

17/02/2019

Qty. | Description

1

CRN 45-6-2 A-F-A-E-HQQE



Q

Product No.: 96123126

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:

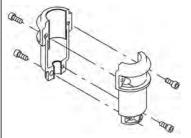
1) Alkaline-based cleaning.

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

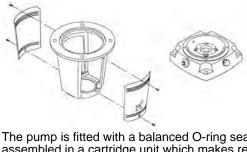
The colour code for the finished product is NCS 9000/RAL 9005.

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.



17/02/2019

Qty. | Description

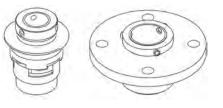
Primary seal:

- 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)

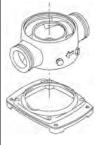
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



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.

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



	Dat	te:	17/02/2019
Description			
Liquid temperature range:	-40 120 °C		
Liquid temperature during opera	ition: 20 °C		
Density:	998.2 kg/m³		
Technical: Pump speed on which pump da	ta ara basad: 2017 rom		
Rated flow:	45 m ³ /h		
Rated head:	113.3 m		
Pump orientation:	Vertical		
Shaft seal arrangement:	Single		
Code for shaft seal:	HQQE		
Approvals on nameplate:	CE, EAC,ACS		
Curve tolerance:	ISO9906:2012 3B		
Matariala			
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		
Maximum operating pressure. Max pressure at stated temp:	30 bar / 120 °C		
	30 bar / -40 °C		
Type of connection:	DIN		
Size of inlet connection:	DN 80		
Size of outlet connection:	DN 80		
Pressure rating for pipe connect			
Flange size for motor:	FF300		
Electrical data:			
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		
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		
Others:			
Minimum efficiency index, MEI á	à‰¥: 0.70		
Net weight:	217 kg		



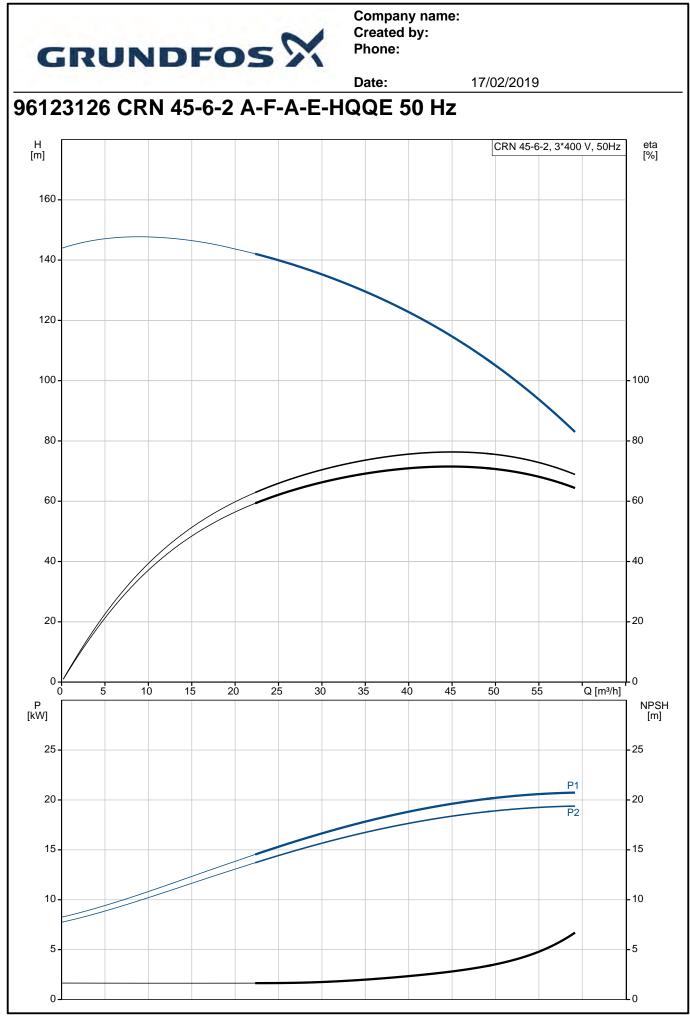
Qty.	Description

Date:

17/02/2019

Shipping volume:	
Danish VVS No.:	

0.805 m³ 385917062



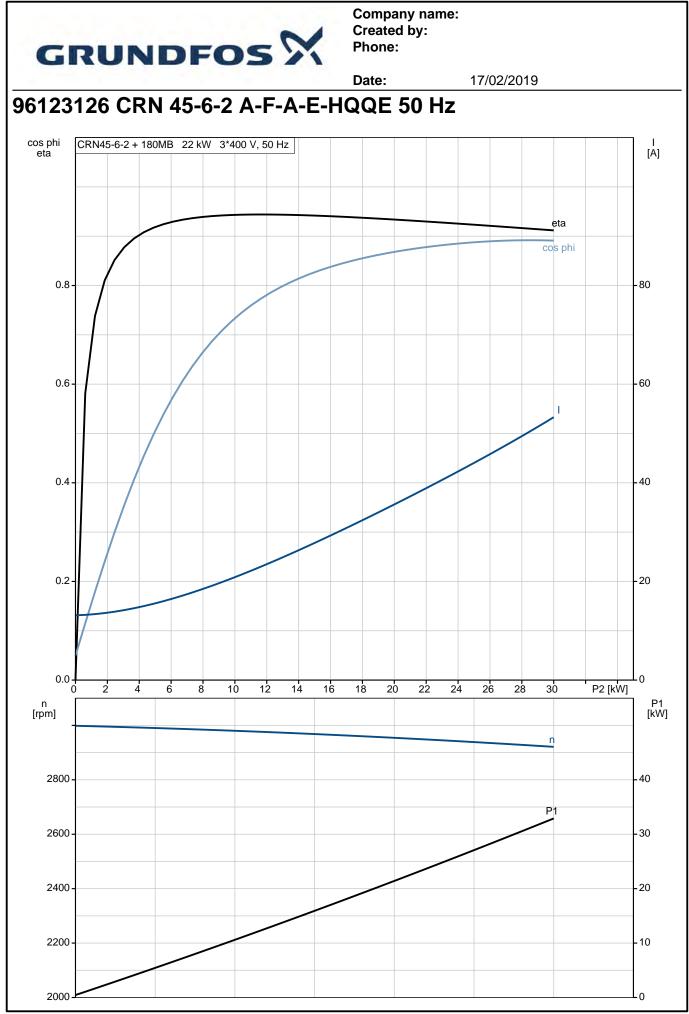


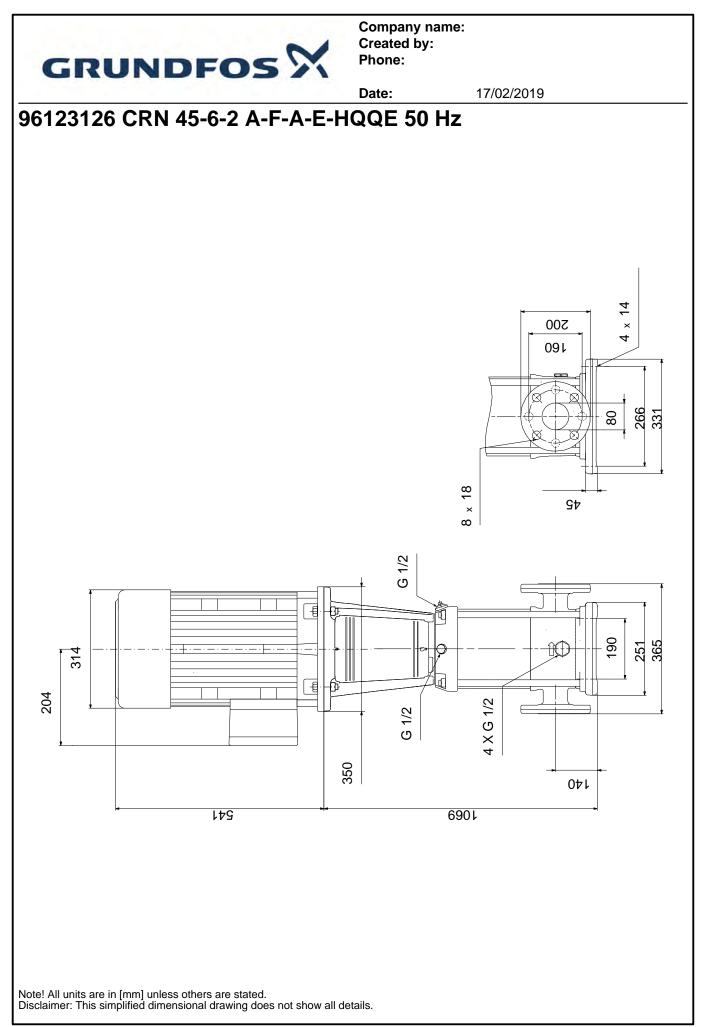
		Date:	17/02		<u> </u>
Description	Value	H [m]		CRN 45-6-2, 3*400 V, 50Hz	eta [%]
General information:		160 -			
Product name:	CRN 45-6-2 A-F-A-E-HQQE				
Product No:	96123126	140 -			1
EAN number:	5700396691718	-			
Technical:		120 -			1
Pump speed on which pump data are based:	2947 rpm	100 -			- 100
Rated flow:	45 m³/h				
Rated head:	113.3 m	80 -			- 80
Head max:	143.2 m	-			
Stages:	6	60 -			- 60
Impellers:	6	-			
Number of reduced-diameter impellers:	2	40 -			- 40
Low NPSH:	Ν				
Pump orientation:	Vertical	20			- 20
Shaft seal arrangement:	Single	/			
Code for shaft seal:	HQQE	0			Lo
Approvals on nameplate:	CE, EAC,ACS	0 10	20 30	40 50 Q [m³/h]	_0
Curve tolerance:	ISO9906:2012 3B	P [kW]			NPSH [m]
Pump version:	A	25 -			- 25
Model:	В			P1	
Materials:		20 -		P2	- 20
Base:	Stainless steel	15 -			- 15
	EN 1.4408				
	AISI 316	10-			- 10
Impeller:	Stainless steel				
•	EN 1.4401	5 -			-5
	AISI 316	0			Lo
Material code:	A	٩			-
Code for rubber:	E	204			
Bearing:	SIC				
Support bearing:	Graflon				
Installation:					
Maximum ambient temperature:	60 °C	- 1 <u>2</u>			
Maximum operating pressure:	30 bar		<u>F</u>		
Max pressure at stated temp:	30 bar / 120 °C				
	30 bar / -40 °C	350	₩ +		
Type of connection:	DIN	G 1/2	<u>G 1/2</u>		
Size of inlet connection:	DN 80				
Size of outlet connection:	DN 80	4 X G 1/2			
Pressure rating for pipe connection:	PN 40				
Flange size for motor:	FF300				
Connect code:	F	251	266	4 × 14	
Liquid:		-			
Pumped liquid:	Water		Y		
Liquid temperature range:	-40 120 °C		'		
Liquid temperature during operation:	20 °C				
Density:	998.2 kg/m ³	- V ^{**} ■ V ^{**}	₽ ₽ ₽		
Electrical data:	<u> </u>		<u>.</u>		
Motor standard:	IEC			Nors Aft	
Motor type:	180MB	TO AMPLIFIER RELAY		OF MAIN	
IE Efficiency class:	IE3	-		N THE TH	
Rated power - P2:	22 kW			TO DIN 4	
Power (P2) required by pump:	22 kW	₿ ^{+⊤} ₿ ^{+⊤}	Ъ ^{+т}		
Mains frequency:	50 Hz			R MALLYS PTC ACC	
Rated voltage:	3 x 380-415D/660-690Y V			Lec Pray makes the second sec	
	39.5/22.8 A	RELAY			

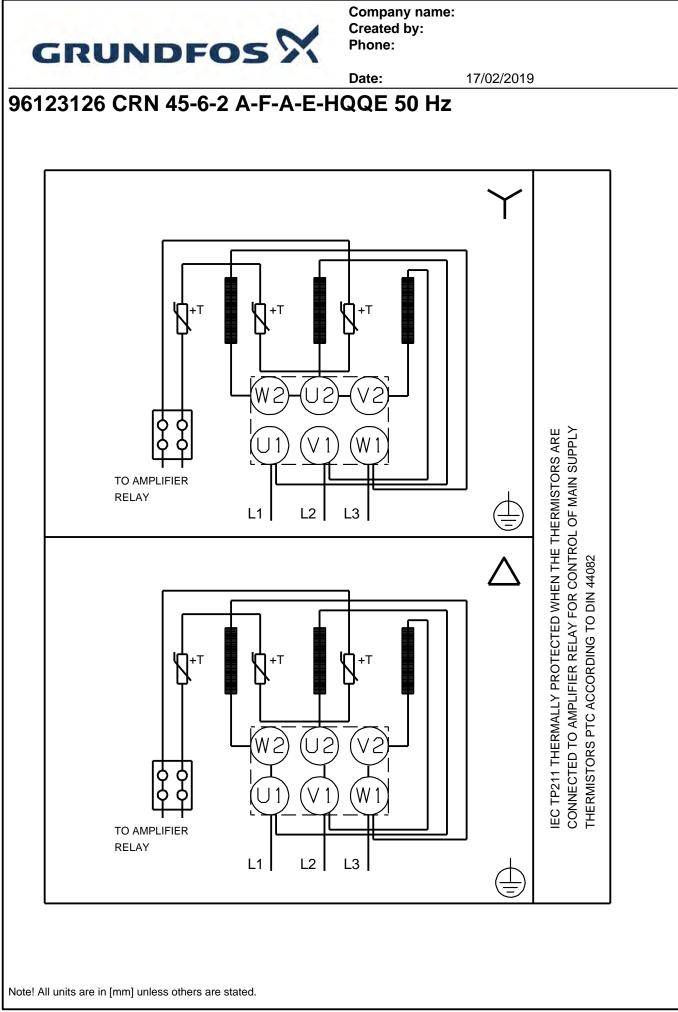
Printed from Grundfos Product Centre [2018.09.002]



		Date:	17/02/2019
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		
Controls:			
Frequency converter:	NONE		
Others:			
Minimum efficiency index, MEI ≥:	0.70		
Net weight:	217 kg		
Gross weight:	256 kg		
Shipping volume:	0.805 m ³		
Danish VVS No.:	385917062		



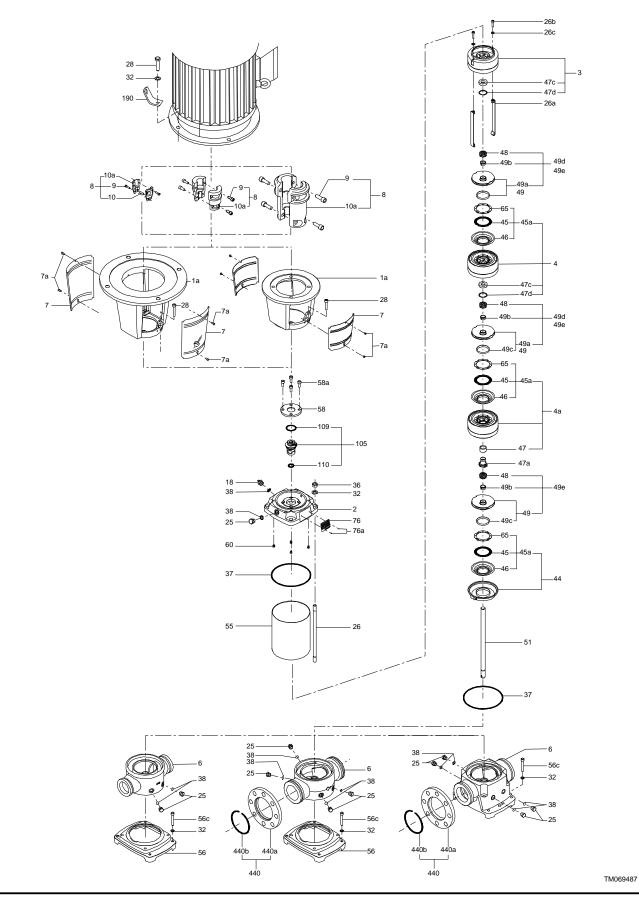




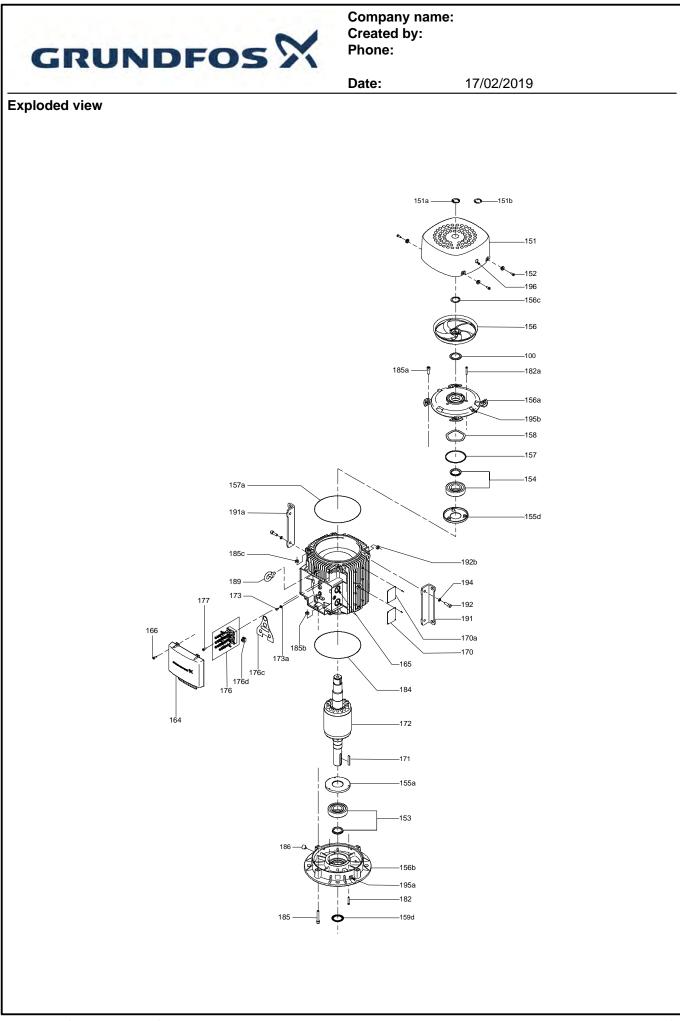


17/02/2019

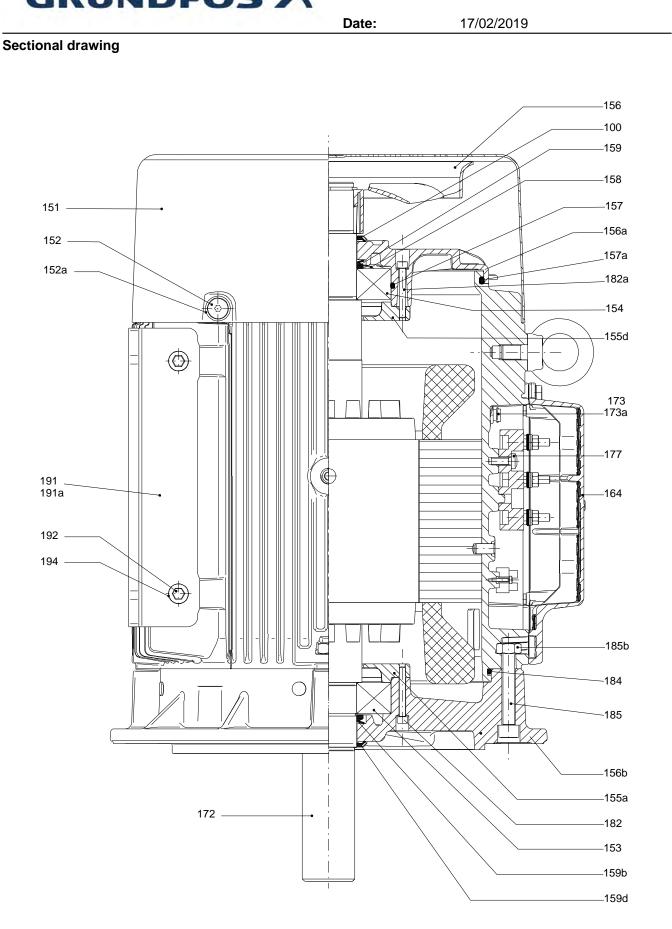
(tm069487 for LACR model B standard)



Printed from Grundfos Product Centre [2018.09.002]









17/02/2019

Spare parts CRN 45-6-2, Product No. 96123126 Valid from 3.3.2014 (1410)

	Pos	Description	Annotation	Classification Data	Part no.	Qty.	
		Base			96587695	1	pcs
	6	Base				1	
	80	Kit, chamber stack			96416250	1	pcs
	80	Chamber stack				1	
	3	Upper chamber cpl.					
		Cone					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
	47d	Lock ring					
	47c	Bush					
_	4a	Intermediate chamber cpl.					
	Τu	Cone					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
		Spare, turbulence optimizer KP					
	45-	Spare, turbulence optimizer KP					
	45a	Neck ring cpl.					
	47	Bearing					
-	4	Intermediate chamber cpl.					
		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.					
	47d	Lock ring					
	47c	Bush					
	26c	Washer		Designation: DI	N 125A		
				Thickness: 1,6			
	26b	Hex socket head cap screw					
	26a	Strap cpl.		Length (mm): 4	89		
				Thread: M8			
-	44	Suction interconnector cpl.					
	44a	Suction interconnector					
	45	Seal ring					
	46	Neck ring					
	65	Top f/neck ring					
_	47a	Bearing cpl.					
		Driver					
		Holder					
		Disc spring					
		Bearing ring					
_	49e	Impeller cpl.					
-		Nut					
	48						
	49b	Split cone					
-	49a	Impeller, reduced diameter					
		Impeller hub					
	49c	Wear ring					



Pre	Description	Annotation Classification Data Part	no	Otre	. Unit
Pos 49d	Impeller cpl. reduced diameter	Annotation Classification Data Part	n o .	wiy.	
49u 48	Nut				
40 49b	Split cone				
490 49a					
498	Impeller, reduced diameter				
	Impeller hub				
49c	Wear ring				
51	Shaft				
	Kit, chambers	98633	3888	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.				
45a 47	Bearing				
					1
47a	Bearing cpl.				1
	Driver				
	Holder				
	Disc spring				
	Bearing ring				
	Kit, coupling	9641	6593	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				
iou	Kit, coupling guard	9650	5135	1	pcs
70	Socket button head screw	9030.	5155		4
7a 7					4 2
7	Coupling guard				
	Kit, cover	98832	2448	1	pcs
58a	Hex socket head cap screw	Designation: DIN 912			4
		Length (mm): 25			
		Thread: M10			
58	Cover				1
	Kit, gaskets	9641	6599	1	pcs
	Adjusting fork				1
37	O-ring				2
38	O-ring	Diameter: 16,3			2
	<u> </u>	Material type: EPDM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3			4
50		Material type: EPDM			7
		Thickness: 2,4			
~~		T NICKNESS: 2,4			4
60	Spring				4
109	O-ring				1
110	O-ring	Diameter: 21,2			1
		Material type: EPDM			
		Thickness: 3,55			
	Kit, impeller	98634	4001	1	pcs
48	Nut				1
48	Nut				1
49b	Split cone				1
490 49	Impeller				1
-1-1		0000	4018		pcs
48	Kit, Impeller, reduced diamete Nut	9003	4010		1



-					
Pos	Description	Annotation Classification Data	Part no.		Unit
49b	Split cone			1	
49a	Impeller, reduced diameter			1	
	Impeller hub				
49c	Wear ring				
	Kit, plug		96505136		pcs
18	Air vent screw			1	
	Spindle				
	Plug				
25	Plug			4	ł
25	Plug			1	
38	O-ring	Diameter: 16,3		2)
	C	Material type: FKM			-
		Thickness: 2,4			
20	O ring				1
38	O-ring	Diameter: 16,3		4	ł
		Material type: FKM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		6	6
		Material type: FKM			
		Thickness: 2,4			
38	O-ring	Diameter: 16,3		2	2
	- 3	Material type: EPDM			
		Thickness: 2,4			
38	O ring	Diameter: 16,3		4	1
30	O-ring			4	ł
		Material type: EPDM			
		Thickness: 2,4			
	Kit, shaft seal HQQE		96525458	1	pcs
	Grinding device			1	
105	Shaft seal	Material type: HQC	ξE	1	
	Adjusting fork				
109	O-ring				
110	O-ring	Diameter: 21,5			
	5	Material type: EPDM			
		Thickness: 4,25			
	Kit, wear parts	1110110000. 1,20	98497474	1	pcs
45	Seal ring		30437474	7	
47d	Lock ring			7	
47c	Bush			5	
49c	Wear ring			7	
65	Top f/neck ring			7	7
	Motor		85904229	1	pcs
	Kit, bearing cpl.		967968	12 1	
153	Angular-contact bearing	Designation: 73	310B		
154	Ball bearing				
158	Waved washer				
159	V-ring				
.00	Kit, bearing plate		967968	na 1	
155 0	Cover		301 300	50 1	
155.a					
208a	Gasket		11040		
208	Hex socket head cap screw	Designation: D	IN912		
		Length (mm): 40			
		Thread: M5			
	Kit, eyebolt		967967	12 1	
189	Eyebolt				
-	Kit, fan		967966	50 1	
156.c	Retaining ring		001000		
156	Fan		00-00-	47	
•	Kit, fan cover		967966	47 1	
151	Fan cover				
152.a	Rubber bush				



Pos	Description	Annotation	Classification Data	Part no. 0	Qty. Unit
152	Hex head cap screw		e.acomouton butu		
196	Diaphragm				
	Kit, flange			9679680	7 1
156.b	Flange			00.0000	
159.b	Seal ring				
185	Hex socket head cap screw				
186	Drain plug				
195.a	Grease nipple			0070050	• •
	Kit, gaskets		D:	9679850	8 1
184	O-ring		Diameter: 235		
	Kit, lubrication nipple			9679667	1 1
195.b	Grease nipple				
195.a	Grease nipple				
	Kit, ND-end shield cpl.			9679681	01
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			9684346	0 1
159.b	V-ring				
159	V-ring				
	Kit, terminal board			9679665	7 1
	Terminal connection			0010000	
	Washer				
36	Hex nut				
173	Torx Screw				
176.d	Terminal board				
176	Terminal board				
177	Torx Screw				
	Kit, terminal box cover			9679665	91
164	Terminal box cover				
273a	Pan head thread forming screw				
1a	Motor stool			98993921 1	pcs
2	Pump head			96587726 1	pcs
3	Upper chamber cpl.			98634048 1	pcs
47c	Bulk, Bush (10 pcs)			9932119	4 1
4	Bulk, Intermediate chamber cpl. (3 pcs)			99335210 3	b pcs
45a	Bulk, Neck ring cpl. (10 pcs)			9654739	2 1
4a	Bulk, Intermediate chamber cpl. (5 pcs)			99262907 2	
4	Intermediate chamber cpl.			98634020 3	
6	Base			99347238 1	
о 7а	Bulk, Socket button head screw (10 pcs)			96549696 4	
7	Bulk, Coupling guard (10 pcs)			96603279 2	
18	Bulk, Air vent screw (5 pcs)			96547461 1	•
18	Air vent screw			95061351 1	•
25	Bulk, Plug (10 pcs)			96536013 1	
26c	Bulk, Washer (4 pcs)		Designation: DIN 125A	99262704 2	2 pcs
			Thickness: 1,6		
26c	Washer		Designation: DIN 125A	96586880 2	2 pcs
			Thickness: 1,6		
26b	Bulk, Hex socket head cap screw (10 pcs)		· ·	98931380 2	2 pcs
26a	Strap cpl.		Length (mm): 489	98983881 2	
	1 1		Thread: M8		P.00
26	Staybolt		Length (mm): 710	98976721 4	pcs
_0	Chaybon		Thread: M16	50070721 2	- pc3



			ate: 17/	02/2019		
Pos	Description	Annotation		Part no.	Qty.	Uni
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			
			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)			979114	48	1
45	Bulk, Seal ring (10 pcs)			965359	952	1
65	Bulk, Top f/neck ring (10 pcs)			965473	890	1
47a	Bulk, Bearing cpl. (5 pcs)			99270649	2	pcs
47a	Bulk, Bearing cpl. (10 pcs)			96535951	2	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)			965359	949	1
49a	Impeller, reduced diameter			98585277	1	pcs
55	Outer sleeve		Outer diameter: 216	98820354	1	pcs
			Length (mm): 503,5			
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			965878	896	1
109	Bulk, O-ring (10 pcs)			965475	86	1
105	Bulk, Shaft seal (12 pcs)		Material type: HQQE	96984070	1	pcs
440b	Bulk, Lock ring (4 pcs)			96535943	1	pcs