

## CR45-11-2 A-F-A-E-HQQE 3x400/690 50 HZ

Grundfos pump 96122816



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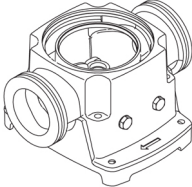
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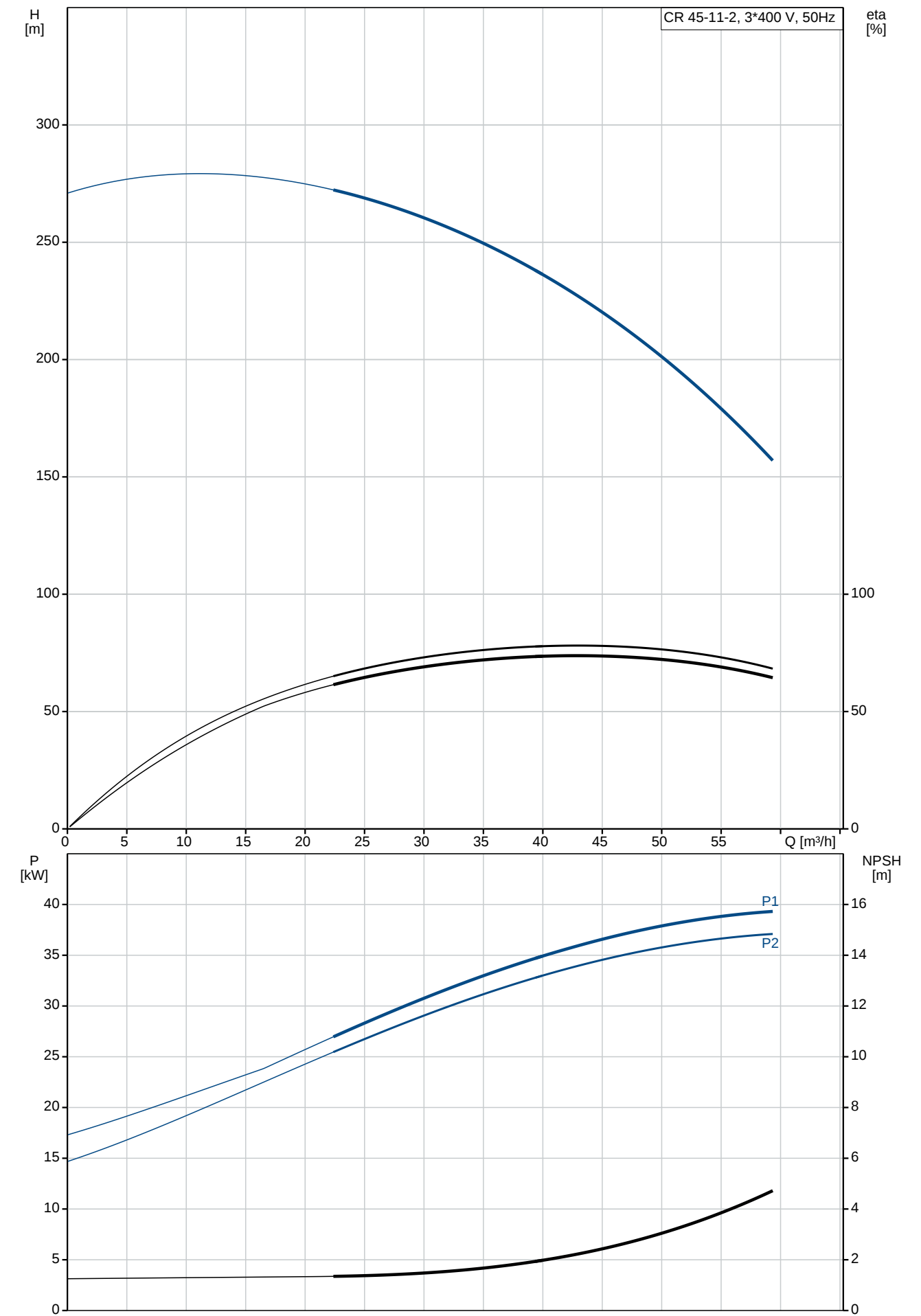
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| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|          | 1    | <p><b>CR 45-11-2 A-F-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 DIN flanges.</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 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.</p>  <p>The motor stool connects the pump head and motor. 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> |

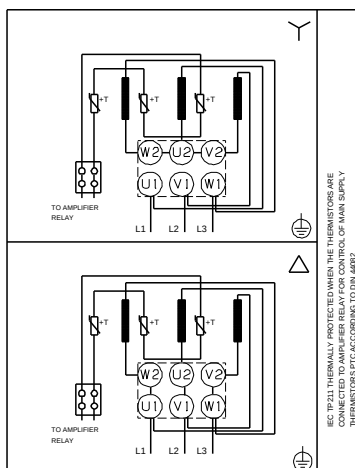
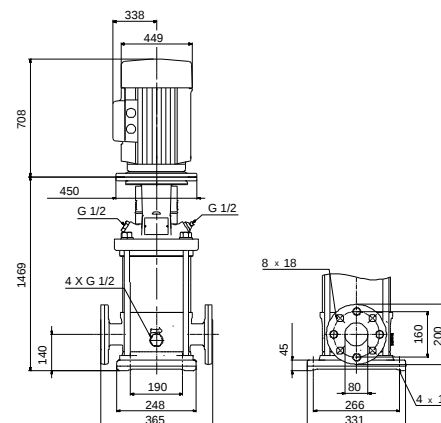
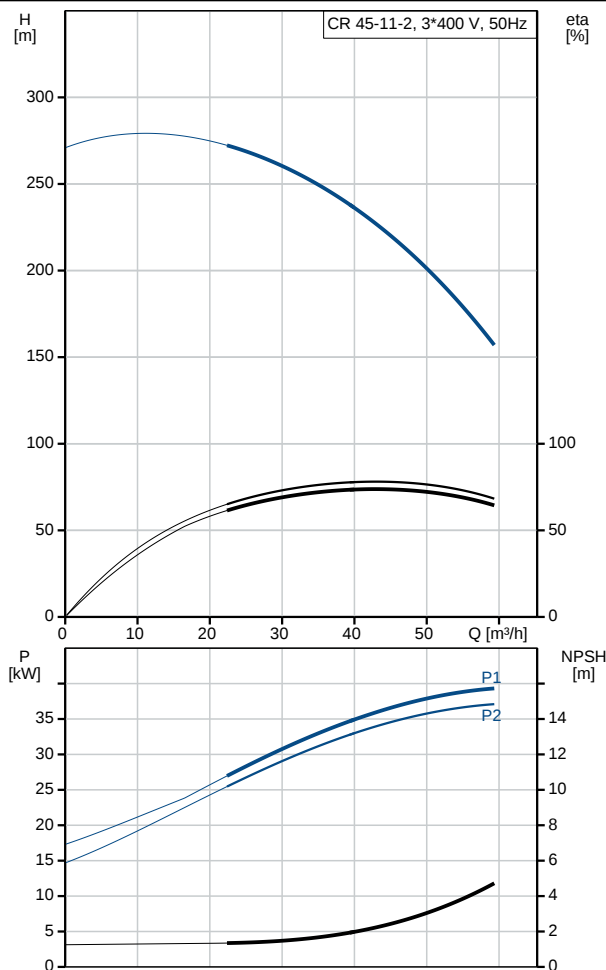
| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <p>EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.</p>  <p>The shaft seal is retained in the pump head by a cover and screws. It can be replaced without removing the motor.</p> <p>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.</p> <p>The base is made of cast iron. 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.</p>  <p><b>Motor</b></p> <p>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).</p> <p>Motor-mounting designation in accordance with IEC 60034-7: IM B 5 (Code I) / IM 3001 (Code II).</p> <p>Electrical tolerances comply with IEC 60034.</p> <p>The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.</p> <p>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.</p> <p>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.</p> <p>A variable speed drive makes adjustment of pump performance to any duty point possible. If the motor is to be connected to a variable speed drive, the pump must be ordered with an electrically insulated motor bearing.</p> <p><b>Technical data</b></p> <p><b>Controls:</b></p> <p>Frequency converter: NONE</p> <p><b>Liquid:</b></p> <p>Pumped liquid: Water</p> <p>Liquid temperature range: -30 .. 120 °C</p> <p>Liquid temperature during operation: 20 °C</p> <p>Density: 998.2 kg/m<sup>3</sup></p> <p><b>Technical:</b></p> <p>Rated flow: 45 m<sup>3</sup>/h</p> <p>Rated head: 221.6 m</p> <p>Pump orientation: Vertical</p> <p>Shaft seal arrangement: Single</p> <p>Code for shaft seal: HQQE</p> <p>Approvals on nameplate: CE, EAC, ACS</p> <p>Curve tolerance: ISO9906:2012 3B</p> <p><b>Materials:</b></p> |

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <p>Base: Cast iron<br/>EN 1563 EN-GJS-500-7<br/>ASTM A536 80-55-06</p> <p>Impeller: Stainless steel<br/>EN 1.4301<br/>AISI 304</p> <p>Bearing: SIC</p> <p>Support bearing: Graflon</p> <p><b>Installation:</b><br/> Maximum ambient temperature: 55 °C<br/> Maximum operating pressure: 30 bar<br/> Max pressure at stated temp: 30 bar / 120 °C<br/> 30 bar / -30 °C<br/> Type of connection: DIN<br/> Size of inlet connection: DN 80<br/> Size of outlet connection: DN 80<br/> Pressure rating for pipe connection: PN 40<br/> Flange size for motor: FF400</p> <p><b>Electrical data:</b><br/> Motor standard: IEC<br/> Motor type: SIEMENS<br/> IE Efficiency class: IE3<br/> Rated power - P2: 45 kW<br/> Power (P2) required by pump: 45 kW<br/> Mains frequency: 50 Hz<br/> Rated voltage: 3 x 380-420D/660-725Y V<br/> Rated current: 81,0-74,0/47,0-43,0 A<br/> Starting current: 690-690 %<br/> Cos phi - power factor: 0.89<br/> Rated speed: 2960 rpm<br/> Efficiency: IE3 94,0%<br/> Motor efficiency at full load: 94.0-94.0 %<br/> Motor efficiency at 3/4 load: 94.5-94.5 %<br/> Motor efficiency at 1/2 load: 94.4-94.4 %<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 ≥: 0.7<br/> Net weight: 455 kg<br/> Gross weight: 506 kg<br/> Shipping volume: 1.13 m³<br/> Danish VVS No.: 385907112</p> |

On request CR 45-11-2 A-F-A-E-HQQE 50 Hz

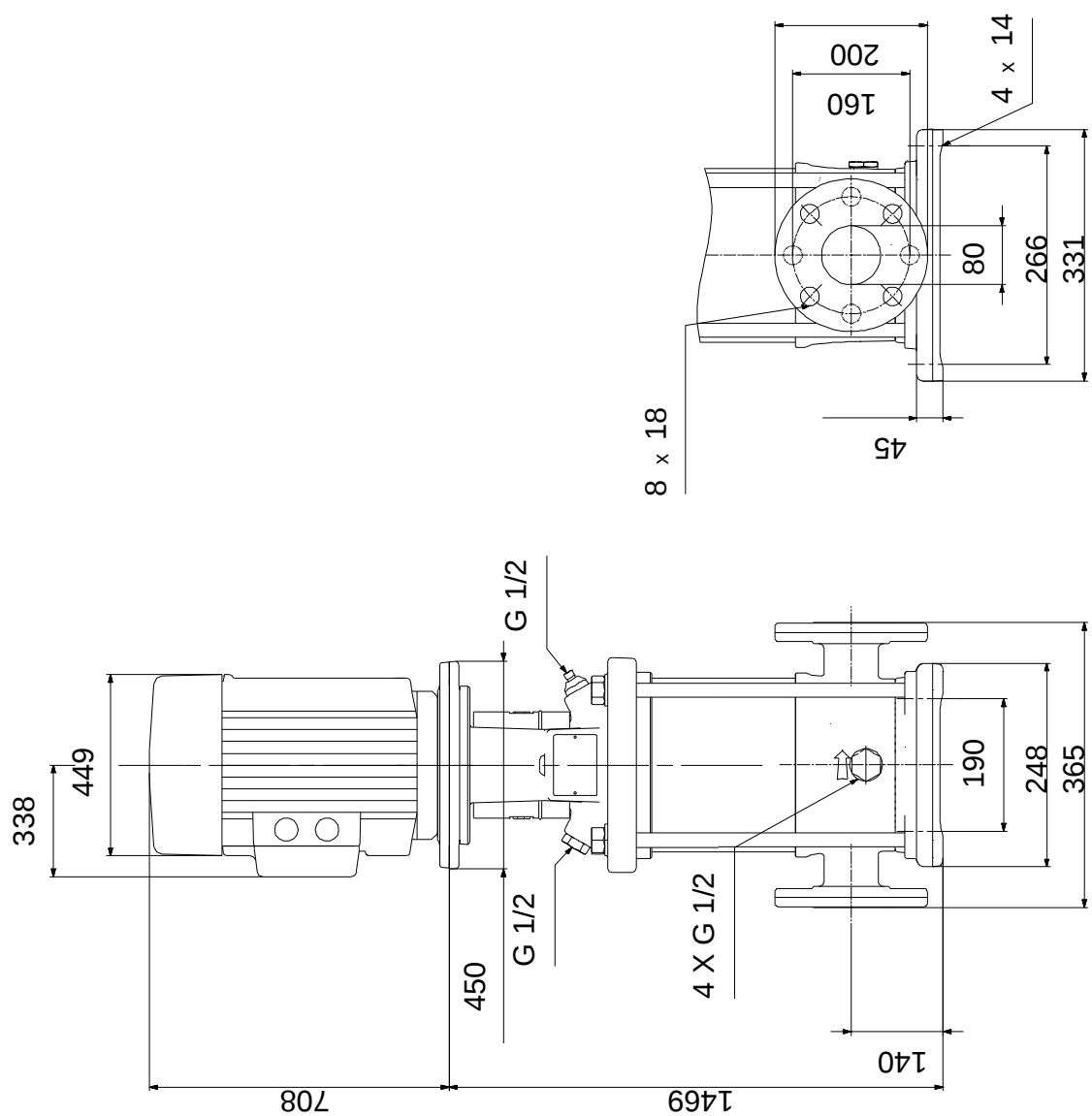


| Description                           | Value                   |
|---------------------------------------|-------------------------|
| <b>General information:</b>           |                         |
| Product name:                         | CR 45-11-2 A-F-A-E-HQQE |
| Product No:                           | On request              |
| EAN number:                           | On request              |
| <b>Technical:</b>                     |                         |
| Rated flow:                           | 45 m <sup>3</sup> /h    |
| Rated head:                           | 221.6 m                 |
| Stages:                               | 11                      |
| Impellers:                            | 11                      |
| Number of reduced-diameter impellers: | 2                       |
| 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                       |
| <b>Materials:</b>                     |                         |
| Base:                                 | Cast iron               |
|                                       | EN 1563 EN-GJS-500-7    |
|                                       | ASTM A536 80-55-06      |
| Impeller:                             | Stainless steel         |
|                                       | EN 1.4301               |
|                                       | AISI 304                |
| Material code:                        | A                       |
| Code for rubber:                      | E                       |
| Bearing:                              | SIC                     |
| Support bearing:                      | Graflon                 |
| <b>Installation:</b>                  |                         |
| Maximum ambient temperature:          | 55 °C                   |
| Maximum operating pressure:           | 30 bar                  |
| Max pressure at stated temp:          | 30 bar / 120 °C         |
|                                       | 30 bar / -30 °C         |
| Type of connection:                   | DIN                     |
| Size of inlet connection:             | DN 80                   |
| Size of outlet connection:            | DN 80                   |
| Pressure rating for pipe connection:  | PN 40                   |
| Flange size for motor:                | FF400                   |
| Connect code:                         | F                       |
| <b>Liquid:</b>                        |                         |
| Pumped liquid:                        | Water                   |
| Liquid temperature range:             | -30 .. 120 °C           |
| Liquid temperature during operation:  | 20 °C                   |
| Density:                              | 998.2 kg/m <sup>3</sup> |
| <b>Electrical data:</b>               |                         |
| Motor standard:                       | IEC                     |
| Motor type:                           | SIEMENS                 |
| IE Efficiency class:                  | IE3                     |
| Rated power - P2:                     | 45 kW                   |
| Power (P2) required by pump:          | 45 kW                   |
| Mains frequency:                      | 50 Hz                   |
| Rated voltage:                        | 3 x 380-420D/660-725Y V |
| Rated current:                        | 81,0-74,0/47,0-43,0 A   |
| Starting current:                     | 690-690 %               |
| Cos phi - power factor:               | 0.89                    |
| Rated speed:                          | 2960 rpm                |
| Efficiency:                           | IE3 94,0%               |
| Motor efficiency at full load:        | 94.0-94.0 %             |
| Motor efficiency at 3/4 load:         | 94.5-94.5 %             |
| Motor efficiency at 1/2 load:         | 94.4-94.4 %             |
| Number of poles:                      | 2                       |
| Enclosure class (IEC 34-5):           | 55 Dust/Jetting         |



| Description                      | Value     |
|----------------------------------|-----------|
| Insulation class (IEC 85):       | F         |
| Motor protec:                    | PTC       |
| Motor No:                        | 81U15336  |
| <b>Controls:</b>                 |           |
| Frequency converter:             | NONE      |
| <b>Others:</b>                   |           |
| Minimum efficiency index, MEI ≥: | 0.7       |
| Net weight:                      | 455 kg    |
| Gross weight:                    | 506 kg    |
| Shipping volume:                 | 1.13 m³   |
| Danish VVS No.:                  | 385907112 |

On request CR 45-11-2 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.

# Exploded view



Sectional drawing (TM058200 for TPE2,TPE3)



TM058200

# Exploded view ( TM057026 for MGE model H/I )



**Parts list CR 45-11-2, Product No. On request**  
**Valid from 2.3.2011 (1109)**

| Pos  | Description               | Annotation | Données de classification | Référence | Quantité | Unité |
|------|---------------------------|------------|---------------------------|-----------|----------|-------|
| +    | Motor                     |            |                           |           | 1        | pcs   |
| - 1  | Basic unit                |            |                           |           | 1        | pcs   |
| - 2a | Pump head cpl.            |            |                           |           | 1        |       |
| 2    | Pump head                 |            |                           |           | 1        |       |
| 9    | Hex socket head cap screw |            | Designation: DIN 912      |           | 4        |       |
|      |                           |            | Length (mm): 25           |           |          |       |
|      |                           |            | Thread: M10               |           |          |       |
| - 18 | Air vent screw            |            |                           |           | 1        |       |
|      | Plug                      |            |                           |           |          |       |
|      | Spindle                   |            |                           |           |          |       |
| 23   | Plug                      |            |                           |           | 1        |       |
| 37   | O-ring                    |            |                           |           | 1        |       |
| 58   | Cover                     |            |                           |           | 1        |       |
| 60   | Spring                    |            |                           |           | 4        |       |
| 100  | O-ring                    |            | Diameter: 16,3            |           | 2        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| - 6b | Base cpl.                 |            | Rubber type: EPDM         |           | 1        |       |
|      | Bearing ring, stationary  |            |                           |           | 1        |       |
| 6    | Base                      |            |                           |           | 1        |       |
| 25   | Plug                      |            |                           |           | 4        |       |
| 31   | Hex socket head cap screw |            |                           |           | 1        |       |
| 32   | Washer                    |            | Designation: DIN 125A     |           | 1        |       |
|      |                           |            | Internal diameter: 6,4    |           |          |       |
|      |                           |            | Outer diameter: 12,0      |           |          |       |
|      |                           |            | Thickness: 1,6            |           |          |       |
| 37   | O-ring                    |            |                           |           | 1        |       |
| 38   | O-ring                    |            | Diameter: 16,3            |           | 4        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| 26   | Staybolt                  |            | Length (mm): 1047         |           | 4        |       |
|      |                           |            | Thread: M16               |           |          |       |
| 36   | Hex nut                   |            | Thread: M16               |           | 4        |       |
| 55   | Outer sleeve              |            | Outer diameter: 216,0     |           | 1        |       |
|      |                           |            | Length (mm): 903,5        |           |          |       |
| 66a  | Washer                    |            | Designation: DIN 125 A    |           | 4        |       |
|      |                           |            | Internal diameter: 17     |           |          |       |
|      |                           |            | Outer diameter: 30        |           |          |       |
|      |                           |            | Thickness: 3              |           |          |       |
| - 1a | Motor stool cpl.          |            |                           |           | 1        | pcs   |
| 1a   | Motor stool               |            |                           |           | 1        |       |
| 7    | Coupling guard            |            |                           |           | 2        |       |
| 7a   | Socket button head screw  |            |                           |           | 4        |       |
| - 8  | Coupling cpl.             |            | Dimension: 22/55          |           | 1        |       |
| 9    | Hex socket head cap screw |            | Designation: DIN 912      |           | 4        |       |
|      |                           |            | Length (mm): 25           |           |          |       |
|      |                           |            | Thread: M10               |           |          |       |
| 10a  | Coupling half             |            |                           |           | 2        |       |
| 28   | Hex head screw            |            | Length (mm): 60           |           | 4        |       |
|      |                           |            | Thread: M16               |           |          |       |
| 28   | Hex socket head cap screw |            | Designation: DIN 912      |           | 4        |       |
|      |                           |            | Length (mm): 50           |           |          |       |
|      |                           |            | Thread: M10               |           |          |       |
| 32a  | Washer                    |            | Designation: DIN 125 A    |           | 8        |       |
|      |                           |            | Internal diameter: 17     |           |          |       |
|      |                           |            | Outer diameter: 30        |           |          |       |
|      |                           |            | Thickness: 3              |           |          |       |
| 36   | Hex nut                   |            | Thread: M16               |           | 4        |       |
| - 76 | Nameplate set             |            |                           |           | 1        | pcs   |

| Pos   | Description    | Annotation | Données de classification | Référence | Quantité | Unité |
|-------|----------------|------------|---------------------------|-----------|----------|-------|
| 76    | Plate          |            |                           |           | 1        |       |
| 76a   | Rivet          |            |                           |           | 2        |       |
| - 105 | Shaft seal     |            | Material type: HQQE       |           | 1        | pcs   |
|       | Adjusting fork |            |                           |           | 1        |       |
| 109   | O-ring         |            |                           |           | 1        |       |
| 110   | O-ring         |            | Diameter: 21,5            |           | 1        |       |
|       |                |            | Material type: EPDM       |           |          |       |
|       |                |            | Thickness: 4,25           |           |          |       |
| - 200 | Flange cpl.    |            |                           |           | 2        | pcs   |
| - 201 | Flange         |            |                           |           | 1        |       |
| 201   | Flange         |            |                           |           | 1        |       |
| 203   | Lock ring      |            |                           |           | 1        |       |

*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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