Company name:
Created by:
Phone:

Date: 17/02/2019

Qty.	Description
1	**CRN 45-12 A-F-A-E-HQQE**

Product No.: 96123139

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

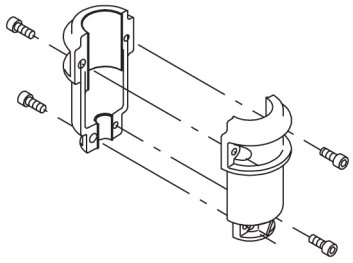
Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An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

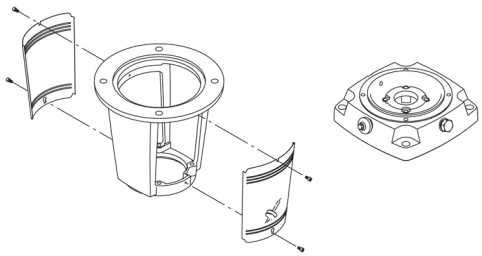
The colour code for the finished product is NCS 9000/RAL 9005.

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.

Qty.	Description

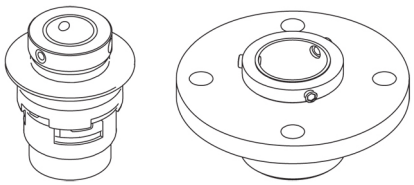
Primary seal:

- 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)

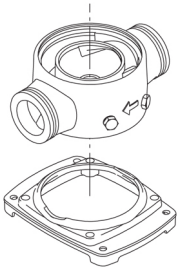
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



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 tappings. 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.

A variable speed drive makes adjustment of pump performance to any duty point possible. If the motor is to be connected to a variable speed drive, the pump must be ordered with an electrically insulated motor bearing.

Technical data

Controls:

Frequency converter:	NONE

Liquid:

Pumped liquid:	Water

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Date: 17/02/2019

Qty.	Description	
	Liquid temperature range:	-40 .. 120 °C
	Liquid temperature during operation:	20 °C
	Density:	998.2 kg/m³
	Technical:	
	Pump speed on which pump data are based:	2960 rpm
	Rated flow:	45 m³/h
	Rated head:	250 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:	55 °C
	Maximum operating pressure:	33 bar
	Max pressure at stated temp:	33 bar / 120 °C
		33 bar / -40 °C
	Type of connection:	DIN
	Size of inlet connection:	DN 80
	Size of outlet connection:	DN 80
	Pressure rating for pipe connection:	PN 40
	Flange size for motor:	FF400
	Electrical data:	
	Motor standard:	IEC
	Motor type:	SIEMENS
	IE Efficiency class:	IE3
	Rated power - P2:	45 kW
	Power (P2) required by pump:	45 kW
	Mains frequency:	50 Hz
	Rated voltage:	3 x 380-420D/660-725Y V
	Rated current:	81,0-74,0/47,0-43,0 A
	Starting current:	690-690 %
	Cos phi - power factor:	0.89
	Rated speed:	2960 rpm
	Efficiency:	IE3 94,0%
	Motor efficiency at full load:	94.0-94.0 %
	Motor efficiency at 3/4 load:	94.5-94.5 %
	Motor efficiency at 1/2 load:	94.4-94.4 %
	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:	460 kg
	Gross weight:	562 kg

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Phone:

Date: 17/02/2019

Qty.	Description	
	Shipping volume:	1.24 m³
	Danish VVS No.:	385917120

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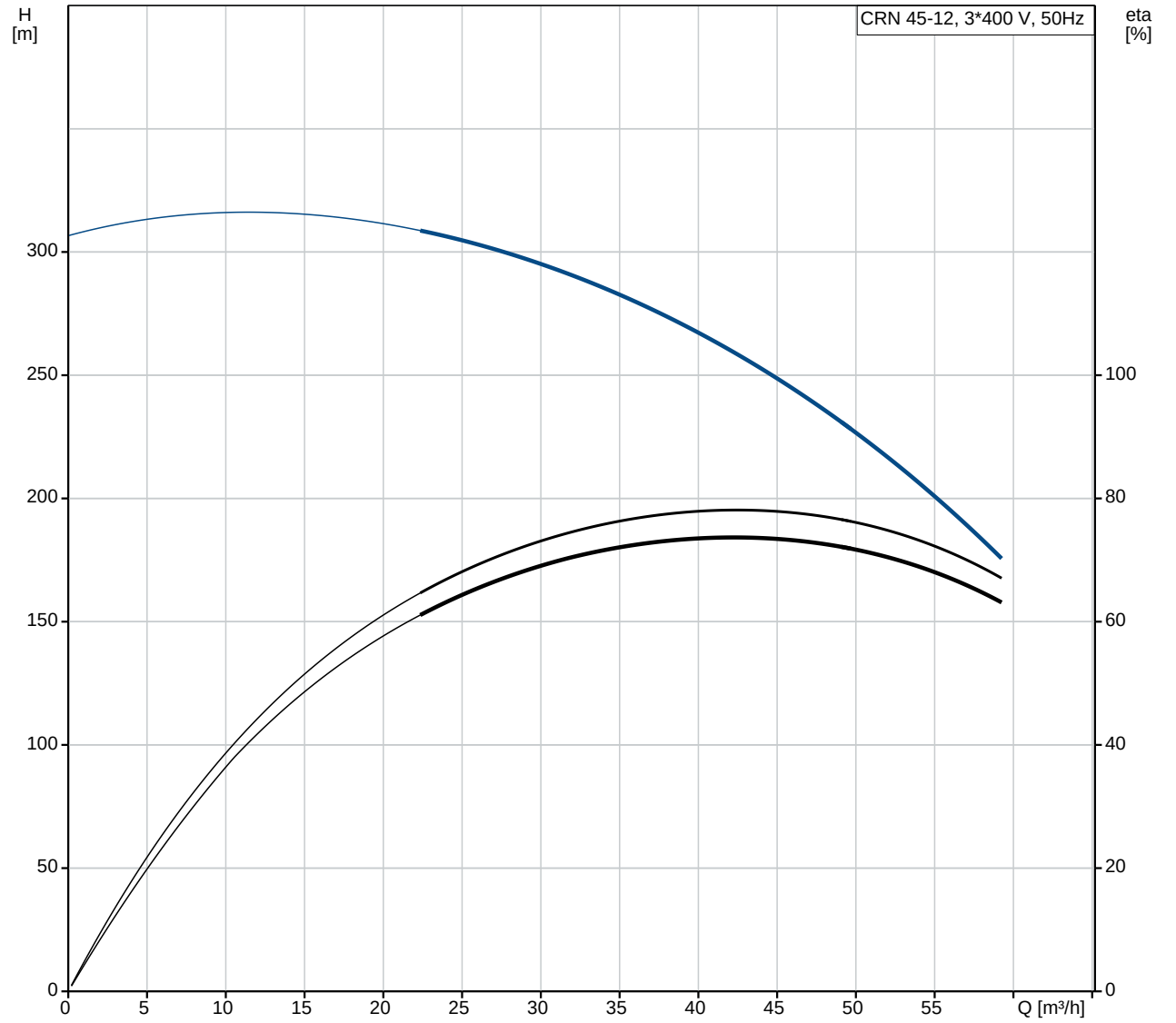
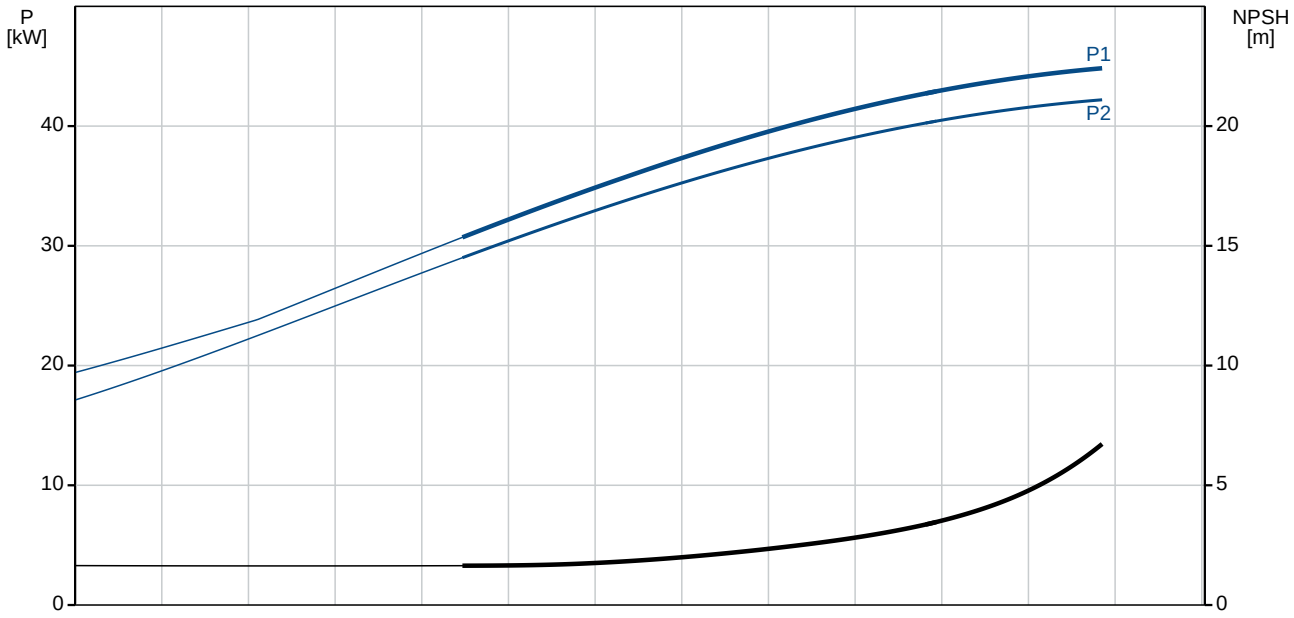
Company name:
Created by:
Phone:

Date: 17/02/2019

96123139 CRN 45-12 A-F-A-E-HQQE 50 Hz

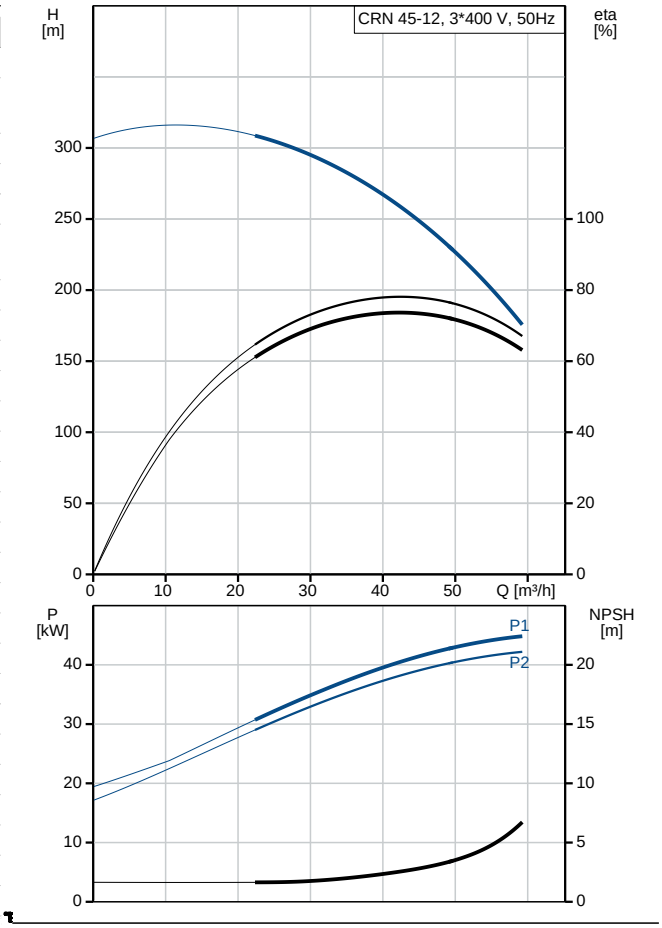


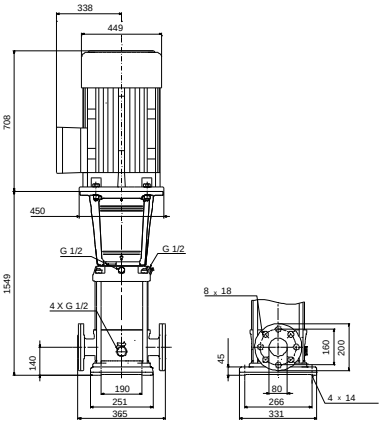


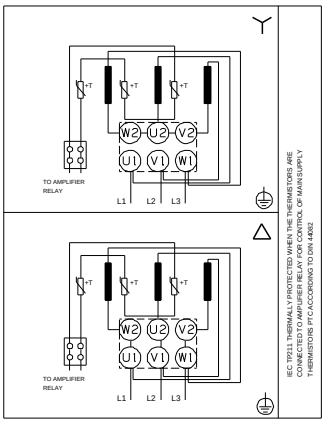
Company name:
Created by:
Phone:

Date: 17/02/2019

Description	Value
General information:	
Product name:	CRN 45-12 A-F-A-E-HQQE
Product No:	96123139
EAN number:	5700396691848
Technical:	
Pump speed on which pump data are based:	2960 rpm
Rated flow:	45 m³/h
Rated head:	250 m
Head max:	306.2 m
Stages:	12
Impellers:	12
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:	B
Materials:	
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:	Graflon
Installation:	
Maximum ambient temperature:	55 °C
Maximum operating pressure:	33 bar
Max pressure at stated temp:	33 bar / 120 °C
	33 bar / -40 °C
Type of connection:	DIN
Size of inlet connection:	DN 80
Size of outlet connection:	DN 80
Pressure rating for pipe connection:	PN 40
Flange size for motor:	FF400
Connect code:	F
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-40 .. 120 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Motor standard:	IEC
Motor type:	SIEMENS
IE Efficiency class:	IE3
Rated power - P2:	45 kW
Power (P2) required by pump:	45 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-420D/660-725Y V
Rated current:	81,0-74,0/47,0-43,0 A







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Company name:
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Phone:

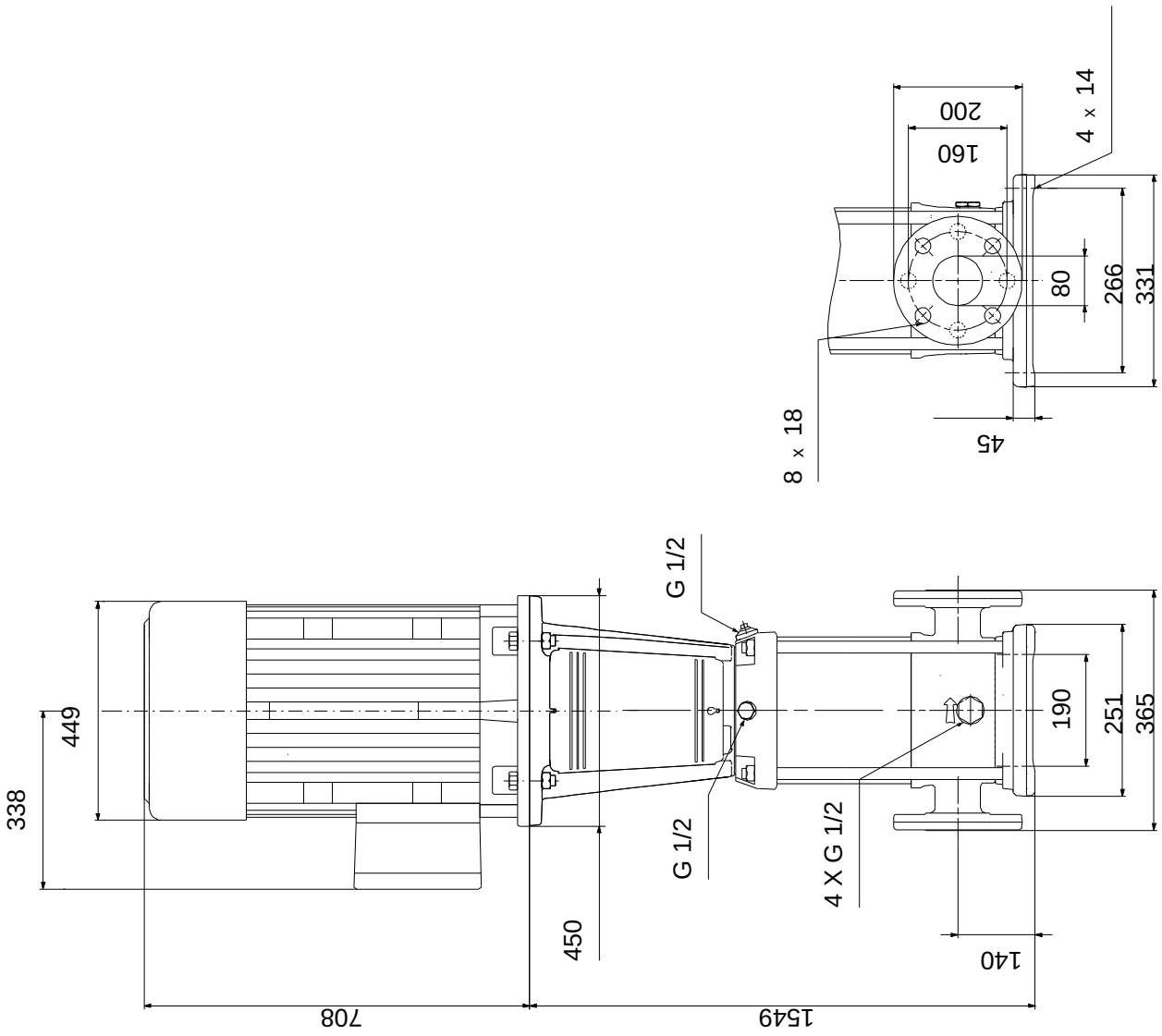
Date: 17/02/2019

Description	Value
Starting current:	690-690 %
Cos phi - power factor:	0.89
Rated speed:	2960 rpm
Efficiency:	IE3 94,0%
Motor efficiency at full load:	94.0-94.0 %
Motor efficiency at 3/4 load:	94.5-94.5 %
Motor efficiency at 1/2 load:	94.4-94.4 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC
Motor No:	81U15336
Controls:	
Frequency converter:	NONE
Others:	
Minimum efficiency index, MEI â‰¥:	0.70
Net weight:	460 kg
Gross weight:	562 kg
Shipping volume:	1.24 m³
Danish VVS No.:	385917120

Company name:
Created by:
Phone:

Date: 17/02/2019

96123139 CRN 45-12 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:
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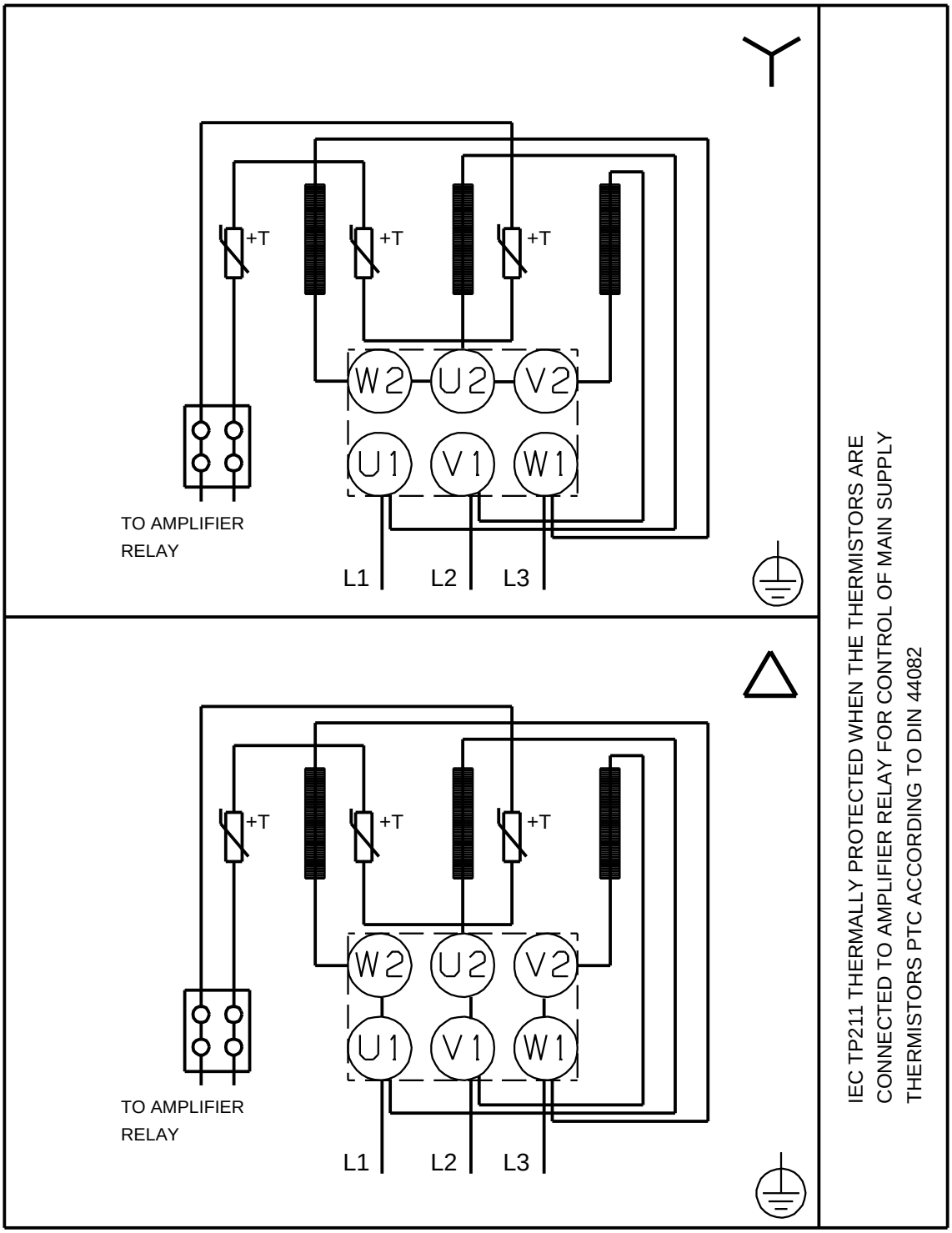
Phone:

Date: 17/02/2019

96123139 CRN 45-12 A-F-A-E-HQQE 50 Hz



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

Company name:
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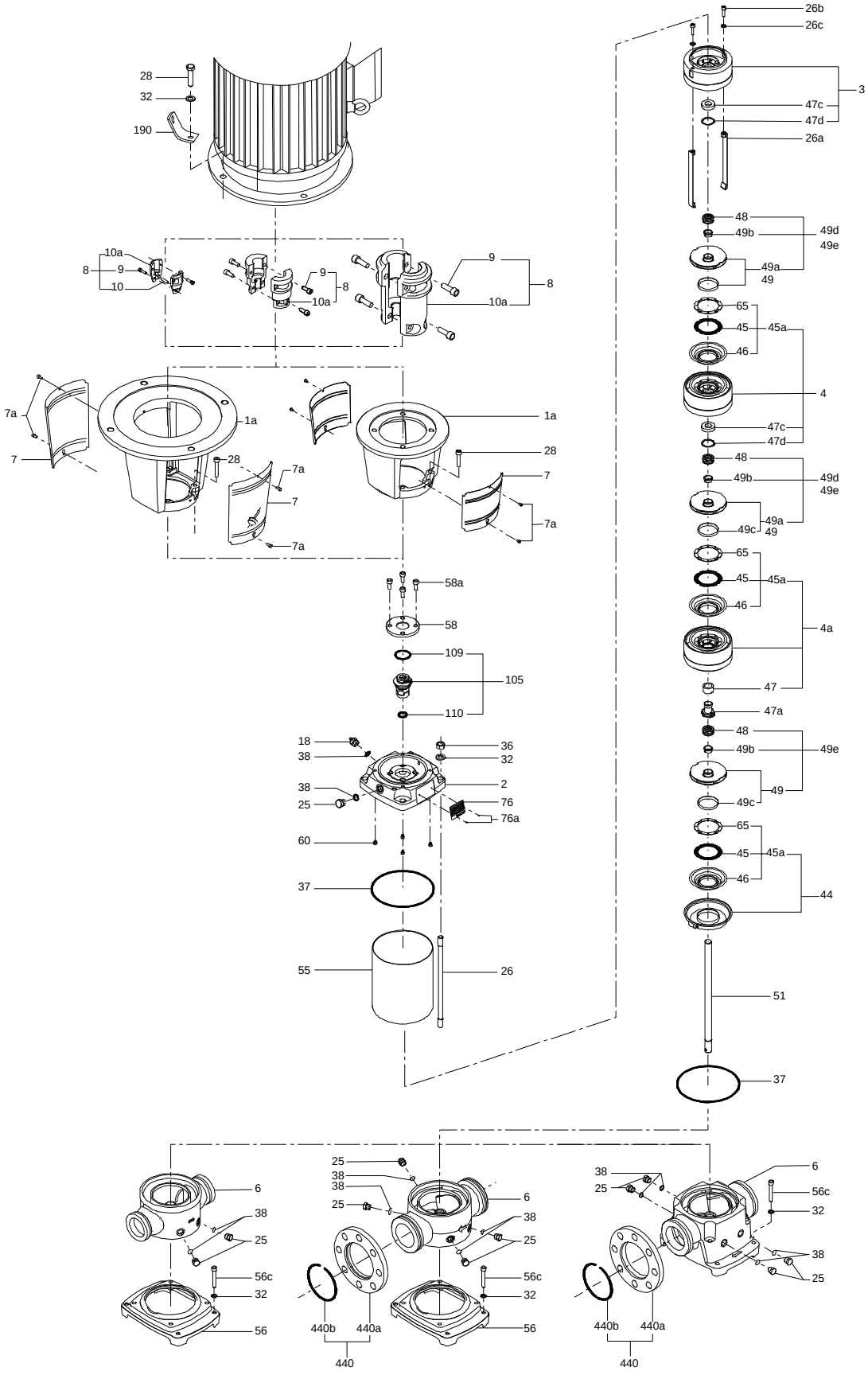
Phone:

Date: 17/02/2019

(tm069487 for LACR model B standard)

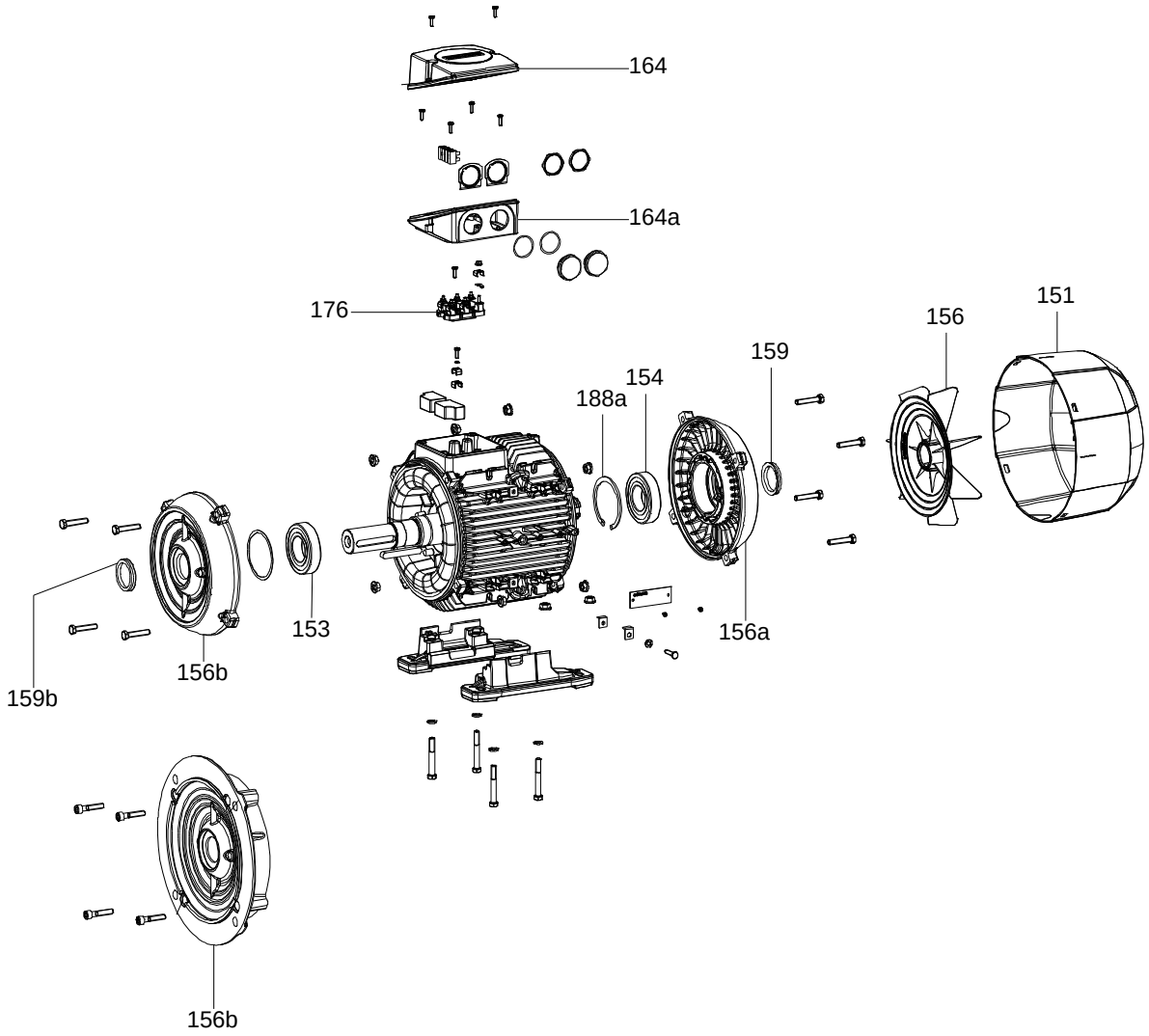


TM069487

Company name:
Created by:
Phone:

Date: 17/02/2019

(TM058162)



GRUNDFOS

Company name:
Created by:
Phone:

Date: 17/02/2019

Spare parts CRN 45-12, Product No. 96123139
Valid from 3.3.2014 (1410)

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-		Base			96587695	1	pcs
	6	Base				1	
-		Kit, chambers			98633888	1	pcs
-	4a	Intermediate chamber cpl.				1	
		Cone					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
	45a	Neck ring cpl.					
	47	Bearing					
-	47a	Bearing cpl.				1	
		Driver					
		Holder					
		Disc spring					
		Bearing ring					
-		Kit, coupling			96416594	1	pcs
		Adjusting fork				1	
-	8	Coupling cpl.		Dimension: 22/55		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
	58a	Hex socket head cap screw		Designation: DIN 912		4	
				Length (mm): 25			
				Thread: M10			
	58	Cover				1	
-		Kit, gaskets			96416599	1	pcs
		Adjusting fork				1	
	37	O-ring				2	
	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			
	60	Spring				4	
	109	O-ring				1	
	110	O-ring		Diameter: 21,2		1	
				Material type: EPDM			
				Thickness: 3,55			
-		Kit, impeller			98634001	1	pcs
	48	Nut				1	
	48	Nut				1	
	49b	Split cone				1	
	49	Impeller				1	
-		Kit, plug			96505136	1	pcs
-	18	Air vent screw				1	

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Phone:

Date: 17/02/2019

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
		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 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			98497476	1	pcs
	45	Seal ring				13	
	47d	Lock ring				13	
	47c	Bush				10	
	49c	Wear ring				13	
	65	Top f/neck ring				13	
-		Motor				1	pcs
	156	Kit, fan			98671984	1	
	151	Kit, fan cover			98062276	1	
	156b	Kit, flange			98062292	1	
		Kit, lubrication nipple			98062533	1	
	156a	Kit, ND-end shield cpl.			98062518	1	
	159b	Kit, seal ring			98062552	1	
	176	Kit, terminal board			98062237	1	
	164a	Kit, terminal box			98062263	1	
	1a	Motor stool			96587724	1	pcs
	2	Pump head			96587726	1	pcs
-	3	Upper chamber cpl.			98634048	1	pcs
	47c	Bulk, Bush (10 pcs)			99321194	1	
-	4	Bulk, Intermediate chamber cpl. (3 pcs)			99335210	8	pcs
	45a	Bulk, Neck ring cpl. (10 pcs)			96547392	1	
+	4a	Bulk, Intermediate chamber cpl. (5 pcs)			99262907	3	pcs
+	4	Intermediate chamber cpl.			98634020	8	pcs
	6	Base			99347238	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
	26	Bulk, Staybolt (4 pcs)		Length (mm): 1192	98698636	4	pcs
				Thread: M16			

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Created by:
Phone:

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	Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
	26	Staybolt		Length (mm): 1192	98976692	4	pcs
				Thread: M16			
	26c	Bulk, Washer (4 pcs)		Designation: DIN 125A	99262704	2	pcs
				Thickness: 1,6			
	26c	Washer		Designation: DIN 125A	96586880	2	pcs
				Thickness: 1,6			
	26b	Bulk, Hex socket head cap screw (10 pcs)			98931380	2	pcs
	26a	Strap cpl.		Length (mm): 969	98983887	2	pcs
				Thread: M8			
	28	Bulk, Hex socket head cap screw (10 pcs)		Designation: DIN 912	96536147	4	pcs
				Length (mm): 50			
				Thread: M10			
	28	Bulk, Hex head screw (20 pcs)		Length (mm): 60	97506949	4	pcs
				Thread: M16			
	32	Bulk, Washer (100 pcs)		Designation: DIN 125 A	98923051	8	pcs
				Internal diameter: 17			
				Outer diameter: 30			
				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			
-	44	Suction interconnector cpl.			98634055	1	pcs
	45	Bulk, Seal ring (10 pcs)			97911448	1	
	45	Bulk, Seal ring (10 pcs)			96535952	1	
	65	Bulk, Top f/neck ring (10 pcs)			96547390	1	
+	47a	Bulk, Bearing cpl. (5 pcs)			99270649	3	pcs
+	47a	Bulk, Bearing cpl. (10 pcs)			96535951	3	pcs
	48	Bulk, Nut (3 pcs)			99262680	1	pcs
	48	Bulk, Nut (10 pcs)			99262683	1	pcs
	48	Bulk, Nut (10 pcs)			96536016	1	pcs
	49b	Bulk, Split cone (10 pcs)			96536010	1	pcs
-	49a	Bulk, Impeller, reduced diameter (5 pcs)			96535957	1	pcs
	49c	Bulk, Wear ring (10 pcs)			96535949	1	
+	49a	Impeller, reduced diameter			98585277	1	pcs
	55	Outer sleeve			98820371	1	pcs
	56	Base plate			96587696	1	pcs
	58	Cover			98893158	1	pcs
	60	Bulk, Spring (20 pcs)			96536032	4	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)			96535943	1	pcs