

Qty. Description

1 CR 15-3 A-F-A-E-HQQE



Note! Product picture may differ from actual product

Product No.: [96501699](#)

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

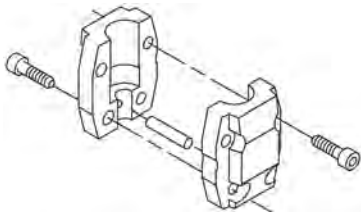
Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An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

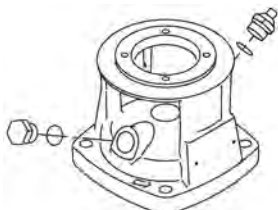
The colour code for the finished product is NCS 9000/RAL 9005.

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.

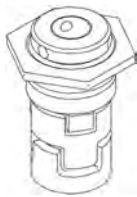
Primary seal:

- 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)

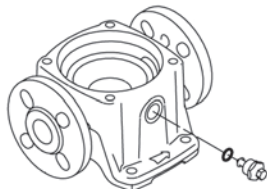
EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



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

| Qty. | Description |
|------|---|
| | Density: 998.2 kg/m ³ Technical: Pump speed on which pump data are based: 2902 rpm Rated flow: 17 m ³ /h Rated head: 33.2 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: 100LC IE Efficiency class: IE3 Rated power - P2: 3 kW Power (P2) required by pump: 3 kW Mains frequency: 50 Hz Rated voltage: 3 x 220-240D/380-415Y V Rated current: 11.0/6.30 A Starting current: 840-920 % Cos phi - power factor: 0.87-0.82 Rated speed: 2900-2920 rpm Efficiency: IE3 87,1% Motor efficiency at full load: 87.1 % Motor efficiency at 3/4 load: 88.0 % Motor efficiency at 1/2 load: 87.7 % Number of poles: 2 Enclosure class (IEC 34-5): 55 Dust/Jetting Insulation class (IEC 85): F Others: Minimum efficiency index, MEI $\hat{\alpha}\%$: 0.70 Net weight: 59 kg Gross weight: 81 kg Shipping volume: 0.234 m ³ Danish VVS No.: 385904330 |



Company name:

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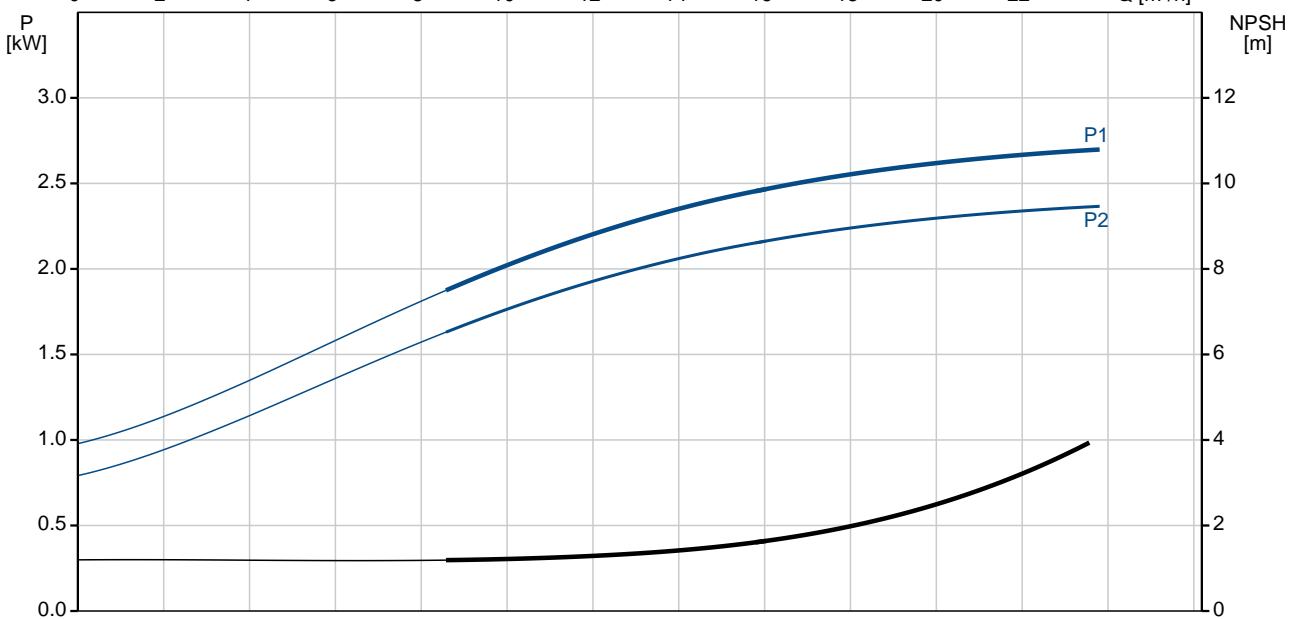
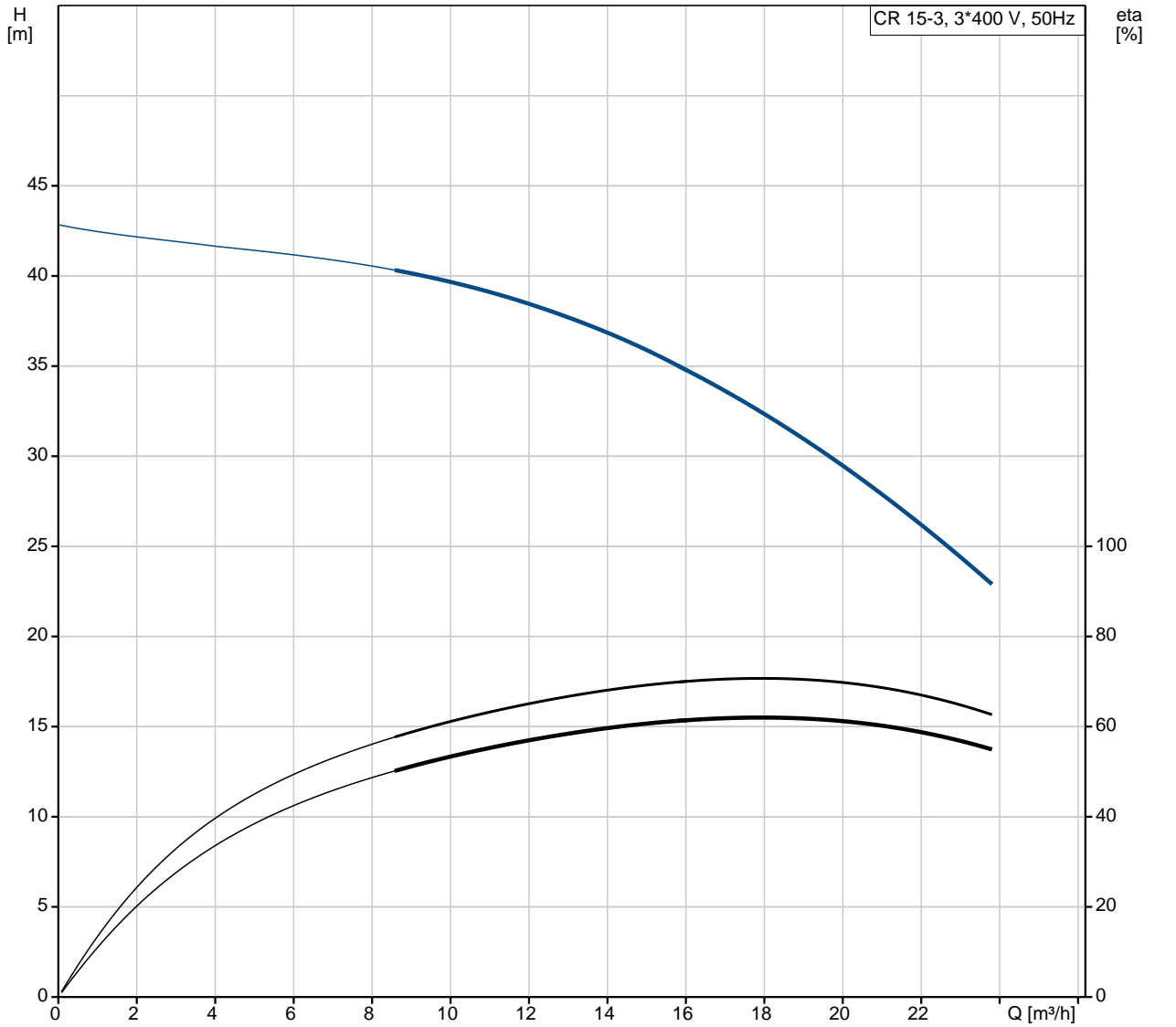
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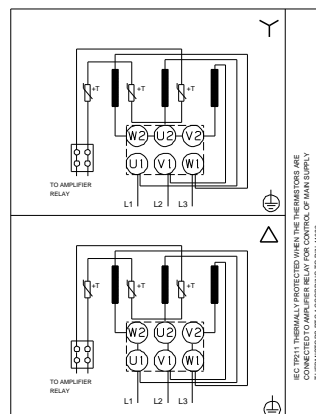
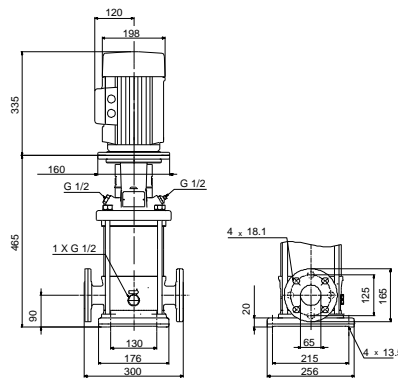
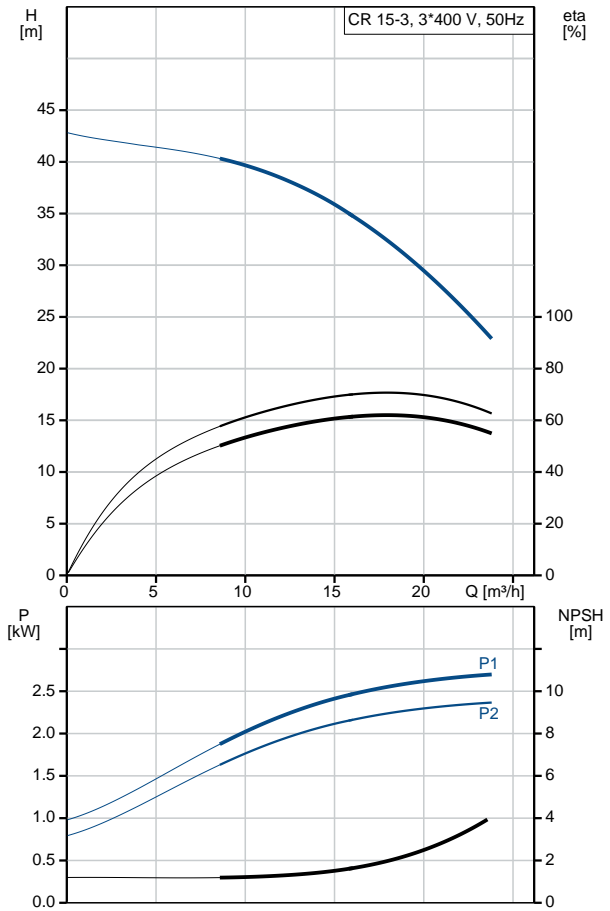
16/02/2019

| Qty. | Description |
|------|--------------------------|
| | Swedish RSK No.: 5823474 |

96501699 CR 15-3 A-F-A-E-HQQE 50 Hz



| Description | Value |
|--|---|
| General information: | |
| Product name: | CR 15-3 A-F-A-E-HQQE |
| Product No: | 96501699 |
| EAN number: | 5700396227443 |
| Technical: | |
| Pump speed on which pump data are based: | 2902 rpm |
| Rated flow: | 17 m ³ /h |
| Rated head: | 33.2 m |
| Head max: | 42.7 m |
| Stages: | 3 |
| Impellers: | 3 |
| 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/m ³ |
| Electrical data: | |
| Motor standard: | IEC |
| Motor type: | 100LC |
| IE Efficiency class: | IE3 |
| Rated power - P2: | 3 kW |
| Power (P2) required by pump: | 3 kW |
| Mains frequency: | 50 Hz |
| Rated voltage: | 3 x 220-240D/380-415V V |
| Rated current: | 11.0/6.30 A |





Company name:

Created by:

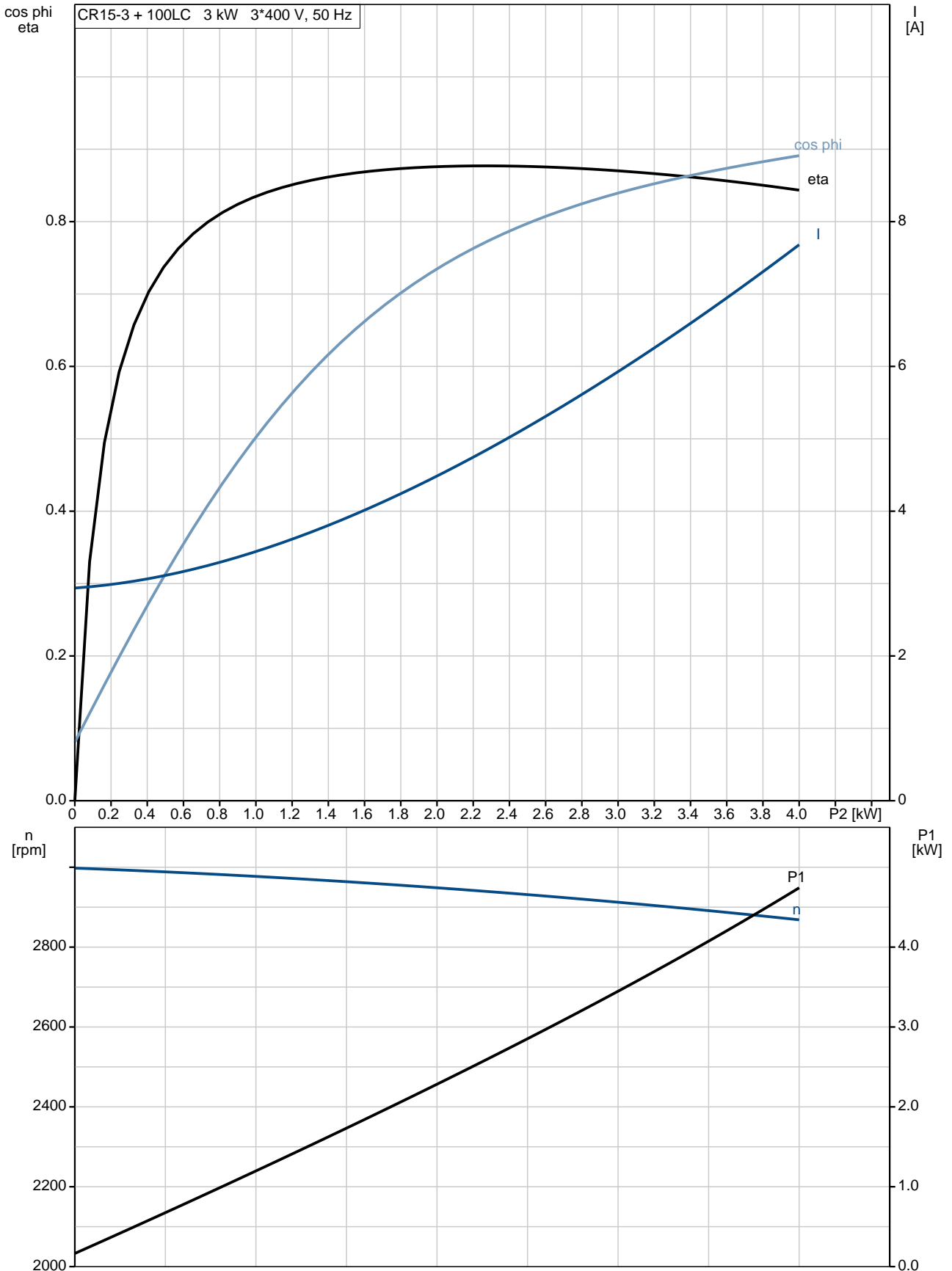
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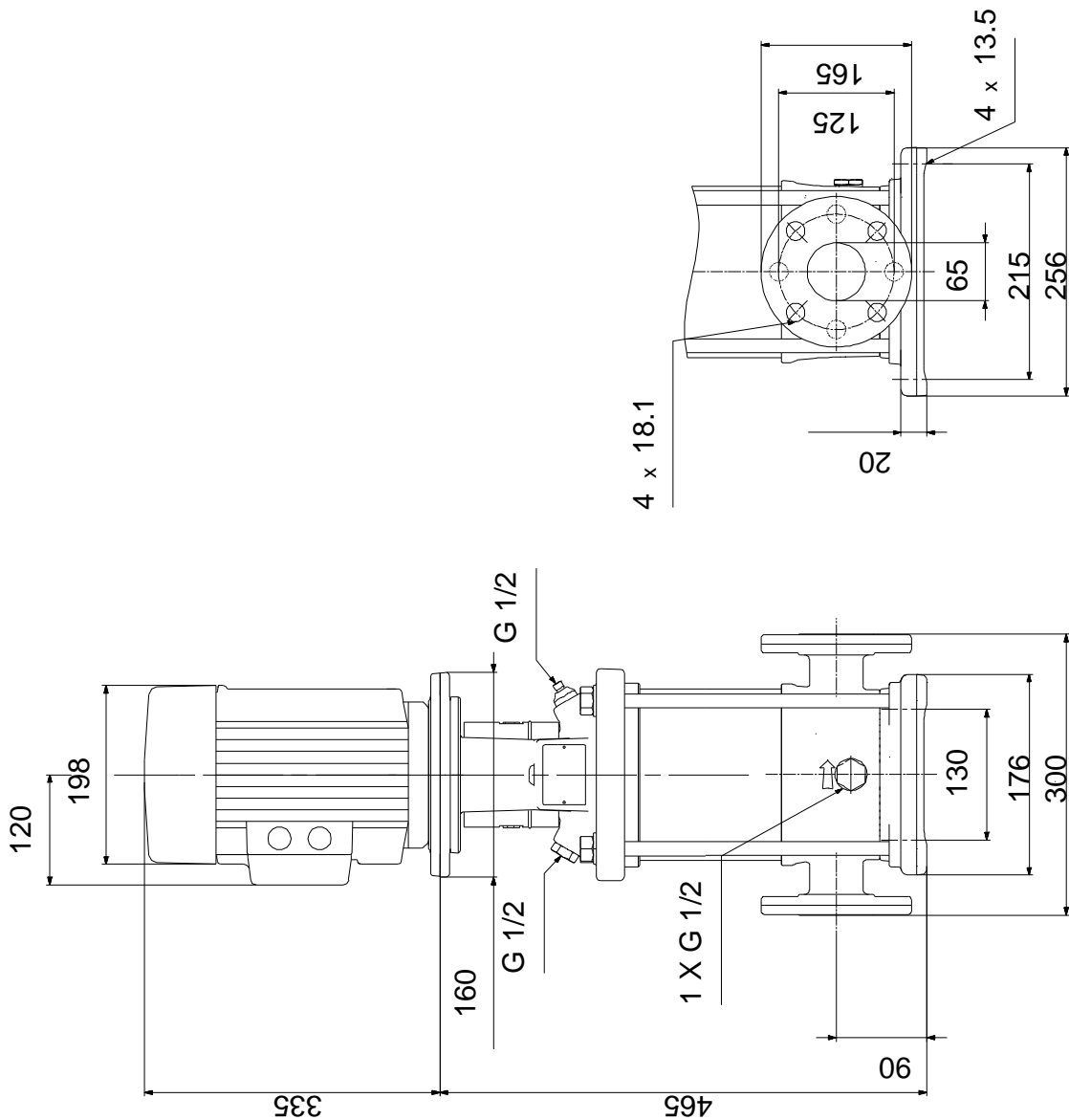
16/02/2019

| Description | Value |
|----------------------------------|----------------------|
| Starting current: | 840-920 % |
| Cos phi - power factor: | 0.87-0.82 |
| Rated speed: | 2900-2920 rpm |
| Efficiency: | IE3 87,1% |
| Motor efficiency at full load: | 87.1 % |
| Motor efficiency at 3/4 load: | 88.0 % |
| Motor efficiency at 1/2 load: | 87.7 % |
| Number of poles: | 2 |
| Enclosure class (IEC 34-5): | 55 Dust/Jetting |
| Insulation class (IEC 85): | F |
| Motor protec: | PTC |
| Motor No: | 85U05510 |
| Controls: | |
| Frequency converter: | NONE |
| Others: | |
| Minimum efficiency index, MEI %: | 0.70 |
| Net weight: | 59 kg |
| Gross weight: | 81 kg |
| Shipping volume: | 0.234 m ³ |
| Danish VVS No.: | 385904330 |
| Swedish RSK No.: | 5823474 |

96501699 CR 15-3 A-F-A-E-HQQE 50 Hz



96501699 CR 15-3 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.

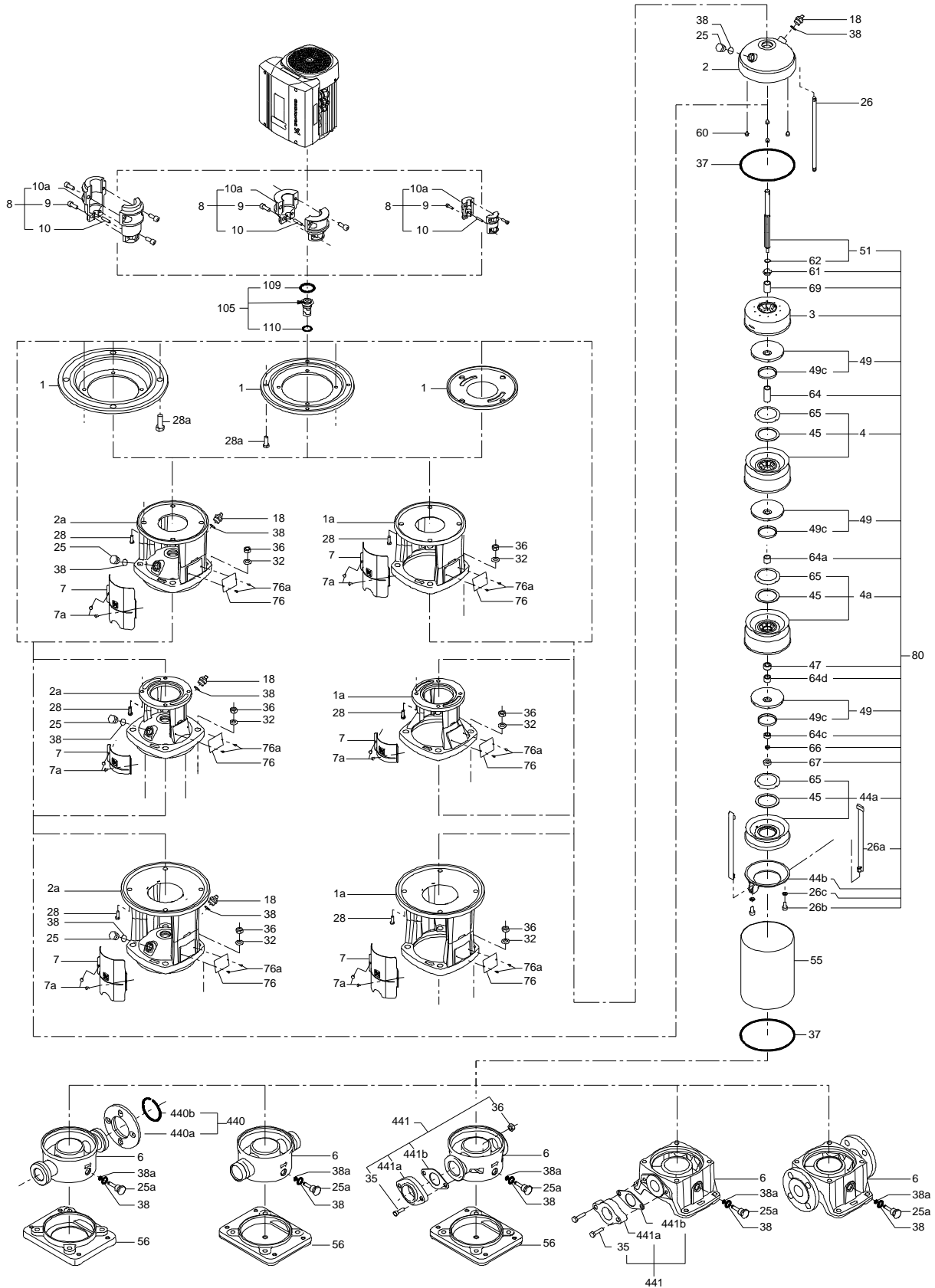
96501699 CR 15-3 A-F-A-E-HQQE 50 Hz



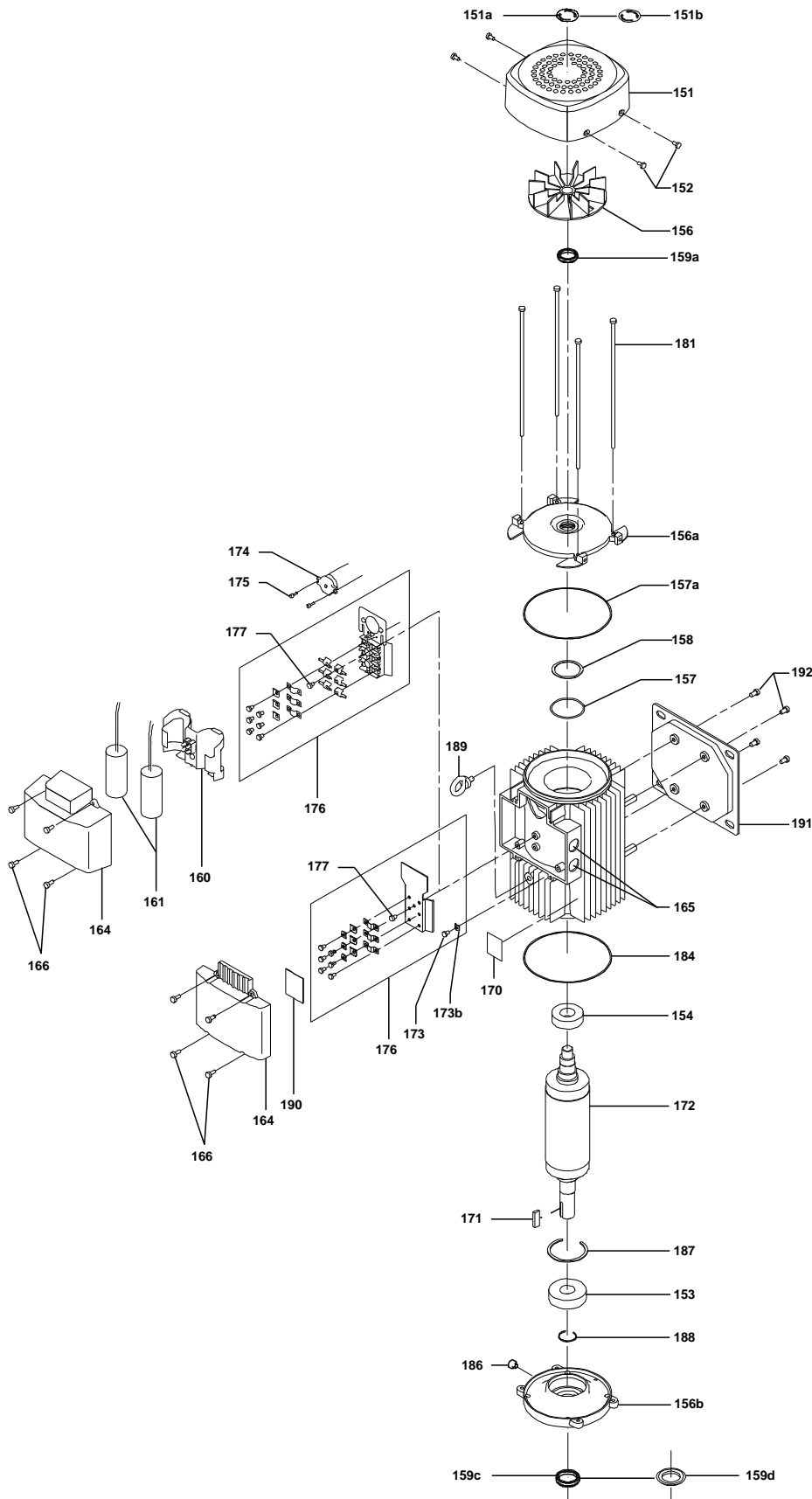
IEC TP211 THERMALLY PROTECTED WHEN THE THERMISTORS ARE
CONNECTED TO AMPLIFIER RELAY FOR CONTROL OF MAIN SUPPLY
THERMISTORS PTC ACCORDING TO DIN 44082

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

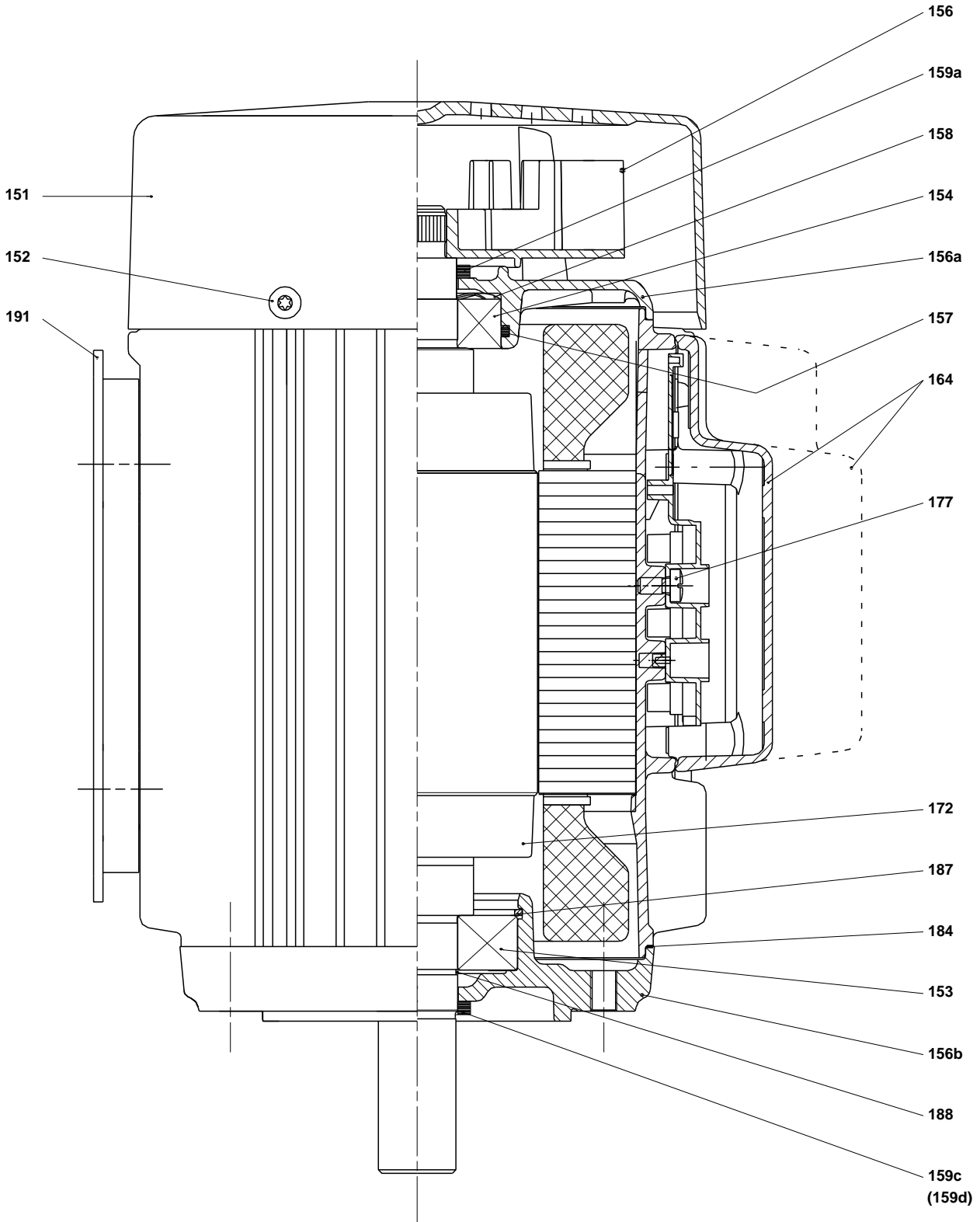
(tm069469 for MECR15,20 standard)



(tm029184 0505)



(tm029178 2004)



Spare parts CR 15-3, Product No. 96501699

Valid from 1.1.2011 (1152)

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|--------------------------------|------------|--|----------|------|------|
| - | Kit, chamber stack | | | 96508455 | 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 | | | | | |
| - 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 | | | |
| 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 Length (mm): 25 Thread: M8 | | 4 | |
| 10a | Coupling half | | | | 2 | |
| 10 | Shaft pin | | Diameter: 5 Length (mm): 26 | | 1 | |
| - | 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 Material type: EPDM Thickness: 2,4 | | 1 | |

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|------|---------------------------|------------|-----------------------|----------|------|------|
| 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 | |
| 64c | Spacing pipe | | Length (mm): 12.7 | | 1 | |
| 64b | Spacing bush | | Length (mm): 5.00 | | 1 | |



Company name:

Created by:

Phone:

Date:

16/02/2019

| Pos | Description | Annotation | Classification Data | Part no. | Qty. | Unit |
|-------|--|------------|--|----------|------|------|
| 64a | Spacing pipe | | Internal diameter: 17,5 Length (mm): 17 | | 1 | |
| 65 | Retainer | | | | 5 | |
| 66 | Wedge lock washer | | | | 1 | |
| 67 | Lock nut | | Thread: M8 | | 1 | |
| - | Motor | | | 85903730 | 1 | pcs |
| - | Kit, Ball bearing | | | 96279795 | 1 | |
| 99a | Retaining ring | | | | | |
| 99 | Retaining ring | | | | | |
| 111 | Ball bearing | | | | | |
| 111 | Ball bearing | | | | | |
| 157 | O-ring | | Diameter: 52 Material type: NBR Thickness: 3 | | | |
| 158 | Waved washer | | | | | |
| - | Kit, end shield | | | 96279831 | 1 | |
| 156a | End shield | | | | | |
| 157 | O-ring | | Diameter: 52 Material type: NBR Thickness: 3 | | | |
| 158 | Waved washer | | | | | |
| 159a | Seal ring | | | | | |
| - | Kit, fan | | | 96279757 | 1 | |
| 156 | Fan | | | | | |
| 159a | Seal ring | | | | | |
| - | Kit, fan cover | | | 96279826 | 1 | |
| 151b | Label | | | | | |
| 151 | Fan cover | | | | | |
| 152 | Pan head thread forming screw | | | | | |
| - | Kit, flange | | | 96279828 | 1 | |
| 156b | Flange | | | | | |
| 156.c | Drain plug | | | | | |
| 159.c | Seal ring | | | | | |
| - | Kit, retaining ring | | | 96279799 | 1 | |
| 99 | Retaining ring | | | | | |
| 188 | Retaining ring | | | | | |
| - | Kit, shaft seal | | | 96279762 | 1 | |
| 159c | Seal ring | | | | | |
| 159a | Seal ring | | | | | |
| - | Kit, staybolts | | | 96279832 | 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 | | | 96279771 | 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 |



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| 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 | 1 | 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 | 1 | 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 Length (mm): 26 | 96536473 | 1 | 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 |
| 25a | Bulk, Drain plug (10 pcs) | | | 96535881 | 1 | pcs |
| 26a | Strap cpl. | | | 98952934 | 2 | pcs |
| 26.c | Bulk, Washer (4 pcs) | | Designation: DIN 125A Thickness: 1,6 | 99262704 | 2 | pcs |
| 26.c | Washer | | Designation: DIN 125A Thickness: 1,6 | 96586880 | 2 | pcs |
| 26 | Staybolt | | | 98982840 | 4 | pcs |
| 28 | Bulk, Hex head screw (4 pcs) | | Length (mm): 25 Thread: M8 | 99335941 | 4 | pcs |
| 32 | Bulk, Washer (100 pcs) | | Designation: DIN 125 A Internal diameter: 17 Outer diameter: 30 Thickness: 3 | 98923051 | 4 | pcs |
| 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 Material type: EPDM Thickness: 2,4 | 99198791 | 1 | pcs |
| 38 | Bulk, O-ring (10 pcs) | | Diameter: 16,3 Material type: EPDM Thickness: 2,4 | 99198815 | 2 | pcs |
| 38 | Bulk, O-ring (50 pcs) | | Diameter: 16,3 Material type: EPDM Thickness: 2,4 | 99412727 | 2 | pcs |
| + 44a | Inlet part cpl. | | | 98818924 | 1 | pcs |
| 47 | Bulk, Bearing ring (10 pcs) | | | 96538795 | 1 | pcs |
| + 49 | Bulk, Impeller cpl. (5 pcs) | | | 98394287 | 3 | pcs |
| + 49 | Impeller cpl. | | | 98394448 | 3 | pcs |
| + 51 | Shaft, spline, cpl. | | | 98368607 | 1 | pcs |
| 55 | Outer sleeve | | | 98812621 | 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 |
| 64a | Bulk, Spacing pipe (10 pcs) | | Internal diameter: 17,5 Length (mm): 17 | 98417487 | 1 | pcs |
| 64 | Bulk, Spacing pipe (20 pcs) | | Length (mm): 43.6 | 96535107 | 1 | 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 |