

## CR20-07 A-A-A-E-HQQE 3x400/690 50 HZ

Grundfos pump 96500524



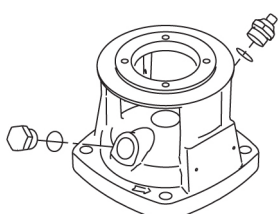
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<https://www.lenntech.com/grundfos/CR020/96500524/CR-20-7-A-A-A-E-HQQE.html>

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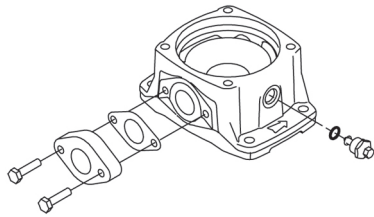
| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>CR 20-7 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 drain plug. The pump is secured to the foundation by four bolts through the base plate.



## Motor

The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. The motor is flange-mounted with free-hole flange (FF).

Motor-mounting designation in accordance with IEC 60034-7: IM B 5 (Code I) / IM 3001 (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:

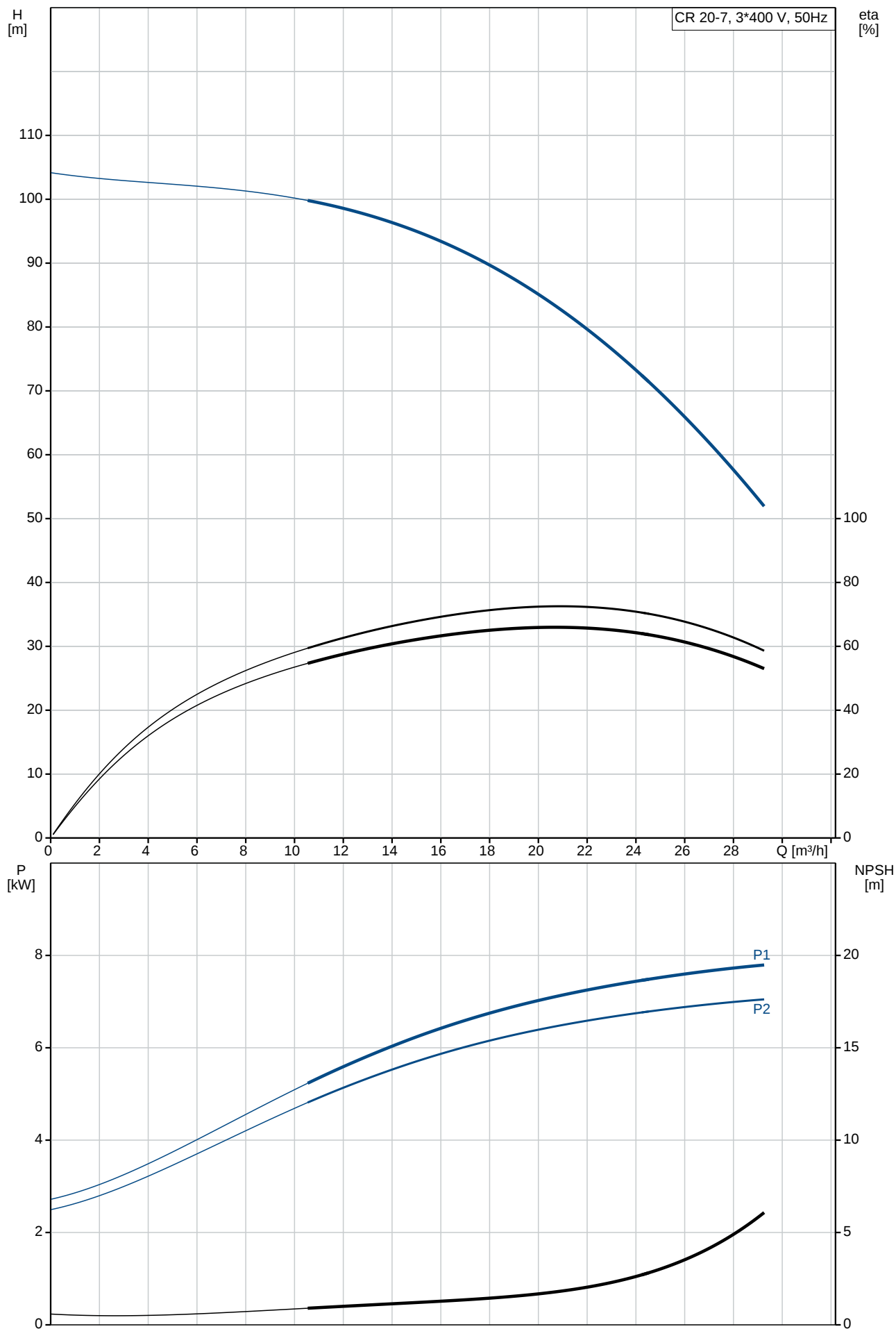
Rated flow: 21 m<sup>3</sup>/h  
Rated head: 81.7 m  
Pump orientation: Vertical  
Shaft seal arrangement: Single  
Code for shaft seal: HQQE  
Approvals on nameplate: CE, EAC, ACS  
Curve tolerance: ISO9906:2012 3B

### Materials:

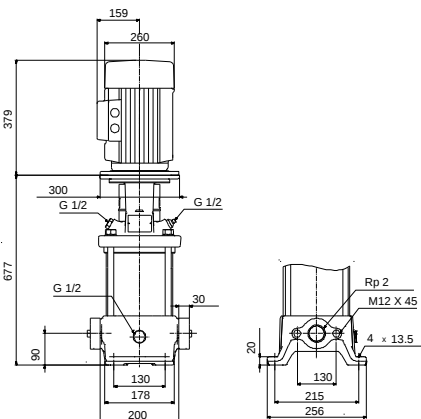
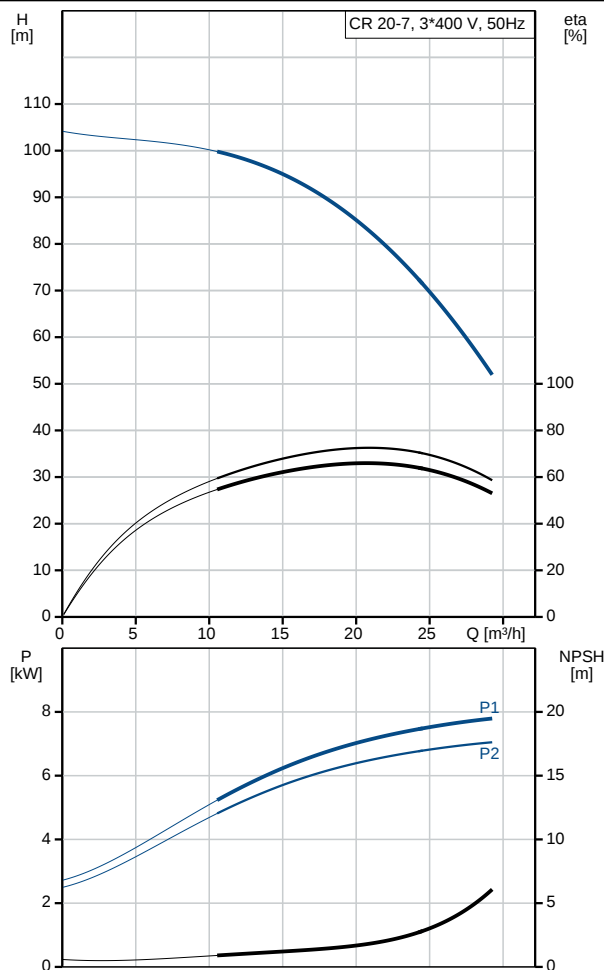
Base: Cast iron  
EN 1561 EN-GJL-200  
ASTM A48-25B

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <p>Impeller: Stainless steel<br/>EN 1.4301<br/>AISI 304</p> <p>Bearing: SIC</p> <p><b>Installation:</b><br/> Maximum ambient temperature: 60 °C<br/> Maximum operating pressure: 10 bar<br/> Max pressure at stated temp: 10 bar / 120 °C<br/> 10 bar / -20 °C<br/> Type of connection: Oval / Rp<br/> Size of inlet connection: 2 inch<br/> Size of outlet connection: 2 inch<br/> Pressure rating for pipe connection: PN 10<br/> Flange size for motor: FF265</p> <p><b>Electrical data:</b><br/> Motor standard: IEC<br/> Motor type: 132SB<br/> IE Efficiency class: IE3<br/> Rated power - P2: 7.5 kW<br/> Power (P2) required by pump: 7.5 kW<br/> Mains frequency: 50 Hz<br/> Rated voltage: 3 x 380-415D/660-690Y V<br/> Rated current: 14,4-14,0/8,30-8,10 A<br/> Starting current: 780-910 %<br/> Cos phi - power factor: 0.88-0.82<br/> Rated speed: 2910-2920 rpm<br/> Efficiency: IE3 90,1%<br/> Motor efficiency at full load: 90.1-90.4 %<br/> Motor efficiency at 3/4 load: 90.8 %<br/> Motor efficiency at 1/2 load: 90.8 %<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: 103 kg<br/> Gross weight: 125 kg<br/> Shipping volume: 0.285 m³<br/> Danish VVS No.: 385905070</p> |

On request CR 20-7 A-A-A-E-HQQE 50 Hz

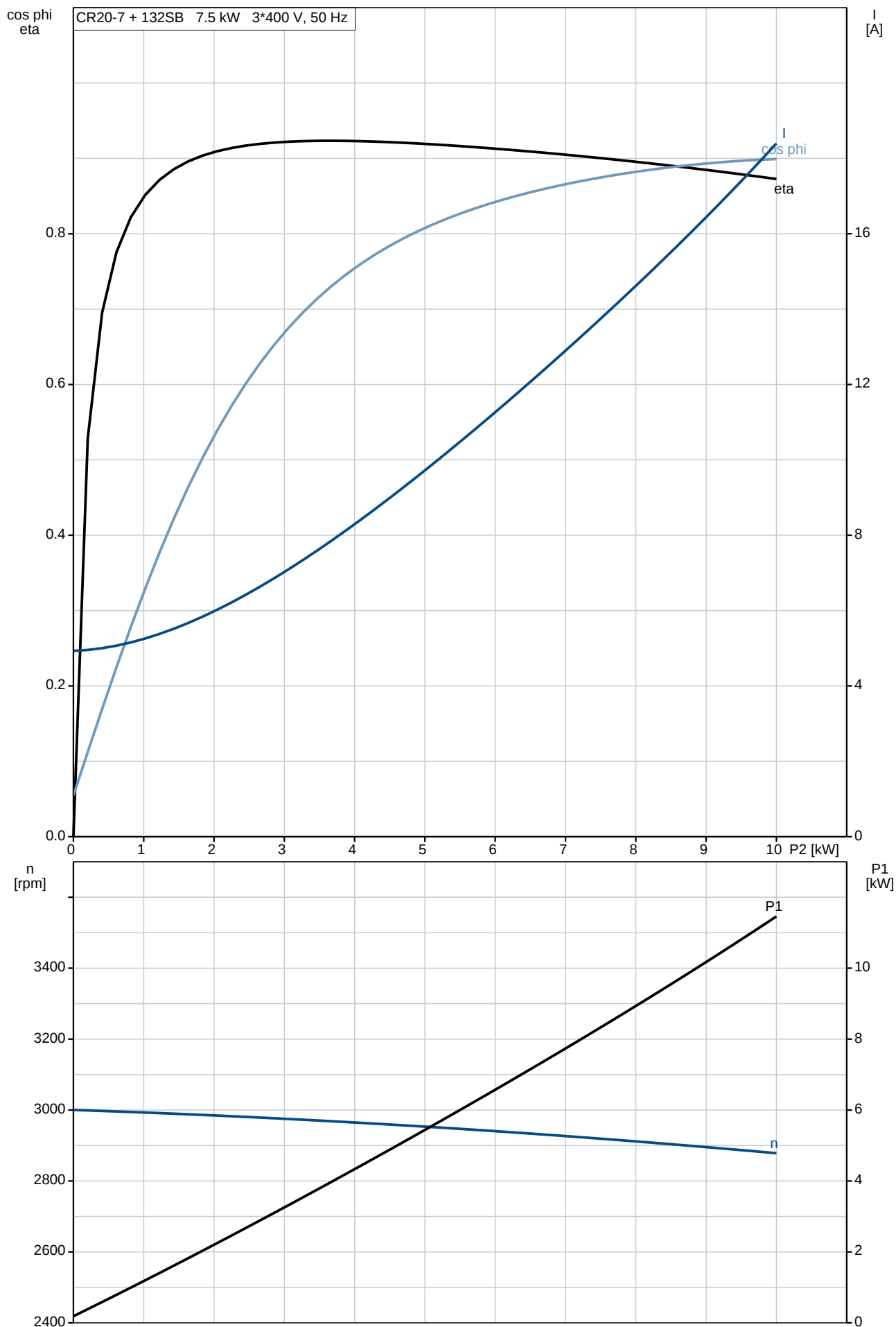


| Description                           | Value                   |
|---------------------------------------|-------------------------|
| <b>General information:</b>           |                         |
| Product name:                         | CR 20-7 A-A-A-E-HQQE    |
| Product No:                           | On request              |
| EAN number:                           | On request              |
| <b>Technical:</b>                     |                         |
| Rated flow:                           | 21 m <sup>3</sup> /h    |
| Rated head:                           | 81.7 m                  |
| Stages:                               | 7                       |
| Impellers:                            | 7                       |
| 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:           | 10 bar                  |
| Max pressure at stated temp:          | 10 bar / 120 °C         |
|                                       | 10 bar / -20 °C         |
| Type of connection:                   | Oval / Rp               |
| Size of inlet connection:             | 2 inch                  |
| Size of outlet connection:            | 2 inch                  |
| Pressure rating for pipe connection:  | PN 10                   |
| Flange size for motor:                | FF265                   |
| 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/m <sup>3</sup> |
| <b>Electrical data:</b>               |                         |
| Motor standard:                       | IEC                     |
| Motor type:                           | 132SB                   |
| IE Efficiency class:                  | IE3                     |
| Rated power - P2:                     | 7.5 kW                  |
| Power (P2) required by pump:          | 7.5 kW                  |
| Mains frequency:                      | 50 Hz                   |
| Rated voltage:                        | 3 x 380-415D/660-690Y V |
| Rated current:                        | 14,4-14,0/8,30-8,10 A   |
| Starting current:                     | 780-910 %               |
| Cos phi - power factor:               | 0.88-0.82               |
| Rated speed:                          | 2910-2920 rpm           |
| Efficiency:                           | IE3 90,1%               |
| Motor efficiency at full load:        | 90.1-90.4 %             |
| Motor efficiency at 3/4 load:         | 90.8 %                  |
| Motor efficiency at 1/2 load:         | 90.8 %                  |
| Number of poles:                      | 2                       |
| Enclosure class (IEC 34-5):           | 55 Dust/Jetting         |
| Insulation class (IEC 85):            | F                       |

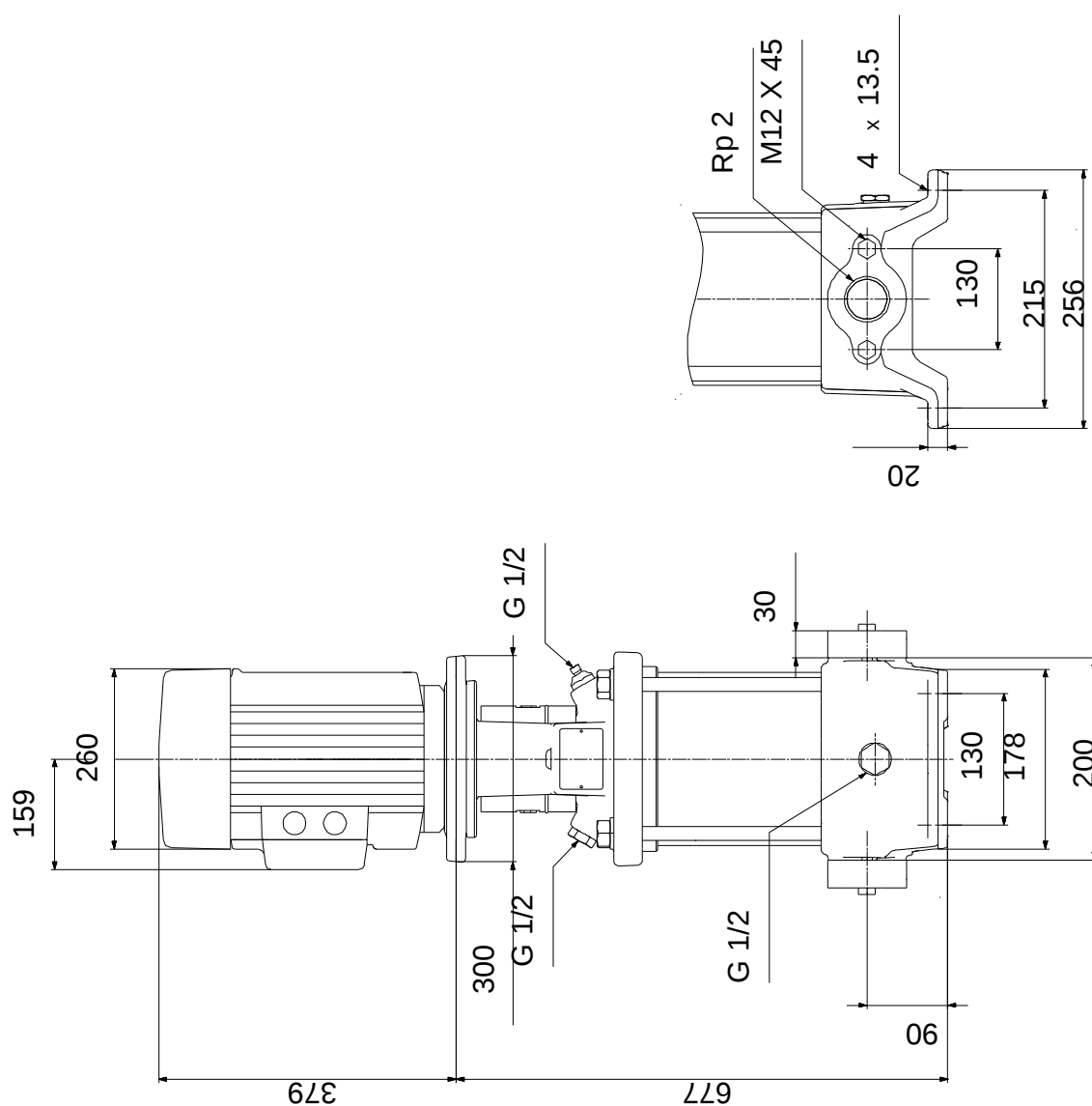


| Description                      | Value                |
|----------------------------------|----------------------|
| Motor protec:                    | PTC                  |
| Motor No:                        | 85U17522             |
| <b>Controls:</b>                 |                      |
| Frequency converter:             | NONE                 |
| <b>Others:</b>                   |                      |
| Minimum efficiency index, MEI ≥: | 0.7                  |
| Net weight:                      | 103 kg               |
| Gross weight:                    | 125 kg               |
| Shipping volume:                 | 0.285 m <sup>3</sup> |
| Danish VVS No.:                  | 385905070            |

# On request CR 20-7 A-A-A-E-HQQE 50 Hz



# On request CR 20-7 A-A-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 20-7, 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        |       |
| 12   | Flange                       |            |                                                                                       |           | 2        |       |
| 25   | Drain plug                   |            |                                                                                       |           | 1        |       |
| 35   | Hex head screw               |            |                                                                                       |           | 4        |       |
| -    | Rubber module                |            |                                                                                       |           | 1        | pcs   |
| 20   | Spring                       |            |                                                                                       |           | 4        |       |
| 37   | O-ring                       |            |                                                                                       |           | 2        |       |
| 38a  | O-ring                       |            | Diameter: 5,3<br>Material type: EPDM<br>Thickness: 2,4                                |           | 1        |       |
| 100  | O-ring                       |            | Diameter: 16,3<br>Material type: EPDM<br>Thickness: 2,4                               |           | 3        |       |
| - 2  | Pump head cpl.               |            |                                                                                       |           | 1        | pcs   |
| 1    | Flange                       |            |                                                                                       |           | 1        |       |
| 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        |       |
| 28   | Hex head screw               |            | Length (mm): 30<br>Thread: M12                                                        |           | 4        |       |
| 28.a | Hex head screw               |            | Length (mm): 30<br>Thread: M12                                                        |           | 4        |       |
| 76   | Nameplate                    |            |                                                                                       |           | 1        |       |
| 76a  | Rivet                        |            |                                                                                       |           | 1        |       |
| - 8  | Coupling                     |            |                                                                                       |           | 1        | pcs   |
| 9    | Hex socket head cap screw    |            | Designation: DIN 912<br>Length (mm): 25<br>Thread: M10                                |           | 4        |       |
| 10   | Shaft pin                    |            | Diameter: 5<br>Length (mm): 26                                                        |           | 1        |       |
| 10a  | Coupling half                |            |                                                                                       |           | 1        |       |
| 26   | Staybolt                     |            |                                                                                       |           | 4        | pcs   |
| 36   | Hex nut                      |            | Thread: M16                                                                           |           | 4        | pcs   |
| 55   | Outer sleeve                 |            |                                                                                       |           | 1        | pcs   |
| 66a  | Washer                       |            | Designation: DIN 125 A<br>Internal diameter: 17<br>Outer diameter: 30<br>Thickness: 3 |           | 4        | pcs   |
| - 80 | Chamber stack                |            |                                                                                       |           | 1        | pcs   |
| - 4  | Intermediate chamber cpl.    |            |                                                                                       |           | 4        |       |
| 45   | Neck ring cpl.               |            |                                                                                       |           | 1        |       |
| 65   | Retainer for upper seal ring |            |                                                                                       |           | 1        |       |
| - 4  | Intermediate chamber cpl.    |            |                                                                                       |           | 1        |       |
|      | Guide vane                   |            |                                                                                       |           | 10       |       |
|      | Front plate                  |            |                                                                                       |           | 1        |       |
| 3    | Top intermediate chamber     |            |                                                                                       |           | 1        |       |
| - 4a | Intermediate chamber cpl.    |            |                                                                                       |           | 2        |       |
|      | Bearing plate                |            |                                                                                       |           | 1        |       |
|      | Bearing bush                 |            |                                                                                       |           | 1        |       |
| 3a   | Intermediate chamber         |            |                                                                                       |           | 1        |       |
| 45   | Neck ring cpl.               |            |                                                                                       |           | 1        |       |
| 65   | Retainer for upper seal ring |            |                                                                                       |           | 1        |       |
| 26.b | Hex head screw               |            |                                                                                       |           | 2        |       |

| Pos   | Description                  | Annotation | Données de classification | Référence | Quantité | Unité |
|-------|------------------------------|------------|---------------------------|-----------|----------|-------|
| 26.c  | Washer                       |            | Designation: DIN 125A     |           | 2        |       |
|       |                              |            | Thickness: 1,6            |           |          |       |
| 26a   | Strap cpl.                   |            | Length (mm): 314MM        |           | 2        |       |
| 36    | Lock nut                     |            | Thread: M8                |           | 1        |       |
| - 44a | Inlet part cpl.              |            |                           |           | 1        |       |
| 45    | Neck ring cpl.               |            |                           |           | 1        |       |
| 65    | Retainer for upper seal ring |            |                           |           | 1        |       |
| 44b   | Inlet part                   |            |                           |           | 1        |       |
| 47a   | Bearing ring                 |            |                           |           | 2        |       |
| - 49  | Impeller cpl.                |            |                           |           | 7        |       |
|       | Impeller plate               |            |                           |           | 1        |       |
|       | Impeller plate               |            |                           |           | 1        |       |
|       | Impeller blade               |            |                           |           | 6        |       |
| 49c   | Wear ring                    |            |                           |           | 1        |       |
| - 51  | Shaft, spline, cpl.          |            |                           |           | 1        |       |
|       | Bar                          |            |                           |           | 0        |       |
| 62    | Stop ring                    |            |                           |           | 1        |       |
| 64b   | Spacing bush                 |            |                           |           | 2        |       |
| 64c   | Spacing pipe                 |            | Length (mm): 12.7         |           | 1        |       |
| 66    | Wedge lock washer            |            |                           |           | 1        |       |
| 69    | Spacing pipe                 |            | Length (mm): 43.6         |           | 4        |       |
| 69    | Spacing pipe                 |            | Internal diameter: 17,5   |           | 2        |       |
|       |                              |            | 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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