

CR, CRI, CRN, CRE, CRIE, CRNE

Vertical multistage centrifugal pumps
50 Hz



Contents

Product data

| | |
|--------------------------------------|---|
| Introduction | 3 |
| Performance range of CR, CRI, CRN | 4 |
| Performance range of CRE, CRIE, CRNE | 4 |
| Applications | 5 |
| Product range | 6 |
| Pump | 8 |
| Motor | 8 |
| Terminal box positions | 9 |
| Ambient temperature | 9 |
| Viscosity | 9 |

Control of E-pumps

| | |
|---|----|
| Examples of E-pump applications | 10 |
| Central management system | 11 |
| Remote control | 11 |
| Control panel | 11 |
| Control modes for E-pumps | 12 |
| CRE, CRIE, CRNE with integrated pressure sensor | 12 |
| CRE, CRIE and CRNE without sensor | 12 |

Construction

| | |
|---|----|
| CR(E) 1s, 1, 3, 5, 10, 15 and 20 | 13 |
| CRI(E), CRN(E) 1s, 1, 3, 5, 10, 15 and 20 | 13 |
| CR(E) 32, 45, 64 and 90 | 14 |
| CRN(E) 32, 45, 64 and 90 | 14 |
| CR 120 and 150 | 15 |
| CRN 120 and 150 | 15 |
| Type keys | 16 |

Operating and inlet pressures

| | |
|--|----|
| Maximum operating pressure and temperature range | 17 |
| Operating range of the shaft seal | 17 |
| Maximum inlet pressure | 18 |

Selection and sizing

| | |
|----------------------------------|----|
| Selection of pumps | 19 |
| WinCAPS and WebCAPS | 20 |
| How to read the curve charts | 23 |
| Guidelines to performance curves | 23 |

Performance curves/ technical data

| | |
|-------------------------|----|
| CR 1s | 24 |
| CRI, CRN 1s | 26 |
| CR, CRE 1 | 28 |
| CRI, CRN, CRIE, CRNE 1 | 30 |
| CR, CRE 3 | 32 |
| CRI, CRN, CRIE, CRNE 3 | 34 |
| CR, CRE 5 | 36 |
| CRI, CRN, CRIE, CRNE 5 | 38 |
| CR, CRE 10 | 40 |
| CRI, CRN, CRIE, CRNE 10 | 42 |
| CR, CRE 15 | 44 |
| CRI, CRN, CRIE, CRNE 15 | 46 |

| | |
|-------------------------|----|
| CR, CRE 20 | 48 |
| CRI, CRN, CRIE, CRNE 20 | 50 |
| CR, CRE 32 | 52 |
| CRN, CRNE 32 | 54 |
| CR, CRE 45 | 56 |
| CRN, CRNE 45 | 58 |
| CR, CRE 64 | 60 |
| CRN, CRNE 64 | 62 |
| CR, CRE 90 | 64 |
| CRN, CRNE 90 | 66 |
| CR 120 | 68 |
| CRN 120 | 70 |
| CR 150 | 72 |
| CRN 150 | 74 |

Motor data

| | |
|---|----|
| Standard motors for CR, CRI, CRN, 50 Hz | 76 |
| E-motors for CRE, CRIE, CRNE, 50 Hz | 77 |

Pumped liquids

| | |
|------------------------|----|
| Pumped liquids | 78 |
| List of pumped liquids | 78 |

Accessories

| | |
|---------------------------------------|----|
| Pipework connection | 80 |
| Counter flanges for CR(E) | 80 |
| Counter flanges for CRN(E) | 82 |
| PJE couplings for CRN(E) | 84 |
| FlexiClamp base connections | 84 |
| Potentiometer for CRE, CRIE, CRNE | 87 |
| G10-LON interface for CRE, CRIE, CRNE | 87 |
| LiqTec for CR(E), CRI(E) and CRN(E) | 87 |
| Remote control, R100 | 87 |
| EMC filter for CRE, CRIE, CRNE | 87 |
| Sensors for CRE, CRIE, CRNE | 88 |

Variants

| | |
|--------------------------------|----|
| Lists of variants - on request | 89 |
|--------------------------------|----|

Further product documentation

| | |
|---------|----|
| WebCAPS | 90 |
| WinCAPS | 91 |

Introduction

This data booklet deals with CR, CRI and CRN as well as CRE, CRIE and CRNE pumps.



GR5381

Fig. 1 CR, CRI and CRN pumps

CR, CRI, CRN

CR, CRI and CRN pumps are vertical multistage centrifugal pumps. The in-line design enables the pump to be installed in a horizontal one-pipe system where the suction and discharge ports are in the same horizontal plane and have the same pipe dimensions. This design provides a more compact pump design and pipework.

Grundfos CR pumps are available in various sizes and various numbers of stages to provide the flow and pressure required.

CR pumps are designed for a variety of applications from the pumping of potable water to the pumping of chemicals. The pumps are therefore suitable for a wide diversity of pumping systems where the performance and material of the pump meet specific demands.

The CR pumps consist of two main components: The motor and the pump unit. The CR pump motor is a Grundfos motor designed to EN standards.

The pump unit consists of optimised hydraulics, various types of connections, an outer sleeve, a pump head and various other parts.

CR pumps are available in various material versions according to the pumped liquid.

CRE, CRIE, CRNE



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Fig. 2 CRE, CRIE and CRNE pumps

CRE, CRIE and CRNE pumps are built on the basis of CR, CRI, CRN pumps.

CRE, CRIE and CRNE pumps belong to the so-called E-pump family. CRE, CRIE and CRNE pumps are referred to as E-pumps.

The difference between the CR and the CRE pump range is the motor. CRE, CRIE and CRNE pumps are fitted with an E-motor, i.e. a motor with built-in frequency control.

The CRE pump motor is a Grundfos MGE or MMGE motor designed to EN standards.

Frequency control enables continuously variable control of motor speed, which makes it possible to set the pump to operation at any duty point. The aim of continuously variable control of the motor speed is to adjust the performance to a given requirement.

CRE, CRIE and CRNE pumps are available with an integrated pressure sensor connected to the frequency control.

The pump materials are identical to those of the CR, CRI and CRN pump range.

Selecting a CRE pump

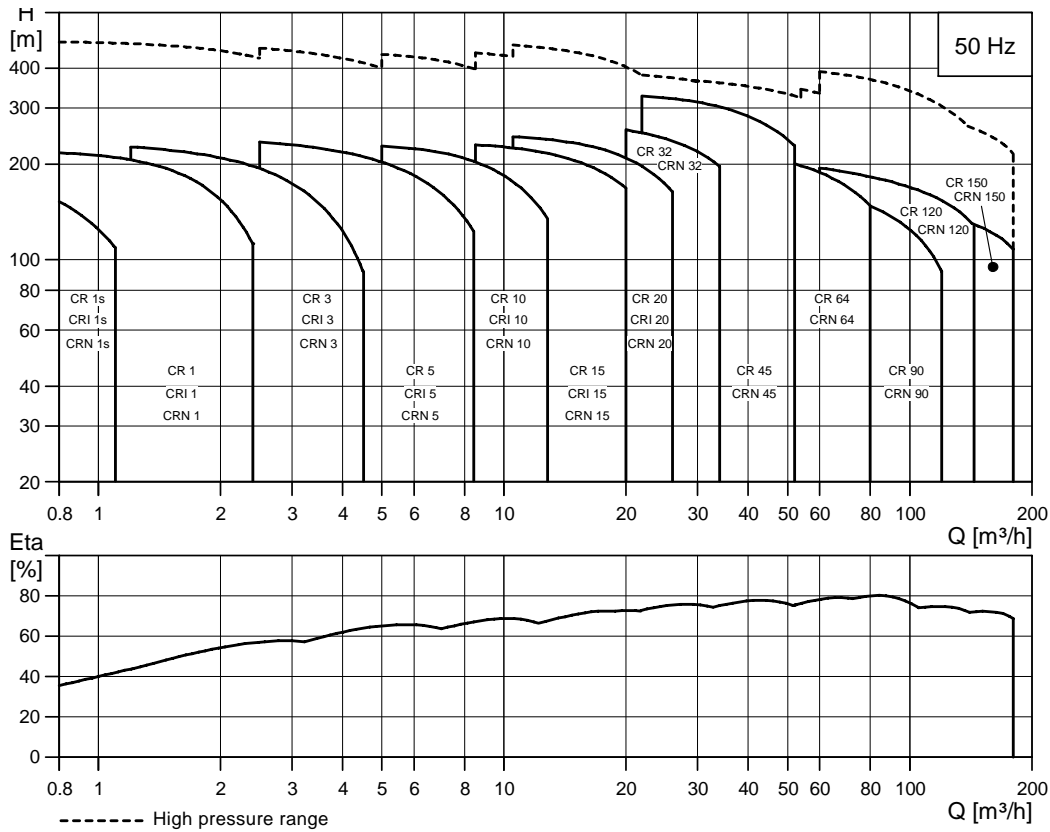
Select a CRE pump if the following features are required:

- Controlled operation, i.e. consumption fluctuates
- Constant pressure
- Communication with the pump.

Adaptation of performance through frequency-controlled speed control offers obvious benefits such as:

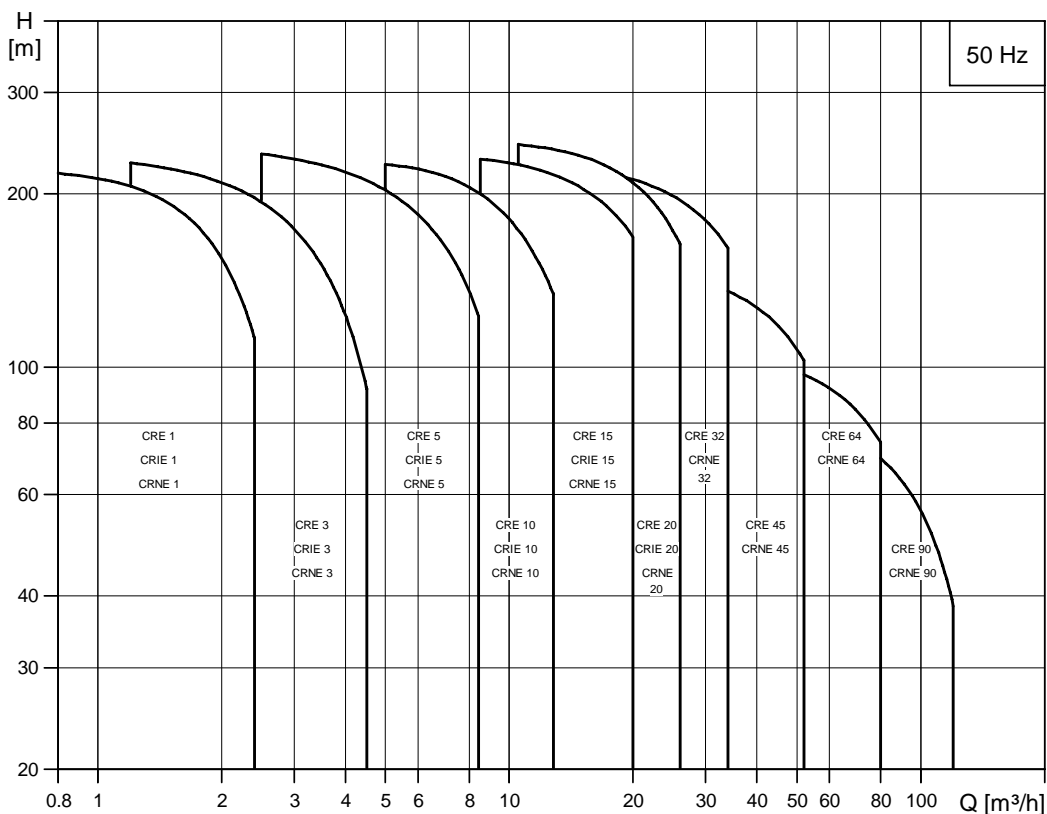
- energy savings
- increased comfort
- control and monitoring of the pump performance.

Performance range of CR, CRI, CRN



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Performance range of CRE, CRIE, CRNE



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Applications

| Application | CR, CRI | CRN | CRE, CRNE |
|--|---------|-----|-----------|
| Water supply | | | |
| Filtration and transfer at waterworks | ● | ○ | ● |
| Distribution from waterworks | ● | ○ | ● |
| Pressure boosting in mains | ● | ○ | ● |
| Pressure boosting in high-rise buildings, hotels, etc. | ● | ○ | ● |
| Pressure boosting for industrial water supply | ● | ○ | ● |
| Industry | | | |
| Pressure boosting | | | |
| Process-water systems | ● | ● | ● |
| Washing and cleaning systems | ● | ● | ○ |
| Vehicle-washing tunnels | ● | ○ | ● |
| Fire-fighting systems | ● | | ○ |
| Liquid transfer | | | |
| Cooling and air-conditioning systems (refrigerants) | ● | ○ | ● |
| Boiler-feed and condensate systems | ● | ○ | ● |
| Machine tools (cooling lubricants) | ● | ● | ● |
| Aquafarming★ | ● | ○ | |
| Special transfer duties | | | |
| Oils and alcohols | ● | ● | |
| Acids and alkalis★ | | ● | |
| Glycol and coolants | ● | | |
| Water treatment | | | |
| Ultra-filtration systems | | ● | |
| Reverse-osmosis systems★ | | ● | |
| Softening, ionising, demineralising systems | | ● | |
| Distillation systems | | ● | |
| Separators | ● | ● | ● |
| Swimming baths★ | | ● | |
| Irrigation | | | |
| Field irrigation (flooding) | ● | ○ | |
| Sprinkler irrigation | ● | ○ | ● |
| Drip-feed irrigation | ● | ○ | |

● Recommended version.

○ Alternative version.

★ CRT, CRTE version available.

For further information about CRT, CRTE pumps, see "Pumped liquids", page 78, or related CRT, CRTE data booklet.

Product range

| Range | CR 1s | CR, CRE 1 | CR, CRE 3 | CR, CRE 5 | CR, CRE 10 | CR, CRE 15 | CR, CRE 20 |
|---|---------------------------------|-----------------|-----------------|-----------------|---------------|---------------|---------------|
| Nominal flow rate [m ³ /h] | 0.8 | 1 | 3 | 5 | 10 | 15 | 20 |
| Temperature range [°C] | -20 to +120 | | | | | | |
| Temperature range [°C] – on request | -40 to +180 | | | | | | |
| Max. pump efficiency [%] | 35 | 48 | 58 | 66 | 70 | 72 | 72 |
| CR pumps | | | | | | | |
| Flow range [m ³ /h] | 0.3-1.1 | 0.7-2.4 | 1.2-4.5 | 2.5-8.5 | 5-13 | 9-24 | 11-29 |
| Max. pressure [bar] | 21 | 22 | 24 | 24 | 22 | 23 | 25 |
| High pressure [bar] – on request | - | 47 | 41 | 47 | 44 | 47 | 48 |
| Motor power [kW] | 0.37-1.1 | 0.37-2.2 | 0.37-3 | 0.37-5.5 | 0.37-7.5 | 1.1-15 | 1.1-18.5 |
| CRE pumps | | | | | | | |
| Flow range [m ³ /h] | - | 0.7-2.4 | 1.2-4.5 | 2.5-8.5 | 5-13 | 8.5-23.5 | 10.5-29 |
| Max. pressure [bar] | - | 22 | 24 | 24 | 22 | 23 | 25 |
| Motor power [kW] | - | 0.37-2.2 | 0.37-3 | 0.37-5.5 | 0.37-7.5 | 1.1-15 | 1.1-18.5 |
| Version | | | | | | | |
| CR, CRE: Cast iron and stainless steel EN 1.4301/AISI 304 | • | • | • | • | • | • | • |
| CRI, CRIE: Stainless steel EN 1.4301/AISI 304 | • | • | • | • | • | • | • |
| CRN, CRNE: Stainless steel EN 1.4401/AISI 316 | • | • | • | • | • | • | • |
| CRT, CRTE: Titanium | See the CRT, CRTE data booklet. | | | | | | |
| CR, CRE pipe connection | | | | | | | |
| Oval flange (BSP) | Rp 1 | Rp 1 | Rp 1 | Rp 1¼ | Rp 1½ | Rp 2 | Rp 2 |
| Oval flange (BSP) on request | Rp 1¼ | Rp 1¼ | Rp 1¼ | Rp 1 | Rp 1¼ Rp 2 | Rp 2½ | Rp 2½ |
| Flange | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 40 | DN 50 | DN 50 |
| Flange on request | - | - | - | - | DN 50 | - | - |
| CRI, CRIE pipe connection | | | | | | | |
| Oval flange (BSP) | Rp 1 | Rp 1 | Rp 1¼ | Rp 1¼ | Rp 1½ | Rp 2 | Rp 2 |
| Oval flange (BSP) on request | Rp 1¼ | Rp 1¼ | Rp 1 | Rp 1 | Rp 2 | - | - |
| Flange | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 40 | DN 50 | DN 50 |
| Flange on request | - | - | - | - | DN 50 | - | - |
| PJE coupling (Victaulic) | R 1¼ DN 32 | R 1¼ DN 32 | R 1¼ DN 32 | R 1¼ DN 32 | R 2 DN 50 | R 2 DN 50 | R 2 DN 50 |
| Clamp coupling (L-coupling) | Ø48.3 | Ø48.3 | Ø48.3 | Ø48.3 | Ø60.3 | Ø60.3 | Ø60.3 |
| Union (+GF+) | G 2 | G2 | G 2 | G 2 | G 2¼ | G 2¼ | G 2¼ |
| CRN(E) pipe connection | | | | | | | |
| Oval flange (BSP) | Rp 1 | Rp 1 | Rp 1¼ | Rp 1¼ | Rp 1½ | Rp 2 | Rp 2 |
| Oval flange (BSP) on request | Rp 1¼ | Rp 1¼ | Rp 1 | Rp 1 | Rp 2 | - | - |
| Flange | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 25/ DN 32 | DN 40 | DN 50 | DN 50 |
| Flange on request | - | - | - | - | DN 50 | - | - |
| PJE coupling (Victaulic) | R 1¼ DN 32 | R 1¼ DN 32 | R 1¼ DN 32 | R 1¼ DN 32 | R 2 DN 50 | R 2 DN 50 | R 2 DN 50 |
| Clamp coupling (L-coupling) | Ø48.3 | Ø48.3 | Ø48.3 | Ø48.3 | Ø60.3 | Ø60.3 | Ø60.3 |
| Union (+GF+) | G 2 | G2 | G 2 | G 2 | G 2¼ | G 2¼ | G 2¼ |

Product data

CR, CRI, CRN,
CRE, CRIE, CRNE

| Range | CR, CRE 32 | CR, CRE 45 | CR, CRE 64 | CR, CRE 90 | CR 120 | CR 150 |
|---|---------------------------------|------------------|------------------|------------------|-----------|-----------|
| Nominal flow rate [m ³ /h] | 32 | 45 | 64 | 90 | 120 | 150 |
| Temperature range [°C] | -30 to +120 ¹⁾ | | | | | |
| Temperature range [°C] – on request | -40 to +180 | | | | | |
| Max. pump efficiency [%] | 78 | 79 | 80 | 81 | 75 | 72 |
| CR pumps | | | | | | |
| Flow range [m ³ /h] | 15-40 | 22-58 | 30-85 | 45-120 | 60-160 | 75-180 |
| Max. pressure [bar] | 28 | 33 | 22 | 20 | 21 | 19 |
| High pressure [bar] – on request | 39 | 39 | 39 | 41 | 41 | 39 |
| Motor power [kW] | 1.5-30 | 3-45 | 4-45 | 5.5-45 | 11-75 | 11-75 |
| CRE pumps | | | | | | |
| Flow range [m ³ /h] | 15-40 | 22-58 | 30-85 | 45-120 | - | - |
| Max. pressure [bar] | 28 | 26 | 20 | 20 | - | - |
| Motor power [kW] | 1.5-22 | 3-22 | 4-22 | 5.5-22 | - | - |
| Version | | | | | | |
| CR, CRE: Cast iron and stainless steel EN 1.4301/AISI 304 | ● | ● | ● | ● | ● | ● |
| CRI, CRIE: Stainless steel EN 1.4301/AISI 304 | ○ | ○ | ○ | ○ | - | - |
| CRN, CRNE: Stainless steel EN 1.4401/AISI 316 | ● | ● | ● | ● | ● | ● |
| CRT, CRTE: Titanium | See the CRT, CRTE data booklet. | | | | - | - |
| CR, CRE pipe connection | | | | | | |
| Oval flange (BSP) | - | - | - | - | - | - |
| Oval flange (BSP) on request | - | - | - | - | - | - |
| Flange | DN 65 | DN 80 | DN 100 | DN 100 | DN 125 | DN 125 |
| Flange on request | DN 80 | DN 100 | DN 125 | DN 125 | DN 150 | DN 150 |
| CRI, CRIE pipe connection | | | | | | |
| Oval flange (BSP) | - | - | - | - | - | - |
| Oval flange (BSP) on request | - | - | - | - | - | - |
| Flange | - | - | - | - | - | - |
| Flange on request | - | - | - | - | - | - |
| PJE coupling (Victaulic) | - | - | - | - | - | - |
| Clamp coupling (L-coupling) | - | - | - | - | - | - |
| Union (+GF+) | - | - | - | - | - | - |
| CRN(E) pipe connection | | | | | | |
| Oval flange (BSP) | - | - | - | - | - | - |
| Oval flange (BSP) on request | - | - | - | - | - | - |
| Flange | DN 65 | DN 80 | DN 100 | DN 100 | DN 125 | DN 125 |
| Flange on request | DN 80 | DN 100 | DN 125 | DN 125 | DN 150 | DN 150 |
| PJE coupling (Victaulic) | 3" ²⁾ | 4" ²⁾ | 4" ²⁾ | 4" ²⁾ | - | - |
| Clamp coupling (L-coupling) | - | - | - | - | - | - |
| Union (+GF+) | - | - | - | - | - | - |

¹⁾ CRN 32 to CRN 90 with HQQE shaft seal: -40 °C to 120 °C

²⁾ On request. See the CR "Custom-built pumps" catalogue.

Pump

The CR and CRE pumps are non-self-priming, vertical multistage centrifugal pumps.

The pumps are available with a Grundfos standard motor (CR pumps) or a frequency-controlled motor (CRE pumps).

The pump consists of a base and a pump head. The chamber stack and the outer sleeve are secured between the pump head and the base by means of staybolts. The base has suction and discharge ports on the same level (in-line). All pumps are equipped with a maintenance-free mechanical shaft seal of the cartridge type.

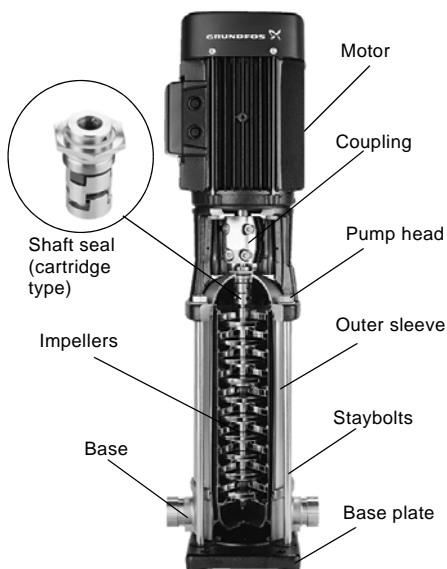


Fig. 3 CR pump

GR5357 - GR3395

Motor

Grundfos standard motors: MG and Siemens motors

CR, CRI and CRN pumps are fitted with a totally enclosed, fan-cooled, 2-pole Grundfos standard motor with principal dimensions to EN standards.

Electrical tolerances according to EN 60034.

CR, CRI, CRN pumps are fitted with three-phase MG motors as standard.

CR, CRI, CRN pumps from 0.37 to 2.2 kW are also available with single-phase motors (1 x 220-230/240 V). See Win-/WebCAPS.

Frequency-controlled motors: MGE

CRE, CRIE and CRNE pumps are fitted with a totally enclosed, fan-cooled, 2-pole frequency-controlled motor with principal dimensions to EN standards.

Electrical tolerances comply with EN 60034.

CRE, CRIE, CRNE pumps from 0.37 to 1.1 kW are fitted with single-phase MGE motors as standard.

CRE, CRIE, CRNE pumps from 0.75 to 1.1 kW are also available with three-phase MGE motors. See Win-/WebCAPS.

Electrical data

CR, CRI, CRN

| | MG motor |
|---|--|
| Mounting designation | Up to 4 kW: V 18 From 5.5 kW: V 1 |
| Insulation class | F |
| Efficiency class | EFF 1 (0.37-0.75 kW pumps are EFF 2) |
| Enclosure class | IP 55★ |
| | P ₂ : 0.37-1.5 kW: 3 x 220-240/380-415 V |
| Supply voltage (Tolerance: ±10%) | P ₂ : 2.2-11 kW: 3 x 380-415 V |
| | P ₂ : 15-75 kW: 3 x 380-415/660-690 V |
| Supply frequency | 50 Hz |

★ IP 44, IP 54 and IP 65 are available on request.

CRE, CRIE, CRNE

| | MGE motor (P ₂ ≤ 7.5 kW) | MMGE motor (P ₂ ≥ 11-22 kW) |
|---|--|---|
| Mounting designation | Up to 4 kW: V 18 From 5.5 kW: V 1 | |
| Insulation class | F | |
| Efficiency class | EFF 1★ | EFF 2 |
| Enclosure class | IP 54 | |
| | P ₂ : 0.37-1.1 kW: 1 x 200-240 V | P ₂ : 11-22 kW: 3 x 380-415 V |
| Supply voltage (Tolerance: ±10%) | P ₂ : 0.75-7.5 kW: 3 x 380-480 V | |
| Supply frequency | 50/60 Hz | |

★ Single-phase MGE motors are EFF 2.

Optional motors

The Grundfos standard range of motors covers a wide variety of application demands. However, for special applications or operating conditions, custom-built motor solutions can be provided.

For special applications or operating conditions, Grundfos offers custom-built motors such as:

- ATEX-approved motors
- MG motors with anti-condensation heating unit
- motors with thermal protection.

Motor protection

MG and Siemens motors

Single-phase Grundfos motors have a built-in thermal overload switch (IEC 34-11: TP 211).

Three-phase motors **must** be connected to a motor starter in accordance with local regulations.

Three-phase Grundfos motors from 3 kW and upwards have a built-in thermistor (PTC) according to DIN 44 082 (IEC 34-11: TP 211).

MGE motors

CRE, CRIE, CRNE pumps require no external motor protection. The MGE motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).

Terminal box positions

As standard the terminal box is mounted on the suction side of the pump.

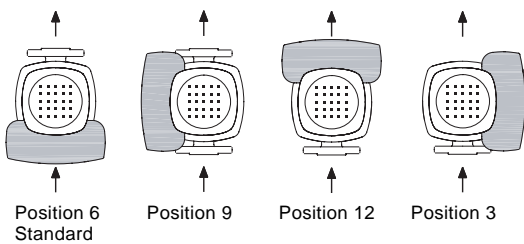


Fig. 4 Terminal box positions

TM03 3658 0606

Ambient temperature

| Motor power [kW] | Motor make | Motor efficiency class | Maximum ambient temperature [°C] | Maximum altitude above sea level [m] |
|------------------|-------------|------------------------|----------------------------------|--------------------------------------|
| 0.37-0.75 | Grundfos MG | EFF 2 | +40 | 1000 |
| 1.1-11 | Grundfos MG | EFF 1 | +60 | 3500 |
| 15-75 | Siemens | EFF 1 | +55 | 2750 |

If the ambient temperature exceeds the above temperature values or the pump is installed at an altitude exceeding the above altitude values, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

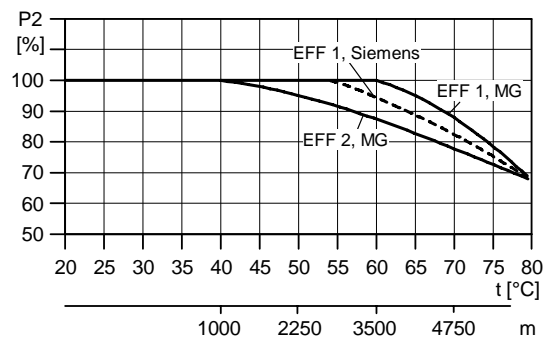


Fig. 5 Motor output depends on temperature/altitude

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Viscosity

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

In such situations the pump should be equipped with a larger motor. If in doubt, contact Grundfos.

Examples of E-pump applications

CRE, CRIE and CRNE pumps are the ideal choice for a number of applications characterised by a need for variable flow at constant pressure. The pumps are suited for water supply systems and pressure boosting as well as for industrial applications.

Depending on the application, the pumps offer energy-savings, increased comfort and improved processing.

E-pumps in the service of industry

Industry uses a large number of pumps in many different applications. Demands on pumps in terms of pump performance and mode of operation make speed control a must in many applications.

Below is listed some of the applications in which E-pumps are often used.

Constant pressure

- water supply
- washing and cleaning systems
- distribution from waterworks
- humidifying systems
- water treatment systems
- process boosting systems, etc.

Example: Within industrial water supply, E-pumps with integrated pressure sensor are used to ensure a constant pressure in the piping network. From the sensor, the E-pump receives inputs about changes of pressure as a result of changes in the consumption. The E-pump responds to the input by adjusting the speed until the pressure is equalized. The constant pressure is stabilized once more on the basis of a preset setpoint.

Constant temperature

- air-conditioning systems at industrial plants
- industrial cooling systems
- industrial freezing systems
- casting and moulding tools, etc.

Example: In industrial freezing systems, E-pumps with temperature sensor increase comfort and lower operating costs compared with pumps without a temperature sensor.

An E-pump continuously adapts its performance to the changing demands reflected in the differences in temperature of the liquid circulating in the freezing system. Thus, the lower the demand for cooling, the smaller the quantity of liquid circulated in the system and vice versa.

Constant flow

- steam boiler systems
- condensate systems
- sprinkler irrigation systems
- chemical industry, etc.

Example: In a steam boiler, it is important to be able to monitor and control pump operation to maintain a constant level of water in the boiler.

By using an E-pump with level sensor in the boiler, it is possible to maintain a constant water level.

A constant water level ensures optimum and cost-efficient operation as a result of a stable steam production.

Dosing applications

- chemical industry (i.e. control of pH-values)
- petrochemical industry
- paint industry
- degreasing systems
- bleaching systems, etc.

Example: In the petrochemical industry, E-pumps with pressure sensor are used as dosing pumps. The E-pumps help to ensure that the correct mixture ratio is achieved when more liquids are combined.

E-pumps functioning as dosing pumps improve processing and offer energy-savings.

E-pumps in commercial building services

Commercial building services use E-pumps to maintain a constant pressure or a constant temperature based on a variable flow.

Constant pressure

Water supply in high-rise buildings such as office buildings and hotels.

Example: E-pumps with pressure sensor are used for water supply in high-rise buildings to ensure a constant pressure even at the highest draw-off point. As the consumption pattern and thus the pressure changes during the day, the E-pump continuously adapts its performance until the pressure is equalized.

Constant temperature

- air-conditioning systems in hotels, schools, etc.
- building cooling systems, etc.

Example: E-pumps are an excellent choice for buildings where constant temperature is essential. E-pumps keep the temperature constant in air-conditioned high-rise glass buildings, irrespective of the seasonal fluctuations of the outdoor temperature and various heat impacts inside the building.

Control options of E-pumps

Communication with CRE, CRIE, CRNE pumps is possible by means of either of the following:

- a central management system
- remote control (Grundfos R100)
- a control panel.

The purpose of controlling an E-pump is to monitor and control the pressure, temperature, flow and liquid level of the system.

Central management system

Communication with the E-pump is possible even if the operator is not present near the E-pump. Communication is enabled by connecting the E-pump to a central management system. This allows the operator to monitor the pump and to change control modes and setpoint settings.

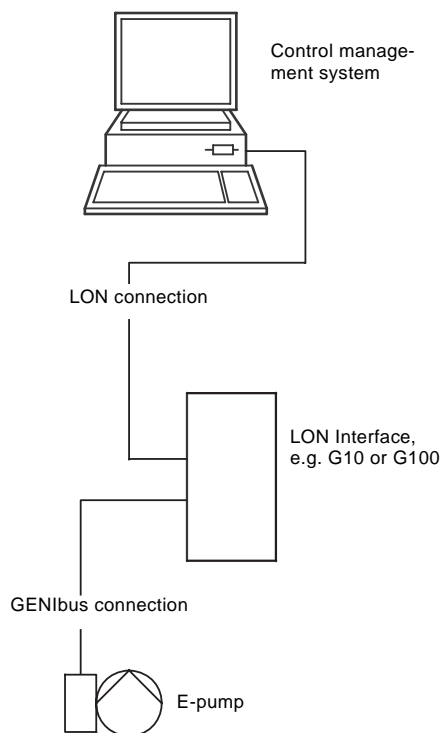


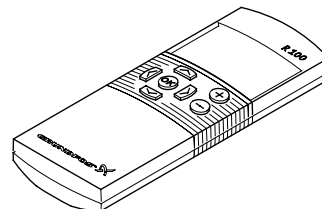
Fig. 6 Structure of a central management system

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Remote control

The R100 remote control produced by Grundfos is available as an accessory.

The operator communicates with the E-pump by pointing the IR-signal transmitter at the control panel of the E-pump terminal box.



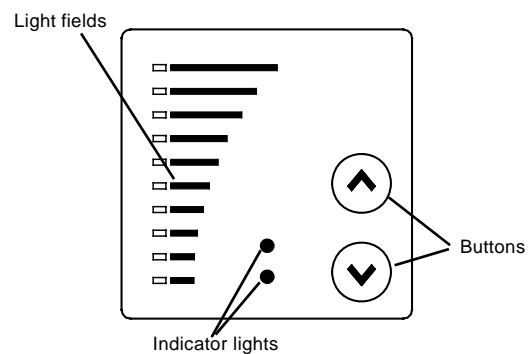
TM00 4498 2802

Fig. 7 R100 remote control

On the R100 display it is possible to monitor and change control modes and settings of the E-pump.

Control panel

The control panel of the E-pump terminal box makes it possible to change the setpoint settings manually.



TM00 7600 0404

Fig. 8 Control panel on CRE pump

Control modes for E-pumps

Grundfos offers CRE, CRIE and CRNE pumps in two different variants:

- CRE, CRIE and CRNE with integrated pressure sensor
- CRE, CRIE and CRNE without sensor.

CRE, CRIE, CRNE with integrated pressure sensor

Use CRE, CRIE and CRNE pumps with integrated pressure sensor in applications where you want to control the pressure after the pump, irrespective of the flow. For further information, see the section "Examples of E-pump applications, page 10.

Signals of pressure changes in the piping system are transmitted continuously from the sensor to the pump. The pump responds to the signals by adjusting its performance up or down to compensate for the pressure difference between the actual and the desired pressure. As this adjustment is a continuous process, a constant pressure is maintained in the piping system.



TM02 7398 3403

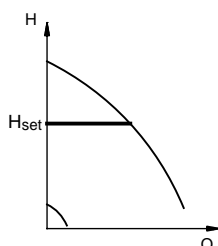
Fig. 9 CRE, CRIE and CRNE pumps

A CRE, CRIE or CRNE pump with integrated pressure sensor facilitates installation and commissioning.

CRE, CRIE and CRNE pumps with integrated pressure sensor can be set to either of these modes:

- constant-pressure mode (factory setting)
- constant-curve mode.

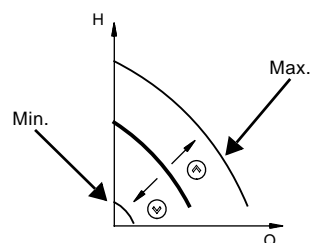
In **constant-pressure** mode, the pump maintains a preset pressure after the pump, irrespective of the flow, see figure below.



TM00 9322 4796

Fig. 10 Constant pressure mode

In **constant-curve** mode, the pump is not controlled. It can be set to pump according to a preset pump characteristic within the range from min. curve to max. curve, see figure below.



TM00 9323 1204

Fig. 11 Constant curve mode

CRE, CRIE and CRNE without sensor

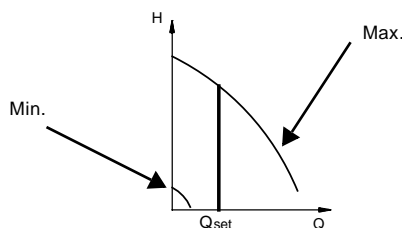
CRE, CRIE and CRNE pumps without sensor are suitable for applications

- where uncontrolled operation is required
- where you want to fit another sensor later in order to control the flow, temperature, differential temperature, liquid level, pH value, etc. at some arbitrary point in the system.

CRE, CRIE and CRNE pumps without sensor can be set to either of these modes:

- controlled-operation mode
- uncontrolled-operation mode (factory-setting).

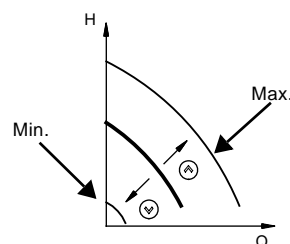
In **controlled**-operation mode, the pump adjusts its performance to the desired setpoint, see figure below.



TM02 7264 2803

Fig. 12 Constant flow mode

In **uncontrolled**-operation mode, the pump operates according to the constant curve set, see figure below.



TM00 9323 1204

Fig. 13 Constant curve mode

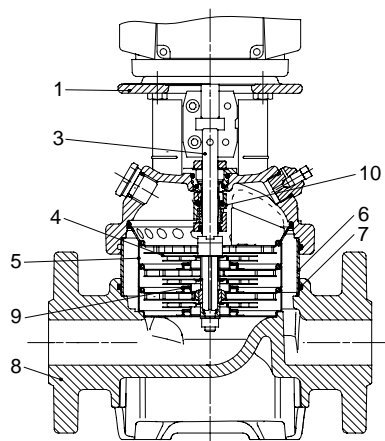
CRE, CRIE and CRNE pumps can be fitted with sensor types meeting the requirements mentioned in the data booklet titled "Grundfos E-pumps".

CR(E) 1s, 1, 3, 5, 10, 15 and 20



TM02 1198 0601 - GR7377 - GR7379

Sectional drawing



TM02 1194 1403

Materials, CR(E)

| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|--------------|----------------------------|-------------------------|--|----------------------|
| 1 | Pump head | Cast iron EN-GJL-200 | EN-JL1030 | ASTM 25B |
| 3 | Shaft | Stainless steel | 1.4401 ¹⁾ 1.4057 ²⁾ | AISI 316 AISI 431 |
| 4 | Impeller | Stainless steel | 1.4301 | AISI 304 |
| 5 | Chamber | Stainless steel | 1.4301 | AISI 304 |
| 6 | Outer sleeve | Stainless steel | 1.4301 | AISI 304 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| 8 | Base | Cast iron EN-GJL-200 | EN-JL1030 | ASTM 25B |
| 9 | Neck ring | PTFE | | |
| 10 | Shaft seal | | | |
| Rubber parts | | EPDM or FKM | | |

¹⁾ CR(E) 1S, 1, 3, 5

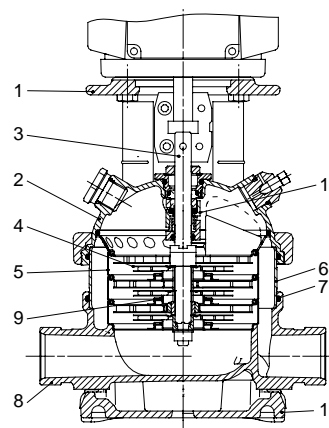
²⁾ CR(E) 10, 15, 20

CRI(E), CRN(E) 1s, 1, 3, 5, 10, 15 and 20



TM02 1808 2001 - GR7373 - GR7375

Sectional drawing



TM02 1195 1403

Materials, CRI(E) and CRN(E)

| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|---------------|----------------------------|---------------------------------------|--|----------------------------|
| 1 | Pump head | Cast iron EN-GJL-200 ¹⁾ | EN-JL1030 | ASTM 25B |
| 2 | Pump head cover | Stainless steel | 1.4408 | CF 8M equal to AISI 316 |
| 3 | Shaft | Stainless steel | 1.4401 ²⁾ 1.4460 ³⁾ | AISI 316 AISI 329 |
| 8 | Base | Stainless steel | 1.4408 | CF 8M equal to AISI 316 |
| 9 | Neck ring | PTFE | | |
| 10 | Shaft seal | Cartridge type | | |
| 11 | Base plate | Cast iron EN-GJL-200 ¹⁾ | EN-JL1030 | ASTM 25B |
| Rubber parts | | EPDM or FKM | | |
| CRI(E) | | | | |
| 4 | Impeller | Stainless steel | 1.4301 | AISI 304 |
| 5 | Chamber | Stainless steel | 1.4301 | AISI 304 |
| 6 | Outer sleeve | Stainless steel | 1.4301 | AISI 304 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| CRN(E) | | | | |
| 4 | Impeller | Stainless steel | 1.4401 | AISI 316 |
| 5 | Chamber | Stainless steel | 1.4401 | AISI 316 |
| 6 | Outer sleeve | Stainless steel | 1.4401 | AISI 316 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |

¹⁾ Stainless steel available on request.

²⁾ CRI(E), CRN(E) 1S, 1, 3, 5

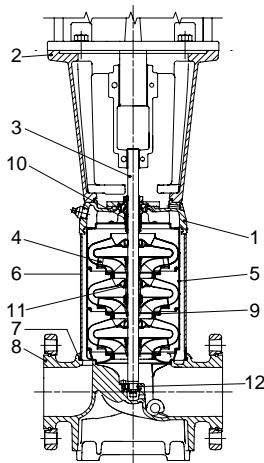
³⁾ CRI(E), CRN(E) 10, 15, 20

CR(E) 32, 45, 64 and 90



TM01 2150 1298 - GR5952

Sectional drawing



TM01 1836 1403

Materials, CR(E)

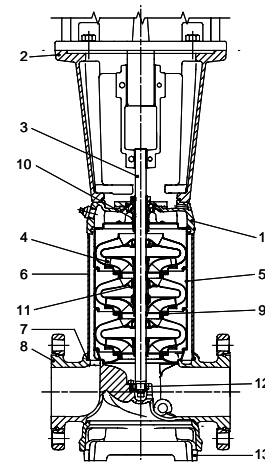
| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|------|----------------------------|---------------------------------------|-----------|------------------|
| 1 | Pump head | Cast iron EN-GJS-500-7 | EN-JS1050 | ASTM 80-55-06 |
| 2 | Motor stool | Cast iron EN-GJL-200 | EN-JL1030 | ASTM 25B |
| 3 | Shaft | Stainless steel | 1.4057 | AISI 431 |
| 4 | Impeller | Stainless steel | 1.4301 | AISI 304 |
| 5 | Chamber | Stainless steel | 1.4301 | AISI 304 |
| 6 | Outer sleeve | Stainless steel | 1.4301 | AISI 304 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| 8 | Base | Cast iron EN-GJS-500-7 | EN-JS1050 | ASTM 80-55-06 |
| 9 | Neck ring | Carbon-graphite- filled PTFE | | |
| 10 | Shaft seal | | | |
| 11 | Bearing ring | Bronze | | |
| 12 | Bottom bearing ring | Tungsten carbide/ tungsten carbide | | |
| | Rubber parts | EPDM or FKM | | |

CRN(E) 32, 45, 64 and 90



TM02 7399 3403

Sectional drawing



TM01 1837 1403

Materials, CRN(E)

| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|------|----------------------------|---|---------------|----------------------------|
| 1 | Pump head | Stainless steel | 1.4408 | CF 8M equal to AISI 316 |
| 2 | Motor stool | Cast iron EN-GJL-200 1) | EN-JL1030 | ASTM 25B |
| 3 | Shaft | Stainless steel | 1.4462 | |
| 4 | Impeller | Stainless steel | 1.4401 | AISI 316 |
| 5 | Chamber | Stainless steel | 1.4401 | AISI 316 |
| 6 | Outer sleeve | Stainless steel | 1.4401 | AISI 316 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| 8 | Base | Stainless steel | 1.4408 | CF 8M equal to AISI 316 |
| 9 | Neck ring | Carbon-graphite filled PTFE | | |
| 10 | Shaft seal | | | |
| 11 | Bearing ring | Carbon-graphite filled PTFE | | |
| 12 | Bottom bearing ring | Tungsten carbide/tungsten carbide | | |
| 13 | Base plate | Cast iron EN-GJS-500-7 ¹⁾ | EN- JS1050 | ASTM 88-55-06 |
| | Rubber parts | EPDM or FKM | | |

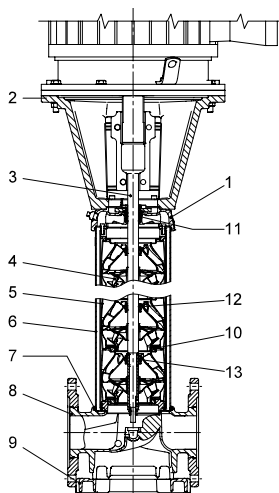
¹⁾ Stainless steel available on request.

CR 120 and 150



GrA3731

Sectional drawing



TM03 8835 2607

Materials, CR

| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|------|---------------------------|-----------------------------------|-----------|-------------------|
| 1 | Pump head | Cast iron EN-GJS-500-7 | EN-JS1050 | A 536 65-45-12 |
| 2 | Motor stool (11-45 kW) | Cast iron EN-GJL-200 | EN-JL1030 | A48-30 B |
| | Motor stool (55-75 kW) | Cast iron EN-GJS-500-7 | EN-JS1050 | A 536 65-45-12 |
| 3 | Shaft | Stainless steel | 1.4057 | AISI 431 |
| 4 | Impeller | Stainless steel | 1.4301 | AISI 304 |
| 5 | Chamber | Stainless steel | 1.4301 | AISI 304 |
| 6 | Outer sleeve | Stainless steel | 1.4401 | AISI 316 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| 8 | Base | Cast iron EN-GJS-500-7 | EN-JS1050 | A 536 65-45-12 |
| 9 | Base plate | Cast iron EN-GJS-500-7 | EN-JS1050 | A 536 65-45-12 |
| 10 | Neck ring | PTFE | | |
| 11 | Shaft seal ¹⁾ | SiC/SiC (Ø22) Carbon/SiC (Ø32) | | |
| 12 | Support bearing | PTFE | | |
| 13 | Bearing ring | SiC/SiC | | |
| | Rubber parts | EPDM or FKM | | |

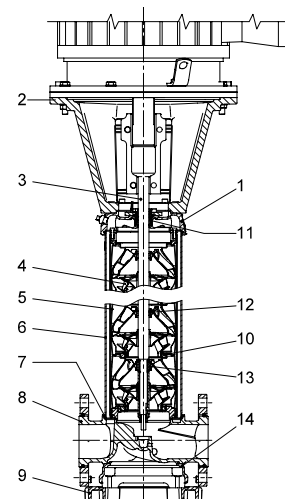
¹⁾ Ø22 mm shaft, 11-45 kW. Ø32 mm shaft, 55-75 kW.

CRN 120 and 150



GrA3732 - GrA3735

Sectional drawing



TM03 8836 2607

Materials, CRN

| Pos. | Designation | Materials | EN/DIN | AISI/ASTM |
|------|---------------------------|---|-----------|-------------------|
| 1 | Pump head | Stainless steel | 1.4408 | A 351 CF 8M |
| 2 | Motor stool (11-45 kW) | Cast iron EN-GJL-200 | EN-JL1030 | A48-30 B |
| | Motor stool (55-75 kW) | Cast iron EN-GJS-500-7 | EN-JS1050 | A 536 65-45-12 |
| 3 | Shaft | Stainless steel | 1.4462 | SAF 2205 |
| 4 | Impeller | Stainless steel | 1.4401 | AISI 316 |
| 5 | Chamber | Stainless steel | 1.4401 | AISI 316 |
| 6 | Outer sleeve | Stainless steel | 1.4401 | AISI 316 |
| 7 | O-ring for outer sleeve | EPDM or FKM | | |
| 8 | Base | Stainless steel | 1.4408 | A 351 CF 8M |
| 9 | Base plate | Cast iron EN-GJS-500-7 ¹⁾ | EN-JS1050 | A 536 65-45-12 |
| 10 | Neck ring | PTFE | | |
| 11 | Shaft seal ²⁾ | SiC/SiC (Ø22) Carbon/SiC (Ø32) | | |
| 12 | Support bearing | PTFE | | |
| 13 | Bearing ring | SiC/SiC | | |
| 14 | Base plate | Cast iron EN-GJS-500-7 ¹⁾ | EN-JS1050 | A 536 65-45-12 |
| | Rubber parts | EPDM or FKM | | |

¹⁾ Stainless steel available on request.

²⁾ Ø22 mm shaft, 11-45 kW. Ø32 mm shaft, 55-75 kW.

Type keys

CR(E), CRI(E), CRN(E)

| Example | CR E 32(s) -4 -2 -A -F -G -E -HQQE |
|--|------------------------------------|
| Type range: CR, CRI, CRN | |
| Pump with integrated frequency control | |
| Flow rate [m ³ /h] | |
| All impellers with reduced diameter (applies only to CR, CRI, CRN 1s) | |
| Number of impellers | |
| Number of reduced-diameter impellers (CR(E), CRN(E) 32, 45, 64, 90, 120 and 150) | |
| Code for pump version | |
| Code for pipe connection | |
| Code for materials | |
| Code for rubber parts | |
| Code for shaft seal | |

Codes

| Example | A | -F | -A | -E | -H | QQ | E |
|------------------------------|---|----|----|----|----|----|---|
| Pump version | | | | | | | |
| A | | | | | | | |
| B | | | | | | | |
| E | | | | | | | |
| F | | | | | | | |
| H | | | | | | | |
| HS | | | | | | | |
| I | | | | | | | |
| J | | | | | | | |
| K | | | | | | | |
| M | | | | | | | |
| N | | | | | | | |
| P | | | | | | | |
| R | | | | | | | |
| SF | | | | | | | |
| X | | | | | | | |
| Pipe connection | | | | | | | |
| A | | | | | | | |
| B | | | | | | | |
| CA | | | | | | | |
| F | | | | | | | |
| G | | | | | | | |
| J | | | | | | | |
| N | | | | | | | |
| P | | | | | | | |
| X | | | | | | | |
| Materials | | | | | | | |
| A | | | | | | | |
| D | | | | | | | |
| G | | | | | | | |
| GI | | | | | | | |
| I | | | | | | | |
| II | | | | | | | |
| K | | | | | | | |
| S | | | | | | | |
| X | | | | | | | |
| Code for rubber parts | | | | | | | |
| E | | | | | | | |
| F | | | | | | | |
| K | | | | | | | |
| V | | | | | | | |
| Shaft seal | | | | | | | |
| H | | | | | | | |
| Q | | | | | | | |
| U | | | | | | | |
| B | | | | | | | |
| E | | | | | | | |
| F | | | | | | | |
| K | | | | | | | |
| V | | | | | | | |

Maximum operating pressure and temperature range

| | Oval flange | | PJE, Clamp, UNION, DIN | |
|------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| | Max. permissible operating pressure | Liquid temperature range | Max. permissible operating pressure | Liquid temperature range |
| CR, CRI, CRN 1s | 16 bar | -20 °C to +120 °C | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E), CRN(E) 1 | 16 bar | -20 °C to +120 °C | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E), CRN(E) 3 | 16 bar | -20 °C to +120 °C | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E), CRN(E) 5 | 16 bar | -20 °C to +120 °C | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 10-1 → 10-16 | 16 bar | -20 °C to +120 °C | 16 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 10-17 → 10-22 | - | - | 25 bar | -20 °C to +120 °C |
| CRN(E) 10 | - | - | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 15-1 → 15-7 | 10 bar | -20 °C to +120 °C | - | - |
| CR(E), CRI(E) 15-1 → 15-10 | - | - | 16 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 15-12 → 15-17 | - | - | 25 bar | -20 °C to +120 °C |
| CRN(E) 15 | - | - | 25 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 20-1 → 20-7 | 10 bar | -20 °C to +120 °C | - | - |
| CR(E), CRI(E) 20-1 → 20-10 | - | - | 16 bar | -20 °C to +120 °C |
| CR(E), CRI(E) 20-12 → 20-17 | - | - | 25 bar | -20 °C to +120 °C |
| CRN(E) 20 | - | - | 25 bar | -20 °C to +120 °C |
| CR(E), CRN(E) 32-1-1 → 32-7 | - | - | 16 bar | -30 °C to +120 °C |
| CR(E), CRN(E) 32-8-2 → 32-14 | - | - | 30 bar | -30 °C to +120 °C |
| CR(E), CRN(E) 45-1-1 → 45-5 | - | - | 16 bar | -30 °C to +120 °C |
| CR(E), CRN(E) 45-6-2 → 45-11 | - | - | 30 bar | -30 °C to +120 °C |
| CR, CRN 45-12-2 → 45-13-2 | - | - | 33 bar | -30 °C to +120 °C |
| CR(E), CRN(E) 64-1-1 → 64-5 | - | - | 16 bar | -30 °C to +120 °C |
| CR, CRN 64-6-2 → 64-8-1 | - | - | 30 bar | -30 °C to +120 °C |
| CR(E), CRN(E) 90-1-1 → 90-4 | - | - | 16 bar | -30 °C to +120 °C |
| CR, CRN 90-5-2 → 90-6 | - | - | 30 bar | -30 °C to +120 °C |
| CR, CRN 120 | - | - | 30 bar | -30 °C to +120 °C |
| CR, CRN 150 | - | - | 30 bar | -30 °C to +120 °C |

Operating range of the shaft seal

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature. The following curves apply to clean water and water with anti-freeze liquids. For selecting the right shaft seal, see "List of pumped liquids", page 78.

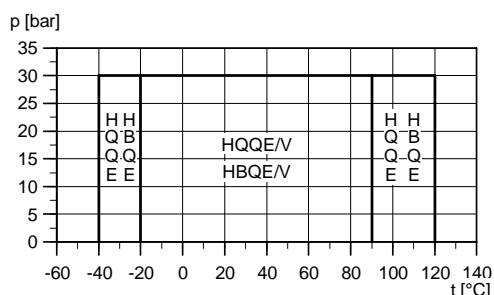


Fig. 14 Operating range of standard shaft seals

| Standard shaft seal | Motor size [kW] | Description | Max. temperature range [°C] |
|---------------------|-----------------|--|-----------------------------|
| HQQE | 0.37-45 | O-ring (cartridge) (balanced seal), SiC/SiC, EPDM | -40 °C to +120 °C |
| HBQE | 55-75 | O-ring (cartridge) (balanced seal), Carbon/SiC, EPDM | -40 °C to +120 °C |
| HQQV | 0.37-45 | O-ring (cartridge) (balanced seal), SiC/SiC, FKM | -20 °C to +90 °C |
| HBQV | 55-75 | O-ring (cartridge) (balanced seal), Carbon/SiC, FKM | -20 °C to +90 °C |

See "Variants on request", page 89, in case of extreme temperatures:

- low temperatures down to -40 °C or
- high temperatures up to +180 °C.

Maximum inlet pressure

The following table shows the maximum permissible inlet pressure. However, the current inlet pressure + the pressure against a closed valve **must** always be lower than the maximum permissible operating pressure.

If the maximum permissible operating pressure is exceeded, the conical bearing in the motor may be damaged and the life of the shaft seal reduced.

| | | |
|---------------------------------|-----------|--------|
| CR, CRI, CRN 1s | | |
| 1s-2 | › 1s-36 | 10 bar |
| CR(E), CRI(E), CRN(E) 1 | | |
| 1-2 | › 1-36 | 10 bar |
| CR(E), CRI(E), CRN(E) 3 | | |
| 3-2 | › 3-29 | 10 bar |
| 3-31 | › 3-36 | 15 bar |
| CR(E), CRI(E), CRN(E) 5 | | |
| 5-2 | › 5-16 | 10 bar |
| 5-18 | › 5-36 | 15 bar |
| CR(E), CRI(E), CRN(E) 10 | | |
| 10-1 | › 10-6 | 8 bar |
| 10-7 | › 10-22 | 10 bar |
| CR(E), CRI(E), CRN(E) 15 | | |
| 15-1 | › 15-3 | 8 bar |
| 15-4 | › 15-17 | 10 bar |
| CR(E), CRI(E), CRN(E) 20 | | |
| 20-1 | › 20-3 | 8 bar |
| 20-4 | › 20-17 | 10 bar |
| CR(E), CRN(E) 32 | | |
| 32-1-1 | › 32-4 | 4 bar |
| 32-5-2 | › 32-10 | 10 bar |
| 32-11 | › 32-14 | 15 bar |
| CR(E), CRN(E) 45 | | |
| 45-1-1 | › 45-2 | 4 bar |
| 45-3-2 | › 45-5 | 10 bar |
| 45-6-2 | › 45-13-2 | 15 bar |
| CR(E), CRN(E) 64 | | |
| 64-1-1 | › 64-2-2 | 4 bar |
| 64-2-1 | › 64-4-2 | 10 bar |
| 64-4-1 | › 64-8-1 | 15 bar |
| CR(E), CRN(E) 90 | | |
| 90-1-1 | › 90-1 | 4 bar |
| 90-2-2 | › 90-3-2 | 10 bar |
| 90-3 | › 90-6 | 15 bar |
| CR, CRN 120 | | |
| 120-1 | › 120-2-1 | 10 bar |
| 120-2 | › 120-5-1 | 15 bar |
| 120-6-1 | › 120-7 | 20 bar |
| CR, CRN 150 | | |
| 150-1-1 | › 150-1 | 10 bar |
| 150-2-1 | › 150-4-2 | 15 bar |
| 150-5-2 | › 150-6 | 20 bar |

Examples of operating and inlet pressures

The values for operating and inlet pressures shown in the table should not be considered individually but should always be compared, see the following examples:

Example 1:

The following pump type has been selected:
CR 5-16 A-A-A

Max. operating pressure: **16 bar**

Max. inlet pressure: **10 bar**

Discharge pressure against a closed valve: **10.6 bar**, see page 37.

This pump is **not** allowed to start at an inlet pressure of 10 bar, but at an inlet pressure of $16.0 - 10.6 = 5.4$ bar.

Example 2:

The following pump type has been selected:
CR 10-2 A-A-A

Max. operating pressure: **16 bar**

Max. inlet pressure: **8.0 bar**

Discharge pressure against a closed valve: **2.0 bar**, see page 41.

This pump is allowed to start at an inlet pressure of 8.0 bar, as the discharge pressure against a closed valve is only 2.0 bar, which results in an operating pressure of $8.0 + 2.0 = 10.0$ bar. On the contrary, the max. operating pressure of this pump is limited to 16.0 bar, as a higher operating pressure will require an inlet pressure of more than 8.0 bar.

In case the inlet or operating pressure exceeds the pressure permitted, see "Variants on request", page 89.

Selection of pumps

Selection of pumps should be based on these elements:

- the duty point of the pump (see page 19)
- dimensional data such as pressure loss as a result of height differences, friction loss in the pipework, pump efficiency etc. (see page 19)
- pump materials (see page 21)
- pump connections (see page 21)
- shaft seal (see page 21).

Duty point of the pump

From a duty point it is possible to select a pump on the basis of the curve charts shown in "Performance curves/technical data" from page 24.

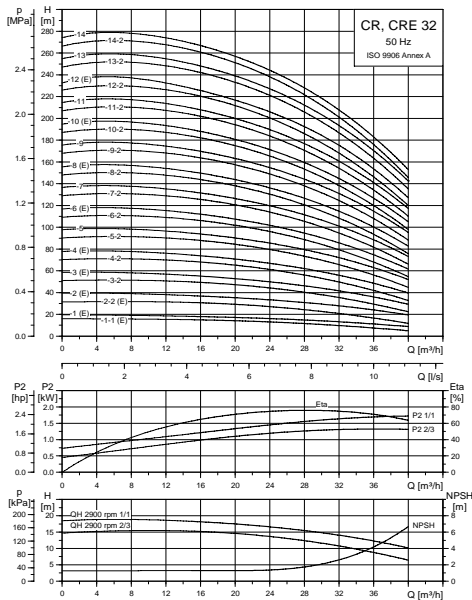


Fig. 15 Example of a curve chart

Dimensional data

When sizing a pump, take the following factors into account:

- Required flow and pressure at the draw-off point.
- Pressure loss as a result of height differences (H_{geo}).
- Friction loss in the pipework (H_f). It may be necessary to account for pressure loss in connection with long pipes, bends or valves, etc.
- Best efficiency at the estimated duty point.
- NPSH value. For calculation of the NPSH value, see "Minimum inlet pressure, NPSH, page 22.

Pump efficiency

Before determining the best efficiency point, the operation pattern of the pump needs to be identified. Is the pump expected to operate at the **same** duty point, then select a CR pump which is operating at a duty point corresponding with the best efficiency of the pump.

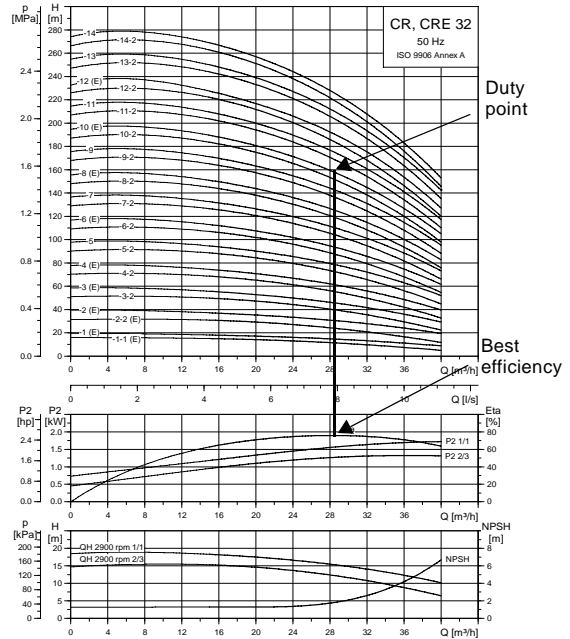


Fig. 16 Example of a CR pump's duty point

As the pump is sized on the basis of the highest possible flow, it is important always to have the duty point to the right on the efficiency curve (eta) in order to keep efficiency high when the flow drops.

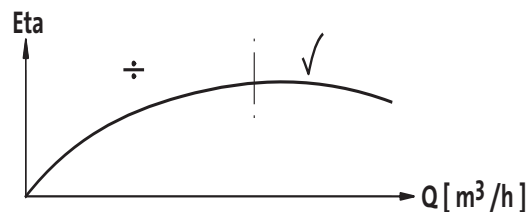


Fig. 17 Best efficiency

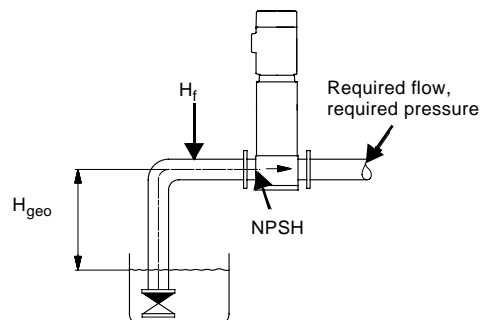


Fig. 18 Dimensional data

TM02 7302 3103

TM02 7302 3103

TM00 9190 1303

TM02 6711 1403

Normally, E-pumps are used in applications characterized by a **variable** flow. Consequently, it is not possible to select a pump that is constantly operating at optimum efficiency.

In order to achieve optimum operating economy, the pump should be selected on the basis of the following criteria:

- The max. duty point required should be as close as possible to the QH curve of the pump.
- The required duty point should be positioned so that P_2 is close to the max. point of the QH curve.

Between the min. and max. performance curve, E-pumps have an infinite number of performance curves each representing a specific speed. Therefore it may not be possible to select a duty point close to the 100 % curve.

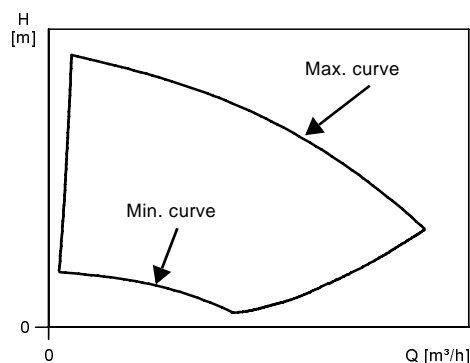


Fig. 19 Min. and max. performance curves

In situations where it is not possible to select a duty point close to the 100 % curve the below affinity equations can be used. The head (H), the flow (Q) and the input power (P) are all the appropriate variables for the motor speed (n).

Note:

The approximated formulas apply on condition that the system characteristic remains unchanged for n_n and n_x and that it is based on the formula $H = k \times Q^2$, where k is a constant.

The power equation implies that the pump efficiency is unchanged at the two speeds. In practice, this is **not** quite correct.

To obtain a precise calculation of the power savings resulting from a reduction of pump speed, take into account the efficiencies of the frequency converter and the motor.

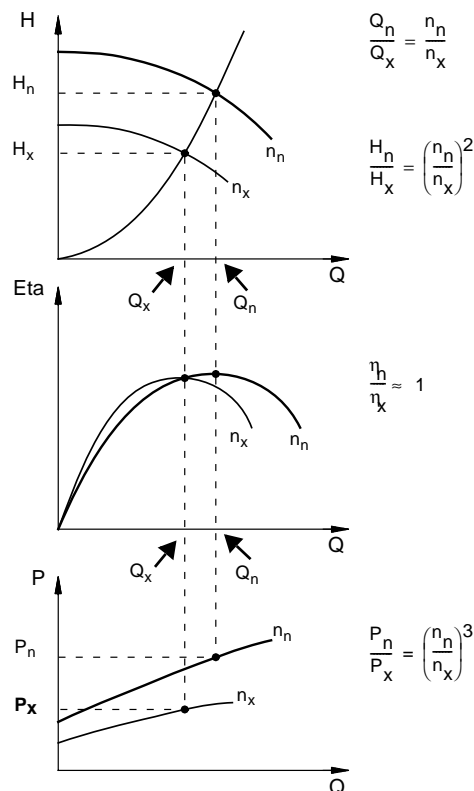


Fig. 20 Affinity equations

Legend

- H_n Rated head in metres
- H_x Current head in metres
- Q_n Rated flow in m^3/h
- Q_x Current flow in m^3/h
- n_n Rated motor speed in min^{-1} ($n_n = 2900 min^{-1}$)
- n_x Current motor speed in min^{-1}
- η_h Rated efficiency in %
- η_k Current efficiency in %

WinCAPS and WebCAPS

WinCAPS and WebCAPS are both selection programmes offered by Grundfos.

The two programmes make it possible to calculate an E-pump's specific duty point and energy consumption.

By entering the dimensional data of the pump, WinCAPS and WebCAPS can calculate the exact duty point and energy consumption. For further information, see pages 90 and 91.

Pump material

Select the material variant (CR(E), CRI(E), CRN(E)) on the basis of the liquid to be pumped. The product range covers the following three basic types.

- CR(E), CRI(E)
Use CR(E), CRI(E) pumps for clean, non-aggressive liquids such as potable water and oils.
- CRN(E)
Use CRN(E) pumps for industrial liquids and acids. See "List of pumped liquids", page 78, or contact Grundfos.

For saline or chloride-containing liquids such as sea water, CRT(E) pumps of titanium are available.

Pump connections

Selection of pump connection depends on the rated pressure and pipework. To meet any requirement, the CR(E), CRI(E) and CRN(E) pumps offer a wide range of flexible connections such as:

- oval flange (BSP)
- DIN flange
- PJE coupling
- clamp coupling
- union (+GF+)
- other connections on request.

Shaft seal

As standard, the CR(E) range is fitted with a Grundfos shaft seal (cartridge type) suitable for the most common applications.

These key parameters **must** be taken into account when selecting the shaft seal:

- type of pumped liquid
- liquid temperature
- maximum pressure.

Grundfos offers a wide range of shaft seal variants to meet specific demands. See "List of pumped liquids", page 78.

Inlet pressure and operating pressure

Do **not** exceed the limit values stated on pages 17 and 18 as regards these pressures:

- maximum inlet pressure
- maximum operating pressure.

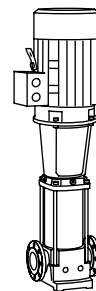


Fig. 21 CR pump

TM01 2100 1198

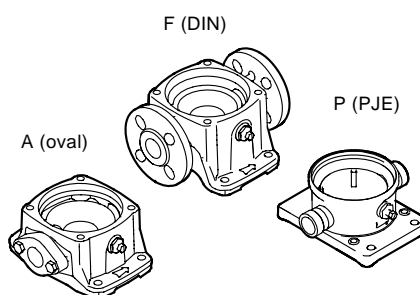


Fig. 22 Pump connections

TM02 1201 0601

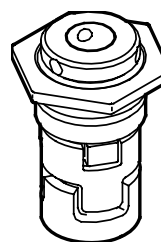


Fig. 23 Shaft seal (cartridge type)

TM02 0538 4800

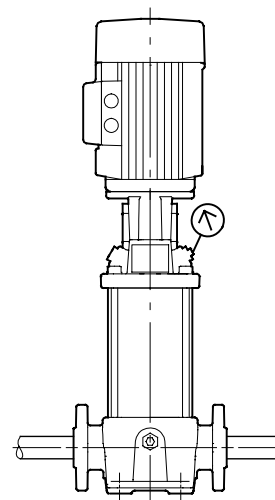


Fig. 24 Inlet and operating pressure

TM02 1204 060

Minimum inlet pressure, NPSH

Calculation of the inlet pressure "H" is recommended in these situations:

- The liquid temperature is high.
- The flow is significantly higher than the rated flow.
- Water is drawn from depths.
- Water is drawn through long pipes.
- Inlet conditions are poor.

To avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump. The maximum suction lift "H" in metres head can be calculated as follows:

$$H = p_b \times 10.2 - \text{NPSH} - H_f - H_v - H_s$$

p_b = Barometric pressure in bar.
(Barometric pressure can be set to 1 bar).
In closed systems, p_b indicates the system pressure in bar.

NPSH = Net Positive Suction Head in metres head.
(To be read from the NPSH curve at the highest flow the pump will be delivering.)

H_f = Friction loss in suction pipe in metres head.
(At the highest flow the pump will be delivering.)

H_v = Vapour pressure in metres head.
(To be read from the vapour pressure scale.
" H_v " depends on the liquid temperature " T_m ".)

H_s = Safety margin = minimum 0.5 metres head.

If the "H" calculated is positive, the pump can operate at a suction lift of maximum "H" metres head.

If the "H" calculated is negative, an inlet pressure of minimum "H" metres head is required.

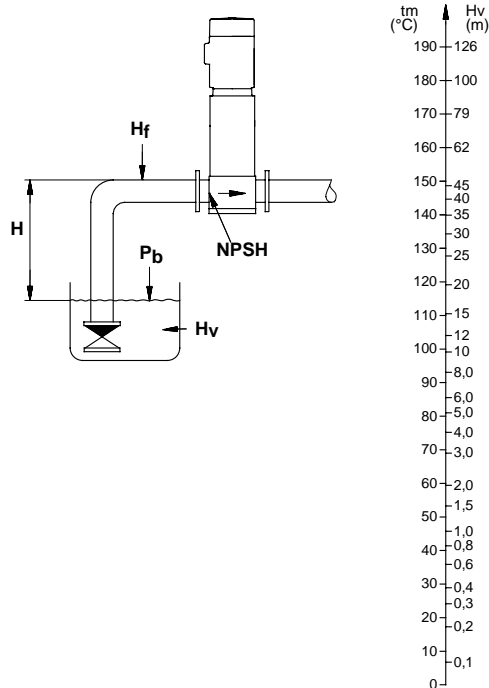


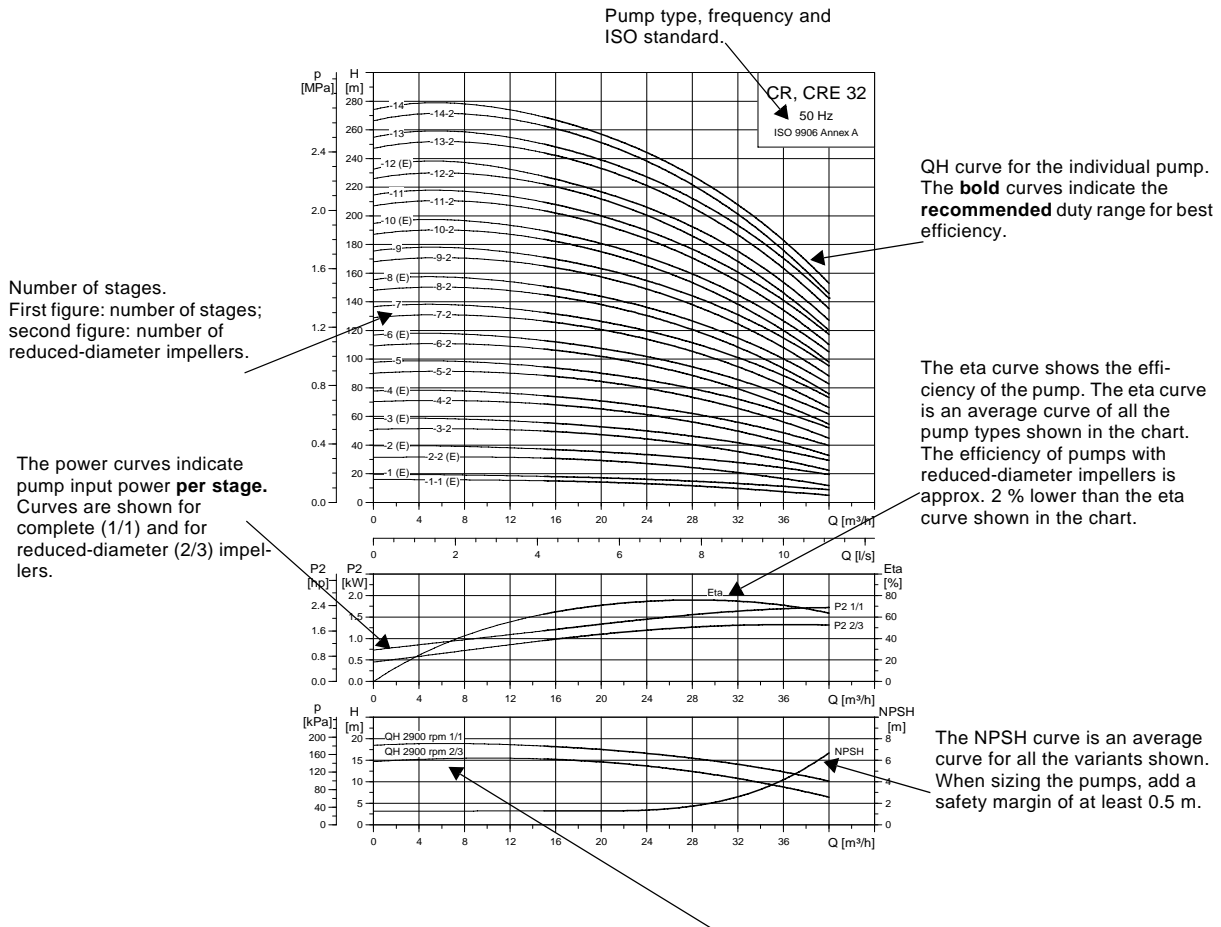
Fig. 25 Minimum inlet pressure - NPSH

Note: To avoid cavitation, **never** select a pump with a duty point too far to the right on the NPSH curve.

Always check the NPSH value of the pump at the highest possible flow.

TM02 7439 3-403

How to read the curve charts



QH curve for each individual impeller. Curves for complete (1/1) and reduced-diameter (2/3) impellers are shown.

Fig. 26 How to read the curve charts

TM02 7302 3103

Guidelines to performance curves

The guidelines below apply to the curves shown on the following pages:

- Tolerances to ISO 9906, Annex A, if indicated.
- The motors used for the measurements are standard Grundfos motors (MG or MGE).
- Measurements have been made with airless water at a temperature of 20 °C.
- The curves apply to the following kinematic viscosity: $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt).
- Due to the risk of overheating, the pumps should not be used at a flow below the minimum flow rate.
- The QH curves apply to a rated motor speed of 2900 min^{-1} . All curves are based on current motor speeds.

The curve below shows the minimum flow rate as a percentage of the nominal flow rate in relation to the liquid temperature. The dotted line shows a CR pump fitted with an air-cooled top assembly.

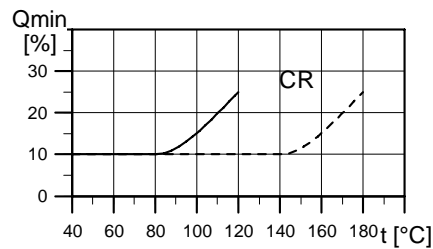
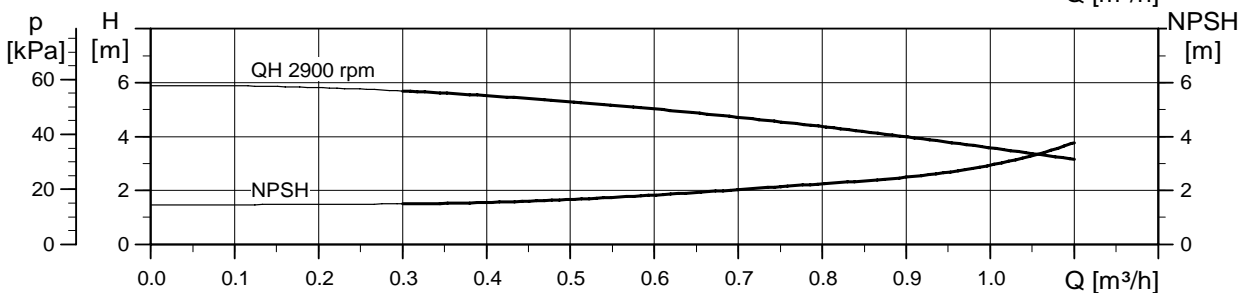
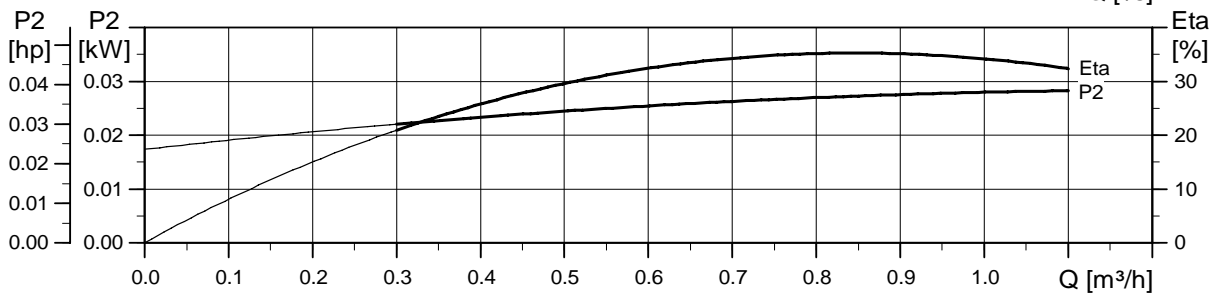
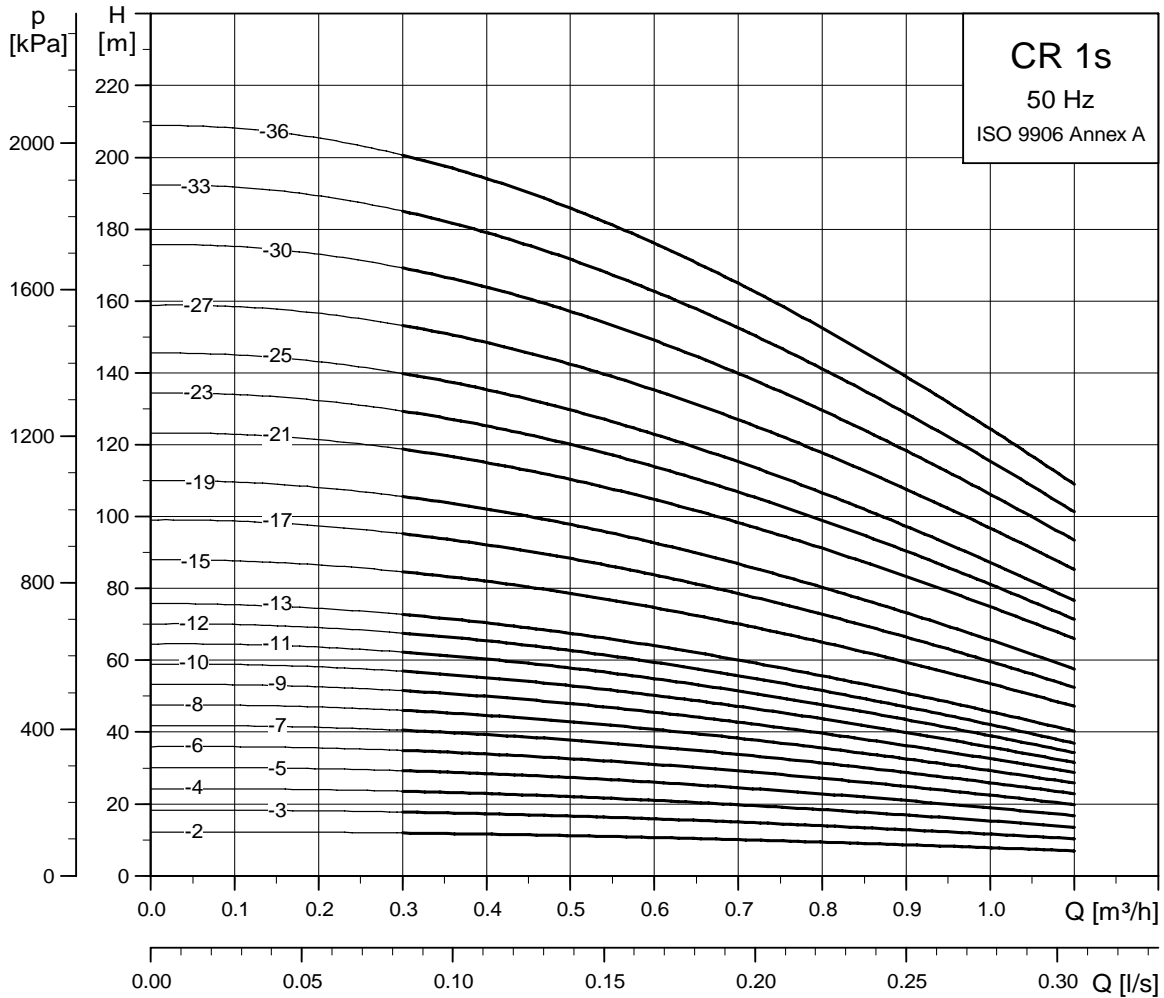


Fig. 27 Minimum flow rate

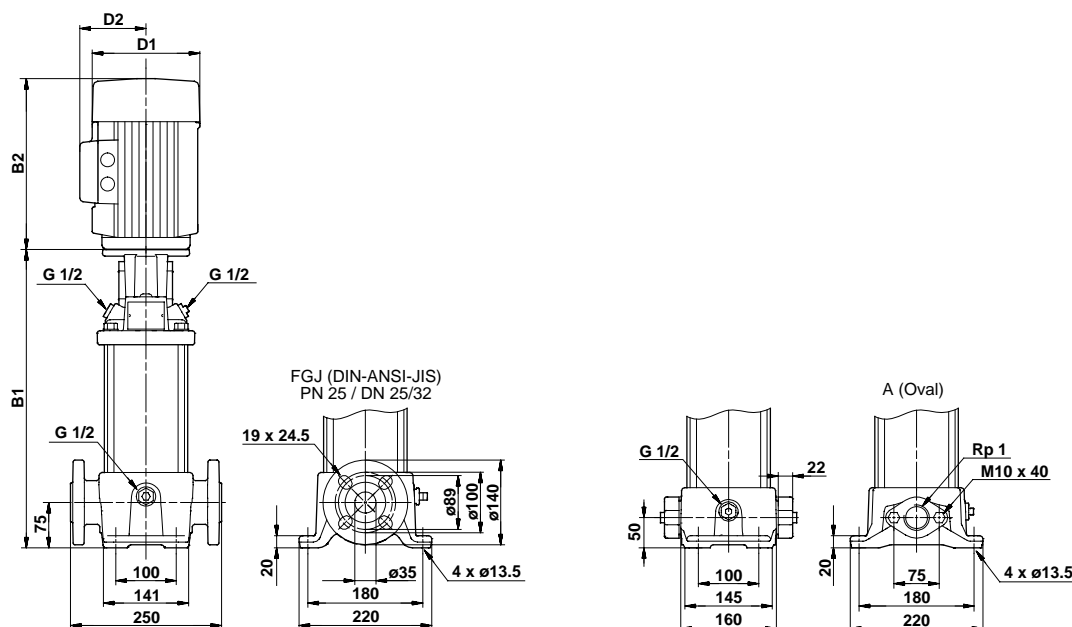
TM01 2816 0303

CR 1s



TM02 7424 3605

Dimensional sketch

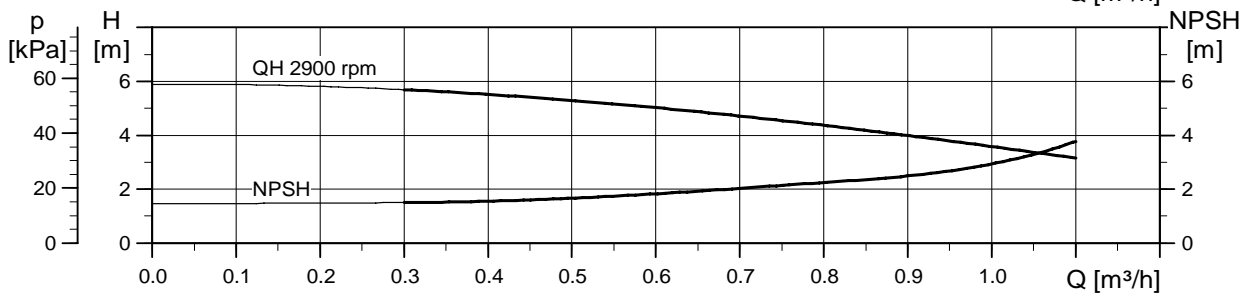
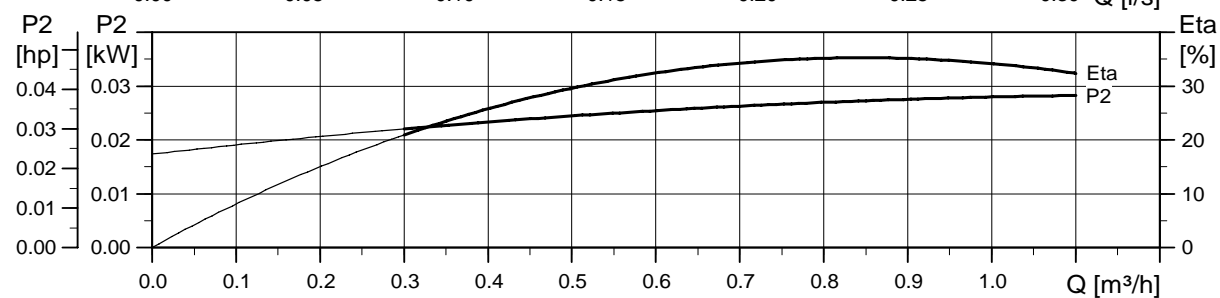
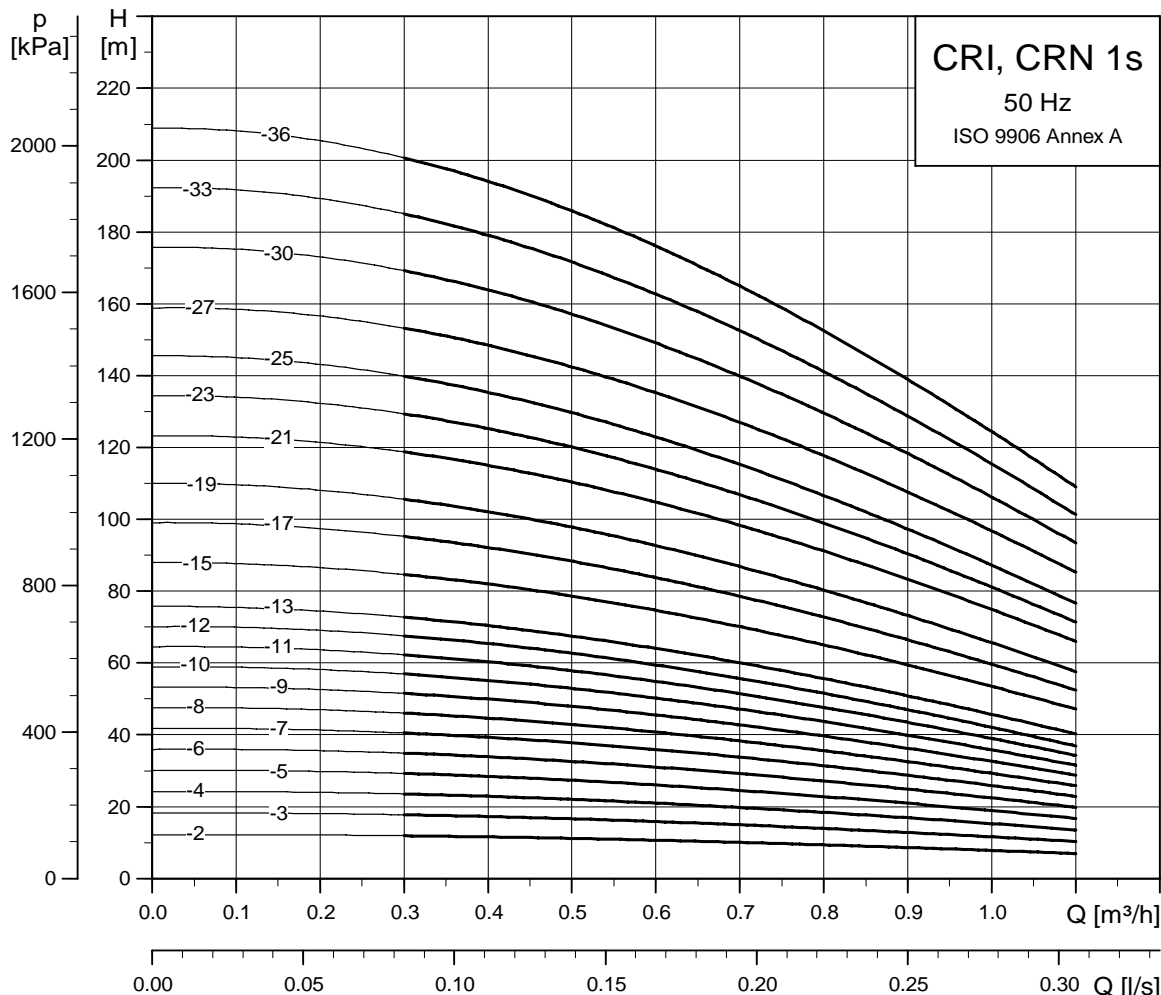


TM03 1721 2805

Dimensions and weights

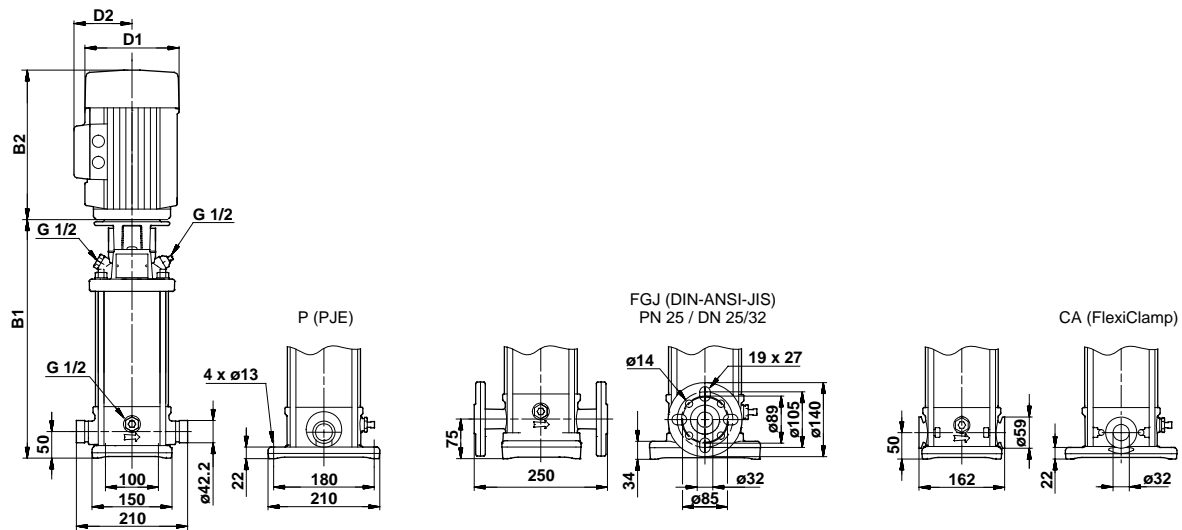
| Pump type | Motor P_2 [kW] | Dimension [mm] | | | | | Net weight [kg] | | |
|-----------|------------------|----------------|-------|------------|-------|-----|-----------------|-------------|------------|
| | | Oval flange | | DIN flange | | D1 | D2 | Oval flange | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | |
| CR 1s-2 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 |
| CR 1s-3 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 |
| CR 1s-4 | 0.37 | 272 | 463 | 297 | 488 | 141 | 109 | 19 | 23 |
| CR 1s-5 | 0.37 | 290 | 481 | 315 | 506 | 141 | 109 | 19 | 24 |
| CR 1s-6 | 0.37 | 308 | 499 | 333 | 524 | 141 | 109 | 19 | 24 |
| CR 1s-7 | 0.37 | 326 | 517 | 351 | 542 | 141 | 109 | 20 | 24 |
| CR 1s-8 | 0.37 | 344 | 535 | 369 | 560 | 141 | 109 | 20 | 25 |
| CR 1s-9 | 0.37 | 362 | 553 | 387 | 578 | 141 | 109 | 21 | 25 |
| CR 1s-10 | 0.37 | 380 | 571 | 405 | 596 | 141 | 109 | 21 | 26 |
| CR 1s-11 | 0.37 | 398 | 589 | 423 | 614 | 141 | 109 | 21 | 26 |
| CR 1s-12 | 0.37 | 416 | 607 | 441 | 632 | 141 | 109 | 22 | 26 |
| CR 1s-13 | 0.37 | 434 | 625 | 459 | 650 | 141 | 109 | 22 | 27 |
| CR 1s-15 | 0.55 | 470 | 661 | 495 | 686 | 141 | 109 | 24 | 28 |
| CR 1s-17 | 0.55 | 506 | 697 | 531 | 722 | 141 | 109 | 25 | 29 |
| CR 1s-19 | 0.55 | 542 | 733 | 567 | 758 | 141 | 109 | 25 | 30 |
| CR 1s-21 | 0.75 | 584 | 815 | 609 | 840 | 141 | 109 | 28 | 32 |
| CR 1s-23 | 0.75 | 620 | 851 | 645 | 876 | 141 | 109 | 29 | 33 |
| CR 1s-25 | 0.75 | 656 | 887 | 681 | 912 | 141 | 109 | 29 | 34 |
| CR 1s-27 | 1.1 | 692 | 923 | 717 | 948 | 141 | 109 | 32 | 37 |
| CR 1s-30 | 1.1 | - | - | 771 | 1002 | 141 | 109 | - | 38 |
| CR 1s-33 | 1.1 | - | - | 825 | 1056 | 141 | 109 | - | 39 |
| CR 1s-36 | 1.1 | - | - | 879 | 1110 | 141 | 109 | - | 41 |

CRI, CRN 1s



TM02 7425 3605

Dimensional sketch

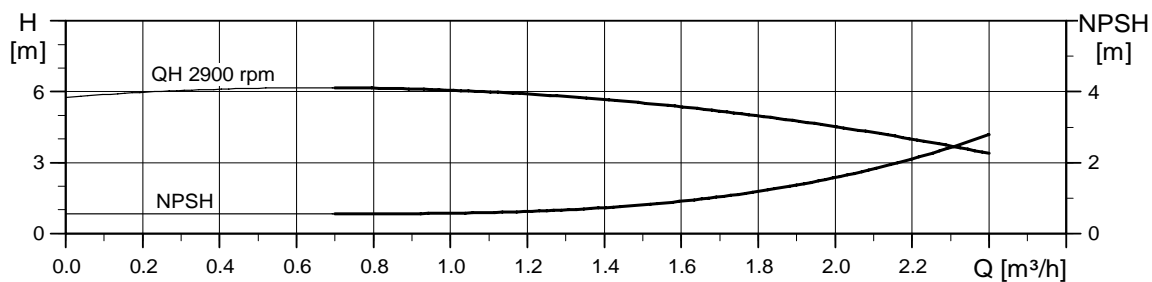
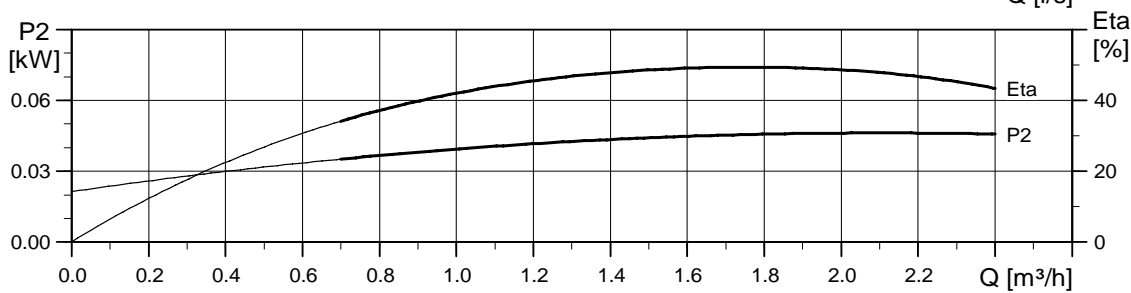
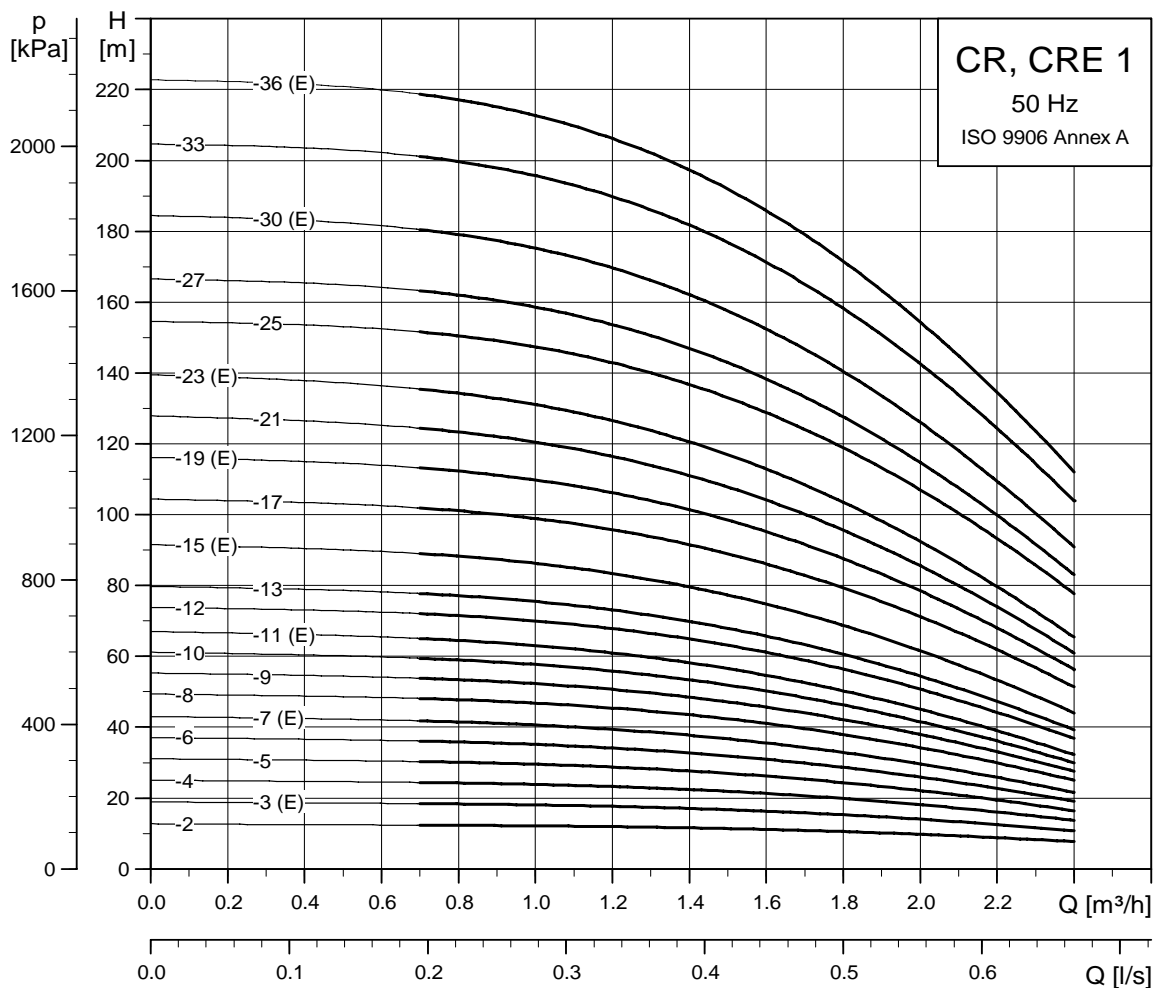


TM03 1722 2805

Dimensions and weights

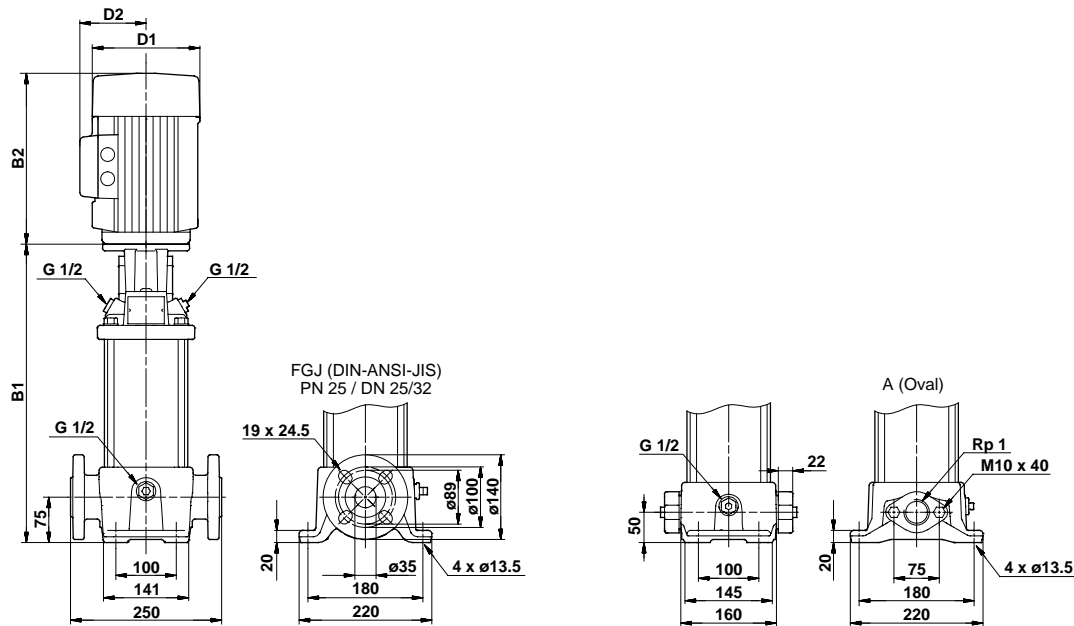
| Pump type | Motor P ₂ [kW] | Dimension [mm] | | | | | Net weight [kg] | | | |
|---------------|---------------------------|----------------|-------|------------|-------|-----|-----------------|--------|------------|--|
| | | PJE/CA | | DIN flange | | D1 | D2 | PJE/CA | DIN flange | |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CRI/CRN 1s-2 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 20 | |
| CRI/CRN 1s-3 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 21 | |
| CRI/CRN 1s-4 | 0.37 | 275 | 466 | 300 | 491 | 141 | 109 | 17 | 21 | |
| CRI/CRN 1s-5 | 0.37 | 293 | 484 | 318 | 509 | 141 | 109 | 17 | 21 | |
| CRI/CRN 1s-6 | 0.37 | 311 | 502 | 336 | 527 | 141 | 109 | 18 | 22 | |
| CRI/CRN 1s-7 | 0.37 | 329 | 520 | 354 | 545 | 141 | 109 | 18 | 22 | |
| CRI/CRN 1s-8 | 0.37 | 347 | 538 | 372 | 563 | 141 | 109 | 18 | 23 | |
| CRI/CRN 1s-9 | 0.37 | 365 | 556 | 390 | 581 | 141 | 109 | 19 | 23 | |
| CRI/CRN 1s-10 | 0.37 | 383 | 574 | 408 | 599 | 141 | 109 | 19 | 23 | |
| CRI/CRN 1s-11 | 0.37 | 401 | 592 | 426 | 617 | 141 | 109 | 19 | 24 | |
| CRI/CRN 1s-12 | 0.37 | 419 | 610 | 444 | 635 | 141 | 109 | 20 | 24 | |
| CRI/CRN 1s-13 | 0.37 | 437 | 628 | 462 | 653 | 141 | 109 | 20 | 25 | |
| CRI/CRN 1s-15 | 0.55 | 473 | 664 | 498 | 689 | 141 | 109 | 22 | 26 | |
| CRI/CRN 1s-17 | 0.55 | 509 | 700 | 534 | 725 | 141 | 109 | 23 | 27 | |
| CRI/CRN 1s-19 | 0.55 | 545 | 736 | 570 | 761 | 141 | 109 | 23 | 28 | |
| CRI/CRN 1s-21 | 0.75 | 587 | 818 | 612 | 843 | 141 | 109 | 26 | 31 | |
| CRI/CRN 1s-23 | 0.75 | 623 | 854 | 648 | 879 | 141 | 109 | 27 | 31 | |
| CRI/CRN 1s-25 | 0.75 | 659 | 890 | 684 | 915 | 141 | 109 | 28 | 32 | |
| CRI/CRN 1s-27 | 1.1 | 695 | 926 | 720 | 951 | 141 | 109 | 31 | 35 | |
| CRI/CRN 1s-30 | 1.1 | 749 | 980 | 774 | 1005 | 141 | 109 | 32 | 36 | |
| CRI/CRN 1s-33 | 1.1 | 803 | 1034 | 828 | 1059 | 141 | 109 | 33 | 37 | |
| CRI/CRN 1s-36 | 1.1 | 857 | 1088 | 882 | 1113 | 141 | 109 | 34 | 39 | |

CR, CRE 1



TM02 7290 3605

Dimensional sketch

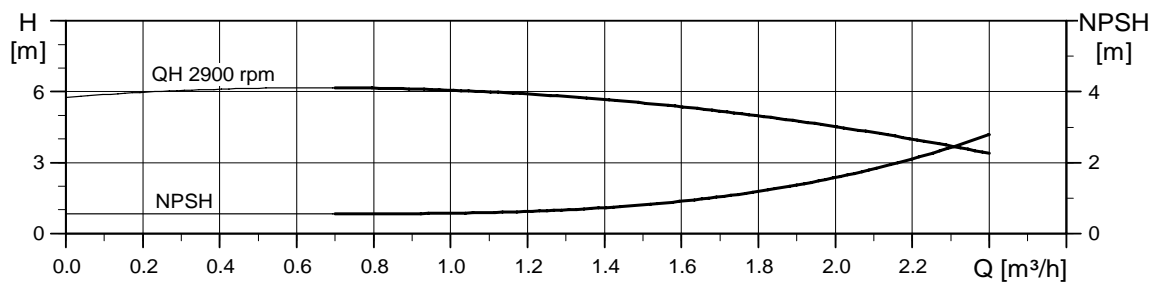
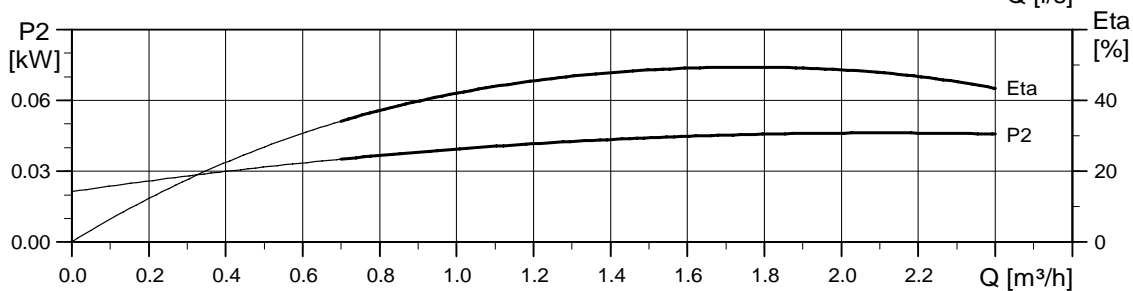
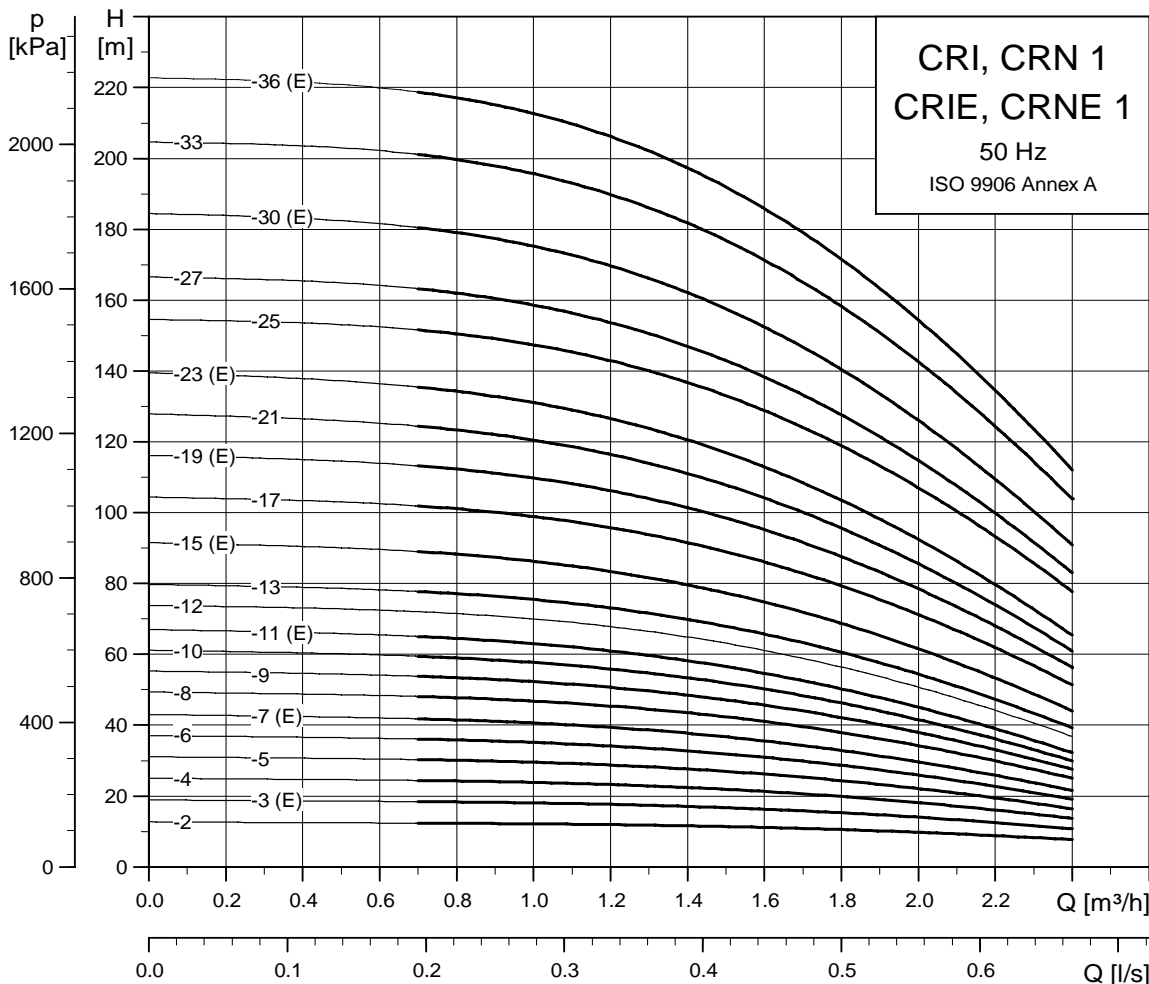


TM03 1721 2805

Dimensions and weights

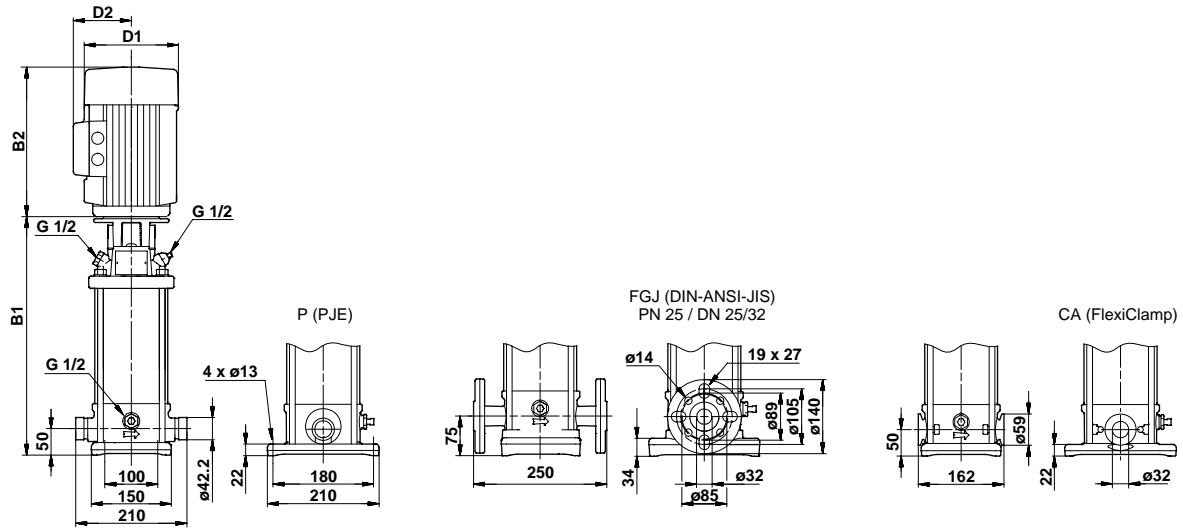
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | CRE | | | | | | | |
|------------|---------------------------|----------------|-------|------------|-------|-----------------|-----|-------------|------------|----------------|-------|------------|-------|-----------------|-----|-------------|------------|
| | | Dimension [mm] | | | | Net weight [kg] | | | | Dimension [mm] | | | | Net weight [kg] | | | |
| | | Oval flange | | DIN flange | | D1 | D2 | Oval flange | DIN flange | Oval flange | | DIN flange | | D1 | D2 | Oval flange | DIN flange |
| B1 | B1+B2 | B1 | B1+B2 | B1 | B1+B2 | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | |
| CR 1-2 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 | - | - | - | - | - | - | - | - |
| CR(E) 1-3 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 | 254 | 445 | 279 | 470 | 141 | 140 | 21 | 26 |
| CR 1-4 | 0.37 | 272 | 463 | 297 | 488 | 141 | 109 | 19 | 23 | - | - | - | - | - | - | - | - |
| CR 1-5 | 0.37 | 290 | 481 | 315 | 506 | 141 | 109 | 19 | 24 | - | - | - | - | - | - | - | - |
| CR 1-6 | 0.37 | 308 | 499 | 333 | 524 | 141 | 109 | 20 | 24 | - | - | - | - | - | - | - | - |
| CR(E) 1-7 | 0.37 | 326 | 517 | 351 | 542 | 141 | 109 | 20 | 25 | 326 | 517 | 351 | 542 | 141 | 140 | 23 | 27 |
| CR 1-8 | 0.55 | 344 | 535 | 369 | 560 | 141 | 109 | 21 | 26 | - | - | - | - | - | - | - | - |
| CR 1-9 | 0.55 | 362 | 553 | 387 | 578 | 141 | 109 | 21 | 26 | - | - | - | - | - | - | - | - |
| CR 1-10 | 0.55 | 380 | 571 | 405 | 596 | 141 | 109 | 22 | 26 | - | - | - | - | - | - | - | - |
| CR(E) 1-11 | 0.55 | 398 | 589 | 423 | 614 | 141 | 109 | 22 | 27 | 398 | 589 | 423 | 614 | 141 | 140 | 25 | 29 |
| CR 1-12 | 0.75 | 422 | 653 | 447 | 678 | 141 | 109 | 24 | 29 | - | - | - | - | - | - | - | - |
| CR 1-13 | 0.75 | 440 | 671 | 465 | 696 | 141 | 109 | 25 | 29 | - | - | - | - | - | - | - | - |
| CR(E) 1-15 | 0.75 | 476 | 707 | 501 | 732 | 141 | 109 | 26 | 30 | 476 | 707 | 501 | 732 | 178 | 167 | 29 | 33 |
| CR 1-17 | 1.1 | 512 | 743 | 537 | 768 | 141 | 109 | 29 | 33 | - | - | - | - | - | - | - | - |
| CR(E) 1-19 | 1.1 | 548 | 779 | 573 | 804 | 141 | 109 | 29 | 34 | 548 | 779 | 573 | 804 | 178 | 167 | 32 | 36 |
| CR 1-21 | 1.1 | 584 | 815 | 609 | 840 | 141 | 109 | 30 | 35 | - | - | - | - | - | - | - | - |
| CR(E) 1-23 | 1.1 | 620 | 851 | 645 | 876 | 141 | 109 | 31 | 36 | 620 | 851 | 645 | 876 | 178 | 167 | 33 | 38 |
| CR 1-25 | 1.5 | - | - | 697 | 978 | 178 | 110 | - | 44 | - | - | - | - | - | - | - | - |
| CR 1-27 | 1.5 | - | - | 733 | 1014 | 178 | 110 | - | 44 | - | - | - | - | - | - | - | - |
| CR(E) 1-30 | 1.5 | - | - | 787 | 1068 | 178 | 110 | - | 46 | - | - | 787 | 1068 | 178 | 167 | - | 52 |
| CR 1-33 | 2.2 | - | - | 841 | 1162 | 178 | 110 | - | 47 | - | - | - | - | - | - | - | - |
| CR(E) 1-36 | 2.2 | - | - | 895 | 1216 | 178 | 110 | - | 49 | - | - | 895 | 1216 | 178 | 167 | - | 59 |

CRI, CRN, CRIE, CRNE 1



TM02 7291 3605

Dimensional sketch

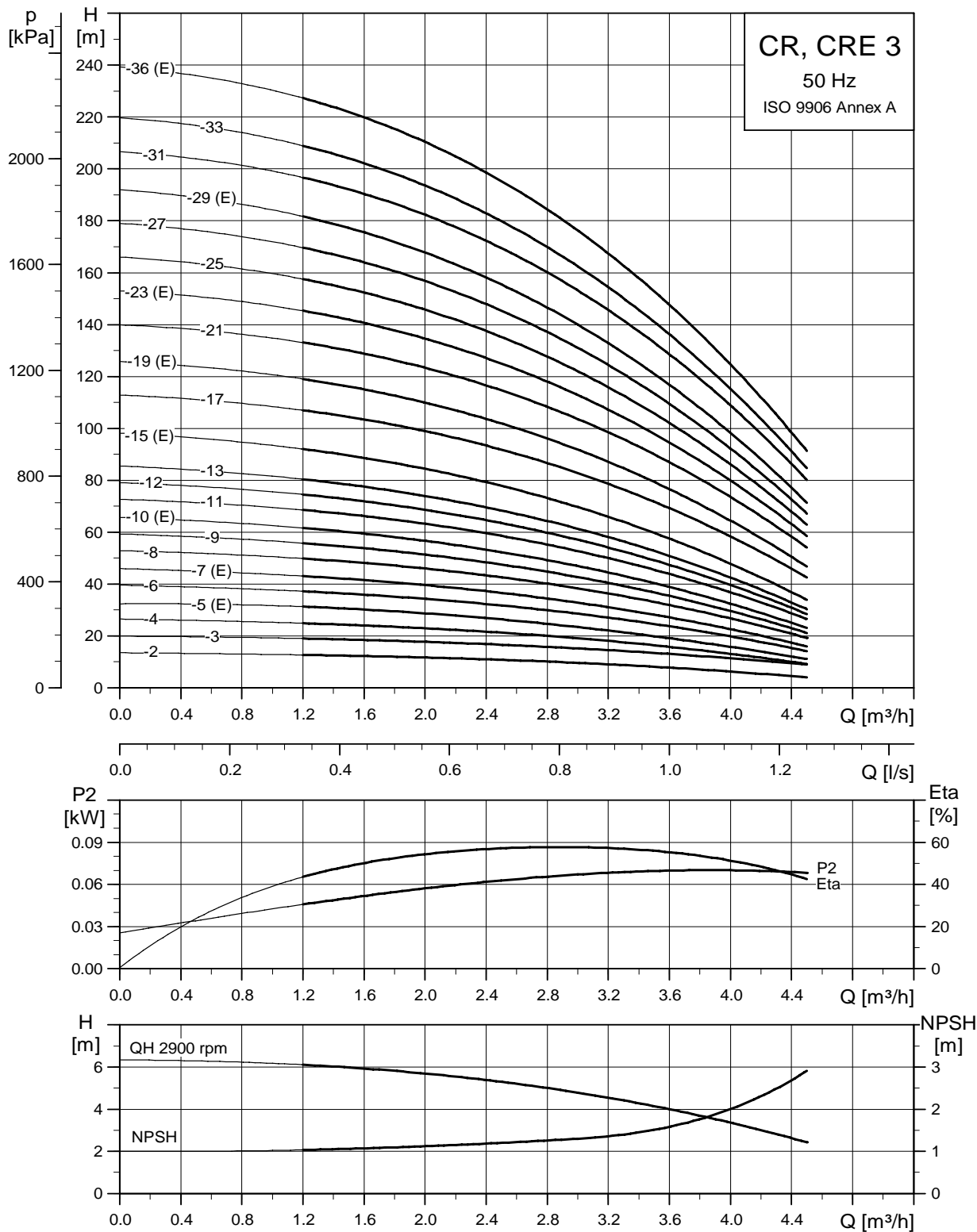


TM03 1722 2805

Dimensions and weights

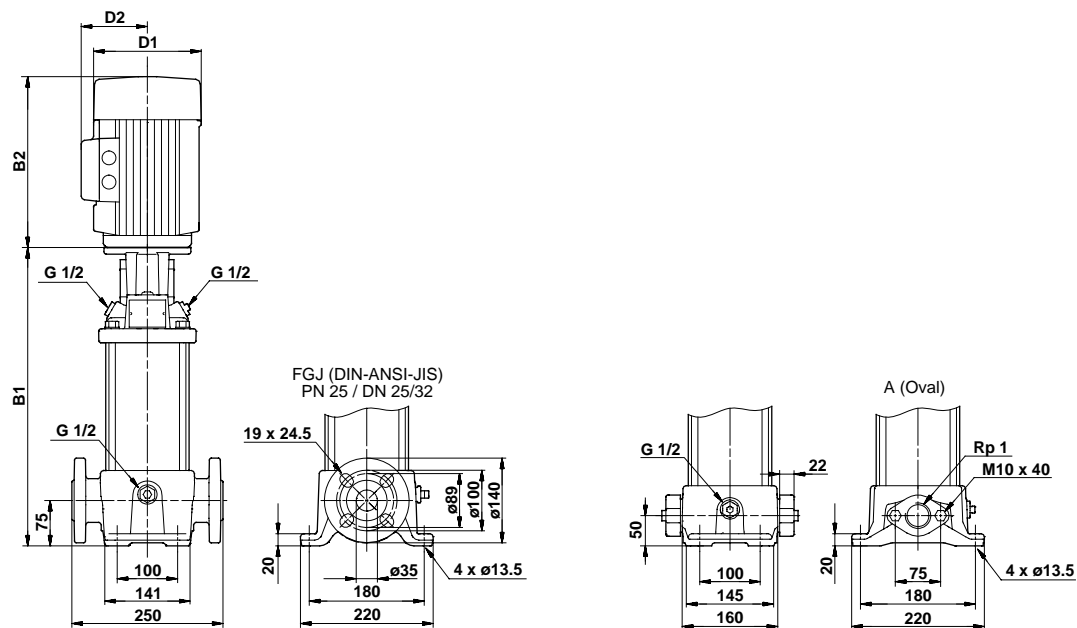
| Pump type | Motor P ₂ [kW] | CRI/CRN | | | | | | | | CRIE/CRNE | | | | | | | |
|--------------------|---------------------------|----------------|-------|------------|-------|-----------------|-----|--------|------------|----------------|-------|------------|-------|-----------------|-----|--------|------------|
| | | Dimension [mm] | | | | Net weight [kg] | | | | Dimension [mm] | | | | Net weight [kg] | | | |
| | | PJE/CA | | DIN flange | | D1 | D2 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | PJE/CA | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | |
| CRI/CRN 1-2 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 20 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-3 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 21 | 257 | 448 | 282 | 473 | 141 | 140 | 19 | 23 |
| CRI/CRN 1-4 | 0.37 | 275 | 466 | 300 | 491 | 141 | 109 | 17 | 21 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-5 | 0.37 | 293 | 484 | 318 | 509 | 141 | 109 | 17 | 21 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-6 | 0.37 | 311 | 502 | 336 | 527 | 141 | 109 | 18 | 22 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-7 | 0.37 | 329 | 520 | 354 | 545 | 141 | 109 | 18 | 22 | 329 | 520 | 354 | 545 | 141 | 140 | 21 | 25 |
| CRI/CRN 1-8 | 0.55 | 347 | 538 | 372 | 563 | 141 | 109 | 19 | 23 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-9 | 0.55 | 365 | 556 | 390 | 581 | 141 | 109 | 20 | 24 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-10 | 0.55 | 383 | 574 | 408 | 599 | 141 | 109 | 20 | 24 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-11 | 0.55 | 401 | 592 | 426 | 617 | 141 | 109 | 20 | 24 | 401 | 592 | 426 | 617 | 141 | 140 | 23 | 27 |
| CRI/CRN 1-12 | 0.75 | 425 | 656 | 450 | 681 | 141 | 109 | 23 | 27 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-13 | 0.75 | 443 | 674 | 468 | 699 | 141 | 109 | 23 | 28 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-15 | 0.75 | 479 | 710 | 504 | 735 | 141 | 109 | 24 | 28 | 479 | 710 | 504 | 735 | 178 | 167 | 27 | 31 |
| CRI/CRN 1-17 | 1.1 | 515 | 746 | 540 | 771 | 141 | 109 | 27 | 31 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-19 | 1.1 | 551 | 782 | 576 | 807 | 141 | 109 | 28 | 32 | 551 | 782 | 576 | 807 | 178 | 167 | 30 | 34 |
| CRI/CRN 1-21 | 1.1 | 587 | 818 | 612 | 843 | 141 | 109 | 29 | 33 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-23 | 1.1 | 623 | 854 | 648 | 879 | 141 | 109 | 30 | 34 | 623 | 854 | 648 | 879 | 178 | 167 | 32 | 36 |
| CRI/CRN 1-25 | 1.5 | 675 | 956 | 700 | 981 | 178 | 110 | 37 | 41 | - | - | - | - | - | - | - | - |
| CRI/CRN 1-27 | 1.5 | 711 | 992 | 736 | 1017 | 178 | 110 | 38 | 42 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-30 | 1.5 | 765 | 1046 | 790 | 1071 | 178 | 110 | 39 | 43 | 765 | 1046 | 790 | 1071 | 178 | 167 | 46 | 50 |
| CRI/CRN 1-33 | 2.2 | 819 | 1140 | 844 | 1165 | 178 | 110 | 41 | 45 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 1-36 | 2.2 | 873 | 1194 | 898 | 1219 | 178 | 110 | 42 | 46 | 873 | 1194 | 898 | 1219 | 178 | 167 | 52 | 56 |

CR, CRE 3



TM02 7292 3605

Dimensional sketch

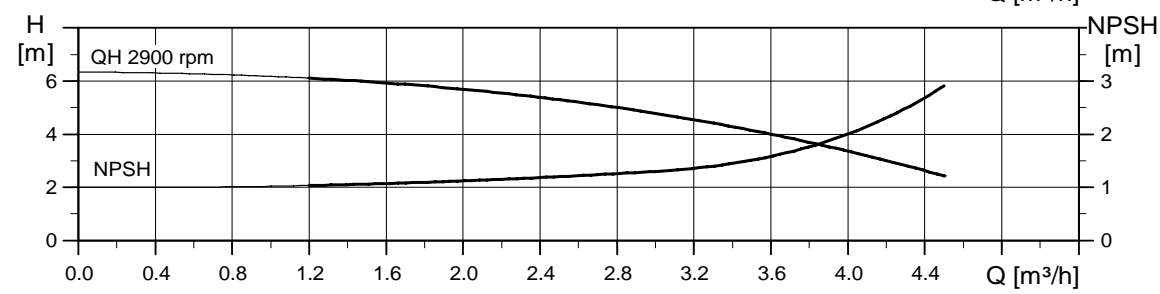
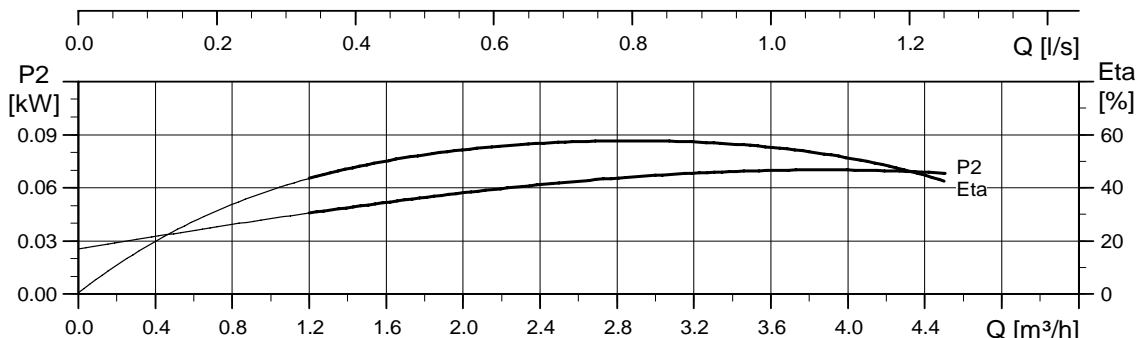
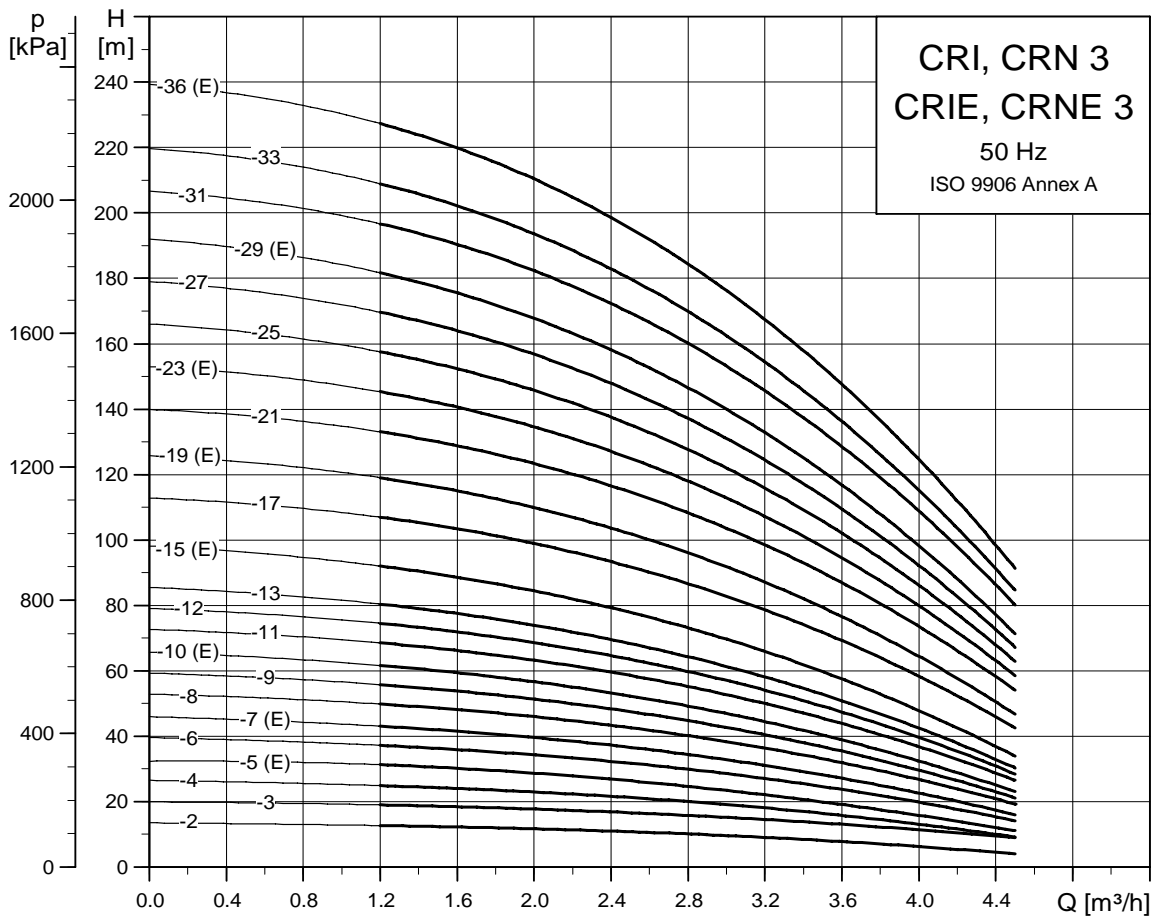


TM03 1721 2805

Dimensions and weights

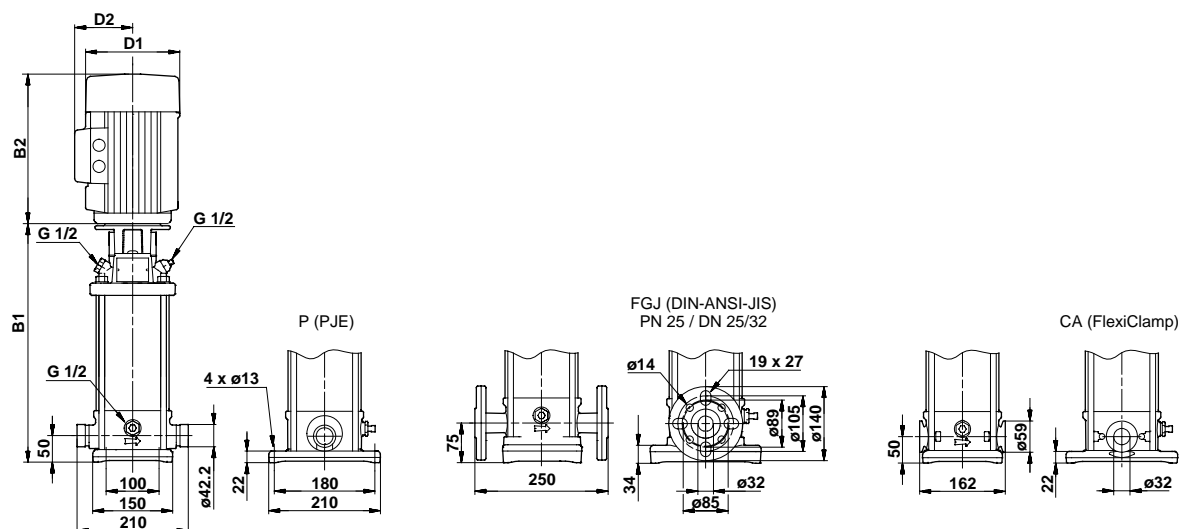
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | CRE | | | | | | | |
|------------|---------------------------|----------------|-------|------------|-------|-----------------|-----|-------------|------------|----------------|-------|------------|-------|-----------------|-----|-------------|------------|
| | | Dimension [mm] | | | | Net weight [kg] | | | | Dimension [mm] | | | | Net weight [kg] | | | |
| | | Oval flange | | DIN flange | | D1 | D2 | Oval flange | DIN flange | Oval flange | | DIN flange | | D1 | D2 | Oval flange | DIN flange |
| B1 | B1+B2 | B1 | B1+B2 | B1 | B1+B2 | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | |
| CR 3-2 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 | - | - | - | - | - | - | - | - |
| CR 3-3 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | 18 | 23 | - | - | - | - | - | - | - | - |
| CR 3-4 | 0.37 | 272 | 463 | 297 | 488 | 141 | 109 | 19 | 23 | - | - | - | - | - | - | - | - |
| CR(E) 3-5 | 0.37 | 290 | 481 | 315 | 506 | 141 | 109 | 19 | 24 | 290 | 481 | 315 | 506 | 141 | 140 | 22 | 27 |
| CR 3-6 | 0.55 | 308 | 499 | 333 | 524 | 141 | 109 | 20 | 25 | - | - | - | - | - | - | - | - |
| CR(E) 3-7 | 0.55 | 326 | 517 | 351 | 542 | 141 | 109 | 21 | 25 | 326 | 517 | 351 | 542 | 141 | 140 | 23 | 28 |
| CR 3-8 | 0.75 | 350 | 581 | 375 | 606 | 141 | 109 | 23 | 27 | - | - | - | - | - | - | - | - |
| CR 3-9 | 0.75 | 368 | 599 | 393 | 624 | 141 | 109 | 23 | 28 | - | - | - | - | - | - | - | - |
| CR(E) 3-10 | 0.75 | 386 | 617 | 411 | 642 | 141 | 109 | 24 | 28 | 386 | 617 | 411 | 642 | 178 | 167 | 27 | 31 |
| CR 3-11 | 1.1 | 404 | 635 | 429 | 660 | 141 | 109 | 26 | 31 | - | - | - | - | - | - | - | - |
| CR 3-12 | 1.1 | 422 | 653 | 447 | 678 | 141 | 109 | 26 | 31 | - | - | - | - | - | - | - | - |
| CR 3-13 | 1.1 | 440 | 671 | 465 | 696 | 141 | 109 | 27 | 31 | - | - | - | - | - | - | - | - |
| CR(E) 3-15 | 1.1 | 476 | 707 | 501 | 732 | 141 | 109 | 28 | 32 | 476 | 707 | 501 | 732 | 178 | 167 | 30 | 35 |
| CR 3-17 | 1.5 | 528 | 809 | 553 | 834 | 178 | 110 | 36 | 40 | - | - | - | - | - | - | - | - |
| CR(E) 3-19 | 1.5 | 564 | 845 | 589 | 870 | 178 | 110 | 37 | 41 | 564 | 845 | 589 | 870 | 178 | 167 | 43 | 48 |
| CR 3-21 | 2.2 | 600 | 921 | 625 | 946 | 178 | 110 | 38 | 42 | - | - | - | - | - | - | - | - |
| CR(E) 3-23 | 2.2 | 636 | 957 | 661 | 982 | 178 | 110 | 39 | 43 | 636 | 957 | 661 | 982 | 178 | 167 | 49 | 54 |
| CR 3-25 | 2.2 | - | - | 697 | 1018 | 178 | 110 | - | 44 | - | - | - | - | - | - | - | - |
| CR 3-27 | 2.2 | - | - | 733 | 1054 | 178 | 110 | - | 45 | - | - | - | - | - | - | - | - |
| CR(E) 3-29 | 2.2 | - | - | 769 | 1090 | 178 | 110 | - | 46 | - | - | 769 | 1090 | 178 | 167 | - | 56 |
| CR 3-31 | 3 | - | - | 809 | 1144 | 198 | 120 | - | 51 | - | - | - | - | - | - | - | - |
| CR 3-33 | 3 | - | - | 845 | 1180 | 198 | 120 | - | 51 | - | - | - | - | - | - | - | - |
| CR(E) 3-36 | 3 | - | - | 899 | 1234 | 198 | 120 | - | 53 | - | - | 899 | 1234 | 198 | 177 | - | 63 |

CRI, CRN, CRIE, CRNE 3



TM02 7293 3605

Dimensional sketch

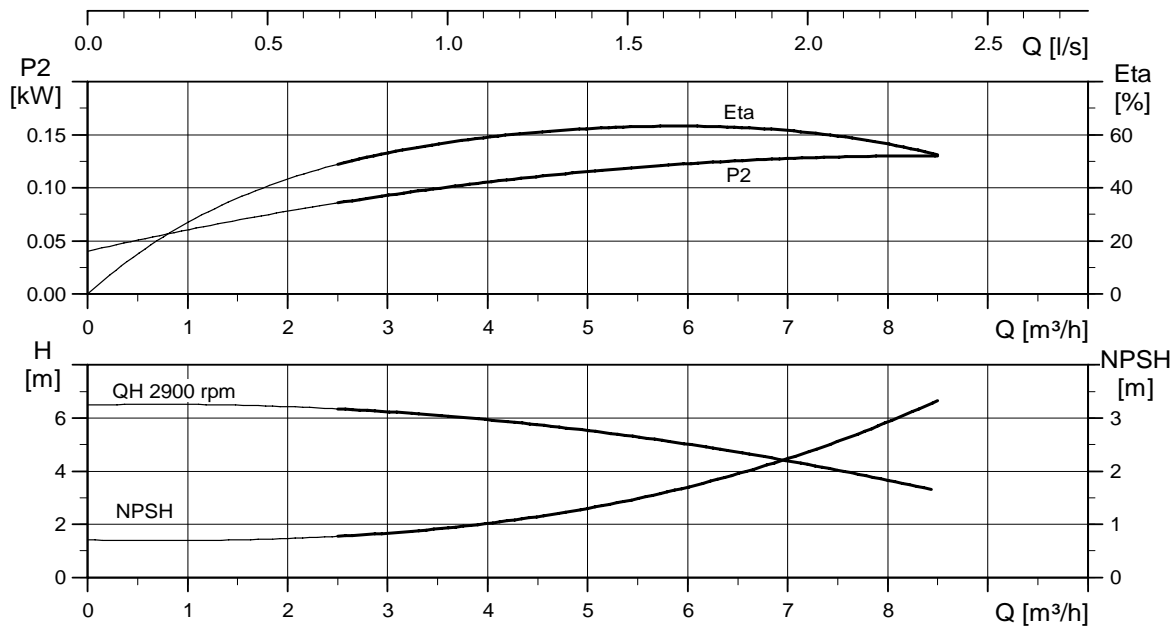
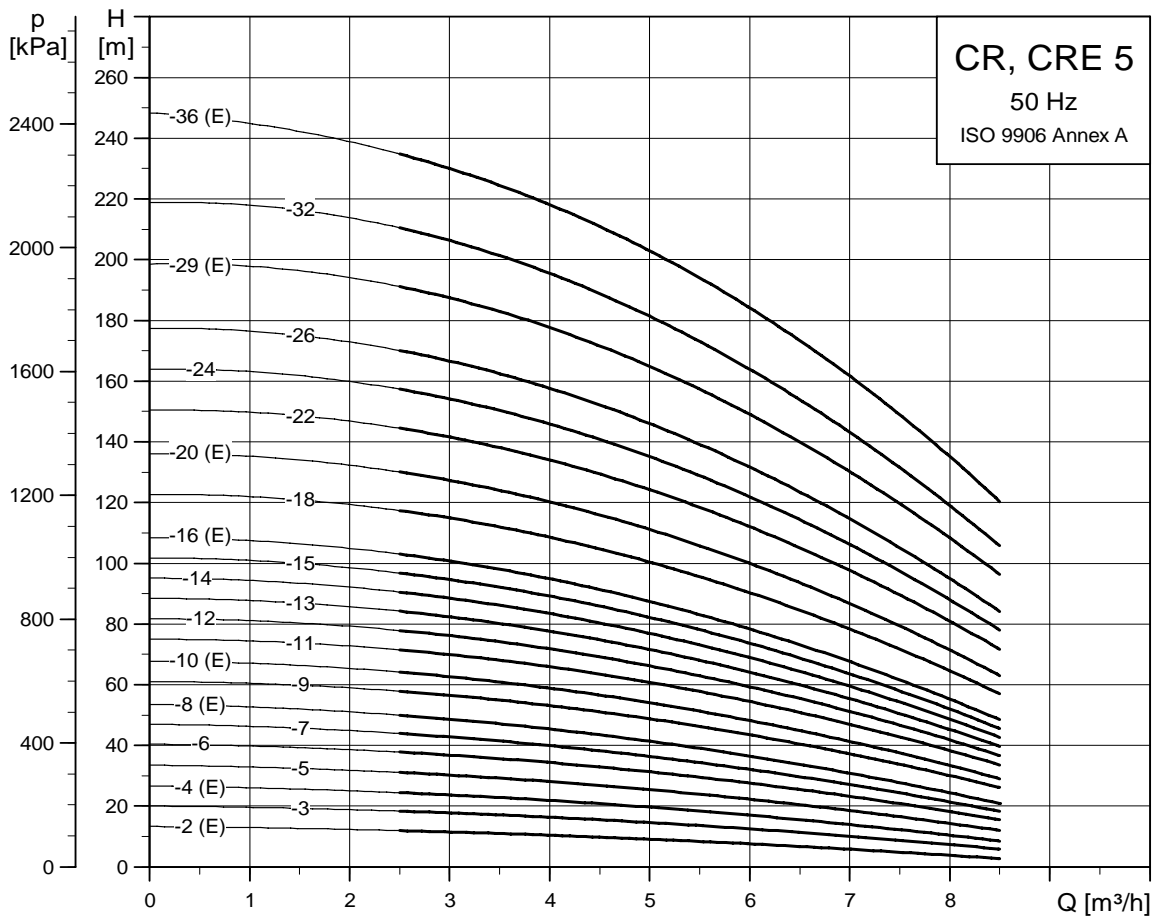


TM03 1722 2805

Dimensions and weights

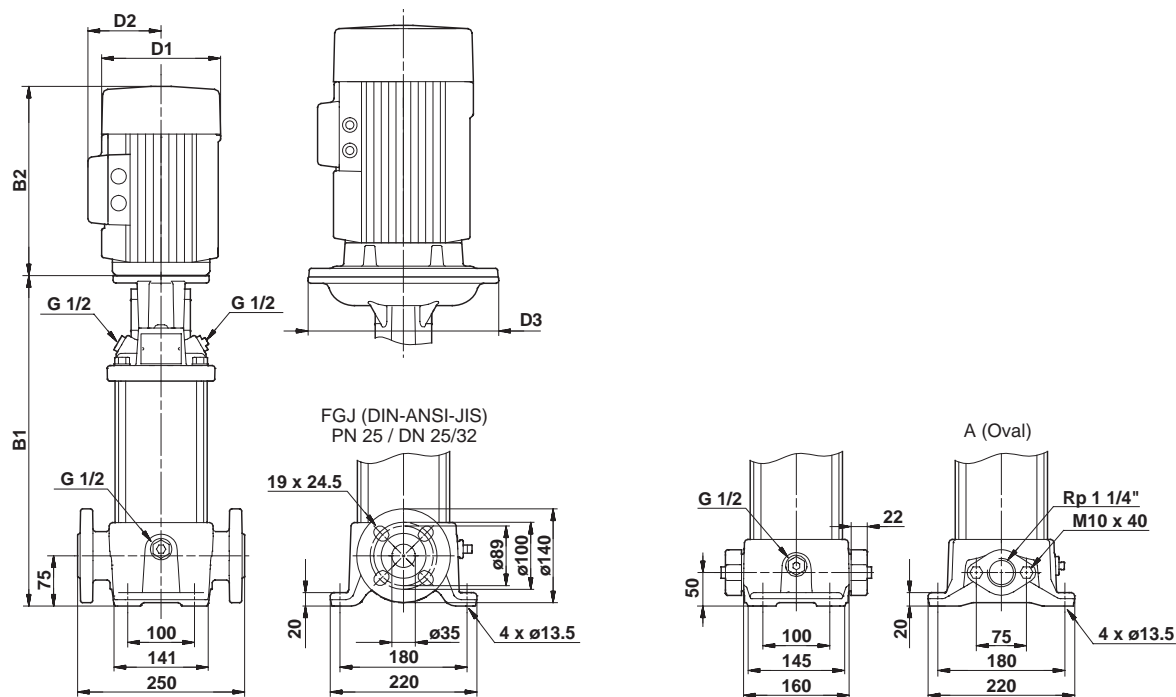
| Pump type | Motor P ₂ [kW] | CRI/CRN | | | | | | | | CRIE/CRNE | | | | | | | |
|--------------------|---------------------------|----------------|-------|------------|-------|-----------------|-----|--------|------------|----------------|-------|------------|-------|-----------------|-----|--------|------------|
| | | Dimension [mm] | | | | Net weight [kg] | | | | Dimension [mm] | | | | Net weight [kg] | | | |
| | | PJE/CA | | DIN flange | | D1 | D2 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | PJE/CA | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | |
| CRI/CRN 3-2 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 20 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-3 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | 16 | 21 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-4 | 0.37 | 275 | 466 | 300 | 491 | 141 | 109 | 17 | 21 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-5 | 0.37 | 293 | 484 | 318 | 509 | 141 | 109 | 17 | 21 | 293 | 484 | 318 | 509 | 141 | 140 | 20 | 24 |
| CRI/CRN 3-6 | 0.55 | 311 | 502 | 336 | 527 | 141 | 109 | 18 | 23 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-7 | 0.55 | 329 | 520 | 354 | 545 | 141 | 109 | 19 | 23 | 329 | 520 | 354 | 545 | 141 | 140 | 21 | 26 |
| CRI/CRN 3-8 | 0.75 | 353 | 584 | 378 | 609 | 141 | 109 | 21 | 26 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-9 | 0.75 | 371 | 602 | 396 | 627 | 141 | 109 | 22 | 26 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-10 | 0.75 | 389 | 620 | 414 | 645 | 141 | 109 | 22 | 26 | 389 | 620 | 414 | 645 | 178 | 167 | 25 | 29 |
| CRI/CRN 3-11 | 1.1 | 407 | 638 | 432 | 663 | 141 | 109 | 25 | 29 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-12 | 1.1 | 425 | 656 | 450 | 681 | 141 | 109 | 25 | 29 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-13 | 1.1 | 443 | 674 | 468 | 699 | 141 | 109 | 26 | 30 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-15 | 1.1 | 479 | 710 | 504 | 735 | 141 | 109 | 26 | 31 | 479 | 710 | 504 | 735 | 178 | 167 | 29 | 33 |
| CRI/CRN 3-17 | 1.5 | 531 | 812 | 556 | 837 | 178 | 110 | 34 | 38 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-19 | 1.5 | 567 | 848 | 592 | 873 | 178 | 110 | 34 | 39 | 567 | 848 | 592 | 873 | 178 | 167 | 41 | 45 |
| CRI/CRN 3-21 | 2.2 | 603 | 924 | 628 | 949 | 178 | 110 | 36 | 40 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-23 | 2.2 | 639 | 960 | 664 | 985 | 178 | 110 | 37 | 41 | 639 | 960 | 664 | 985 | 178 | 167 | 47 | 51 |
| CRI/CRN 3-25 | 2.2 | 675 | 996 | 700 | 1021 | 178 | 110 | 37 | 42 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-27 | 2.2 | 711 | 1032 | 736 | 1057 | 178 | 110 | 38 | 42 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-29 | 2.2 | 747 | 1068 | 772 | 1093 | 178 | 110 | 39 | 43 | 747 | 1068 | 772 | 1093 | 178 | 167 | 49 | 54 |
| CRI/CRN 3-31 | 3 | 788 | 1123 | 813 | 1148 | 198 | 120 | 44 | 48 | - | - | - | - | - | - | - | - |
| CRI/CRN 3-33 | 3 | 824 | 1159 | 849 | 1184 | 198 | 120 | 45 | 49 | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 3-36 | 3 | 878 | 1213 | 903 | 1238 | 198 | 120 | 46 | 50 | 878 | 1213 | 903 | 1238 | 198 | 177 | 56 | 60 |

CR, CRE 5



TM02 7294 3605

Dimensional sketch

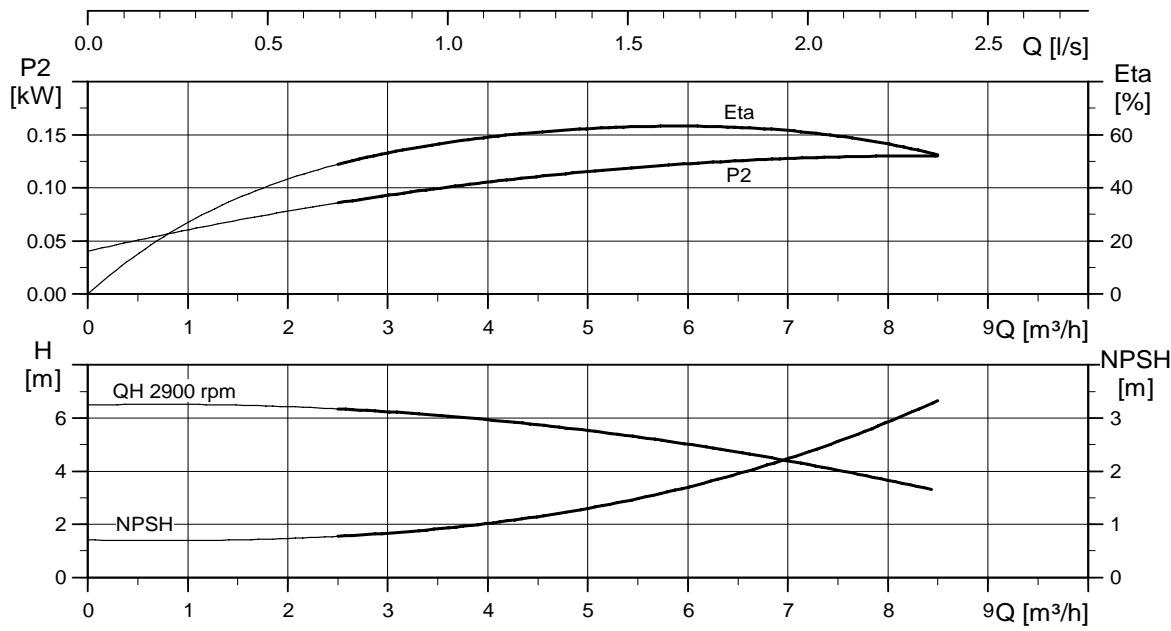
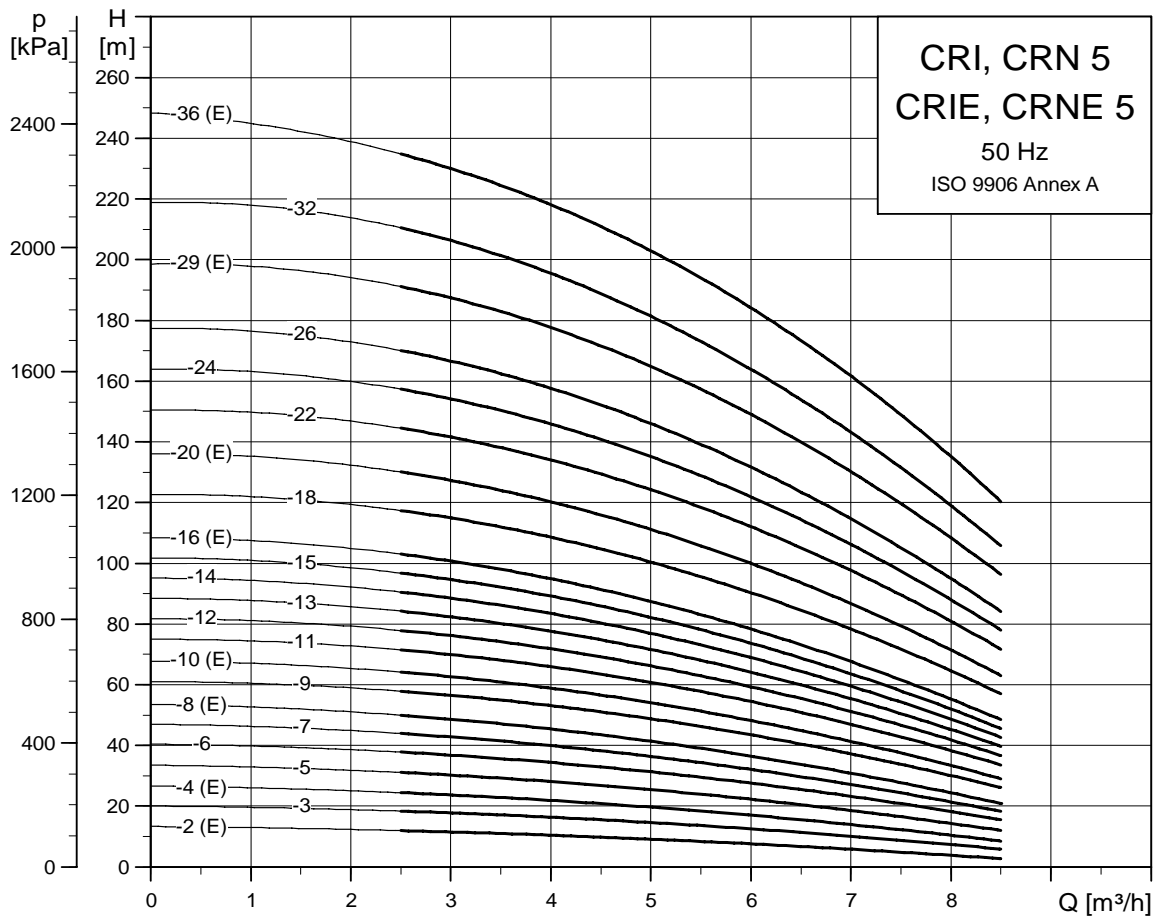


TM03 1723 2805

Dimensions and weights

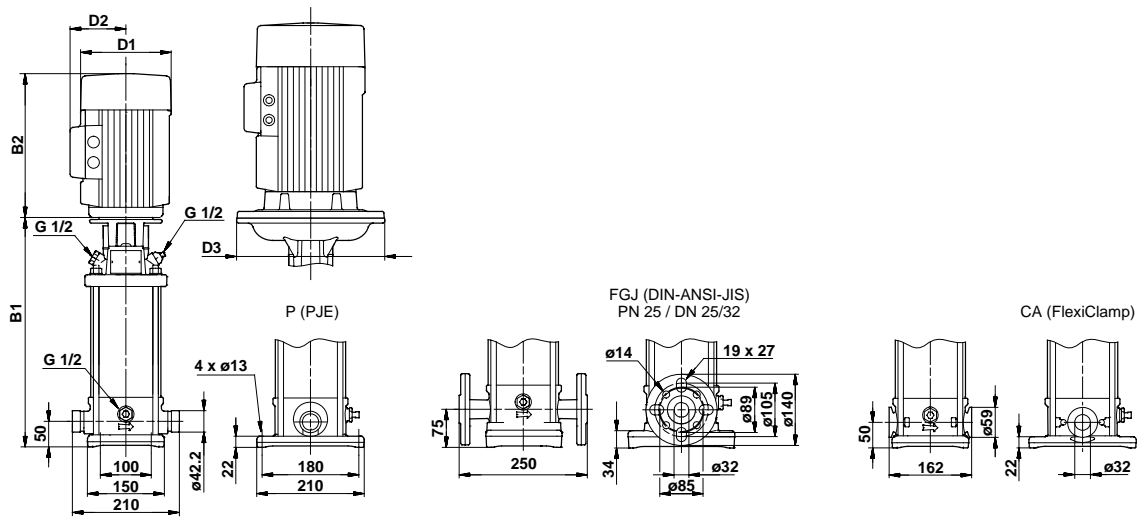
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | | CRE | | | | | | | | |
|------------|---------------------------|----------------|-------|------------|------|-----|-----|-----------------|-------------|------------|----------------|-------------|------|------------|-----|-----|-----------------|----|-------------|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | Dimension [mm] | | | | | | Net weight [kg] | | |
| | | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange |
| B1 | B1+B2 | B1 | B1+B2 | | | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CR(E) 5-2 | 0.37 | 254 | 445 | 279 | 470 | 141 | 109 | - | 18 | 23 | 254 | 445 | 279 | 470 | 141 | 140 | - | 21 | 26 |
| CR 5-3 | 0.55 | 281 | 472 | 306 | 497 | 141 | 109 | - | 20 | 24 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-4 | 0.55 | 308 | 499 | 333 | 524 | 141 | 109 | - | 20 | 25 | 308 | 499 | 333 | 524 | 141 | 140 | - | 23 | 27 |
| CR(E) 5-5 | 0.75 | 341 | 572 | 366 | 597 | 141 | 109 | - | 22 | 27 | 341 | 572 | 366 | 597 | 178 | 167 | - | 25 | 30 |
| CR 5-6 | 1.1 | 368 | 599 | 393 | 624 | 141 | 109 | - | 25 | 30 | - | - | - | - | - | - | - | - | - |
| CR 5-7 | 1.1 | 395 | 626 | 420 | 651 | 141 | 109 | - | 26 | 30 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-8 | 1.1 | 422 | 653 | 447 | 678 | 141 | 109 | - | 26 | 31 | 422 | 653 | 447 | 678 | 178 | 167 | - | 28 | 33 |
| CR 5-9 | 1.5 | 465 | 746 | 490 | 771 | 178 | 110 | - | 34 | 38 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-10 | 1.5 | 492 | 773 | 517 | 798 | 178 | 110 | - | 34 | 39 | 492 | 773 | 517 | 798 | 178 | 167 | - | 41 | 46 |
| CR 5-11 | 2.2 | 519 | 840 | 544 | 865 | 178 | 110 | - | 36 | 40 | - | - | - | - | - | - | - | - | - |
| CR 5-12 | 2.2 | 546 | 867 | 571 | 892 | 178 | 110 | - | 36 | 41 | - | - | - | - | - | - | - | - | - |
| CR 5-13 | 2.2 | 573 | 894 | 598 | 919 | 178 | 110 | - | 37 | 41 | - | - | - | - | - | - | - | - | - |
| CR 5-14 | 2.2 | 600 | 921 | 625 | 946 | 178 | 110 | - | 37 | 42 | - | - | - | - | - | - | - | - | - |
| CR 5-15 | 2.2 | 627 | 948 | 652 | 973 | 178 | 110 | - | 38 | 43 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-16 | 2.2 | 654 | 975 | 679 | 1000 | 178 | 110 | - | 38 | 43 | 654 | 975 | 679 | 1000 | 178 | 167 | - | 49 | 53 |
| CR 5-18 | 3 | 712 | 1047 | 737 | 1072 | 198 | 120 | - | 44 | 48 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-20 | 3 | 766 | 1101 | 791 | 1126 | 198 | 120 | - | 45 | 50 | 766 | 1101 | 791 | 1126 | 198 | 177 | - | 55 | 60 |
| CR 5-22 | 4 | 820 | 1192 | 845 | 1217 | 220 | 134 | - | 57 | 62 | - | - | - | - | - | - | - | - | - |
| CR 5-24 | 4 | - | - | 899 | 1271 | 220 | 134 | - | - | 63 | - | - | - | - | - | - | - | - | - |
| CR 5-26 | 4 | - | - | 953 | 1325 | 220 | 134 | - | - | 64 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-29 | 4 | - | - | 1034 | 1406 | 220 | 134 | - | - | 66 | - | - | 1034 | 1406 | 220 | 188 | - | - | 76 |
| CR 5-32 | 5.5 | - | - | 1145 | 1536 | 220 | 134 | 300 | - | 82 | - | - | - | - | - | - | - | - | - |
| CR(E) 5-36 | 5.5 | - | - | 1253 | 1644 | 220 | 134 | 300 | - | 84 | - | - | 1253 | 1644 | 220 | 188 | - | - | 91 |

CRI, CRN, CRIE, CRNE 5



TM02 7295 3605

Dimensional sketch

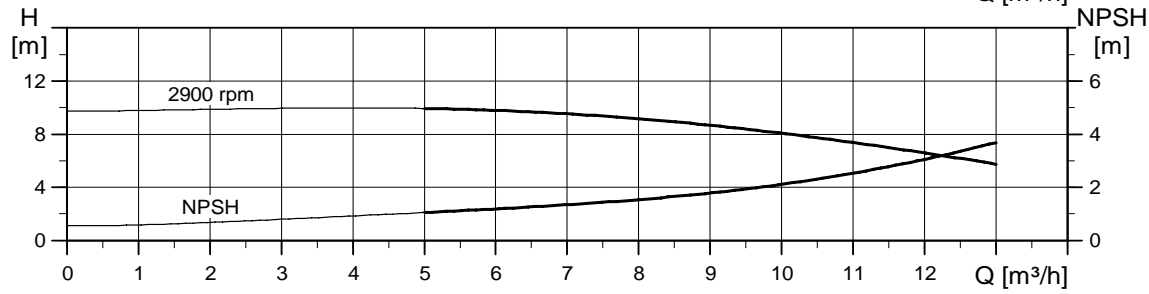
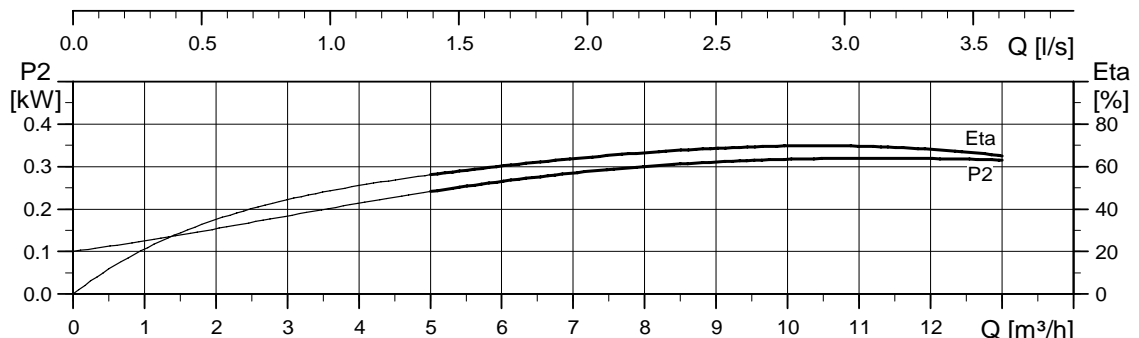
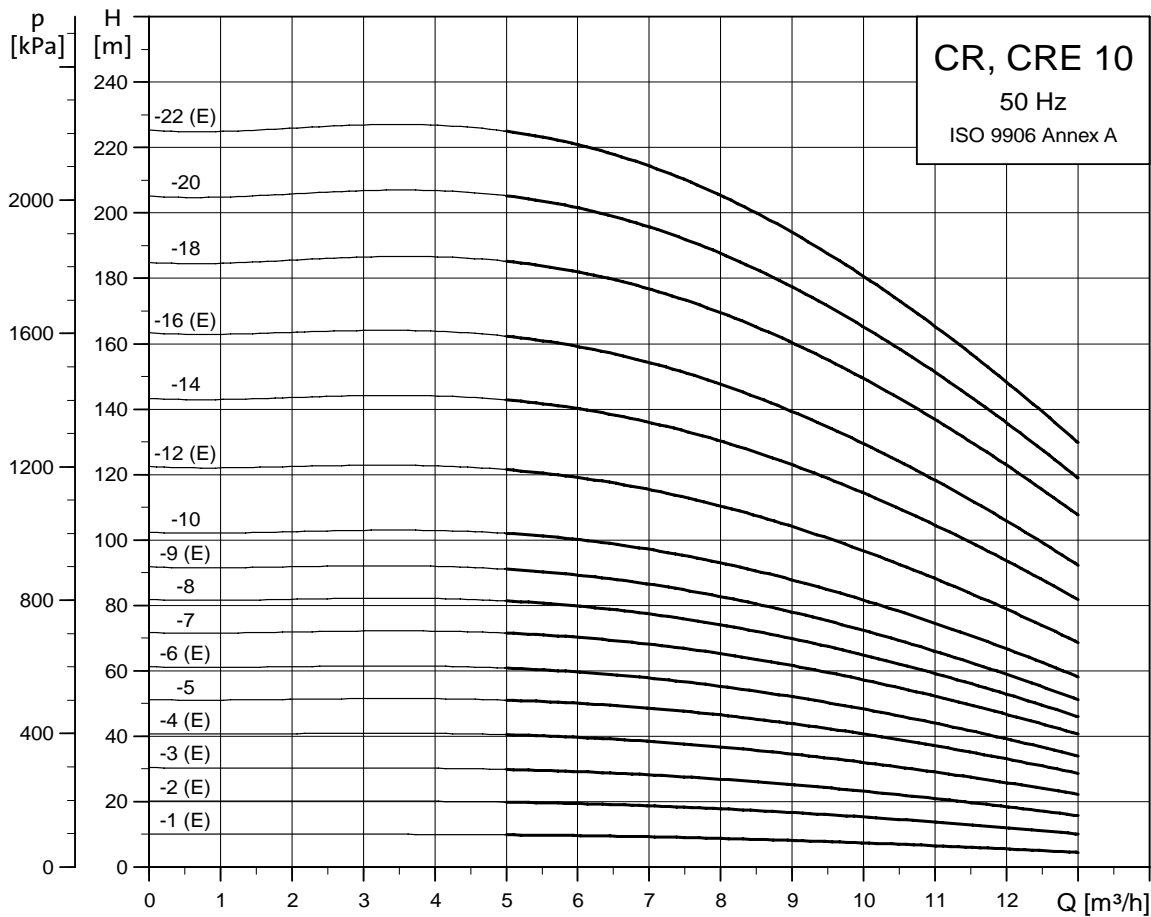


TM03 1724 2805

Dimensions and weights

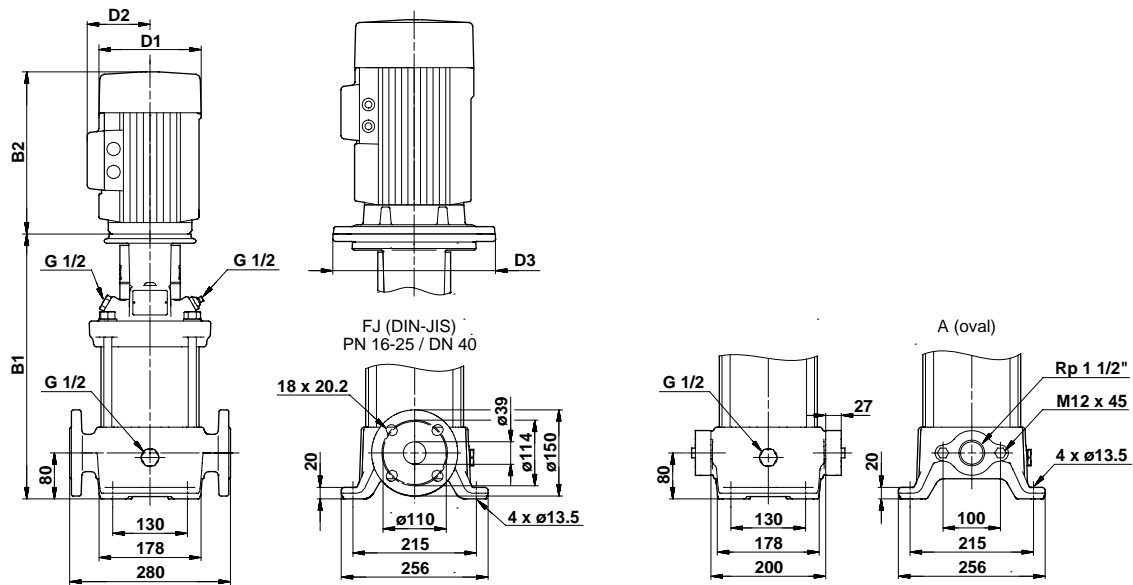
| Pump type | Motor P ₂ [kW] | CRI/CRN | | | | | | | | | | CRIE/CRNE | | | | | | | | | |
|--------------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----|--------|-----------------|--------|----------------|------------|-------|-----|-----|----|--------|------------|-----------------|--|
| | | Dimension [mm] | | | | | | | | Net weight [kg] | | Dimension [mm] | | | | | | | | Net weight [kg] | |
| | | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange | | |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | | | |
| CRI(E)/CRN(E) 5-2 | 0.37 | 257 | 448 | 282 | 473 | 141 | 109 | - | 16 | 21 | 257 | 448 | 282 | 473 | 141 | 140 | - | 19 | 23 | | |
| CRI/CRN 5-3 | 0.55 | 284 | 475 | 309 | 500 | 141 | 109 | - | 18 | 22 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-4 | 0.55 | 311 | 502 | 336 | 527 | 141 | 109 | - | 18 | 22 | 311 | 502 | 336 | 527 | 141 | 140 | - | 21 | 25 | | |
| CRI/CRN(E) 5-5 | 0.75 | 344 | 575 | 369 | 600 | 141 | 109 | - | 21 | 25 | 344 | 575 | 369 | 600 | 178 | 167 | - | 23 | 27 | | |
| CRI/CRN 5-6 | 1.1 | 371 | 602 | 396 | 627 | 141 | 109 | - | 24 | 28 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-7 | 1.1 | 398 | 629 | 423 | 654 | 141 | 109 | - | 24 | 28 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-8 | 1.1 | 425 | 656 | 450 | 681 | 141 | 109 | - | 25 | 29 | 425 | 656 | 450 | 681 | 178 | 167 | - | 27 | 31 | | |
| CRI/CRN 5-9 | 1.5 | 468 | 749 | 493 | 774 | 178 | 110 | - | 32 | 36 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-10 | 1.5 | 495 | 776 | 520 | 801 | 178 | 110 | - | 32 | 37 | 495 | 776 | 520 | 801 | 178 | 167 | - | 39 | 43 | | |
| CRI/CRN 5-11 | 2.2 | 522 | 843 | 547 | 868 | 178 | 110 | - | 34 | 38 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-12 | 2.2 | 549 | 870 | 574 | 895 | 178 | 110 | - | 34 | 38 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-13 | 2.2 | 576 | 897 | 601 | 922 | 178 | 110 | - | 35 | 39 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-14 | 2.2 | 603 | 924 | 628 | 949 | 178 | 110 | - | 35 | 40 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-15 | 2.2 | 630 | 951 | 655 | 976 | 178 | 110 | - | 36 | 40 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-16 | 2.2 | 657 | 978 | 682 | 1003 | 178 | 110 | - | 36 | 41 | 657 | 978 | 682 | 1003 | 178 | 167 | - | 47 | 51 | | |
| CRI/CRN 5-18 | 3 | 716 | 1051 | 741 | 1076 | 198 | 120 | - | 42 | 46 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-20 | 3 | 770 | 1105 | 795 | 1130 | 198 | 120 | - | 43 | 47 | 770 | 1105 | 795 | 1130 | 198 | 177 | - | 53 | 57 | | |
| CRI/CRN 5-22 | 4 | 824 | 1196 | 849 | 1221 | 220 | 134 | - | 55 | 59 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-24 | 4 | 878 | 1250 | 903 | 1275 | 220 | 134 | - | 56 | 61 | - | - | - | - | - | - | - | - | - | | |
| CRI/CRN 5-26 | 4 | 932 | 1304 | 957 | 1329 | 220 | 134 | - | 58 | 62 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-29 | 4 | 1013 | 1385 | 1038 | 1410 | 220 | 134 | - | 59 | 64 | 1013 | 1385 | 1038 | 1410 | 220 | 188 | - | 70 | 74 | | |
| CRI/CRN 5-32 | 5.5 | 1123 | 1514 | 1148 | 1539 | 220 | 134 | 300 | 75 | 79 | - | - | - | - | - | - | - | - | - | | |
| CRI(E)/CRN(E) 5-36 | 5.5 | 1231 | 1622 | 1256 | 1647 | 220 | 134 | 300 | 77 | 81 | 1231 | 1622 | 1256 | 1647 | 220 | 188 | - | 84 | 88 | | |

CR, CRE 10



TM02 7296 3605

Dimensional sketch

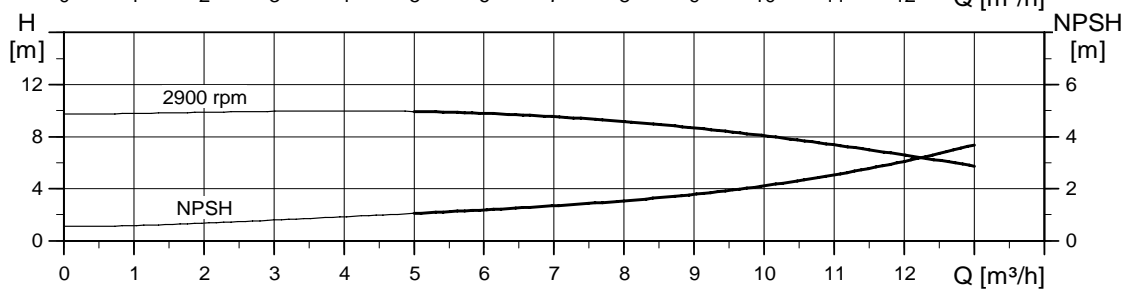
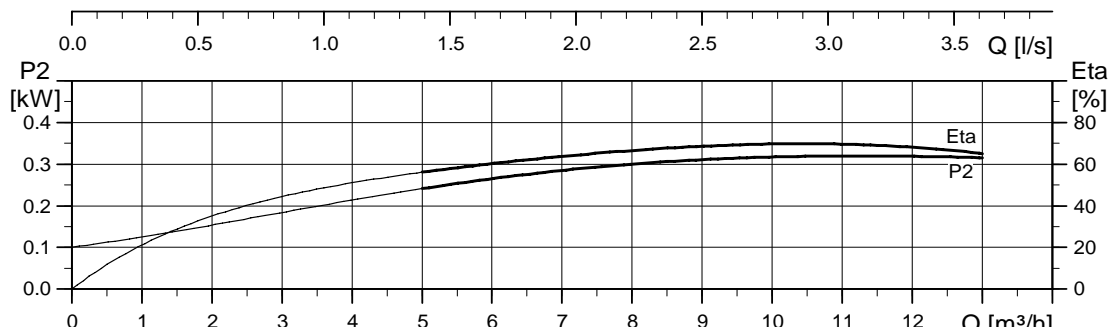
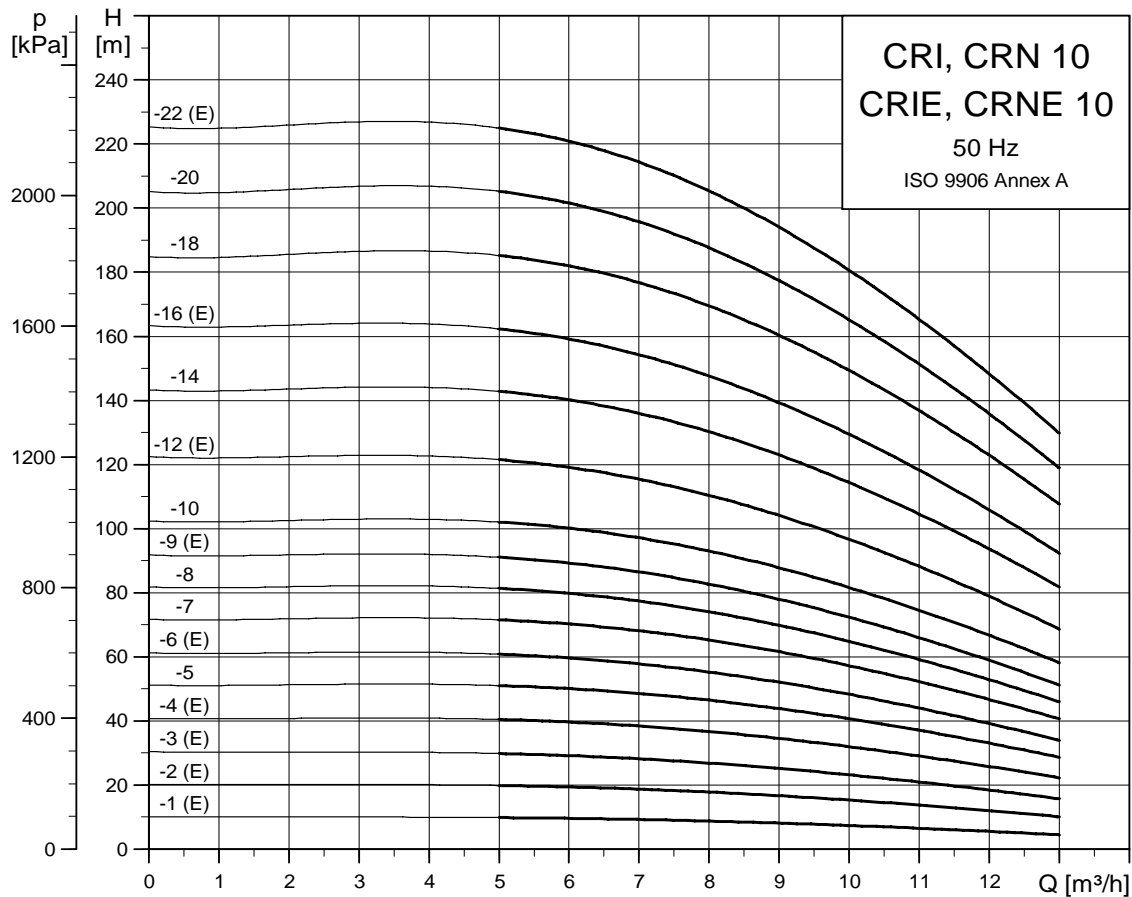


TM03 1725 2805

Dimensions and weights

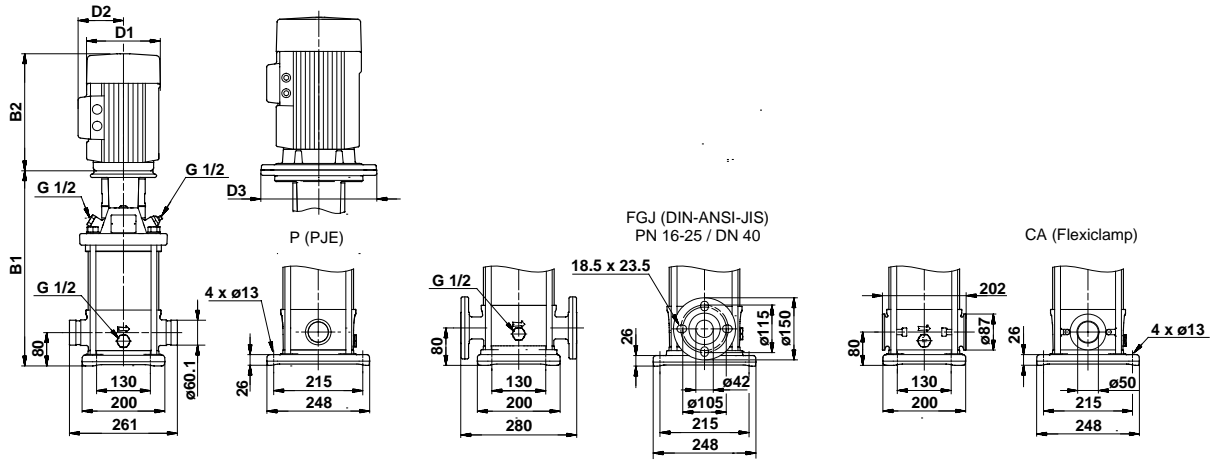
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | | | CRE | | | | | | | | | |
|-------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----|-------------|-----------------|-------------|----------------|------------|-------|-----|-----|-----|-------------|------------|-----------------|--|
| | | Dimension [mm] | | | | | | | | Net weight [kg] | | Dimension [mm] | | | | | | | | Net weight [kg] | |
| | | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | | |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | | | |
| CR(E) 10-1 | 0.37 | 343 | 534 | 343 | 534 | 141 | 109 | - | 31 | 34 | 343 | 534 | 343 | 534 | 141 | 140 | - | 34 | 37 | | |
| CR(E) 10-2 | 0.75 | 347 | 578 | 347 | 578 | 141 | 109 | - | 34 | 36 | 347 | 578 | 347 | 578 | 178 | 167 | - | 36 | 39 | | |
| CR(E) 10-3 | 1.1 | 377 | 608 | 377 | 608 | 141 | 109 | - | 37 | 39 | 377 | 608 | 377 | 608 | 178 | 167 | - | 39 | 42 | | |
| CR(E) 10-4 | 1.5 | 423 | 704 | 423 | 704 | 178 | 110 | - | 45 | 47 | 423 | 704 | 423 | 704 | 178 | 167 | - | 52 | 54 | | |
| CR 10-5 | 2.2 | 453 | 774 | 453 | 774 | 178 | 110 | - | 46 | 49 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 10-6 | 2.2 | 483 | 804 | 483 | 804 | 178 | 110 | - | 47 | 50 | 483 | 804 | 483 | 804 | 178 | 167 | - | 58 | 60 | | |
| CR 10-7 | 3 | 518 | 853 | 518 | 853 | 198 | 120 | - | 52 | 55 | - | - | - | - | - | - | - | - | - | | |
| CR 10-8 | 3 | 548 | 883 | 548 | 883 | 198 | 120 | - | 53 | 56 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 10-9 | 3 | 578 | 913 | 578 | 913 | 198 | 120 | - | 54 | 57 | 578 | 913 | 578 | 913 | 198 | 177 | - | 64 | 67 | | |
| CR 10-10 | 4 | 608 | 980 | 608 | 980 | 220 | 134 | - | 66 | 69 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 10-12 | 4 | 668 | 1040 | 668 | 1040 | 220 | 134 | - | 69 | 71 | 668 | 1040 | 668 | 1040 | 220 | 188 | - | 79 | 81 | | |
| CR 10-14 | 5.5 | 760 | 1151 | 760 | 1151 | 220 | 134 | 300 | 91 | 94 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 10-16 | 5.5 | 820 | 1211 | 820 | 1211 | 220 | 134 | 300 | 93 | 96 | 820 | 1211 | 820 | 1211 | 220 | 188 | 298 | 100 | 102 | | |
| CR 10-18 | 7.5 | - | - | 880 | 1271 | 220 | 134 | 300 | - | 101 | - | - | - | - | - | - | - | - | - | | |
| CR 10-20 | 7.5 | - | - | 940 | 1331 | 220 | 134 | 300 | - | 103 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 10-22 | 7.5 | - | - | 1000 | 1391 | 220 | 134 | 300 | - | 105 | - | - | 1000 | 1391 | 220 | 188 | 298 | - | 113 | | |

CRI, CRN, CRIE, CRNE 10



TM02 7297 3605

Dimensional sketch

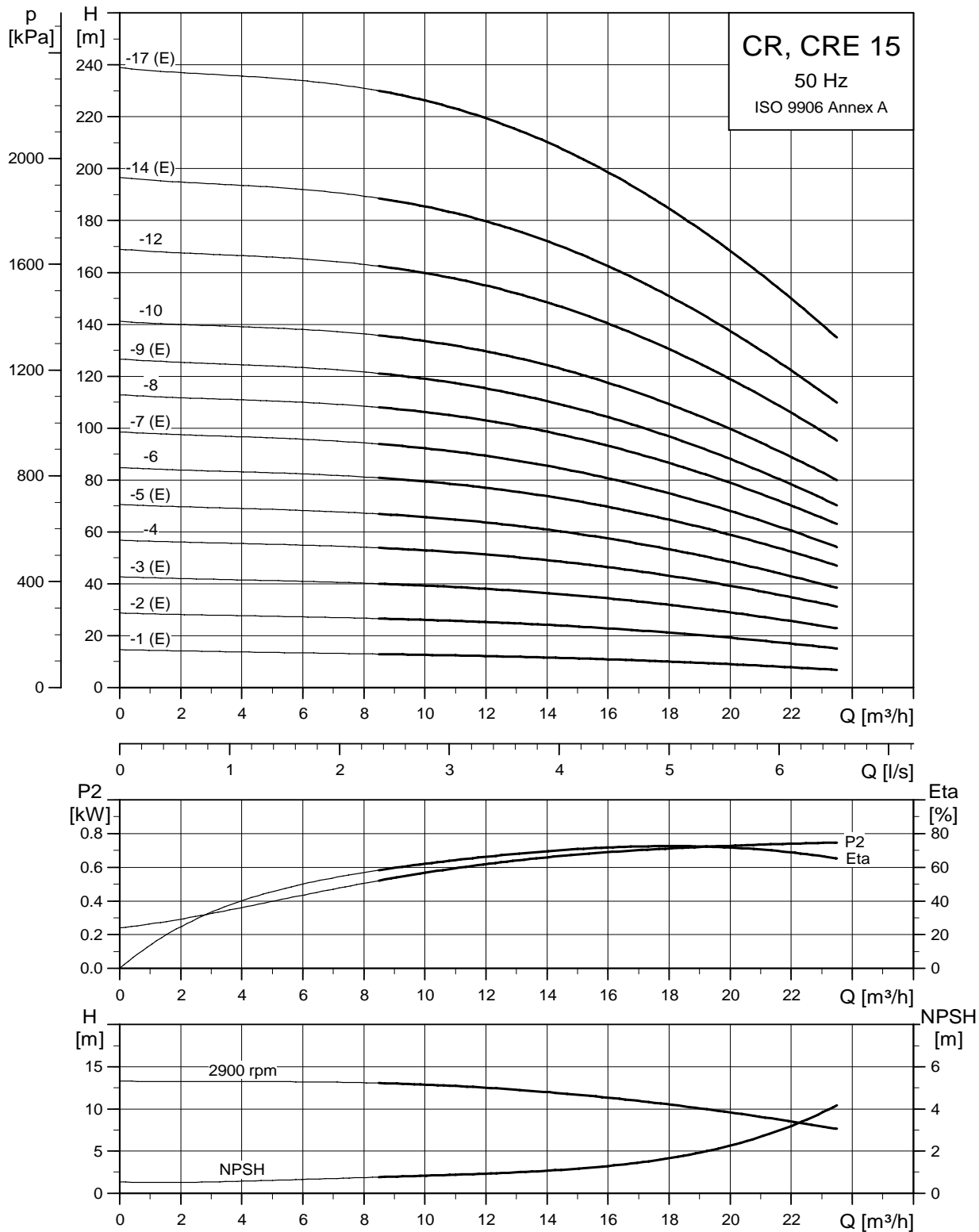


TM03 2498 4405

Dimensions and weights

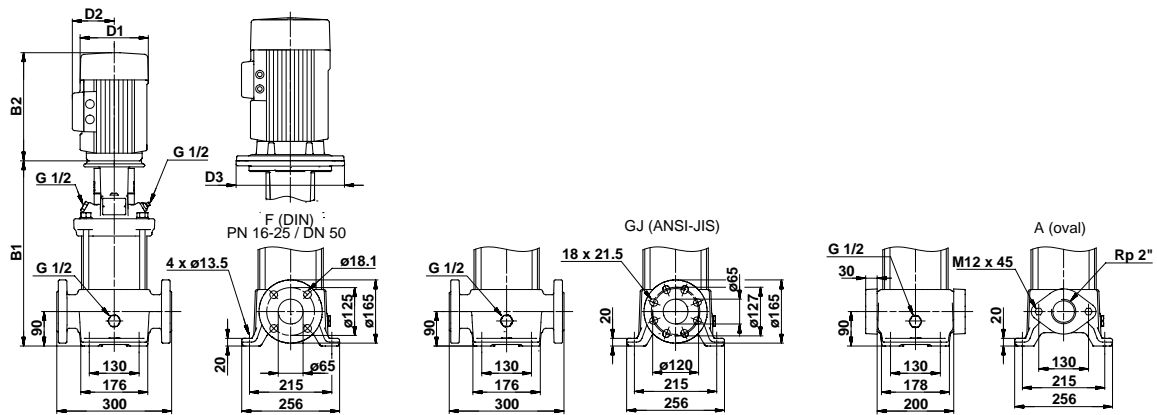
| Pump type | Motor P ₂ [kW] | CRI/CRN | | | | | | | | | CRIE/CRNE | | | | | | | | |
|---------------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | Dimension [mm] | | | | | | Net weight [kg] | | |
| | | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CRI(E)/CRN(E) 10-1 | 0.37 | 353 | 544 | 353 | 544 | 141 | 109 | - | 28 | 32 | 353 | 544 | 353 | 544 | 141 | 140 | - | 31 | 35 |
| CRI(E)/CRN(E) 10-2 | 0.75 | 357 | 588 | 357 | 588 | 141 | 109 | - | 31 | 34 | 357 | 588 | 357 | 588 | 178 | 167 | - | 33 | 37 |
| CRI(E)/CRN(E) 10-3 | 1.1 | 387 | 618 | 387 | 618 | 141 | 109 | - | 34 | 38 | 387 | 618 | 387 | 618 | 178 | 167 | - | 37 | 40 |
| CRI(E)/CRN(E) 10-4 | 1.5 | 433 | 714 | 433 | 714 | 178 | 110 | - | 42 | 46 | 433 | 714 | 433 | 714 | 178 | 167 | - | 49 | 53 |
| CRI/CRN 10-5 | 2.2 | 463 | 784 | 463 | 784 | 178 | 110 | - | 44 | 48 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 10-6 | 2.2 | 493 | 814 | 493 | 814 | 178 | 110 | - | 45 | 49 | 493 | 814 | 493 | 814 | 178 | 167 | - | 55 | 59 |
| CRI/CRN 10-7 | 3 | 528 | 863 | 528 | 863 | 198 | 120 | - | 50 | 54 | - | - | - | - | - | - | - | - | - |
| CRI/CRN 10-8 | 3 | 558 | 893 | 558 | 893 | 198 | 120 | - | 52 | 55 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 10-9 | 3 | 588 | 923 | 588 | 923 | 198 | 120 | - | 53 | 56 | 588 | 923 | 588 | 923 | 198 | 177 | - | 63 | 66 |
| CRI/CRN 10-10 | 4 | 618 | 990 | 618 | 990 | 220 | 134 | - | 65 | 68 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 10-12 | 4 | 678 | 1050 | 678 | 1050 | 220 | 134 | - | 67 | 70 | 678 | 1050 | 678 | 1050 | 220 | 188 | - | 77 | 81 |
| CRI/CRN 10-14 | 5.5 | 770 | 1161 | 770 | 1161 | 220 | 134 | 300 | 89 | 93 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 10-16 | 5.5 | 830 | 1221 | 830 | 1221 | 220 | 134 | 300 | 91 | 95 | 830 | 1221 | 830 | 1221 | 220 | 188 | 298 | 98 | 102 |
| CRI/CRN 10-18 | 7.5 | 890 | 1281 | 890 | 1281 | 220 | 134 | 300 | 96 | 99 | - | - | - | - | - | - | - | - | - |
| CRI/CRN 10-20 | 7.5 | 950 | 1341 | 950 | 1341 | 220 | 134 | 300 | 98 | 101 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 10-22 | 7.5 | 1010 | 1401 | 1010 | 1401 | 220 | 134 | 300 | 100 | 104 | 1010 | 1401 | 1010 | 1401 | 220 | 188 | 298 | 108 | 111 |

CR, CRE 15



TM02 7298 3605

Dimensional sketch

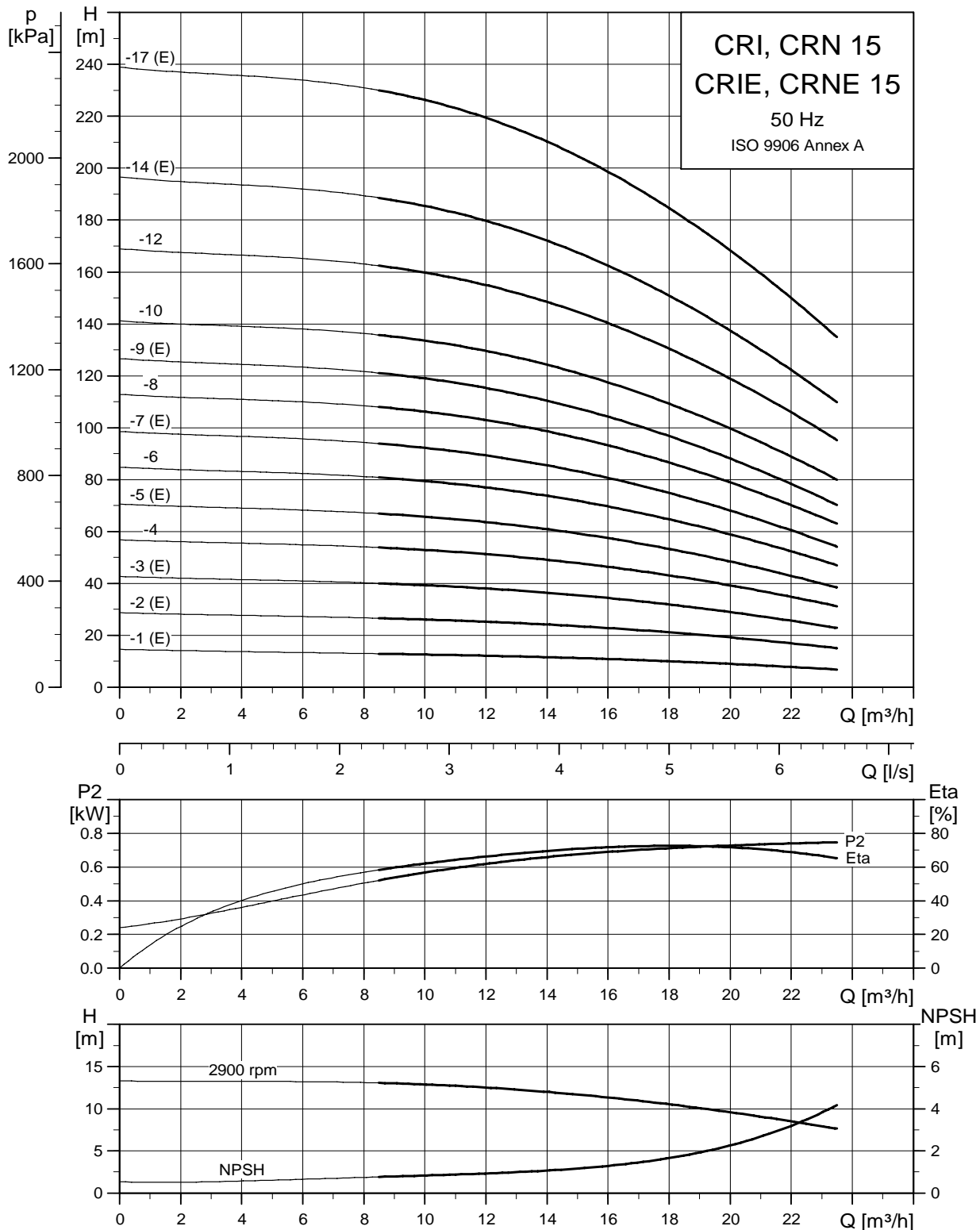


TM03 1727 2805

Dimensions and weights

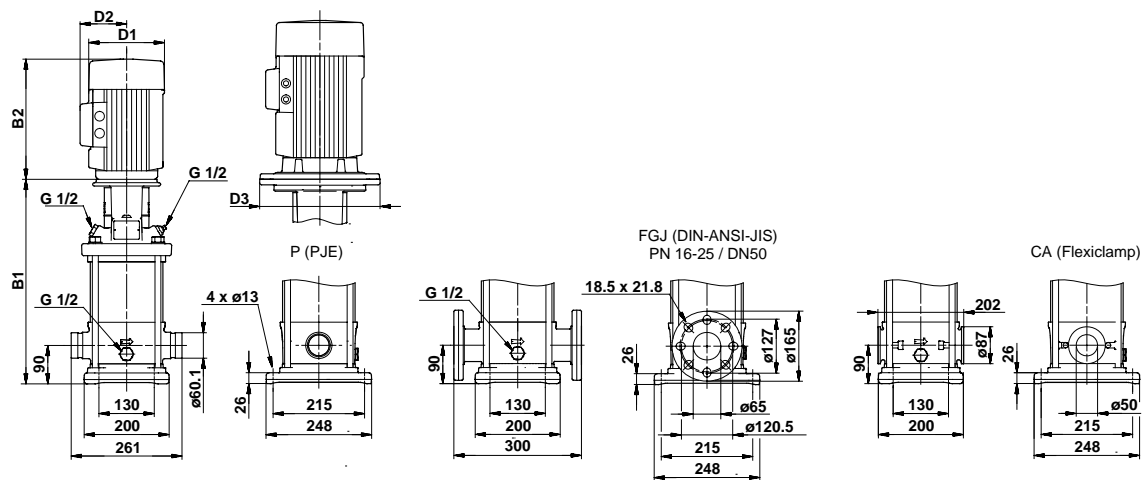
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | | | CRE | | | | | | | | | |
|-------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----------------|-------------|------------|-------------|----------------|------------|-------|-----|-----|-----|-----------------|------------|--|--|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | | Dimension [mm] | | | | | | Net weight [kg] | | | |
| | | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | | |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | | | |
| CR(E) 15-1 | 1.1 | 400 | 631 | 400 | 631 | 141 | 109 | - | 41 | 42 | 400 | 631 | 400 | 631 | 178 | 167 | - | 44 | 45 | | |
| CR(E) 15-2 | 2.2 | 415 | 736 | 415 | 736 | 178 | 110 | - | 49 | 50 | 415 | 736 | 415 | 736 | 178 | 167 | 270 | 59 | 60 | | |
| CR(E) 15-3 | 3 | 465 | 800 | 465 | 800 | 198 | 120 | - | 54 | 55 | 465 | 800 | 465 | 800 | 198 | 177 | 270 | 64 | 65 | | |
| CR 15-4 | 4 | 510 | 882 | 510 | 882 | 220 | 134 | - | 67 | 68 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 15-5 | 4 | 555 | 927 | 555 | 927 | 220 | 134 | - | 68 | 69 | 555 | 927 | 555 | 927 | 220 | 188 | 270 | 78 | 79 | | |
| CR 15-6 | 5.5 | 632 | 1023 | 632 | 1023 | 220 | 134 | 300 | 90 | 91 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 15-7 | 5.5 | 677 | 1068 | 677 | 1068 | 220 | 134 | 300 | 92 | 93 | 677 | 1068 | 677 | 1068 | 220 | 188 | 298 | 99 | 100 | | |
| CR 15-8 | 7.5 | - | - | 722 | 1113 | 220 | 134 | 300 | - | 97 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 15-9 | 7.5 | - | - | 767 | 1158 | 220 | 134 | 300 | - | 98 | - | - | 767 | 1158 | 220 | 188 | 298 | - | 106 | | |
| CR 15-10 | 11 | - | - | 889 | 1388 | 260 | 172 | 350 | - | 130 | - | - | - | - | - | - | - | - | - | | |
| CR 15-12 | 11 | - | - | 979 | 1478 | 260 | 172 | 350 | - | 134 | - | - | - | - | - | - | - | - | - | | |
| CR(E) 15-14 | 11 | - | - | 1069 | 1568 | 260 | 172 | 350 | - | 138 | - | - | 1084 | 1533 | 258 | 359 | 350 | - | 205 | | |
| CR(E) 15-17 | 15 | - | - | 1204 | 1682 | 320 | 197 | 350 | - | 157 | - | - | 1219 | 1680 | 313 | 377 | 350 | - | 227 | | |

CRI, CRN, CRIE, CRNE 15



TM02 7299 3605

Dimensional sketch

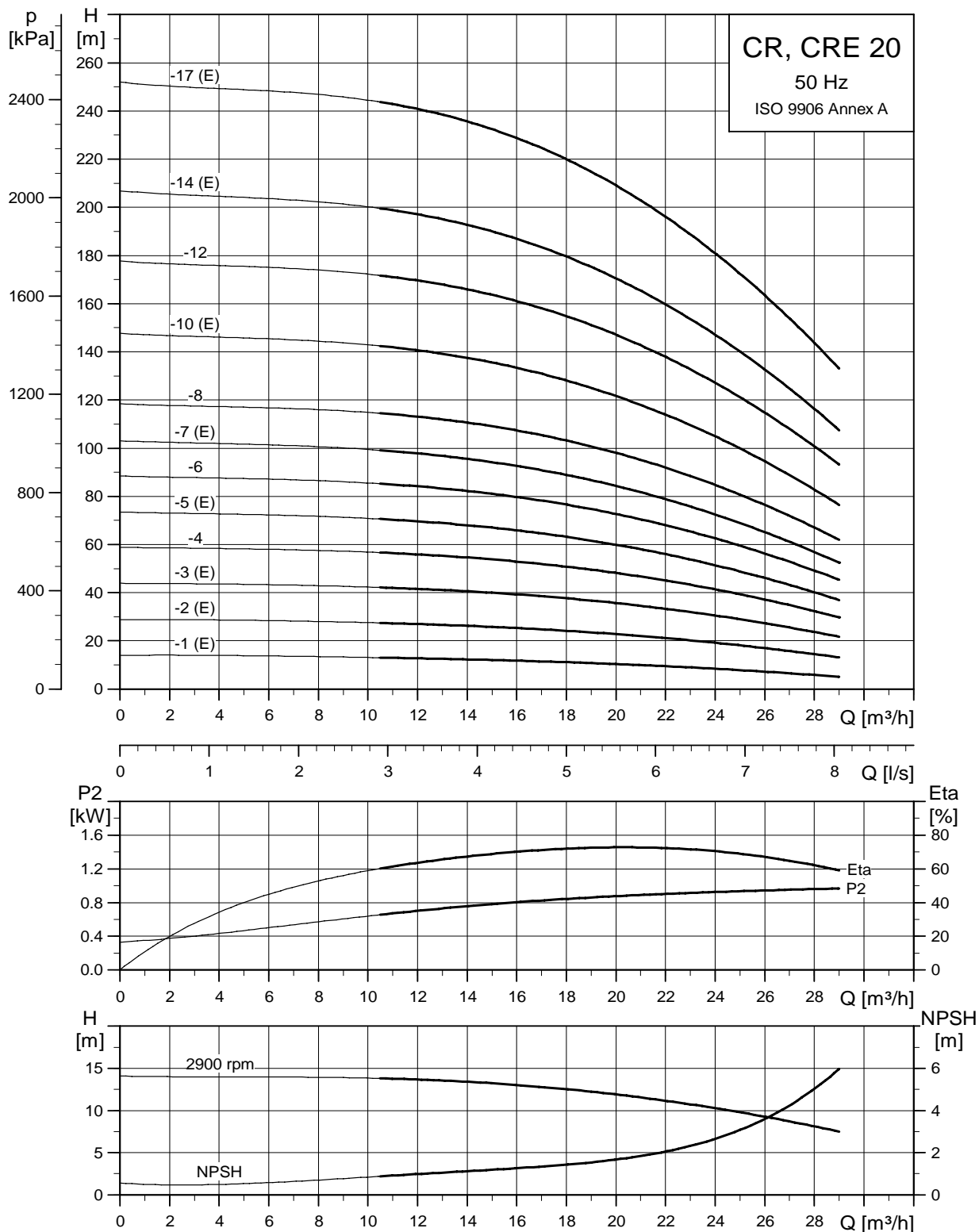


TM03 1728 2805

Dimensions and weights

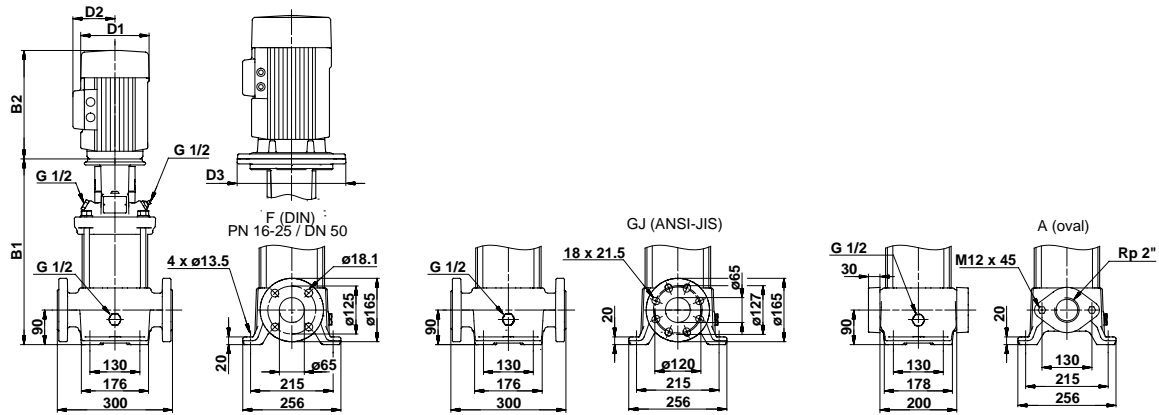
| Pump type | Motor P ₂ [kW] | CR/CRN | | | | | | | | | CRIE/CRNE | | | | | | | | |
|---------------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | Dimension [mm] | | | | | | Net weight [kg] | | |
| | | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CRI(E)/CRN(E) 15-1 | 1.1 | 397 | 628 | 397 | 628 | 141 | 109 | - | 34 | 39 | 397 | 628 | 397 | 628 | 178 | 167 | - | 37 | 42 |
| CRI(E)/CRN(E) 15-2 | 2.2 | 413 | 734 | 413 | 734 | 178 | 110 | - | 42 | 47 | 413 | 734 | 413 | 734 | 178 | 167 | 270 | 53 | 57 |
| CRI(E)/CRN(E) 15-3 | 3 | 463 | 798 | 463 | 798 | 198 | 120 | - | 48 | 53 | 463 | 798 | 463 | 798 | 198 | 177 | 270 | 58 | 63 |
| CR/CRN 15-4 | 4 | 508 | 880 | 508 | 880 | 220 | 134 | - | 61 | 65 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 15-5 | 4 | 553 | 925 | 553 | 925 | 220 | 134 | - | 62 | 67 | 553 | 925 | 553 | 925 | 220 | 188 | 270 | 72 | 77 |
| CR/CRN 15-6 | 5.5 | 630 | 1021 | 630 | 1021 | 220 | 134 | 300 | 84 | 89 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 15-7 | 5.5 | 675 | 1066 | 675 | 1066 | 220 | 134 | 300 | 86 | 90 | 675 | 1066 | 675 | 1066 | 220 | 188 | 298 | 92 | 97 |
| CR/CRN 15-8 | 7.5 | 720 | 1111 | 720 | 1111 | 220 | 134 | 300 | 89 | 94 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 15-9 | 7.5 | 765 | 1156 | 765 | 1156 | 220 | 134 | 300 | 91 | 96 | 765 | 1156 | 765 | 1156 | 220 | 188 | 298 | 99 | 104 |
| CR/CRN 15-10 | 11 | 887 | 1386 | 887 | 1386 | 260 | 172 | 350 | 123 | 128 | - | - | - | - | - | - | - | - | - |
| CR/CRN 15-12 | 11 | 977 | 1476 | 977 | 1476 | 260 | 172 | 350 | 126 | 131 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 15-14 | 11 | 1067 | 1566 | 1067 | 1566 | 260 | 172 | 350 | 130 | 134 | 1082 | 1531 | 1082 | 1531 | 258 | 359 | 350 | 197 | 202 |
| CRI(E)/CRN(E) 15-17 | 15 | 1202 | 1680 | 1202 | 1680 | 320 | 197 | 350 | 149 | 153 | 1217 | 1678 | 1217 | 1678 | 313 | 377 | 350 | 219 | 224 |

CR, CRE 20



TM02 7300 3605

Dimensional sketch

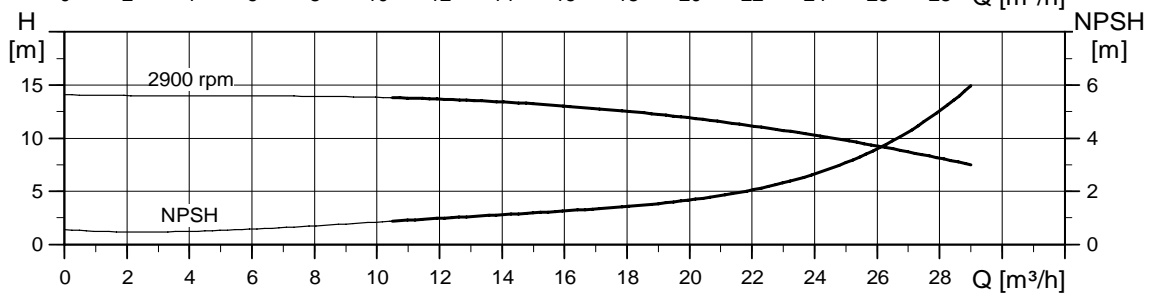
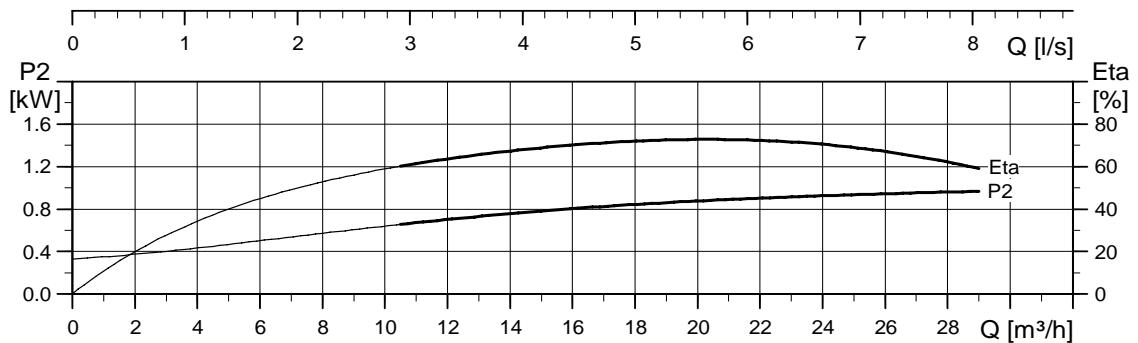
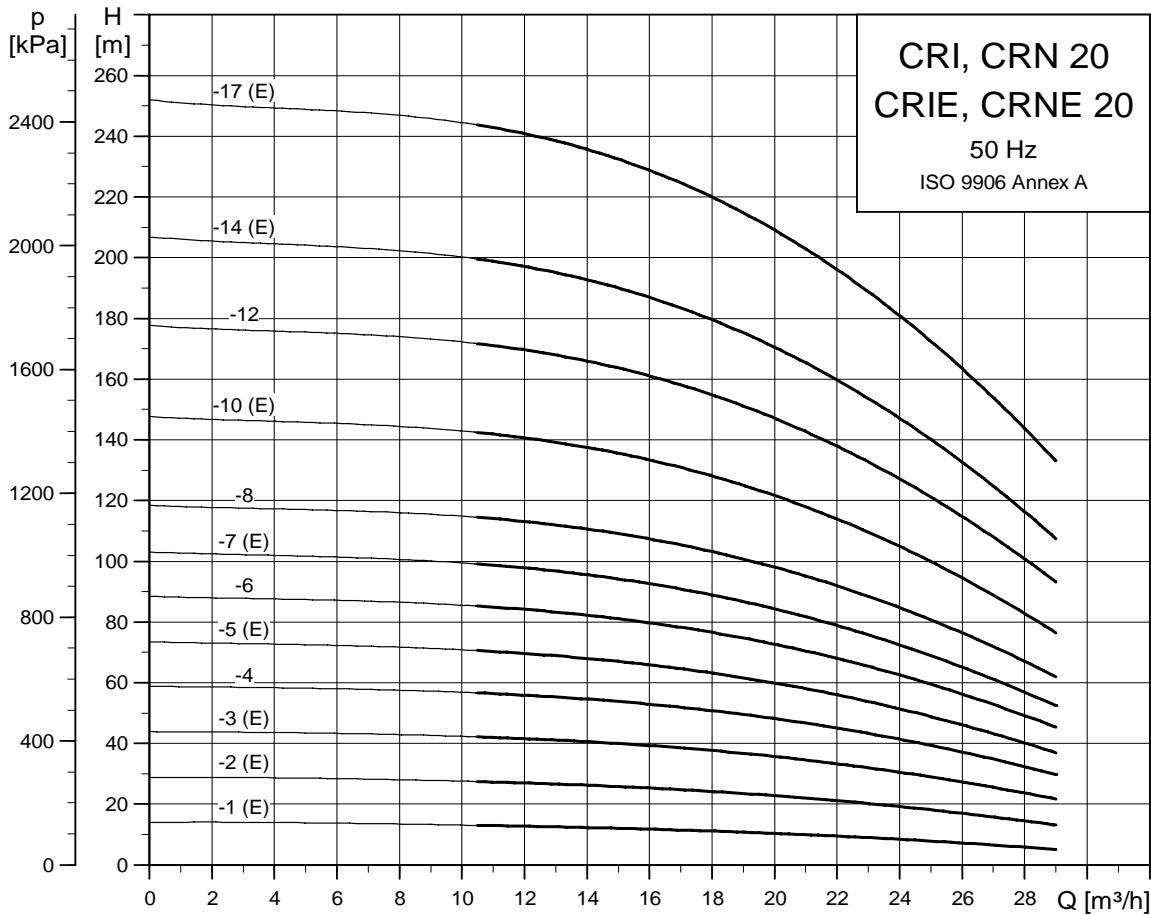


TM03 1727 2805

Dimensions and weights

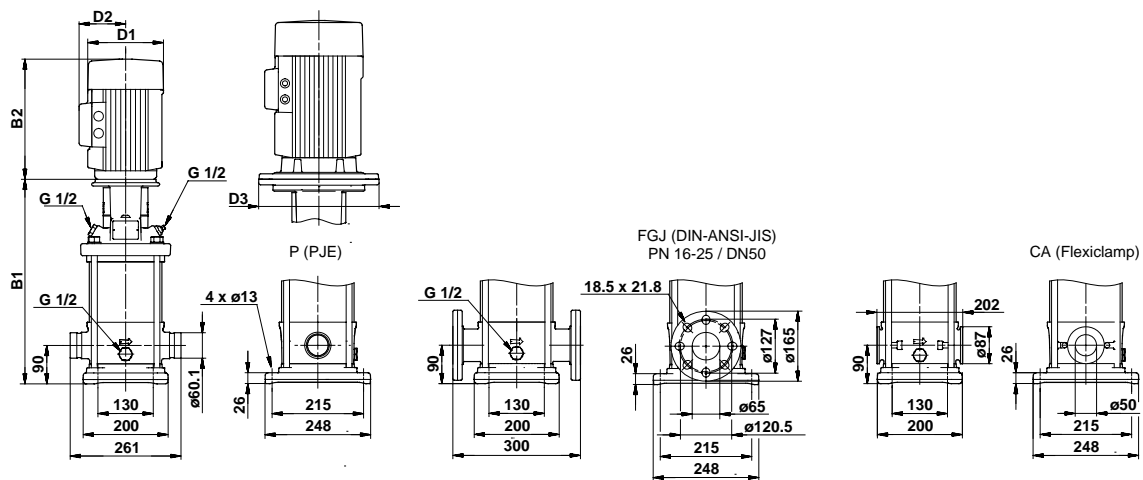
| Pump type | Motor P ₂ [kW] | CR | | | | | | | | | CRE | | | | | | | | |
|-------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----------------|-------------|------------|----------------|-------|------------|-------|-----|-----|-----------------|-------------|------------|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | Dimension [mm] | | | | | | Net weight [kg] | | |
| | | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange | Oval flange | | DIN flange | | D1 | D2 | D3 | Oval flange | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CR(E) 20-1 | 1.1 | 400 | 631 | 400 | 631 | 141 | 109 | - | 41 | 42 | 400 | 631 | 400 | 631 | 178 | 167 | - | 44 | 45 |
| CR(E) 20-2 | 2.2 | 415 | 736 | 415 | 736 | 178 | 110 | - | 49 | 50 | 415 | 736 | 415 | 736 | 178 | 167 | - | 59 | 60 |
| CR(E) 20-3 | 4 | 465 | 837 | 465 | 837 | 220 | 134 | - | 65 | 66 | 465 | 837 | 465 | 837 | 220 | 188 | - | 75 | 76 |
| CR 20-4 | 5.5 | 542 | 933 | 542 | 933 | 220 | 134 | 300 | 87 | 88 | - | - | - | - | - | - | - | - | - |
| CR(E) 20-5 | 5.5 | 587 | 978 | 587 | 978 | 220 | 134 | 300 | 89 | 90 | 587 | 978 | 587 | 978 | 220 | 188 | 298 | 95 | 96 |
| CR 20-6 | 7.5 | 632 | 1023 | 632 | 1023 | 220 | 134 | 300 | 92 | 93 | - | - | - | - | - | - | - | - | - |
| CR(E) 20-7 | 7.5 | 677 | 1068 | 677 | 1068 | 220 | 134 | 300 | 94 | 95 | 677 | 1068 | 677 | 1068 | 220 | 188 | 298 | 102 | 103 |
| CR 20-8 | 11 | - | - | 799 | 1298 | 260 | 172 | 350 | - | 127 | - | - | - | - | - | - | - | - | - |
| CR(E) 20-10 | 11 | - | - | 889 | 1388 | 260 | 172 | 350 | - | 130 | - | - | 904 | 1353 | 258 | 359 | 350 | - | 198 |
| CR 20-12 | 15 | - | - | 979 | 1457 | 320 | 197 | 350 | - | 148 | - | - | - | - | - | - | - | - | - |
| CR(E) 20-14 | 15 | - | - | 1069 | 1547 | 320 | 197 | 350 | - | 152 | - | - | 1084 | 1545 | 313 | 377 | 350 | - | 222 |
| CR(E) 20-17 | 18.5 | - | - | 1204 | 1722 | 320 | 197 | 350 | - | 187 | - | - | 1219 | 1718 | 313 | 377 | 350 | - | 262 |

CRI, CRN, CRIE, CRNE 20



TM02 7301 3605

Dimensional sketch

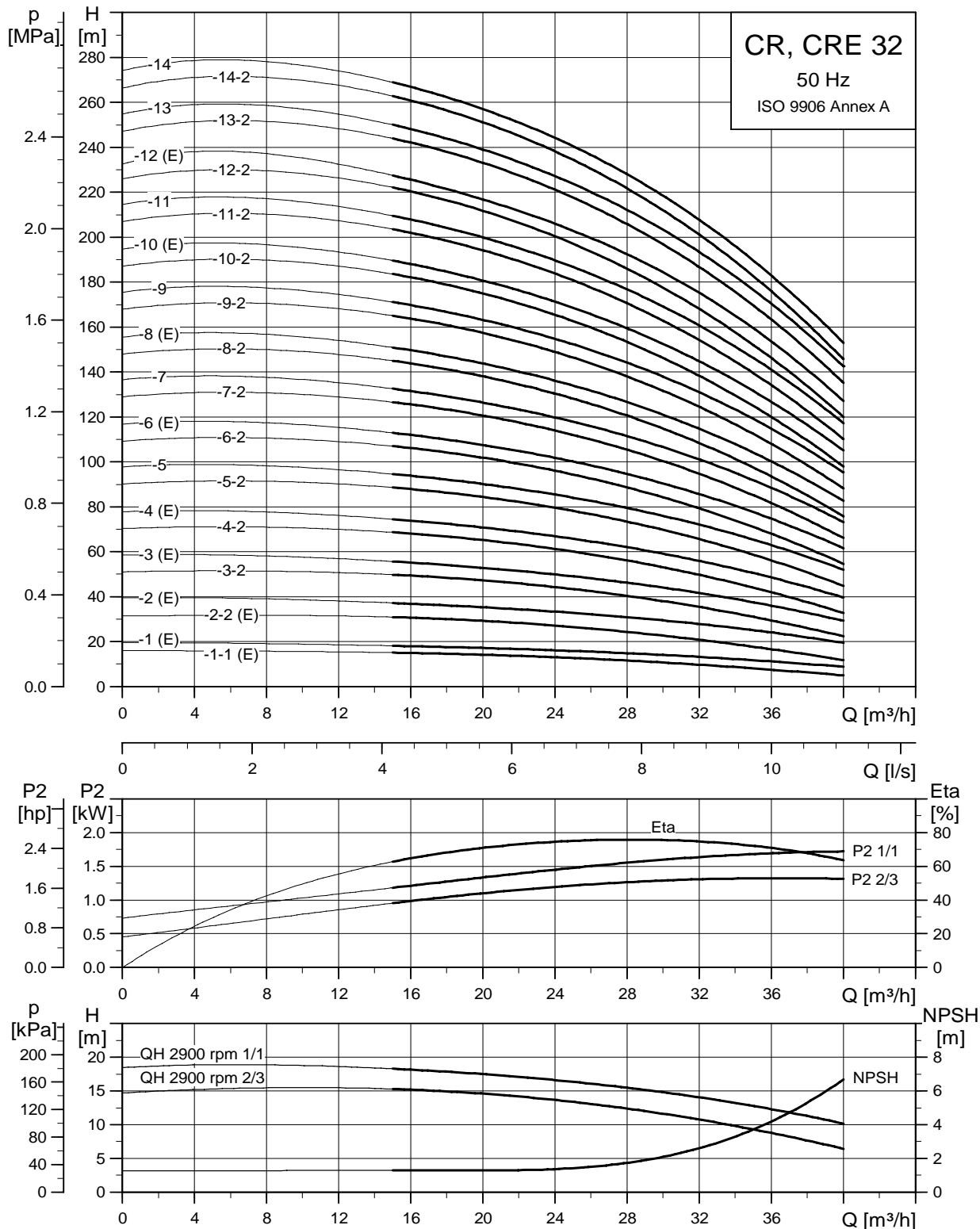


TM03 1728 2805

Dimensions and weights

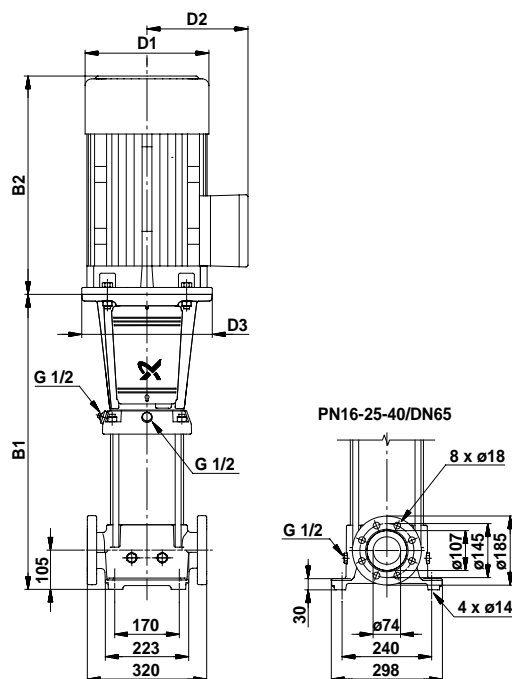
| Pump type | Motor P ₂ [kW] | CRI/CRN | | | | | | | | | CRIE/CRNE | | | | | | | | |
|---------------------|---------------------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|----------------|-------|------------|-------|-----|-----|-----------------|--------|------------|
| | | Dimension [mm] | | | | | | Net weight [kg] | | | Dimension [mm] | | | | | | Net weight [kg] | | |
| | | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange | PJE/CA | | DIN flange | | D1 | D2 | D3 | PJE/CA | DIN flange |
| | | B1 | B1+B2 | B1 | B1+B2 | | | | | | B1 | B1+B2 | B1 | B1+B2 | | | | | |
| CRI(E)/CRN(E) 20-1 | 1.1 | 397 | 628 | 397 | 628 | 141 | 109 | - | 34 | 39 | 397 | 628 | 397 | 628 | 178 | 167 | - | 37 | 42 |
| CRI(E)/CRN(E) 20-2 | 2.2 | 413 | 734 | 413 | 734 | 178 | 110 | - | 42 | 47 | 413 | 734 | 413 | 734 | 178 | 167 | - | 53 | 57 |
| CRI(E)/CRN(E) 20-3 | 4 | 463 | 835 | 463 | 835 | 220 | 134 | - | 59 | 64 | 463 | 835 | 463 | 835 | 220 | 188 | - | 69 | 74 |
| CRI/CRN 20-4 | 5.5 | 540 | 931 | 540 | 931 | 220 | 134 | 300 | 81 | 86 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 20-5 | 5.5 | 585 | 976 | 585 | 976 | 220 | 134 | 300 | 82 | 87 | 585 | 976 | 585 | 976 | 220 | 188 | 298 | 89 | 94 |
| CRI/CRN 20-6 | 7.5 | 630 | 1021 | 630 | 1021 | 220 | 134 | 300 | 86 | 91 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 20-7 | 7.5 | 675 | 1066 | 675 | 1066 | 220 | 134 | 300 | 88 | 92 | 675 | 1066 | 675 | 1066 | 220 | 188 | 298 | 96 | 100 |
| CRI/CRN 20-8 | 11 | 797 | 1296 | 797 | 1296 | 260 | 172 | 350 | 119 | 124 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 20-10 | 11 | 887 | 1386 | 887 | 1386 | 260 | 172 | 350 | 123 | 128 | 902 | 1351 | 902 | 1351 | 258 | 359 | 350 | 191 | 195 |
| CRI/CRN 20-12 | 15 | 977 | 1455 | 977 | 1455 | 320 | 197 | 350 | 140 | 145 | - | - | - | - | - | - | - | - | - |
| CRI(E)/CRN(E) 20-14 | 15 | 1067 | 1545 | 1067 | 1545 | 320 | 197 | 350 | 144 | 148 | 1082 | 1543 | 1082 | 1543 | 313 | 377 | 350 | 214 | 219 |
| CRI(E)/CRN(E) 20-17 | 18.5 | 1202 | 1720 | 1202 | 1720 | 320 | 197 | 350 | 179 | 183 | 1217 | 1716 | 1217 | 1716 | 313 | 377 | 350 | 254 | 259 |

CR, CRE 32



TM02 7302 3605

Dimensional sketch

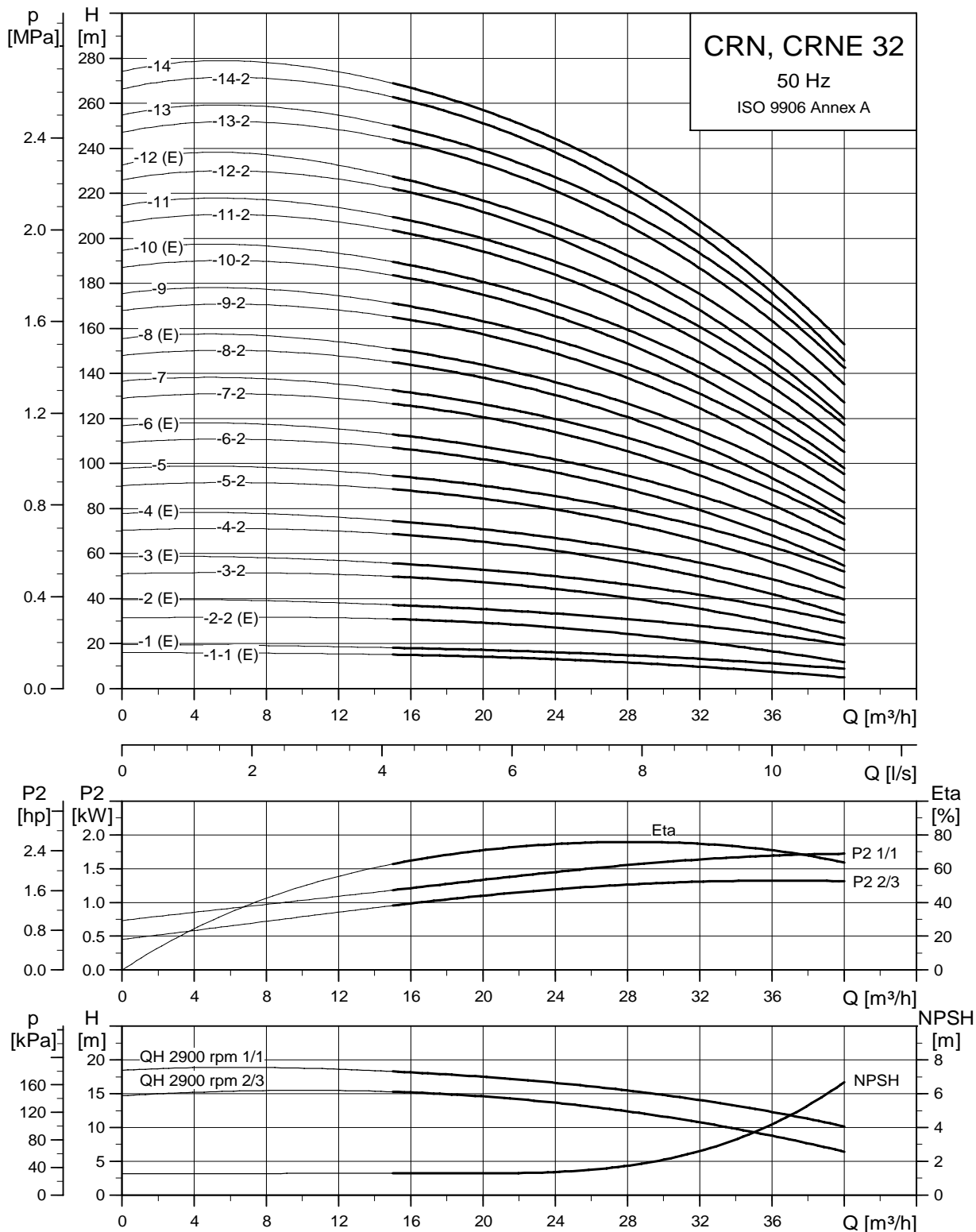


Dimensions and weights

| Pump type | Motor P ₂ [kW] | CR | | | | | Net weight [kg] | CRE | | | | | Net weight [kg] |
|--------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | | Dimension [mm] | | | | | |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR(E) 32-1-1 | 1.5 | 505 | 786 | 178 | 110 | 270 | 64 | 505 | 786 | 178 | 167 | 270 | 70 |
| CR(E) 32-1 | 2.2 | 505 | 826 | 178 | 110 | 270 | 64 | 505 | 826 | 178 | 167 | 270 | 74 |
| CR(E) 32-2-2 | 3 | 575 | 910 | 198 | 120 | 270 | 71 | 575 | 910 | 198 | 177 | 270 | 81 |
| CR(E) 32-2 | 4 | 575 | 947 | 220 | 134 | 270 | 82 | 575 | 947 | 220 | 188 | 270 | 92 |
| CR 32-3-2 | 5.5 | 645 | 1036 | 220 | 134 | 300 | 96 | - | - | - | - | - | - |
| CR(E) 32-3 | 5.5 | 645 | 1036 | 220 | 134 | 300 | 96 | 645 | 1036 | 220 | 188 | 298 | 103 |
| CR 32-4-2 | 7.5 | 715 | 1106 | 220 | 134 | 300 | 101 | - | - | - | - | - | - |
| CR(E) 32-4 | 7.5 | 715 | 1106 | 220 | 134 | 300 | 101 | 715 | 1106 | 220 | 188 | 298 | 109 |
| CR 32-5-2 | 11 | 895 | 1394 | 260 | 172 | 350 | 139 | - | - | - | - | - | - |
| CR 32-5 | 11 | 895 | 1394 | 260 | 172 | 350 | 139 | - | - | - | - | - | - |
| CR 32-6-2 | 11 | 965 | 1464 | 260 | 172 | 350 | 142 | - | - | - | - | - | - |
| CR(E) 32-6 | 11 | 965 | 1464 | 260 | 172 | 350 | 142 | 965 | 1414 | 258 | 359 | 350 | 194 |
| CR 32-7-2 | 15 | 1035 | 1513 | 320 | 197 | 350 | 163 | - | - | - | - | - | - |
| CR 32-7 | 15 | 1035 | 1513 | 320 | 197 | 350 | 163 | - | - | - | - | - | - |
| CR 32-8-2 | 15 | 1105 | 1583 | 320 | 197 | 350 | 169 | - | - | - | - | - | - |
| CR(E) 32-8 | 15 | 1105 | 1583 | 320 | 197 | 350 | 169 | 1105 | 1566 | 313 | 377 | 350 | 220 |
| CR 32-9-2 | 18.5 | 1175 | 1693 | 320 | 197 | 350 | 180 | - | - | - | - | - | - |
| CR 32-9 | 18.5 | 1175 | 1693 | 320 | 197 | 350 | 180 | - | - | - | - | - | - |
| CR 32-10-2 | 18.5 | 1245 | 1763 | 320 | 197 | 350 | 183 | - | - | - | - | - | - |
| CR(E) 32-10 | 18.5 | 1245 | 1763 | 320 | 197 | 350 | 183 | 1245 | 1744 | 313 | 377 | 350 | 262 |
| CR 32-11-2 | 22 | 1315 | 1925 | 363 | 262 | 350 | 272 | - | - | - | - | - | - |
| CR 32-11 | 22 | 1315 | 1925 | 363 | 262 | 350 | 272 | - | - | - | - | - | - |
| CR 32-12-2 | 22 | 1385 | 1995 | 363 | 262 | 350 | 276 | - | - | - | - | - | - |
| CR(E) 32-12 | 22 | 1385 | 1995 | 363 | 262 | 350 | 276 | 1385 | 1910 | 351 | 399 | 350 | 308 |
| CR 32-13-2 | 30 | 1455 | 2101 | 415 | 300 | 400 | 329 | - | - | - | - | - | - |
| CR 32-13 | 30 | 1455 | 2101 | 415 | 300 | 400 | 329 | - | - | - | - | - | - |
| CR 32-14-2 | 30 | 1525 | 2171 | 415 | 300 | 400 | 332 | - | - | - | - | - | - |
| CR 32-14 | 30 | 1525 | 2171 | 415 | 300 | 400 | 332 | - | - | - | - | - | - |

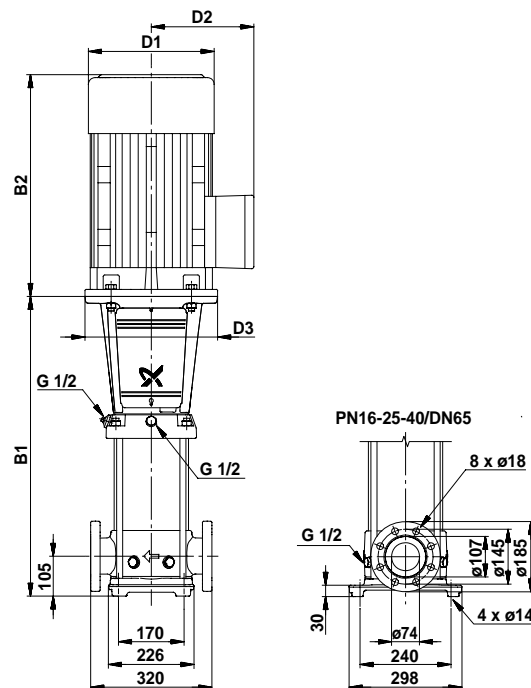
TM01 1749 3298

CRN, CRNE 32



TM02 7303 3605

Dimensional sketch

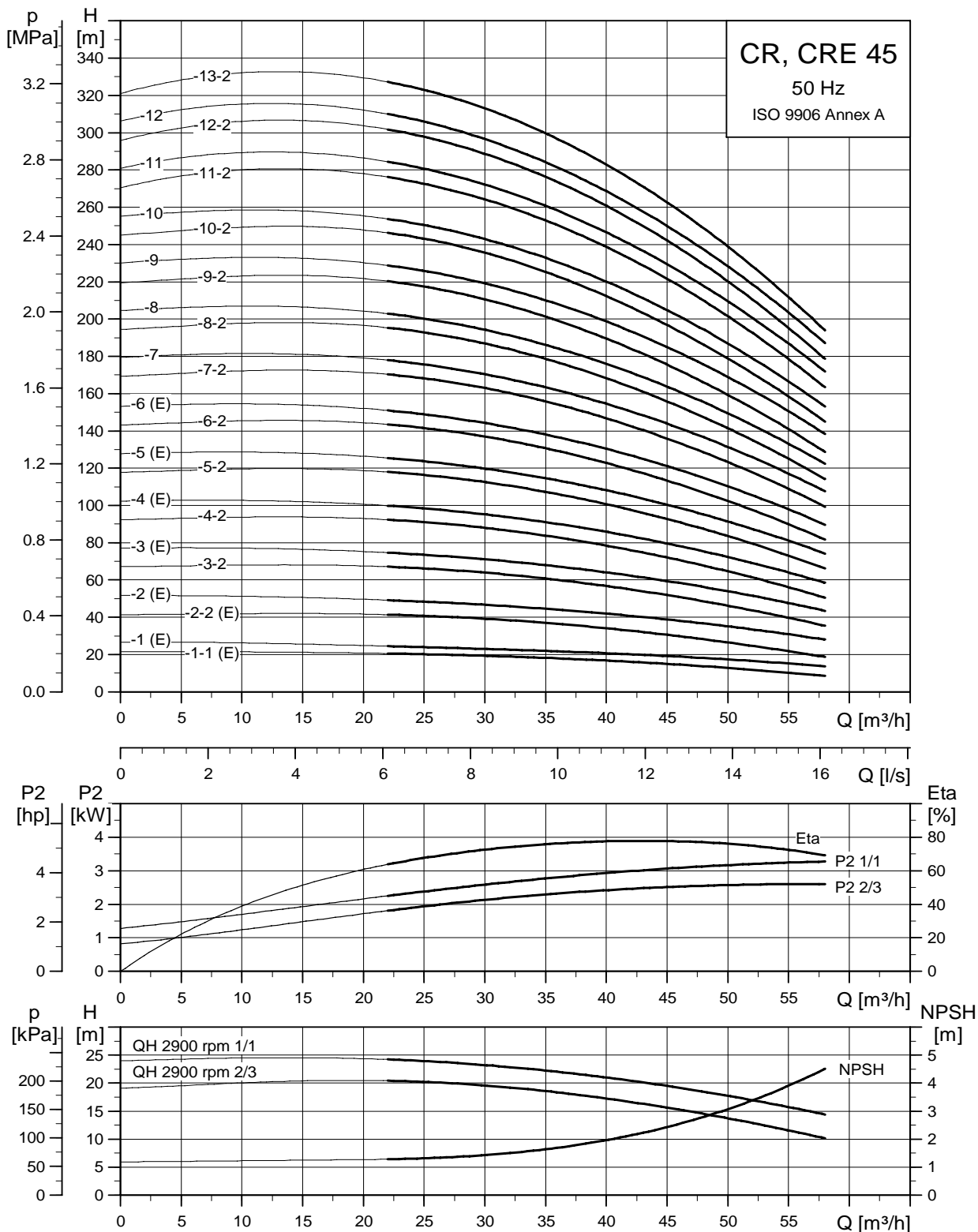


Dimensions and weights

| Pump type | Motor P ₂ [kW] | CRN | | | | | | CRNE | | | | | |
|---------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN(E) 32-1-1 | 1.5 | 505 | 786 | 178 | 110 | 270 | 66 | 505 | 786 | 178 | 167 | 270 | 73 |
| CRN(E) 32-1 | 2.2 | 505 | 826 | 178 | 110 | 270 | 66 | 505 | 826 | 178 | 167 | 270 | 77 |
| CRN(E) 32-2-2 | 3 | 575 | 910 | 198 | 120 | 270 | 73 | 575 | 910 | 198 | 177 | 270 | 83 |
| CRN(E) 32-2 | 4 | 575 | 947 | 220 | 134 | 270 | 84 | 575 | 947 | 220 | 188 | 270 | 94 |
| CRN 32-3-2 | 5.5 | 645 | 1036 | 220 | 134 | 300 | 99 | - | - | - | - | - | - |
| CRN(E) 32-3 | 5.5 | 645 | 1036 | 220 | 134 | 300 | 99 | 645 | 1036 | 220 | 188 | 298 | 105 |
| CRN 32-4-2 | 7.5 | 715 | 1106 | 220 | 134 | 300 | 104 | - | - | - | - | - | - |
| CRN(E) 32-4 | 7.5 | 715 | 1106 | 220 | 134 | 300 | 104 | 715 | 1106 | 220 | 188 | 298 | 111 |
| CRN 32-5-2 | 11 | 895 | 1394 | 260 | 172 | 350 | 141 | - | - | - | - | - | - |
| CRN 32-5 | 11 | 895 | 1394 | 260 | 172 | 350 | 141 | - | - | - | - | - | - |
| CRN 32-6-2 | 11 | 965 | 1464 | 260 | 172 | 350 | 144 | - | - | - | - | - | - |
| CRN(E) 32-6 | 11 | 965 | 1464 | 260 | 172 | 350 | 144 | 965 | 1414 | 258 | 359 | 350 | 196 |
| CRN 32-7-2 | 15 | 1035 | 1513 | 320 | 197 | 350 | 165 | - | - | - | - | - | - |
| CRN 32-7 | 15 | 1035 | 1513 | 320 | 197 | 350 | 165 | - | - | - | - | - | - |
| CRN 32-8-2 | 15 | 1105 | 1583 | 320 | 197 | 350 | 171 | - | - | - | - | - | - |
| CRN(E) 32-8 | 15 | 1105 | 1583 | 320 | 197 | 350 | 171 | 1105 | 1566 | 313 | 377 | 350 | 222 |
| CRN 32-9-2 | 18.5 | 1175 | 1693 | 320 | 197 | 350 | 182 | - | - | - | - | - | - |
| CRN 32-9 | 18.5 | 1175 | 1693 | 320 | 197 | 350 | 182 | - | - | - | - | - | - |
| CRN 32-10-2 | 18.5 | 1245 | 1763 | 320 | 197 | 350 | 185 | - | - | - | - | - | - |
| CRN(E) 32-10 | 18.5 | 1245 | 1763 | 320 | 197 | 350 | 185 | 1245 | 1744 | 313 | 377 | 350 | 264 |
| CRN 32-11-2 | 22 | 1315 | 1925 | 363 | 262 | 350 | 274 | - | - | - | - | - | - |
| CRN 32-11 | 22 | 1315 | 1925 | 363 | 262 | 350 | 274 | - | - | - | - | - | - |
| CRN 32-12-2 | 22 | 1385 | 1995 | 363 | 262 | 350 | 278 | - | - | - | - | - | - |
| CRN(E) 32-12 | 22 | 1385 | 1995 | 363 | 262 | 350 | 278 | 1385 | 1910 | 351 | 399 | 350 | 310 |
| CRN 32-13-2 | 30 | 1455 | 2101 | 415 | 300 | 400 | 331 | - | - | - | - | - | - |
| CRN 32-13 | 30 | 1455 | 2101 | 415 | 300 | 400 | 331 | - | - | - | - | - | - |
| CRN 32-14-2 | 30 | 1525 | 2171 | 415 | 300 | 400 | 335 | - | - | - | - | - | - |
| CRN 32-14 | 30 | 1525 | 2171 | 415 | 300 | 400 | 335 | - | - | - | - | - | - |

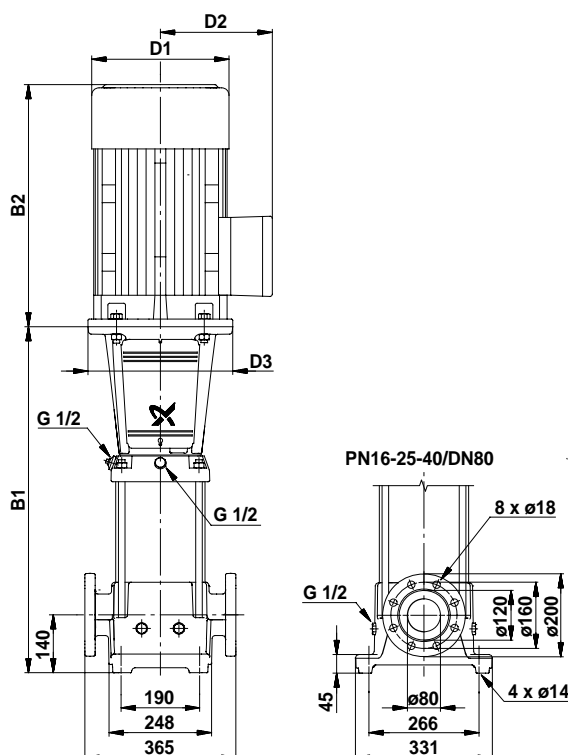
TM01 1750 2203

CR, CRE 45



TM02 7304 3605

Dimensional sketch

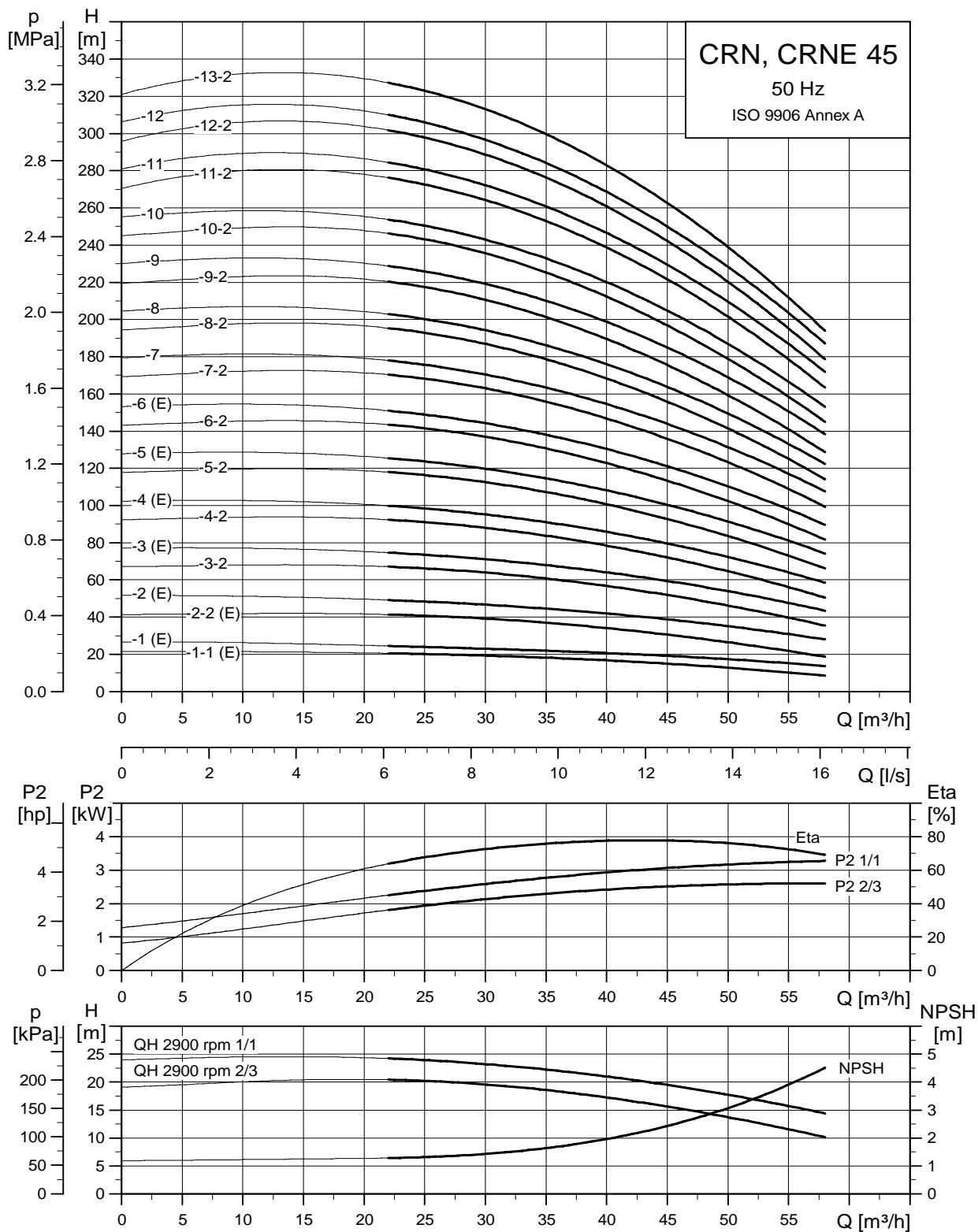


TM01 1751 3203

Dimensions and weights

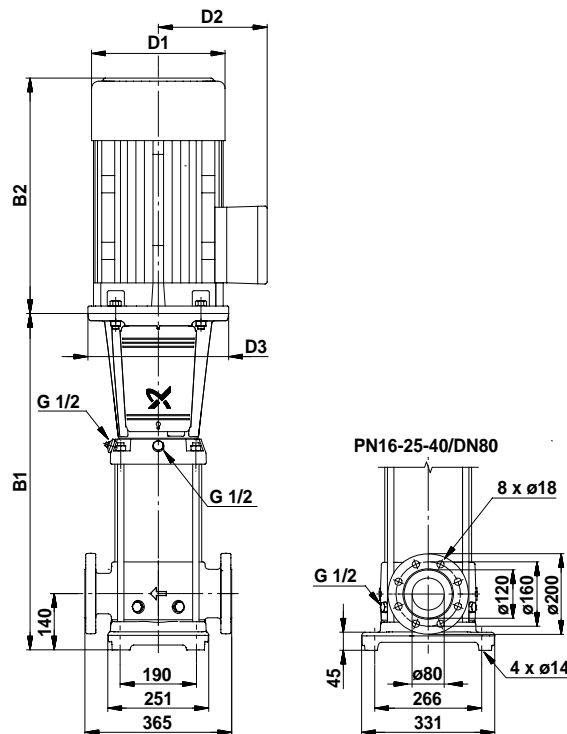
| Pump type | Motor P ₂ [kW] | CR | | | | | | CRE | | | | | |
|--------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR(E) 45-1-1 | 3 | 559 | 894 | 198 | 120 | 270 | 78 | 559 | 894 | 198 | 177 | 270 | 88 |
| CR(E) 45-1 | 4 | 559 | 931 | 220 | 134 | 270 | 89 | 559 | 931 | 220 | 188 | 270 | 99 |
| CR(E) 45-2-2 | 5.5 | 639 | 1030 | 220 | 134 | 300 | 104 | 639 | 1030 | 220 | 188 | 298 | 110 |
| CR(E) 45-2 | 7.5 | 639 | 1030 | 220 | 134 | 300 | 106 | 639 | 1030 | 220 | 188 | 298 | 114 |
| CR 45-3-2 | 11 | 829 | 1328 | 260 | 172 | 350 | 144 | - | - | - | - | - | - |
| CR(E) 45-3 | 11 | 829 | 1328 | 260 | 172 | 350 | 144 | 829 | 1278 | 258 | 359 | 350 | 196 |
| CR 45-4-2 | 15 | 909 | 1387 | 320 | 197 | 350 | 166 | - | - | - | - | - | - |
| CR(E) 45-4 | 15 | 909 | 1387 | 320 | 197 | 350 | 166 | 909 | 1370 | 313 | 377 | 350 | 217 |
| CR 45-5-2 | 18.5 | 989 | 1507 | 320 | 197 | 350 | 177 | - | - | - | - | - | - |
| CR(E) 45-5 | 18.5 | 989 | 1507 | 320 | 197 | 350 | 177 | 989 | 1488 | 313 | 377 | 350 | 256 |
| CR 45-6-2 | 22 | 1069 | 1679 | 363 | 262 | 350 | 269 | - | - | - | - | - | - |
| CR(E) 45-6 | 22 | 1069 | 1679 | 363 | 262 | 350 | 269 | 1069 | 1594 | 351 | 399 | 350 | 301 |
| CR 45-7-2 | 30 | 1149 | 1795 | 415 | 300 | 400 | 324 | - | - | - | - | - | - |
| CR 45-7 | 30 | 1149 | 1795 | 415 | 300 | 400 | 324 | - | - | - | - | - | - |
| CR 45-8-2 | 30 | 1229 | 1875 | 415 | 300 | 400 | 328 | - | - | - | - | - | - |
| CR 45-8 | 30 | 1229 | 1875 | 415 | 300 | 400 | 328 | - | - | - | - | - | - |
| CR 45-9-2 | 30 | 1309 | 1955 | 415 | 300 | 400 | 332 | - | - | - | - | - | - |
| CR 45-9 | 37 | 1309 | 2012 | 415 | 300 | 400 | 362 | - | - | - | - | - | - |
| CR 45-10-2 | 37 | 1389 | 2092 | 415 | 300 | 400 | 367 | - | - | - | - | - | - |
| CR 45-10 | 37 | 1389 | 2092 | 415 | 300 | 400 | 367 | - | - | - | - | - | - |
| CR 45-11-2 | 45 | 1469 | 2178 | 442 | 325 | 450 | 450 | - | - | - | - | - | - |
| CR 45-11 | 45 | 1469 | 2178 | 442 | 325 | 450 | 450 | - | - | - | - | - | - |
| CR 45-12-2 | 45 | 1549 | 2258 | 442 | 325 | 450 | 455 | - | - | - | - | - | - |
| CR 45-12 | 45 | 1549 | 2258 | 442 | 325 | 450 | 455 | - | - | - | - | - | - |
| CR 45-13-2 | 45 | 1629 | 2338 | 442 | 325 | 450 | 459 | - | - | - | - | - | - |

CRN, CRNE 45



TM02 7305 3605

Dimensional sketch

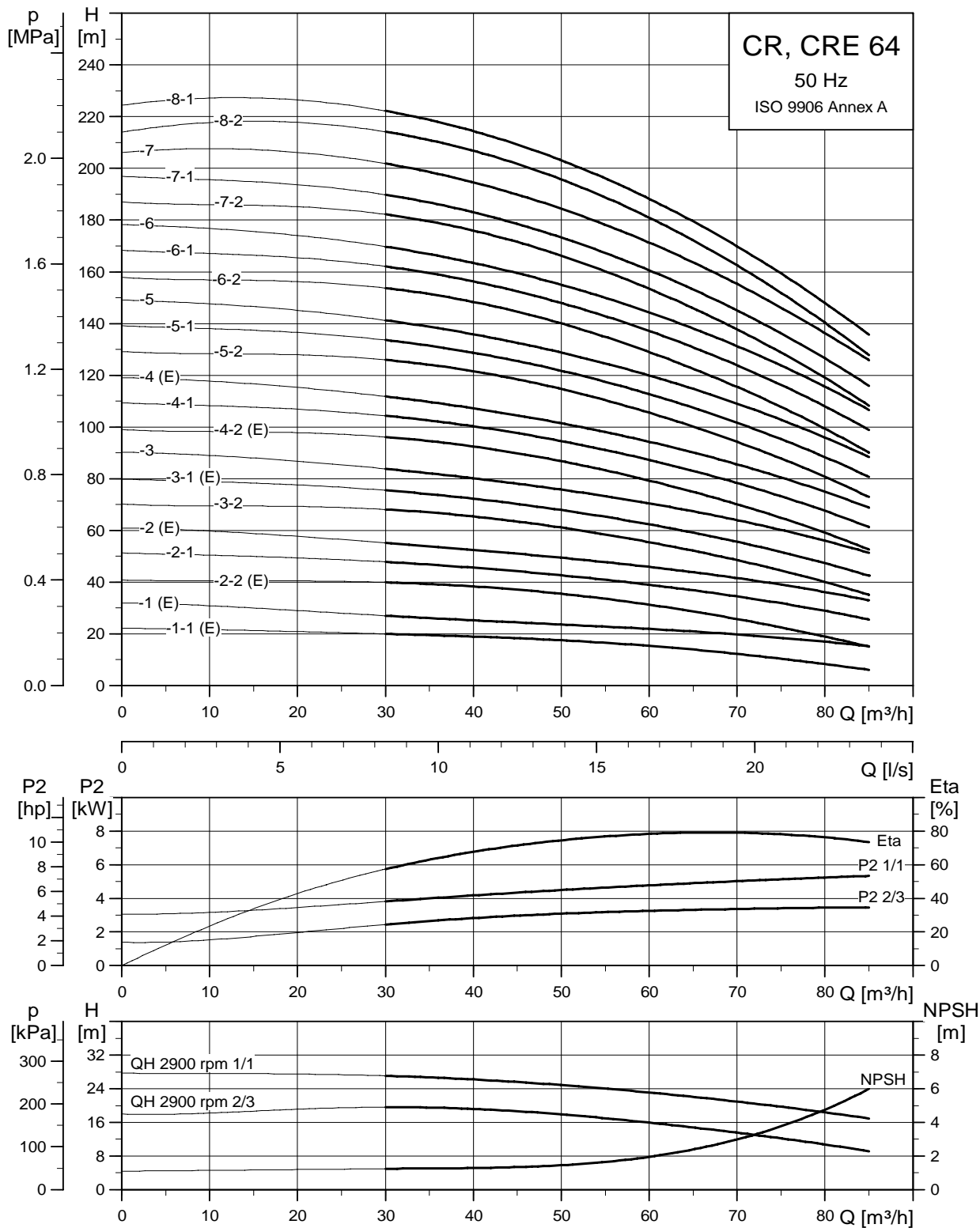


TM01 1752 3203

Dimensions and weights

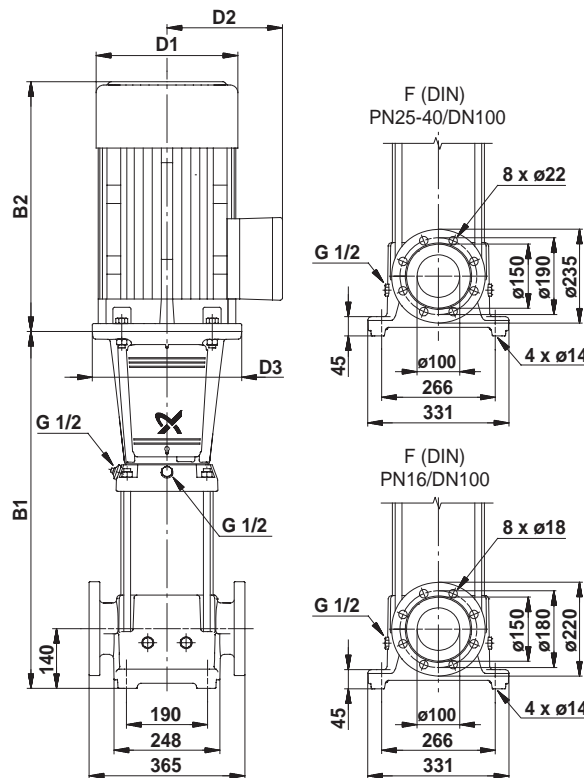
| Pump type | Motor P ₂ [kW] | CRN | | | | | | CRNE | | | | | |
|---------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN(E) 45-1-1 | 3 | 559 | 894 | 198 | 120 | 270 | 78 | 559 | 894 | 198 | 177 | 270 | 88 |
| CRN(E) 45-1 | 4 | 559 | 931 | 220 | 134 | 270 | 89 | 559 | 931 | 220 | 188 | 270 | 99 |
| CRN(E) 45-2-2 | 5.5 | 639 | 1030 | 220 | 134 | 300 | 104 | 639 | 1030 | 220 | 188 | 298 | 111 |
| CRN(E) 45-2 | 7.5 | 639 | 1030 | 220 | 134 | 300 | 106 | 639 | 1030 | 220 | 188 | 298 | 114 |
| CRN 45-3-2 | 11 | 829 | 1328 | 260 | 172 | 350 | 145 | - | - | - | - | - | - |
| CRN(E) 45-3 | 11 | 829 | 1328 | 260 | 172 | 350 | 145 | 829 | 1278 | 258 | 359 | 350 | 197 |
| CRN 45-4-2 | 15 | 909 | 1387 | 320 | 197 | 350 | 166 | - | - | - | - | - | - |
| CRN(E) 45-4 | 15 | 909 | 1387 | 320 | 197 | 350 | 166 | 909 | 1370 | 313 | 377 | 350 | 217 |
| CRN 45-5-2 | 18.5 | 989 | 1507 | 320 | 197 | 350 | 177 | - | - | - | - | - | - |
| CRN(E) 45-5 | 18.5 | 989 | 1507 | 320 | 197 | 350 | 177 | 989 | 1488 | 313 | 377 | 350 | 256 |
| CRN 45-6-2 | 22 | 1069 | 1679 | 363 | 262 | 350 | 270 | - | - | - | - | - | - |
| CRN(E) 45-6 | 22 | 1069 | 1679 | 363 | 262 | 350 | 270 | 1069 | 1594 | 351 | 399 | 350 | 302 |
| CRN 45-7-2 | 30 | 1149 | 1795 | 415 | 300 | 400 | 324 | - | - | - | - | - | - |
| CRN 45-7 | 30 | 1149 | 1795 | 415 | 300 | 400 | 324 | - | - | - | - | - | - |
| CRN 45-8-2 | 30 | 1229 | 1875 | 415 | 300 | 400 | 328 | - | - | - | - | - | - |
| CRN 45-8 | 30 | 1229 | 1875 | 415 | 300 | 400 | 328 | - | - | - | - | - | - |
| CRN 45-9-2 | 30 | 1309 | 1955 | 415 | 300 | 400 | 333 | - | - | - | - | - | - |
| CRN 45-9 | 37 | 1309 | 2012 | 415 | 300 | 400 | 363 | - | - | - | - | - | - |
| CRN 45-10-2 | 37 | 1389 | 2092 | 415 | 300 | 400 | 367 | - | - | - | - | - | - |
| CRN 45-10 | 37 | 1389 | 2092 | 415 | 300 | 400 | 367 | - | - | - | - | - | - |
| CRN 45-11-2 | 45 | 1469 | 2178 | 442 | 325 | 450 | 450 | - | - | - | - | - | - |
| CRN 45-11 | 45 | 1469 | 2178 | 442 | 325 | 450 | 450 | - | - | - | - | - | - |
| CRN 45-12-2 | 45 | 1549 | 2258 | 442 | 325 | 450 | 455 | - | - | - | - | - | - |
| CRN 45-12 | 45 | 1549 | 2258 | 442 | 325 | 450 | 455 | - | - | - | - | - | - |
| CRN 45-13-2 | 45 | 1629 | 2338 | 442 | 325 | 450 | 459 | - | - | - | - | - | - |

CR, CRE 64



TM02 7306 3605

Dimensional sketch

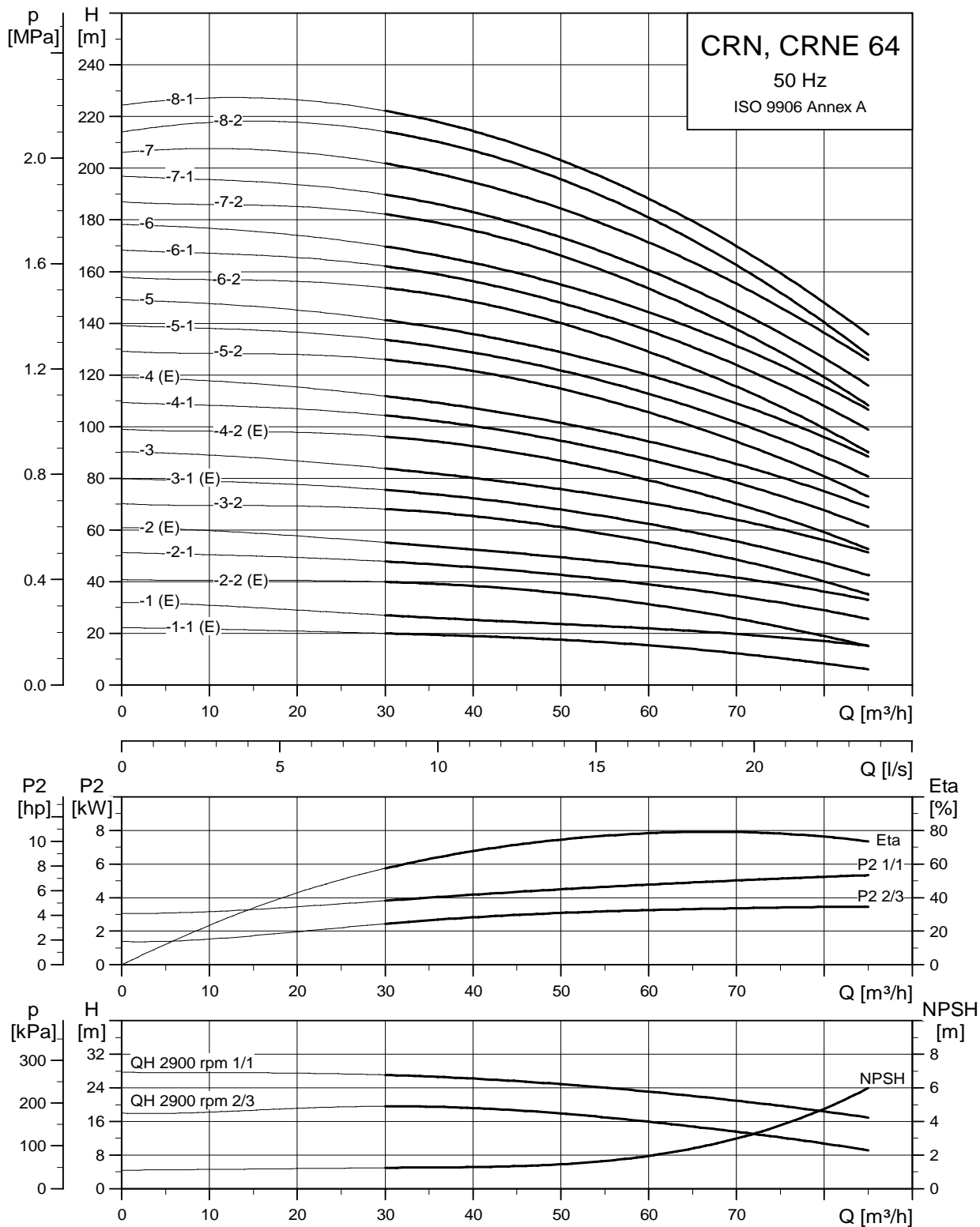


TM01 1753 5197

Dimensions and weights

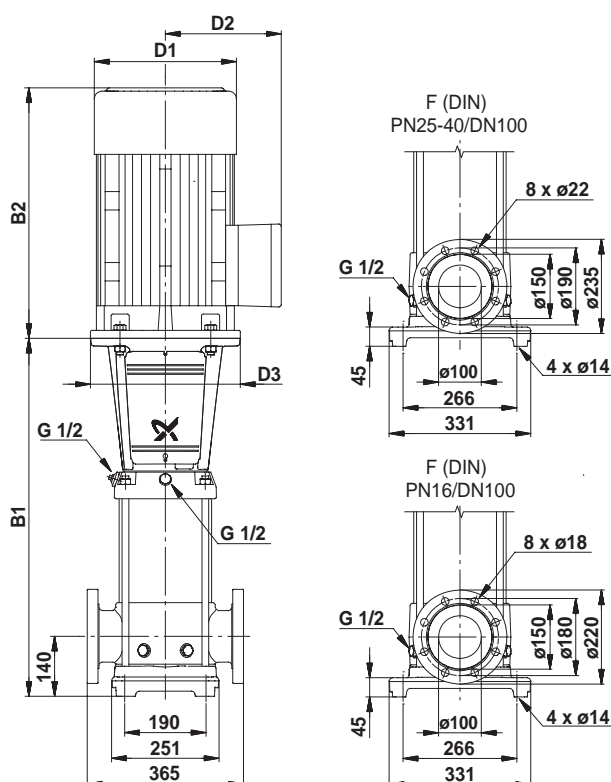
| Pump type | Motor P ₂ [kW] | CR | | | | | | CRE | | | | | |
|--------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR(E) 64-1-1 | 4 | 561 | 933 | 220 | 134 | 270 | 91 | 561 | 933 | 220 | 188 | 270 | 101 |
| CR(E) 64-1 | 5.5 | 561 | 952 | 220 | 134 | 300 | 102 | 561 | 952 | 220 | 188 | 298 | 109 |
| CR(E) 64-2-2 | 7.5 | 644 | 1035 | 220 | 134 | 300 | 109 | 644 | 1035 | 220 | 188 | 298 | 117 |
| CR 64-2-1 | 11 | 754 | 1253 | 260 | 172 | 350 | 143 | - | - | - | - | - | - |
| CR(E) 64-2 | 11 | 754 | 1253 | 260 | 172 | 350 | 143 | 754 | 1203 | 258 | 359 | 350 | 195 |
| CR 64-3-2 | 15 | 836 | 1314 | 320 | 197 | 350 | 166 | - | - | - | - | - | - |
| CR(E) 64-3-1 | 15 | 836 | 1314 | 320 | 197 | 350 | 166 | 836 | 1297 | 313 | 377 | 350 | 217 |
| CR 64-3 | 18.5 | 836 | 1354 | 320 | 197 | 350 | 173 | - | - | - | - | - | - |
| CR(E) 64-4-2 | 18.5 | 919 | 1437 | 320 | 197 | 350 | 177 | 919 | 1418 | 313 | 377 | 350 | 256 |
| CR 64-4-1 | 22 | 919 | 1529 | 363 | 262 | 350 | 263 | - | - | - | - | - | - |
| CR(E) 64-4 | 22 | 919 | 1529 | 363 | 262 | 350 | 263 | 919 | 1444 | 351 | 399 | 350 | 295 |
| CR 64-5-2 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CR 64-5-1 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CR 64-5 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CR 64-6-2 | 30 | 1084 | 1730 | 415 | 300 | 400 | 324 | - | - | - | - | - | - |
| CR 64-6-1 | 37 | 1084 | 1787 | 415 | 300 | 400 | 354 | - | - | - | - | - | - |
| CR 64-6 | 37 | 1084 | 1787 | 415 | 300 | 400 | 354 | - | - | - | - | - | - |
| CR 64-7-2 | 37 | 1166 | 1869 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CR 64-7-1 | 37 | 1166 | 1869 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CR 64-7 | 45 | 1166 | 1875 | 442 | 325 | 450 | 438 | - | - | - | - | - | - |
| CR 64-8-2 | 45 | 1249 | 1958 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |
| CR 64-8-1 | 45 | 1249 | 1958 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |

CRN, CRNE 64



TM02 7307 3605

Dimensional sketch

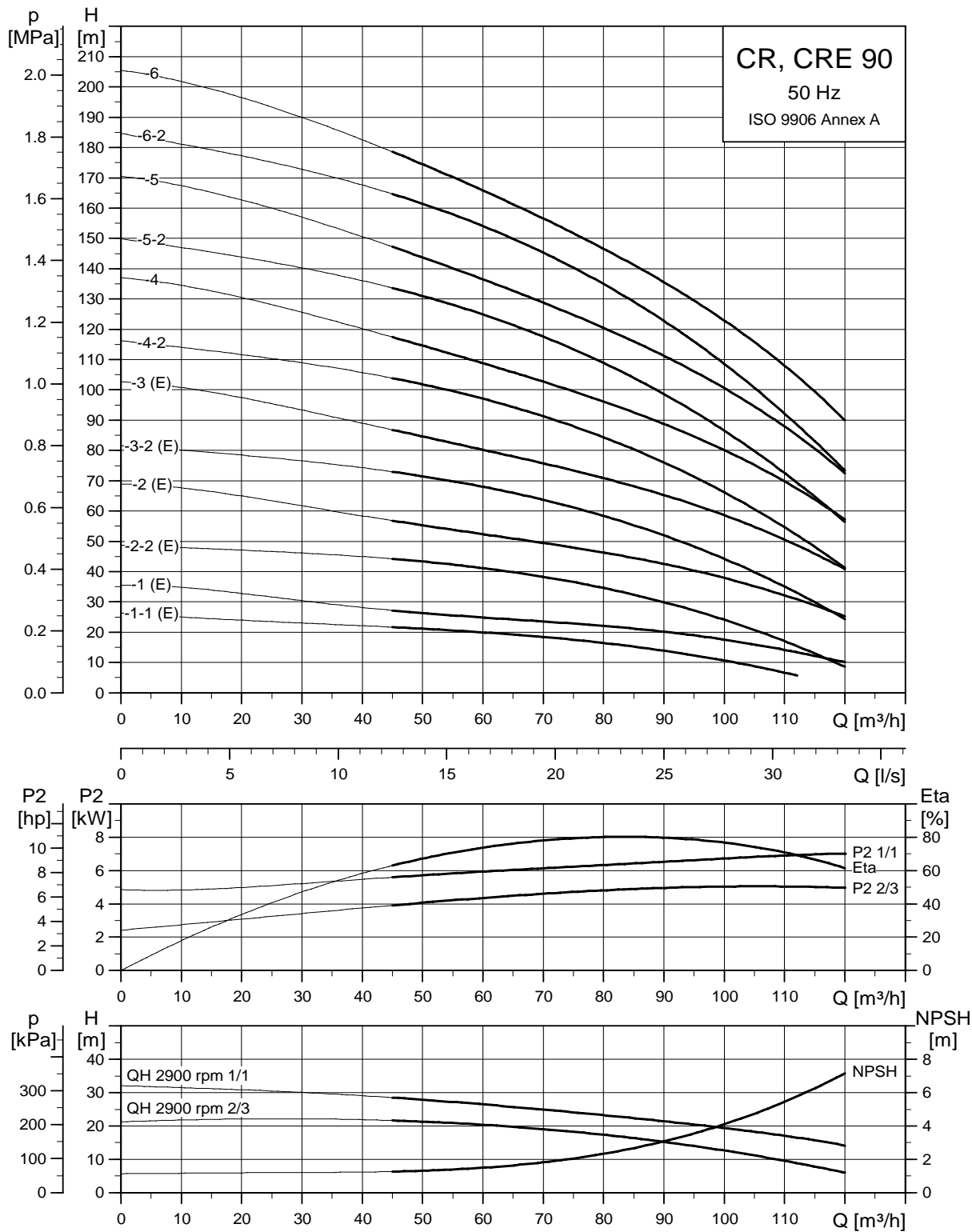


TM01 1754 0904

Dimensions and weights

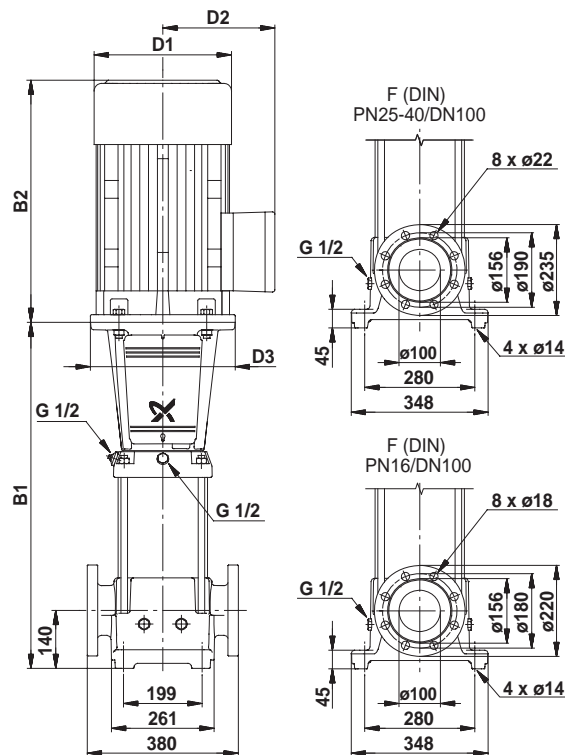
| Pump type | Motor P ₂ [kW] | CRN | | | | | | CRNE | | | | | |
|---------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN(E) 64-1-1 | 4 | 561 | 933 | 220 | 134 | 270 | 91 | 561 | 933 | 220 | 188 | 270 | 101 |
| CRN(E) 64-1 | 5.5 | 561 | 952 | 220 | 134 | 300 | 102 | 561 | 952 | 220 | 188 | 298 | 109 |
| CRN(E) 64-2-2 | 7.5 | 644 | 1035 | 220 | 134 | 300 | 109 | 644 | 1035 | 220 | 188 | 298 | 116 |
| CRN 64-2-1 | 11 | 754 | 1253 | 260 | 172 | 350 | 143 | - | - | - | - | - | - |
| CRN(E) 64-2 | 11 | 754 | 1253 | 260 | 172 | 350 | 143 | 754 | 1203 | 258 | 359 | 350 | 195 |
| CRN 64-3-2 | 15 | 836 | 1314 | 320 | 197 | 350 | 166 | - | - | - | - | - | - |
| CRN(E) 64-3-1 | 15 | 836 | 1314 | 320 | 197 | 350 | 166 | 836 | 1297 | 313 | 377 | 350 | 217 |
| CRN 64-3 | 18.5 | 836 | 1354 | 320 | 197 | 350 | 173 | - | - | - | - | - | - |
| CRN(E) 64-4-2 | 18.5 | 919 | 1437 | 320 | 197 | 350 | 177 | 919 | 1418 | 313 | 377 | 350 | 256 |
| CRN 64-4-1 | 22 | 919 | 1529 | 363 | 262 | 350 | 263 | - | - | - | - | - | - |
| CRN(E) 64-4 | 22 | 919 | 1529 | 363 | 262 | 350 | 263 | 919 | 1444 | 351 | 399 | 350 | 295 |
| CRN 64-5-2 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CRN 64-5-1 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CRN 64-5 | 30 | 1001 | 1647 | 415 | 300 | 400 | 318 | - | - | - | - | - | - |
| CRN 64-6-2 | 30 | 1084 | 1730 | 415 | 300 | 400 | 325 | - | - | - | - | - | - |
| CRN 64-6-1 | 37 | 1084 | 1787 | 415 | 300 | 400 | 355 | - | - | - | - | - | - |
| CRN 64-6 | 37 | 1084 | 1787 | 415 | 300 | 400 | 355 | - | - | - | - | - | - |
| CRN 64-7-2 | 37 | 1166 | 1869 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CRN 64-7-1 | 37 | 1166 | 1869 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CRN 64-7 | 45 | 1166 | 1875 | 442 | 325 | 450 | 439 | - | - | - | - | - | - |
| CRN 64-8-2 | 45 | 1249 | 1958 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |
| CRN 64-8-1 | 45 | 1249 | 1958 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |

CR, CRE 90



TM02 7308 3605

Dimensional sketch

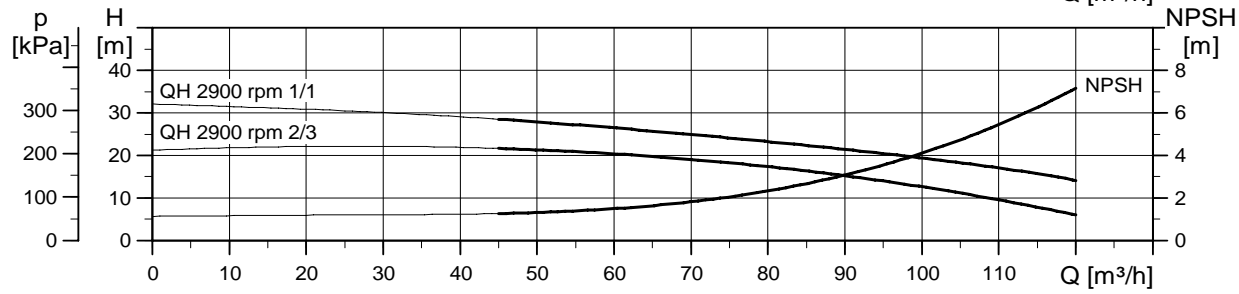
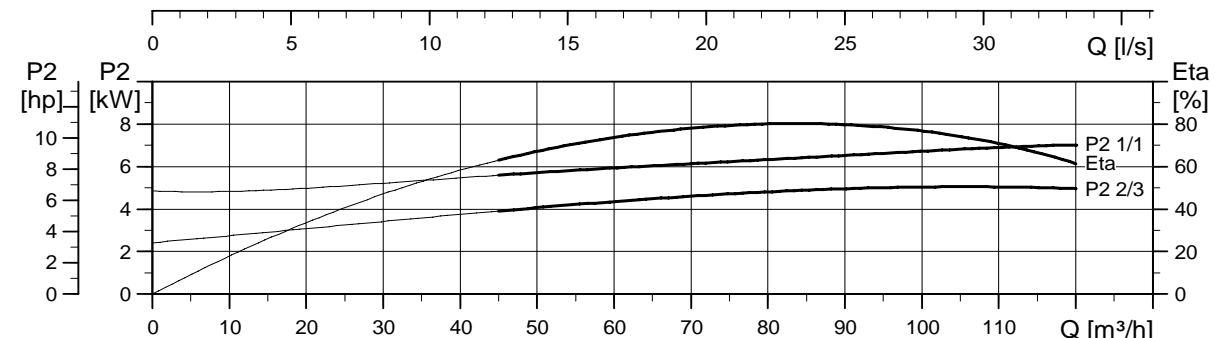
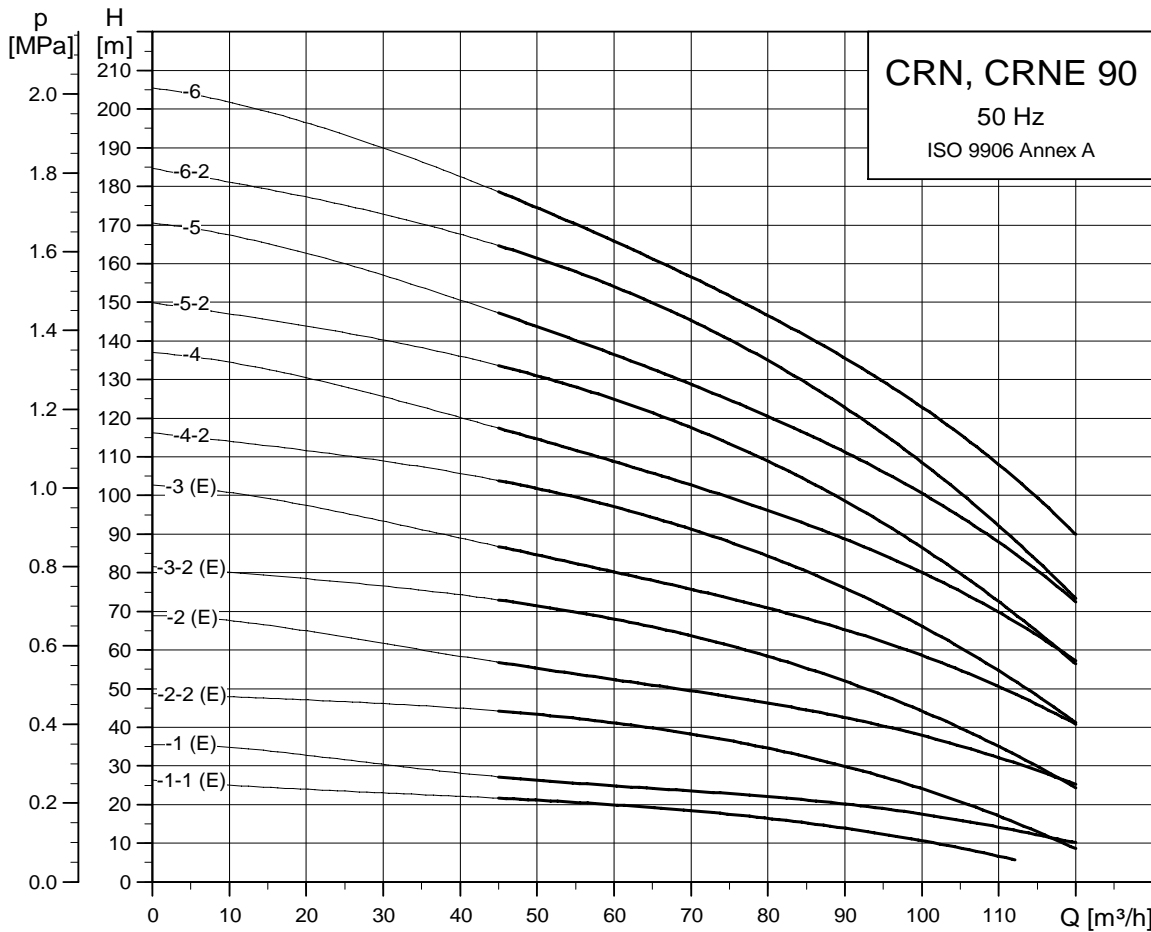


TM01 1755 2203

Dimensions and weights

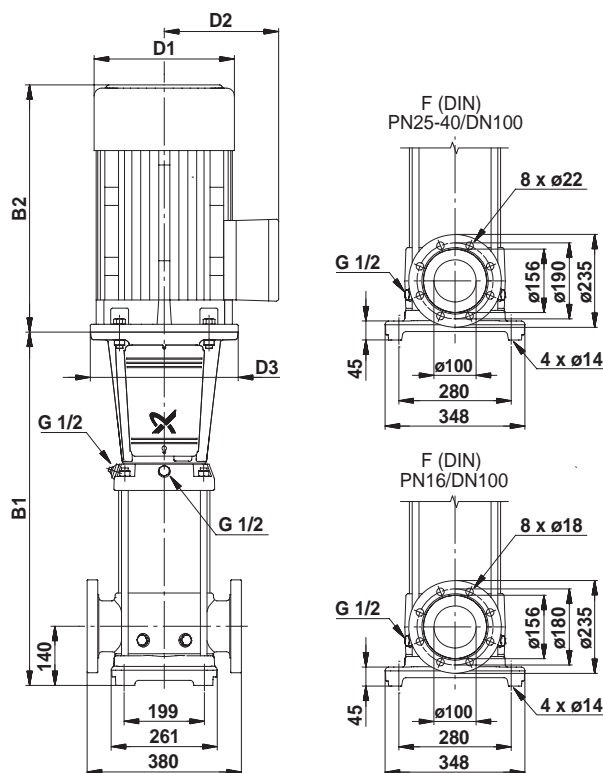
| Pump type | Motor P ₂ [kW] | CR | | | | | Net weight [kg] | CRE | | | | | Net weight [kg] |
|--------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | | Dimension [mm] | | | | | |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR(E) 90-1-1 | 5.5 | 571 | 962 | 220 | 134 | 300 | 107 | 571 | 962 | 220 | 188 | 298 | 114 |
| CR(E) 90-1 | 7.5 | 571 | 962 | 220 | 134 | 300 | 109 | 571 | 962 | 220 | 188 | 298 | 117 |
| CR(E) 90-2-2 | 11 | 773 | 1272 | 260 | 172 | 350 | 149 | 773 | 1222 | 258 | 359 | 350 | 201 |
| CR(E) 90-2 | 15 | 773 | 1251 | 320 | 197 | 350 | 167 | 773 | 1234 | 313 | 377 | 350 | 218 |
| CR(E) 90-3-2 | 18.5 | 865 | 1383 | 320 | 197 | 350 | 179 | 865 | 1364 | 313 | 377 | 350 | 258 |
| CR(E) 90-3 | 22 | 865 | 1475 | 363 | 262 | 350 | 264 | 865 | 1390 | 351 | 399 | 350 | 296 |
| CR 90-4-2 | 30 | 957 | 1603 | 415 | 300 | 400 | 320 | - | - | - | - | - | - |
| CR 90-4 | 30 | 957 | 1603 | 415 | 300 | 400 | 320 | - | - | - | - | - | - |
| CR 90-5-2 | 37 | 1049 | 1752 | 415 | 300 | 400 | 356 | - | - | - | - | - | - |
| CR 90-5 | 37 | 1049 | 1752 | 415 | 300 | 400 | 356 | - | - | - | - | - | - |
| CR 90-6-2 | 45 | 1141 | 1850 | 442 | 325 | 450 | 441 | - | - | - | - | - | - |
| CR 90-6 | 45 | 1141 | 1850 | 442 | 325 | 450 | 441 | - | - | - | - | - | - |

CRN, CRNE 90



TM02 7305 3605

Dimensional sketch

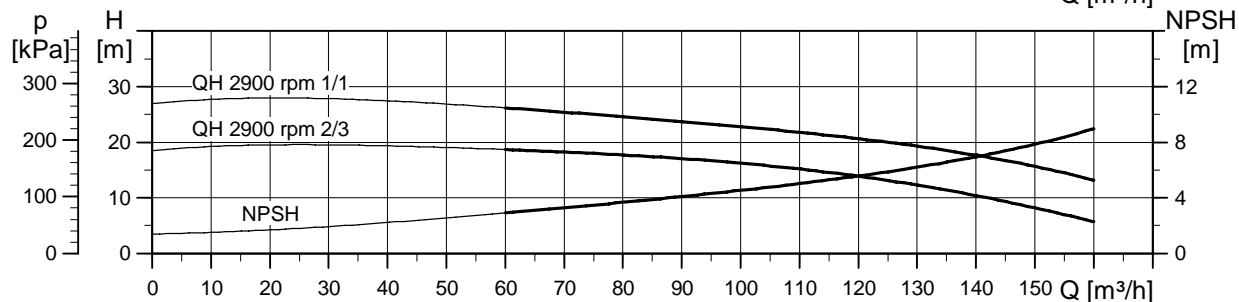
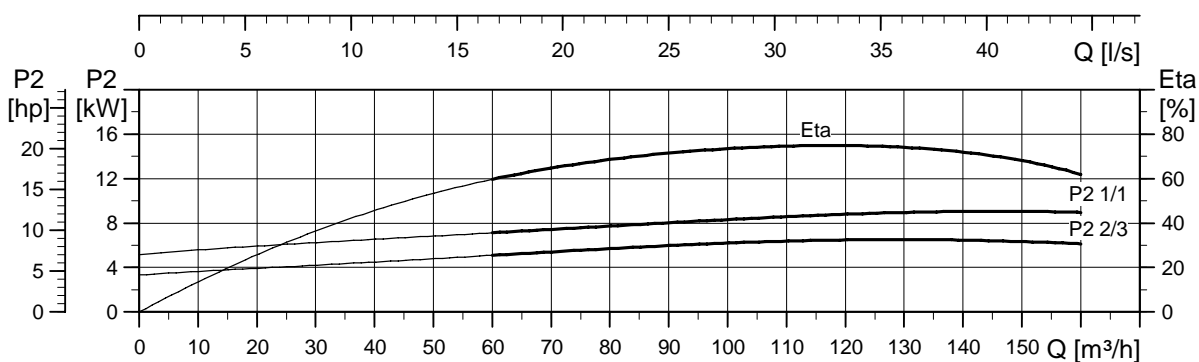
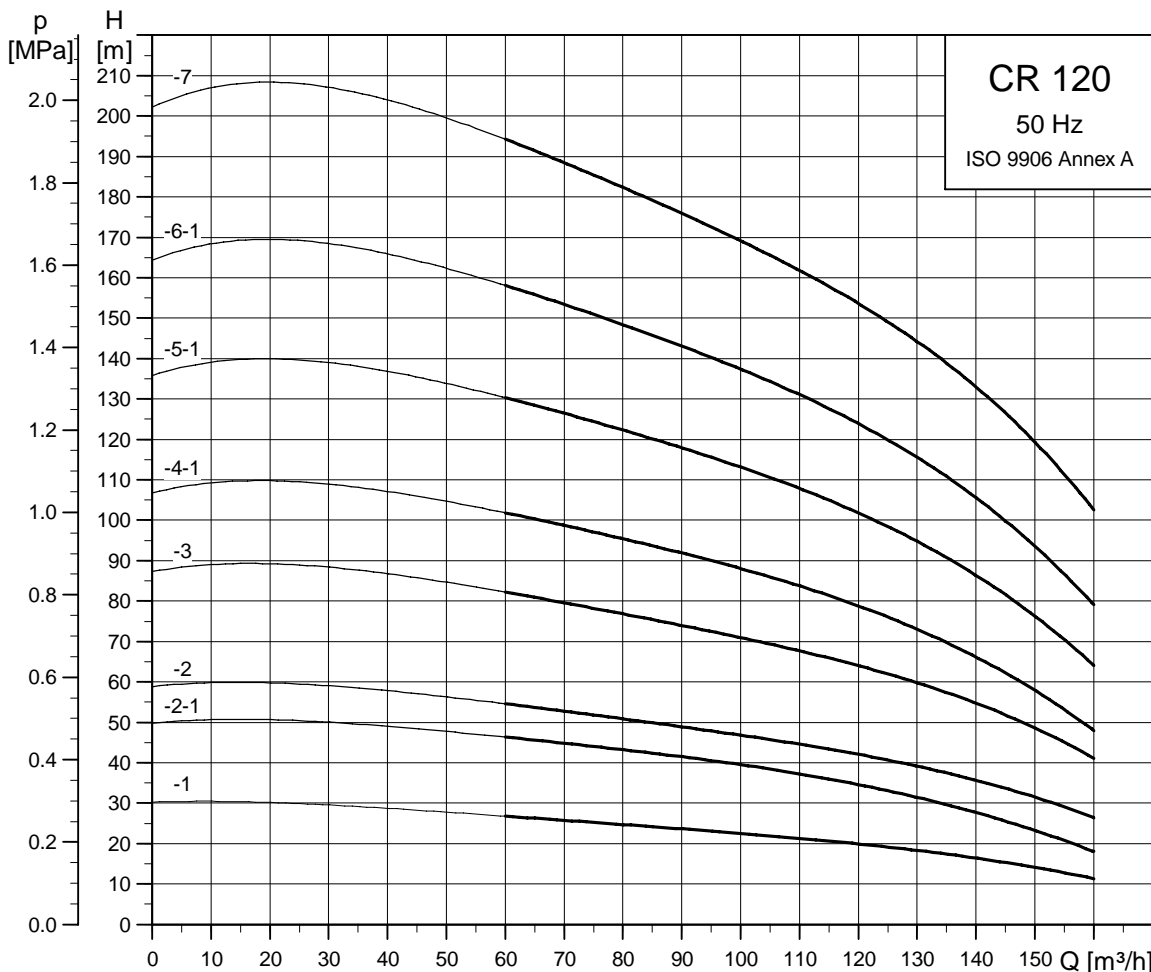


TM02 1570 2203

Dimensions and weights

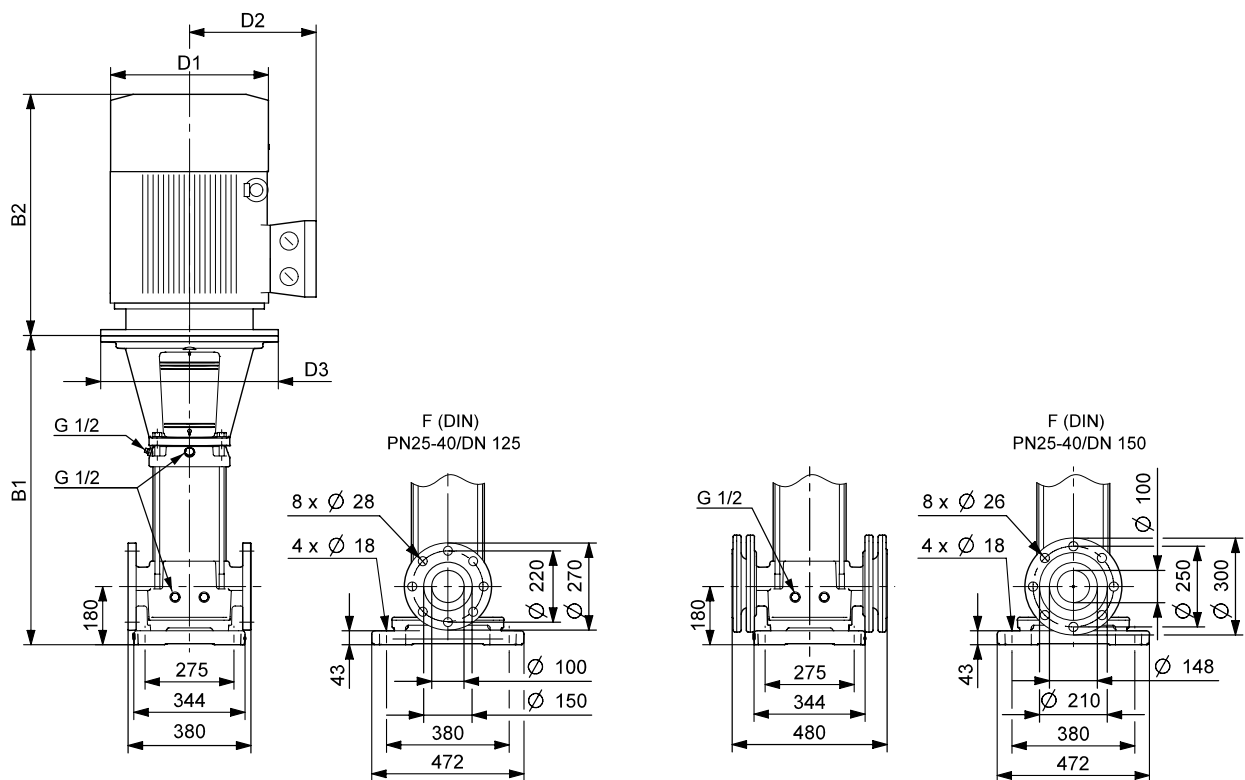
| Pump type | Motor P ₂ [kW] | CRN | | | | | | CRNE | | | | | |
|---------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|----------------|-------|-----|-----|-----|-----------------|
| | | Dimension [mm] | | | | | Net weight [kg] | Dimension [mm] | | | | | Net weight [kg] |
| | | B1 | B1+B2 | D1 | D2 | D3 | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN(E) 90-1-1 | 5.5 | 571 | 962 | 220 | 134 | 300 | 109 | 571 | 962 | 220 | 188 | 298 | 115 |
| CRN(E) 90-1 | 7.5 | 571 | 962 | 220 | 134 | 300 | 111 | 571 | 962 | 220 | 188 | 298 | 118 |
| CRN(E) 90-2-2 | 11 | 773 | 1272 | 260 | 172 | 350 | 150 | 773 | 1222 | 258 | 359 | 350 | 202 |
| CRN(E) 90-2 | 15 | 773 | 1251 | 320 | 197 | 350 | 168 | 773 | 1234 | 313 | 377 | 350 | 219 |
| CRN(E) 90-3-2 | 18.5 | 865 | 1383 | 320 | 197 | 350 | 180 | 865 | 1364 | 313 | 377 | 350 | 259 |
| CRN(E) 90-3 | 22 | 865 | 1475 | 363 | 262 | 350 | 266 | 865 | 1390 | 351 | 399 | 350 | 298 |
| CRN 90-4-2 | 30 | 957 | 1603 | 415 | 300 | 400 | 321 | - | - | - | - | - | - |
| CRN 90-4 | 30 | 957 | 1603 | 415 | 300 | 400 | 321 | - | - | - | - | - | - |
| CRN 90-5-2 | 37 | 1049 | 1752 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CRN 90-5 | 37 | 1049 | 1752 | 415 | 300 | 400 | 359 | - | - | - | - | - | - |
| CRN 90-6-2 | 45 | 1141 | 1850 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |
| CRN 90-6 | 45 | 1141 | 1850 | 442 | 325 | 450 | 443 | - | - | - | - | - | - |

CR 120



TM03 8743 2407

Dimensional sketch

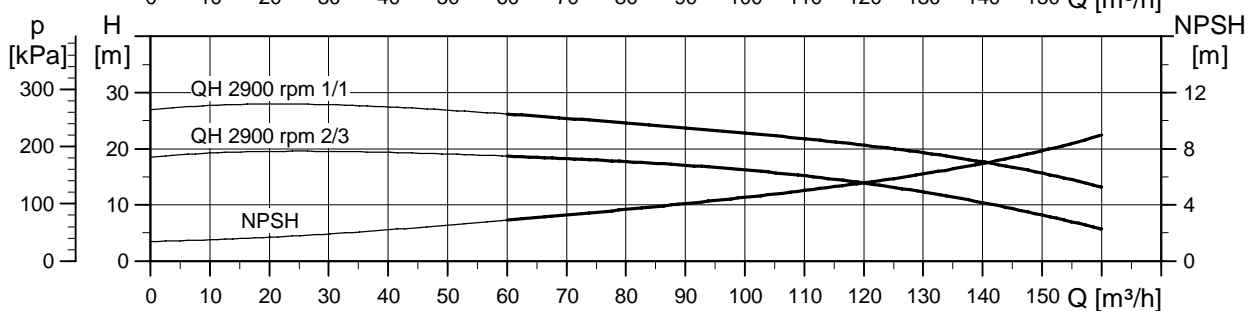
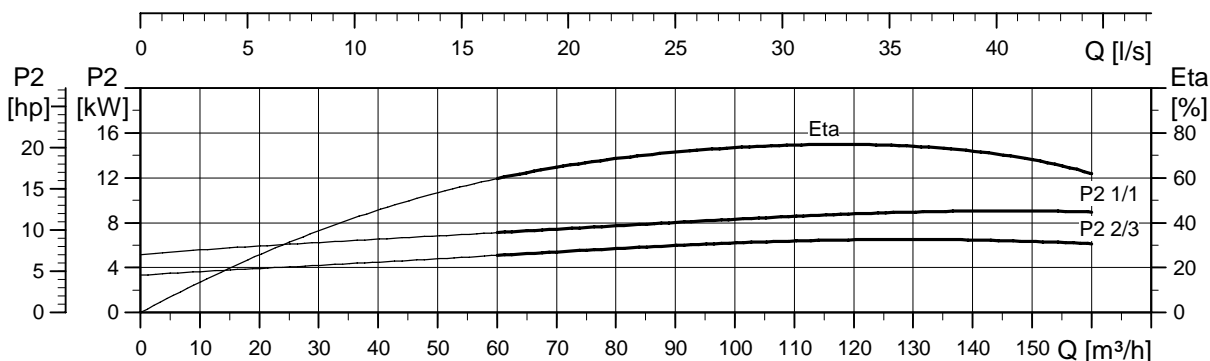
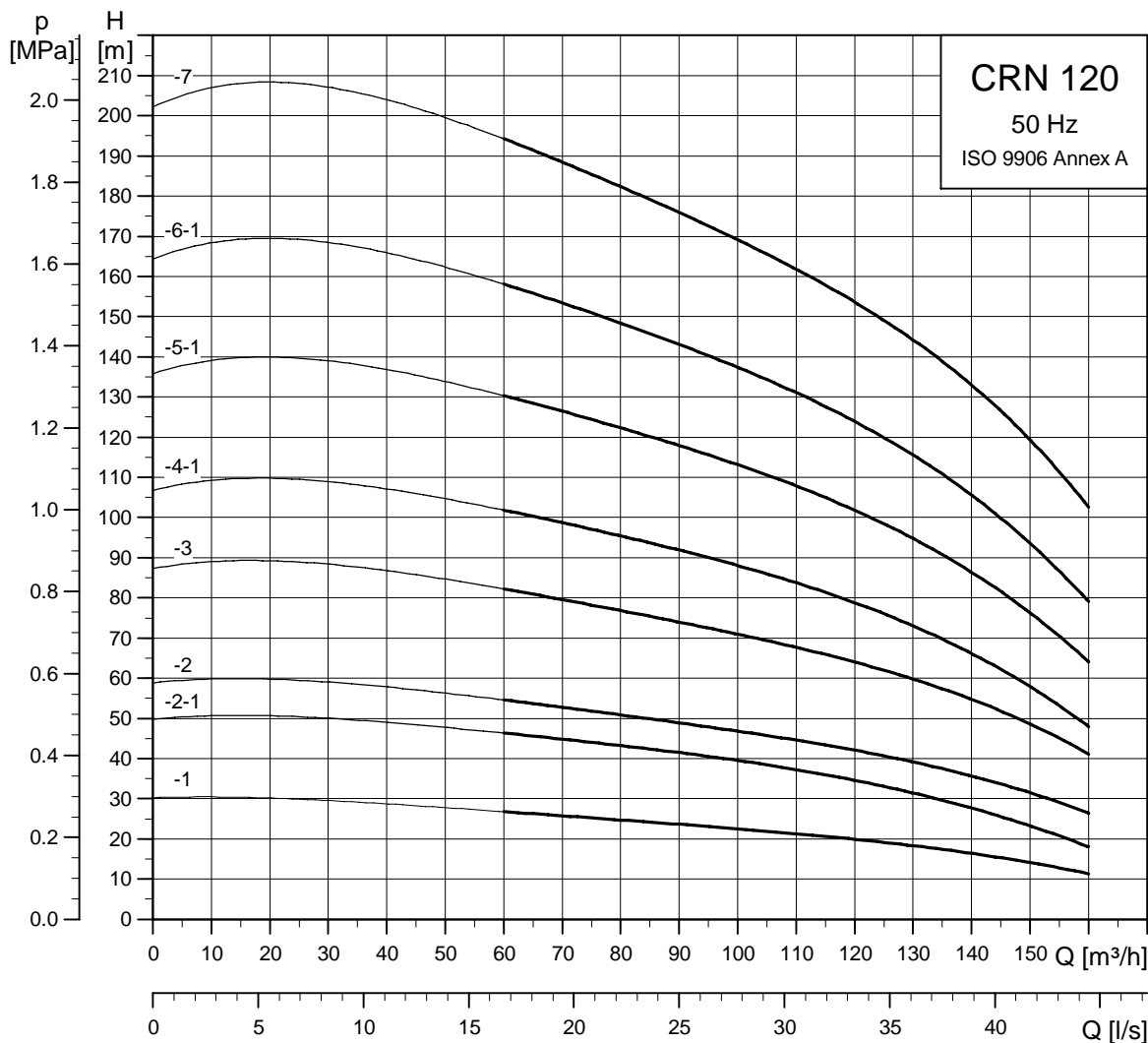


TM03 5999 4106

Dimensions and weights

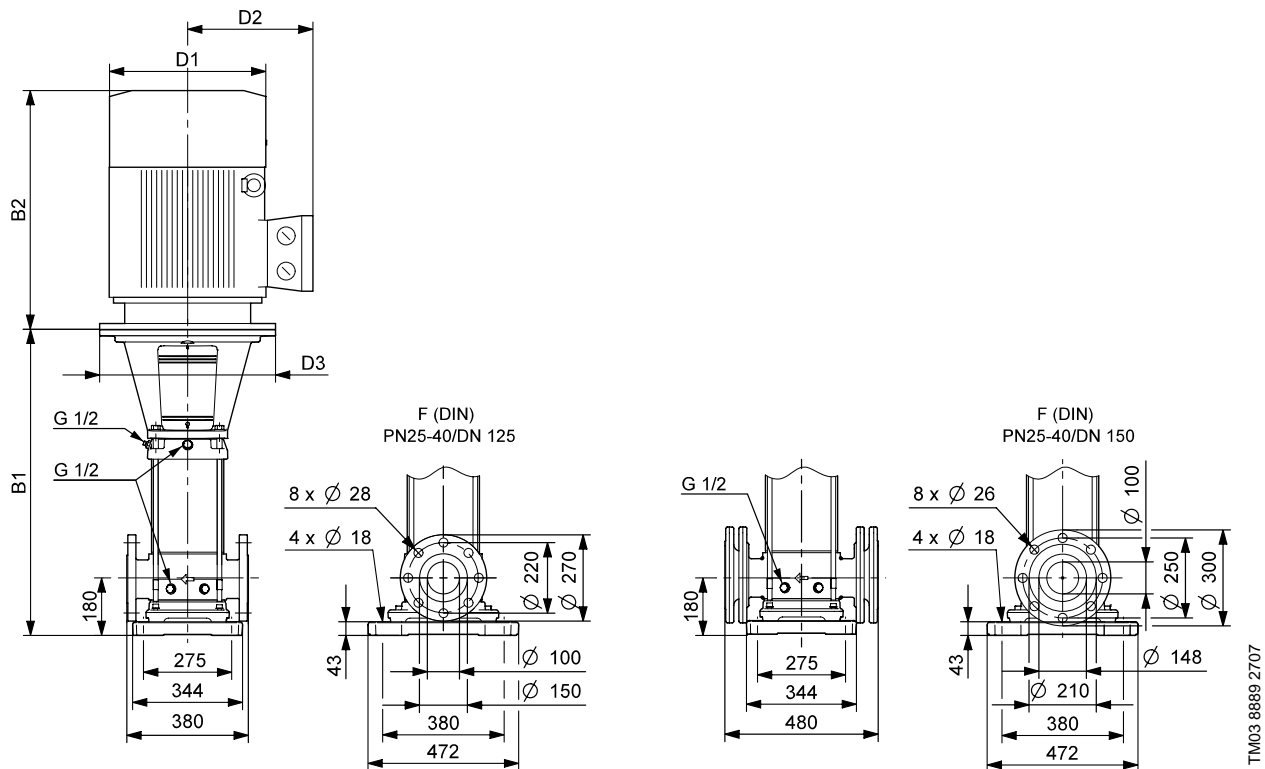
| Pump type | Motor P ₂ [kW] | Dimension [mm] | | | | | Net weight [kg] |
|------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|
| | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR 120-1 | 11 | 835 | 1334 | 260 | 172 | 350 | 193 |
| CR 120-2-1 | 18.5 | 990 | 1508 | 320 | 197 | 350 | 211 |
| CR 120-2 | 22 | 990 | 1600 | 363 | 262 | 350 | 297 |
| CR 120-3 | 30 | 1146 | 1756 | 402 | 300 | 400 | 357 |
| CR 120-4-1 | 37 | 1301 | 1968 | 402 | 300 | 400 | 397 |
| CR 120-5-1 | 45 | 1457 | 2166 | 442 | 325 | 449 | 486 |
| CR 120-6-1 | 55 | 1642 | 2389 | 495 | 392 | 550 | 631 |
| CR 120-7 | 75 | 1798 | 2618 | 555 | 432 | 550 | 775 |

CRN 120



TM03 8744 2407

Dimensional sketch

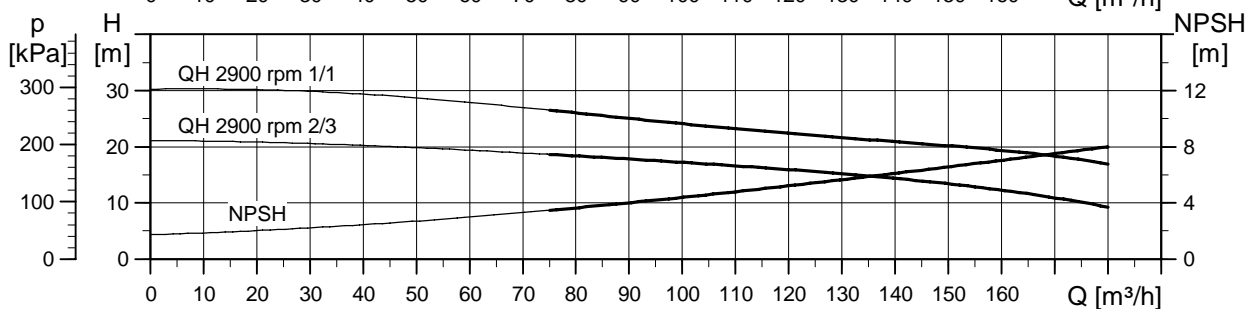
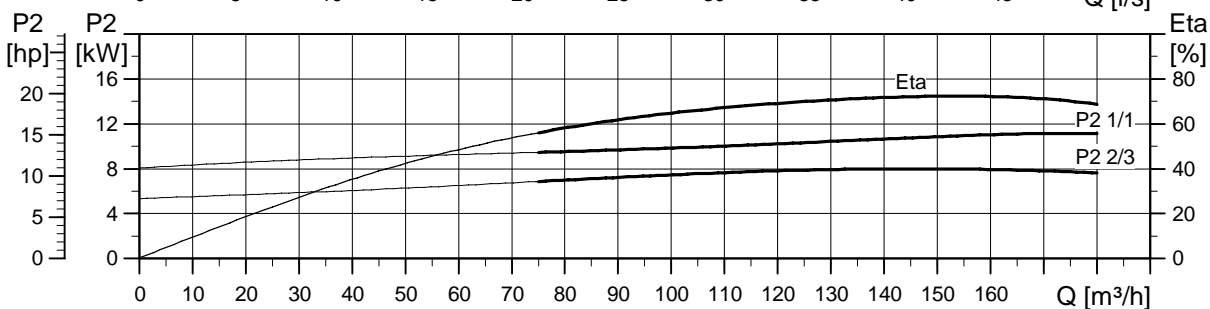
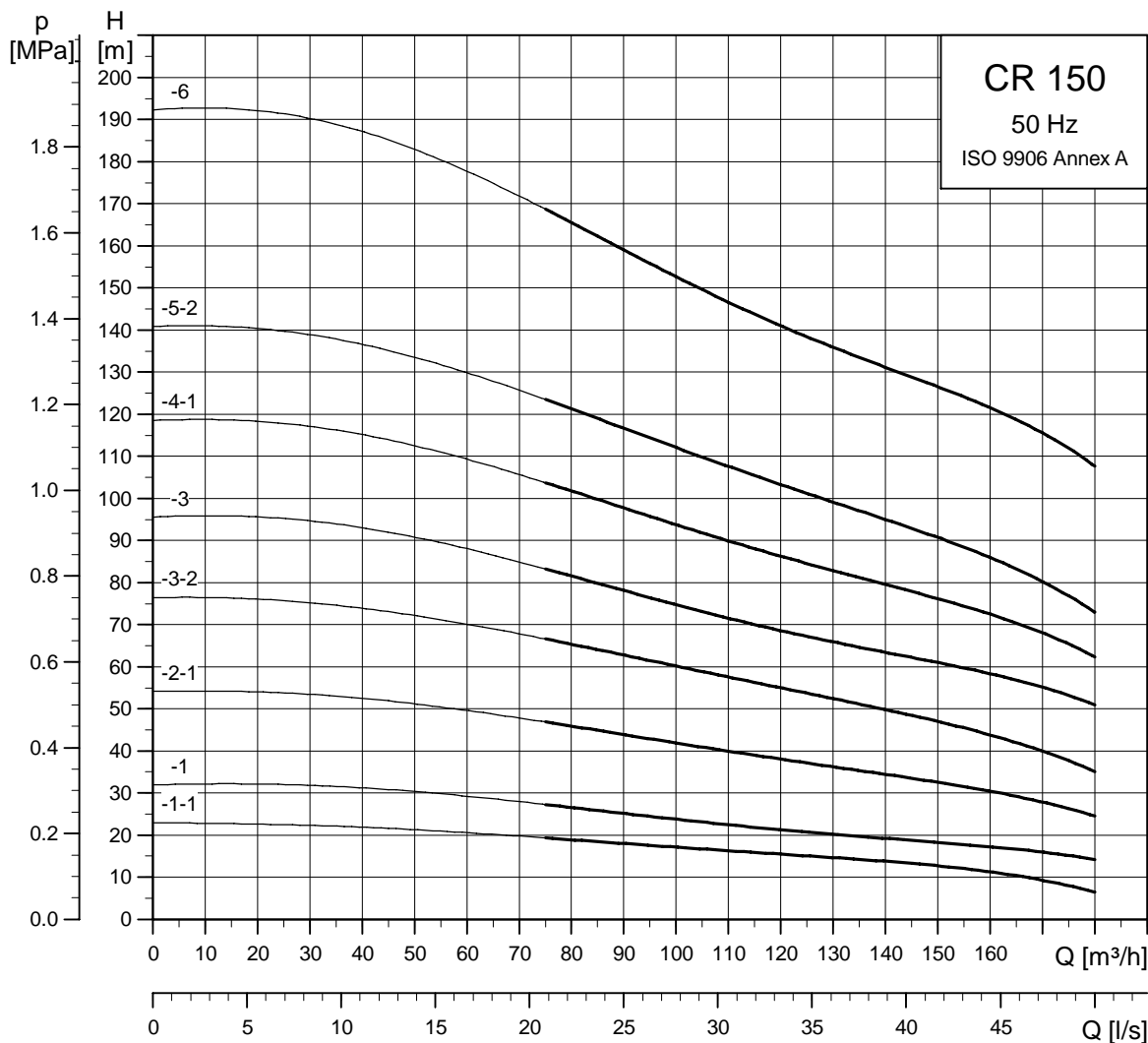


TM03 8889 2707

Dimensions and weights

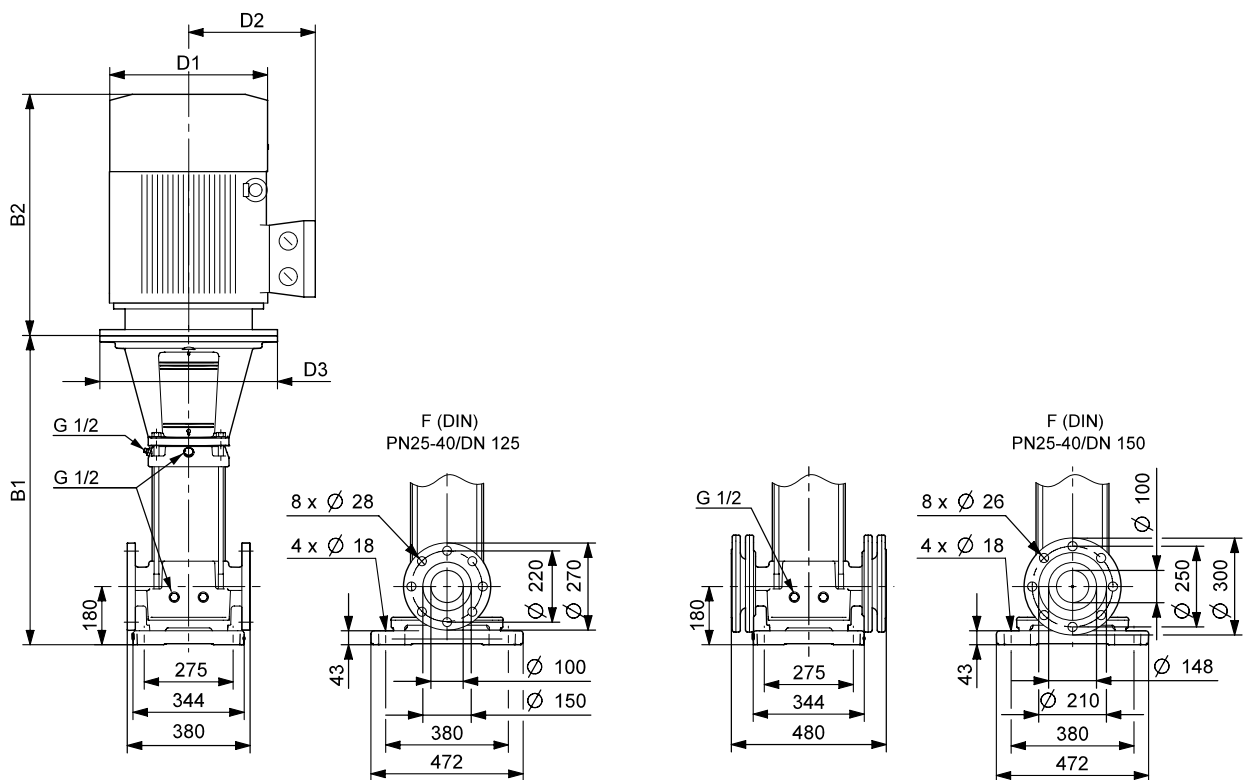
| Pump type | Motor P ₂ [kW] | Dimension [mm] | | | | | Net weight [kg] |
|-------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|
| | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN 120-1 | 11 | 835 | 1334 | 260 | 172 | 350 | 193 |
| CRN 120-2-1 | 18.5 | 990 | 1508 | 320 | 197 | 350 | 211 |
| CRN 120-2 | 22 | 990 | 1600 | 363 | 262 | 350 | 297 |
| CRN 120-3 | 30 | 1146 | 1756 | 402 | 300 | 400 | 357 |
| CRN 120-4-1 | 37 | 1301 | 1968 | 402 | 300 | 400 | 397 |
| CRN 120-5-1 | 45 | 1457 | 2166 | 442 | 325 | 449 | 486 |
| CRN 120-6-1 | 55 | 1642 | 2389 | 495 | 392 | 550 | 631 |
| CRN 120-7 | 75 | 1798 | 2618 | 555 | 432 | 550 | 775 |

CR 150



TM03 8745 2407

Dimensional sketch

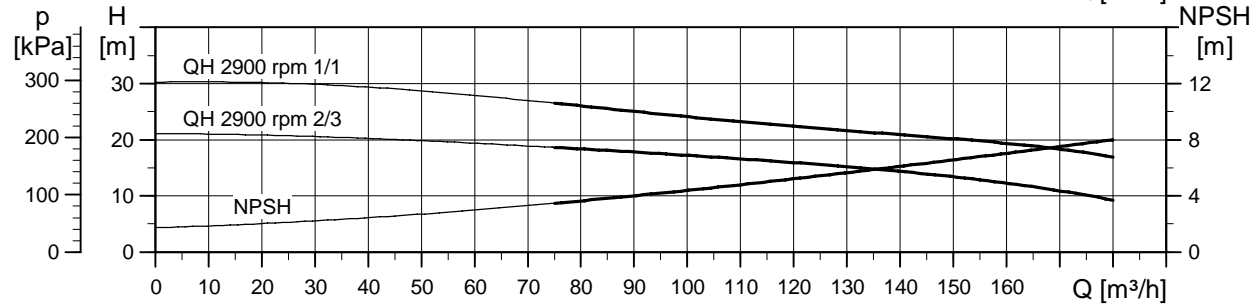
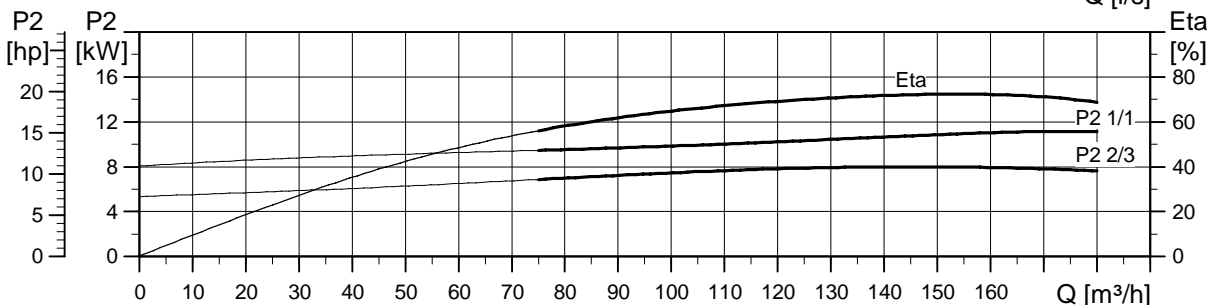
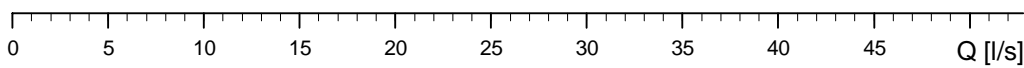
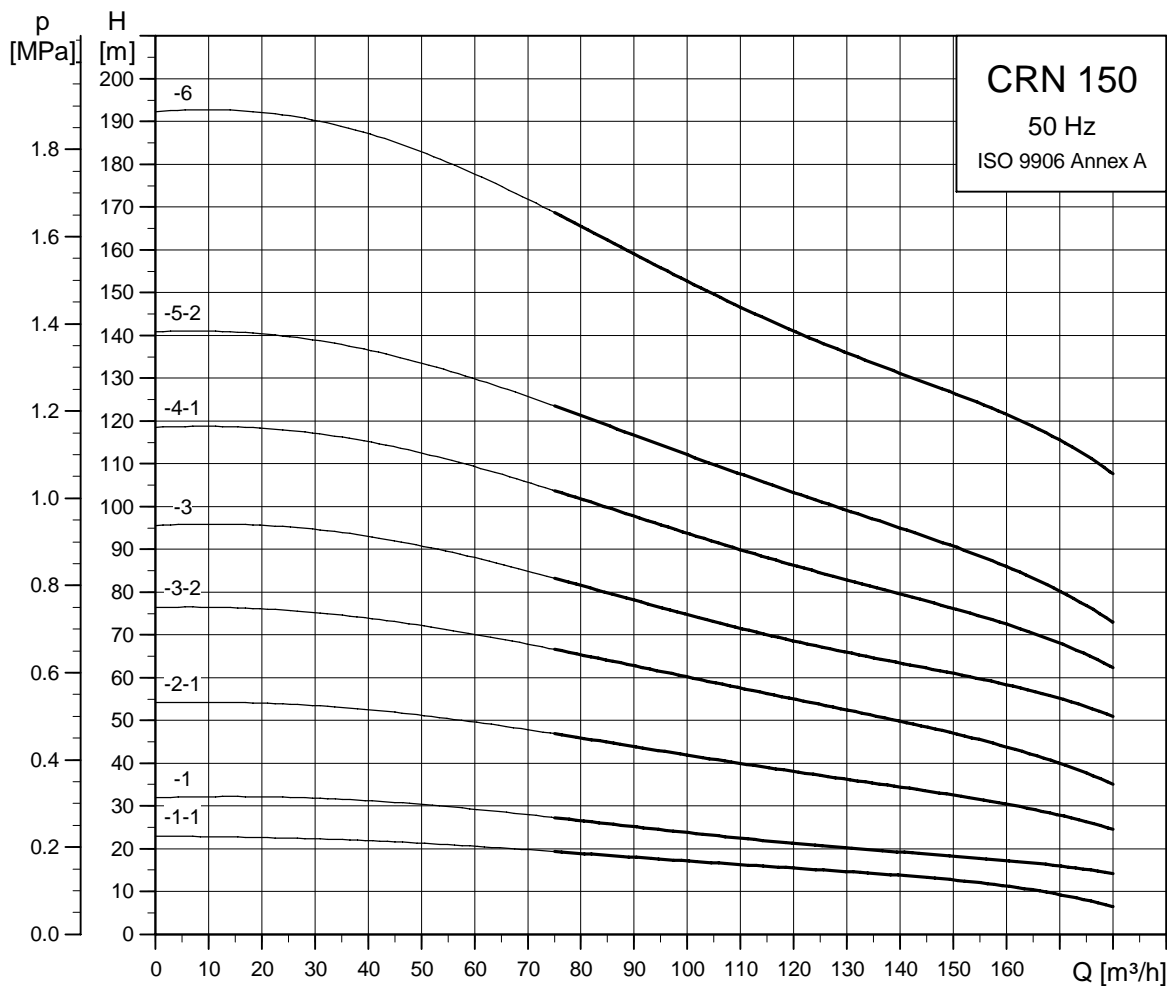


TM03 5999 4106

Dimensions and weights

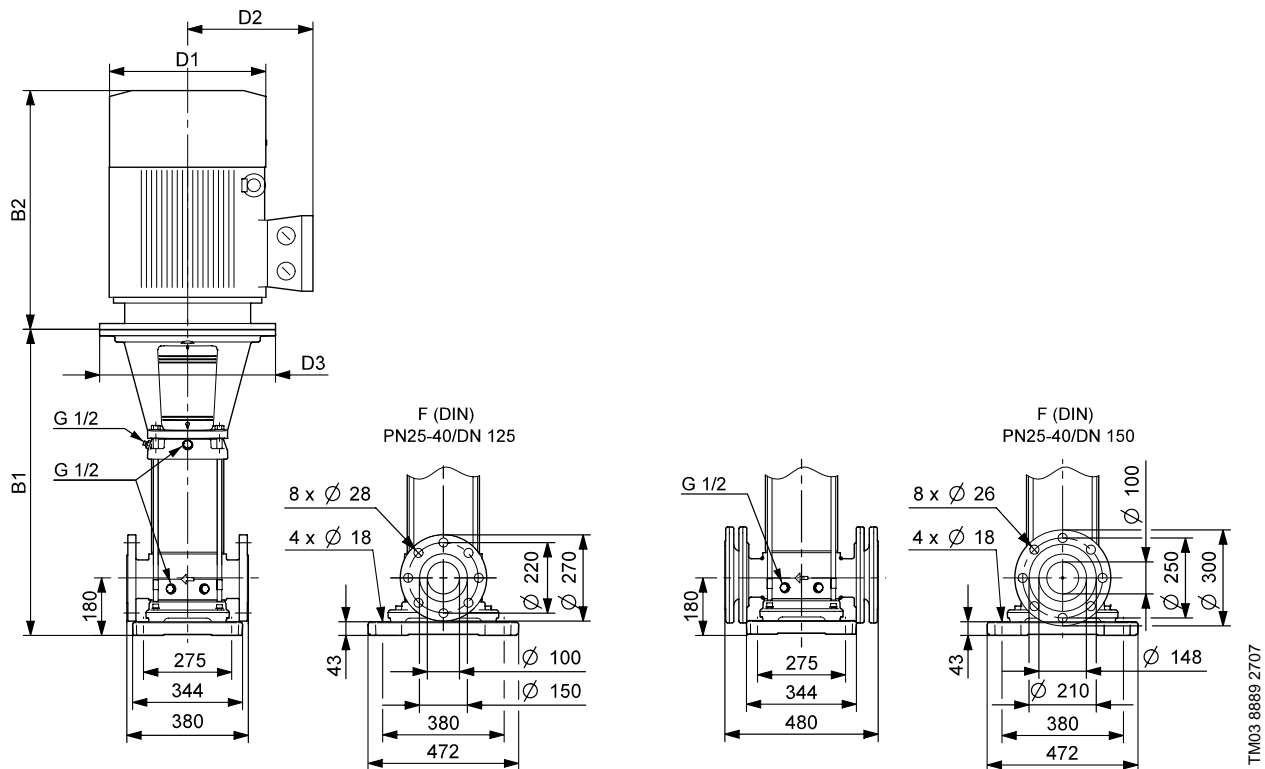
| Pump type | Motor P ₂ [kW] | Dimension [mm] | | | | | Net weight [kg] |
|------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|
| | | B1 | B1+B2 | D1 | D2 | D3 | |
| CR 150-1-1 | 11 | 835 | 1334 | 260 | 172 | 350 | 193 |
| CR 150-1 | 15 | 835 | 1313 | 320 | 197 | 350 | 194 |
| CR 150-2-1 | 22 | 990 | 1600 | 363 | 262 | 350 | 297 |
| CR 150-3-2 | 30 | 1146 | 1756 | 402 | 300 | 400 | 357 |
| CR 150-3 | 37 | 1146 | 1813 | 402 | 300 | 400 | 387 |
| CR 150-4-1 | 45 | 1301 | 2010 | 442 | 325 | 449 | 476 |
| CR 150-5-2 | 55 | 1487 | 2234 | 495 | 392 | 550 | 621 |
| CR 150-6 | 75 | 1642 | 2462 | 555 | 432 | 550 | 766 |

CRN 150



TM03 8746 2407

Dimensional sketch





TM03 8889 2707

Dimensions and weights

| Pump type | Motor P ₂ [kW] | Dimension [mm] | | | | | Net weight [kg] |
|-------------|---------------------------|----------------|-------|-----|-----|-----|-----------------|
| | | B1 | B1+B2 | D1 | D2 | D3 | |
| CRN 150-1-1 | 11 | 835 | 1334 | 260 | 172 | 350 | 193 |
| CRN 150-1 | 15 | 835 | 1313 | 320 | 197 | 350 | 194 |
| CRN 150-2-1 | 22 | 990 | 1600 | 363 | 262 | 350 | 297 |
| CRN 150-3-2 | 30 | 1146 | 1756 | 402 | 300 | 400 | 357 |
| CRN 150-3 | 37 | 1146 | 1813 | 402 | 300 | 400 | 387 |
| CRN 150-4-1 | 45 | 1301 | 2010 | 442 | 325 | 449 | 476 |
| CRN 150-5-2 | 55 | 1487 | 2234 | 495 | 392 | 550 | 621 |
| CRN 150-6 | 75 | 1642 | 2462 | 555 | 432 | 550 | 766 |

Standard motors for CR, CRI, CRN, 50 Hz

| Motor P ₂ [kW] | Frame size | Standard voltage [V] | I _{1/1} [A] | Cos φ _{1/1} | η[%] | I _{start} | Speed [rpm] | |
|---------------------------|------------|----------------------|----------------------|----------------------|------|---------------------|-------------|--|
| 0.37 | 71 | 220-240Δ/380-415Y | 1.7/1 | 0.80-0.70 | 78.5 | 8.5-9.2/4.9-5.3 | 2850-2880 | <p>MG</p>  <p>TM03 1711 2805</p> |
| 0.55 | 71 | 220-240Δ/380-415Y | 2.5/1.4 | 0.80-0.70 | 80 | 12-13/6.9-7.5 | 2830-2850 | |
| 0.75 | 80 | 220-240Δ/380-415Y | 3.3/1.9 | 0.81-0.71 | 81 | 19.1-20.5/11.0-11.8 | 2840-2870 | |
| 1.1 | 80 | 220-240Δ/380-415Y | 4.5/2.6 | 0.84-0.76 | 82.8 | 28.5-31.5/16.3-17.9 | 2820-2860 | |
| 1.5 | 90 | 220-240Δ/380-415Y | 5.5/3.2 | 0.87-0.82 | 85.5 | 46.3-50.7/26.8-29.3 | 2890-2910 | |
| 2.2 | 90 | 380-415Δ | 4.5-4.5 | 0.89-0.87 | 87.5 | 37.8-42.3 | 2890-2910 | |
| 3.0 | 100 | 380-415Δ | 6.3-6.3 | 0.87-0.82 | 87.5 | 52.9-58.0 | 2900-2920 | |
| 4.0 | 112 | 380-415Δ | 8-8 | 0.88-0.84 | 89 | 89.6-98.4 | 2910-2930 | |
| 5.5 | 132 | 380-415Δ | 11.2-11.2 | 0.88-0.84 | 90 | 119.8-131.0 | 2910-2930 | |
| 7.5 | 132 | 380-415Δ | 15.2-15.2 | 0.87-0.80 | 89.5 | 152-168.7 | 2900-2920 | |
| 11 | 160 | 380-415Δ | 21.4-21.4 | 0.90-0.90 | 91.4 | 156.2-171.2 | 2920-2930 | |
| 15 | 160 | 380-415Δ/660-690Y | 26.5/15.2 | 0.90-0.90 | 91.5 | 185.5/106.4 | 2945 | <p>Siemens</p>  <p>TM03 1710 2805</p> |
| 18.5 | 160 | 380-415Δ/660-690Y | 31.5/18.4 | 0.92-0.92 | 92.5 | 220.5/128.8 | 2940 | |
| 22 | 180 | 380-415Δ/660-690Y | 38.5/22 | 0.88-0.88 | 94 | 277.2/158.4 | 2955 | |
| 30 | 200 | 380-415Δ/660-690Y | 53/30.5 | 0.88-0.88 | 93.5 | 371/213.5 | 2960 | |
| 37 | 200 | 380-415Δ/660-690Y | 64/37 | 0.89-0.89 | 94 | 460.8/266.4 | 2960 | |
| 45 | 225 | 380-415Δ/660-690Y | 77/44.5 | 0.89-0.89 | 95 | 562.1/324.9 | 2965 | |
| 55 | 250 | 380-415Δ/660-690Y | 93/54 | 0.90-0.90 | 95.5 | 632.4/367.2 | 2975 | |
| 75 | 280 | 380-415Δ/660-690Y | 128/74 | 0.89-0.89 | 95 | 896-832/518-481 | 2975 | |

E-motors for CRE, CRIE, CRNE, 50 Hz

| Motor P ₂ [kW] | Frame size | Phase | Standard voltage [V] | I _{1/1} [A] | Cos φ _{1/1} | η[%] |
|---------------------------------|------------|-------|----------------------------|----------------------|----------------------|------|
| 0.37 | 71 | 1 | 200-240 | 2.7-2.5 | 0.96 | 68 |
| 0.55 | 71 | 1 | 200-240 | 3.9-3.6 | 0.96 | 70 |
| 0.75 | 80 | 1 | 200-240 | 5.1-4.7 | 0.97 | 72 |
| 1.1 | 80 | 1 | 200-240 | 7.4-6.8 | 0.97 | 73 |
| 0.75* | 90 | 3 | 380-480 | 2.1-1.8 | 0.80-0.70 | 77 |
| 1.1* | 90 | 3 | 380-480 | 2.6-2.3 | 0.88-0.77 | 78 |
| 1.5 | 90 | 3 | 380-480 | 3.3-2.7 | 0.91-0.87 | 81 |
| 2.2 | 90 | 3 | 380-480 | 4.6-3.8 | 0.92-0.90 | 83 |
| 3.0 | 100 | 3 | 380-480 | 6.2-5.0 | 0.94-0.92 | 83 |
| 4.0 | 112 | 3 | 380-480 | 8.1-6.6 | 0.94-0.92 | 85 |
| 5.5 | 132 | 3 | 380-480 | 11-8.8 | 0.94-0.93 | 85.5 |
| 7.5 | 132 | 3 | 380-480 | 15-12 | 0.94-0.93 | 85 |
| 11 | 160 | 3 | 380-415 | 21.4 | 0.93 | 84 |
| 15 | 160 | 3 | 380-415 | 28 | 0.94 | 85.5 |
| 18.5 | 160 | 3 | 380-415 | 34 | 0.95 | 85.5 |
| 22 | 180 | 3 | 380-415 | 42 | 0.94 | 85 |

MGE



TM03 1712 2805

MMGE



TM03 1713 2805

* Pumps are normally fitted with single-phase MGE motors. Previous dimensions tables show pumps with single-phase MGE motors

Pumped liquids

Thin, non-explosive liquids, not containing solid particles or fibres. The liquid must not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than that of water, use oversized motors, if required.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH value, temperature and content of chemicals, oils, etc.

Please note that aggressive liquids, such as sea water and some acids, may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

The CR(E), CRI(E), CRN(E) pump types are suitable for the following liquids:

CR(E), CRI(E)

CR(E), CRI(E) pumps are suitable for non-corrosive liquids.

Use CR(E), CRI(E) pumps for liquid transfer, circulation and pressure boosting of cold or hot clean water.

CRN(E)

CRN(E) pumps are suitable for industrial liquids.

Use CRN(E) pumps in systems where all parts in contact with the liquid must be made of high-grade stainless steel.

CRT(E)

CRT(E) pumps are suitable for these liquids:

- saline liquids
- hypochlorites
- acids.

For saline or chloride-containing liquids such as sea water or for oxidizing agents such as hypochlorites, Grundfos offers CRT(E) pumps made of titanium. See separate data booklet on CRT(E), accessible in *WebCAPS*.

List of pumped liquids

A number of typical liquids are listed below.

Other pump versions may be applicable, but those stated in the list are considered to be the best choices.

The table is intended as a general guide only and cannot replace actual testing of the pumped liquids and pump materials under specific working conditions.

However, use the list with some caution. Factors such as those mentioned below may affect the chemical resistance of a specific pump version:

- concentration of the pumped liquid
- liquid temperature
- pressure.

Take safety precautions when pumping dangerous liquids.

Notes

| | |
|----------|---|
| D | Often with additives. |
| E | The density and/or viscosity differ from that/those of water. Take this factor into account when calculating motor output and pump performance. |
| F | Pump selection depends on many factors. Contact Grundfos. |
| H | Risk of crystallisation/precipitation in shaft seal. |
| 1 | Highly inflammable liquid. |
| 2 | Combustible liquid. |
| 3 | Insoluble in water. |
| 4 | Low self-ignition point. |

| Pumped liquid | Note | Liquid concentration, liquid temperature | CR(E), CRI(E) | CRN(E) |
|---|------------|--|---------------|--------|
| Acetic acid, CH ₃ COOH | - | 5 %, +20 °C | - | HQQE |
| Acetone, CH ₃ COCH ₃ | 1, F | 100 %, +20 °C | - | HQQE |
| Alkaline degreasing agent | D, F | - | HQQE | - |
| Ammonium bicarbonate, NH ₄ HCO ₃ | E | 20 %, +30 °C | - | HQQE |
| Ammonium hydroxide, NH ₄ OH | - | 20 %, +40 °C | HQQE | - |
| Aviation fuel | 1, 3, 4, F | 100 %, +20 °C | HQBV | - |
| Benzoic acid, C ₆ H ₅ COOH | H | 0.5 %, +20 °C | - | HQQV |
| Boiler water | - | < +120 °C | HQQE | - |
| | F | +120 °C - +180 °C | - | - |
| Calcareous water | - | < +90 °C | HQQE | - |
| Calcium acetate (as coolant with inhibitor) Ca(CH ₃ COO) ₂ | D, E | 30 %, +50 °C | HQQE | - |
| Calcium hydroxide, Ca(OH) ₂ | E | Saturated solution, +50 °C | HQQE | - |
| Chloride-containing water | F | < +30 °C, max. 500 ppm | - | HQQE |
| Chromic acid, H ₂ CrO ₄ | H | 1 %, +20 °C | - | HQQV |
| Citric acid, HOC(CH ₂ CO ₂ H) ₂ COOH | H | 5 %, +40 °C | - | HQQE |
| Completely desalinated water (demineralized water) | - | +120 °C | - | HQQE |

Pumped liquids

CR, CRI, CRN,
CRE, CRIE, CRNE

| Pumped liquid | Note | Liquid concentration, liquid temperature | CR(E), CRI(E) | CRN(E) |
|---|------------|---|---------------|--------|
| Condensate | - | 120 °C | HQQE | - |
| Copper sulphate, CuSO ₄ | E | 10 %, +50 °C | - | HQQE |
| Corn oil | D, E, 3 | 100 %, +80 °C | HQQV | - |
| Diesel oil | 2, 3, 4, F | 100 %, +20 °C | HQBv | - |
| Domestic hot water (potable water) | - | < +120 °C | HQQE | - |
| Ethanol (ethyl alcohol), C ₂ H ₅ OH | 1, F | 100 %, +20 °C | HQQE | - |
| Ethylene glycol, HOCH ₂ CH ₂ OH | D, E | 50 %, +50 °C | HQQE | - |
| Formic acid, HCOOH | - | 5 %, +20 °C | - | HQQE |
| Glycerine (glycerol), OHCH ₂ CH(OH)CH ₂ OH | D, E | 50 %, +50 °C | HQQE | - |
| Hydraulic oil (mineral) | E, 2, 3 | 100 %, +100 °C | HQQV | - |
| Hydraulic oil (synthetic) | E, 2, 3 | 100 %, +100 °C | HQQV | - |
| Isopropyl alcohol, CH ₃ CHOHCH ₃ | 1, F | 100 %, +20 °C | HQQE | - |
| Lactic acid, CH ₃ CH(OH)COOH | E, H | 10 %, +20 °C | - | HQQV |
| Linoleic acid, C ₁₇ H ₃₁ COOH | E, 3 | 100 %, +20 °C | HQQV | - |
| Methanol (methyl alcohol), CH ₃ OH | 1, F | 100 %, +20 °C | HQQE | - |
| Motor oil | E, 2, 3 | 100 %, +80 °C | HQQV | - |
| Naphthalene, C ₁₀ H ₈ | E, H | 100 %, +80 °C | HQQV | - |
| Nitric acid, HNO ₃ | F | 1 %, +20 °C | - | HQQE |
| Oil-containing water | - | < +100 °C | HQQV | - |
| Olive oil | D, E, 3 | 100 %, +80 °C | HQQV | - |
| Oxalic acid, (COOH) ₂ | H | 1 %, +20 °C | - | HQQE |
| Ozone-containing water, (O ₃) | - | < +100 °C | - | HQQE |
| Peanut oil | D, E, 3 | 100 %, +80 °C | HQQV | - |
| Petrol | 1, 3, 4, F | 100 %, +20 °C | HQBv | - |
| Phosphoric acid, H ₃ PO ₄ | E | 20 %, +20 °C | - | HQQE |
| Propanol, C ₃ H ₇ OH | 1, F | 100 %, +20 °C | HQQE | - |
| Propylene glycol, CH ₃ CH(OH)CH ₂ OH | D, E | 50 %, +90 °C | HQQE | - |
| Potassium carbonate, K ₂ CO ₃ | E | 20 %, +50 °C | HQQE | - |
| Potassium formate (as coolant with inhibitor), KOOCH | D, E | 30 %, +50 °C | HQQE | - |
| Potassium hydroxide, KOH | E | 20 %, +50 °C | - | HQQE |
| Potassium permanganate, KMnO ₄ | - | 5 %, +20 °C | - | HQQE |
| Rape seed oil | D, E, 3 | 100 %, +80 °C | HQQV | - |
| Salicylic acid, C ₆ H ₄ (OH)COOH | H | 0.1 %, +20 °C | - | HQQE |
| Silicone oil | E, 3 | 100 % | HQQV | - |
| Sodium bicarbonate, NaHCO ₃ | E | 10 %, +60 °C | - | HQQE |
| Sodium chloride (as coolant), NaCl | D, E | 30 %, < +5 °C, pH > 8 | HQQE | - |
| Sodium hydroxide, NaOH | E | 20 %, +50 °C | - | HQQE |
| Sodium hypochlorite, NaOCl | F | 0.1 %, +20 °C | - | HQQV |
| Sodium nitrate, NaNO ₃ | E | 10 %, +60 °C | - | HQQE |
| Sodium phosphate, Na ₃ PO ₄ | E, H | 10 %, +60 °C | - | HQQE |
| Sodium sulphate, Na ₂ SO ₄ | E, H | 10 %, +60 °C | - | HQQE |
| Softened water | - | < +120 °C | - | HQQE |
| Soya oil | D, E, 3 | 100 %, +80 °C | HQQV | - |
| Sulphuric acid, H ₂ SO ₄ | F | 1 %, +20 °C | - | HQQV |
| Sulphurous acid, H ₂ SO ₃ | - | 1 %, +20 °C | - | HQQE |
| Unsalted swimming pool water | - | Approx. 2 ppm free chlorine (Cl ₂) | HQQE | - |

Pipework connection

Various sets of counter flanges and couplings are available for pipework connection.

Counter flanges for CR(E)

A counter flange set consists of one counter flange, one gasket, bolts and nuts.

| Counter flange | Pump type | Description | Rated pressure | Pipework connection | Product number | |
|----------------|----------------|--|----------------|------------------------|----------------|----------|
| | TM03 2115 3705 | CR 1s CR(E) 1 CR(E) 3 CR(E) 5 | Threaded | 16 bar, EN 1092-2 | Rp 1 | 409901 |
| | | | For welding | 25 bar, EN 1092-2 | 25 mm, nominal | 409902 |
| | TM03 0400 3705 | CR 1s CR(E) 1 CR(E) 3 CR(E) 5 | Threaded | 16 bar, EN 1092-2 | Rp 1½ | 419901 |
| | | | For welding | 25 bar, EN 1092-2 | 32 mm, nominal | 419902 |
| | TM03 0401 3705 | CR(E) 10 | Threaded | 16 bar, EN 1092-2 | Rp 1½ | 429902 |
| | | | Threaded | 16 bar, EN 1092-2 | Rp 2 | 429904 |
| | | | For welding | 25 bar, EN 1092-2 | 40 mm, nominal | 429901 |
| | | | For welding | 40 bar, special flange | 50 mm, nominal | 429903 |
| | TM03 0402 3705 | | Threaded | 16 bar, EN 1092-2 | Rp 2 | 339903 |
| | | | Threaded | 16 bar, special flange | Rp 2½ | 339904 |
| | TM02 7203 2803 | CR(E) 15 CR(E) 20 | Threaded | 16 bar, special flange | Rp 2½ ★ | 96509578 |
| | TM03 0402 3705 | | For welding | 25 bar, EN 1092-2 | 50 mm, nominal | 339901 |
| | | | For welding | 40 bar, special flange | 65 mm, nominal | 339902 |
| | TM03 2116 3705 | CR(E) 32 | Threaded | 16 bar, EN 1092-2 | Rp 2½ | 349902 |
| | | | Threaded | 16 bar, special flange | Rp 3 | 349901 |
| | | | For welding | 16 bar, EN 1092-2 | 65 mm, nominal | 349904 |
| | | | For welding | 40 bar, DIN 2635 | 65 mm, nominal | 349905 |
| | | | For welding | 16 bar, special flange | 80 mm, nominal | 349903 |

Accessories

CR, CRI, CRN,
CRE, CRIE, CRNE

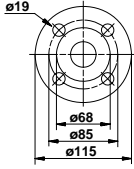
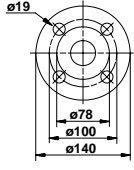
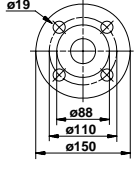
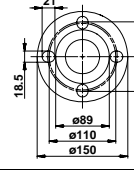
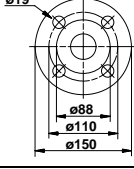
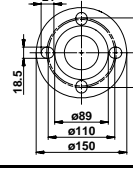
| Counter flange | Pump type | Description | Rated pressure | Pipework connection | Product number | |
|----------------|----------------|----------------------|-------------------|---------------------|-----------------|----------|
| | TM03 2117 3705 | Threaded | 16 bar | Rp 3 | 350540 | |
| | | CR(E) 45 | For welding | 16 bar | 80 mm, nominal | 350541 |
| | | For welding | 40 bar | 80 mm, nominal | 350542 | |
| | TM03 2118 3705 | Threaded | 16 bar, EN 1092-2 | Rp 4 | 369901 | |
| | | CR(E) 64 CR(E) 90 | For welding | 16 bar, EN 1092-2 | 100 mm, nominal | 369902 |
| | | For welding | 25 bar, EN 1092-2 | 100 mm, nominal | 369905 | |
| | TM03 8892 2707 | For welding | 40 bar, EN 1092-2 | 125 mm, nominal | 96750475 | |
| | TM03 8891 2707 | CR 120 CR 150 | For welding | 40 bar, EN 1092-2 | 150 mm, nominal | 96750476 |

★ Flange with 20 mm higher collar. With this collar, the installation dimensions of a CR 20 will be identical to those of a CR 32.
If a CR 32 is replaced with a CR 20, the base must be raised by 15 mm.

Counter flanges for CRN(E)

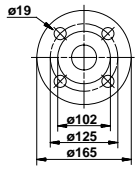
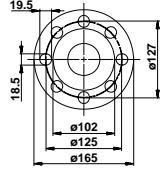
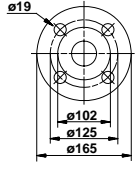
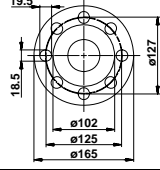
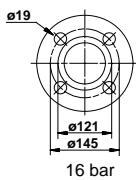
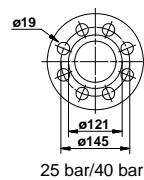
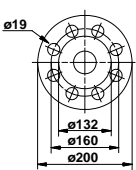
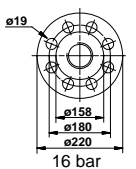
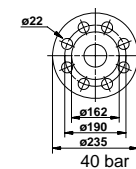
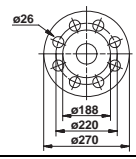
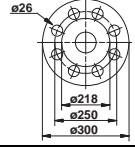
Counter flanges for CRN(E) pumps are made of stainless steel to EN 1.4401 (AISI 316).

A counter flange set consists of one counter flange, one gasket, bolts and nuts.

| Counter flange | Pump type | Description | Rated pressure | Pipework connection | Product number | |
|---|----------------|-------------------------------|----------------|------------------------|----------------|----------|
|  | TM03 2115 3705 | CRI(E), CRN(E) 1s, 1, 3, 5 | Threaded | 16 bar, EN 1092-2 | Rp 1 | 405284 |
| | | | For welding | 25 bar, EN 1092-2 | 25 mm, nominal | 405285 |
|  | TM03 0400 3705 | CRI(E), CRN(E) 1s, 1, 3, 5 | Threaded | 16 bar, EN 1092-2 | Rp 1½ | 415304 |
| | | | For welding | 25 bar, EN 1092-2 | 32 mm, nominal | 415305 |
|  | TM03 0401 3705 | | Threaded | 16 bar, EN 1092-2 | Rp 1½ | 425245 |
|  | TM02 7202 2803 | CRI(E) 10 CRN(E) 10 | Threaded | 16 bar, EN 1092-2 | Rp 2 | 96509570 |
|  | TM03 0401 3705 | | For welding | 25 bar, EN 1092-2 | 40 mm, nominal | 425246 |
|  | TM02 7202 2803 | | For welding | 25 bar, special flange | 50 mm, nominal | 96509571 |

Accessories

CR, CRI, CRN,
CRE, CRIE, CRNE

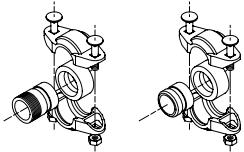
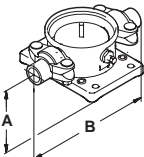
| Counter flange | Pump type | Description | Rated pressure | Pipework connection | Product number | |
|---|----------------|--|------------------------|------------------------|-----------------|----------|
|  | TM00 0402 3705 | Threaded | 16 bar, EN 1092-2 | Rp 2 | 335254 | |
|  | TM02 7203 2803 | Threaded | 16 bar, special flange | Rp 2½ | 96509575 | |
| | | Threaded | 16 bar, special flange | Rp 2½ ★ | 96509579 | |
| | | CRI(E) 15, 20 CRN(E) 15, 20 | | | | |
|  | TM03 0402 3705 | For welding | 25 bar, EN 1092-2 | 50 mm, nominal | 335255 | |
|  | TM00 7203 2803 | For welding | 25 bar, special flange | 65 mm, nominal | 96509573 | |
|  | TM03 2119 3705 | CRN(E) 32 | Threaded | 16 bar | Rp 2½ | 349910 |
|  | | | Threaded | 16 bar, special flange | Rp 3 | 349911 |
| | | | For welding | 16 bar | 65 mm, nominal | 349906 |
| | | | For welding | 40 bar | 65 mm, nominal | 349908 |
| | | | For welding | 16 bar, special flange | 80 mm, nominal | 349907 |
| | | | For welding | 25 bar, special flange | 80 mm, nominal | 349909 |
|  | TM03 2117 3705 | CRN(E) 45 | Threaded | 16 bar | Rp 3 | 350543 |
| | | | For welding | 16 bar | 80 mm, nominal | 350544 |
| | | | For welding | 40 bar | 80 mm, nominal | 350545 |
|  | TM03 2118 3705 | CRN(E) 64 CRN(E) 90 | Threaded | 16 bar | Rp 4 | 369904 |
|  | | | For welding | 16 bar | 100 mm, nominal | 369903 |
| | | | For welding | 40 bar | 100 mm, nominal | 369906 |
|  | TM03 8892 2707 | CRN 120 CRN 150 | For welding | 40 bar, EN 1092-2 | 125 mm, nominal | 96750477 |
|  | TM03 8891 2707 | | For welding | 40 bar, EN 1092-2 | 150 mm, nominal | 96750478 |

★ Flange with 20 mm higher collar. With this collar, the installation dimensions of a CR 20 will be identical to those of a CR 32.
If a CR 32 is replaced with a CR 20, the base must be raised by 15 mm.

PJE couplings for CRN(E)

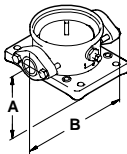
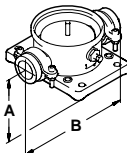
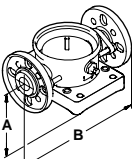
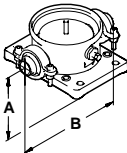
Materials in contact with the pumped liquid are made of stainless steel to EN 1.4401 (AISI 316) and rubber.

A PJE coupling set consists of two coupling halves (Vic-taulic, type 77), one gasket, one pipe stud (for welding or threaded), bolts and nuts.

| Coupling | Pump type | Pipe stub | PN | A | B | Pipework connection | Rubber parts | Number of coupling sets needed | Product number |
|---|----------------|-------------|--------|----|-----|---------------------|--------------|--------------------------------|----------------|
|  | TM00 3808 1094 | Threaded | 80 bar | 50 | 320 | R 1½ | EPDM | 2 | 419911 |
| | | | | | | | FKM | 2 | 419905 |
| | | For welding | 80 bar | 50 | 280 | DN 32 | EPDM | 2 | 419912 |
| | | | | | | | FKM | 2 | 419904 |
|  | TM03 8890 2707 | Threaded | 70 bar | 80 | 377 | R 2 | EPDM | 2 | 339911 |
| | | | | | | | FKM | 2 | 339918 |
| | | For welding | 70 bar | 80 | 371 | DN 50 | EPDM | 2 | 339910 |
| | | | | | | | FKM | 2 | 339917 |

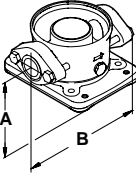
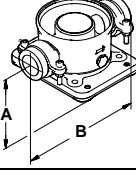
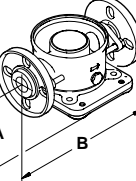
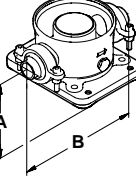
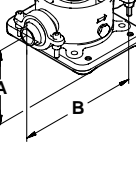
FlexiClamp base connections

All sets comprise the necessary number of bolts and nuts as well as a gasket/O-ring.

| Base connection | Pump type | Connection | Pipework connection | PN | A | B | Rubber parts | Number of coupling sets needed | Product number |
|---|----------------|---------------------------|---------------------|----------|----|----------|--------------|--------------------------------|----------------|
|  | TM02 7368 3303 | Oval (cast iron) | Rp 1 | 16 | 50 | 210 | Klingsil | 1 | 96449748 |
| | | | Rp 1½ | | | | Klingsil | 1 | 96449749 |
| | | Oval (stainless steel) | Rp 1 | Klingsil | 2 | 96449746 | | | |
| | | | Rp 1½ | Klingsil | 2 | 96449747 | | | |
|  | TM02 7369 3303 | Union | G 2 | 25 | 50 | 228 | EPDM | 2 | 96449743 |
| | | | | | | | FKM | 2 | 96449744 |
|  | TM02 7370 3303 | DIN (stainless steel) | DN 25 | 16 | 75 | 250 | EPDM | 2 | 96449745 |
| | | | DN 32 | | | | FKM | 2 | 96449900 |
|  | TM02 7371 3303 | Clamp, threaded pipe stub | Rp 1 | 25 | 50 | 208 | EPDM | 2 | 405280 |
| | | | FKM | | | | 2 | 405281 | |
| | | | Rp 1½ | | | | EPDM | 2 | 415296 |
| | | | 1" NPT | | | | FKM | 2 | 415297 |
| | | | 1½" NPT | | | | EPDM | 2 | 405291 |
| | | | EPDM | | | | 2 | 405292 | |
| | | | FKM | | | | 2 | 415311 | |
| | | | FKM | | | | 2 | 415312 | |
| | | | 28.5 | | | | EPDM | 2 | 405282 |
| | | | 37.2 | | | | FKM | 2 | 405283 |
| EPDM | 2 | 415300 | | | | | | | |
| FKM | 2 | 415301 | | | | | | | |

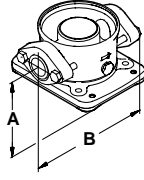
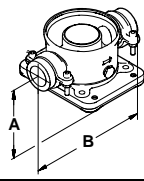
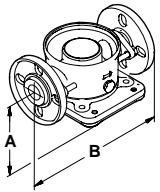
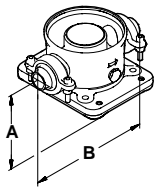
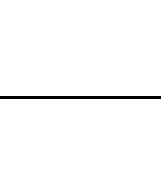
Accessories

CR, CRI, CRN,
CRE, CRIE, CRNE

| Base connection | Pump type | Connection | Pipework connection | PN | A | B | Rubber parts | Number of coupling sets needed | Product number | |
|---|--------------------------------------|---------------------------------|---------------------|----|----|-----|--------------------------|--------------------------------|----------------|----------|
|  | CRI(E) 10 CRN(E) 10 | Oval (cast iron) | Rp 1¼ | 16 | 80 | 260 | Klingersil | 2 | 96498775 | |
| | | | Rp 1½ | | | | Klingersil | 2 | 96498727 | |
| | | | Rp 2 | | | | Klingersil | 2 | 96498836 | |
| | | | Rp 1¼ | | | | Klingersil | 2 | 96498776 | |
| | | | Rp 1½ | | | | Klingersil | 2 | 96498728 | |
| | | | Rp 2 | | | | Klingersil | 2 | 96498835 | |
|  | CRI(E) 10 CRN(E) 10 | Union | G 2¼ | 25 | 80 | 288 | EPDM | 2 | 96500275 | |
| | | | | | | | FKM | 2 | 96500276 | |
|  | CRI(E) 10 CRN(E) 10 | FGJ (cast iron) | DN 40 | 16 | 80 | 316 | EPDM | 2 | 96498840 | |
| | | | | | | | FKM | 2 | 96500119 | |
| | | | | | | | FGJ (stainless steel) | EPDM | 2 | 96500263 |
| | | | | | | | FKM | 2 | 96500264 | |
| | | | | | | | FGJ (cast iron) | EPDM | 2 | 96500265 |
| | | | | | | | FKM | 2 | 96500266 | |
|  | CRI(E) 10 CRN(E) 10 | Clamp, threaded pipe stub | Rp 2 | 25 | 80 | 346 | EPDM | 2 | 425238 | |
| | | | | | | | FKM | 2 | 425239 | |
| | | | | | | | EPDM | 2 | 335241 | |
| | | | | | | | FKM | 2 | 335242 | |
| | | | | | | | EPDM | 2 | 96508600 | |
| | | | | | | | FKM | 2 | 96508601 | |
|  | CRI(E) 10 CRN(E) 10 | Clamp, pipe stub for welding | 48.3 (DN 40) | - | - | - | EPDM | 2 | 425242 | |
| | | | | | | | FKM | 2 | 425243 | |
| | | | | | | | EPDM | 2 | 335251 | |
| | | | | | | | FKM | 2 | 335252 | |

Accessories

CR, CRI, CRN,
CRE, CRIE, CRNE

| Base connection | Pump type | Connection | Pipework connection | PN | A | B | Rubber parts | Number of coupling sets needed | Product number | |
|---|--|--------------------------|---------------------------|----|----|-----|---------------------------------|--------------------------------|----------------|----------|
|  | CRI(E) 15, 20 CRN(E) 15, 20 | Oval (cast iron) | Rp 1½ | 10 | 90 | 260 | Klingsil | 2 | 96498775 | |
| | | | Rp 1½ | | | | Klingsil | 2 | 96498727 | |
| | | | Rp 2 | | | | Klingsil | 2 | 96498836 | |
| | | | Rp 1½ | | | | Klingsil | 2 | 96498776 | |
| | | | Oval (stainless steel) | | | | Rp 1½ | Klingsil | 2 | 96498728 |
| | | | | | | | Rp 2 | Klingsil | 2 | 96498835 |
|  | CRI(E) 15, 20 CRN(E) 15, 20 | Union | G 2½ | 25 | 90 | 288 | EPDM | 2 | 96500275 | |
| | | | | | | | FKM | 2 | 96500276 | |
|  | CRI(E) 15, 20 CRN(E) 15, 20 | FGJ (cast iron) | DN 40 | 10 | 90 | 334 | EPDM | 2 | 96498840 | |
| | | | | | | | FKM | 2 | 96500119 | |
| | | | | | | | FGJ (stainless steel) | EPDM | 2 | 96500263 |
| | | | | | | | | FKM | 2 | 96500264 |
| | | | | | | | FGJ (cast iron) | EPDM | 2 | 96500265 |
| | | | | | | | | FKM | 2 | 96500266 |
|  | CRI(E) 15, 20 CRN(E) 15, 20 | FGJ (stainless steel) | DN 50 | 25 | 90 | 346 | EPDM | 2 | 96500267 | |
| | | | | | | | FKM | 2 | 96500269 | |
| | | | | | | | Rp 1½ | EPDM | 2 | 425238 |
| | | | | | | | | FKM | 2 | 425239 |
| | | | | | | | Clamp, threaded pipe stub | EPDM | 2 | 335241 |
| | | | | | | | | FKM | 2 | 335242 |
|  | CRI(E) 15, 20 CRN(E) 15, 20 | Rp 2½ | Rp 2 | 25 | 90 | 346 | EPDM | 2 | 96508600 | |
| | | | | | | | FKM | 2 | 96508601 | |
| | | | | | | | 48.3 (DN 40) | EPDM | 2 | 425242 |
| | | | | | | | | FKM | 2 | 425243 |
| | | | | | | | Clamp, pipe stub for welding | EPDM | 2 | 335251 |
| | | | | | | | | FKM | 2 | 335252 |

Potentiometer for CRE, CRIE, CRNE

The potentiometer is for setpoint setting and start/stop of the CRE, CRIE, CRNE pump.

| Product | Product number |
|---|----------------|
| External potentiometer with cabinet for wall mounting | 625468 |

G10-LON interface for CRE, CRIE, CRNE

Use the G10-LON interface in connection with data transmission between a Locally Operating Network (LON) and electronically controlled Grundfos pumps applying the Grundfos bus-protocol GENIbus.

| Product | Product number |
|-------------------|----------------|
| G10-LON interface | 00605726 |

LiqTec for CR(E), CRI(E) and CRN(E)

The LiqTec dry-running protection device protects pump and process against dry-running and temperatures exceeding 130 °C ±5 °C. Connected to the motor PTC sensor, LiqTec also monitors the motor temperature.

LiqTec is prepared for DIN rail mounting in control cabinet.

Enclosure class: IP X0.

Remote control, R100

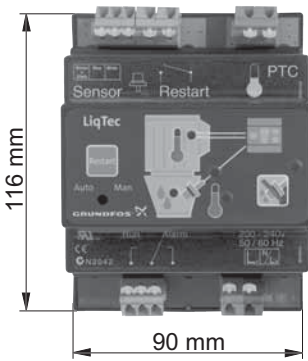
Use the R100 for wireless communication with the CRE, CRIE, CRNE pump. The communication takes place by means of infrared light.

| Product | Product number |
|---------|----------------|
| R100 | 625333 |

EMC filter for CRE, CRIE, CRNE

The EMC filter is required for installation of 11 to 22 kW E-pumps in residential areas.

| Product | Product number |
|----------------------|----------------|
| EMC-filter (11 kW) | 96478309 |
| EMC-filter (15 kW) | |
| EMC-filter (18.5 kW) | |
| EMC-filter (22 kW) | |

| Dry-running protection | Pump type | Voltage [V] | LiqTec | Sensor, ½" | Cable, 5 m | Extension cable, 15 m | Product number |
|--|------------------------------------|-------------|--------|------------|------------|-----------------------|----------------|
|  <p>116 mm</p> <p>90 mm</p> <p>TM03 2108 3705</p> | <p>CR(E) CRI(E) CRN(E)</p> | 200-240 | ● | ● | ● | - | 96556429 |
| | | 80-130 | ● | ● | ● | - | 96556430 |
| | | - | - | - | - | ● | 96443676 |

Sensors for CRE, CRIE, CRNE

| Accessory | Type | Supplier | Measuring range | Product number |
|---|---------------------------------|----------------------|----------------------------------|----------------|
| Flowmeter | SITRANS FM MAGFLO MAG 5100 W | Siemens | 1-5 m ³ (DN 25) | ID8285 |
| Flowmeter | SITRANS FM MAGFLO MAG 5100 W | Siemens | 3-10 m ³ (DN 40) | ID8286 |
| Flowmeter | SITRANS FM MAGFLO MAG 5100 W | Siemens | 6-30 m ³ (DN 65) | ID8287 |
| Flowmeter | SITRANS FM MAGFLO MAG 5100 W | Siemens | 20-75 m ³ (DN 100) | ID8288 |
| Temperature sensor | TTA (0) 25 | Carlo Gavazzi | 0 °C to +25 °C | 96432591 |
| Temperature sensor | TTA (-25) 25 | Carlo Gavazzi | -25 °C to +25 °C | 96430194 |
| Temperature sensor | TTA (50) 100 | Carlo Gavazzi | +50 °C to +100 °C | 96432592 |
| Temperature sensor | TTA (0) 150 | Carlo Gavazzi | 0 °C to +150 °C | 96430195 |
| Accessory for temperature sensor. All with ½ RG connection | Protecting tube Ø9 x 50 mm | Carlo Gavazzi | | 96430201 |
| | Protecting tube Ø9 x 100 mm | Carlo Gavazzi | | 96430202 |
| | Cutting ring bush | Carlo Gavazzi | | 96430203 |
| Temperature sensor, ambient temperature | WR 52 | tmg (DK: Plesner) | -50 °C to +50 °C | ID8295 |
| Differential temperature sensor | ETSD | Honsberg | 0 °C to +20 °C | 96409362 |
| Differential temperature sensor | ETSD | Honsberg | 0 °C to +50 °C | 96409363 |

Note: All sensors have 4-20 mA signal output.

Danfoss pressure sensor kits for CRE, CRIE, CRNE 1, 3, 5, 10, 15, 20, 32, 45, 64 and 90

| The kit comprises: | Pressure range | Temperature range | Product number |
|---|----------------|-------------------|----------------|
| <ul style="list-style-type: none"> Danfoss pressure transmitter, type MBS 3000, with 2 m screened cable Connection: G ½ A (DIN 16288 - B6kt) 5 cable clips (black) Instruction manual PT (00 40 02 12) | 0-4 bar | -40 °C to +85 °C | 96428014 |
| | 0-6 bar | | 96428015 |
| | 0-10 bar | | 96428016 |
| | 0-16 bar | | 96428017 |
| | 0-25 bar | | 96428018 |

DPI differential pressure sensor kit

| The kit comprises: | Pressure range | Product number |
|--|----------------|----------------|
| <ul style="list-style-type: none"> 1 sensor incl. 0.9 m screened cable (7/16" connections) 1 original DPI bracket (for wall mounting) 1 Grundfos bracket (for mounting on motor) 2 M4 screws for mounting of sensor on bracket 1 M6 screw (self-cutting) for mounting on MGE 90/100 1 M8 screw (self-cutting) for mounting on MGE 112/132 3 capillary tubes (short/long) 2 fittings (1/4" - 7/16") 5 cable clips (black) Installation and operating instructions (00480675) Service kit instructions. | 0-0.6 bar | 96611522 |
| | 0-1.0 bar | 96611523 |
| | 0-1.6 bar | 96611524 |
| | 0-2.5 bar | 96611525 |
| | 0-4.0 bar | 96611526 |
| | 0-6.0 bar | 96611527 |
| | 0-10 bar | 96611550 |

Lists of variants - on request

Although the Grundfos CR(E), CRI(E), CRN(E) product range offers a number of pumps for different applications, customers require specific pump solutions to satisfy their needs. See following documents:

- Grundfos CR "Custom-built pumps" catalogue
- Grundfos "CR, CRN high pressure" data booklet.

Below please find the range of options available for customizing the CR(E) pumps to meet the customers' demands.

Contact Grundfos for further information or for requests other than the ones mentioned below.

Motors

| Variant | Description |
|--|---|
| ATEX motor | For operation in hazardous atmospheres, explosion-proof or dust-ignition-proof motors may be required. |
| Motor with anti-condensation heating unit | For operation in humid environments motors with built-in anti-condensation heating unit may be required. |
| Motor with thermal protection | Grundfos offers motors with built-in bimetallic thermal switches or temperature-controlled PTC sensors (thermistors) incorporated in the motor windings. |
| Oversize motor | Ambient temperatures above 40°C or installation at altitudes of more than 1000 metres above sea level require the use of an oversize motor (i.e. derating). |
| 4-pole motor | Grundfos offers 4-pole standard motors. |

Shaft seals

| Variant | Description |
|---|---|
| Shaft seal with FFKM O-ring material | Shaft seals with FFKM or FXM O-ring material are recommended for applications where the pumped liquid may damage the standard O-ring material. |
| Seal with flush, quench seal | Recommended for applications involving crystallizing, hardening or sticky liquids. |
| Air-cooled shaft seal system | Recommended for applications involving extremely high temperatures. No conventional mechanical shaft seal can withstand liquid temperatures of up to 180°C for any length of time. For such applications, Grundfos' unique air-cooled shaft seal system is recommended. In order to ensure a low liquid temperature around the standard shaft seal, the pump is fitted with a special air-cooled shaft seal chamber. No separate cooling is required. |
| Double seal with pressure chamber | Recommended for applications involving poisonous or explosive liquids. Protects the surrounding environment and the people working in the vicinity of the pump. Consists of two seals mounted in a "back-to-back" arrangement inside a separate pressure seal chamber. As the pressure in the chamber is higher than the pump pressure, leakage is prevented. A dosing pump or a special pressure-intensifier generates the seal chamber pressure. |
| CR MAGdrive | Magnetically driven pumps for industrial applications. Key applications are industrial processes involving the handling of aggressive, environmental, dangerous or volatile liquids, e.g. organic compounds, solvents, etc. |

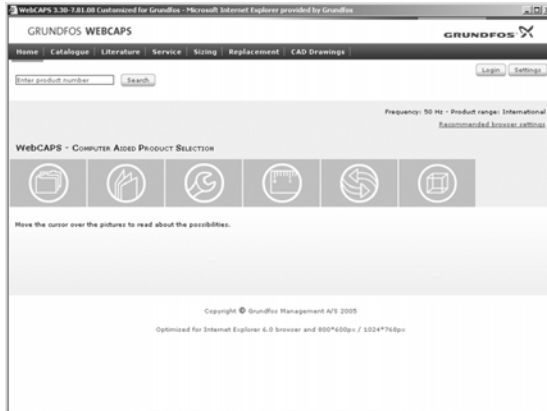
Pumps

| Variant | Description |
|--|---|
| Horizontally mounted pump | For safety or height reasons, certain applications, for instance on ships, require the pump to be mounted in the horizontal position. For easy installation the pump is equipped with brackets that support motor and pump. |
| Low-temperature pump | Exposed to temperatures down to -40 °C, coolant pumps may require neck-rings with a different diameter in order to prevent impeller drag. |
| High-speed pump up to 47 bar | For high-pressure applications, Grundfos offers a unique pump capable of generating up to 47 bar. The pump is equipped with a high-speed motor, type MGE. The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down, as a result of which the pumped liquid flows in the opposite direction. |
| High-pressure pump up to 47 bar | For high-pressure applications, Grundfos offers a unique double pump system capable of generating a pressure of up to 47 bar pressure. |
| Low-NPSH pump (improved suction) | Recommended for boiler-feed applications where cavitation may occur due to poor inlet conditions. |
| Pump with bearing flange | The bearing flange is suitable for applications where the inlet pressure is higher than the maximum pressure recommended. The bearing flange increases the life of motor bearings. (Recommended for standard motors.) |
| Belt-driven pump | Belt-driven pumps designed to operate in places with limited space or where no electrical power is available. |
| Pump for pharmaceutical and biotechnological applications | CRN(E) pumps designed for applications requiring the sterilization and CIP capability of pipes, valves and pumps. (CIP = Cleaning-In-Place.) |

Connections and other variants

| Variant | Description |
|-----------------------------|---|
| Pipe connections | In addition to the wide range of standard flange connections, a 16 bar DIN standard clamping flange is available. Customized flanges are available according to specifications. |
| TriClamp connection | TriClamp connections are of a hygienic design with a sanitary coupling for use in the pharmaceutical and food industry. |
| Electropolished pump | To substantially reduce the risk of corrosion of the materials. For use in the pharmaceutical/food industry. |

WebCAPS



WebCAPS is a **Web-based Computer Aided Product Selection** program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

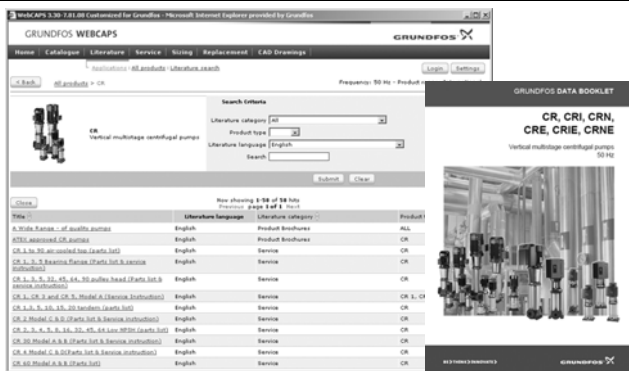
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

This section is based on fields of application and pump types, and contains

- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.

Furthermore, this section contains service videos showing you how to replace service parts.



Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, etc.



Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump. The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

- 2-dimensional drawings:
- .dxf, wireframe drawings
 - .dwg, wireframe drawings.
- 3-dimensional drawings:
- .dwg, wireframe drawings (without surfaces)
 - .stp, solid drawings (with surfaces)
 - .eprt, E-drawings.

WinCAPS



Fig. 28 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

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Subject to alterations.