

Qty. Description

1 CRN 45-1 A-F-A-E-HQQE



Product No.: [96123117](#)

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:

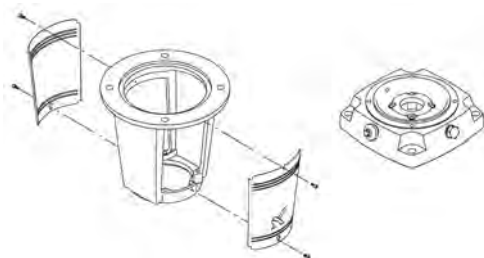
- 1) Alkaline-based cleaning.
 - 2) Zinc phosphating.
 - 3) Cathodic electro-deposition.
 - 4) Curing to a dry film thickness 18-22 my m.
- The colour code for the finished product is NCS 9000/RAL 9005.

Pump

A 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 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:

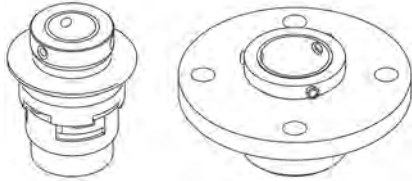
- Rotating seal ring material: silicon carbide (SiC)
- Stationary seat material: silicon carbide (SiC)

Qty. Description

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)

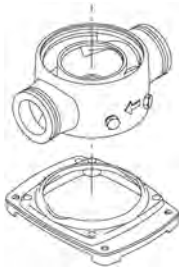
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



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 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

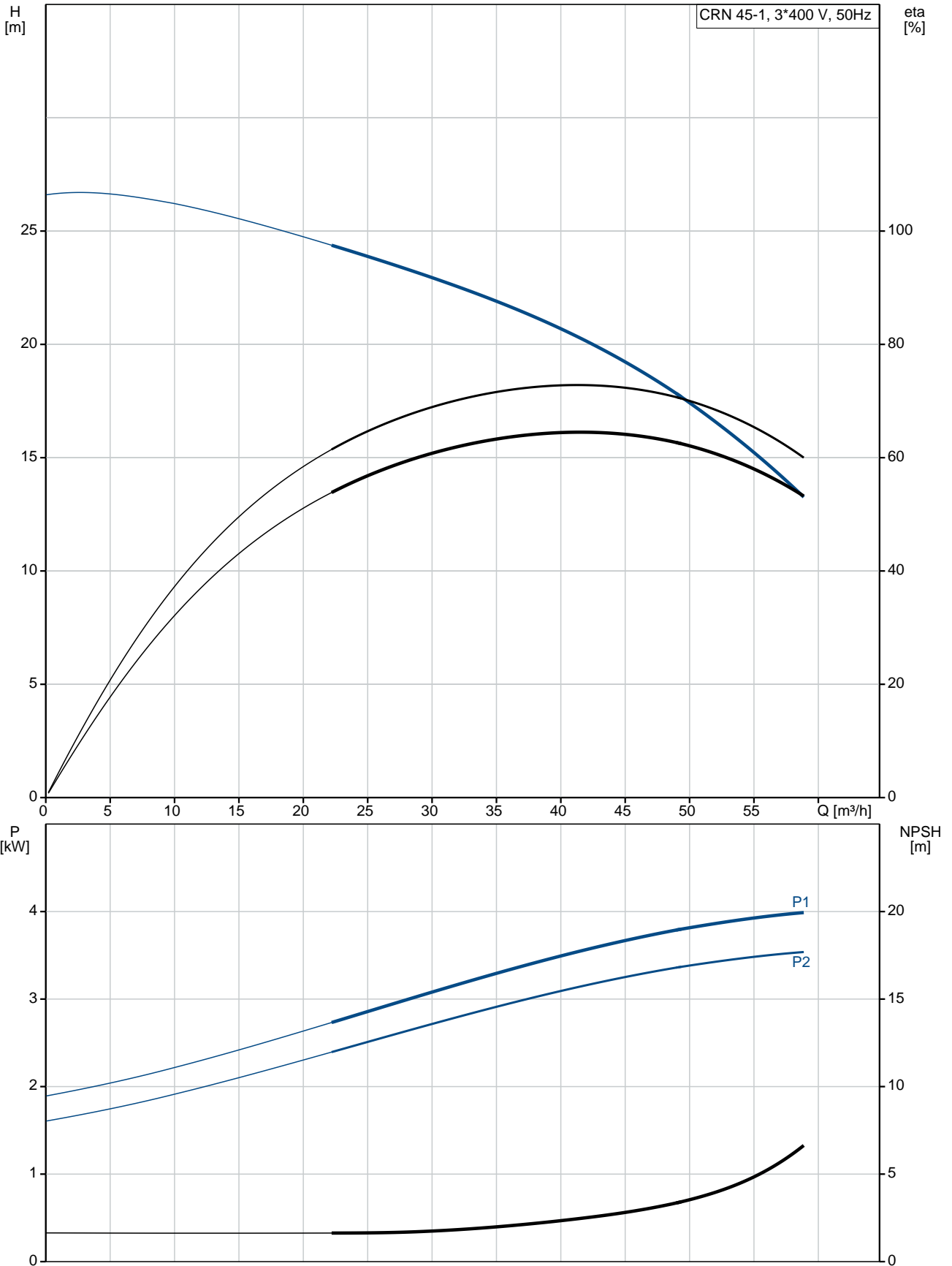
Liquid temperature range: -40 .. 120 °C

Liquid temperature during operation: 20 °C

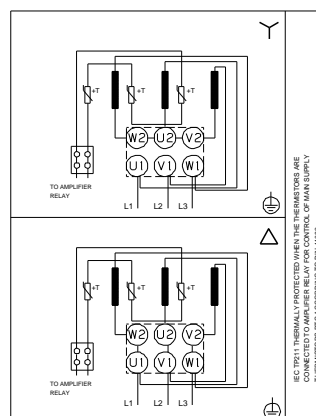
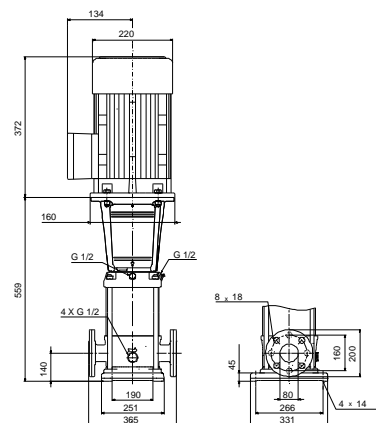
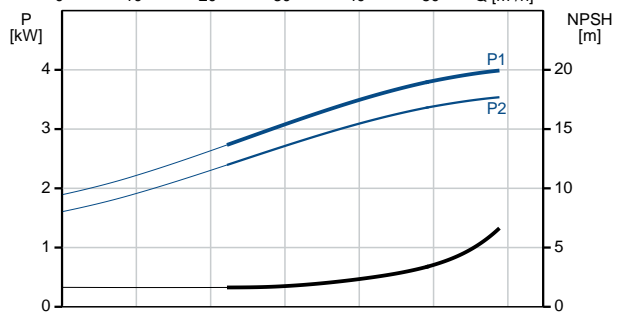
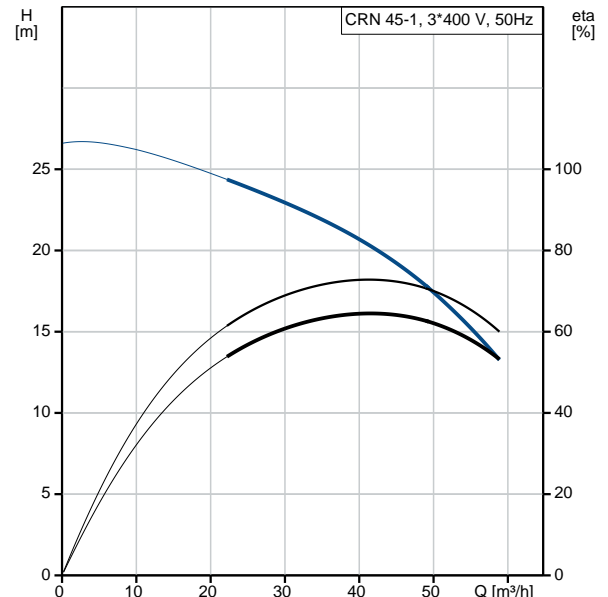
Density: 998.2 kg/m³

| Qty. | Description |
|------|--|
| | <p>Technical: Pump speed on which pump data are based: 2917 rpm Rated flow: 45 m³/h Rated head: 19.1 m Pump orientation: Vertical Shaft seal arrangement: Single Code for shaft seal: HQQE Approvals on nameplate: CE, EAC, ACS Curve tolerance: ISO9906:2012 3B</p> <p>Materials: Base: Stainless steel EN 1.4408 AISI 316 Impeller: Stainless steel EN 1.4401 AISI 316 Bearing: SIC Support bearing: Graflon</p> <p>Installation: Maximum ambient temperature: 60 °C Maximum operating pressure: 16 bar Max pressure at stated temp: 16 bar / 120 °C 16 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: FT130</p> <p>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</p> <p>Others: Minimum efficiency index, MEI $\hat{\alpha}_{\%}$: 0.70 Net weight: 93.5 kg Gross weight: 116 kg Shipping volume: 0.309 m³ Danish VVS No.: 385917010</p> |

96123117 CRN 45-1 A-F-A-E-HQQE 50 Hz



| Description | Value |
|--|--|
| General information: | |
| Product name: | CRN 45-1 A-F-A-E-HQQE |
| Product No: | 96123117 |
| EAN number: | 5700396691626 |
| Technical: | |
| Pump speed on which pump data are based: | 2917 rpm |
| Rated flow: | 45 m ³ /h |
| Rated head: | 19.1 m |
| Head max: | 26.6 m |
| Stages: | 1 |
| Impellers: | 1 |
| 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: | 60 °C |
| Maximum operating pressure: | 16 bar |
| Max pressure at stated temp: | 16 bar / 120 °C 16 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: | FT130 |
| Connect code: | F |
| Liquid: | |
| Pumped liquid: | Water |
| Liquid temperature range: | -40 .. 120 °C |
| Liquid temperature during operation: | 20 °C |
| Density: | 998.2 kg/m ³ |
| 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 % |





Company name:

Created by:

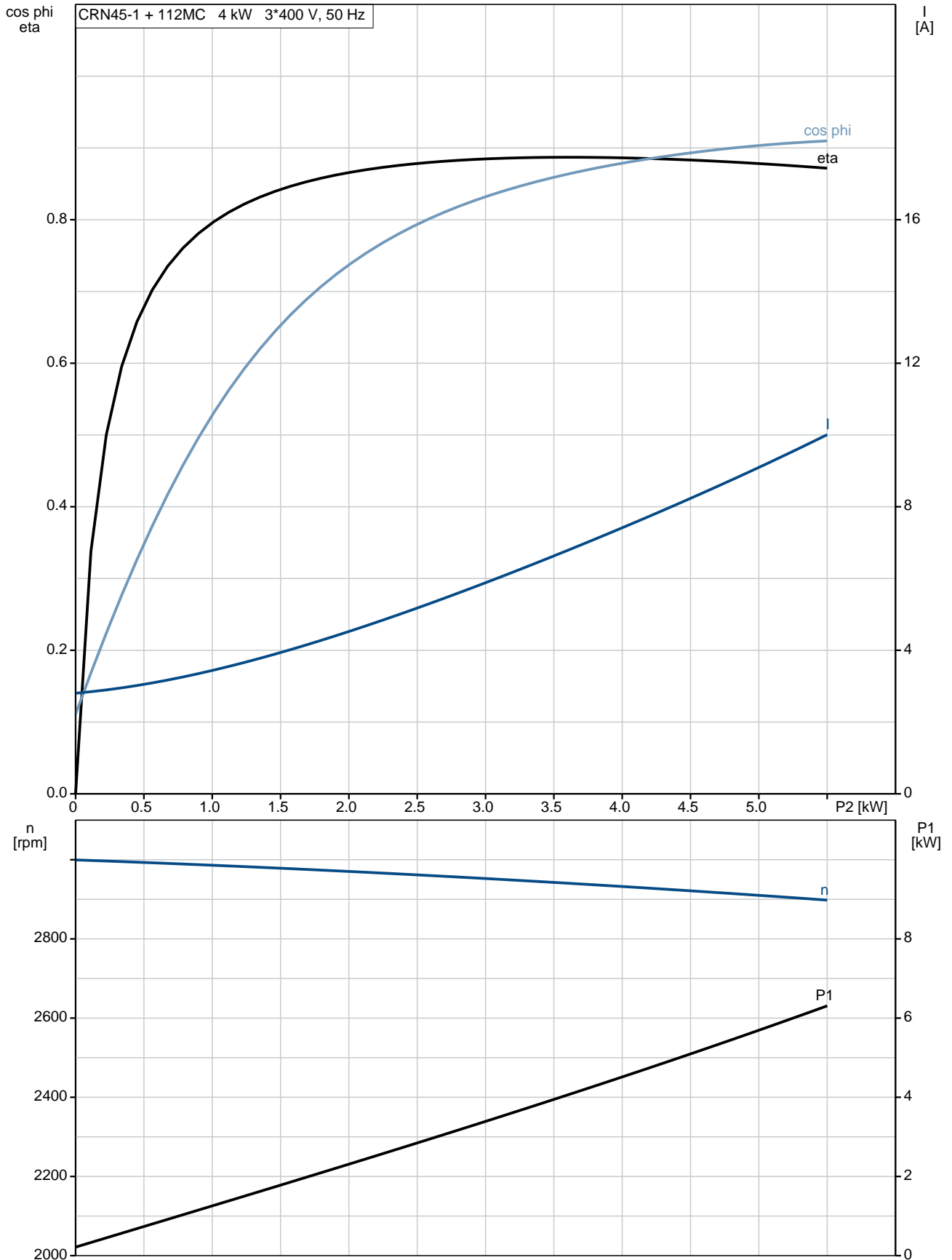
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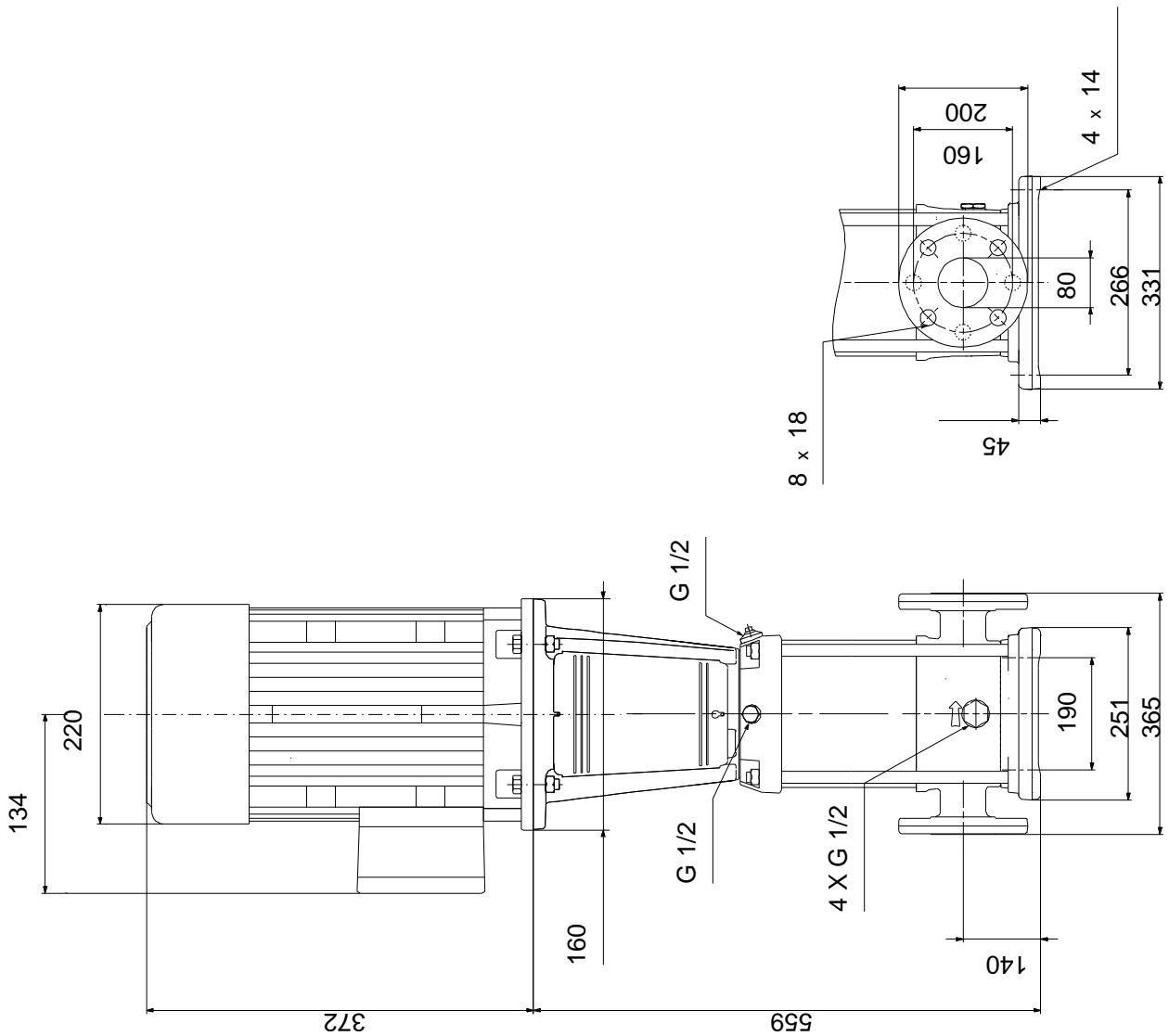
17/02/2019

| 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 %: | 0.70 |
| Net weight: | 93.5 kg |
| Gross weight: | 116 kg |
| Shipping volume: | 0.309 m ³ |
| Danish VVS No.: | 385917010 |

96123117 CRN 45-1 A-F-A-E-HQQE 50 Hz



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

96123117 CRN 45-1 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.

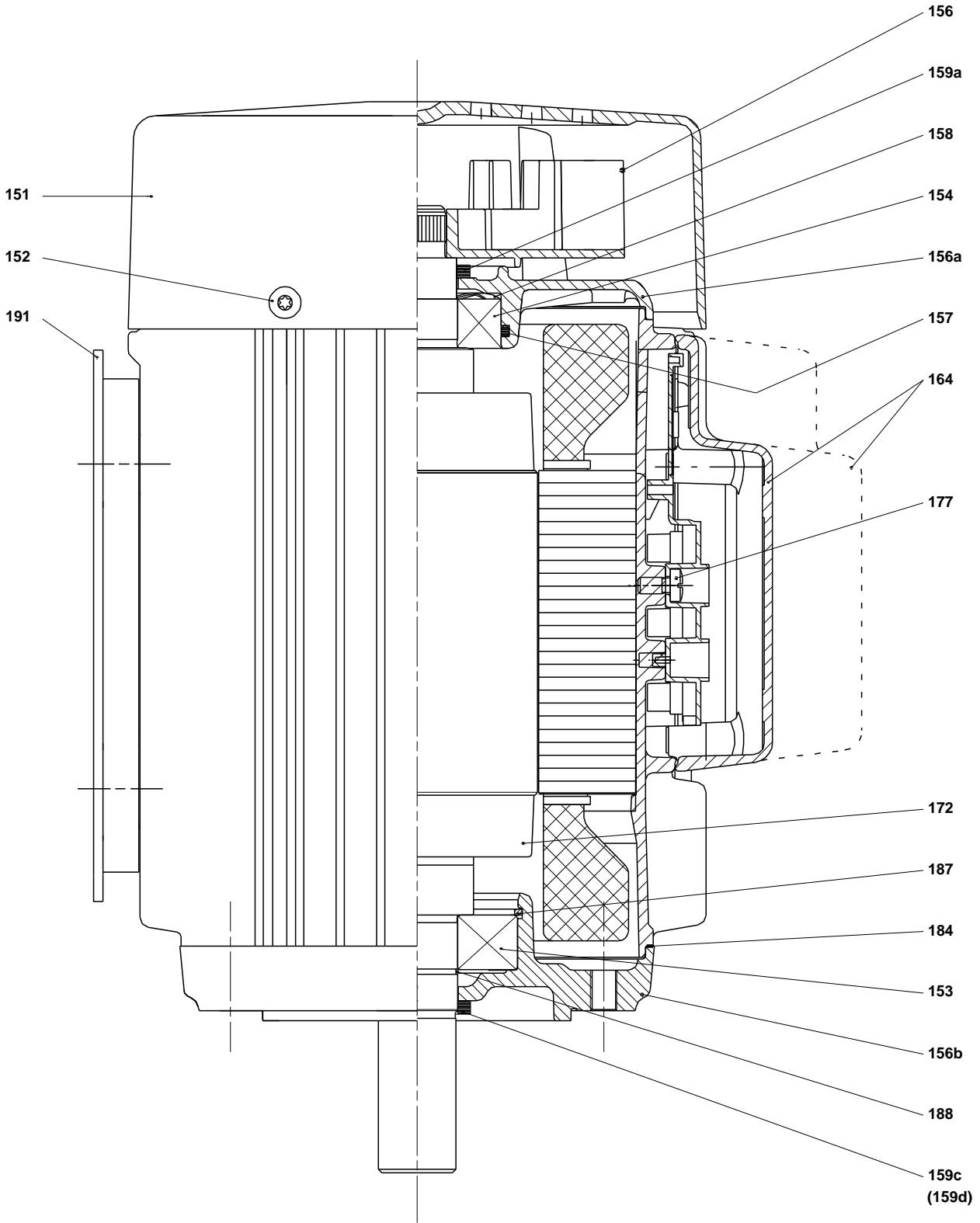
(tm069487 for LACR model B standard)



(tm029184 0505)



(tm029178 2004)



Spare parts CRN 45-1, Product No. 96123117
Valid from 3.3.2014 (1410)

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|--------------------------------|------------|-----------------------|----------|------|------|
| - | Base | | | 96587695 | 1 | pcs |
| 6 | Base | | | | 1 | |
| - 80 | Kit, chamber stack | | | 96416240 | 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 | | | | | |
| 47 | Bearing | | | | | |
| 26c | Washer | | Designation: DIN 125A | | | |
| | | | Thickness: 1,6 | | | |
| 26b | Hex socket head cap screw | | | | | |
| 26a | Strap cpl. | | | | | |
| - 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 | | | | | |
| 47f | Hairpin clip | | | | | |
| - 49e | Impeller cpl. | | | | | |
| 48 | Nut | | | | | |
| 49b | Split cone | | | | | |
| 49 | Impeller | | | | | |
| 51 | Shaft | | | | | |
| - | Kit, chambers | | | 98633988 | 1 | pcs |
| - 3 | Upper chamber cpl. | | | | 1 | |
| | Cone | | | | | |
| | Spare, turbulence optimizer KP | | | | | |
| | Spare, turbulence optimizer KP | | | | | |
| | Spare, turbulence optimizer KP | | | | | |
| | Spare, turbulence optimizer KP | | | | | |
| | Spare, turbulence optimizer KP | | | | | |
| 47 | Bearing | | | | | |
| - 47a | Bearing cpl. | | | | 1 | |
| | Driver | | | | | |
| | Holder | | | | | |
| | Disc spring | | | | | |
| | Bearing ring | | | | | |
| 47f | Hairpin clip | | | | | |
| - | Kit, coupling | | | 96416590 | 1 | pcs |
| | Adjusting fork | | | | 1 | |
| 9 | Hex socket head cap screw | | Designation: DIN 912 | | 4 | |
| | | | Length (mm): 25 | | | |
| | | | Thread: M10 | | | |
| 10a | Coupling | | | | 1 | |

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|---------------------------|------------|----------------------|----------|------|------|
| - | Kit, coupling guard | | | 96505134 | 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 | |
| | 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 | | | 98497473 | 1 | pcs |
| 45 | Seal ring | | | | 2 | |
| 47d | Lock ring | | | | 2 | |

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|---|------------|-----------------------------|----------|------|------|
| 47c | Bush | | | | 1 | |
| 49c | Wear ring | | | | 2 | |
| 65 | Top f/neck ring | | | | 2 | |
| - | 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 | | | | | |
| 1a | Motor stool | | | 96587723 | 1 | pcs |
| 2 | Pump head | | | 96587726 | 1 | pcs |
| + 3 | Bulk, Upper chamber cpl. (5 pcs) | | | 99262946 | 1 | pcs |
| 6 | Base | | | 99347238 | 1 | pcs |
| 7a | Bulk, Socket button head screw (10 pcs) | | | 96549696 | 4 | pcs |
| 7 | Bulk, Coupling guard (10 pcs) | | | 96603300 | 2 | pcs |
| + 18 | Bulk, Air vent screw (5 pcs) | | | 96547461 | 1 | pcs |

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|--|------------|-----------------------|----------|------|------|
| + 18 | Air vent screw | | | 95061351 | 1 | pcs |
| 25 | Bulk, Plug (10 pcs) | | | 96536013 | 1 | pcs |
| 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. | | | 98983877 | 2 | pcs |
| 26 | Staybolt | | Length (mm): 310 | 98976717 | 4 | pcs |
| | | | Thread: M16 | | | |
| 28 | Bulk, Hex socket head cap screw (10 pcs) | | Designation: DIN 912 | 96536147 | 4 | pcs |
| | | | Length (mm): 50 | | | |
| | | | Thread: M10 | | | |
| 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) | | | 99270651 | 1 | pcs |
| 49b | Bulk, Split cone (10 pcs) | | | 96536010 | 1 | pcs |
| 55 | Outer sleeve | | Outer diameter: 216 | 98820349 | 1 | pcs |
| | | | Length (mm): 103,5 | | | |
| 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 | | | 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 |