

## CRN20-03 A-P-G-E-HQQE 3x400D 50 HZ

Grundfos pump 96500559



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<https://www.lenntech.com/grundfos/CRN20/96500559/CRN-20-3-A-P-G-E-HQQE.html>

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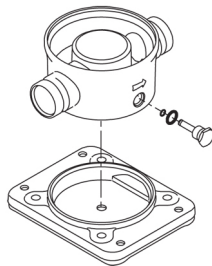
| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>CRN 20-3 A-P-X-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). 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 PJE (Victaulic®) couplings.</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 and flange for motor mounting is made in one piece (cast iron). The pump head cover is a separate component (stainless steel). 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 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. The outlet side of the base has a drain plug. The pump is secured to the foundation by four bolts through the base plate. The base is prepared for connection by means of PJE (Victualic®) couplings.



## 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:

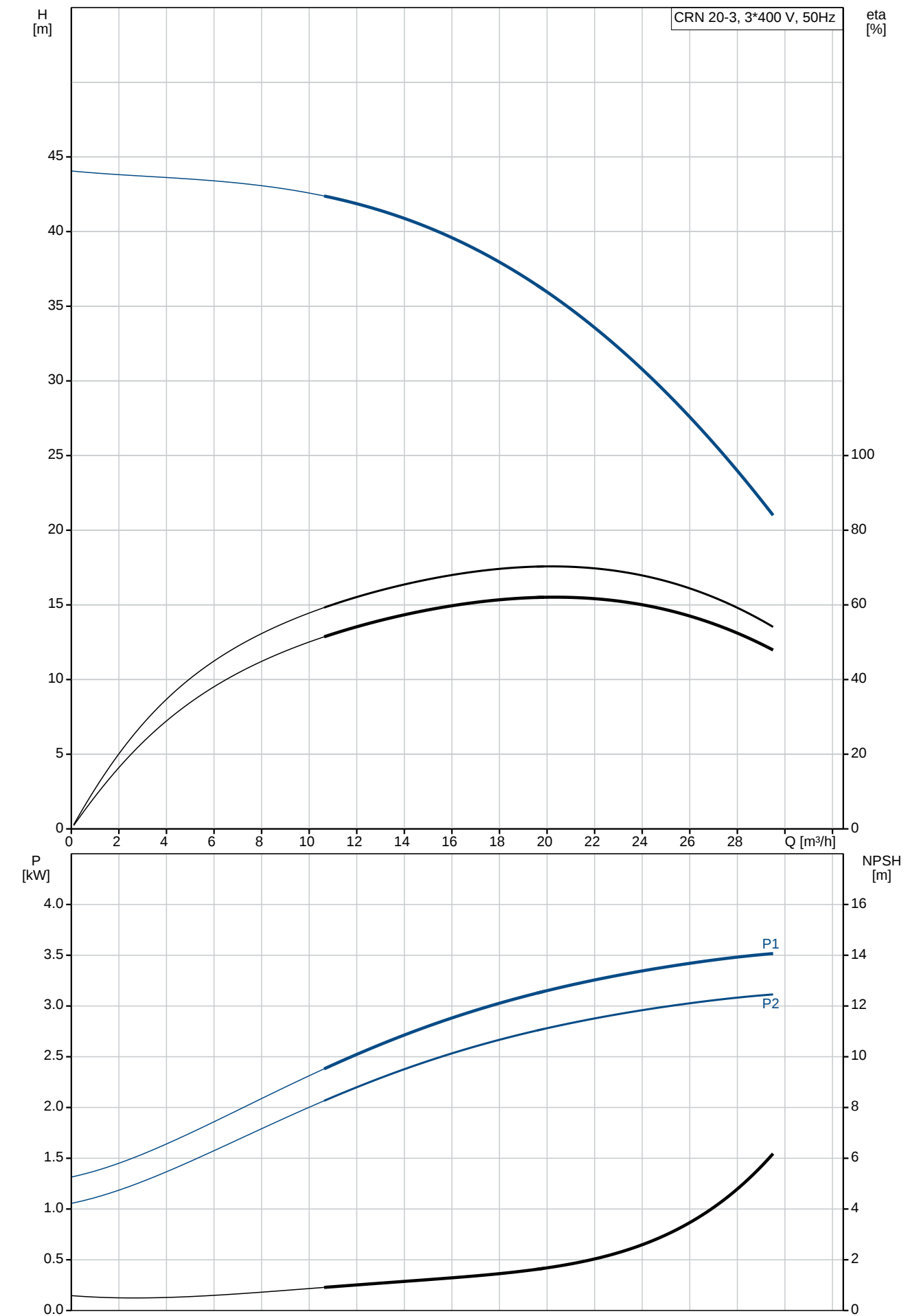
Pumped liquid: Water  
 Liquid temperature range: -20 .. 120 °C  
 Liquid temperature during operation: 20 °C  
 Density: 998.2 kg/m<sup>3</sup>

### Technical:

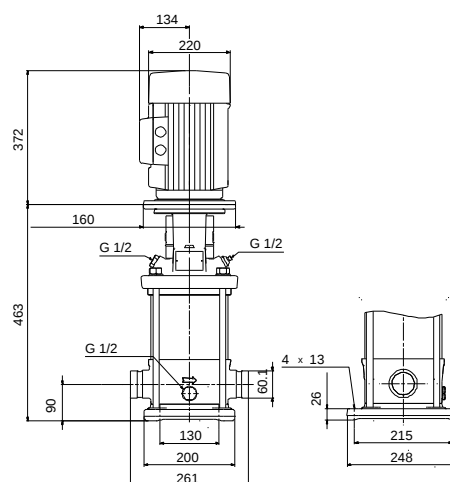
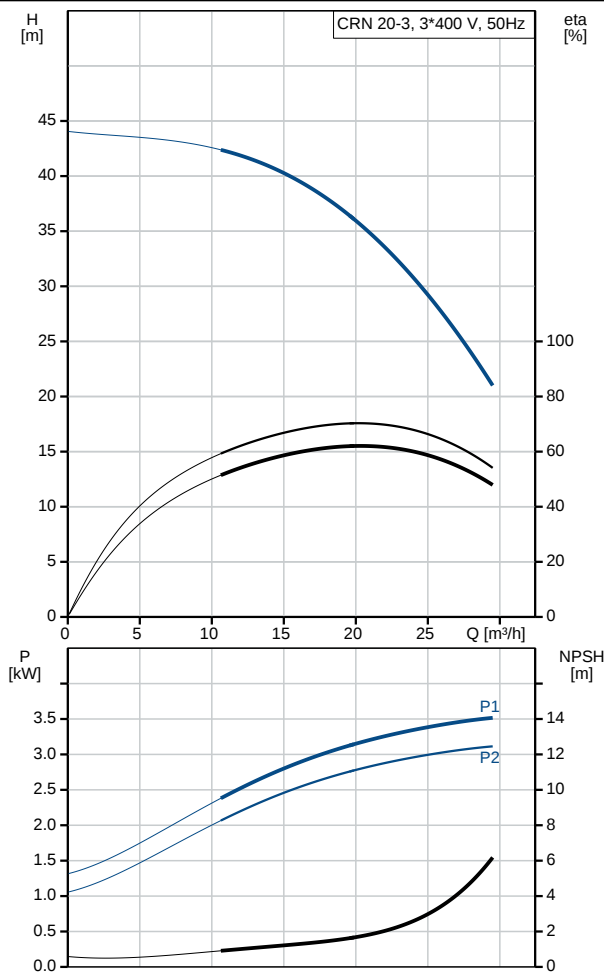
Rated flow: 21 m<sup>3</sup>/h  
 Rated head: 34.6 m  
 Pump orientation: Vertical  
 Shaft seal arrangement: Single  
 Code for shaft seal: HQQE  
 Approvals on nameplate: CE, EAC, ACS  
 Curve tolerance: ISO9906:2012 3B

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <p><b>Materials:</b></p> <p>Base: Stainless steel<br/>EN 1.4408<br/>AISI 316</p> <p>Impeller: Stainless steel<br/>EN 1.4401<br/>AISI 316</p> <p>Bearing: SIC</p> <p><b>Installation:</b></p> <p>Maximum ambient temperature: 60 °C<br/>Maximum operating pressure: 25 bar<br/>Max pressure at stated temp: 25 bar / 120 °C<br/>25 bar / -20 °C</p> <p>Type of connection: PJE<br/>Size of inlet connection: DN 50<br/>2 inch</p> <p>Size of outlet connection: DN 50<br/>2 inch</p> <p>Pressure rating for pipe connection: PN 50<br/>Flange size for motor: FT130</p> <p><b>Electrical data:</b></p> <p>Motor standard: IEC<br/>Motor type: 112MC<br/>IE Efficiency class: IE3<br/>Rated power - P2: 4 kW<br/>Power (P2) required by pump: 4 kW<br/>Mains frequency: 50 Hz<br/>Rated voltage: 3 x 380-415D V<br/>Rated current: 7.9 A<br/>Starting current: 1000-1110 %<br/>Cos phi - power factor: 0.87-0.87<br/>Rated speed: 2920-2940 rpm<br/>Efficiency: IE3 88,1%<br/>Motor efficiency at full load: 88.1 %<br/>Motor efficiency at 3/4 load: 88.6 %<br/>Motor efficiency at 1/2 load: 85.2 %<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></p> <p>Minimum efficiency index, MEI ≥: 0.7<br/>Net weight: 63 kg<br/>Gross weight: 67 kg<br/>Shipping volume: 0.13 m³<br/>Danish VVS No.: 385915030</p> |

On request CRN 20-3 A-P-X-E-HQQE 50 Hz

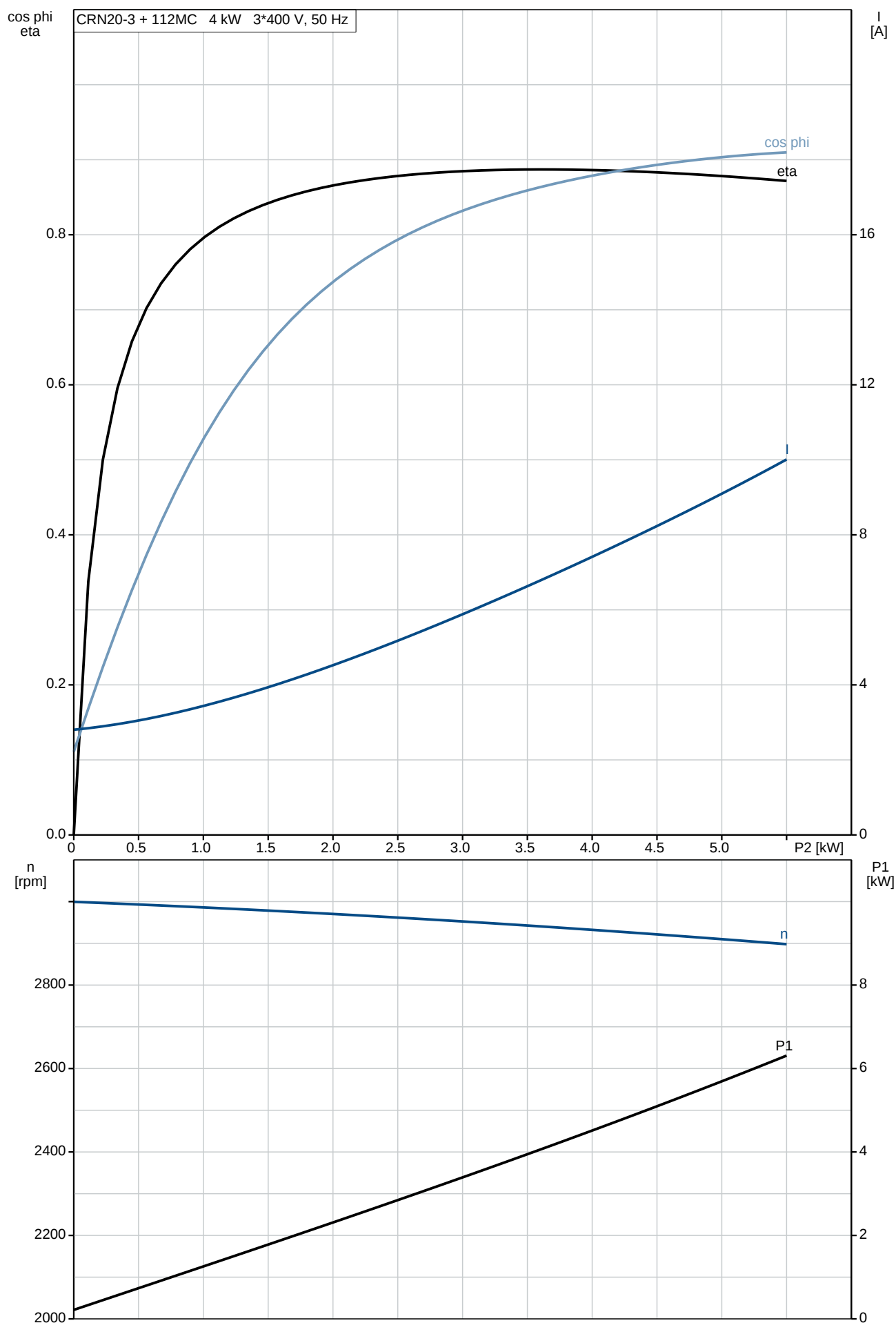


| Description                           | Value                                    |
|---------------------------------------|------------------------------------------|
| <b>General information:</b>           |                                          |
| Product name:                         | CRN 20-3 A-P-X-E-HQQE                    |
| Product No:                           | On request                               |
| EAN number:                           | On request                               |
| <b>Technical:</b>                     |                                          |
| Rated flow:                           | 21 m³/h                                  |
| Rated head:                           | 34.6 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                                        |
| <b>Materials:</b>                     |                                          |
| Base:                                 | Stainless steel<br>EN 1.4408             |
| Impeller:                             | AISI 316<br>Stainless steel<br>EN 1.4401 |
| Material code:                        | X                                        |
| Code for rubber:                      | E                                        |
| Bearing:                              | SIC                                      |
| <b>Installation:</b>                  |                                          |
| Maximum ambient temperature:          | 60 °C                                    |
| Maximum operating pressure:           | 25 bar                                   |
| Max pressure at stated temp:          | 25 bar / 120 °C<br>25 bar / -20 °C       |
| Type of connection:                   | PJE                                      |
| Size of inlet connection:             | DN 50<br>2 inch                          |
| Size of outlet connection:            | DN 50<br>2 inch                          |
| Pressure rating for pipe connection:  | PN 50                                    |
| Flange size for motor:                | FT130                                    |
| Connect code:                         | P                                        |
| <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:                           | 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                                        |

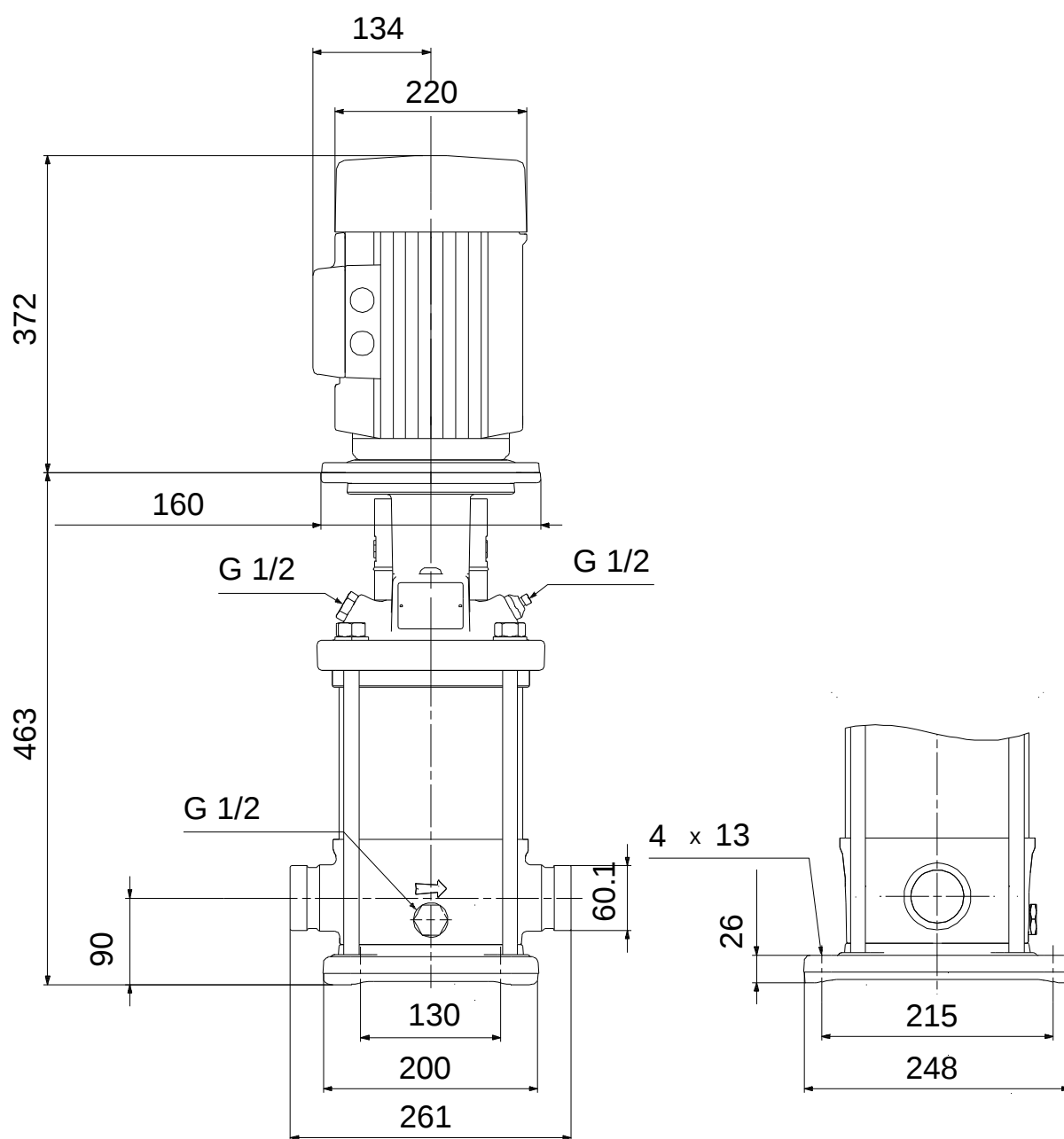


| Description                      | Value           |
|----------------------------------|-----------------|
| Enclosure class (IEC 34-5):      | 55 Dust/Jetting |
| Insulation class (IEC 85):       | F               |
| Motor protec:                    | PTC             |
| Motor No:                        | 85U15413        |
| <b>Controls:</b>                 |                 |
| Frequency converter:             | NONE            |
| <b>Others:</b>                   |                 |
| Minimum efficiency index, MEI ≥: | 0.7             |
| Net weight:                      | 63 kg           |
| Gross weight:                    | 67 kg           |
| Shipping volume:                 | 0.13 m³         |
| Danish VVS No.:                  | 385915030       |

# On request CRN 20-3 A-P-X-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 CRN 20-3, Product No. On request**  
**Valid from 1.1.2011 (1152)**

| Pos  | Description               | Annotation | Données de classification | Référence | Quantité | Unité |
|------|---------------------------|------------|---------------------------|-----------|----------|-------|
| +    | Motor                     |            |                           |           | 1        | pcs   |
| -    | Base cpl.                 |            |                           |           | 1        | pcs   |
| 6    | Base                      |            |                           |           | 1        |       |
| 25   | Drain plug                |            |                           |           | 1        |       |
| 56   | Base plate                |            |                           |           | 1        |       |
| -    | Rubber module             |            |                           |           | 1        | pcs   |
| 20   | Spring                    |            |                           |           | 4        |       |
| 37   | O-ring                    |            |                           |           | 2        |       |
| 38   | O-ring                    |            | Diameter: 16,3            |           | 1        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| 38a  | O-ring                    |            | Diameter: 5,3             |           | 1        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| 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        |       |
| 7.a  | Combi Slot Torx screw     |            |                           |           | 4        |       |
| - 18 | Air vent screw            |            |                           |           | 1        |       |
|      | Plug                      |            |                           |           | 1        |       |
|      | Spindle                   |            |                           |           | 1        |       |
| 23   | Plug                      |            |                           |           | 1        |       |
| 37.a | O-ring                    |            |                           |           | 1        |       |
| 76   | Nameplate                 |            |                           |           | 1        |       |
| 76a  | Rivet                     |            |                           |           | 1        |       |
| 77   | Pump cover                |            |                           |           | 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                  |            |                           |           | 4        | pcs   |
| 36   | Nut                       |            | Thread: M16               |           | 4        | pcs   |
| 55   | Outer sleeve              |            |                           |           | 1        | pcs   |
| 66a  | Washer                    |            | Designation: DIN 125 A2   |           | 4        | pcs   |
|      |                           |            | Internal diameter: 17     |           |          |       |
|      |                           |            | Outer diameter: 30        |           |          |       |
|      |                           |            | Thickness: 3              |           |          |       |
| - 80 | Chamber stack             |            |                           |           | 1        | pcs   |
| - 3  | Top intermediate chamber  |            |                           |           | 1        |       |
|      | Cover plate               |            |                           |           | 1        |       |
|      | Guide vane                |            |                           |           | 10       |       |
| 3    | Intermediate chamber      |            |                           |           | 1        |       |
| - 4  | Intermediate chamber cpl. |            |                           |           | 1        |       |
|      | Intermediate chamber      |            |                           |           | 1        |       |
| 45   | Neck ring cpl.            |            |                           |           | 1        |       |
| 65   | Retainer                  |            |                           |           | 1        |       |
| - 4a | Intermediate chamber cpl. |            |                           |           | 1        |       |
|      | Guide vane                |            |                           |           | 10       |       |
|      | Bearing plate             |            |                           |           | 1        |       |
|      | Bearing bush              |            |                           |           | 1        |       |
|      | Intermediate chamber      |            |                           |           | 1        |       |
|      | Guide cup                 |            |                           |           | 1        |       |
|      | Sand Lifter               |            |                           |           | 1        |       |

| Pos   | Description         | Annotation | Données de classification | Référence | Quantité | Unité |
|-------|---------------------|------------|---------------------------|-----------|----------|-------|
| 45    | Neck ring cpl.      |            |                           |           | 1        |       |
| 65    | Retainer            |            |                           |           | 1        |       |
| 26.b  | Hex head screw      |            |                           |           | 2        |       |
| 26.c  | Washer              |            | Designation: DIN 125A     |           | 2        |       |
|       |                     |            | Thickness: 1,6            |           |          |       |
| 26a   | Strap cpl.          |            |                           |           | 2        |       |
| 36    | Lock nut            |            | Thread: M8                |           | 1        |       |
| - 44a | Inlet part cpl.     |            |                           |           | 1        |       |
| 45    | Neck ring cpl.      |            |                           |           | 1        |       |
| 65    | Retainer            |            |                           |           | 1        |       |
| 44b   | Inlet part          |            |                           |           | 1        |       |
| 47a   | Bearing ring        |            |                           |           | 1        |       |
| - 49  | Impeller cpl.       |            |                           |           | 3        |       |
|       | Impeller            |            |                           |           | 1        |       |
| 49c   | Wear ring           |            |                           |           | 1        |       |
| - 51  | Shaft, spline, cpl. |            |                           |           | 1        |       |
|       | Bar                 |            |                           |           | 0        |       |
| 62    | Stop ring           |            |                           |           | 1        |       |
| 64b   | Spacing bush        |            |                           |           | 1        |       |
| 64c   | Spacing pipe        |            | Length (mm): 12.7         |           | 1        |       |
| 66    | Wedge lock washer   |            |                           |           | 1        |       |
| 69    | Spacing pipe        |            | Length (mm): 43.6         |           | 1        |       |
| 69    | Spacing pipe        |            | Internal diameter: 17,5   |           | 1        |       |
|       |                     |            | Length (mm): 17           |           |          |       |
| 69    | Spacing bush        |            |                           |           | 1        |       |
| 105   | Shaft seal          |            | Material type: HQQE       |           | 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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