

## CR1-33 A-FGJ-A-E-HQQE 3x400D 50HZ

Grundfos pump 96513309



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<https://www.lenntech.com/grundfos/CRFAM/96513309/CR-1-33-A-FGJ-A-E-HQQE.html>

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| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>CR 1-33 A-FGJ-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 combined DIN-ANSI-JIS 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 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 flanges and base are cast in one piece. The outlet side of the base has a combined drain plug and bypass valve. The pump is secured to the foundation by four bolts through the base plate.



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## Motor

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

Motor-mounting designation in accordance with IEC 60034-7: IM B 14 (Code I) / IM 3601 (Code II).

Electrical tolerances comply with IEC 60034.

The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.

The motor does not incorporate motor protection and must be connected to a motor-protective circuit breaker which can be manually reset. The motor-protective circuit breaker must be set according to the rated current of the motor (I<sub>1</sub>/1).

The motor can be connected to a variable speed drive for adjustment of pump performance to any duty point. Grundfos CUE offers a range of variable speed drives. Please find more information in Grundfos Product Center.

## Technical data

### Controls:

Frequency converter: NONE

### Liquid:

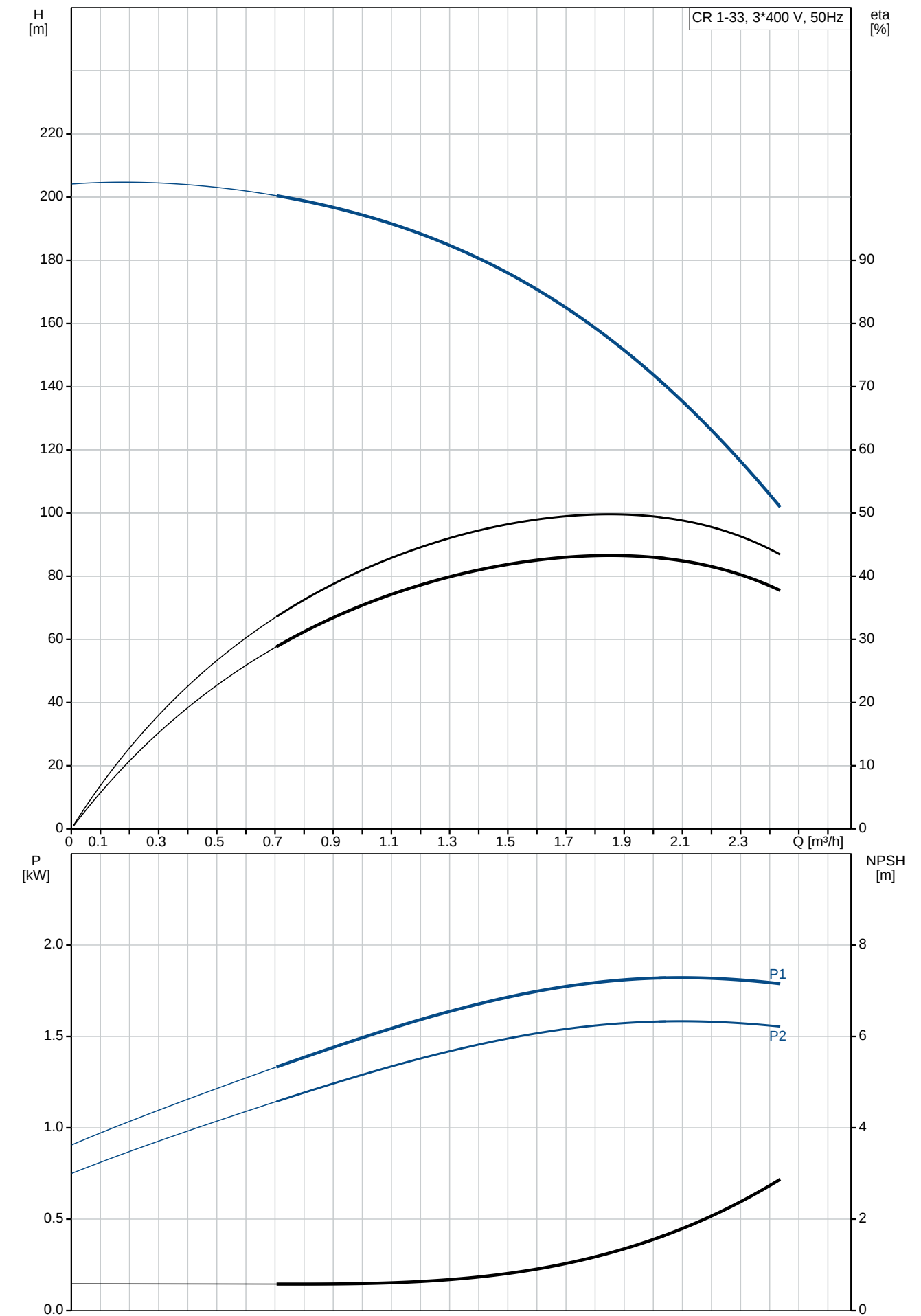
Pumped liquid: Water  
 Liquid temperature range: -20 .. 120 °C  
 Liquid temperature during operation: 20 °C  
 Density: 998.2 kg/m<sup>3</sup>

### Technical:

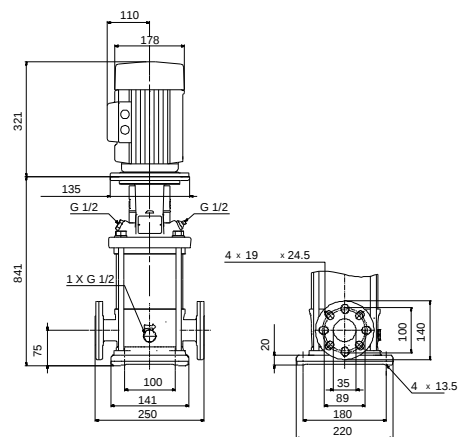
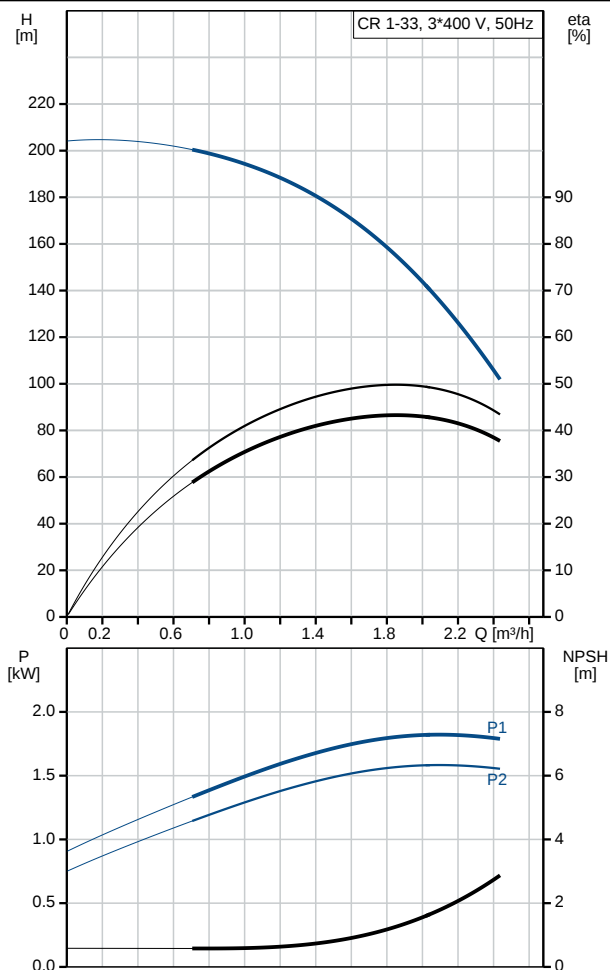
Rated flow: 1.8 m<sup>3</sup>/h  
 Rated head: 158.9 m  
 Pump orientation: Vertical  
 Shaft seal arrangement: Single

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <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> <p>Base: Cast iron<br/>EN 1561 EN-GJL-200<br/>ASTM A48-25B</p> <p>Impeller: Stainless steel<br/>EN 1.4301<br/>AISI 304</p> <p>Bearing: SIC</p> <p><b>Installation:</b></p> <p>Maximum ambient temperature: 60 °C</p> <p>Maximum operating pressure: 25 bar</p> <p>Max pressure at stated temp: 25 bar / 120 °C<br/>25 bar / -20 °C</p> <p>Type of connection: DIN / ANSI / JIS</p> <p>Size of inlet connection: DN 25/32<br/>1 1/4 inch</p> <p>Size of outlet connection: DN 25/32<br/>1 1/4 inch</p> <p>Pressure rating for pipe connection: PN 25</p> <p>Flange rating inlet: 250 lb</p> <p>Flange size for motor: FT115</p> <p><b>Electrical data:</b></p> <p>Motor standard: IEC</p> <p>Motor type: 90LC</p> <p>IE Efficiency class: IE3</p> <p>Rated power - P2: 2.2 kW</p> <p>Power (P2) required by pump: 2.2 kW</p> <p>Mains frequency: 50 Hz</p> <p>Rated voltage: 3 x 380-415D V</p> <p>Rated current: 4.45 A</p> <p>Starting current: 850-950 %</p> <p>Cos phi - power factor: 0.89-0.87</p> <p>Rated speed: 2890-2910 rpm</p> <p>Efficiency: IE3 85,9%</p> <p>Motor efficiency at full load: 85.9 %</p> <p>Motor efficiency at 3/4 load: 86.8 %</p> <p>Motor efficiency at 1/2 load: 86.0 %</p> <p>Number of poles: 2</p> <p>Enclosure class (IEC 34-5): 55 Dust/Jetting</p> <p>Insulation class (IEC 85): F</p> <p><b>Others:</b></p> <p>Minimum efficiency index, MEI ≥: 0.7</p> <p>Net weight: 51.2 kg</p> <p>Gross weight: 55.8 kg</p> <p>Shipping volume: 0.148 m³</p> |

On request CR 1-33 A-FGJ-A-E-HQQE 50 Hz

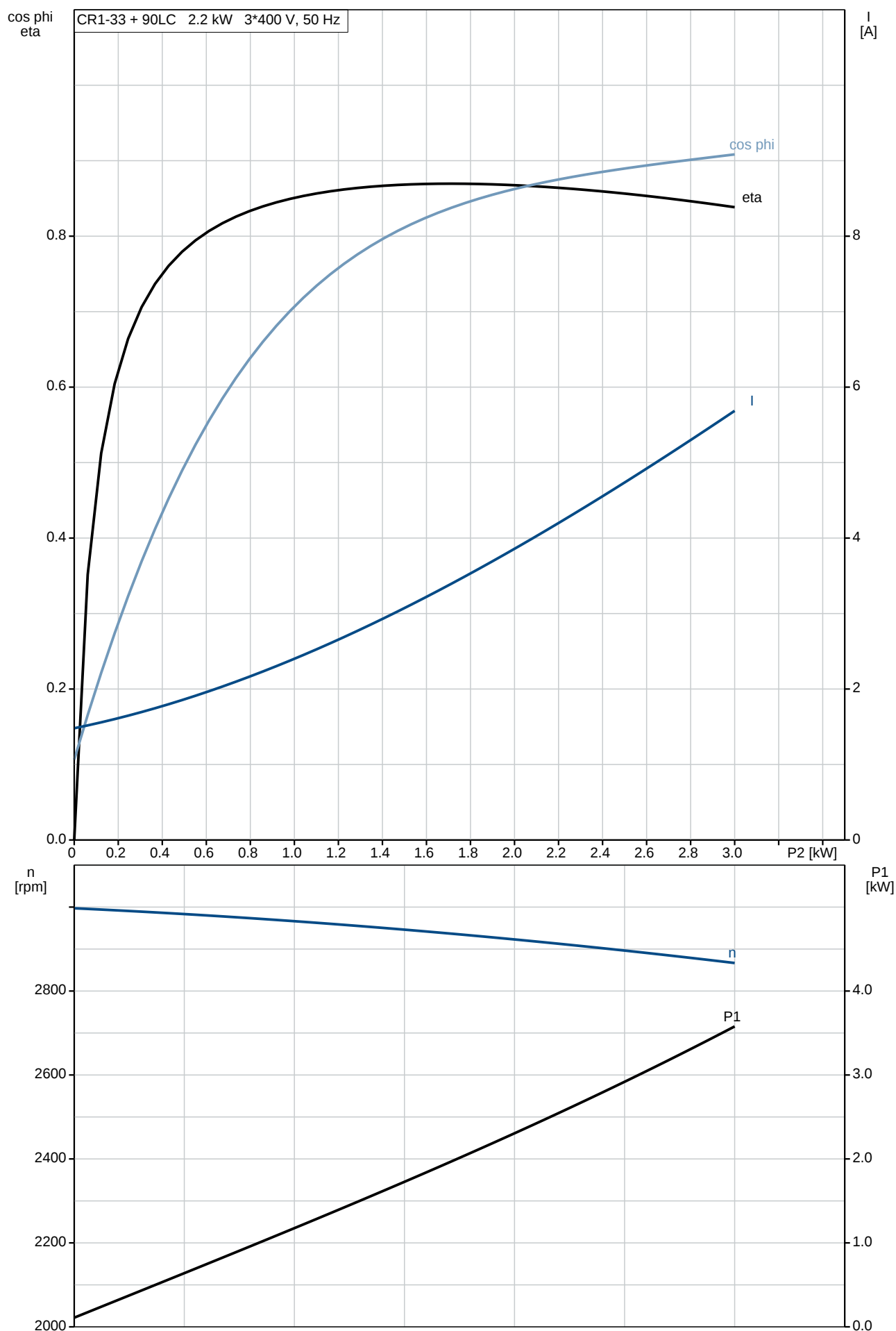


| Description                           | Value                  |
|---------------------------------------|------------------------|
| <b>General information:</b>           |                        |
| Product name:                         | CR 1-33 A-FGJ-A-E-HQQE |
| Product No:                           | On request             |
| EAN number:                           | On request             |
| <b>Technical:</b>                     |                        |
| Rated flow:                           | 1.8 m³/h               |
| Rated head:                           | 158.9 m                |
| Stages:                               | 33                     |
| Impellers:                            | 33                     |
| 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:           | 25 bar                 |
| Max pressure at stated temp:          | 25 bar / 120 °C        |
|                                       | 25 bar / -20 °C        |
| Type of connection:                   | DIN / ANSI / JIS       |
| Size of inlet connection:             | DN 25/32               |
|                                       | 1 1/4 inch             |
| Size of outlet connection:            | DN 25/32               |
|                                       | 1 1/4 inch             |
| Pressure rating for pipe connection:  | PN 25                  |
| Flange rating inlet:                  | 250 lb                 |
| Flange size for motor:                | FT115                  |
| Connect code:                         | FGJ                    |
| <b>Liquid:</b>                        |                        |
| Pumped liquid:                        | Water                  |
| Liquid temperature range:             | -20 .. 120 °C          |
| Liquid temperature during operation:  | 20 °C                  |
| Density:                              | 998.2 kg/m³            |
| <b>Electrical data:</b>               |                        |
| Motor standard:                       | IEC                    |
| Motor type:                           | 90LC                   |
| IE Efficiency class:                  | IE3                    |
| Rated power - P2:                     | 2.2 kW                 |
| Power (P2) required by pump:          | 2.2 kW                 |
| Mains frequency:                      | 50 Hz                  |
| Rated voltage:                        | 3 x 380-415D V         |
| Rated current:                        | 4.45 A                 |
| Starting current:                     | 850-950 %              |
| Cos phi - power factor:               | 0.89-0.87              |
| Rated speed:                          | 2890-2910 rpm          |
| Efficiency:                           | IE3 85,9%              |
| Motor efficiency at full load:        | 85.9 %                 |
| Motor efficiency at 3/4 load:         | 86.8 %                 |
| Motor efficiency at 1/2 load:         | 86.0 %                 |

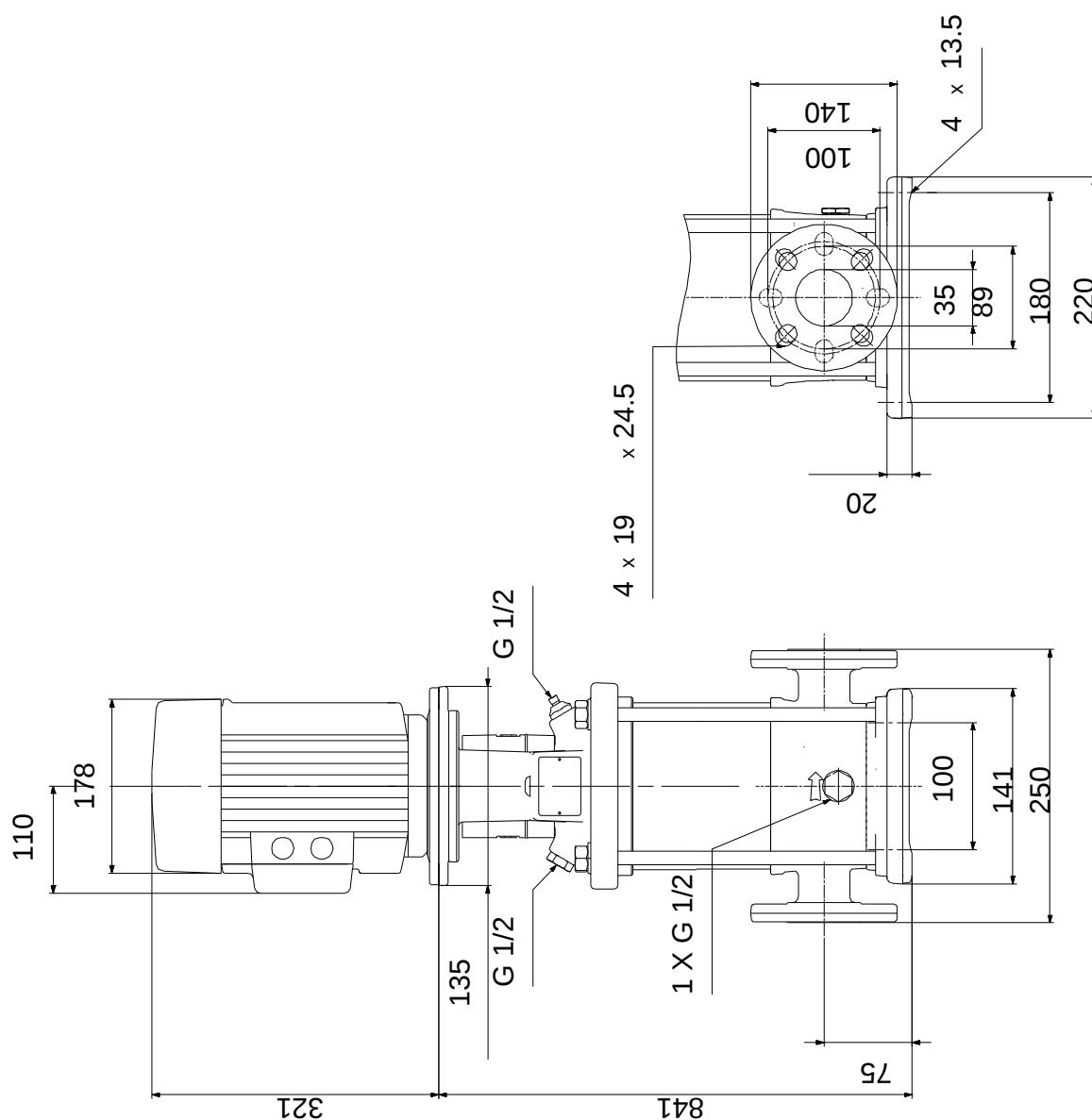


| Description                      | Value           |
|----------------------------------|-----------------|
| Number of poles:                 | 2               |
| Enclosure class (IEC 34-5):      | 55 Dust/Jetting |
| Insulation class (IEC 85):       | F               |
| Motor protec:                    | NONE            |
| Motor No:                        | 85U15908        |
| <b>Controls:</b>                 |                 |
| Frequency converter:             | NONE            |
| <b>Others:</b>                   |                 |
| Minimum efficiency index, MEI ≥: | 0.7             |
| Net weight:                      | 51.2 kg         |
| Gross weight:                    | 55.8 kg         |
| Shipping volume:                 | 0.148 m³        |

# On request CR 1-33 A-FGJ-A-E-HQQE 50 Hz



# On request CR 1-33 A-FGJ-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 1-33, Product No. On request**  
**Valid from 1.1.2011 (1152)**

| Pos  | Description               | Annotation | Données de classification | Référence | Quantité | Unité |
|------|---------------------------|------------|---------------------------|-----------|----------|-------|
| -    | Base cpl.                 |            |                           |           | 1        | pcs   |
| 6    | Base                      |            |                           |           | 1        |       |
| -    | Sealing parts             |            |                           |           | 1        | pcs   |
| - 25 | Drain plug w/bypass valve |            |                           |           | 1        |       |
| 38   | O-ring                    |            | Diameter: 16,3            |           | 1        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| 37   | O-ring                    |            |                           |           | 2        |       |
| 100  | O-ring                    |            | Diameter: 16,3            |           | 2        |       |
|      |                           |            | Material type: EPDM       |           |          |       |
|      |                           |            | Thickness: 2,4            |           |          |       |
| - 2  | Pump head cpl.            |            |                           |           | 1        | pcs   |
| 2    | Pump head                 |            |                           |           | 1        |       |
| 7    | Coupling guard            |            |                           |           | 2        |       |
| 7a   | Combi Slot Torx screw     |            |                           |           | 4        |       |
| - 18 | Air vent screw            |            |                           |           | 1        |       |
|      | Plug                      |            |                           |           | 1        |       |
|      | Spindle                   |            |                           |           | 1        |       |
| 23a  | Plug                      |            |                           |           | 1        |       |
| 28   | Hex head screw            |            | Length (mm): 20           |           | 4        |       |
|      |                           |            | Thread: M8                |           |          |       |
| 60   | Formed wire spring        |            |                           |           | 1        |       |
| - 8  | Coupling cpl.             |            |                           |           | 1        | pcs   |
| 9    | Hex socket head cap screw |            | Designation: DIN 912      |           | 4        |       |
|      |                           |            | Length (mm): 25           |           |          |       |
|      |                           |            | Thread: M8                |           |          |       |
| 10   | Shaft pin                 |            | Diameter: 5               |           | 1        |       |
|      |                           |            | Length (mm): 26           |           |          |       |
| 10a  | Coupling half             |            |                           |           | 2        |       |
| 26   | Staybolt                  |            | Length (mm): 616          |           | 4        | pcs   |
|      |                           |            | Thread: M12               |           |          |       |
| 36a  | Washer                    |            | Designation: DIN 125 A    |           | 4        | pcs   |
|      |                           |            | Internal diameter: 13     |           |          |       |
|      |                           |            | Outer diameter: 24        |           |          |       |
|      |                           |            | Thickness: 2,5            |           |          |       |
| 55   | Outer sleeve              |            |                           |           | 1        | pcs   |
| 66a  | Nut                       |            | Thread: M12               |           | 4        | pcs   |
| - 80 | Chamber stack             |            |                           |           | 1        | pcs   |
| - 4  | Chamber cpl.              |            |                           |           | 28       |       |
|      | Guide vane                |            |                           |           | 6        |       |
|      | Plate                     |            |                           |           | 1        |       |
|      | Retainer                  |            |                           |           | 1        |       |
|      | Intermediate chamber      |            |                           |           | 1        |       |
|      | Vane                      |            |                           |           | 1        |       |
| 45   | Neck ring                 |            |                           |           | 1        |       |
| 65   | Retainer                  |            |                           |           | 1        |       |
| - 4a | Chamber w. bearing cpl.   |            |                           |           | 4        |       |
|      | Guide vane                |            |                           |           | 6        |       |
|      | Retainer for bearing      |            |                           |           | 1        |       |
|      | Bearing bush              |            |                           |           | 1        |       |
|      | Retainer                  |            |                           |           | 1        |       |
|      | Intermediate chamber      |            |                           |           | 1        |       |
|      | Vane                      |            |                           |           | 1        |       |
| 45   | Neck ring                 |            |                           |           | 1        |       |
| 65   | Retainer                  |            |                           |           | 1        |       |
| - 5a | Chamber cpl.              |            |                           |           | 1        |       |
|      | Retainer                  |            |                           |           | 1        |       |
|      | Intermediate chamber      |            |                           |           | 1        |       |
|      | Vane                      |            |                           |           | 1        |       |

| Pos    | Description            | Annotation | Données de classification | Référence | Quantité | Unité |
|--------|------------------------|------------|---------------------------|-----------|----------|-------|
| 45     | Neck ring              |            |                           |           | 1        |       |
| 65     | Retainer               |            |                           |           | 1        |       |
| 36     | Lock nut               |            | Thread: M8                |           | 1        |       |
| 47a    | Bearing ring, rotating |            |                           |           | 4        |       |
| 49     | Impeller               |            |                           |           | 33       |       |
| - 50a  | Guide vane cpl.        |            |                           |           | 1        |       |
|        | Plate                  |            |                           |           | 1        |       |
| 50a    | Guide vane             |            |                           |           | 6        |       |
| 50b    | Top plate              |            |                           |           | 1        |       |
| 51     | Shaft, spline, cpl.    |            |                           |           | 1        |       |
| 64a    | Spacing pipe           |            |                           |           | 28       |       |
| 64a    | Spacing pipe           |            | Internal diameter: 12,85  |           | 4        |       |
|        |                        |            | Outer diameter: 15,85     |           |          |       |
|        |                        |            | Length (mm): 4,50         |           |          |       |
| 64c    | Clamp, splined         |            | Internal diameter: 8,5    |           | 1        |       |
|        |                        |            | Outer diameter: 15        |           |          |       |
| 66     | Wedge lock washer      |            |                           |           | 1        |       |
| - 105  | Shaft seal             |            | Material type: HQQE       |           | 1        | pcs   |
|        | O-ring                 |            |                           |           | 1        |       |
|        | O-ring                 |            |                           |           | 1        |       |
|        | Seal driver, upper     |            |                           |           | 1        |       |
|        | Seal driver, lower     |            |                           |           | 1        |       |
|        | Spacer ring            |            |                           |           | 1        |       |
|        | Pipe                   |            |                           |           | 1        |       |
|        | Plug                   |            |                           |           | 1        |       |
|        | Plug                   |            |                           |           | 1        |       |
|        | Compression spring     |            |                           |           | 1        |       |
|        | Socket set screw       |            |                           |           | 1        |       |
| 102    | O-ring                 |            | Diameter: 22,00           |           | 1        |       |
|        |                        |            | Material type: EPDM       |           |          |       |
|        |                        |            | Thickness: 2,75           |           |          |       |
| 103    | Seal ring, stationary  |            |                           |           | 1        |       |
| 105    | Seal ring, rotating    |            |                           |           | 1        |       |
| 107    | O-ring                 |            |                           |           | 1        |       |
| 113    | Driver                 |            |                           |           | 1        |       |
| + 2099 | Motor                  |            |                           |           | 1        | pcs   |

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

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

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

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