

## CR5-16 A-A-A-E-HQQE 3x400D 50HZ

Grundfos pump 96513368



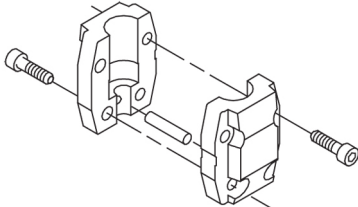
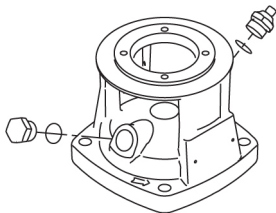
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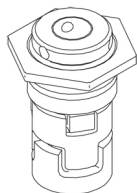
<https://www.lenntech.com/grundfos/CRFAM/96513368/CR-5-16-A-A-A-E-HQQE.html>

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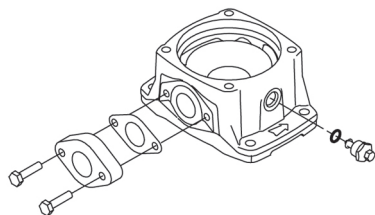
| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>CR 5-16 A-A-A-E-HQQE</b></p>  <p>Product No.: On request</p> <p>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 oval flanges with internal Rp threads.</p> <p>The pump is fitted with a 3-phase, fan-cooled asynchronous motor.</p> <p><b>Further product details</b></p> <p>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:</p> <ol style="list-style-type: none"> <li>1) Alkaline-based cleaning.</li> <li>2) Zinc phosphating.</li> <li>3) Cathodic electro-deposition.</li> <li>4) Curing to a dry film thickness 18-22 my m.</li> </ol> <p>The colour code for the finished product is NCS 9000/RAL 9005.</p> <p><b>Pump</b></p> <p>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.</p>  <p>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.</p>  <p>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.</p> <p>Primary seal:</p> <ul style="list-style-type: none"> <li>• Rotating seal ring material: silicon carbide (SiC)</li> <li>• Stationary seat material: silicon carbide (SiC)</li> </ul> <p>This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles.</p> <p>Secondary seal material: EPDM (ethylene-propylene rubber)</p> <p>EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.</p> |



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 oval flanges are bolted to the base. The outlet side of the base has a combined drain plug and bypass valve. 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 does not incorporate motor protection and must be connected to a motor-protective circuit breaker which can be manually reset. The motor-protective circuit breaker must be set according to the rated current of the motor (I1/1).

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  
 Density: 998.2 kg/m<sup>3</sup>

### Technical:

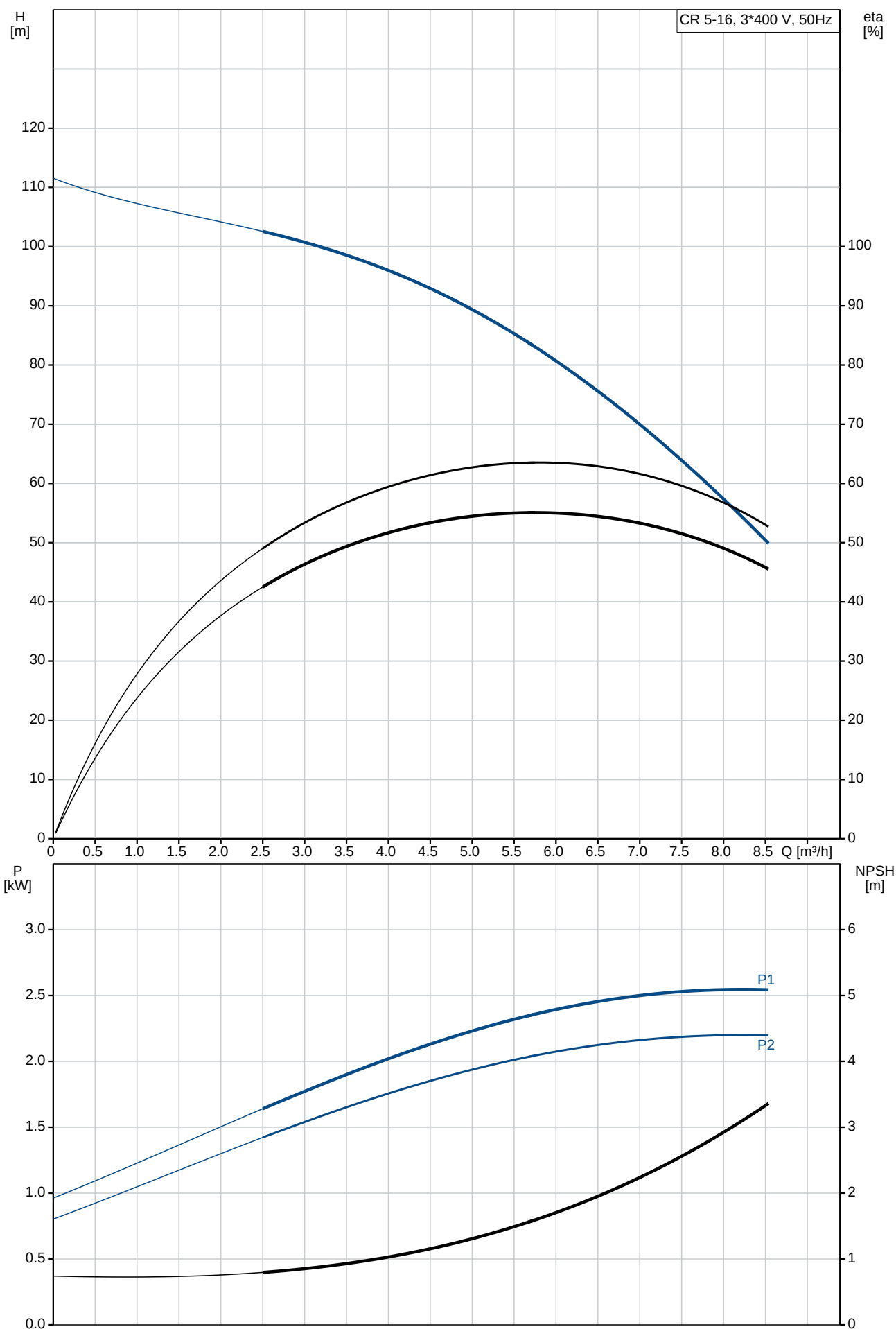
Rated flow: 5.8 m<sup>3</sup>/h  
 Rated head: 80.8 m  
 Pump orientation: Vertical  
 Shaft seal arrangement: Single  
 Code for shaft seal: HQQE  
 Approvals on nameplate: CE, EAC, ACS  
 Curve tolerance: ISO9906:2012 3B

### Materials:

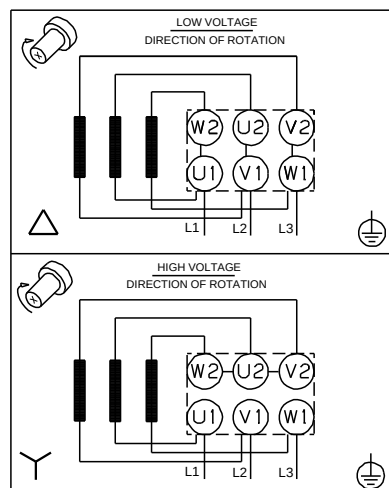
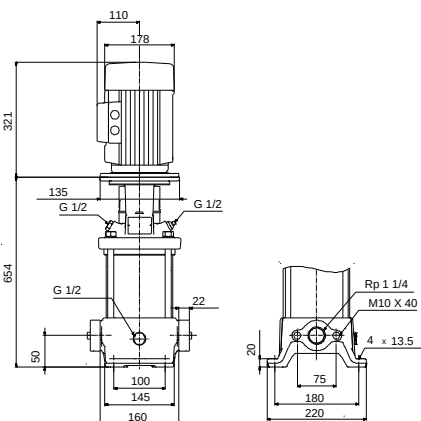
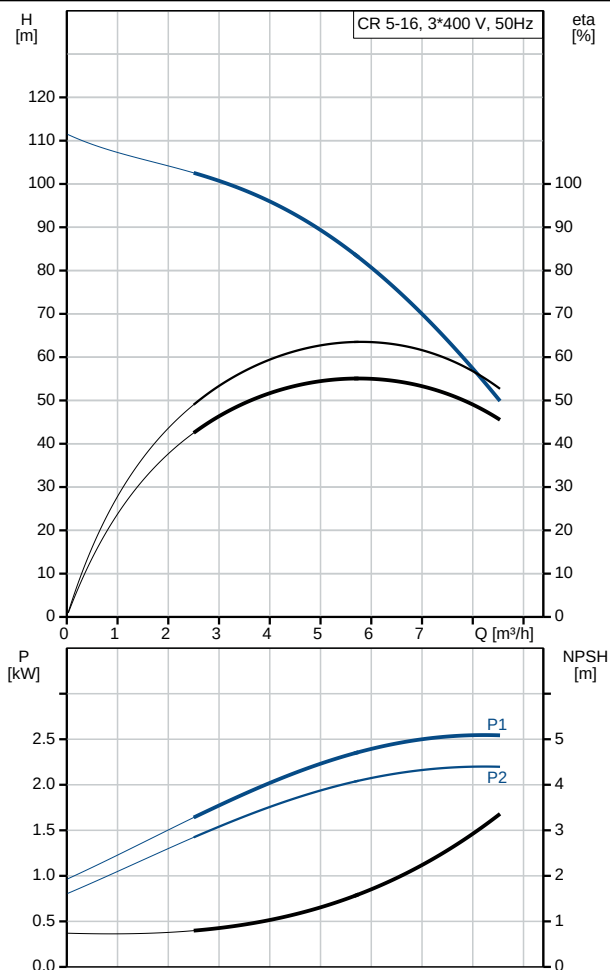
Base: Cast iron  
 EN 1561 EN-GJL-200  
 ASTM A48-25B  
 Impeller: Stainless steel  
 EN 1.4301

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <p>AISI 304<br/>SIC</p> <p>Bearing:</p> <p><b>Installation:</b><br/> Maximum ambient temperature: 60 °C<br/> Maximum operating pressure: 16 bar<br/> Max pressure at stated temp: 16 bar / 120 °C<br/> 16 bar / -20 °C<br/> Type of connection: Oval / Rp<br/> Size of inlet connection: 1 1/4 inch<br/> Size of outlet connection: 1 1/4 inch<br/> Pressure rating for pipe connection: PN 16<br/> Flange size for motor: FT115</p> <p><b>Electrical data:</b><br/> Motor standard: IEC<br/> Motor type: 90LC<br/> IE Efficiency class: IE3<br/> Rated power - P2: 2.2 kW<br/> Power (P2) required by pump: 2.2 kW<br/> Mains frequency: 50 Hz<br/> Rated voltage: 3 x 380-415D V<br/> Rated current: 4.45 A<br/> Starting current: 850-950 %<br/> Cos phi - power factor: 0.89-0.87<br/> Rated speed: 2890-2910 rpm<br/> Efficiency: IE3 85,9%<br/> Motor efficiency at full load: 85.9 %<br/> Motor efficiency at 3/4 load: 86.8 %<br/> Motor efficiency at 1/2 load: 86.0 %<br/> Number of poles: 2<br/> Enclosure class (IEC 34-5): 55 Dust/Jetting<br/> Insulation class (IEC 85): F</p> <p><b>Others:</b><br/> Minimum efficiency index, MEI ≥: 0.57<br/> Net weight: 42.3 kg<br/> Gross weight: 45.2 kg<br/> Shipping volume: 0.13 m³</p> |

# On request CR 5-16 A-A-A-E-HQQE 50 Hz

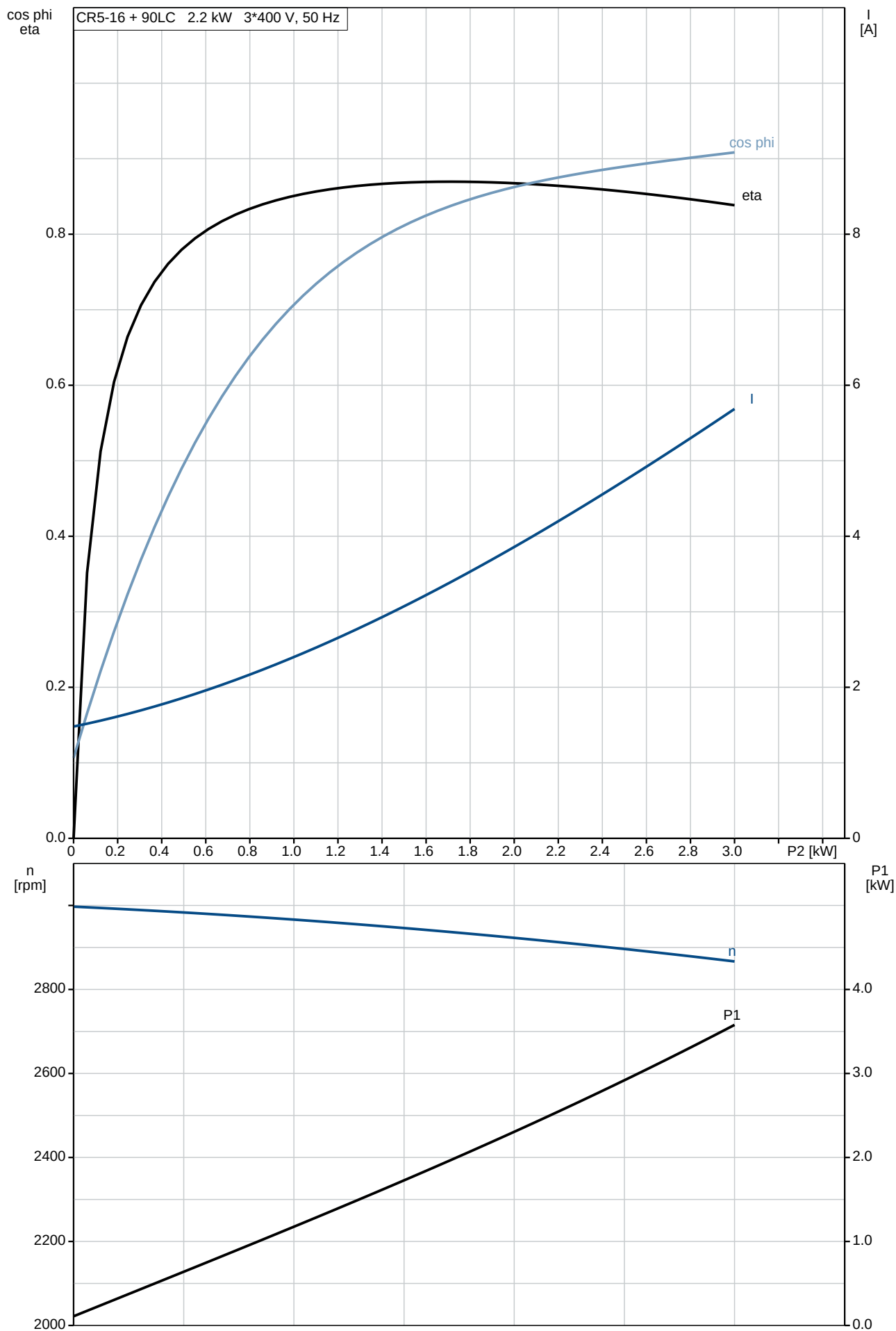


| Description                           | Value                |
|---------------------------------------|----------------------|
| <b>General information:</b>           |                      |
| Product name:                         | CR 5-16 A-A-A-E-HQQE |
| Product No:                           | On request           |
| EAN number:                           | On request           |
| <b>Technical:</b>                     |                      |
| Rated flow:                           | 5.8 m³/h             |
| Rated head:                           | 80.8 m               |
| Stages:                               | 16                   |
| Impellers:                            | 16                   |
| 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                    |
| <b>Materials:</b>                     |                      |
| 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                  |
| <b>Installation:</b>                  |                      |
| 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:                   | Oval / Rp            |
| Size of inlet connection:             | 1 1/4 inch           |
| Size of outlet connection:            | 1 1/4 inch           |
| Pressure rating for pipe connection:  | PN 16                |
| Flange size for motor:                | FT115                |
| Connect code:                         | A                    |
| <b>Liquid:</b>                        |                      |
| Pumped liquid:                        | Water                |
| Liquid temperature range:             | -20 .. 120 °C        |
| Liquid temperature during operation:  | 20 °C                |
| Density:                              | 998.2 kg/m³          |
| <b>Electrical data:</b>               |                      |
| Motor standard:                       | IEC                  |
| Motor type:                           | 90LC                 |
| IE Efficiency class:                  | IE3                  |
| Rated power - P2:                     | 2.2 kW               |
| Power (P2) required by pump:          | 2.2 kW               |
| Mains frequency:                      | 50 Hz                |
| Rated voltage:                        | 3 x 380-415D V       |
| Rated current:                        | 4.45 A               |
| Starting current:                     | 850-950 %            |
| Cos phi - power factor:               | 0.89-0.87            |
| Rated speed:                          | 2890-2910 rpm        |
| Efficiency:                           | IE3 85,9%            |
| Motor efficiency at full load:        | 85.9 %               |
| Motor efficiency at 3/4 load:         | 86.8 %               |
| Motor efficiency at 1/2 load:         | 86.0 %               |
| Number of poles:                      | 2                    |
| Enclosure class (IEC 34-5):           | 55 Dust/Jetting      |
| Insulation class (IEC 85):            | F                    |
| Motor protec:                         | NONE                 |

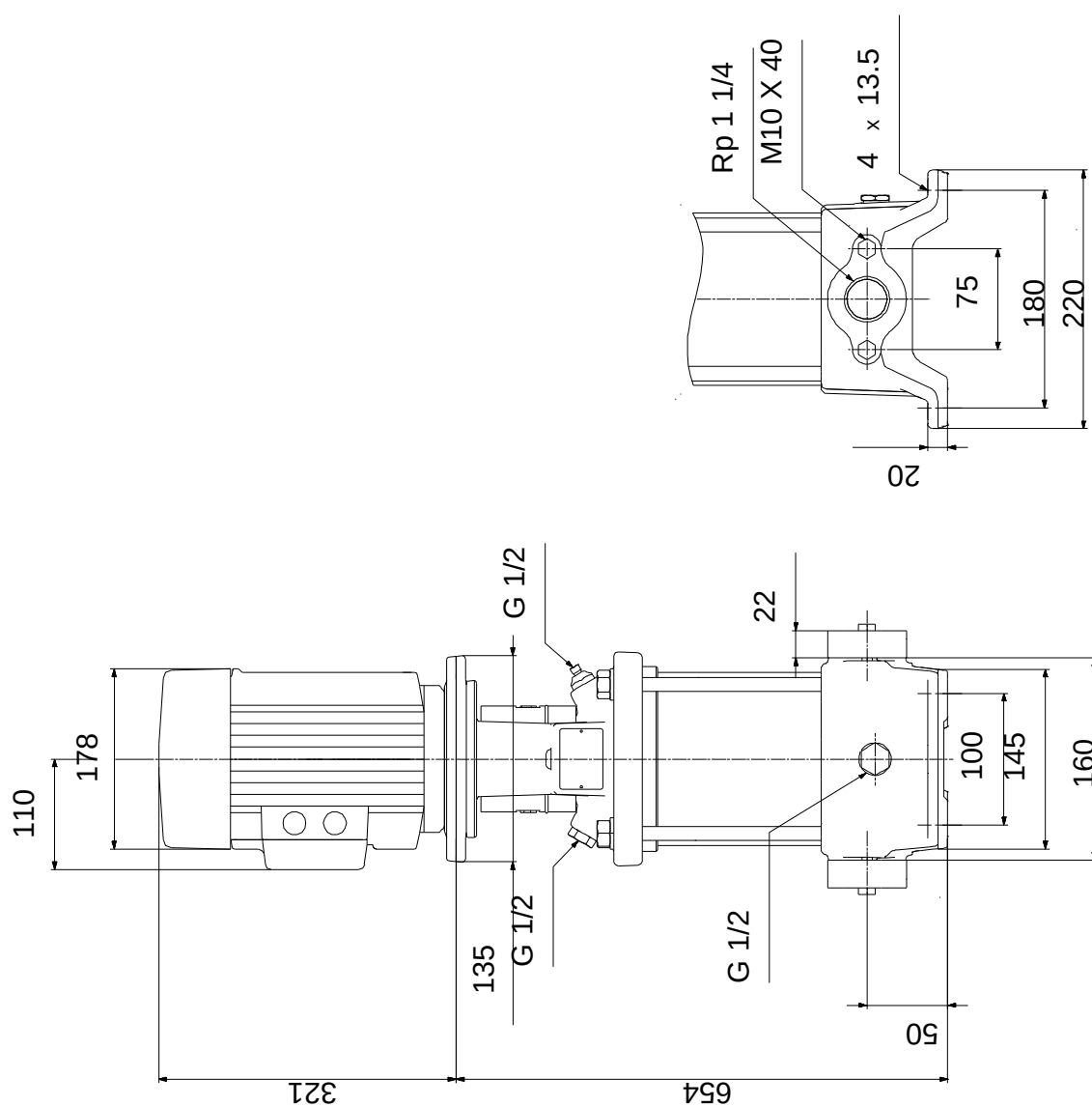


| Description                      | Value               |
|----------------------------------|---------------------|
| Motor No:                        | 85U15908            |
| <b>Controls:</b>                 |                     |
| Frequency converter:             | NONE                |
| <b>Others:</b>                   |                     |
| Minimum efficiency index, MEI ≥: | 0.57                |
| Net weight:                      | 42.3 kg             |
| Gross weight:                    | 45.2 kg             |
| Shipping volume:                 | 0.13 m <sup>3</sup> |

# On request CR 5-16 A-A-A-E-HQQE 50 Hz

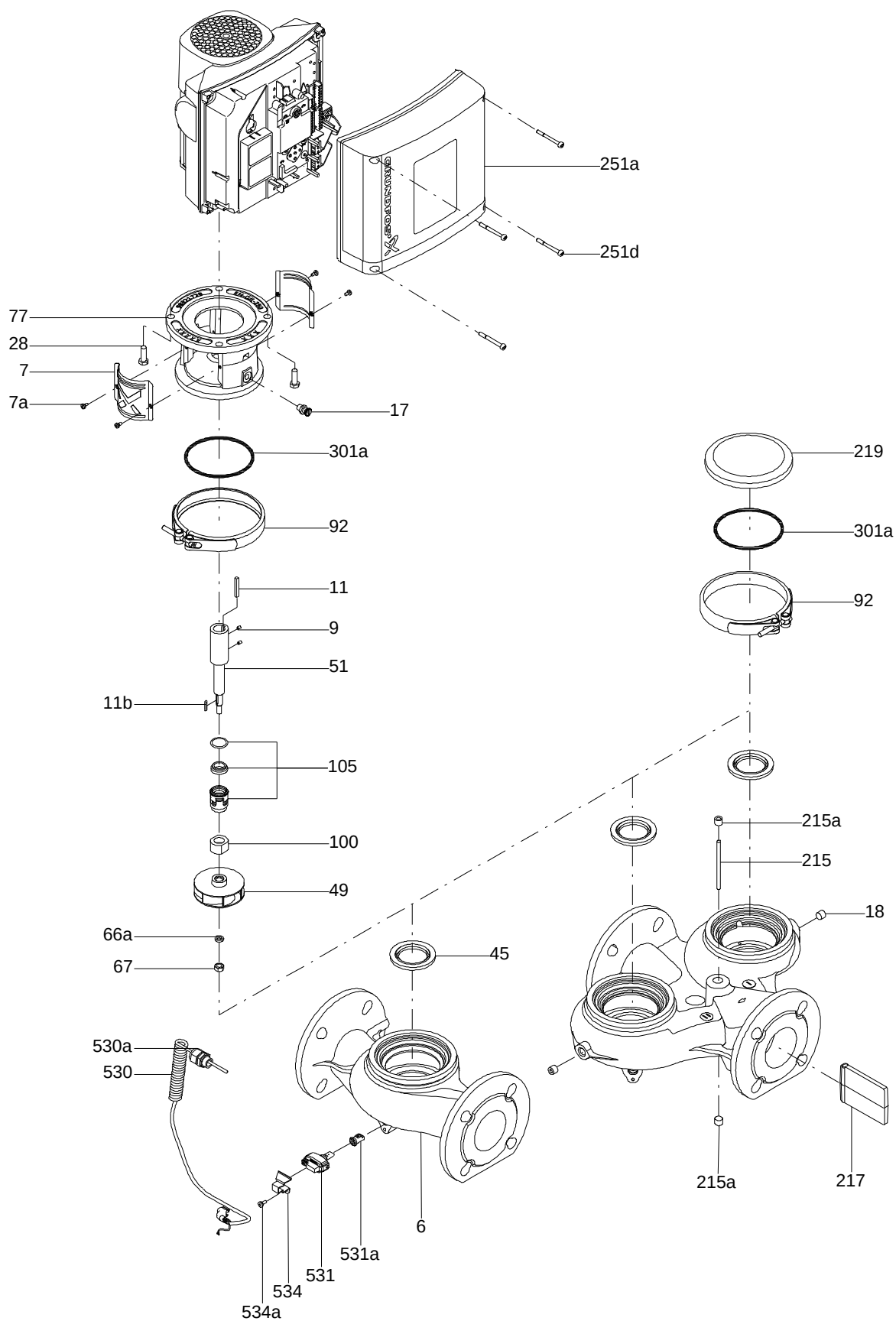


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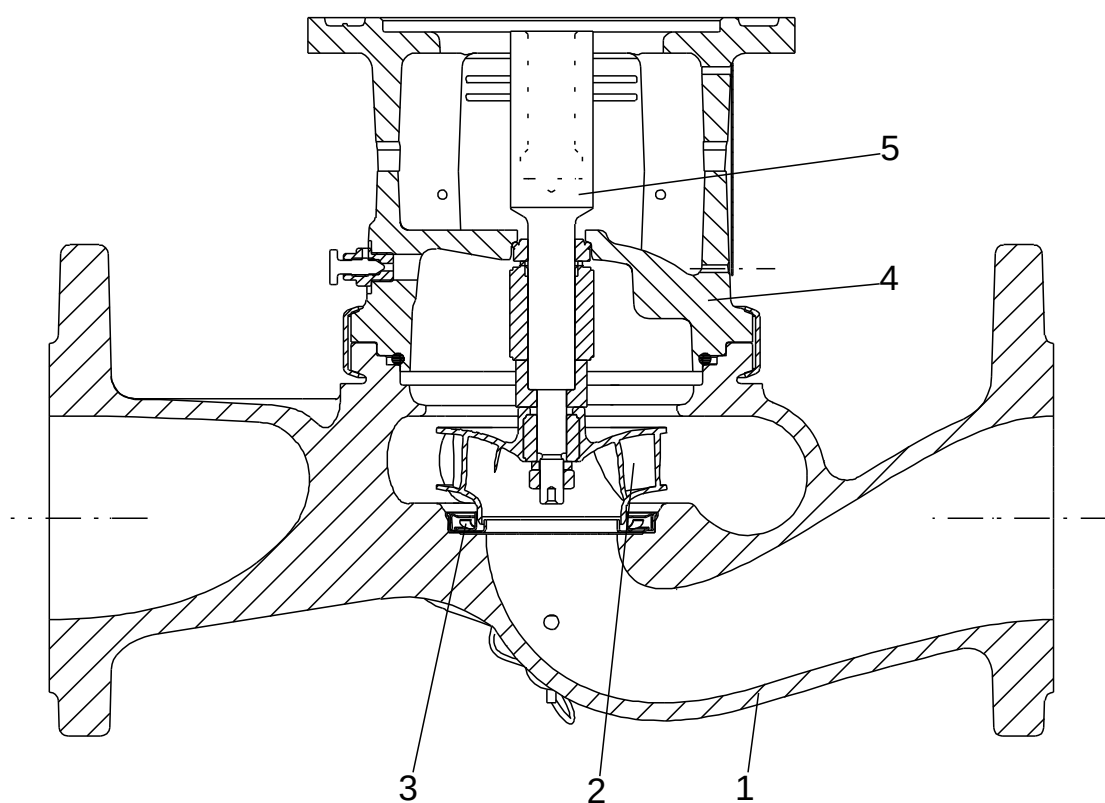


Note! All units are in [mm] unless others are stated.  
Disclaimer: This simplified dimensional drawing does not show all details.

# Exploded view

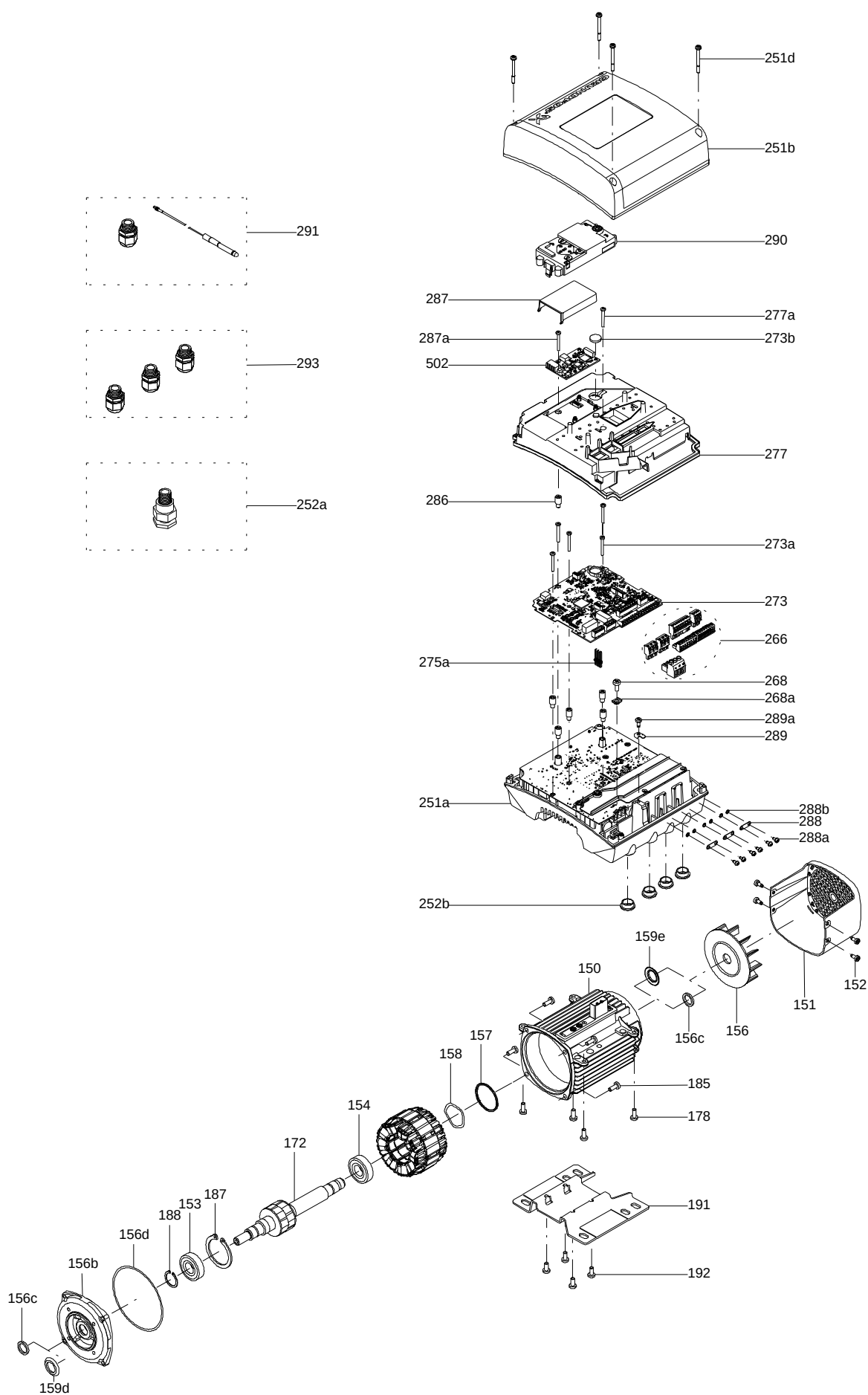


Sectional drawing (TM058200 for TPE2,TPE3)



TM058200

Exploded view ( TM057026 for MGE model H/I )



**Parts list CR 5-16, Product No. On request**  
**Valid from 1.1.2011 (1152)**

| Pos  | Description               | Annotation | Données de classification | Référence | Quantité | Unité |
|------|---------------------------|------------|---------------------------|-----------|----------|-------|
| -    | Base cpl.                 |            |                           |           | 1        | pcs   |
| 6    | Base                      |            |                           |           | 1        |       |
| + 12 | Flange                    |            | Thread: RP 1              |           | 2        |       |
| 35   | Hex head screw            |            | Length (mm): 40           |           | 4        |       |
|      |                           |            | Thread: M10               |           |          |       |
| 39   | Gasket                    |            |                           |           | 2        |       |
| -    | Sealing parts             |            |                           |           | 1        | pcs   |
| - 25 | Drain plug w/bypass valve |            |                           |           | 1        |       |
| 38   | O-ring                    |            | Diameter: 16,3            |           | 1        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| 37   | O-ring                    |            |                           |           | 2        |       |
| 100  | O-ring                    |            | Diameter: 16,3            |           | 2        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| - 2  | Pump head cpl.            |            |                           |           | 1        | pcs   |
| 2    | Pump head                 |            |                           |           | 1        |       |
| 7    | Coupling guard            |            |                           |           | 2        |       |
| 7a   | Combi Slot Torx screw     |            |                           |           | 4        |       |
| - 18 | Air vent screw            |            |                           |           | 1        |       |
|      | Plug                      |            |                           |           | 1        |       |
|      | Spindle                   |            |                           |           | 1        |       |
| 23a  | Plug                      |            |                           |           | 1        |       |
| 28   | Hex head screw            |            | Length (mm): 20           |           | 4        |       |
|      |                           |            | Thread: M8                |           |          |       |
| 60   | Formed wire spring        |            |                           |           | 1        |       |
| - 8  | Coupling cpl.             |            |                           |           | 1        | pcs   |
| 9    | Hex socket head cap screw |            | Designation: DIN 912      |           | 4        |       |
|      |                           |            | Length (mm): 25           |           |          |       |
|      |                           |            | Thread: M8                |           |          |       |
| 10   | Shaft pin                 |            | Diameter: 5               |           | 1        |       |
|      |                           |            | Length (mm): 26           |           |          |       |
| 10a  | Coupling half             |            |                           |           | 2        |       |
| 26   | Staybolt                  |            | Length (mm): 454          |           | 4        | pcs   |
|      |                           |            | Thread: M12               |           |          |       |
| 36a  | Washer                    |            | Designation: DIN 125 A    |           | 4        | pcs   |
|      |                           |            | Internal diameter: 13     |           |          |       |
|      |                           |            | Outer diameter: 24        |           |          |       |
|      |                           |            | Thickness: 2,5            |           |          |       |
| 55   | Outer sleeve              |            |                           |           | 1        | pcs   |
| 66a  | Nut                       |            | Thread: M12               |           | 4        | pcs   |
| - 80 | Chamber stack             |            |                           |           | 1        | pcs   |
| - 4  | Chamber cpl.              |            |                           |           | 12       |       |
|      | Chamber                   |            |                           |           | 1        |       |
|      | Retainer for seal ring    |            |                           |           | 1        |       |
|      | Guide vane                |            |                           |           | 6        |       |
|      | Plate                     |            |                           |           | 1        |       |
|      | Vane                      |            |                           |           | 1        |       |
| 45   | Neck ring                 |            |                           |           | 1        |       |
| 65   | Retainer                  |            |                           |           | 1        |       |
| - 4a | Chamber w. bearing cpl.   |            |                           |           | 3        |       |
|      | Chamber                   |            |                           |           | 1        |       |
|      | Retainer for seal ring    |            |                           |           | 1        |       |
|      | Guide vane                |            |                           |           | 6        |       |
|      | Retainer for bearing      |            |                           |           | 1        |       |
|      | Bearing bush              |            |                           |           | 1        |       |
|      | Vane                      |            |                           |           | 1        |       |
| 45   | Neck ring                 |            |                           |           | 1        |       |
| 65   | Retainer                  |            |                           |           | 1        |       |

| Pos    | Description            | Annotation | Données de classification | Référence | Quantité | Unité |
|--------|------------------------|------------|---------------------------|-----------|----------|-------|
| - 5a   | Chamber cpl.           |            |                           |           | 1        |       |
|        | Chamber                |            |                           |           | 1        |       |
| 45     | Neck ring              |            |                           |           | 1        |       |
| 65     | Retainer               |            |                           |           | 1        |       |
| 36     | Lock nut               |            | Thread: M8                |           | 1        |       |
| 47a    | Bearing ring, rotating |            |                           |           | 3        |       |
| 49     | Impeller cpl.          |            |                           |           | 16       |       |
| - 50a  | Guide vane cpl.        |            |                           |           | 1        |       |
|        | Guide vane             |            |                           |           | 6        |       |
|        | Plate                  |            |                           |           | 1        |       |
| 50b    | Top plate              |            |                           |           | 1        |       |
| 51     | Shaft, spline, cpl.    |            |                           |           | 1        |       |
| 64a    | Spacing pipe           |            | Internal diameter: 12,85  |           | 1        |       |
|        |                        |            | Outer diameter: 15,85     |           |          |       |
|        |                        |            | Length (mm): 4,50         |           |          |       |
| 64a    | Spacing pipe           |            | Length (mm): 13.00        |           | 3        |       |
| 64c    | Clamp, splined         |            | Internal diameter: 8,5    |           | 1        |       |
|        |                        |            | Outer diameter: 15        |           |          |       |
| 66     | Wedge lock washer      |            |                           |           | 1        |       |
| 69     | Spacing pipe           |            | Length (mm): 26.0         |           | 12       |       |
| 69     | Spacing pipe           |            | Length (mm): 2.00         |           | 1        |       |
| - 105  | Shaft seal             |            | Material type: HQQE       | 1         |          | pcs   |
|        | O-ring                 |            |                           |           | 1        |       |
|        | O-ring                 |            |                           |           | 1        |       |
|        | Seal driver, upper     |            |                           |           | 1        |       |
|        | Seal driver, lower     |            |                           |           | 1        |       |
|        | Spacer ring            |            |                           |           | 1        |       |
|        | Pipe                   |            |                           |           | 1        |       |
|        | Plug                   |            |                           |           | 1        |       |
|        | Plug                   |            |                           |           | 1        |       |
|        | Compression spring     |            |                           |           | 1        |       |
|        | Socket set screw       |            |                           |           | 1        |       |
| 102    | O-ring                 |            | Diameter: 22,00           |           | 1        |       |
|        |                        |            | Material type: EPDM       |           |          |       |
|        |                        |            | Thickness: 2,75           |           |          |       |
| 103    | Seal ring, stationary  |            |                           |           | 1        |       |
| 105    | Seal ring, rotating    |            |                           |           | 1        |       |
| 107    | O-ring                 |            |                           |           | 1        |       |
| 113    | Driver                 |            |                           |           | 1        |       |
| + 2099 | Motor                  |            |                           |           | 1        | pcs   |

*Disclaimer: The information about the Grundfos pump in this document may be outdated.*

*Data may be subject to alterations without further notice.*

*Please contact us to verify the data above is still accurate/up-to-date.*

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