 16/02/2019

(tm029178 2004)



TM029178

Company name:
Created by:
Phone:

Date: 16/02/2019

Spare parts CR 15-4, Product No. 96501895
Valid from 1.1.2011 (1152)

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-		Kit, chamber stack			96508456	1	pcs
-	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.					
	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.					
-	51	Shaft, spline, cpl.					
		Bar					
	62	Stop ring					
	64d	Spacing bush					
	64c	Spacing pipe		Length (mm): 12.7			
	64b	Spacing bush		Length (mm): 5.00			
	64a	Spacing pipe		Internal diameter: 17,5			
				Length (mm): 17			
	64	Spacing pipe		Length (mm): 43.6			
	66	Wedge lock washer					
	67	Lock nut		Thread: M8			
	69	Spacing bush					
-		Kit, coupling			96511350	1	pcs
		Adjusting fork				1	
	9	Hex socket head cap screw		Designation: DIN 912		4	
				Length (mm): 25			
				Thread: M8			
	10a	Coupling half				2	
	10	Shaft pin		Diameter: 5		1	
				Length (mm): 26			
-		Kit, coupling guard			96509612	1	pcs
	7.a	Combi Slot Torx screw				4	
	7	Coupling guard				2	
-		Kit, gaskets			96509609	1	pcs
		Gasket				2	
	24	O-ring				2	
	37	O-ring				2	
	38a	O-ring		Diameter: 5,3		1	

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Company name:
Created by:
Phone:

Date: 16/02/2019

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
			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	
			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			96511311	1	pcs
- 18	Air vent screw				1	
	Spindle					
	Plug					
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	
			Material type: EPDM			
			Thickness: 2,4			
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	
			Material type: EPDM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		2	
			Material type: EPDM			
			Thickness: 2,4			
-	Kit, shaft seal HQQE			96511844	1	pcs
	Emery cloth				1	
	Grinding device				1	
105	Shaft seal		Material type: HQQE		1	
-	Kit, wear parts			96511824	1	pcs
- 4a	Intermediate chamber cpl.				1	
	Sand Lifter					
	Guide cup					
	Bearing plate					
	Guide vane					
3	Intermediate chamber					
45a	Neck ring cpl.					
47	Bearing bush					
65	Retainer					
26.c	Washer		Designation: DIN 125A		2	
			Thickness: 1,6			
26.b	Hex head screw				2	
45a	Neck ring cpl.				5	
47	Bearing ring				1	
49c	Wear ring				6	
62	Retaining ring				1	
64d	Spacing bush				1	

GRUNDFOS

Company name:
Created by:
Phone:

Date: 16/02/2019

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
	64c	Spacing pipe		Length (mm): 12.7		1	
	64b	Spacing bush		Length (mm): 5.00		1	
	64a	Spacing pipe		Internal diameter: 17,5		1	
				Length (mm): 17			
	65	Retainer				5	
	66	Wedge lock washer				1	
	67	Lock nut		Thread: M8		1	
-		Motor			85903740	1	pcs
-		Kit, bearing cpl.			96279802	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					
-		Kit, end shield			96279790	1	
	156a	End shield					
	157	O-ring		Diameter: 62			
				Material type: NBR			
				Thickness: 3			
	158	Waved washer					
	159a	Seal ring					
-		Kit, eyebolt			96279825	1	
	189	Eyebolt					
-		Kit, fan			96279758	1	
	156	Fan					
	159c	Seal ring					
	159a	Seal ring					
-		Kit, fan cover			96279756	1	
	151b	Label					
	151	Fan cover					
	152	Pan head thread forming screw					
-		Kit, flange			96279779	1	
	156b	Flange					
	159.c	Seal ring					
	186	Drain plug					
-		Kit, shaft seal			96279763	1	
	159c	Seal ring					
	159a	Seal ring					
-		Kit, staybolts			96279793	1	
	181	Pan head staybolt					
-		Kit, terminal board			96279769	1	
	173a	Base					
	173	Pan head thread forming screw		Designation: COMBI TORX T25			
	176	Slot cheese head screw		Designation: COMBI TORX T25			
				Length (mm): 10			
				Thread: M5			
	176	Terminal					
	176	Connecting piece					
	176	Wire clamp					
	176	Terminal board					
	177	Pan head screw					
-		Kit, terminal box			96279772	1	
	164	Terminal box cover w/gasket					
	166	Pan head thread forming screw					
	2a	Pump head			98785091	1	pcs
+	3	Bulk, Top intermediate chamber (3 pcs)			96538971	1	pcs
+	3	Top intermediate chamber			98371105	1	pcs

GRUNDFOS

Company name:
Created by:
Phone:

Date: 16/02/2019

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-	4a	Bulk, Intermediate chamber cpl. (10 pcs)			96538842	1	pcs
	3	Bulk, Intermediate chamber (3 pcs)			96535086	1	
+	4a	Intermediate chamber cpl.			98371109	1	pcs
-	4	Bulk, Intermediate chamber cpl. (10 pcs)			96538817	2	pcs
	65	Bulk, Retainer for upper seal ring (20 pcs)			97699527	1	
	65	Retainer for upper seal ring			96587913	1	
+	4	Intermediate chamber cpl.			98371107	2	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.			98926722	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			98982842	4	pcs
	28	Bulk, Hex head screw (4 pcs)		Length (mm): 25	99335941	4	pcs
				Thread: M8			
	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
	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	1	pcs
+	44a	Inlet part cpl.			98818924	1	pcs
	47	Bulk, Bearing ring (10 pcs)			96538795	1	pcs
+	49	Bulk, Impeller cpl. (5 pcs)			98394287	4	pcs
+	49	Impeller cpl.			98394448	4	pcs
+	51	Shaft, spline, cpl.			98368609	1	pcs
	55	Outer sleeve			98812623	1	pcs
	60	Bulk, Spring (20 pcs)			96538963	4	pcs
	64d	Bulk, Spacing bush (20 pcs)			96538947	1	pcs
	64c	Bulk, Spacing pipe (5 pcs)		Length (mm): 12.7	97980241	1	pcs
	64b	Bulk, Spacing bush (20 pcs)		Length (mm): 5.00	96535098	1	pcs
	64a	Bulk, Spacing pipe (10 pcs)		Internal diameter: 17,5	98417487	1	pcs
				Length (mm): 17			
	64	Bulk, Spacing pipe (20 pcs)		Length (mm): 43.6	96535107	2	pcs
	66	Bulk, Wedge lock washer (10 pcs)			96536157	1	pcs
	67	Bulk, Lock nut (10 pcs)		Thread: M8	98277008	1	pcs
	69	Bulk, Spacing bush (20 pcs)			96538949	1	pcs
	76a	Bulk, Rivet (100 pcs)			96620489	1	pcs
	105	Bulk, Shaft seal (11 pcs)		Material type: HQQE	96538914	1	pcs