

# CR, CRI, CRN, CRT CRE, CRIE, CRNE, CRTE

**Custom-built pumps**

50/60 Hz



|                                            |           |                                                  |            |
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|                                            |           | GO CAPS                                          | 167        |

## 1. Introduction

This catalogue is a supplement to these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CRT, CRTE
- CR, CRN high-pressure pumps.

It gives an overview of some of the customised solutions offered by Grundfos. If the catalogue does not provide a solution to your specific pumping needs, please contact us with a detailed description of your problem, and we will get down to work - for you!

### Customised CR pumps

We offer a wide range of customised variants of the CR type range for a variety of demanding industrial applications.

With these multistage in-line pumps, based on the well-known CR type range, we meet the customers' needs for pumps capable of handling special installation requirements and these liquids:

- high-temperature liquids
- crystallising liquids
- high-viscosity liquids such as paints and varnishes
- aggressive liquids
- volatile liquids
- flammable liquids.

Most of the pumps are available with either mains-operated motors (CR, CRI, CRN and CRT) or electronically speed-controlled motors (CRE, CRIE, CRNE and CRTE).

Customised pumps from CR 1s to CR 90 are available for these temperature ranges:

- Water-based liquids: -40 to 180 °C.
- Thermal oils: -20 to 240 °C.

The below pump types are available as customised pumps.

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

**Note:** CRT(E) 2, 4, 8 and 16 are also available as customised pumps.

### Pumps for individual requirements

The CR pumps can be customised to meet individual requirements. This is due to the "mix-and-match" approach to customisation, where the many pump features and options are to be regarded as modules that can be combined to create the ideal pump for the job at hand.

#### Motor options

CR motors are available in many different configurations to meet the requirements presented by the power supply, the pump environment and/or the pumped liquid itself.

- Power supply systems vary in terms of both frequency and voltage, and required protection methods.
- Your environment may be explosive, very hot and/or very humid. Special conditions also apply at high altitudes.
- The pumped liquid can call for a special motor solution. High or low viscosities and/or high or low densities may require non-standard motor sizes. You may also need an explosion-proof variant.
- The installation site of the pump may require alternative positions of pump and motor parts, such as terminal box positions and vent screw positions.

For further information, see section [Overview](#).

#### Shaft seal options

Extreme liquids sometimes call for extreme measures.

- High temperatures damage seal faces unless precautions are taken.
- Concern for safety can necessitate special measures for aggressive, toxic or flammable liquids.
- Liquids can be harmful to shaft seals because they crystallise, harden or are extremely abrasive.

For further information, see section [Overview](#).

#### Pump options

The CR pump elements can handle the most demanding liquids and pressures, and be adapted to suit many other requirements.

- Horizontal installation if height is a limitation.
- Poor inlet conditions mean that NPSH values must be adjusted to avoid cavitation.
- Very high pressures demand special solutions.
- Special surface treatments or certificates may be required.

For further information, see section [Overview](#).

#### Connection options

Your chosen pump elements can be fitted with exactly the connection options you need. All standards are covered, and special connection variants are available for maximum compactness, high liquid pressures etc.

For further information, see section [Overview](#).

## Features and benefits

Customised CR pumps have the following features and benefits:



GR5357

### Grundfos motor

Grundfos motors are remarkably silent and highly efficient.

3-phase pumps from 1.1 to 75 kW have premium efficiency IE3 motors as standard.

Grundfos motors are available with integrated frequency converter designed for speed-controlled operation.

### Shaft seal solutions

The specially designed cartridge seal increases reliability, ensures safe handling and enables easy service and access.

The cartridge shaft seal comes in a wide choice of materials. It is available in single and double seal arrangements and magnetic drive configurations.

### Connections

The Grundfos CR pump can be connected to any system.

### Material options

The Grundfos CR pump is available in four different material variants:

CRT(E): Titanium

CRN(E): Stainless steel AISI 316

CRI(E): Stainless steel AISI 304

CR(E): Stainless steel AISI 304/cast iron.

### Wide range of pump sizes

The CR pump comes in 13 flow sizes and hundreds of pressure sizes, ensuring that you can always find exactly the right pump for the job.

### High-performance hydraulics

Pump efficiency is maximised by the optimised hydraulics and carefully crafted production technology.

### Dry-running protection

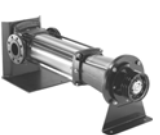
The patented Grundfos LiqTec system eliminates the risk of breakdowns due to dry running. If there is no liquid in the pump, the LiqTec will stop the pump immediately.





## 2. Overview



|                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>4-pole motors</b>                                                                | <b>Explosion-proof motors</b>                                                       | <b>Anti-condensation heater</b>                                                      | <b>Multiplug connections</b>                                                          | <b>CSA/UL-approved motors</b>                                                         |
|    |    |    |    |    |
| See page 27.                                                                        | See page 21.                                                                        | See page 24.                                                                         | See page 22.                                                                          | See page 20.                                                                          |
| <b>Shaft seals</b>                                                                  | <b>Rubber parts</b>                                                                 | <b>Titanium</b>                                                                      | <b>Non-cartridge solution</b>                                                         | <b>CR pumps with air-cooled top</b>                                                   |
|    |    |    |    |    |
| See page 28.                                                                        | See page 28.                                                                        | See page 28.                                                                         | See page 28.                                                                          | See page 34.                                                                          |
| <b>CR high-pressure pumps</b>                                                       | <b>Horizontal mounting</b>                                                          | <b>All-stainless steel CR pumps</b>                                                  | <b>CRH, horizontal end-suction pumps</b>                                              | <b>Low temperature pumps</b>                                                          |
|  |  |  |  |  |
| See page 12 and 38.                                                                 | See page 17 and 41.                                                                 | See page 40.                                                                         | See page 44.                                                                          | See page 14 and 38.                                                                   |
| <b>Aseptic connection (CR)</b>                                                      | <b>Oval flanges (CR)</b>                                                            | <b>Flanges (CR)</b>                                                                  | <b>PJE connections (CRI, CRN)</b>                                                     | <b>Flanges (CRI, CRN)</b>                                                             |
|  |  |  |  |  |
| See page 55.                                                                        | See page 57.                                                                        | See page 57.                                                                         | See page 56.                                                                          | See page 57.                                                                          |

**VIK-approved  
motors**



See page 20.

**Motor protection**



See page 24.

**Oversize or  
undersize  
motors**



See page 26.

**Special voltage**



See page 22.

**Enclosure class**



See page 27.

**Terminal box  
positions**



See page 27.

**MAGdrive**



See page 36.

**Back-to-back  
seal  
arrangement**



See page 29.

**CR pump with  
pressure  
intensifier**



See page 31.

**CR pump with  
barrier liquid**



See page 30.

**Tandem seal  
arrangement**



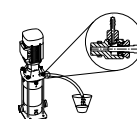
See page 32.

**Dry-running  
protection**



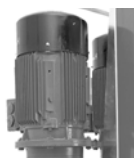
See page 50.

**Accessories**



See page 19.

**Alternative  
colour**



See page 39.

**Bearing flange**



See page 48.

**Pump rubber  
parts**



See page 48.

**CR low-NPSH  
pumps**



See page 13  
and 40.

**CR deep-well  
pumps**



See page 18  
and 47.

**Belt-driven CR  
pumps**



See page 17  
and 45.

**Bearing  
materials**



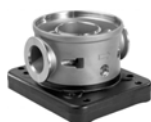
See page 50.

**Surface  
treatment**



See page 39.

**Clamp  
connections  
(CRI, CRN)**



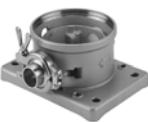
See page 54.

**Oval flanges  
(CRI, CRN)**



See page 57.

**TriClamp  
connections  
(CRN)**



See page 52.

**Union  
connections (CRI,  
CRN)**



See page 57.

**PJE connections  
(CRT)**



See page 57.

**Customised  
solutions**



See page 57.

**Certificates**



See page 58.

**CRE pump  
solutions**

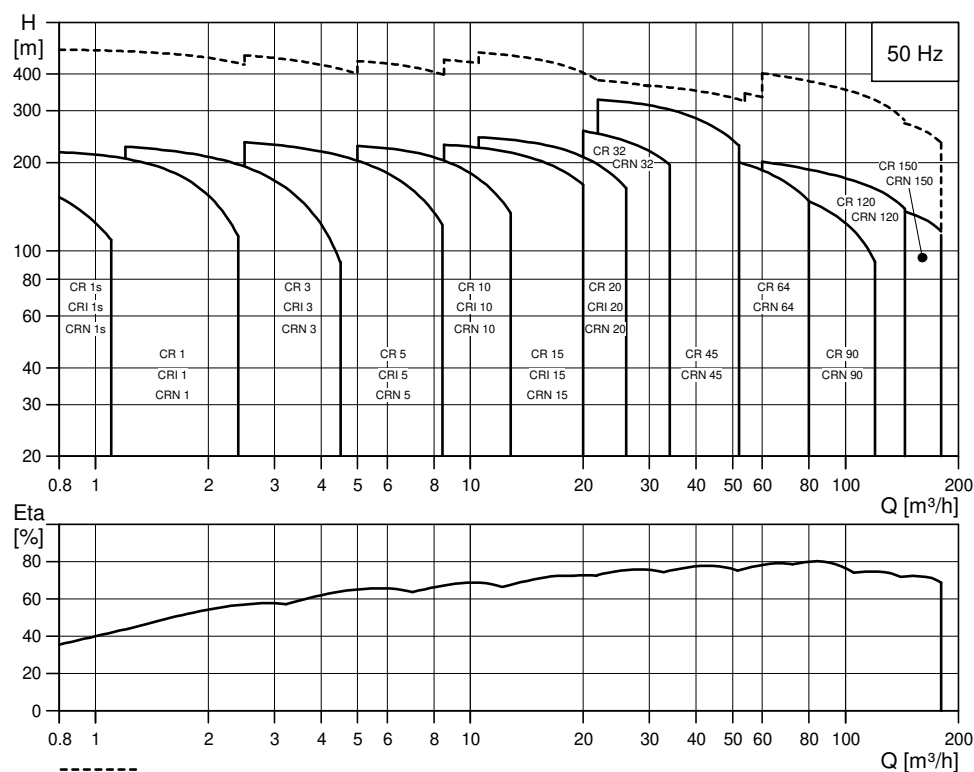


See page 63.

### 3. Performance range

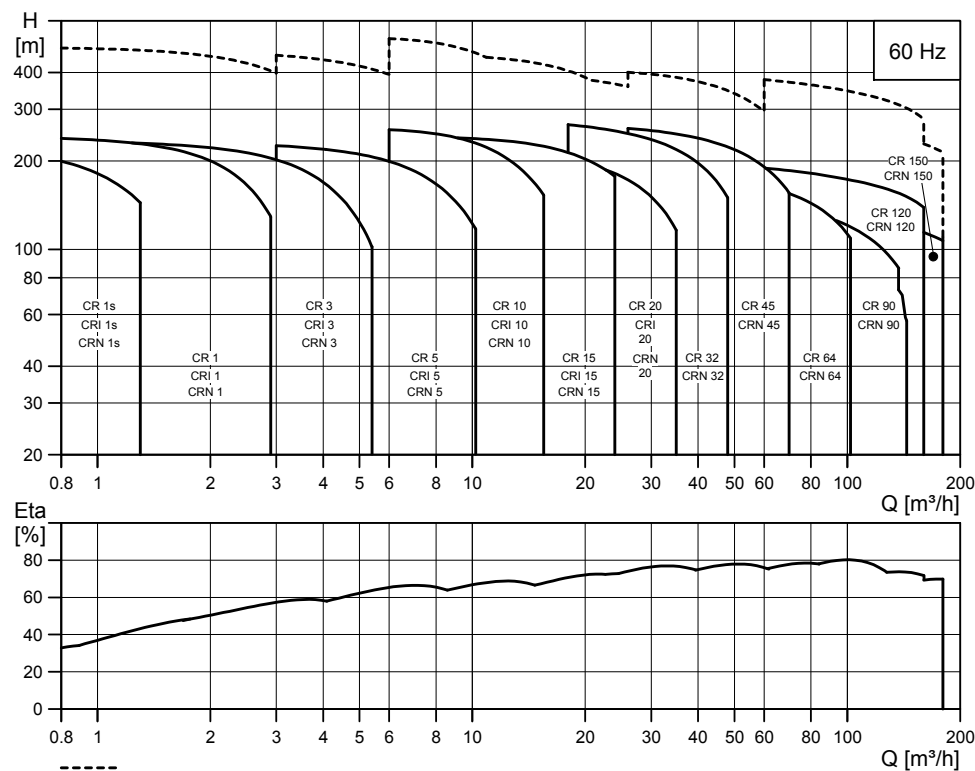
#### CR

50 Hz



Note: CRE, CRIE, CRNE pumps are available up to 22 kW.

60 Hz



Note: CRE, CRIE, CRNE pumps are available up to 22 kW.

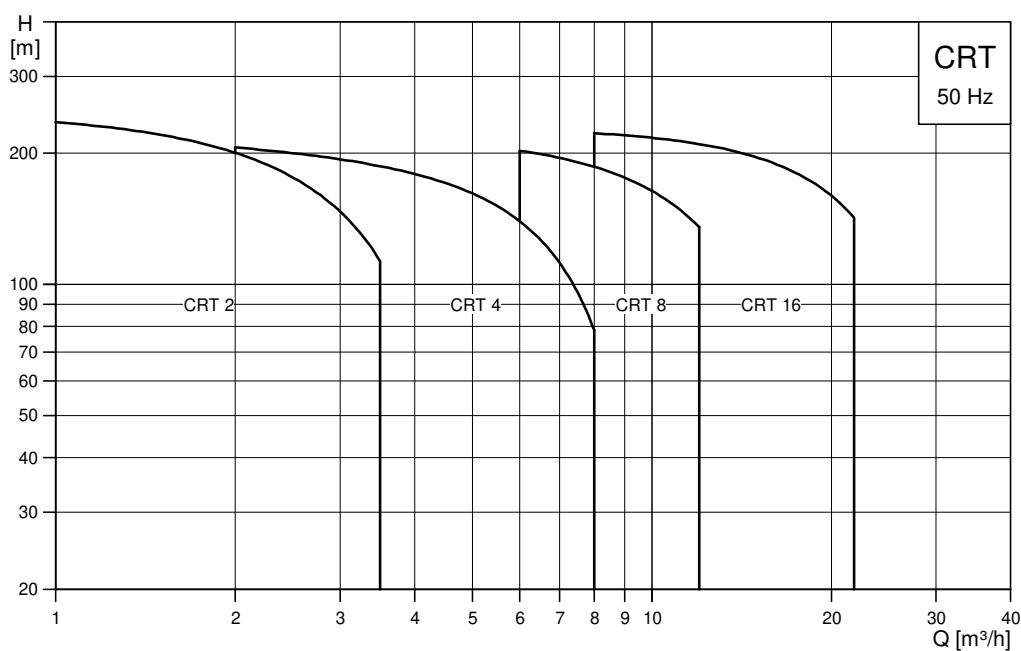
TM02 1192 4708

TM02 1530 4408



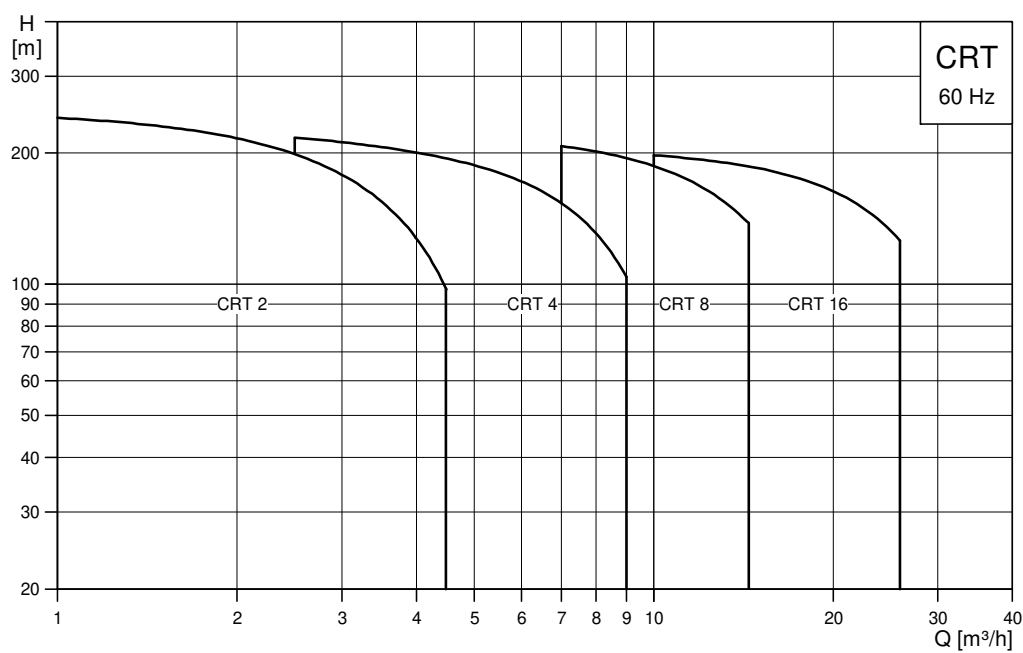
## CRT(E)

50 Hz



**Note:** CRTE pumps are available.

60 Hz



**Note:** CRTE pumps are available.

TM03 3817 1106

TM03 3818 1106

## EuP ready

The CR, CRI, CRN pumps are energy-optimised and comply with the EuP Directive (Commission Regulation (EC) No 547/2012) which has been effective since 1 January 2013. As from this date, all pumps will be classified/graduated in a new energy minimum efficiency index (MEI).

## Minimum efficiency index

Minimum efficiency index (MEI) means the dimensionless scale unit for hydraulic pump efficiency at best efficiency point (BEP), part load (PL) and overload (OL). The Commission Regulation (EU) sets efficiency requirements to  $MEI \geq 0.10$  as from 1 January 2013 and  $MEI \geq 0.40$  as from 1 January 2015. An indicative benchmark for best-performing water pump available on the market as from 1 January 2013 is determined in the Regulation.

- The benchmark for most efficient water pumps is  $MEI \geq 0.70$ .
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable-speed drive that matches the pump duty to the system.
- Information on benchmark efficiency is available at <http://europump.eu/efficiencycharts>.

## MEI index for CR pumps

| Pump type | MEI    |
|-----------|--------|
| CR 1s-3   | 0.54   |
| CR 1-3    | > 0.70 |
| CR 3-3    | > 0.70 |
| CR 5-3    | 0.57   |
| CR 10-3   | > 0.70 |
| CR 15-3   | > 0.70 |
| CR 20-3   | > 0.70 |
| CR 32-3   | > 0.70 |
| CR 45-3   | > 0.70 |
| CR 64-3   | > 0.70 |
| CR 90-3   | > 0.70 |

## 4. Identification

### Type keys

#### Pump

| Example                                                                        | CR | E | 32 | s | -4 | -2 | -A | -F | -G | -E | -HQQE |
|--------------------------------------------------------------------------------|----|---|----|---|----|----|----|----|----|----|-------|
| Type range:<br>CR, CRI, CRN, CRT                                               |    |   |    |   |    |    |    |    |    |    |       |
| Pump with integrated frequency<br>converter                                    |    |   |    |   |    |    |    |    |    |    |       |
| Flow rate [m <sup>3</sup> /h]                                                  |    |   |    |   |    |    |    |    |    |    |       |
| Undersize impeller (all impellers)<br>CR 1s, CRI 1s, CRN 1s                    |    |   |    |   |    |    |    |    |    |    |       |
| Number of impellers                                                            |    |   |    |   |    |    |    |    |    |    |       |
| Number of reduced-diameter impellers<br>CR(E), CRN(E) 32, 45, 64, 90, 120, 150 |    |   |    |   |    |    |    |    |    |    |       |
| Code for pump version                                                          |    |   |    |   |    |    |    |    |    |    |       |
| Code for pipe connection                                                       |    |   |    |   |    |    |    |    |    |    |       |
| Code for materials                                                             |    |   |    |   |    |    |    |    |    |    |       |
| Code for rubber parts                                                          |    |   |    |   |    |    |    |    |    |    |       |
| Code for shaft seal                                                            |    |   |    |   |    |    |    |    |    |    |       |

#### Key to codes

| Code                   | Description                                      |
|------------------------|--------------------------------------------------|
| <b>Pump version</b>    |                                                  |
| A                      | Basic version                                    |
| B                      | Oversize motor                                   |
| D                      | Pump with pressure intensifier                   |
| DW                     | Deep-well pump with ejector                      |
| E                      | Pump with certificate or ATEX approval           |
| F                      | Pump for high temperatures (with air-cooled top) |
| G                      | Multi-E slave                                    |
| H                      | Horizontal version                               |
| HS                     | High-pressure pump with high-speed MGE motor     |
| I                      | Different pressure rating                        |
| J                      | Pump with a different maximum speed              |
| K                      | Pump with low NPSH                               |
| M                      | Magnetic drive                                   |
| N                      | With sensor                                      |
| P                      | Undersize motor                                  |
| R                      | Horizontal version with bearing bracket          |
| SF                     | High-pressure pump                               |
| V                      | Multi-E master                                   |
| X                      | Special version                                  |
| <b>Pipe connection</b> |                                                  |
| A                      | Oval flange                                      |
| B                      | NPT thread                                       |
| CA                     | FlexiClamp                                       |
| CX                     | Triclap                                          |
| F                      | DIN flange                                       |
| FC                     | DIN flange according to DIN 11853-2              |
| G                      | ANSI flange                                      |
| J                      | JIS flange                                       |
| N                      | Changed diameter of ports                        |
| P                      | PJE coupling                                     |
| X                      | Special version                                  |

| Code                                          | Description                                                |
|-----------------------------------------------|------------------------------------------------------------|
| <b>Materials</b>                              |                                                            |
| A                                             | Basic version                                              |
| AD                                            | Carbon-graphite filled PTFE (bearings)                     |
| G                                             | Wetted parts EN 1.4401/AISI 316                            |
| GI                                            | All parts stainless steel, wetted parts EN 1.4401/AISI 316 |
| I                                             | Wetted parts EN 1.4301/AISI 304                            |
| II                                            | All parts stainless steel, wetted parts EN 1.4301/AISI 304 |
| K                                             | Bronze (bearings)                                          |
| S                                             | SiC bearings + PTFE neck rings                             |
| X                                             | Special version                                            |
| SX                                            | Carbon-free                                                |
| <b>Code for rubber parts in pump</b>          |                                                            |
| E                                             | EPDM                                                       |
| F                                             | FXM (Fluoraz®)                                             |
| K                                             | FFKM (Kalrez®)                                             |
| V                                             | FKM (Viton®)                                               |
| <b>Shaft seal type designation</b>            |                                                            |
| A                                             | O-ring seal with fixed driver                              |
| D                                             | Balanced O-ring seal                                       |
| H                                             | Balanced cartridge seal with O-ring                        |
| K                                             | Type M as cartridge seal                                   |
| O                                             | Double seal, back-to-back                                  |
| P                                             | Double seal, tandem                                        |
| X                                             | Special version                                            |
| <b>Seal face material</b>                     |                                                            |
| B                                             | Carbon, synthetic resin-impregnated                        |
| C                                             | Other types of carbon                                      |
| H                                             | Cemented tungsten carbide, embedded (hybrid)               |
| U                                             | Cemented tungsten carbide                                  |
| Q                                             | Silicon carbide                                            |
| X                                             | Other ceramics                                             |
| <b>Secondary seal material (rubber parts)</b> |                                                            |
| E                                             | EPDM                                                       |
| F                                             | FXM (Fluoraz®)                                             |
| K                                             | FFKM (Kalrez®)                                             |
| V                                             | FKM (Viton®)                                               |

#### Shaft seal

| Example                                   | -H | -Q | -Q | -E |
|-------------------------------------------|----|----|----|----|
| Shaft seal type designation               |    |    |    |    |
| Material of rotating seal face            |    |    |    |    |
| Material of stationary seal face          |    |    |    |    |
| Material of secondary seal (rubber parts) |    |    |    |    |

## 5. Applications

### High-pressure applications



GR7767 - TM02 8470 4004

Fig. 1 CR high-pressure pumps

#### Reference applications

- Filtration
- reverse osmosis
- cleaning and washing
- boiler feed.

#### Customised solutions

High-pressure applications often expose pumps to a variety of extreme conditions, such as high inlet pressure, high operating pressure, frequent starts/stops and pressure pulsing. Overload of the pump may cause increased wear of pump parts, such as motor bearings and shaft seal, and thus reduce the pump life.

To avoid unexpected breakdowns, we offer customised solutions designed to meet your needs!

#### High-pressure handling

We offer high-pressure pumps specially designed to cope with pressures up to 50 bar at max. 120 °C.

When necessary, CR high-pressure pumps are fitted with a bearing flange. A bearing flange is an additional flange with an oversize ball bearing designed to absorb axial forces in both directions.

CR high-pressure pumps come in two variants: as a single-pump solution or as a 2-pump solution.

The single-pump solution is used for flow rates up to 5 m<sup>3</sup>/h, the 2-pump solution for flow rates above 5 m<sup>3</sup>/h.

#### Single-pump solution

Our single-pump solutions include the pump types CRNE 1 HS and CRNE 3 HS.

CRNE HS pumps are fitted with a high-speed motor with integrated frequency converter.

To minimise the pressure on the shaft seal, the direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned up-side down. Consequently, the pumped liquid flows in the opposite direction.

#### 2-pump solutions

Our 2-pump solutions are divided into two groups based on pump size:

- CRN 3, 5, 10, 15, 20, 32, 45, 64, 90 SF
- CR(N) 120, 150.

Both solutions consist of two pumps in series. The first pump is a standard pump for feeding. The second pump is either a high-pressure pump (SF) specially designed for high pressure or a standard pump.

To minimise the pressure on the shaft seal, the direction of rotation on CR SF pumps is the opposite of that of standard pumps, and the chamber stack is turned up-side down. Consequently, the pumped liquid flows in the opposite direction.

#### Further documentation

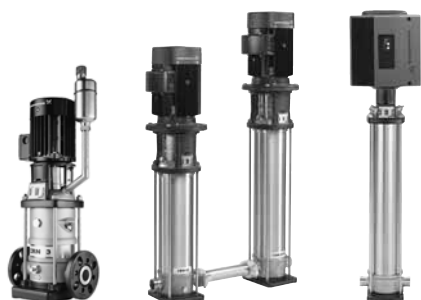
| Information about                               | See page              |
|-------------------------------------------------|-----------------------|
| CR high-pressure pumps (standard documentation) | <a href="#">165</a>   |
| Pumps with bearing flange                       | <a href="#">48</a>    |
| Customised pump parts                           | <a href="#">20-66</a> |
| Special installation requirements               | <a href="#">17</a>    |
| E-pump solutions                                | <a href="#">63</a>    |
| WebCAPS                                         | <a href="#">165</a>   |

#### Supplementary Grundfos pumps

For pressures above 50 bar, we recommend Grundfos BM modules or Grundfos BME, BMET pumps.

For further information about BM modules and BME, BMET pumps, see page [165](#).

## Hot-water applications



GR5228 - GR7767 - TM02 8470 4004

**Fig. 2** CR pumps for hot-water applications

### Reference applications

- Boiler feeding
- applications involving poor inlet/suction conditions
- cleaning and washing applications
- high-temperature applications.

### Customised solutions

Hot-water applications often expose pumps to a variety of extreme conditions, such as high temperatures, long operating hours, frequent starts/stops, pressure pulsing, poor inlet conditions and high inlet pressure. Such conditions may result in cavitation and/or cause increased wear of pump parts, for instance motor bearings and shaft seal, and thus reduce the pump life.

To avoid breakdowns, we offer customised solutions designed to meet your needs! We provide solutions for applications involving special requirements:

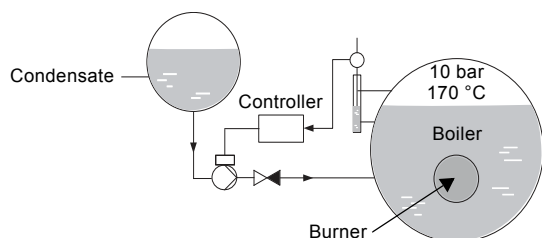
- steady steam production
- poor inlet conditions
- high temperature, etc.

### Steady steam production

To ensure a steady steam production and a constant water level in the boiler tank, we recommend speed-controlled pumps.

We recommend speed-controlled pumps because:

- The reaction to changes in the steam consumption is faster compared with mains-operated pumps.
- The water level in the boiler feed tank is kept stable.
- The installation costs are lower compared to systems with mains-operated pumps and valves.
- No bypass pipe is needed.



**Fig. 3** Boiler-feed application with speed-controlled pump

### Applications involving poor inlet conditions

Cavitation is often a problem in applications where pumps have to cope with the combination of high liquid temperatures, poor inlet pressure and/or high flow rate.

Low-NPSH pumps eliminate the risk of cavitation and ensure a stable and reliable operation.

The CR low-NPSH pump is a pump with a special first stage design that reduces the NPSH value and prevents erosion and destruction of the pump, pipework and valves.

For further information about NPSH and the calculation of NPSH-value, see these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CR, CRN high pressure
- CRT, CRTE.

### High-temperature applications

The pumping of hot liquids demands much of pump parts, such as the shaft seal and rubber parts.

To ensure a reliable and stable production, we offer CR pumps with an air-cooled top.

A CR pump with an air-cooled top has a standard mechanical shaft seal handling liquid temperatures up to 180 °C at 25 bar without external cooling. At the same time the pump delivers a high pressure. As the name implies, the pump is fitted with a special air-cooled shaft seal chamber generating the same insulation effects as that of a vacuum flask.

### Further documentation

| Information about                   | see page              |
|-------------------------------------|-----------------------|
| CR low-NPSH pumps                   | <a href="#">40</a>    |
| CR pumps with air-cooled top        | <a href="#">34</a>    |
| Pumps with bearing flange           | <a href="#">48</a>    |
| CR pumps with under-/oversize motor | <a href="#">26</a>    |
| Customised pump parts               | <a href="#">20-66</a> |
| Special installation requirements   | <a href="#">17</a>    |
| E-pump solutions                    | <a href="#">63</a>    |
| WebCAPS                             | <a href="#">165</a>   |

## Applications involving temperature control



TM02 7397 3403

Fig. 4 CRE, CRIE, CRNE pumps with sensor

### Reference applications

Cooling systems:

- Electronic data processing
- laser equipment
- medical equipment
- industrial cooling and freezing processes, etc.

Temperature-control systems:

- Casting and moulding tools
- oil processing, etc.

### Customised solutions

To ensure a safe and reliable operation in applications involving temperature control, we offer customised solutions designed to meet your needs!

We provide solutions for applications involving pumping of the following liquids:

- liquids at temperatures down to  $-40\text{ }^{\circ}\text{C}$
- high-temperature liquids
- high-viscous liquids, etc.

### Pumping of liquids down to $-40\text{ }^{\circ}\text{C}$

In applications where liquids are pumped at temperatures down to  $-40\text{ }^{\circ}\text{C}$ , it is crucial for a successful production that pump parts are of the right materials and dimensions.

At such low temperatures, the selection of wrong materials and dimensions may cause deformation because of thermal expansion, and eventually stoppage of operation.

**For low-temperature liquids below  $-20\text{ }^{\circ}\text{C}$ , we recommend CRN pumps.**

### Pumping of high-temperature liquids

The pumping of hot liquids demands much of pump parts, such as shaft seals and rubber parts.

Examples of such liquids:

- water-based liquids up to  $180\text{ }^{\circ}\text{C}$  at PN 25
- thermal oils up to  $240\text{ }^{\circ}\text{C}$  at PN 16.

To ensure a reliable and stable production, we offer CR pumps with an air-cooled top and special rubber parts.

A CR pump with an air-cooled top is a pump which can handle high temperatures and deliver a high pressure. The pump is fitted with a special air-cooled shaft seal chamber generating the same insulation effects as that of a vacuum flask.

### Pumping of high-viscous liquids

In applications where high-viscous liquids are pumped, precautions must be taken to ensure that the motor of the pump is not overloaded, and that the pump performance is not reduced too much.

The viscosity of a pumped liquid depends strongly on the liquid temperature.

To ensure a stable and reliable operation, we offer CR pumps with oversize motors.

### Further documentation

| Information about                 | See page              |
|-----------------------------------|-----------------------|
| ATEX-approved pumps               | <a href="#">21</a>    |
| CR pumps with air-cooled top      | <a href="#">34</a>    |
| Pump rubber parts                 | <a href="#">48</a>    |
| CR pumps with oversize motor      | <a href="#">26</a>    |
| Customised pump parts             | <a href="#">20-66</a> |
| Special installation requirements | <a href="#">17</a>    |
| E-pump solutions                  | <a href="#">63</a>    |
| WebCAPS                           | <a href="#">165</a>   |



## Aggressive/hazardous liquids



GR5954 - GR7369 - GR5216

**Fig. 5** CR pumps for aggressive/hazardous liquids

### Reference applications

- Chemical industry
- pharmaceutical industry
- refineries
- petrochemical industry
- distilling plants
- paint industry
- mining.

### Customised solutions

In industries where pumping of dangerous and aggressive liquids is an integrated part of the daily production, safety is top priority. Leaking pumps pose a danger to the environment.

To prevent breakdowns, we offer customised solutions designed to meet your needs!

We provide solutions for the following liquids:

- aggressive and abrasive liquids
- toxic and hazardous liquids
- flammable liquids
- odorous liquids.

To ensure a safe handling of the above liquids, we offer the following pumps:

- pumps with tandem seal arrangement and flushing
- pumps with back-to-back seal arrangement and pressure intensifier
- pumps with magnetic drive (MAGdrive)
- pumps with ATEX approval.

### Pumps with tandem seal arrangement

Pumps with tandem seal arrangements connected to a flushing device are used for crystallising, hardening or sticky liquids.

If the primary seal leaks, the leaking liquid will be flushed away by a flushing liquid.

### Pumps with back-to-back seal arrangement

We recommend pumps with back-to-back seal arrangements for toxic, aggressive or flammable liquids.

Pumps with back-to-back seal arrangements are connected to systems that provide a higher pressure than the maximum pump pressure preventing leakage from the pump to the atmosphere side.

### MAGdrive pumps

We recommend pumps with magnetic drive (MAGdrive) for toxic and hazardous liquids.

The MAGdrive pump is a hermetically sealed pump. In the MAGdrive pump, the power from the motor is transmitted to the pump shaft by means of magnetic force instead of a traditional coupling.

The motor shaft and the pump shaft are hermetically separated from each other.

### ATEX-approved pumps

We recommend ATEX-approved pumps for potentially explosive atmospheres. Explosive atmospheres consist of air and combustible material such as gases, vapours, mists or dusts in which the explosion spreads after ignition.

### Electropolished pumps

We recommend electropolished pumps for applications with strict requirements concerning corrosion and cleanability.

We offer electropolished pumps in all CRN pump sizes.

### Further documentation

| Information about                           | see page              |
|---------------------------------------------|-----------------------|
| CR pumps with back-to-back seal arrangement | <a href="#">29</a>    |
| CR pumps with tandem seal arrangement       | <a href="#">32</a>    |
| Pumps with magnetic drive (MAGdrive)        | <a href="#">36</a>    |
| ATEX-approved pumps                         | <a href="#">21</a>    |
| Customised pump parts                       | <a href="#">20-66</a> |
| Special installation requirements           | <a href="#">17</a>    |
| E-pump solutions                            | <a href="#">63</a>    |
| WebCAPS                                     | <a href="#">165</a>   |

## Hygienic applications



TM02 1808 2001 - GR7375 - TM02 8470 4004

**Fig. 6** CR pumps for hygienic applications

CR pumps are not designed for the pumping of hygienic and sterile liquids, but their construction and the choice of materials make them an ideal solution for secondary processes in hygienic applications.

### Reference applications

- Pharmaceutical industries
- biotechnological industries
- electronics industries
- food and beverage industries
- process industries.

### Customised solutions

In hygienic industries, pumps must meet strict requirements on design, materials, surface quality, cleanability, etc.

To ensure a hygienic and reliable production, we offer customised solutions specially designed to meet your requirements!

We provide solutions for applications involving special requirements to hygienic design and cleanability.

### Hygienic design

The surface quality of pump parts is of utmost importance - both for corrosion resistance and microbial adhesion and growth.

To meet the strict hygienic requirements to material and surface quality in secondary hygienic processes, we offer electropolished stainless steel CRN pumps with the following surface quality:

| Pump type                                             | Cast stainless steel | Stainless-steel parts (not cast) | Surface quality |
|-------------------------------------------------------|----------------------|----------------------------------|-----------------|
| CRN 1s, 1, 3, 5, 10, 15, 20, 32, 45, 64, 90, 120, 150 | •                    | •                                | Ra ≤ 0.8 µm     |

- Available.

**Note:** CRN pumps are not sanitary pumps regardless of the surface quality.

Furthermore, we offer a wide variety of connections, such as TriClamp connections, specially designed for pharmaceutical, food and beverage industries. For further information about TriClamp connections, see page 52.

We offer the following pumps:

- cleaned and dried pumps
- mechanically or electropolished pumps.

Electropolished pumps have a higher corrosion resistance than non-polished pumps.

### Cleanability

In secondary hygienic applications, it is extremely important to clean the pumps sufficiently to prevent deposits from contaminating the pumped liquid.

For secondary hygienic applications, we recommend CRN(E) pumps which have all pump parts in stainless steel. As the surface and properties of the metal is not affected by cleaning agents, stainless steel is the ideal solution.

### ATEX-approved pumps

We recommend ATEX-approved pumps for potentially explosive atmospheres. Explosive atmospheres consist of air and combustible material such as gases, vapours, mists or dusts in which the explosion spreads after ignition.

### Further documentation

| Information about                 | see page |
|-----------------------------------|----------|
| Cleaned and dried CR pumps        | 39       |
| Electropolished CR pumps          | 39       |
| Stainless steel CRN pumps         | 40       |
| ATEX-approved pumps               | 21       |
| Customised pump parts             | 20-66    |
| Special installation requirements | 17       |
| E-pump solutions                  | 63       |
| WebCAPS                           | 165      |

### Supplementary Grundfos pumps

If you need sanitary pumps with a hygienic design, we recommend the following Grundfos sanitary pump types:

- F&B-HYGIA
- Euro-HYGIA®
- Contra
- Sipla.

Most of the Grundfos sanitary pumps comply with the QHD, EHEDG and 3-A sanitary standards.

For further information, see page 165.

## Special installation requirements



TM06 0754 0914

Fig. 7 CR pumps for special installations

### Reference applications

- Places with limited access and space
- ships
- mobile applications
- fire protection
- earthquake-prone areas
- applications in remote areas.

### Customised solutions

Due to safety, location and arrangement requirements some installations require pumps of another design than traditional vertical pumps.

To meet special installation requirements, we offer customised solutions designed to meet your needs!

We provide solutions for the following pump types:

- horizontally mounted pumps
- belt-driven pumps
- pumps with alternative mounting, etc.

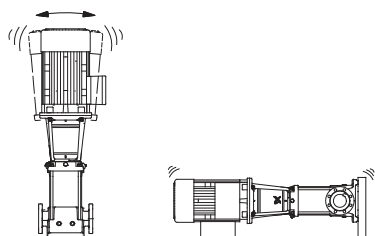
### Horizontally mounted pumps

Horizontally mounted pumps are often chosen in the following cases:

- installations with limited access and space, for instance cabinets and compact systems
- earthquake-prone areas
- mobile systems, for instance ships and vehicles.

For installations with limited height, we recommend horizontally mounted pumps.

For earthquake-prone areas, we recommend horizontally mounted pumps to lower the centre of gravity and thus minimise swings during an earthquake. See the example in fig. 8.



TM03 2645 4705

Fig. 8 Vibrations of pumps in earthquake-prone areas

If the chamber stack and staybolts are stressed by repeated swings during an earthquake, they may break and cause stoppage of operation.

For earthquake-prone areas and in mobile systems, we recommend CRN pumps, as stainless steel is more ductile than cast iron.

Horizontal mounting requires special mounting plates. For further details, see [Horizontal in-line pumps](#) on page 41.

### Belt-driven pumps

Belt-driven pumps are often selected in the following cases:

- non-electrically driven applications for instance air-, solar-, wind-, diesel- and pneumatically driven applications
- installations requiring an alternative supply, for instance firefighting systems and emergency pumps.

The construction of belt-driven pumps is like that of electrically driven pumps, but belt-driven pumps have a pulley and belt connected to a combustion motor or other device.

### Pumps with alternative mounting

For installations with limited access and space, we offer pumps with alternative mounting of pump parts such as terminal box and vent screw.

### Certificates, approvals and reports

We offer customised pumps with a wide variety of certificates and approvals. Examples:

- Inspection certificate 3.1C
  - Lloyds Register of Shipping (LRS)
  - Det Norske Veritas (DNV)
- ATEX, VIK and UL approvals
- Duty-point verification report
- Vibration test report.

### Further documentation

| Information about                       | see page              |
|-----------------------------------------|-----------------------|
| Horizontally mounted CR pumps           | <a href="#">41</a>    |
| Belt-driven CR pumps                    | <a href="#">45</a>    |
| Stainless steel CRN pumps               | <a href="#">40</a>    |
| Pump parts designed to match your needs | <a href="#">20-66</a> |
| CR pumps with certificates              | <a href="#">58</a>    |
| E-pump solutions                        | <a href="#">63</a>    |
| WebCAPS                                 | <a href="#">165</a>   |

### Supplementary Grundfos pumps

For installations with special requirements to a compact design, we recommend CH, CHI pumps or BM booster modules. For further information, see page [165](#).

## Special applications



GR7369 - TM02 8470 - TM02 1808

Fig. 9 CRT, CRNE and CRN pumps

### Reference applications

- Off-shore and maritime applications
- cooling applications
- deep-well pumping systems
- pumps operating under special conditions.

### Customised solutions

We offer customised solutions for a number of applications not mentioned on the previous pages.

Examples:

- Off-shore and maritime applications
- pumping of liquids down to -40 °C
- deep-well pumping in small water supply systems
- special conditions
- special requirements as to approvals, voltage, frequency.

**To ensure a stable and reliable operation, we offer customised solutions designed to meet your needs!**

### Off-shore and maritime applications

In off-shore and maritime applications, pumps must meet stringent requirements to reliability in connection with for instance cooling, firefighting, cleaning and desalination systems. Pumps are often installed in a corrosive environment.

We offer customised pumps with a wide variety of 3.1C inspection certificates, such as Lloyds Register of Shipping (LRS) and Det Norske Veritas (DNV). For further information, see page [58](#).

Furthermore, we offer customised pumps with a wide variety of materials, connections, enclosure classes, etc.

For the pumping of seawater, we recommend CRT(E) pumps which have all pump parts in titanium. As the corrosion resistance of CRT(E) pumps is not affected by seawater, titanium is the ideal solution.

### Pumping of liquids down to -40 °C

In applications with liquid temperatures down to -40 °C, the material of shaft seal faces, the dimensions of the neck ring and other factors must meet high requirements. At such low temperatures, the selection of wrong materials and dimensions may cause deformation because of thermal expansion, and eventually stoppage of operation.

For liquids below -20 °C, we recommend CRN pumps.

### Deep-well pumping in small water supply systems

Water is pumped from depths down to 90 metres. The system consists of a dry-mounted CR pump connected to a submerged ejector.

### Pumps operating under special conditions

- Installations at high altitudes:
  - > 3,500 metres if fitted with Grundfos MG IE3 motors
  - > 2,750 metres if fitted with Siemens IE3 motors
  - > 1,000 metres if fitted with Grundfos MGE motors.
- applications with low, high or fluctuating ambient temperatures
- the pumping of high-viscous/-density liquids.

In such cases, the motor may be overloaded and an oversize motor may be required.

### Special requirements

We offer customised pumps meeting special requirements as to approvals, voltage, frequency, etc.

### Further documentation

| Information about                       | see page              |
|-----------------------------------------|-----------------------|
| CR pumps for cooling applications       | <a href="#">38</a>    |
| CR pumps for deep-well pumping          | <a href="#">47</a>    |
| CR pumps with under-/oversize motors    | <a href="#">26</a>    |
| Pump parts designed to match your needs | <a href="#">20-66</a> |
| Special installation requirements       | <a href="#">17</a>    |
| E-pump solutions                        | <a href="#">63</a>    |
| CR pumps with certificates              | <a href="#">58</a>    |
| WebCAPS                                 | <a href="#">165</a>   |

### Supplementary Grundfos pumps

If the suction head exceeds 90 metres, we recommend Grundfos SP and SQ submersible pumps.

For further information about SP and SQ pumps, see page [165](#).

## 6. Accessories

### ATEX-approved dry-running protection

For environments, group II, category 2G, always use dry-running protection.

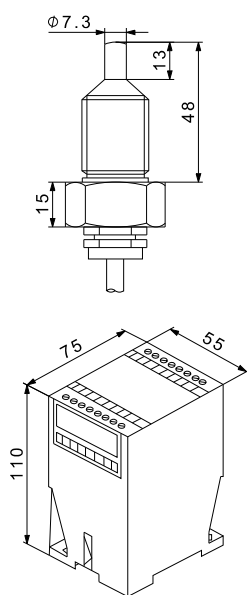
The link between ATEX groups, categories and zones is explained in the 1999/92/EC directive. Some EEC countries may therefore have stricter local rules.

The user or installer is always responsible for checking that the group and category of the pump correspond to the zone classification of the installation site.

The dry-running protection with ATEX approval mentioned below is offered by Grundfos.

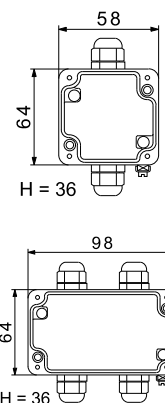
#### Components

| Designation               | Ex marking            | Connection            | [°C]     | Product number |
|---------------------------|-----------------------|-----------------------|----------|----------------|
| Flow sensor               | II 2G Ex ib IIC T6    | G 1/2<br>AISI 316Ti   | 85       | 96607921       |
|                           |                       | G 1/2<br>AISI 316Ti   | 120      | 96607922       |
| Amplifier for flow sensor | -                     | II (1) GD [Ex ia] IIC | [V]      | -              |
|                           |                       |                       | 230      | 96607923       |
| Extension box             | -                     | Terminals             | Type     | -              |
|                           | II2GEx e IIT6         | 4                     | GKEI 100 | 97754528       |
|                           | II 2GEx ia IIC T6     |                       | GKI 60   | 97754527       |
|                           | II 2GEx e [ia] IIC T6 |                       | GKE 60   | 97752524       |



TM05 1169 3511

Fig. 10 ATEX-approved flow sensor and amplifier

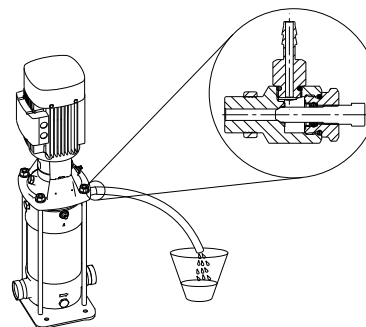


TM05 1120 0611

Fig. 11 ATEX-approved extension box

The extension box is designed for connection of intrinsically safe and/or non-intrinsically safe circuits in explosion-hazardous areas of category 2 (zone 1 and 21).

### Venting valve with connecting pipe



TM05 1160 0611

Fig. 12 Venting valve with connecting pipe

The connecting pipe of this special venting valve allows the operator to deaerate the pump into a closed container. This accessory is ideal when pumping aggressive or hazardous liquids.

| Designation                        | Connection | Type | Product number |
|------------------------------------|------------|------|----------------|
| Venting valve with connecting pipe | G 1/2      | EPDM | 97773787       |
|                                    |            | FKM  | 97775104       |
|                                    |            | FFKM | 97775105       |
|                                    |            | FXM  | 97775106       |

## 7. Motor

The Grundfos standard range of motors meets a wide variety of application demands. For special applications or operating conditions, we offer various customised solutions:

- a wide range of motor approvals
- motors with special voltage
- motors with anti-condensation heater
- motors with Harting® 10-pin multiplug connection
- motors with built-in PTC sensor
- motors with built-in thermal switch
- undersize and oversize motors
- motors with alternative enclosure class, etc.
- motors with bearings suitable for high-temperature operating conditions (bearings are packed with grease suitable for high temperatures).

### VIK-approved motors

We recommend VIK-approved motors for industrial climates where aggressive gasses and/or aggressive vapours, etc., are likely to occur.

The VIK standard applies to three-phase mains-operated motors and three-phase motors connected to a frequency converter.

We offer VIK-approved motors from 0.37 to 75 kW in accordance with the requirements of the German industrial standard, Verband der Industriellen Energie- und Kraftwirtschaft. To comply with the standard, VIK-approved motors must meet these requirements:

- Group II, Category 2, version EEx e or EEx d, temperature class T3 in the ATEX directive.  
In case of doubt, consult the above standard or contact Grundfos.
- Enclosure class IP55 as a minimum.
- Protected against sucking. This phenomenon may occur when the pressure inside the motor is lower than the atmospheric pressure. In such cases, moisture is sucked from the atmospheric side into the motor through bearing housings, etc.

From 1.1 to 75 kW, all VIK-approved motors are IE2 high-efficiency motors.

For further information about the VIK-standard, see [www.vik.de](http://www.vik.de) or contact Grundfos.

### Tropicalised motors

A tropicalised motor does not contain paper, wood or similar materials containing wood pulp.

Grundfos defines a tropicalised motor as a motor which fulfils the climate group "World-Wide" in DIN/IEC 721-2-1 and has the following characteristics:

- enamel covered windings
- double winding impregnation
- double winding insulation
- FPM V-ring
- terminal board made of polyester
- liquid sealing between frame and flange/end shield
- all outside screws made of stainless steel
- 30 µm paint layer on aluminium stator housings
- 120 µm paint layer on cast-iron stator housings
- heating element.

### cURus-, UR- and CSA-approved motors

We offer mains-operated motors with these approvals:

| Approval | Motor power - P2 [kW] |
|----------|-----------------------|
| cURus    | 0.37 - 22             |
| UR       | 30-75                 |
| CSA      | 30-75                 |

### Energy

We offer mains-operated motors that comply with these energy standards:

- CEL
- EISA 2007
- KEMCO
- INMETRO
- NOM-016-ENER
- cURus ENERGY.

### Other motor approvals

We offer a wide range of motor approvals:

- CCC
- C-tick
- GOST
- BΔ
- TSU
- METI/JQA
- CB
- TSENK
- SASO, etc.



## ATEX-approved pumps



TM01 619 4202

ATEX-approved pumps are for use in potentially explosive atmospheres. Explosive atmospheres consists of air and combustible matter, such as gases, vapours, mists or dusts in which the explosion spreads after ignition.

We offer explosion-proof or dust-ignition-proof motors in accordance with the EC directive 94/9/EC, the so-called ATEX directive. The ATEX-approved pumps can be used in areas (zones) classified according to the directive 1999/92/EC. In case of doubt, consult the above-mentioned directives or contact Grundfos.

The nameplates of ATEX-approved pumps are supplied with serial number, ATEX classification, and an "X" indicating that special installation and operating instructions must be followed.

An ATEX certificate is available on request.

### Scope of ATEX categories

| Group I                                                                                             |                                                                                                       |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Category M2                                                                                         |                                                                                                       |
| Underground installations in mines liable to be endangered by explosive gasses or combustible dust. | Pumps made of materials that do not create sparks and thus do not constitute any danger of explosion. |
| CR pumps available                                                                                  | CR, CRI, CRN                                                                                          |
| Motors available                                                                                    | None <sup>1)</sup>                                                                                    |

<sup>1)</sup> Air-driven or hydraulically driven motors are not available from Grundfos.

| Group II                                                             |                                                                                     |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Category 2                                                           |                                                                                     |
| Installation areas liable to be endangered by explosive atmospheres. | Pumps intended for use in areas in which explosive atmospheres are likely to occur. |
|                                                                      | G (gas) D (dust)                                                                    |
| 1999/92/EC <sup>1)</sup>                                             | Zone 1 Zone 21                                                                      |
| CR pumps available                                                   | CR, CRI, CRN, CRT <sup>2)</sup> CR, CRI, CRN, CRT                                   |
| Motors available                                                     | 2G EEx e II T3 2G EEx d IIB T4 2D 125 °C                                            |

| Group II                                                             |                                                                                          |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Category 3                                                           |                                                                                          |
| Installation areas liable to be endangered by explosive atmospheres. | Pumps intended for use in areas in which explosive atmosphere <u>only rarely occur</u> . |
|                                                                      | G (gas) D (dust)                                                                         |
| 1999/92/EC <sup>1)</sup>                                             | Zone 2 Zone 22                                                                           |
| Pumps available                                                      | CR, CRI, CRN, CRT CR, CRI, CRN, CRT                                                      |
| Motors available                                                     | 2G EEx e II T3 2G EEx d IIB T4 3D 125 °C                                                 |

<sup>1)</sup> **Note:** The link between groups, categories and zones is explained in the 1999/92/EC directive. Some EEC countries may therefore have stricter local rules. The user or installer is always responsible for checking that the group and category of the pump correspond to the zone classification of the installation site.

- <sup>2)</sup> For group II, category 2 G (zone 1), the pump must be protected against dry running. Use one of the following methods:
- An ATEX-approved dry-running protection. Always use this protection on pumps with MAGdrive or pumps with a single mechanical shaft seal.
  - Pumps with double seal system.
    - Back-to-back: The system for pressurising the system must be ATEX approved.
    - Tandem: Make sure that the flow of flushing liquid is always sufficient, and make sure that the elevated tank never runs dry of flushing liquid.

We offer the following ATEX-approved motors:

| Motor [kW] | Version         |                  |             |             |
|------------|-----------------|------------------|-------------|-------------|
|            | (2G EExe II T3) | (2G EExd IIB T4) | (2D T125 °) | (3D T125 °) |
| 0.37 - 1.3 | •               |                  |             |             |
| 1.85 - 4.6 | •               |                  |             |             |
| 5.5 - 7.5  | •               |                  |             |             |
| 10-15      | •               |                  |             |             |
| 20-28      | •               |                  |             |             |
| 0.37 - 1.5 |                 | •                |             |             |
| 2.2 - 4    |                 | •                |             |             |
| 5.5 - 7.5  |                 | •                |             |             |
| 11-45      |                 | •                |             |             |
| 0.37 - 45  |                 |                  | •           |             |
| 0.37 - 45  |                 |                  |             | •           |

All explosion-proof motors have PTC sensors. For further information about PTC sensors, see page 24.



## Special voltage

We offer pumps with the following voltages:

| Frequency                                        | Voltage                       |
|--------------------------------------------------|-------------------------------|
| <b>Mains-operated motor</b>                      |                               |
| 50 Hz                                            | 3 x 220-240 Δ/380-415 YV      |
|                                                  | 3 x 200-220/346-380 V         |
|                                                  | 3 x 380-415 ΔV                |
|                                                  | 3 x 380-415 Δ/660-690 YV      |
| 60 Hz                                            | 3 x 200-230/346-400 V         |
|                                                  | 3 x 208-230/460 V             |
|                                                  | 3 x 220-255 Δ/380-440 YV      |
|                                                  | 3 x 220-277 Δ/380-480 YV      |
|                                                  | 3 x 220-277 Δ/380-480 YV      |
|                                                  | 3 x 380-440 ΔV                |
|                                                  | 3 x 380-480 ΔV                |
|                                                  | 3 x 380-480 Δ/660-690 YV      |
|                                                  | 3 x 575 YV                    |
|                                                  |                               |
| <b>Motor with integrated frequency converter</b> |                               |
| 50/60 Hz                                         | 1 x 200-240 V                 |
|                                                  | 3 x 380-500 V (0.37 - 2.2 kW) |
|                                                  | 3 x 380-480 V (3-22 kW)       |

**Note:** Other voltages are available on request.

## Certificate

Grundfos offers a certificate for an ATEX-approved pump. The certificate has to be confirmed for every order. If a certificate is needed, please order it when ordering the pump.

BE > THINK > INNOVATE >

GRUNDFOS

### ATEX-approved pump



|                       |          |
|-----------------------|----------|
| Customer name         |          |
| Customer order no.    |          |
| Customer TAG no.      |          |
| GRUNDFOS order no.    |          |
| Pump type             |          |
| GRUNDFOS DUT id.      |          |
| Part number           |          |
| Production code       |          |
| Pump serial no.       |          |
| Motor serial no.      |          |
| ATEX approval of pump |          |
| Technical file no.    | 96499604 |

GRUNDFOS hereby confirms that the pump mentioned above is manufactured according to the ATEX directive. This means the pump is conformity with the ATEX 94/9EEC (ATEX 100) appendix VIII directive as mentioned in the "ATEX Supplement to installation and operating instructions" supplied with the pump.

GRUNDFOS

Date:

Signature:

Name:

Dept.:

Part no 96 51 22 40/A72775

TM03 4 166 1706

The certificate is to be ordered via the product number

| Description                        | Product number |
|------------------------------------|----------------|
| Certificate for ATEX-approved pump | 96512240       |

## Motor with multiplug connection



Gr7550

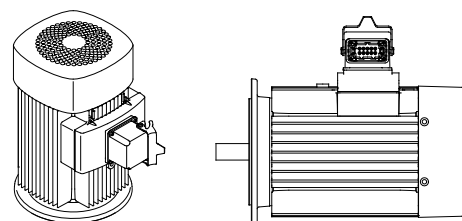
**Fig. 13** Mains-operated motor with Harting® 10-pin multiplug

Mains-operated motors fitted with a Harting® 10-pin multiplug connection, HAN 10 ES, enable easy connection to the mains.

**Note:** For Grundfos motors with integrated frequency converter up to 7.5 kW, we offer the solutions shown on page 23.

The purpose of a multiplug connection is to make the electrical installation and service of the pump easier. The multiplug functions as a plug-and-pump device.

The drawings below show the position of the multiplug on the mains-operated motor.



TM01 8713 0700 - TM02 8518 0304

**Fig. 14** Motor with multiplug connection

The multiplug connection is available for the following motor sizes:

| Motor power P2 [kW] | Voltage [V], starting method |
|---------------------|------------------------------|
| 0.37 - 7.5          | 3 x 220-240 Δ/380-415 YV     |
| 0.37 - 7.5          | 3 x 380-415 ΔV               |

## Logo for multiplug

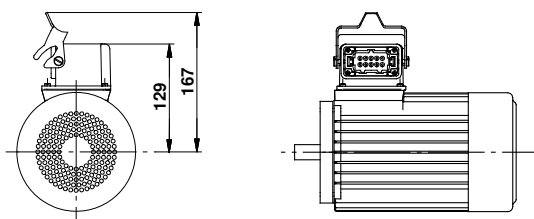


**Fig. 15** Logo

TM02 0470 0700

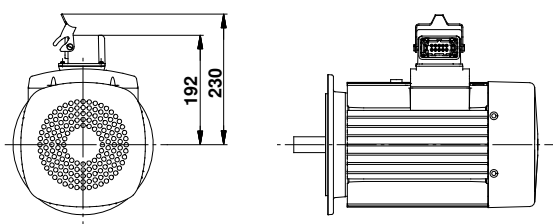
## Dimensions

All dimensions are in mm.



TM01 8716 0700

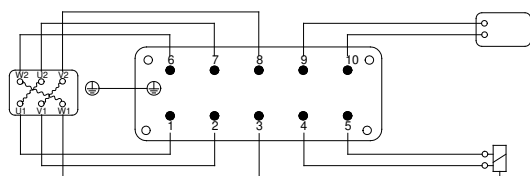
Fig. 16 Dimensions, 0.37 - 1.1 kW



TM01 8714 0700

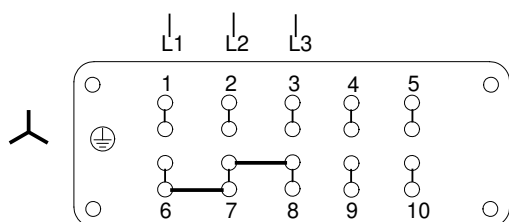
Fig. 17 Dimensions, 1.5 - 7.5 kW

## Plug connections



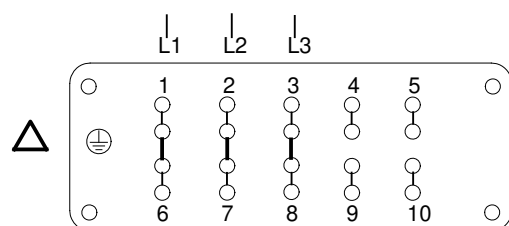
TM01 8702 0700

Fig. 18 Plug connection from motor



TM01 8703 0700

Fig. 19 Plug connection for star connection



TM01 8704 0700

Fig. 20 Plug connection for delta connection

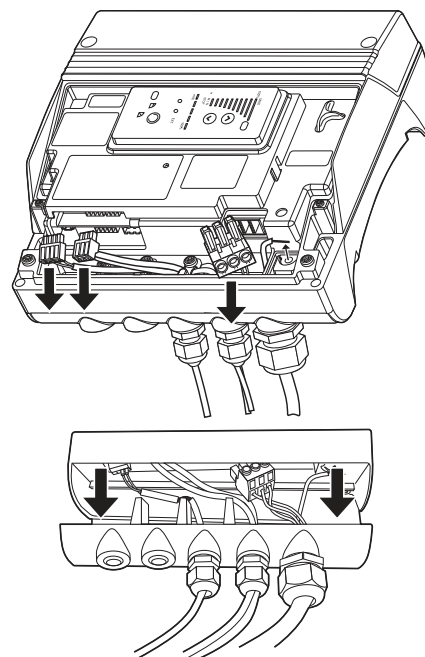
**Note:** Fishplates for connections are located in the plug.

## Plug-and-pump solutions for CRE pumps

To facilitate electrical installation and service of our three-phase CRE pumps from 3-22 kW, all motor terminal boxes are equipped with a detachable cable inlet bar.

When the cable inlet bar is removed, you can disconnect all electrical connections.

Figure 21 shows the location of the detachable cable inlet bar on the motor terminal box as well as plugs for mains connection, sensor and communication.



TM03 1964 3405 - TM03 1962 3405

Fig. 21 Location of the detachable cable inlet bar on the motor terminal box as well as plugs for mains connection, sensor and communication

## Motor with anti-condensation heater



TM03 2440 4305

**Fig. 22** Mains-operated MG motor with anti-condensation heater

In applications where condensation in the motor may occur, we recommend that you install a motor with an anti-condensation heater on the stator coil ends. The heater keeps the motor temperature higher than the ambient temperature and prevents condensation.

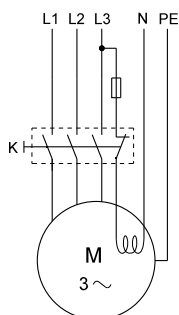
**Note:** Anti-condensation heater is standard on all MGE motors and can be activated by remote.

High humidity may cause condensation in the motor. Slow condensation occurs as a result of a decreasing ambient temperature; rapid condensation occurs as a result of shock cooling caused by direct sunlight followed by rain. We recommend that you always use motors with anti-condensation heater in areas with ambient temperatures below 0 °C.

**Note:** Rapid condensation is not to be confused with the phenomenon which occurs when the pressure inside the motor is lower than the atmospheric pressure. In such cases, moisture is sucked from the atmosphere into the motor through bearings, housings etc.

In applications with constant high humidity levels above 85 %, the drain holes in the drive-end flange must be open. This changes the enclosure class to IP44. If IP55 protection is required due to operation in dusty environments, we recommend that you install a motor with anti-condensation heater.

The figure below shows a typical circuit of a three-phase motor with anti-condensation heater.



TM03 4058 1406

**Fig. 23** Three-phase motor with anti-condensation heater

### Key

| Symbol | Designation |
|--------|-------------|
| K      | Contactors  |
| M      | Motor       |

**Note:** Connect the anti-condensation heater to the supply voltage so that it is on when the motor is switched off.

Motors from 0.37 to 75 kW are available with anti-condensation heater.

| Motor size, 50/60 Hz [kW] |                        | Power of heating unit [W] |           |               |
|---------------------------|------------------------|---------------------------|-----------|---------------|
| 2-pole                    | 4-pole                 | 1 x 24 V                  | 1 x 115 V | 1 x 190-250 V |
| 0.37 - 1.1                | 0.25 - 0.75            |                           |           | 23            |
| 1.5 - 3.0                 | 1.1 - 3.0              | 38                        |           | 31            |
| 4.0 - 5.5                 | 4.0                    |                           |           | 38            |
| 7.5 - 22                  | 5.5 - 15 <sup>1)</sup> | 2 x 38                    |           | 2 x 38        |
| 30-37                     | 18.5 <sup>1)</sup>     |                           | 55        | 55            |
| 45-55                     | -                      | -                         | 92        | 92            |
| 75                        | -                      |                           | 109       | 109           |

<sup>1)</sup> 15 and 18.5 kW 4-pole are oversize motors in the CR pump range.

## Motors with PTC sensors



TM02 7038 2403

**Fig. 24** PTC sensor incorporated in winding

Built-in PTC sensors (thermistors) protect the motor against rapid as well as steady overload.

We offer motors with temperature-controlled PTC sensors in the motor windings.

Three-phase mains-operated motors from 3 kW and up have PTC sensors as standard.

**Note:** Temperature-controlled PTC sensors must be connected to an external tripping or LiqTec unit connected to the control circuit. For further information about LiqTec, see page 50.

Protection according to IEC 60034-11:

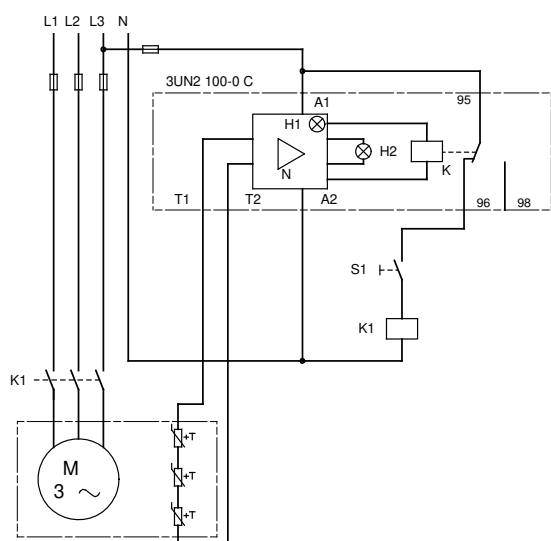
- TP 111 (steady overload only)
- TP 211 (steady and rapid overload).

PTC sensors comply with DIN 44 082.

Maximum voltage at the terminals,  $U_{\max} = 2.5$  VDC.

All tripping units available for DIN 44 082 PTC sensors meet this requirement.

The figure below shows a typical circuit of a three-phase motor with PTC sensors.



TM00 3965 1494

Fig. 25 Three-phase motor with PTC sensors

### Key

| Symbol       | Designation                        |
|--------------|------------------------------------|
| S1           | On/off switch                      |
| K1           | Contactor                          |
| +T           | PTC sensor (thermistor) in motor   |
| M            | Motor                              |
| 3UN2 100-0 C | Tripping unit with automatic reset |
| N            | Amplifier                          |
| K            | Output relay                       |
| H1           | LED "Ready"                        |
| H2           | LED "Tripped"                      |
| A1, A2       | Connection for control voltage     |
| T1, T2       | Connection for PTC sensor loop     |

## Motors with thermal switches



TM02 7042 2403

Fig. 26 Thermal switch incorporated in winding

Built-in thermal switches protect the motor against rapid as well as steady overload.

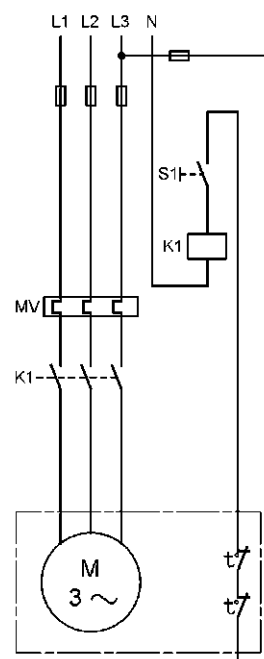
We offer three-phase mains-operated motors from 0.37 to 11 kW with built-in thermal switches.

**Note:** Thermal switches must be connected to an external control circuit to protect the motor against steady overload. The thermal switches require no tripping unit.

Protection according to IEC 60034-11: TP 211 (steady and rapid overload). As protection against seizure, connect the motor to a motor-protective circuit breaker. Thermal switches tolerate the following maximum loads:

|           |                                           |
|-----------|-------------------------------------------|
| $U_{max}$ | 250 VAC                                   |
| $I_N$     | 1.5 A                                     |
| $I_{max}$ | 5.0 A (locked-rotor and breaking current) |

Figure 27 below shows a typical circuit of a three-phase motor with built-in bimetallic thermal switches.



TM00 3964 1494

Fig. 27 Three-phase motor with thermal switches

### Key

| Symbol | Designation                      |
|--------|----------------------------------|
| S1     | On/off switch                    |
| K1     | Contactor                        |
| t°     | Thermal switch in motor          |
| M      | Motor                            |
| MV     | Motor-protective circuit breaker |

## Upsize motors

We recommend that you use an upsize motor if operating conditions fall outside the operating conditions described in these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CR, CRN high pressure
- CRT, CRTE.

We especially recommend upsize motors in these cases:

- The pump is installed at an altitude above 3,500 m (MG IE3), 2,875 m (Siemens IE3), and 1,000 m (MG IE2).
- The ambient temperature exceeds 60 °C (MG IE3), 55 °C (Siemens IE3) or 40 °C (MG IE2).
- The viscosity or density of the pumped liquid is higher than that of water.

We offer the following upsize motors.

### Mains-operated motors

| Upsize motors (three-phase) |        |
|-----------------------------|--------|
| 2-pole                      | 4-pole |
|                             | 0.37   |
| 0.55                        | 0.55   |
| 0.75                        | 0.75   |
| 1.1                         | 1.1    |
| 1.5                         | 1.5    |
| 2.2                         | 2.2    |
| 3.0                         | 3.0    |
| 4.0                         | 4.0    |
| 5.5                         | 5.5    |
| 7.5                         | 7.5    |
| 11.0                        | 11.0   |
| 15.0                        | 15.0   |
| 18.5                        | 18.5   |
| 22.0                        |        |
| 30.0                        |        |
| 37.0                        |        |
| 45.0                        |        |
| 55.0                        |        |
| 75.0                        |        |

### Motors with integrated frequency converter

| Upsize motors (three-phase) |        |
|-----------------------------|--------|
| 2-pole                      | 4-pole |
|                             | 0.37   |
| 0.55                        | 0.55   |
| 0.75                        | 0.75   |
| 1.1                         | 1.1    |
| 1.5                         | 1.5    |
| 2.2                         | 2.2    |
| 3.0                         | 3.0    |
| 4.0                         | 4.0    |
| 5.5                         | 5.5    |
| 7.5                         |        |
| 11.0                        |        |
| 15.0                        |        |
| 18.5                        |        |
| 22.0                        |        |

## Downsize motors

We recommend that you use an downsize motor if operating conditions fall much inside the standard conditions described in these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CR, CRN high pressure
- CRT, CRTE.

We especially recommend downsize motors in these cases:

- The viscosity or density is lower than that of water.
- The duty point of the pump is constant, and the flow rate is significantly lower than the maximum recommended flow rate.

We offer the following downsize motors.

### Mains-operated motors

| Downsize motors (three-phase) |        |
|-------------------------------|--------|
| 2-pole                        | 4-pole |
|                               | 0.25   |
| 0.37                          | 0.37   |
| 0.55                          | 0.55   |
| 0.75                          | 0.75   |
| 1.1                           | 1.1    |
| 1.5                           | 1.5    |
| 2.2                           | 2.2    |
| 3.0                           | 3.0    |
| 4.0                           | 4.0    |
| 5.5                           | 5.5    |
| 7.5                           | 7.5    |
| 11.0                          |        |
| 15.0                          |        |
| 18.5                          |        |
| 22.0                          |        |
| 30.0                          |        |
| 37.0                          |        |
| 45.0                          |        |
| 55.0                          |        |

### Motors with integrated frequency converter

| Downsize motors (three-phase) |        |
|-------------------------------|--------|
| 2-pole                        | 4-pole |
|                               | 0.25   |
| 0.37                          | 0.37   |
| 0.55                          | 0.55   |
| 0.75                          | 0.75   |
| 1.1                           | 1.1    |
| 1.5                           | 1.5    |
| 2.2                           | 2.2    |
| 3.0                           | 3.0    |
| 4.0                           | 4.0    |
| 5.5                           |        |
| 7.5                           |        |
| 11.0                          |        |
| 15.0                          |        |
| 18.5                          |        |

## Motor sizes available for pumps

### 2-pole

| Pump type       | Undersize motor | Oversize motor |
|-----------------|-----------------|----------------|
|                 | [kW]            | [kW]           |
| CR 1s - CR 5    | 0.37            | 7.5            |
| CR 10 - CR 20   | 0.37            | 18.5           |
| CR 32 - CR 90   | 1.5             | 45             |
| CR 120 - CR 150 | 7.5             | 75             |

### 4-pole

| Pump type       | Undersize motor | Oversize motor |
|-----------------|-----------------|----------------|
|                 | [kW]            | [kW]           |
| CR 1s - CR 5    | 0.25            | 1.5            |
| CR 10 - CR 20   | 0.25            | 4.0            |
| CR 32 - CR 90   | 1.5             | 11             |
| CR 120 - CR 150 | 1.5             | 18.5           |

## Alternative enclosure class (IP)

The motor enclosure class complies with IEC 60034-5. The enclosure class states the degrees of protection of the motor against ingress of solid objects and water.

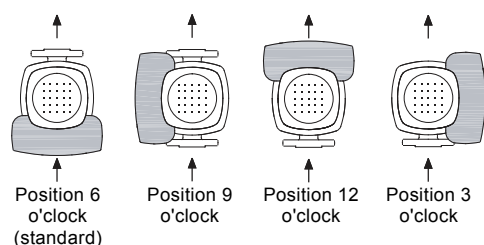
All motors comply with IP55 as standard.

On request, we offer motors with the following enclosure classes:

| IP class | Description                                                                                                                                                                                                                      |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP54     | <ul style="list-style-type: none"> <li>The motor is protected against the ingress of dust, i.e. harmful layers of dust.</li> <li>The motor is protected against water splashing from any direction.</li> </ul>                   |
| IP55     | <ul style="list-style-type: none"> <li>The motor is protected against the ingress of dust, i.e. harmful layers of dust.</li> <li>The motor is protected against water being projected by a nozzle from any direction.</li> </ul> |
| IP56     | <ul style="list-style-type: none"> <li>The motor is protected against the ingress of dust.</li> <li>The motor is protected against heavy seas or high-pressure water jets from any direction.</li> </ul>                         |
| IP65     | <ul style="list-style-type: none"> <li>The motor is completely dust-proof.</li> <li>The motor is protected against water being projected by a nozzle from any direction.</li> </ul>                                              |
| IP66     | <ul style="list-style-type: none"> <li>The motor is completely dust-proof.</li> <li>The motor is protected against heavy seas or high-pressure water jets from any direction.</li> </ul>                                         |

## Alternative terminal box positions

The terminal box is in position 6 o'clock as standard. The possible terminal box positions are shown below.



TM03 3658 0606

Fig. 28 Possible terminal box positions

## 4-pole motors



TM03 1711 2805

Fig. 29 4-pole motor

We offer all CR pumps with 4-pole motors.

4-pole motors are often preferred in these cases:

- A low sound pressure level is required.
- Inlet conditions are poor.
- Beating of the liquid is not allowed.

Performance curves and technical data of 4-pole CR pumps, see page 117 to 138 and 128 to 138.

Electrical data of 4-pole CR pumps, see pages 160 and 161.

## Motor efficiency classes

The new EN standard 60034-30:2009 defines the following efficiency classes of low-voltage three-phase asynchronous motors from 0.75 to 375 kW:

- IE1: standard efficiency
- IE2: high efficiency
- IE3: premium efficiency.

IE = International Efficiency.

Three-phase motors of CR pumps are 0.75 to 75 kW IE3 motors as standard.

CR pumps with IE2 motors are available on request.

## Other motor makes

We also offer pumps with a motor of any make which can fulfil requirements such as

- flange dimensions
- bearing specifications
- pump shaft.

Alternatively, Grundfos pumps can be supplied without a motor.

## 8. Shaft seals

### Shaft seal arrangements

Depending on the application, CR pumps are available with these shaft seals:

- single seal arrangement
- double seal arrangement
- magnetic drive.

CR(E), CRI(E), CRN(E) pumps are fitted with a cartridge shaft seal mounted in a single seal arrangement as standard:

- HQQE or HQQV (0.25 - 45 kW)
- HBQE or HBQV (55-75 kW).

CRT(E) are fitted with one AUUE or AUUV O-ring seal as standard.

In applications where the pumped liquid may harm the environment, double seal arrangements or magnetic-drive pumps are selected.

To ensure reliability, these conditions must be considered when selecting a shaft seal:

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

### Overview of shaft seals

The below table shows the shaft seals available.

| Shaft seal                               |                                          |
|------------------------------------------|------------------------------------------|
| As standard                              | On request                               |
| <b>CR(E), CRI(E) and CRN(E)</b>          |                                          |
| HQQE<br>HQQV                             | HQQE <sup>*)</sup><br>HQQV <sup>*)</sup> |
|                                          | HUBE<br>HUBV                             |
| HBQE <sup>*)</sup><br>HBQV <sup>*)</sup> | HUUE<br>HUUV<br>HUUK<br>HUUF             |
|                                          | HUBF<br>HUBK                             |
|                                          | HQQK<br>HQQF                             |
|                                          | HQBE<br>HQBv<br>HQBK                     |
|                                          | KUHE<br>KUHv                             |
|                                          | KUUV<br>KUUE                             |
| <b>CRT(E)</b>                            |                                          |
|                                          | AUUK                                     |
| AUUE<br>AUUV                             | AQQE<br>AQQV<br>AQQK                     |
|                                          | DQQE<br>DQQV<br>DQQK                     |

<sup>\*)</sup> Only for CR, CRN 120 and 150, 55-75 kW.

Codes for shaft seals, see page 11.

### Shaft seal variants

Liquids or applications exceeding the range of normal operating conditions require special-purpose shaft seal solutions.

In order to meet any specific requirements, we offer variants of seal face material and secondary seal material (rubber parts).

The following tables apply to clean water and water containing glycol.

**Note:** For ultra pure water (conductivity lower than 2 µS/cm), do not use an xQQx seal face combination. Instead, use a xQUx seal face combination.

FKM (xxxV) is limited to 90 °C in water.

If abrasive particles are present, use an xQQx seal face combination.

#### Shaft seal and seal face variants

| Pump type             | Shaft seal, seal face variant | Temperature [°C] |      | Pressure rating [bar] |
|-----------------------|-------------------------------|------------------|------|-----------------------|
|                       |                               | Min.             | Max. |                       |
| CR(E), CRI(E), CRN(E) | HQQx                          | -40              | 120  | 30                    |
|                       | HBQx <sup>*)</sup>            | 0                | 120  | 30                    |
|                       | HQBx                          | 0                | 120  | 30                    |
|                       | HUUx                          | -40              | 90   | 30                    |
|                       | HUBx                          | 0                | 120  | 30                    |
| CRT(E)                | AQQx                          | -40              | 90   | 25                    |
|                       | DQQx                          | -40              | 90   | 25                    |

<sup>\*)</sup> Only for CR, CRN 120 and 150, 55-75 kW.

For explanation of codes, shaft seal types and materials, see the type key on page 11, or see the data booklet "Shaft seals" which is available in WebCAPS.

#### Single shaft seals with EPDM O-ring material (HxxE)

We recommend single shaft seals with EPDM O-ring material for water and aqueous solutions.

EPDM rubber is not resistant to mineral oils.

Temperature range for rubber material:

- heat resistant from -40 to 150 °C.
- water and watery medias from -40 to 140 °C.

#### Singles shaft seals with FKM O-ring material (HxxV)

We recommend single shaft seals with FKM O-ring material for a wide range of temperatures and pumped liquids, such as acids, saline solutions, mineral oil, vegetable oil and most solvents.

Temperature range for rubber material:

- heat-resistant from -20 °C to +240 °C (oil only)
- water-resistant up to 90 °C.



**Single shaft seals with FFKM O-ring material (HxxK)**

We recommend single shaft seals with FFKM O-ring material for a wide range of pumped liquids, such as nitric acid, solvents, varnishes, paints and dyes.

Temperature range for rubber material:

- heat-resistant from -20 °C to 250 °C
- water-resistant up to 220 °C.

**Single shaft seals with FXM O-ring material (HxxF)**

We recommend single shaft seals with FXM O-ring material for high temperatures as well as for acid liquids and gasses within oil and gas extraction.

Temperature range for rubber material:

- -10 to 275 °C. For short periods up to 300 °C.

Plug and sleeve O-rings made of FXM are available for the full range.

For further information about O-ring materials, see the following data booklets available in WebCAPS >

[www.grundfos.com/webcaps](http://www.grundfos.com/webcaps)

| Data booklet                           | Publication number | QR code                                                                             |
|----------------------------------------|--------------------|-------------------------------------------------------------------------------------|
| CR, CRI, CRN (50 Hz)                   | V7023751           |    |
| CR, CRI, CRN (60 Hz)                   | 96488672           |  |
| CRT, CRTE (50/60 Hz)                   | V7149894           |  |
| CRE, CRIE, CRNE (50/60 Hz)             | 98423696           |  |
| CR, CRN, CRNE high pressure (50/60 Hz) | V7174003           |  |
| Shaft seals                            | 96519875           |  |

**Double seal arrangements**

We offer two double seal arrangements:

- back-to-back (OQQx)
- tandem (PQQx).

**Back-to-back seal arrangement**

Back-to-back seal arrangements consist of two Grundfos cartridge shaft seals, type O, fitted back-to-back in a separate seal chamber.

We recommend this type of seal arrangement for handling these types of liquid:

- toxic, aggressive or flammable liquids
- abrasive or sticky liquids which would either wear out, damage or block a mechanical shaft seal.

The back-to-back double seal protects the surrounding environment and the people working in the vicinity of the pump. It is specially designed for operating pressures up to 25 bar and 120 °C with the aim of minimising the risk of leakage from the pump to the environment.

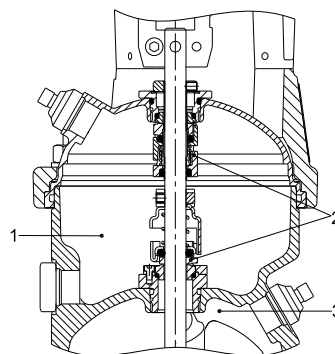


Fig. 30 CR 1s to 5 with back-to-back seal arrangement

TM04 4404 1609

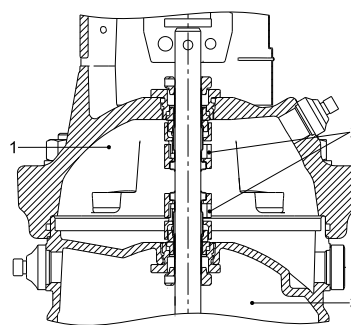
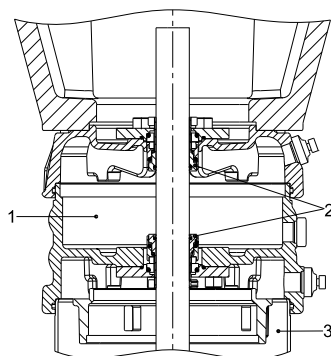


Fig. 31 CR 10 to 20 with back-to-back seal arrangement

TM04 4405 1609



TM04 4406 1609

**Fig. 32** CR 32, 45, 64, 90, 120 and 150 with back-to-back seal arrangement

#### Key to figures 30, 31 and 32

| Pos. | Designation  |
|------|--------------|
| 1    | Seal chamber |
| 2    | Shaft seals  |
| 3    | Pump         |

The back-to-back seal arrangement is available for the following CR pumps:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

#### Dimensions

All dimensions are in mm.

| Pump type            | Additional height of seal chamber |
|----------------------|-----------------------------------|
| CRI, CRN 1s, 1, 3, 5 | 108                               |
| CRI, CRN 10, 15, 20  | 90                                |
| CR, CRN 32           | 185                               |
| CR, CRN 45           | 215                               |
| CR, CRN 64           | 141                               |
| CR, CRN 90           | 159                               |
| CR, CRN 120, 150     | 111                               |

#### Pressurising

In back-to-back seal arrangements, the pressure in the seal chamber must be higher than the pump pressure to prevent the pumped liquid from leaking through the shaft seal to the environment.

**Note:** The barrier liquid will seep through the lower (primary) shaft seal and be mixed with the pumped liquid. Always use the right barrier liquid.

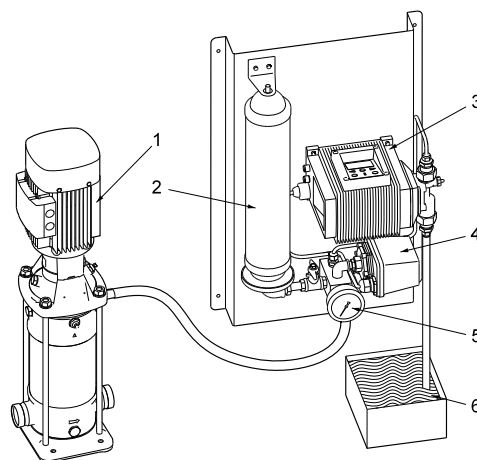
The pressure in the seal chamber can be generated in three ways:

- by an existing pressure source
- by a dosing pump
- by a pressure intensifier.

For further information about Grundfos back-to-back seal arrangements, see the data booklet "Shaft seals" which is available in WebCAPS.

#### CR pump with dosing pump

The example below shows a CR pump with a back-to-back seal arrangement. The barrier liquid is supplied and pressurised by a dosing pump.



TM03 3810 1106

**Fig. 33** CR pump with dosing pump

#### Key

| Pos. | Designation                   |
|------|-------------------------------|
| 1    | Pump                          |
| 2    | Pressure tank                 |
| 3    | Dosing pump                   |
| 4    | Pressure switch               |
| 5    | Manometer                     |
| 6    | Reservoir with barrier liquid |

The setpoint of the barrier liquid pressure is set by means of pressure switch (4). When the pressure drops below the setpoint, the dosing pump will start and thus maintain a higher pressure in the seal chamber (max. pressure 16 bar). Barrier liquid is supplied from reservoir (6).

One dosing pump can supply several pumps with back-to-back seal arrangements.

Connections are all RG 1/2".

**Note:** Connecting pipes/hoses are not included.

### Dimensions of back plate with components

All dimensions are in mm.

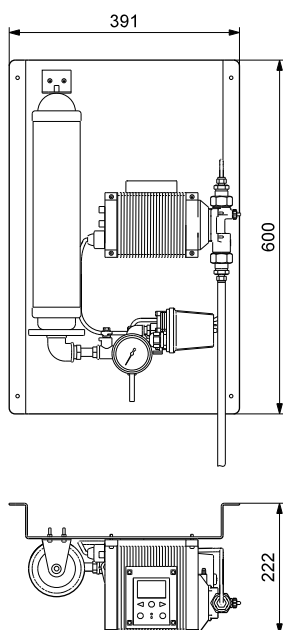


Fig. 34 Dimensional sketch

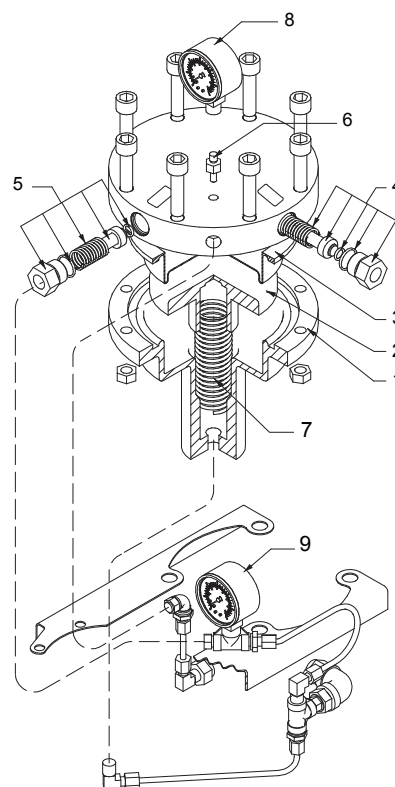
### CR pump with pressure intensifier



Fig. 35 CR pump with pressure intensifier

TM03 4660 2406

GR5954



TM03 8299 1007

Fig. 36 Components of pressure intensifier

| Pos. | Designation                     |
|------|---------------------------------|
| 1    | Pressure intensifier            |
| 2    | Piston                          |
| 3    | Diaphragm                       |
| 4    | Non-return valve                |
| 5    | Relief valve                    |
| 6    | Vent screw, Rp 1/8              |
| 7    | Spring for piston               |
| 8    | Pressure gauge (barrier liquid) |
| 9    | Pressure gauge (pumped liquid)  |

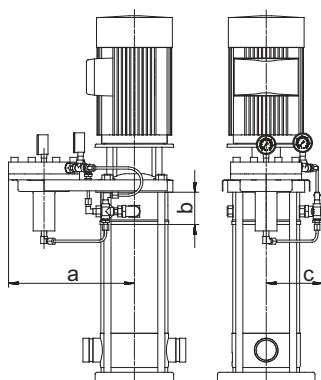
The seal chamber is primed with barrier liquid via non-return valve (4) until pressure gauge (8) reaches 1.5 to 2 bar. The spring (7) is now preloaded with the barrier liquid pressure. The pump is primed and vented. When the pump is started, the pump pressure and the pressure from the preloaded spring will result in a pressure 1.5 to 2 bar higher in the seal chamber.

**Note:** One pressure intensifier can only supply one pump. The pressure intensifier is fitted on the pump from factory.

Maximum operating pressure: 25 bar.

## Dimensions

All dimensions are in mm.



TM01 4459 0399

**Fig. 37** Dimensional sketch

| Pump type               | a   | b   | c   |
|-------------------------|-----|-----|-----|
| CR, CRI, CRN 1, 3, 5    | 297 | 108 | 128 |
| CR, CRI, CRN 10, 15, 20 | 330 | 90  | 140 |
| CR, CRN 32              | 342 | 185 | 155 |
| CR, CRN 45              | 349 | 215 | 164 |
| CR, CRN 64              | 349 | 141 | 164 |
| CR, CRN 90              | 355 | 159 | 170 |
| CR, CRN 120, 150        | 355 | 111 | 170 |

**Note:** The dimension "b" is the additional height as compared to the standard pump.

## Tandem seal arrangement

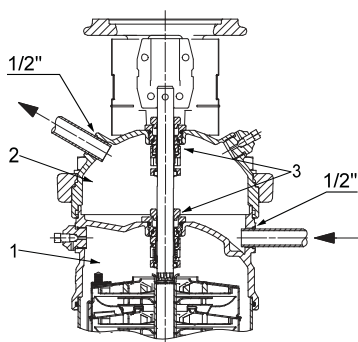
Tandem seal arrangements consist of two Grundfos cartridge shaft seals, type P, mounted tandem in a separate seal chamber.

We recommend tandem seals for crystallising, hardening or sticky liquids.

The tandem seal arrangement is specially designed for operating pressures up to 25 bar and 150 °C.

**Note:** At temperatures from 120 °C to 150 °C, the O-ring material in the shaft seal must be FXM (Fluoraz).

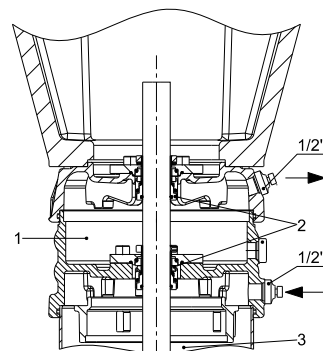
### CR 1s, 1, 3, 5, 10, 15 and 20



TM03 3657 0606

**Fig. 38** CR 1s to 20 with tandem seal arrangement

### CR 32, 45, 64, 90, 120 and 150



TM04 4164 1609

**Fig. 39** CR 32, 45, 64, 90, 120 and 150 with tandem seal arrangement

## Key

| Pos. | Designation  |
|------|--------------|
| 1    | Pump         |
| 2    | Seal chamber |
| 3    | Shaft seals  |

The tandem type of seal is available for these CR pumps:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

• Available.

## Dimensions

All dimensions are in mm.

| Pump type              | Additional height of seal chamber |
|------------------------|-----------------------------------|
| CRI, CRN 1s, 1, 3, 5   | 108                               |
| CRI, CRN 10, 15, 20    | 90                                |
| CR, CRN 32, 45, 64, 90 | 140                               |
| CR, CRN 120, 150       | 111                               |

## Flushing-liquid systems

CR pumps with tandem seal arrangement must be equipped with a flushing-liquid system.

**Note:** The pumped liquid will seep through the lower (primary) shaft seal and be mixed with the flushing liquid. Maximum liquid temperature: 120 °C (HxxF 150 °C).

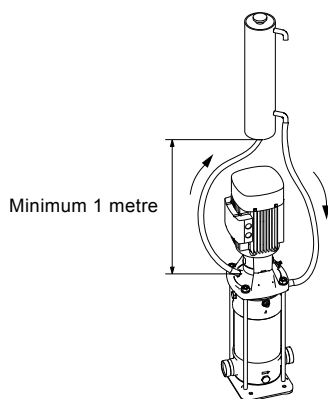
The flushing-liquid flow rate should also be matched to the application (recommended flow rate 25-200 l/h).

The pressure of the flushing liquid must always be lower than the pressure of the pumped liquid.

**Note:** The flushing-liquid supply must never be connected directly to the public water supply system. Observe the local regulations.

For further information about Grundfos tandem seal arrangements, see the data booklet "Shaft seals" which is available in WebCAPS.

The following figures show examples of flushing systems for tandem seal arrangements.

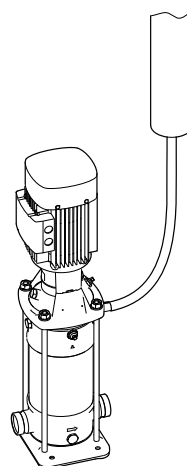


TM04 3217 2408

**Fig. 40** Tandem seal arrangement with circulating flushing liquid

In figure 40, the flushing liquid circulates between an elevated tank and the pump by natural circulation. Heated flushing liquid rises from the seal chamber to the tank where it cools down. The cooled-down flushing liquid returns to the seal chamber.

At high temperatures, the circulation of flushed liquid through the seal chamber cools the seal faces of the shaft seal and reduces noise.

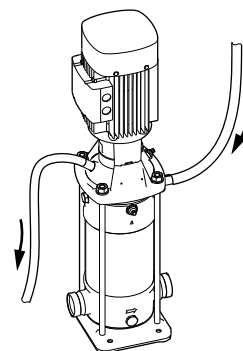


TM03 3809 1106

**Fig. 41** Tandem seal arrangement with flushing-liquid supply

In figure 41, the flushing liquid enters the seal chamber via a pipe from an elevated tank.

No heat is dissipated from the system.



TM03 3813 1106

**Fig. 42** Tandem seal arrangement with flushing liquid connected to a drain

In figure 42, the flushing liquid enters the seal chamber via a pipe from an elevated tank.

In case of leakage, the pumped liquid is washed away to the drain by the flushing liquid.

## Air-cooled top

CR pumps with an air-cooled top are used where the pumping of hot liquids is crucial for a successful production. A CR pump with an air-cooled top is a pump with a special air-cooled shaft seal chamber generating the same insulation effect as that of a vacuum flask. No external cooling is necessary; the ambient temperature is sufficient.



GR5228

**Fig. 43** CR pump with an air-cooled top

CR pumps with air-cooled top have a mechanical silicon carbide/silicon carbide/EPDM cartridge shaft seal, type HQQE, as standard.

The pumps are able to handle liquid temperatures up to 180 °C at max. PN 25.

**Note:** If the pumped liquid is oil, the pumps can handle following liquid temperatures:

- CR 1s to 90: 240 °C at max. PN 16.
- CR 120 and 150: 180 °C at max. PN 16.

The following rubber part variants are available for our air-cooled top solutions:

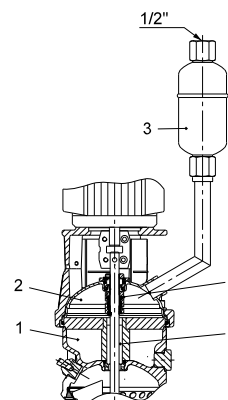
| Liquid temperature [°C]    | Rubber part material |
|----------------------------|----------------------|
| <b>Water-based liquids</b> |                      |
| 120-140                    | EPDM                 |
| 120-180                    | FXM/EPDM             |
| <b>Thermal oils</b>        |                      |
| 120-240                    | FKM                  |

Temperatures above 120 °C normally result in a substantial reduction of seal life due to poor lubrication of the seal faces. As the temperature in the seal chamber does not exceed 120 °C during operation, a standard Grundfos shaft seal can be used.

An automatic air vent is required for venting the pump seal chamber.

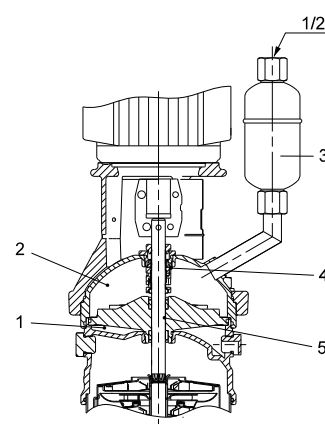
**Note:** For safety reasons, fit a pipe in order to lead away steam from the air vent to a drain. Observe local regulations.

## CR 1s, 1, 3 and 5



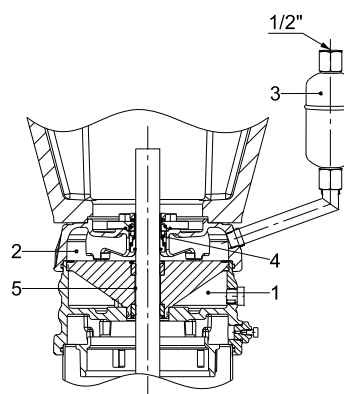
**Fig. 44** CR 1s, 1, 3 and 5 with air-cooled top

## CR 10, 15 and 20



**Fig. 45** CR 10, 15 and 20 with air-cooled top

## CR 32, 45, 64, 90, 120 and 150



**Fig. 46** CR 32, 45, 64, 90, 120 and 150 with air-cooled top

## Key

| Pos. | Designation     |
|------|-----------------|
| 1    | Air chamber     |
| 2    | Liquid          |
| 3    | Air vent        |
| 4    | Shaft seal      |
| 5    | Cooling channel |

TM03 9159 3507

TM03 9160 3507

TM04 4165 0909

**Pump range**

The air-cooled top is available for these pump types:

| Pump type | CR pumps with air-cooled top |   |   |   |    |    |    |    |    |    |    |     |     |
|-----------|------------------------------|---|---|---|----|----|----|----|----|----|----|-----|-----|
|           | 1s                           | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
| CR(E)     |                              |   |   |   |    |    |    | •  | •  | •  | •  |     | •   |
| CRI(E)    | •                            | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •                            | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

**Note:** CRT(E) pumps are not available with air-cooled top.

**Bearing flanges for CR pumps with air-cooled top**

When pumping hot liquids, the pump requires a net positive inlet pressure according to the vapour pressure of the specific liquid.

For water applications at 180 °C, a bearing flange is incorporated in the following pump types.

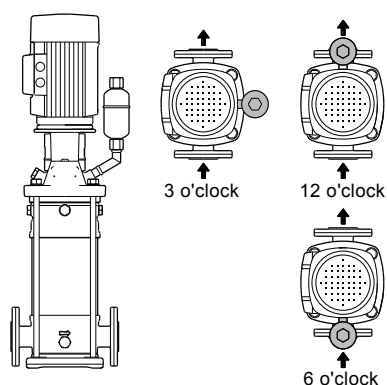
| 50 Hz                   | 60 Hz                 |
|-------------------------|-----------------------|
| CRI, CRN 10-1 - 10-6    | CRI, CRN 10-1 - 10-5  |
| CRI, CRN 15-1 - 15-3    | CRI, CRN 15-1 - 15-2  |
| CRI, CRN 20-1 - 20-3    | CRI, CRN 20-1         |
| CR, CRN 32-1-1 - 32-4   | CR, CRN 32-1 - 32-2   |
| CR, CRN 45-1-1 - 45-2   | CR, CRN 45-1-1 - 45-1 |
| CR, CRN 64-1-1 - 64-2-2 | CR, CRN 64-1-1        |
| CR, CRN 90-1-1 - 90-1   |                       |

**Note:** For CR, CRN 32 a bearing flange is not available with motors below 3 kW.

**Air vent positions on CR pumps with air-cooled top**

The air vent of vertical CR pumps with air-cooled top is in line with the discharge port (12 o'clock position) as standard. The air vent is mounted vertically (12 o'clock position) on horizontal pumps.

The possible air vent positions are shown below.

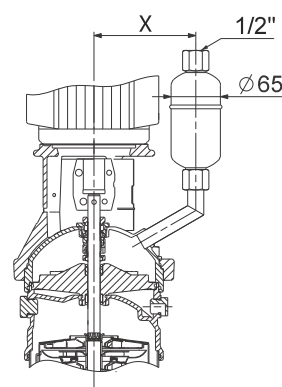
**Vertical CR pumps with air-cooled top**

TM03 3659 0606

**Fig. 47** Air vent positions on vertical CR pumps

**Dimensions**

All dimensions are in mm.



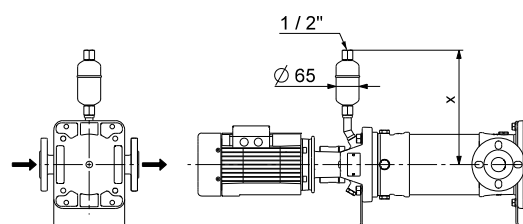
TM03 4082 1609

**Fig. 48** Air-cooled top

| Pump type                          | X   |
|------------------------------------|-----|
| CRI, CRN 1s, 1, 3, 5 (< 3 kW)      | 142 |
| CRI, CRN 1s, 1, 3, 5 (3 - 7.5 kW)  | 172 |
| CRI, CRN 10, 15, 20 (< 4 kW)       | 156 |
| CRI, CRN 10, 15, 20 (4 - 7.5 kW)   | 186 |
| CRI, CRN 10, 15, 20 (11 - 18.5 kW) | 217 |
| CR, CRN 32                         | 176 |
| CR, CRN 45, 64                     | 186 |
| CR, CRN 90                         | 190 |
| CR, CRN 120, 150 (11-45 kW)        | 190 |
| CR, CRN 120, 150 (55-75 kW)        | 243 |

**Additional pump height**

| Pump type           | Additional pump height |
|---------------------|------------------------|
| CRI, CRN 1, 3, 5    | 108                    |
| CRI, CRN 10, 15, 20 | 90                     |
| CR, CRN 32          | 185                    |
| CR, CRN 45          | 215                    |
| CR, CRN 64          | 141                    |
| CR, CRN 90          | 159                    |
| CR, CRN 120, 150    | 111                    |

**Horizontal CR pumps with air-cooled top**

TM03 4084 1609

**Fig. 49** Air vent positions on horizontal CR pumps with air-cooled top

**Key to fig. 49**

| Pump type            | X   |
|----------------------|-----|
| CRI, CRN 1s, 1, 3, 5 | 308 |
| CRI, CRN 10, 15, 20  | 324 |
| CR, CRN 32           | 391 |
| CR, CRN 45, 64       | 398 |
| CR, CRN 90, 120, 150 | 404 |

**Note:** 75 kW motors are higher than distance x.



## Magnetic-drive pump (MAGdrive)

Grundfos CRN MAGdrive pumps operate according to a patented, magnetic-drive system that eliminates the need for shaft seals. The power from the motor is transmitted to the pump by magnetic force and not by a conventional coupling. Combined with a hermetically sealed liquid end, the pump is totally leak-free.

As all axial forces are absorbed in the MAGdrive system, the pump incorporates a standard ICE or NEMA motor with keyway and deep-groove ball bearing.



GrA4445

Fig. 50 CRN MAGdrive pumps

The MAGdrive solution is available for these pumps:

| Pump type | CRN pumps with magnetic drive |   |   |   |    |    |    |    |    |    |    |
|-----------|-------------------------------|---|---|---|----|----|----|----|----|----|----|
|           | 1s                            | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 |
| CRN(E)    | •                             | • | • | • | •  | •  | •  | •* | •* | •* | •* |

- Available.
- \* Available up to 22 kW.

As minimum, a soft starter is required for these motors:

- 2-pole motors: 18.5 and 22 kW.
- 4-pole motors: 1.1 kW and up.

### Features and benefits

CRN MAGdrive offers the following special features and benefits:

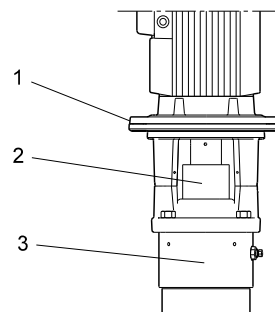
- a hermetically sealed drive system for 100 % leak-free pump operation
- special choice of materials and design for low energy loss
- simple pump design for ease of service
- unique pump design for efficient cooling of magnet by means of the pumped liquid
- ATEX version available.

### Applications

The CRN MAGdrive pump is suitable for wide selection of industrial applications such as:

- **Aggressive or corrosive liquids**  
Concentrated sulphuric acid, nitric acid, phosphoric acid, etc.
- **Toxic liquids**  
Trichloroethylene, chloroform, phenol, etc.
- **Flammable and combustible liquids**  
Petrol, jet fuels, LPG, alcohols, etc.
- **Hardening/curing liquids**  
Paint, glue, resins, etc.
- **Crystallising liquids**  
Glycol additives, naphthalene, sugar products, salts, etc.
- **Refrigerants**  
Ammonia, synthetic chemicals (CFC, HCFC, HFC), etc.

### Design



TM03 9149 3407

Fig. 51 MAGdrive system

| Pos. | Designation | Materials                             |
|------|-------------|---------------------------------------|
| 1    | Motor stool | Cast iron. Stainless steel on request |
| 2    | MAGdrive    |                                       |
| 3    | Pump head   | Stainless steel (EN 1.4408)           |

The configuration of the CRN MAGdrive pump is almost identical to that of the standard CRN pump. The following rubber parts solutions are available:

- EPDM
- FXM (Fluoraz®)
- FFKM (Kalrez®)
- FKM (Viton®).

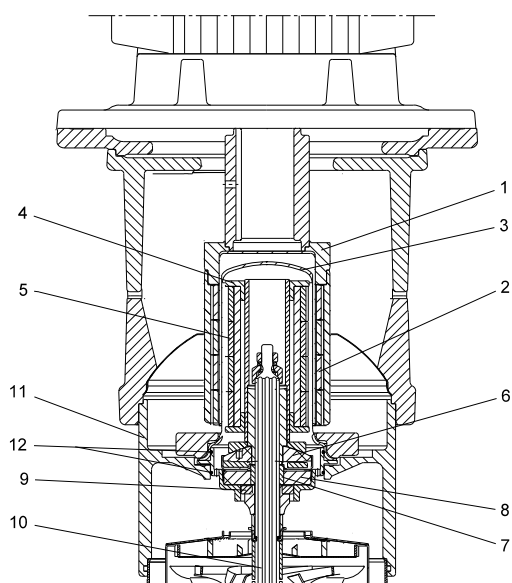
Connections available for CRN MAGdrive pumps:

| Connection type                          | CRN                     |                |
|------------------------------------------|-------------------------|----------------|
|                                          | 1s, 1, 3, 5, 10, 15, 20 | 32, 45, 64, 90 |
| DIN, ANSI, JIS flange                    | •                       | •              |
| PJE                                      | •                       | •              |
| FlexiClamp, union, oval flange, TriClamp | •                       |                |

- Available.

### Construction

The magnetic field is generated by two magnets; the outer magnet is driven by the motor, and the inner magnet is connected to the pump. The two shafts are not connected.



**Fig. 52** Sectional drawing of MAGdrive system

| Pos. | Designation               | Material                                                         |
|------|---------------------------|------------------------------------------------------------------|
| 1    | Outer drive               | 1.4301                                                           |
| 2    | Outer magnets             | NdFeB (neodymium)                                                |
| 3    | Can                       | 1.4539                                                           |
| 4    | Inner drive               | 1.4401                                                           |
| 5    | Inner magnets             | NdFeB (Neodymium)                                                |
| 6    | Rotating thrust bearing   | SiC Q <sub>1</sub> <sup>G</sup> (silicon carbide, carbon-filled) |
| 7    | Stationary thrust bearing | SiC Q <sub>1</sub> <sup>G</sup> (silicon carbide, carbon-filled) |
| 8    | Radial bearing            | SiC (silicon carbide)                                            |
| 9    | Upthrust bearing          | Graflon (carbon-graphite-filled PTFE)                            |
| 10   | Drive/pump shaft          | CRN 1s-5: 1.4401<br>CRN 10-20: 1.4460<br>CRN 32-90: 1.4462       |
| 11   | Pump head                 | 1.4408                                                           |
| 12   | O-ring                    | EPDM, FKM, FXM, FFKM                                             |

### Operating conditions

Maximum pressure: 25 bar.

Temperature range: -40 to 120 °C

Viscosity range: 0.15 to 300 mPas.

### Technical data

Motor range: 0.37 kW to 22 kW.

### Dimensions

The height of the MAGdrive system typically makes the pump a little higher than a standard CRN pump. Some pump sizes have a larger motor than the standard range.

For dimensions and weights for CRN MAGdrive pumps, see page 141 to 152.

**Note:** When ordering a Grundfos MAGdrive, please state the data:

- liquid temperature [°C]
- liquid viscosity [mPas]
- liquid density [kg/m<sup>3</sup>]
- frequency [Hz].

Above information is required for the selection of the correct MAGdrive/motor combination.

## 9. Pump

### PN 25 and PN 40 pumps

We offer customised pump solutions for the following inlet pressures:

- CR 1 to CR 20: up to 25 bar.
- CR 32 to CR 150: up to 40 bar.

**Note:** In applications with high inlet pressures, a bearing flange must be fitted. For further information, see the CR, CRN high-pressure data booklet (publication number V7174003).

### Measurement of inlet pressure

As CR 1s to CR 20 pumps are not equipped with a connection for the measurement of pump inlet pressure, we offer customised pumps with a tapping for a pressure gauge or pressure sensor.



Fig. 53 CR pump with pressure gauge

TM03 4726 2506

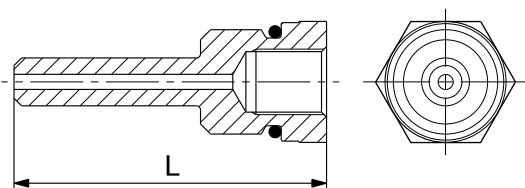


Fig. 54 Insert for measurement of inlet pressure

TM03 4091 1606

The material of the insert is stainless steel (AISI 316).

| Designation                              | Rubber material      | Connection | L [mm] | Product number |
|------------------------------------------|----------------------|------------|--------|----------------|
| Insert for measurement of inlet pressure | CR 1s, 1, 3, 5       |            |        |                |
|                                          | EPDM                 | RG 1/4"    | 57     | 96488082       |
|                                          | FKM                  |            |        | 96562250       |
|                                          | FFKM                 |            |        | 96562251       |
|                                          | FXM                  |            |        | 96562252       |
|                                          | CRI, CRN 1s, 1, 3, 5 |            |        |                |
|                                          | EPDM                 | RG 1/4"    | 51.5   | 96562253       |
|                                          | FKM                  |            |        | 96562254       |
|                                          | FFKM                 |            |        | 96562255       |
|                                          | FXM                  |            |        | 96562256       |
|                                          | CR 10, 15, 20        |            |        |                |
|                                          | EPDM                 | RG 1/4"    | 62     | 96584117       |
|                                          | FKM                  |            |        | 96584119       |
|                                          | CRI, CRN 10, 15, 20  |            |        |                |
|                                          | EPDM                 | RG 1/4"    | 53     | 96584121       |
|                                          | FKM                  |            |        | 96584122       |

We offer these pump types with tapings:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |

- Available.

**Note:** CR(E) and CRN(E) 32, 45, 64 and 90 have tapings for measurement of pump inlet pressure as standard.

### Pumping of liquids down to -40 °C

We offer customised pumps for the pumping of liquids down to -40 °C. The pumps have an oversize neck ring ensuring that impellers do not seize up as a result of thermal expansion.

We offer the above solution for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | ○  | ○  | ○  | ○  | ○   | ○   |

- Available.

○ Standard CRN 32, 45, 64 and 90 pumps with shaft seal type HQQE are suitable for liquid temperatures down to -40 °C.

### Carbon-free pumps

Certain processes, such as pumping of pure water in electronics industries, require pumps that do not contain carbon.

To meet such requirements, we offer these 100 % carbon-free pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | ○  | ○ | ○ | ○ | ○  | ○  | ○  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | ○  | ○ | ○ | ○ | ○  | ○  | ○  |    |    |    |    |     |     |
| CRN(E)    | ○  | ○ | ○ | ○ | ○  | ○  | ○  | •  | •  | •  | •  | •   | •   |

- Available.

○ Pumps with HQQx shaft seal are carbon-free as standard.

## Surface treatment

### Application overview

| Applications                                        | Surface treatment |                    |                 |                       |                      |
|-----------------------------------------------------|-------------------|--------------------|-----------------|-----------------------|----------------------|
|                                                     | Cleaned and dried | Vacuum-dried pumps | Electropolished | Alternative colouring | Corrosion protection |
| Offshore                                            |                   |                    |                 |                       | •                    |
| Pharmaceutical industry, food and beverage industry | •                 |                    | •               |                       |                      |
| Cooling industry                                    |                   | •                  |                 |                       |                      |

#### Cleaned and dried pumps

Cleaned and dried pumps are used in applications involving strict demands to cleanliness and surface quality, such as low content of silicone.

To meet these strict demands, we offer these cleaned dried pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

Prior to assembly, all pump parts are cleaned in 60 to 70 °C water with a cleaning agent. All pump parts are then thoroughly rinsed in de-ionised water and air-dried. The pump is assembled without any use of silicone lubricants. Finally, the pump is packed in silicone-free plastic.

**Note:** Silicone-free shaft seals are available as option. Cleaned and dried pumps are not performance tested.

#### Vacuum-dried pumps

In general, all CR products are tested before leaving the assembly line.

After the test, all pumps are drained. Due to the design of the chamber stack, it is not possible to completely drain the product. Primarily within cooling applications, no residual water from the test is accepted in the pump, and all pumps must be completely dry.

Therefore after the pump performance test, vacuum-dried pumps are handled as described below:

1. Water is blown out of the pump with compressed air.
2. The pump is ventilated with hot air for a predefined period of time.
3. The pump is exposed to a vacuum for a predefined period of time.
4. The humidity inside the pump is measured.

If necessary, steps 2 and 3 are repeated until the humidity level reaches a predefined value ensuring that no liquid is present inside the pump.

We offer these vacuum-dried pumps:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |

- Available.

#### Electropolished pumps

Electropolished pumps are often used in the pharmaceutical industry and in the food and beverage industry where materials and surface quality must meet strict requirements to hygiene or corrosion resistance.

Electropolishing removes burrs as well as metallic and non-metallic inclusions, providing a smooth, clean and corrosion-resistant stainless steel surface.

First all components are pickled in a mixture of nitric and hydrofluoric acid. Subsequently, the components are electropolished in a mixture of sulphuric and phosphoric acid. Finally, the components are passivated in nitric acid.

All cast parts of CRN are polished mechanically before being electropolished.

**Note:** The pump incorporates a standard shaft seal which has not been polished.

To meet the strict hygienic requirements to material and surface quality, we offer electropolished stainless steel pumps with the following surface quality:

| Pump type                                | Cast stainless steel | Stainless-steel parts (not cast) | Surface quality |
|------------------------------------------|----------------------|----------------------------------|-----------------|
| CRN 1s, 1, 3, 5                          | •                    | •                                | Ra ≤ 0.8 µm     |
| CRN 10, 15, 20, 32, 45, 64, 90, 120, 150 | •                    | •                                | Ra ≤ 1.6 µm     |

- Available.

We offer these electropolished pumps:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

#### Alternative colouring

We offer customised pumps in any NCS- or RAL-specified colour to suit your requirements!

The used paint is water-based. Painted parts correspond to corrosion class III.

All pump types and sizes are available with alternative colouring.

#### Corrosion protection

We offer corrosion protection in the form of painting and in several categories according to the specific requirements of the pump installation.

The categories refer to area/environment, layer thickness and lifetime expectancy.

Corrosion protection will be according to DS/EN ISO standard 12944.

## CRN all-stainless steel pumps

We offer customised stainless-steel CRN pumps for maritime applications, very humid environments, etc.:

- pump with stainless-steel motor stool
- pump with stainless-steel base
- pump with stainless-steel flanges.

We offer the above solutions for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

**Note:** The dimensions of customised stainless-steel CRN pumps do not differ from those of standard CRN pumps.

## CR low NPSH

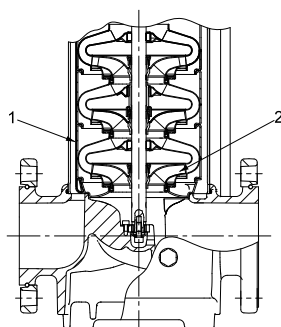
Cavitation is often a problem in applications where pumps have to deal with the combination of high liquid temperatures, poor inlet pressure and/or high flow rate. For further information about NPSH and the calculation of NPSH value, see these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CR, CRN high pressure
- CRT, CRTE.

Low-NPSH pumps are designed to eliminate the risk of cavitation and ensure a stable and reliable operation.

The CR low-NPSH pump is a pump with a special first-stage design that reduces the pump's NPSH value and prevents erosion and destruction of the pump, pipework and valves. Thanks to the improved inlet design, low-NPSH pumps can handle more stress than conventional pumps without affecting the stability of operation.

The CR low-NPSH pump reduces the excess pressure itself and does not require any additional tank to provide supplementary pressure. In boiler feed applications where many large tanks are gathered, a compact system is an advantage.



TM03 4063 1406

**Fig. 55** Sectional drawing of CR low-NPSH pump

### Key

| Pos. | Designation            |
|------|------------------------|
| 1    | Special inlet part     |
| 2    | Special inlet impeller |

### Pump range

These pump types are available as low-NPSH pumps:

| Pump type | CR low-NPSH pumps |   |   |   |    |    |    |    |    |    |    |     |     |
|-----------|-------------------|---|---|---|----|----|----|----|----|----|----|-----|-----|
|           | 1s                | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
| CR(E)     |                   |   | • | • | •  | •  | •  | •  | •  | •  |    |     |     |
| CRI(E)    |                   |   | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    |                   |   | • | • | •  | •  | •  | •  | •  | •  |    |     |     |

- Available.

|                            |                      |
|----------------------------|----------------------|
| Maximum pressure           | 25 bar               |
| Maximum liquid temperature | 120 °C <sup>1)</sup> |

<sup>1)</sup> With air-cooled top, the maximum liquid temperature is +180 °C.

For further information about CR low-NPSH pumps, see pages 77 to 92.

For information about sectional drawings, dimensions and weights, see pages 117 to 127.

## Horizontal in-line pumps



GR5379

**Fig. 56** Horizontal CR pump

Horizontal pumps are used in applications for safety and/or space-saving reasons.

In earthquake areas, horizontal pumps are more reliable than vertical pumps. In case of earthquake, the design and mounting of the pump will dampen the oscillations of the pump.

In installations with limited access or space, we recommend horizontal pumps to improve installation and service.

### Pump range

These Grundfos pumps are available for horizontal mounting:

| Pump<br>type | Horizontal CR pumps |   |   |   |    |    |    |    |    |    |    |     |     |
|--------------|---------------------|---|---|---|----|----|----|----|----|----|----|-----|-----|
|              | 1s                  | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
| CR(E)        | •                   | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)       | •                   | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN(E)       | •                   | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

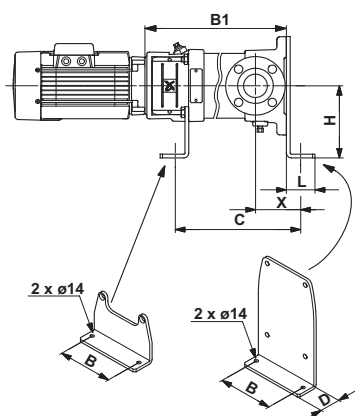
- Available.

CRT(E) 2, 4, 8 and 16 pumps are also available for horizontal mounting. The pumps are supplied with separate mounting plates for support of motor and pump.

### Dimensional drawings

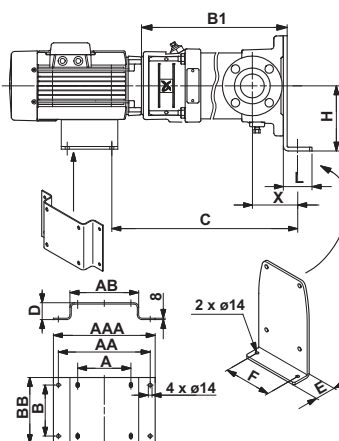
CR(E), CRI(E), CRN(E) 1s, 1, 3, 5 ( $\leq 4$  kW)

CR(E), CRI(E), CRN(E) 10, 15, 20 ( $\leq 4$  kW)



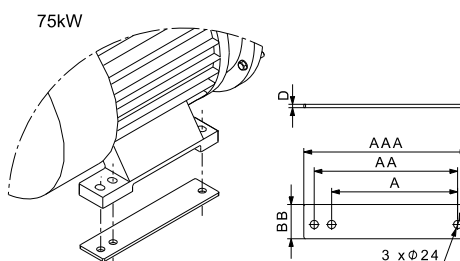
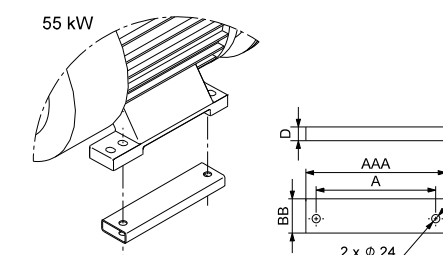
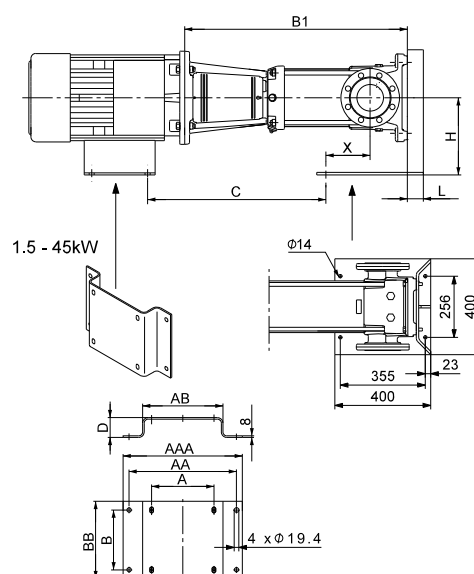
TM03 4641 3507

CR(E), CRI(E), CRN(E) 5 (5.5 - 7.5 kW)  
CR(E), CRI(E), CRN(E) 10, 15, 20 ( $\geq 5.5$  kW)



TM03 4642 3507

CR(E), CRN(E) 32, 45, 64, 90, 120, 150



TM05 1537 2911

**Dimensions**

All dimensions are in mm.

**CR(E), CRI(E), CRN(E) 1s, 1, 3, 5 (≤ 4 kW), support for base plate and pump head**

| Motor<br>[kW] | B   | C     | D  | H   | L  | X           |                       |
|---------------|-----|-------|----|-----|----|-------------|-----------------------|
|               |     |       |    |     |    | Connections |                       |
|               |     |       |    |     |    | DIN         | Oval, PJE, FlexiClamp |
| 0.37 - 0.55   | 138 | B1-58 | 45 | 140 | 50 | 105         | 80                    |
| 0.75 - 1.1    |     | B1-64 | 45 |     |    |             |                       |
| 1.5 - 2.2     |     | B1-80 | 45 |     |    |             |                       |
| 3 - 4         |     | B1-84 | 45 |     |    |             |                       |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.**CR(E), CRI(E), CRN(E) 5 (5.5 - 7.5 kW)**

| Motor<br>[kW] | A   | AA  | AAA | AB  | B   | BB  | C      | D  | E  | F   | H   | L  | CR(E), CRI(E), CRN(E) 5 |      |
|---------------|-----|-----|-----|-----|-----|-----|--------|----|----|-----|-----|----|-------------------------|------|
|               |     |     |     |     |     |     |        |    |    |     |     |    | X                       |      |
|               |     |     |     |     |     |     |        |    |    |     |     |    | Connections             |      |
|               |     |     |     |     |     |     |        |    |    |     |     |    | DIN                     | Oval |
| 5.5           | 216 | 326 | 366 | 276 | 140 | 180 | B1+119 | 68 | 45 | 138 | 200 | 50 | 105                     | 80   |
| 7.5           | 216 | 326 | 366 | 276 | 140 | 180 | B1+119 | 68 | 45 | 138 | 200 | 50 |                         |      |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.**CR(E), CRI(E), CRN(E) 10, 15, 20 (≤ 4 kW), support for base plate and pump head**

| Motor<br>[kW] | B   | C       | D  | H   | L  | CR(E), CRI(E), CRN(E)      |                            |
|---------------|-----|---------|----|-----|----|----------------------------|----------------------------|
|               |     |         |    |     |    | 10                         | 15, 20                     |
|               |     |         |    |     |    | X                          |                            |
|               |     |         |    |     |    | Connections                |                            |
|               |     |         |    |     |    | DIN, oval, PJE, FlexiClamp | DIN, oval, PJE, FlexiClamp |
| 0.37 - 0.55   | 170 | B1-65   | 45 | 174 | 50 | 110                        | 120                        |
| 0.75 - 1.1    |     | B1-69   | 45 |     |    |                            |                            |
| 1.5 - 2.2     |     | B1-84.5 | 45 |     |    |                            |                            |
| 3-4           |     | B1-89.5 | 45 |     |    |                            |                            |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.**CR(E), CRI(E), CRN(E) 10, 15, 20 (≥ 5.5 kW), support for base plate and motor**

| Motor<br>[kW] | A   | AA  | AAA | AB  | B   | BB  | C      | D  | E  | F   | H   | L  | CR(E), CRI(E), CRN(E)      |                            |
|---------------|-----|-----|-----|-----|-----|-----|--------|----|----|-----|-----|----|----------------------------|----------------------------|
|               |     |     |     |     |     |     |        |    |    |     |     |    | 10                         | 15, 20                     |
|               |     |     |     |     |     |     |        |    |    |     |     |    | X                          |                            |
|               |     |     |     |     |     |     |        |    |    |     |     |    | Connections                |                            |
|               |     |     |     |     |     |     |        |    |    |     |     |    | DIN, oval, PJE, FlexiClamp | DIN, oval, PJE, FlexiClamp |
| 5.5           | 216 | 326 | 366 | 276 | 140 | 180 | B1+119 | 68 | 45 | 170 | 200 | 50 | 110                        | 120                        |
| 7.5           | 216 | 326 | 366 | 276 | 140 | 180 | B1+119 | 68 | 45 | 170 | 200 | 50 |                            |                            |
| 11            | 254 | 384 | 424 | 334 | 210 | 260 | B1+138 | 40 | 45 | 170 | 200 | 50 |                            |                            |
| 15            | 254 | 384 | 424 | 334 | 210 | 260 | B1+138 | 40 | 45 | 170 | 200 | 50 |                            |                            |
| 18.5          | 254 | 384 | 424 | 334 | 254 | 310 | B1+138 | 40 | 45 | 170 | 200 | 50 |                            |                            |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.



**CR(E), CRN(E) 32, 45, 64, 90, 120, 150 ( ≤ 45 kW), support for base plate and motor**

| Motor<br>[kW] | A   | AA  | AAA | AB  | B   | BB  | C      | D   | E   | H   | L  | CR(E), CRN(E) |            |
|---------------|-----|-----|-----|-----|-----|-----|--------|-----|-----|-----|----|---------------|------------|
|               |     |     |     |     |     |     |        |     |     |     |    | 32            | 45, 64, 90 |
|               |     |     |     |     |     |     |        |     |     |     |    | X             |            |
|               |     |     |     |     |     |     |        |     |     |     |    | Connections   |            |
|               |     |     |     |     |     |     |        |     |     |     |    | DIN           | DIN        |
| 1.5           | 140 | 320 | 380 | 220 | 100 | 165 | B1-261 | 200 | 400 |     |    |               |            |
| 2.2           | 140 | 320 | 380 | 220 | 125 | 165 | B1-261 | 200 | 400 |     |    |               |            |
| 3             | 160 | 340 | 400 | 245 | 140 | 180 | B1-254 | 190 | 400 |     |    |               |            |
| 4             | 190 | 370 | 430 | 275 | 140 | 180 | B1-247 | 178 | 400 |     |    |               |            |
| 5.5           | 216 | 395 | 455 | 300 | 140 | 180 | B1-228 | 158 | 400 |     |    |               |            |
| 7.5           | 216 | 395 | 455 | 300 | 140 | 180 | B1-228 | 158 | 400 |     |    |               |            |
| 11            | 254 | 440 | 500 | 340 | 210 | 275 | B1-209 | 130 | 400 | 290 | 60 | 212           | 177        |
| 15            | 254 | 455 | 515 | 340 | 210 | 266 | B1-209 | 130 | 400 |     |    |               |            |
| 18.5          | 254 | 455 | 515 | 340 | 254 | 310 | B1-209 | 130 | 400 |     |    |               |            |
| 22            | 279 | 485 | 545 | 365 | 240 | 310 | B1-196 | 110 | 400 |     |    |               |            |
| 30            | 318 | 540 | 600 | 410 | 305 | 365 | B1-184 | 90  | 400 |     |    |               |            |
| 37            | 318 | 540 | 600 | 410 | 305 | 365 | B1-184 | 90  | 400 |     |    |               |            |
| 45            | 356 | 580 | 640 | 450 | 310 | 370 | B1-168 | 65  | 400 |     |    |               |            |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.

**CR, CRN 120, 150 (55-75 kW), support for base plate and motor**

| Motor<br>[kW] | A   | AA  | AAA | BB  | C      | D  | E   | H   | L  | CR, CRN     |     |
|---------------|-----|-----|-----|-----|--------|----|-----|-----|----|-------------|-----|
|               |     |     |     |     |        |    |     |     |    | 120, 150    |     |
|               |     |     |     |     |        |    |     |     |    | X           |     |
|               |     |     |     |     |        |    |     |     |    | Connections |     |
|               |     |     |     |     |        |    |     |     |    | DIN         | DIN |
| 55            | 349 | -   | 409 | 100 | B1-189 | 40 | 400 | 290 | 60 | 177         |     |
| 75            | 368 | 419 | 479 | 100 | B1-167 | 10 | 400 | 290 | 60 | 177         |     |

**Note:** For pump height (B1), see the CR(E), CRI(E), CRN(E) data booklet.

## Multistage horizontal end-suction pumps



TM05 1717 3511

Fig. 57 Multistage horizontal end-suction pumps

### CRE-H, CRIE-H, CRNE-H 50/60 Hz

CR-H, CRI-H, CRN-H pumps are horizontal end-suction pumps, typically mounted on base plates. The pumps are available in a complete 50 and 60 Hz range with both IEC or NEMA motors.

#### Interchangeable ANSI solution

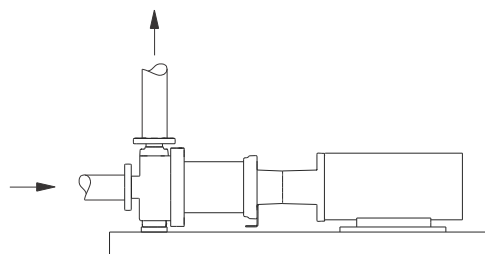
The patented loose flange concept provides easy installation in ANSI, DIN or JIS standard pipework.

Pump connection configurations comply with the ANSI/ASME B73.1 standard and ensure interchangeability with traditional end-suction pumps with axial suction port and radial centre-line discharge port. Therefore, the CR-H is a high-efficiency solution designed for drop-in replacement of ANSI configured pumps. The CR-H design enables service of the pump without removing the pump from the pipework.

CR-H, CRI-H, CRN-H pumps are suitable for a variety of applications from pumping of potable water to pumping of chemicals. The pumps are therefore used in a wide variety of pumping systems where the performance and material of the pump meet specific demands.

#### Energy efficiency

To reduce loss and thus increase the pump efficiency, CR-H, CRI-H, CRN-H pumps are available in an energy-optimised version with suction and discharge ports with a larger diameter than ANSI specifications.



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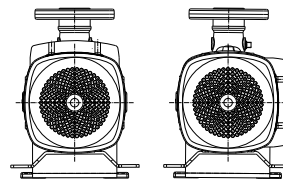
Fig. 58 CRH pump with axial suction port and radial discharge port

Max. pressure: 30 bar.

Max. liquid temperature: 120 °C (air-cooled top 180 °C (oil 240 °C)).

Max. motor size: 45 kW.

#### Terminal box positions



TM05 1988 4111

#### IEC motor

| Pump type | 1 | 1s | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|---|----|---|---|----|----|----|----|----|----|----|-----|-----|
| CR-H      | • | •  | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI-H     | • | •  | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN-H     | • | •  | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

Dimensions of CR-H pumps with IEC motors, see section [CRH\(N\) pumps](#).

#### NEMA motor

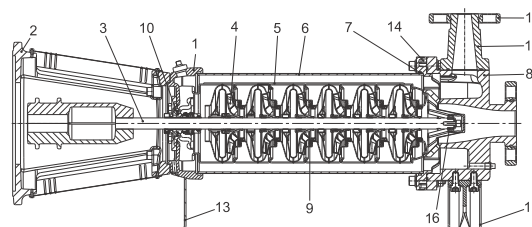
| Pump type | 1 | 1s | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|---|----|---|---|----|----|----|----|----|----|----|-----|-----|
| CR-H      | • | •  | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN-H     | • | •  | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

Dimensions of CR-H pumps with NEMA motors, see WebCAPS.

#### Variants

The same variants and accessories are available for the CR-H, CRI-H, CRN-H pump range as for the standard CR pump range. The only difference between the CR horizontal end-suction pump and the CR in-line pump is the base. However, the base for horizontal end-suction pumps is not available in titanium.

#### Construction



TM05 1989 4111

Fig. 59 Sectional drawing

| Pos. | Designation       | Pos. | Designation         |
|------|-------------------|------|---------------------|
| 1    | Pump head         | 9    | Neck ring           |
| 2    | Motor stool       | 10   | Shaft seal          |
| 3    | Shaft             | 11   | Foot                |
| 4    | Impeller          | 12   | Flange ring         |
| 5    | Chamber           | 13   | Support bracket     |
| 6    | Sleeve            | 14   | Sleeve flange       |
| 7    | O-ring for sleeve | 15   | Discharge port      |
| 8    | Base              | 16   | Bottom bearing ring |

## Belt-driven pumps



Fig. 60 Belt-driven CR pump

Belt-driven pumps are used in applications for space-saving reasons or where no electrical power is available.

Belt-driven CR pumps are of the same construction as electrically driven CR pumps. They do, however, have a pulley for connection to for instance an internal combustion motor.

### Pump range

These Grundfos pumps are available as belt-driven pumps:

| Pump type | Belt-driven CR pumps |   |   |   |    |    |    |    |    |    |    |     |     |
|-----------|----------------------|---|---|---|----|----|----|----|----|----|----|-----|-----|
|           | 1s                   | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
| CR        | •                    | • | • | • | •  | •  | •  | •  | •  | •  | •  |     |     |
| CRI       | •                    | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN       | •                    | • | • | • | •  | •  | •  | •  | •  | •  | •  |     |     |

- Available.

CRT 2, 4, 8 and 16 pumps are also available as belt-driven pumps.

An additional bearing has been added on top of an existing bearing flange. The two bearings are fitted back to back. This bearing design makes it possible to withstand the extra radial forces caused by a pulley.

A pulley can be attached to the end of the shaft.

**Note:** The pulley is not supplied with the pump.

By means of pulley belts, the pump can be driven by a motor mounted next to it rather than on top of it.

The pump can be mounted horizontally or vertically by the extra support plates.

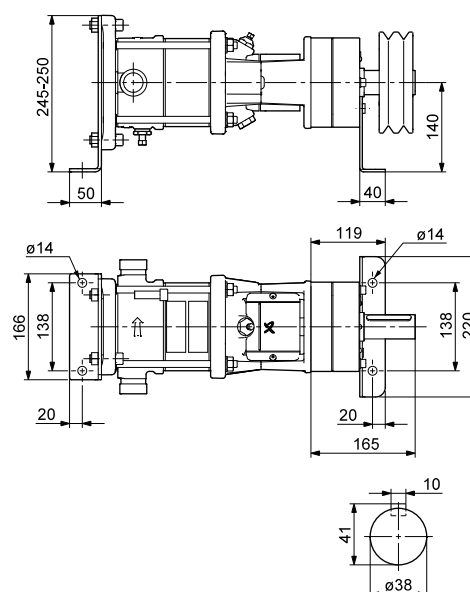
The pulley head is positioned on the motor stool where the motor would normally be fitted. By means of the existing holes in the motor stool, the pulley head can be secured to the motor stool with bolts, washers and nuts. The pulley wheel is then attached to the shaft using an appropriate bush and key.

For extended bearing life, we recommend these pulley wheel sizes:

|                                 | Type III                | Type IV         | Type II        | Type I       |
|---------------------------------|-------------------------|-----------------|----------------|--------------|
| Pulley head                     | 0.37 - 5.5 [kW]         | 7.5 - 18.5 [kW] | 1.5 - 7.5 [kW] | 11 - 45 [kW] |
| Pump type                       | CR, CRI, CRN            |                 | CR, CRN        |              |
|                                 | 1s, 1, 3, 5, 10, 15, 20 | 10, 15, 20      | 32, 45, 64, 90 |              |
| Pulley wheel diameter           | Ø112-135                | Min. Ø200       | Min. Ø160      | Min. Ø200    |
| V-belts                         | 2                       | Min. 3          | Min. 2         | Min. 3       |
| Pump speed [min <sup>-1</sup> ] | Max. 3000               |                 |                |              |

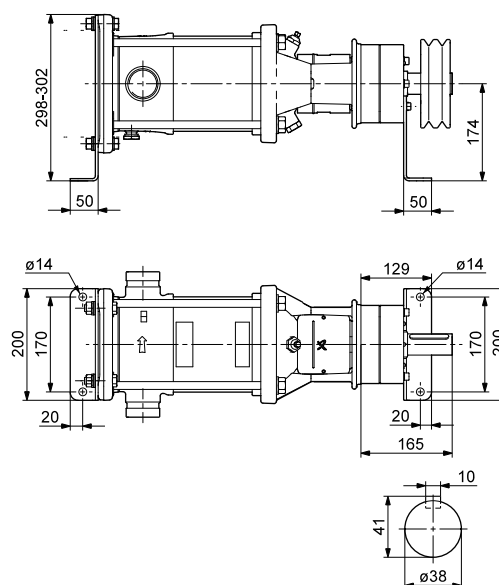
### Dimensional drawings

#### CR, CRI, CRN 1s, 1, 3 and 5 (type III)



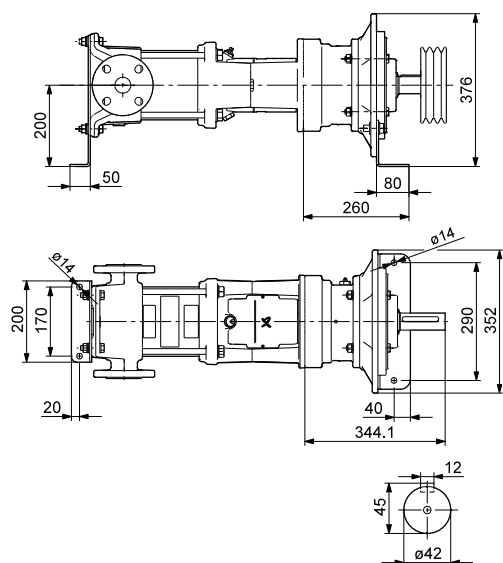
TM03 4137 1706

#### CR, CRI, CRN 10, 15 and 20 (type III)



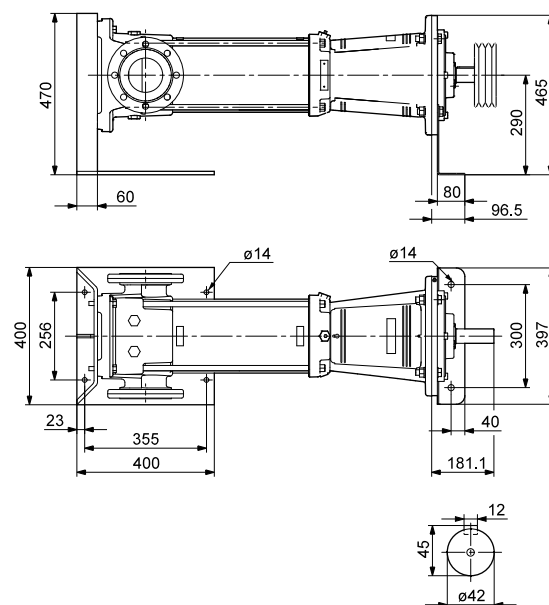
TM03 4168 1706

CR, CRI, CRN 10, 15 and 20 (type IV)



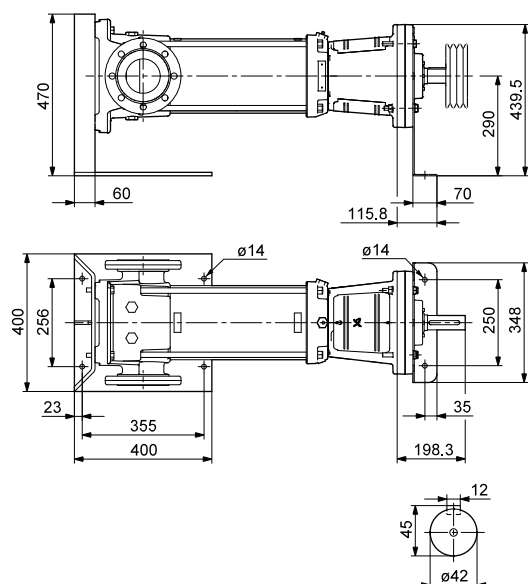
TM03 4169 1706

CR, CRN 32, 45, 64 and 90 (type I)



TM03 4171 1706

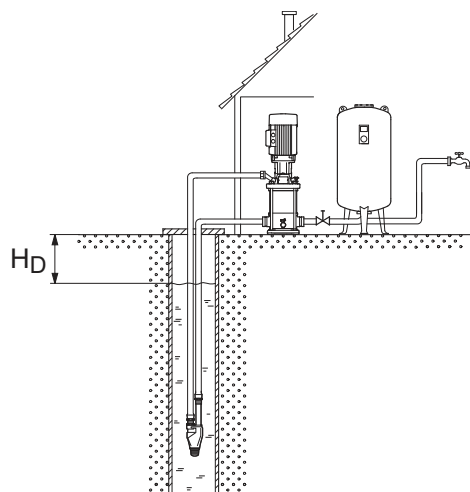
CR, CRN 32, 45, 64 and 90 (type II)



TM03 4170 1706

## CR(I) deep-well pumps

CR(I) deep-well pumps are used for deep-well pumping in small water supply systems where water is pumped from depths ( $H_D$ ) down to 90 metres.

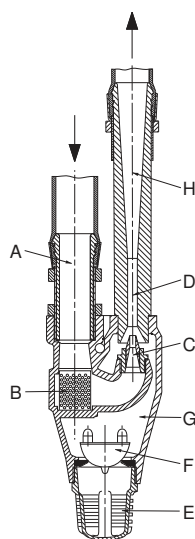


TM03 2954 4905

**Fig. 61** System with CR(I) deep-well pump

The pump system consists of a dry-installed CR(I) multistage centrifugal pump connected to a one-size submerged ejector via two pipes.

We recommend that you connect a pressure tank to the discharge side of the pump to maintain a suitable pressure at the tapping point.



TM03 2953 4905

**Fig. 62** Sectional drawing of ejector

Water is pumped through the pressure pipe (A) and the strainer (B) to the nozzle (C). The water passes the nozzle at high speed and flows into the diffuser (D). Via the strainer (E) and bottom valve (F), water which is to be pumped up is in connection with the chamber (G).

From the chamber, it is pressed into the diffusor (D) by the water jet from the nozzle (C). There the two water flows mix, and the velocity is converted into pressure, driving the water up through the riser pipe (H) to the suction port of the pump.

### Technical data

|                              |        |
|------------------------------|--------|
| Maximum system pressure:     | 16 bar |
| Maximum ambient temperature: | 40 °C  |
| Maximum liquid temperature:  | 40 °C  |
| Minimum size of borehole:    | 3"     |

### Pump range

These pumps are available with ejector:

| Pump type | CR deep-well pumps |   |   |   |    |    |    |    |    |    |    |     |     |
|-----------|--------------------|---|---|---|----|----|----|----|----|----|----|-----|-----|
|           | 1s                 | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
| CR        |                    |   |   | • |    |    |    |    |    |    |    |     |     |
| CRI       |                    |   |   | • |    |    |    |    |    |    |    |     |     |
| CRN       |                    |   |   |   |    |    |    |    |    |    |    |     |     |

- Available.

### Use of suction pipe

If the well capacity is lower than the pump capacity, dry running of the pump can be prevented by fitting a suction pipe below the ejector. To enable this, the ejector strainer (E) is replaced with a special threaded nipple.

### Performance curves and technical data

For information about the performance curves and technical data of CR deep-well pumps, see page 76 and 139.

### Ejectors

Based on the performance curves on page 76, we offer the following ejectors:

| Ejector type | Product number |
|--------------|----------------|
| 45B          | 90230045       |
| 44B          | 90230044       |
| 29B          | 90230029       |
| 22B          | 90230022       |
| 20B          | 90230020       |
| 11B          | 90230011       |

Contact Grundfos for further information about CR(I) ejector pumps.

## Pump rubber parts

We offer pumps with a wide range of customised rubber materials such as EPDM, FKM, FFKM and FXM to suit your requirements.

| Pump type                | Rubber material |     |                 |     |
|--------------------------|-----------------|-----|-----------------|-----|
|                          | EPDM            | FKM | FFKM            | FXM |
| CR, CRI, CRN 1s, 1, 3, 5 | •               | •   | •               | •   |
| CR, CRI, CRN 10, 15, 20  | •               | •   | •               | •   |
| CR, CRN 32, 45, 64, 90   | •               | •   | • <sup>1)</sup> |     |
| CR, CRN 120, 150         | •               | •   |                 |     |

• Available.

<sup>1)</sup> These pumps are fitted with FXM sleeve gaskets. All other rubber parts are of FFKM.

We offer customised rubber materials for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

• Available.

## Empty chambers

We offer customised pumps with empty chambers designed to meet your specific duty point!

CR pumps with a predefined number of chambers are selected from the standard range. See for instance the performance curves of CR 20-14 and CR 20-17 on page 8. In order to avoid the selection of a pump too large for your duty point, we offer customised pumps with empty chambers enabling an optimum match.

We offer pumps with empty chambers for the following pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |

• Available.

**Note:** CRT(E) 2, 4, 8 and 16 are also available as customised pumps with empty chambers.

## Bearing flange

To ensure long pump life and reliable operation, fit a bearing flange between the motor and the pump head.

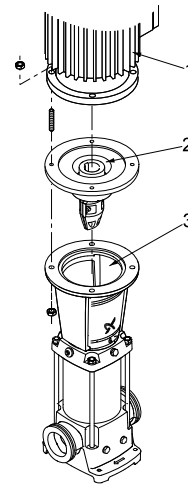


Fig. 63 Bearing flange

### Key

| Pos. | Designation    |
|------|----------------|
| 1    | Motor          |
| 2    | Bearing flange |
| 3    | Pump head      |

A bearing flange is an additional flange with an oversize ball bearing to absorb axial forces in both directions. The coupling is part of the bearing flange fitted to obtain optimum alignment.

**Note:** The bearing flange requires a motor with keyway and ball bearings according to IEC 34 and NEMA.

A bearing flange is used in two situations:

1. A standard motor with standard ball bearing is required. The bearing flange absorbs the hydraulic load from the pump, ensuring an acceptable motor bearing life.
2. The pump is to run at a higher inlet pressure than the maximum pressure recommended.

**Note:** For motor sizes above 11 kW, the bearing flange is equipped with grease nipples and must be lubricated regularly. Please follow the instructions on the bearing flange.

### Pump range

The following pump types are available with bearing flange:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

• Available.

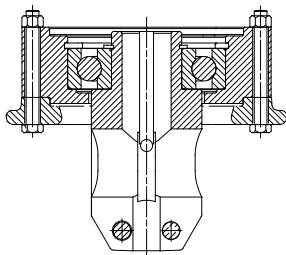
**Note:** CRT(E) 2, 4, 8 and 16 are also available as customised pumps with bearing flange.

TM03 4062 1406

CR, CRI, CRN, CRT  
CRE, CRIE, CRNE, CRTE

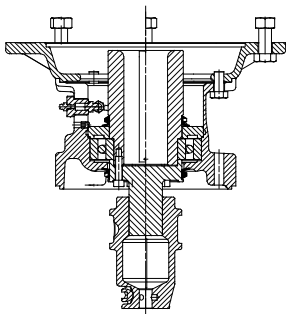
### Bearing flange for CR pumps

CR, CRI, CRN 1s, 1, 3, 5 ( $\leq 7.5$  kW)  
CR, CRI, CRN 10, 15, 20 ( $\leq 4$  kW)



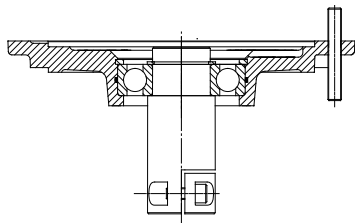
TM02 7436 3403

CR, CRI, CRN 10, 15, 20 ( $\geq 5.5$  kW)



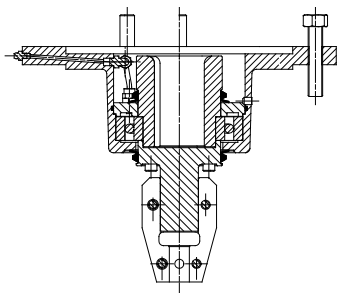
TM02 7437 3403

CR, CRN 32, 45, 64, 90 ( $\leq 7.5$  kW)



TM01 4352 0199

CR, CRN 32, 45, 64, 90 ( $> 7.5$  kW)



TM01 4353 0199

### Dimensions

The following additional heights in mm must be added to the total height of the pump.

CR, CRI, CRN 1s, 1, 3, 5, 10, 15, 20

| Motor power      | Additional height                   |
|------------------|-------------------------------------|
| <b>IEC [kW]</b>  |                                     |
| 0.37 - 0.55      | 31                                  |
| 0.75 - 1.1       | 32                                  |
| 1.5 - 4.0        | 40                                  |
| 5.5 - 7.5        | 23 <sup>1)</sup> /150 <sup>2)</sup> |
| 11.0 - 18.5      | 180                                 |
| <b>NEMA [hp]</b> |                                     |
| 0.33 - 2.0       | 40                                  |
| 3 - 10           | 45                                  |
| 15 - 40          | 135                                 |

1) CR, CRI, CRN 1s, 1, 3, 5

2) CR, CRI, CRN 10, 15, 20.

CR, CRN 32, 45, 64, 90

| Motor power      | Additional height |
|------------------|-------------------|
| <b>IEC [kW]</b>  |                   |
| 3.0 - 7.5        | 23                |
| 11 - 45          | 20                |
| <b>NEMA [hp]</b> |                   |
| 3 - 10           | 22                |
| 15 - 60          | 17                |

For information about the total height of a given CR pump, see these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CRT, CRTE
- CR, CRN high pressure.

The above data booklets are available in WebCAPS. See page [165](#).

### Support bearings

We offer customised pumps with support bearings of bronze for corrosive applications for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    | •  | •  | •  | •  |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    |    |   |   |   |    |    |    | •  | •  | •  | •  |     |     |

- Available.



## Bearing material

We offer pumps with a wide range of customised bearing materials such as bronze, tungsten carbide and carbon-filled PTFE to suit your requirements.

| Pump size                   | Bearing material                 |
|-----------------------------|----------------------------------|
| CR, CRN 1, 3, 5, 10, 15, 20 | Bronze/tungsten carbide          |
|                             | EPDM/tungsten carbide            |
| CR, CRN 32, 45, 64, 90      | Silicon carbide/tungsten carbide |

We offer customised rubber parts for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  |     |     |

- Available.

## Pump head positions

The pump head is mounted so that the air vent screw is in line with the discharge port as standard.

The pump head can be mounted in three other positions in steps of 90 °.

**Note:** The air vent of horizontal pumps must always point upwards.

## Customised nameplate

We offer additional customised nameplates attached to the pump:

- A nameplate supplied by you.
- A Grundfos nameplate customised in terms of a specific duty point.
- A Grundfos nameplate with a tag number.

**Note:** A Grundfos standard nameplate is always fitted on the pump.

## Dry-running protection

### LiqTec



GR9415

**Fig. 64** LiqTec dry-running protection device

The Grundfos LiqTec immediately cuts off the pilot current to the motor protection relay in these cases:

- There is no liquid in the pump.
- The liquid temperature exceeds  $130 \pm 5$  °C.
- The sensor, sensor cable, electronic unit or power supply fails.

When connected to the PTC sensors in the motor, the LiqTec also protects the motor against overheating.

The sensor is easily inserted through the 1/2" connection in the pump head close to the shaft seal. It can, however, also be used externally.

The LiqTec sends a heat impulse through the sensor, measuring the temperature of the sensor. Liquid in the pump cools the sensor as well as the shaft seal and other pump parts.

If there is no liquid present, the LiqTec detects a high temperature in the sensor and cuts out the pump immediately to prevent damage.

The LiqTec also prevents excessive liquid temperatures from damaging the pump. If the LiqTec senses a liquid temperature above 130 °C, it cuts out the pump immediately. The LiqTec is a fail-safe device, meaning that the pump stops as soon as the sensor detects an error on the sensor cable or the electronics, or if the power supply of the control unit is switched off.

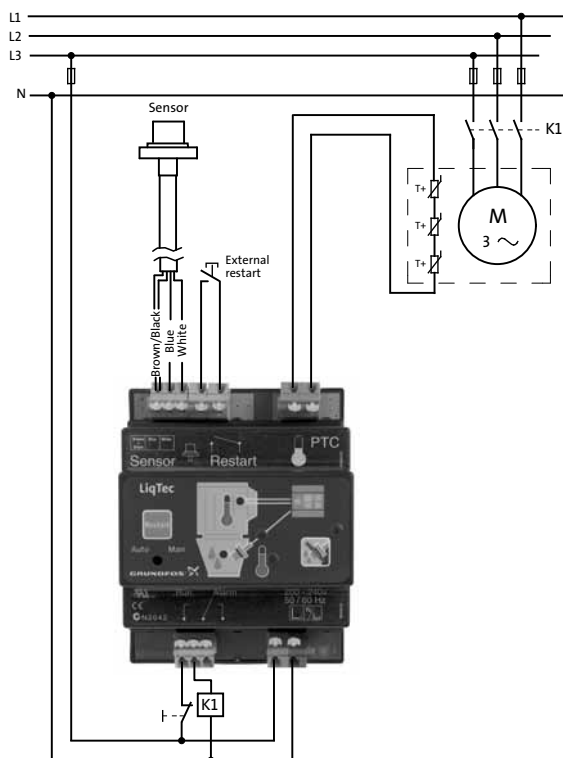
Restarting of the pump can be automatic or manual when the sensor detects liquid in the pump again.

Remote restarting is possible via a digital input.

The electronic control unit can also be connected to the PTC sensor measuring the motor temperature. In case of overheating of the motor, the system cuts out the pump.

Figures 65, 66 and 67 show installation examples.

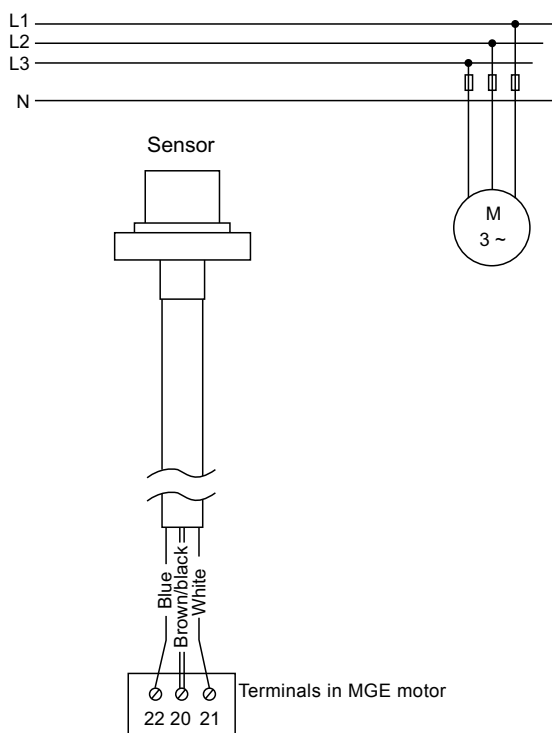
## Connection to standard motors



TM03 0112 4004

**Fig. 65** LiqTec connected to a standard motor

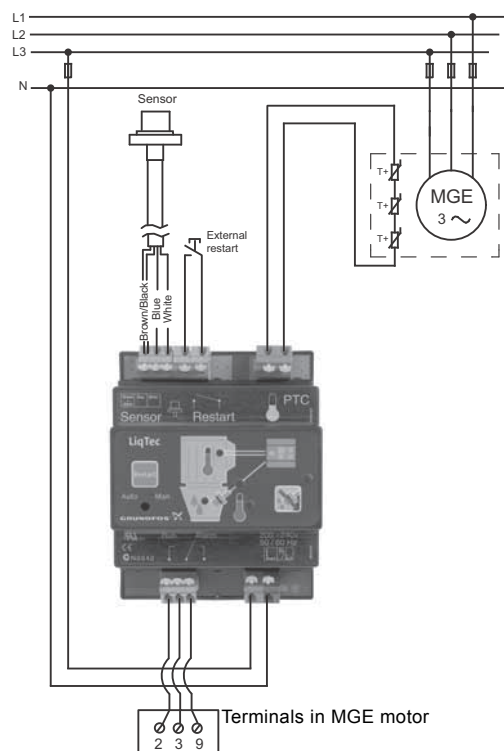
## Connection to MGE motors (0.37 - 2.2 kW)



TM06 0807 0914

**Fig. 66** LiqTec connected to an MGE motor (0.37 - 2.2 kW)

## Connection to MGE motors (3-22 kW)



TM04 4472 1309

**Fig. 67** LiqTec connected to an MGE motor (3-22 kW)

## Dimensions

116 x 90 mm. The LiqTec can be mounted on a DIN rail in a control cabinet.

## Technical data

|                              |                                                  |
|------------------------------|--------------------------------------------------|
| Supply voltage               | 1 x 80-130 V or 1 x 200-240 V                    |
| Power consumption            | 5 W                                              |
| Max. pressure                | 40 bar                                           |
| Min./max. liquid temperature | -20 °C / 120 °C                                  |
| Max. ambient temperature     | 50 °C                                            |
| Humidity                     | 99 %                                             |
| Enclosure class              | IPX0                                             |
| Pumped liquid                | Any water-based liquid handled by Grundfos pumps |
| Cable length                 | 5 m <sup>1)</sup>                                |

<sup>1)</sup> 15-metres cable is available on request.

## Connections

### 6" base with DIN, JIS or ANSI flange

The 6" base enables connection to DN 150 flanges and is available with either DIN, JIS or ANSI flanges. The flange base consists of a pump base and a set of flanges. The flanges are thread mounted on the discharge and suction ports of the base.

The base is made of stainless steel EN/DIN 1.4408.

The flanges are available in stainless steel EN/DIN 1.4408 or cast iron EN/DIN 1092-2.

### Dimensions

All dimensions are in mm.

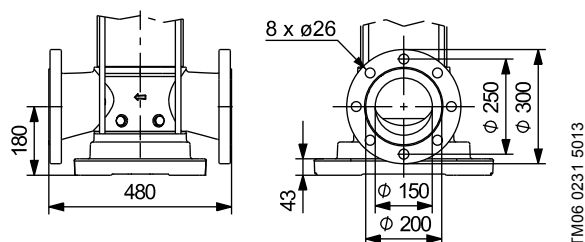


Fig. 68 Base with DN 150, PN 40 flanges

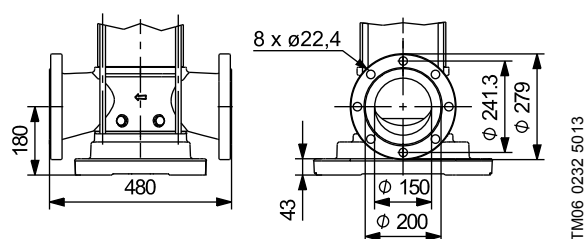


Fig. 69 Base with ANSI B 16.5, class 150 - 6" flanges

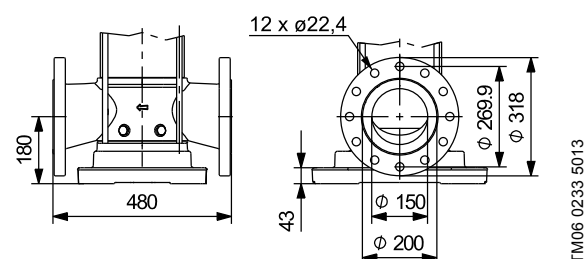


Fig. 70 Base with ANSI B 16.5, Class 300 - 6" flanges

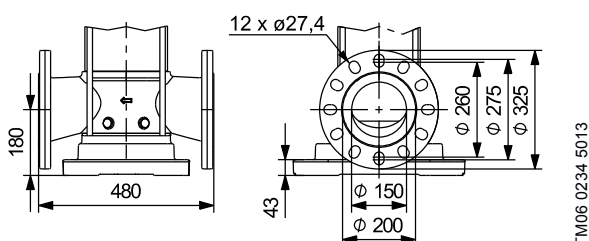


Fig. 71 Base with JIS 2210 20/30, 150 mm flanges

We offer the base with DIN, JIS or ANSI flanges for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    |    |   |   |   |    |    |    |    |    |    | •  | •   | •   |

- Available.

### CR pumps with TriClamp connection

A base with TriClamp connection is of hygienic design with a sanitary coupling for use in the pharmaceutical and food and beverage industry.

A set consists of one clamping ring, one gasket and one pipe stub.

The connection is in accordance with EN/DIN 32676.

## Dimensions

All dimensions are in mm.

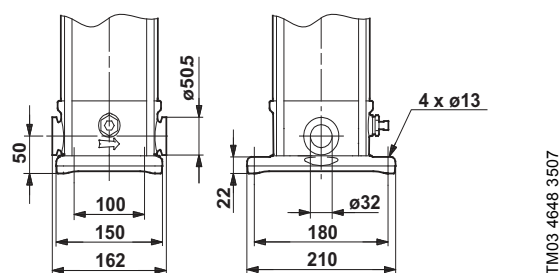


Fig. 72 TriClamp connection for CRI, CRN 1s, 1, 3 and 5

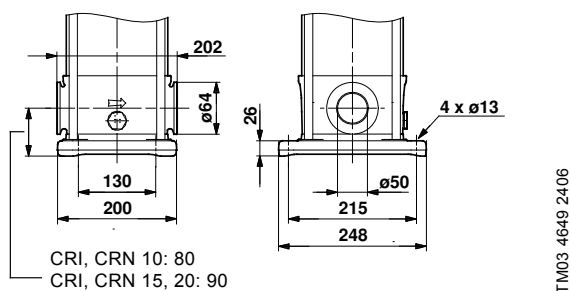
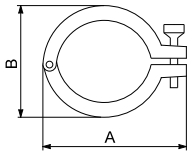
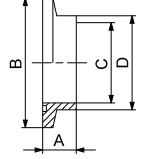
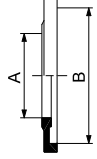


Fig. 73 TriClamp connection for CRI, CRN 10, 15 and 20

|                               |    | Clamping ring                                                                      |      | Port                                                                                |      |      |      | Gasket                                                                               |      |
|-------------------------------|----|------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|------|------|------|--------------------------------------------------------------------------------------|------|
|                               |    |  |      |  |      |      |      |  |      |
| Pump type                     | PN | A                                                                                  | B    | A                                                                                   | B    | C    | D    | A                                                                                    | B    |
| CRI(E), CRN(E)<br>1s, 1, 3, 5 | 16 | 92.0                                                                               | 59.5 | 21.5                                                                                | 50.5 | 35.6 | 38.6 | 35.3                                                                                 | 50.5 |
|                               | 50 | 102.0                                                                              | 60.0 |                                                                                     |      | 32.0 | 36.0 | 32.2                                                                                 |      |
| CRI(E), CRN(E)<br>10, 15, 20  | 16 | 104.4                                                                              | 74.0 |                                                                                     | 64.0 | 48.6 | 51.6 | 48.0                                                                                 | 64.0 |
|                               | 50 | 123.0                                                                              | 75.0 |                                                                                     | 65.0 | 50.0 | 54.0 | 50.2                                                                                 |      |

The clamping ring is made of stainless steel EN/DIN 1.4301/AISI 304.

The port is made of stainless steel EN/DIN 1.4401/AISI 316.

The gasket is made of PTFE or EPDM.

| Connection                                                                          | Pump type                    | Pipework connection | Connection material | Gaskets | Pressure [bar] | Coupling sets required | Product number |  |
|-------------------------------------------------------------------------------------|------------------------------|---------------------|---------------------|---------|----------------|------------------------|----------------|--|
|  | CRI(E), CRN(E)<br>1, 3, 5    | DN 32               | Stainless steel     | PTFE    | 16             | 2                      | 96515375       |  |
|                                                                                     |                              |                     |                     | EPDM    | 50             | 2                      | 96515374       |  |
|                                                                                     | CRI(E), CRN(E)<br>10, 15, 20 | DN 50               |                     | PTFE    | 16             | 2                      | 96515377       |  |
|                                                                                     |                              |                     |                     | EPDM    | 50             | 2                      | 96515376       |  |
|                                                                                     |                              |                     |                     | PTFE    | 16             | 2                      | 96515377       |  |
|                                                                                     |                              |                     |                     | EPDM    | 50             | 2                      | 97549397       |  |

We offer TriClamp connections for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |

- Available.

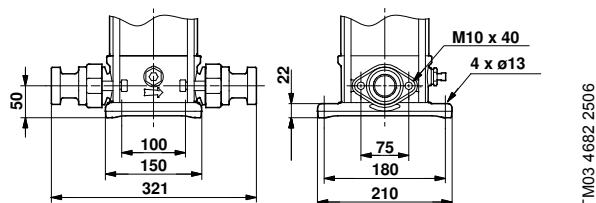
**CR pumps with FlexiClamp according to EN/DIN 11851**

A base with connections according to EN/DIN 11851 is of hygienic design for use in dairies and in the food and beverage industry.

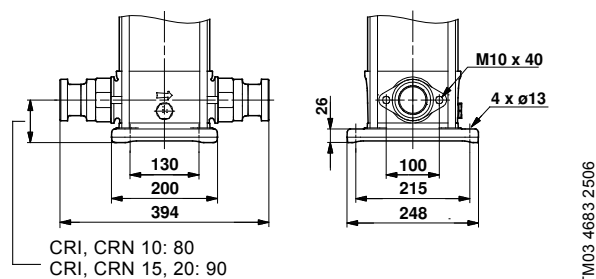
A set consists of one pipe stub with external thread designed for a flexiClamp base with union connection.

**Dimensions**

All dimensions are in mm.



**Fig. 74** Connection to EN/DIN 11851 for CRI, CRN 1s, 1, 3 and 5



**Fig. 75** Connection to EN/DIN 11851 for CRI, CRN 10, 15 and 20

| Pump type                    | Pipework connection | Connection material | Gaskets | Pressure [bar] | Coupling sets required | Product number |
|------------------------------|---------------------|---------------------|---------|----------------|------------------------|----------------|
| CRI(E), CRN(E)<br>1, 3, 5    | DN 32               | Stainless steel     | EPDM    | 16             | 2                      | 96551545       |
|                              |                     |                     | FKM     |                | 2                      | 96551547       |
| CRI(E), CRN(E)<br>10, 15, 20 | DN 50               |                     | EPDM    |                | 2                      | 96551549       |
|                              |                     |                     | FKM     |                | 2                      | 96551570       |

We offer the above connections for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |

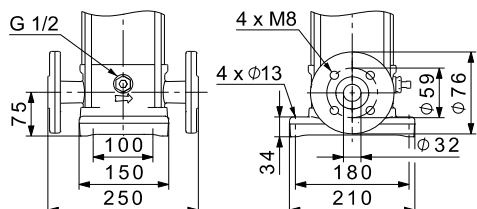
- Available.

## CR pumps with aseptic connection

A base with connections according to EN/DIN 11853-2 is of non-sanitary design but is often used in the dairy, food, beverage and pharmaceutical industry. The aseptic connection is not approved for process use. Instead the aseptic connection is used in secondary systems such as washing and cleaning, CIP cleaning and steam applications.

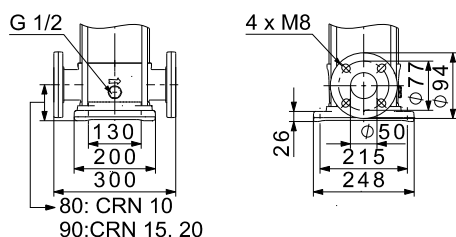
### Dimensions

All dimensions are in mm.



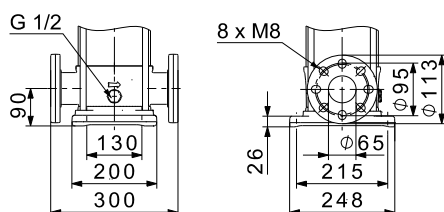
TM05 6269 4512

Fig. 76 Aseptic connection for CRI, CRN 1s, 1, 3 and 5



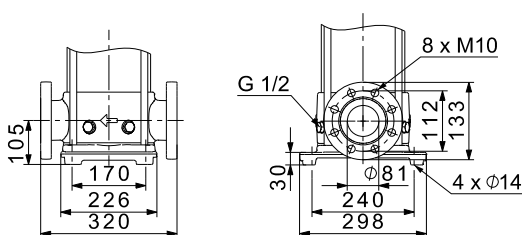
TM05 6270 4512

Fig. 77 Aseptic connection for CRI, CRN 10, 15 and 20



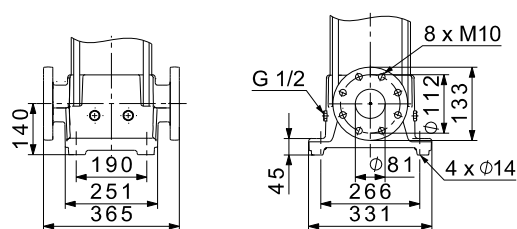
TM05 6271 4512

Fig. 78 Aseptic connection for CRI, CRN 15 and 20



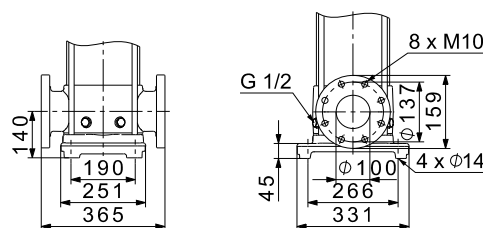
TM05 6272 4512

Fig. 79 Aseptic connection for CRI, CRN 32



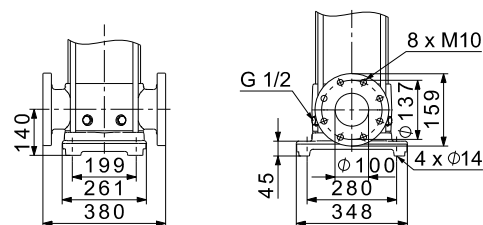
TM05 6273 4512

Fig. 80 Aseptic connection for CRI, CRN 45



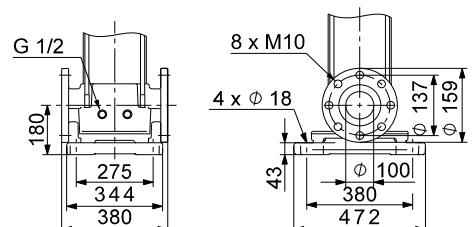
TM05 6274 4512

Fig. 81 Aseptic connection for CRI, CRN 64



TM05 6275 4512

Fig. 82 Aseptic connection for CRI, CRN 90



TM05 6276 4512

Fig. 83 Aseptic connection for CRI, CRN 120 and 150

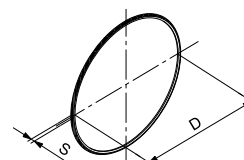
| Pump type          | Pipework connection | Connection material |
|--------------------|---------------------|---------------------|
| CRN(E) 1s, 1, 3, 5 | DN 32               | Stainless steel     |
| CRN(E) 10, 15, 20  | DN 50               |                     |
| CRN(E) 15, 20      | DN 65               |                     |
| CRN(E) 32          | DN 80               |                     |
| CRN(E) 45          | DN 80               |                     |
| CRN(E) 64          | DN 100              |                     |
| CRN(E) 90          | DN 100              |                     |
| CRN(E) 120, 150    | DN 100              |                     |

We offer the above connections for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |

• Available.

Dimensions of O-ring:



TM05 6242 4512

Fig. 84 Dimension sketch of O-ring

| DN  | Dimensions [mm]    |               |
|-----|--------------------|---------------|
|     | Inner diameter (D) | Thickness (S) |
| 32  | 34                 | 5             |
| 50  | 52                 | 5             |
| 65  | 68                 | 5             |
| 80  | 83                 | 5             |
| 100 | 102                | 5             |

**CR pump with PJE coupling**

A base with PJE couplings is designed for use in a wide range of industrial applications.

A set consists of two coupling halves, one gasket, one coupling liner for welding and bolts and nuts.

**Dimensions**

All dimensions are in mm.

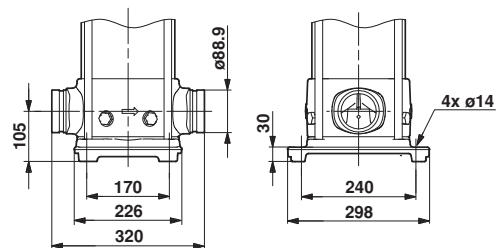


Fig. 85 PJE coupling for CRN 32

TM03 4719 2506

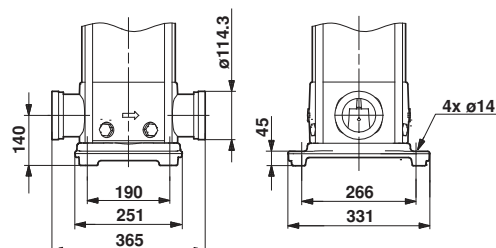


Fig. 86 PJE coupling for CRN 45

TM03 4720 2506

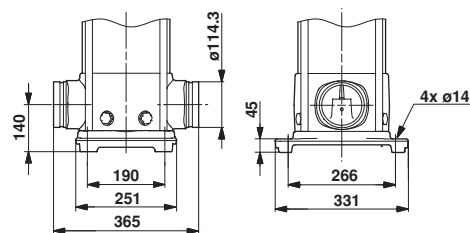


Fig. 87 PJE coupling for CRN 64

TM03 4721 2506

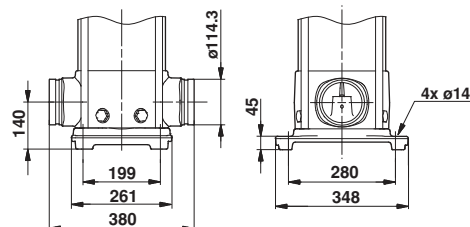


Fig. 88 PJE coupling for CRN 90

TM03 4722 2506

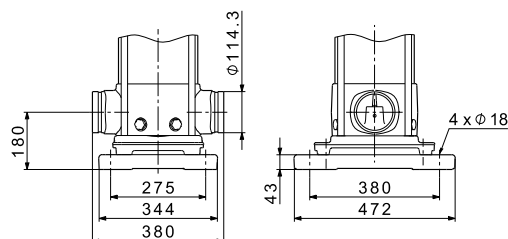


Fig. 89 PJE coupling for CRN 120 and 150

TM04 4558 1609

| Part                                                                                                  | Designation                                       | Designed for pump type   | Rubber parts | Product number |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------|--------------|----------------|
| <br>TM00 3712 0894 | Victaulic type 77 coupling<br>3": Ø89<br>4": Ø114 | CRN 32                   | NBR seal 3"  | 00ID7664       |
|                                                                                                       |                                                   | CRN 45, 64, 90, 120, 150 | NBR seal 4"  | 96415463       |
| <br>TM00 3709 0894 | Victaulic coupling liner for welding              | CRN 32                   | N version 3" | 00150574       |
|                                                                                                       |                                                   | CRN 45, 64, 90, 120, 150 | N version 4" | 96416743       |

We offer PJE couplings with NBR rubber parts for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRI(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |
| CRN(E)    |    |   |   |   |    |    |    |    |    |    |    |     |     |

- Available.

**Note:** PJE connections are available with EPDM and FKM rubber parts on CRI, CRN, 1s to 150 pumps as standard.



**CR pumps with ANSI or JIS connection**

We offer pumps with ANSI or JIS flanges for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     |    |   |   |   |    | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    |    |   |   |   |    | •  | •  |    |    |    |    |     |     |
| CRN(E)    |    |   |   |   |    | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

**Note:** ANSI and JIS connections are available on CRI, CRN, 1s, 1, 3, 5, 10, 15 and 20 pumps as standard.

**Technical data**

| Connection | Max. rated pressure |
|------------|---------------------|
| ANSI       | Class 300           |
| JIS        | 30 K                |

**Note:** CR(E), CRI(E), CRN(E) 1s, 1, 3, 5 and 10 pumps are available with flanges that meet the requirements of both DIN, ANSI and JIS as standard. The dimensions of pumps with DIN, ANSI or JIS flanges are the same, apart from the flange bolt holes.

**Customised connections**

We offer a wide range of customised connections for these pump types:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

Contact Grundfos for further information about customised connections.

We also offer these connections:

- oval flanges (BSP)
- DIN flanges
- PJE couplings (Victaulic®) for CRN(E)
- clamp couplings (L-couplings)
- unions (+GF+).

For further information about connections, see these data booklets:

- CR, CRI, CRN, CRE, CRIE, CRNE
- CR, CRN high pressure
- CRT, CRTE.

All data booklets are available in WebCAPS. See page [165](#).

## 10. Certificates

### CR pumps with certificates

We offer certificates for a number of applications requiring documentation on the pump quality.

Examples:

- pharmaceutical industries
- maritime and offshore applications
- potentially explosive environments
- energy and power suppliers.

**Note:** The certificates must be ordered with the pump.

#### Certificates

| Certificate                                                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Certificate of compliance with the order                                  | According to EN 10204, 2.1. Grundfos document certifying that the pump supplied is in compliance with the order specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Test certificate. Non-specific inspection and testing                     | According to EN 10204, 2.2. Certificate with inspection and test results of a non-specific pump.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Inspection certificate 3.1                                                | Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Inspection certificate                                                    | Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate. Certificate from the surveyor is included.<br>We offer the following inspection certificates: <ul style="list-style-type: none"> <li>• Lloyds Register of Shipping (LRS)</li> <li>• Det Norske Veritas (DNV)</li> <li>• Germanischer Lloyd (GL)</li> <li>• Bureau Veritas (BV)</li> <li>• American Bureau of Shipping (ABS)</li> <li>• Registro Italiano Navale Agenture (RINA)</li> <li>• China Classification Society (CCS)</li> <li>• Russian maritime register of Shipping (RS)</li> <li>• Biro Klassifikasi Indonesia (BKI)</li> <li>• United States Coast Guard (USCG)</li> <li>• Nippon Kaiji Koykai (NKK)</li> </ul> |
| Standard test report                                                      | Certifies that the main components of the specific pump are manufactured by Grundfos, and that the pump has been QH-tested, inspected and conforms to the full requirements of the appropriate catalogues, drawings and specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Material specification report                                             | Certifies the material used for the main components of the specific pump.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Material specification report with certificate from raw material supplier | Certifies the material used for the main components of the specific pump. A material specification report with EN 10204 material certificate from the raw material supplier will be supplied for each main component.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Duty-point verification report                                            | Certifies a test point specified by the customer. Issued according to ISO 9906 concerning "Duty point verification".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Surface-roughness                                                         | Shows the measured roughness of the cast pump base of the specific pump. The report indicates the values measured at the base inlet and outlet according to ISO 1302.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Vibration report                                                          | Vibration report indicating the values measured during the performance test of the specific pump according to ISO 10816.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Motor test report                                                         | Shows the performance test of the specific motor, including power output, current, temperature, stator windings resistance and insulation test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Cleaned and dried pump                                                    | Confirms that the specific pump has been cleaned and dried, and how it was done.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Vacuum-dried pump                                                         | Confirms that the specific pump has been vacuum-dried, and how it was done.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Electropolished pump                                                      | Confirms that the specific pump has been electropolished. The maximum surface roughness is specified in the report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ATEX-approved pump                                                        | Confirms that the specific pump is ATEX-approved according to the EU directive 94/9/EC, the "ATEX directive".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

See examples of the certificates on pages [59](#) to [62](#).

**Note:** Other certificates are available on request.

These pumps are available with certificates:

| Pump type | 1s | 1 | 3 | 5 | 10 | 15 | 20 | 32 | 45 | 64 | 90 | 120 | 150 |
|-----------|----|---|---|---|----|----|----|----|----|----|----|-----|-----|
| CR(E)     | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |
| CRI(E)    | •  | • | • | • | •  | •  | •  |    |    |    |    |     |     |
| CRN(E)    | •  | • | • | • | •  | •  | •  | •  | •  | •  | •  | •   | •   |

- Available.

**Note:** Certified and approved CRT(E) 2, 4, 8 and 16 pumps are also available.



## Standard test report

| BE THINK INNOVATE                                                                                                                                                                                                                                                                                                                                               |  | GRUNDFOS |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| <b>Standard test report</b>                                                                                                                                                                                                                                                                                                                                     |  |          |
| Customer name                                                                                                                                                                                                                                                                                                                                                   |  |          |
| Customer order no.                                                                                                                                                                                                                                                                                                                                              |  |          |
| Customer Tag no.                                                                                                                                                                                                                                                                                                                                                |  |          |
| GRUNDFOS order no.                                                                                                                                                                                                                                                                                                                                              |  |          |
| Product type                                                                                                                                                                                                                                                                                                                                                    |  |          |
| GRUNDFOS DUT id.                                                                                                                                                                                                                                                                                                                                                |  |          |
| Part number                                                                                                                                                                                                                                                                                                                                                     |  |          |
| <p>We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured by GRUNDFOS, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.</p> <p>The attached test result is from the above mentioned pump.</p> |  |          |
| <b>GRUNDFOS</b><br>Date: _____<br>Signature: _____<br>Name: _____<br>Dept.: _____                                                                                                                                                                                                                                                                               |  |          |
| Part no. 96 50 79 35 P03 /A72775                                                                                                                                                                                                                                                                                                                                |  |          |

TM03 4143 1706

## Material specification report

| BE THINK INNOVATE                                                                                                                                                                                                                                                                 |           | GRUNDFOS   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|
| <b>Material specification report.</b>                                                                                                                                                                                                                                             |           |            |
| Customer name                                                                                                                                                                                                                                                                     |           |            |
| Customer order no.                                                                                                                                                                                                                                                                |           |            |
| Customer TAG no.                                                                                                                                                                                                                                                                  |           |            |
| GRUNDFOS order no.                                                                                                                                                                                                                                                                |           |            |
| Pump type                                                                                                                                                                                                                                                                         |           |            |
| GRUNDFOS DUT id.                                                                                                                                                                                                                                                                  |           |            |
| Part number                                                                                                                                                                                                                                                                       |           |            |
| Production code                                                                                                                                                                                                                                                                   |           |            |
| Pump                                                                                                                                                                                                                                                                              | Materials | DIN W.-Nr. |
| Pump head                                                                                                                                                                                                                                                                         |           |            |
| Pump head cover                                                                                                                                                                                                                                                                   |           |            |
| Shaft                                                                                                                                                                                                                                                                             |           |            |
| Impeller                                                                                                                                                                                                                                                                          |           |            |
| Chamber                                                                                                                                                                                                                                                                           |           |            |
| Outer sleeve                                                                                                                                                                                                                                                                      |           |            |
| Base                                                                                                                                                                                                                                                                              |           |            |
| <p>We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.</p> |           |            |
| <b>GRUNDFOS</b><br>Date: _____<br>Signature: _____<br>Name: _____<br>Dept.: _____                                                                                                                                                                                                 |           |            |
| Part no. 96 50 79 28 /A72775                                                                                                                                                                                                                                                      |           |            |

TM03 4150 1706

## Material specification report with certificate from raw material supplier

| BE THINK INNOVATE                                                                                                                                                                                                                                                                 |                      | GRUNDFOS            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|
| <b>Material specification report with<br/>EN10204 material certificate<br/>from raw material supplier</b>                                                                                                                                                                         |                      |                     |
| Customer name                                                                                                                                                                                                                                                                     |                      |                     |
| Customer order no.                                                                                                                                                                                                                                                                |                      |                     |
| Customer TAG no.                                                                                                                                                                                                                                                                  |                      |                     |
| GRUNDFOS order no.                                                                                                                                                                                                                                                                |                      |                     |
| Pump type                                                                                                                                                                                                                                                                         |                      |                     |
| GRUNDFOS DUT id.                                                                                                                                                                                                                                                                  |                      |                     |
| Part number                                                                                                                                                                                                                                                                       |                      |                     |
| Production code                                                                                                                                                                                                                                                                   |                      |                     |
| Pump part                                                                                                                                                                                                                                                                         | EN 10204:<br>3.1 2.2 | Raw material<br>no. |
| Pump head                                                                                                                                                                                                                                                                         |                      |                     |
| Pump head cover                                                                                                                                                                                                                                                                   |                      |                     |
| Base                                                                                                                                                                                                                                                                              |                      |                     |
| Outer sleeve                                                                                                                                                                                                                                                                      |                      |                     |
| Shaft                                                                                                                                                                                                                                                                             |                      |                     |
| Impeller                                                                                                                                                                                                                                                                          |                      |                     |
| Chamber                                                                                                                                                                                                                                                                           |                      |                     |
| <p>We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.</p> |                      |                     |
| <b>GRUNDFOS</b><br>Date: _____<br>Signature: _____<br>Name: _____<br>Dept.: _____                                                                                                                                                                                                 |                      |                     |
| Part no. 9607529/1123611                                                                                                                                                                                                                                                          |                      |                     |

TM06 0753 0914

## Duty point verification report

| BE THINK INNOVATE                                                                                                                                                                                                                                                                             |  | GRUNDFOS |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------|
| <b>Duty point verification report</b>                                                                                                                                                                                                                                                         |  |          |
| Customer name                                                                                                                                                                                                                                                                                 |  |          |
| Customer order no.                                                                                                                                                                                                                                                                            |  |          |
| Customer Tag no.                                                                                                                                                                                                                                                                              |  |          |
| GRUNDFOS order no.                                                                                                                                                                                                                                                                            |  |          |
| Product type                                                                                                                                                                                                                                                                                  |  |          |
| GRUNDFOS DUT id.                                                                                                                                                                                                                                                                              |  |          |
| Part number                                                                                                                                                                                                                                                                                   |  |          |
| <p>We the undersigned hereby guarantee and certify that the materials and/or parts for the above mentioned product were manufactured by GRUNDFOS, tested, inspected, and conform to the full requirements of the appropriate catalogues, drawings and/or specifications relative thereto.</p> |  |          |
| <b>GRUNDFOS</b><br>Date: _____<br>Signature: _____<br>Name: _____<br>Dept.: _____                                                                                                                                                                                                             |  |          |
| Part no. 96 53 96 09 /A72775                                                                                                                                                                                                                                                                  |  |          |

TM03 4148 1706

## Surface-roughness

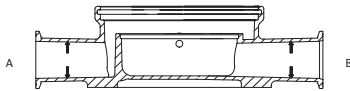
BE THINK INNOVATE GRUNDFOS

### Surface roughness

According to ISO 1302

|                      |  |
|----------------------|--|
| Customer name        |  |
| Customer order no.   |  |
| Customer TAG no.     |  |
| GRUNDFOS order no.   |  |
| Pump type            |  |
| GRUNDFOS DUT id.     |  |
| Part number          |  |
| CRN base part number |  |

The surface roughness is measured as the maximum roughness of the CRN inlet and outlet surface.



|                   |  |
|-------------------|--|
| Surface Treatment |  |
| None              |  |
| Electro-polished  |  |

|                   |      |
|-------------------|------|
| Measured values A |      |
| R <sub>max</sub>  | (μm) |
| R <sub>A</sub>    | (μm) |
| R <sub>Z</sub>    | (μm) |

|                   |      |
|-------------------|------|
| Measured values B |      |
| R <sub>max</sub>  | (μm) |
| R <sub>A</sub>    | (μm) |
| R <sub>Z</sub>    | (μm) |

|                         |                  |
|-------------------------|------------------|
| Roughness value RA [μm] | Roughness degree |
| 50                      | N 12             |
| 25                      | N 11             |
| 12.5                    | N 10             |
| 6.3                     | N 9              |
| 3.2                     | N 8              |
| 1.6                     | N 7              |
| 0.8                     | N 6              |
| 0.4                     | N 5              |
| 0.2                     | N 4              |
| 0.1                     | N 3              |
| 0.05                    | N 2              |
| 0.025                   | N 1              |

GRUNDFOS

Date:

Signature:

Name:

Dept.:

Part no. 96 50 79 33 /A72775

TM03 4147 3607

## Vibration report

BE THINK INNOVATE GRUNDFOS

### Vibration report

According to ISO 10816

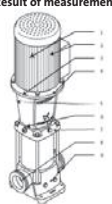
|                    |  |
|--------------------|--|
| Customer name      |  |
| Customer order no. |  |
| Customer TAG no.   |  |
| GRUNDFOS order no. |  |
| GRUNDFOS DUT id.   |  |

|                 |                |
|-----------------|----------------|
| Measured object |                |
| Pump type       | Part number    |
| P2 (kW)         | Frequency (Hz) |
| Number of poles | Serial no.     |

|                                                   |                                                           |
|---------------------------------------------------|-----------------------------------------------------------|
| Test conditions                                   |                                                           |
| The pump is floor-mounted on vibration absorbers. | Voltage (V)                                               |
|                                                   | Flow (m³/h)                                               |
|                                                   | Frequency (Hz)                                            |
|                                                   | Head (m)                                                  |
|                                                   | For vibration velocity measurement positions, see figure. |

Remarks

Result of measurement:



| Pos | RMS vibration velocity (mm/s) |
|-----|-------------------------------|
| 1   | 0.23                          |
| 2   | 0.45                          |
| 3   | 0.71                          |
| 4   | 1.12                          |
| 5   | 1.8                           |
| 6   | 2.8                           |
| 7   | 4.5                           |
| 8   | 7.1                           |
| 9   | 11.2                          |

| RMS vibration velocity (mm/s) | Class I | Class II |
|-------------------------------|---------|----------|
| 0.23                          |         |          |
| 0.45                          | A       | A        |
| 0.71                          |         |          |
| 1.12                          | B       | B        |
| 1.8                           |         |          |
| 2.8                           | C       | C        |
| 4.5                           |         |          |
| 7.1                           | D       | D        |
| 11.2                          |         |          |
| 18                            |         |          |
| 28                            |         |          |
| 45                            |         |          |

The machine classifications are as follows:

Class I: Individual parts of engines and machines, integrally connected to the complete machine in its normal operating condition. (Production electrical motors of up to 25 kW are typical examples of machines in this category.)

Class II: Medium-sized machines (typically electrical motors with 15 kW to 75 kW output) without special foundations, rigidly mounted engines or machines (up to 300 kW) on special foundations.

GRUNDFOS

Date: 26-Apr-06

Signature:

Name:

Dept.:

Part no. 96 50 79 32 /A72775

TM03 4167 1706

## Motor test report

BE THINK INNOVATE GRUNDFOS

### Motor test report

|                    |  |
|--------------------|--|
| Customer name      |  |
| Customer order no. |  |
| Customer Tag no.   |  |
| GRUNDFOS order no. |  |
| GRUNDFOS DUT id.   |  |
| Part number        |  |
| Motor no.          |  |
| Motor serie no.    |  |

We the undersigned hereby guarantee and certify that the above motor has been tested. The performance of the motor can be seen in the motor test report on the next page.

GRUNDFOS

Date:

Signature:

Name:

Dept.:

Part no. 96 50 79 33 /A72775

TM03 4146 1706

## Cleaned and dried pump

BE THINK INNOVATE GRUNDFOS

### Cleaned and dried pump

|                    |  |
|--------------------|--|
| Customer name      |  |
| Customer order no. |  |
| Customer TAG no.   |  |
| GRUNDFOS order no. |  |
| Pump type          |  |
| GRUNDFOS DUT id.   |  |
| Part number        |  |
| Production code    |  |

GRUNDFOS hereby confirms that the pump mentioned above is manufactured according to the specifications mentioned in the "CR, CRI, CRN Custom-built pumps" data booklet. This means that prior to assembly, pump components are washed in pure, hot soap water, rinsed in de-ionized water and dried.

The pump is wrapped in a plastic bag before being packed.

The pump has not been performance-tested.

GRUNDFOS

Date:

Signature:

Name:

Dept.:

Part no. 96 50 79 34 /A72775

TM03 4145 1706

## Vacuum-dried pump

BE THINK INNOVATE GRUNDFOS

### Vacuum Dried Pump

|                    |  |
|--------------------|--|
| Customer name      |  |
| Customer order no. |  |
| Customer TAG no.   |  |
| GRUNDFOS order no. |  |
| Pump type          |  |
| GRUNDFOS DUT id.   |  |
| Part number        |  |
| Production code    |  |

GRUNDFOS hereby confirms that the pump mentioned above is manufactured according to the specifications mentioned in the "CR, CRI, CRN Custom-built pumps" data booklet. This means that after the performance test of the pump, a heat and vacuum drying process will ensure that no liquid water is present inside the pump.

The in- and outlet of the pump is sealed by means of a sticker after the drying process.

GRUNDFOS  
Date: \_\_\_\_\_  
Signature:  
Name:  
Dept.: \_\_\_\_\_

Part no. 9806312/1126913

TM06 0335 5213

## Electropolished pump

BE THINK INNOVATE GRUNDFOS

### Electro-polished pump

|                    |  |
|--------------------|--|
| Customer name      |  |
| Customer order no. |  |
| Customer TAG no.   |  |
| GRUNDFOS order no. |  |
| Pump type          |  |
| GRUNDFOS DUT id.   |  |
| Part number        |  |
| Production code    |  |

Grundfos hereby confirms that the pump mentioned above is manufactured according to the specifications mentioned in the "CR, CRI, CRN Custom-built pumps" data booklet. This means that prior to assembly, pump components are electro-polished in a mixture of sulphuric acid and phosphoric acid. Finally the components are passivated in nitric acid.

The CRN1s, 1, 3, 5, 10, 15, and 20 casted parts are all mechanically polished before being electropolished.

The pump will then obtain following surface roughness;

| Pump type         | Stainless steel casted parts | Stainless steel plate and other non casted parts | Surface roughness (µm)                   |
|-------------------|------------------------------|--------------------------------------------------|------------------------------------------|
| CRN1s, 1, 3, 5    | *                            | *                                                | equal to or below 0,8                    |
| CRN10, 15, 20     | *                            | *                                                | equal to or below 0,8                    |
| CRN32, 45, 64, 90 | *                            | *                                                | between 10 – 15<br>equal to or below 0,8 |

GRUNDFOS  
Date: \_\_\_\_\_  
Signature:  
Name:  
Dept.: \_\_\_\_\_

Part no 96 50 79 35/A72775

TM03 4144 1706

## ATEX-approved pump

BE THINK INNOVATE GRUNDFOS

### ATEX-approved pump

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Customer name         |                                                                                     |
| Customer order no.    |                                                                                     |
| Customer TAG no.      |                                                                                     |
| GRUNDFOS order no.    |                                                                                     |
| Pump type             |                                                                                     |
| GRUNDFOS DUT id.      |                                                                                     |
| Part number           |                                                                                     |
| Production code       |                                                                                     |
| Pump serial no.       |                                                                                     |
| Motor serial no.      |                                                                                     |
| ATEX approval of pump |  |
| Technical file no.    | 96499604                                                                            |

GRUNDFOS hereby confirms that the pump mentioned above is manufactured according to the ATEX directive. This means the pump is conformity with the ATEX 94/9EEC (ATEX 100) appendix VIII directive as mentioned in the "ATEX Supplement to installation and operating instructions" supplied with the pump.

GRUNDFOS  
Date: \_\_\_\_\_  
Signature:  
Name:  
Dept.: \_\_\_\_\_

Part no 96 51 22 40/A72775

TM03 4166 1706

## 11. CRE pump solutions



TM02 7397 0511

**Fig. 90** Motors for CRE, CRIE, CRNE, CRTE pumps

Besides continuously variable performance, CRE, CRIE, CRNE, CRTE pumps offer a number of advantages depending on the hardware and software combinations of the motor.

CRE pumps are not dependent on the frequency of the supply voltage and are designed for operation at frequencies between  $750 \text{ min}^{-1}$  and  $6000 \text{ min}^{-1}$ .

This offers a number of advantages:

- compact pump
- higher performance in relation to physical size
- larger dynamic range
- less noise at reduced speed
- more gentle handling of the pumped liquid at reduced speed.

The speed may be chosen freely, taking into consideration the maximum motor load and the hydraulic properties of the pump. Pumps can be delivered with oversize or undersize motors depending on load profile. Ball bearing configuration can also be altered to fit load and demands.

### Customised CRE pump solutions

As an alternative to the standard CRE pump solutions, we offer CRE pumps customised for your requirements.

You can configure CRE pumps as follows:

- Selecting a control panel on the front of the terminal box of the motor.
- Selecting a communication module for bus standards such as GENIbus, LonWorks, Profibus etc. See [Communication with CRE pumps](#) on page 66.
- Selecting a customised functionality by means of special configuration files (gsc-files).

### User interfaces for CRE pumps

Pump settings can be made by means of the following user interfaces:

#### Control panels

CRE pumps can be delivered with different control panels. The available options depend on the motor type and size. See the table below:

|                  | Control panel type   |                      |                   |                      |                   |                      |                      |
|------------------|----------------------|----------------------|-------------------|----------------------|-------------------|----------------------|----------------------|
|                  | Standard             | Blind                | Basic             |                      | Standard          | Advanced             |                      |
|                  | Without radio module | Without radio module | With radio module | Without radio module | With radio module | Without radio module | Without radio module |
| <b>MGE motor</b> |                      |                      |                   |                      |                   |                      |                      |
| 0.37 - 2.2 kW    |                      |                      | ○                 | ○                    | ●                 | ○                    | ○                    |
| 3 - 22 kW        | ●                    | ○                    |                   |                      |                   |                      |                      |

- Mounted as standard.
- Optional.

#### CRE pumps from 0.37 to 2.2 kW

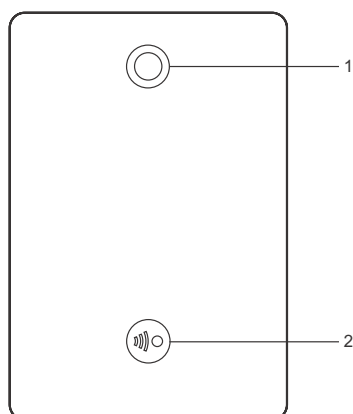
The available control panels enable monitoring and setting of the pump. Settings can either be made directly on the control panel or via the remote controls Grundfos GO Remote or Grundfos R100.

The control panels can be delivered with or without a radio module for communication between the pump and Grundfos GO Remote or communication to other pumps in a multipump system. All control panels enable communication via infrared (IR) connection which can be used in connection with both the Grundfos GO Remote and Grundfos R100.

The different control panels and remote controls are described below.



## Basic control panel

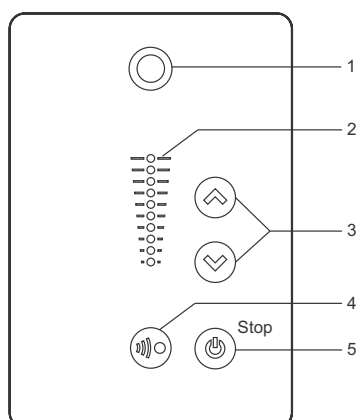


TM05 4847 2712

Fig. 91 Basic control panel

| Pos. | Symbol | Description                                                                                  |
|------|--------|----------------------------------------------------------------------------------------------|
| 1    |        | Grundfos Eye<br>Shows the operating status of the pump.                                      |
| 2    |        | Enables radio communication with the Grundfos GO Remote and other products of the same type. |

## Standard control panel

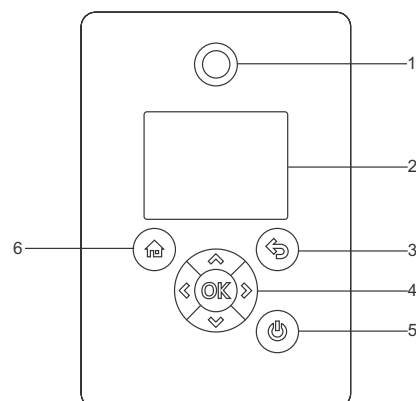


TM05 4848 3512

Fig. 92 Standard control panel

| Pos. | Symbol | Description                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    |        | Grundfos Eye<br>Shows the operating status of the pump.                                                                                                                                                                                                                                                                                                                                                                          |
| 2    | -      | Light fields for indication of setpoint.                                                                                                                                                                                                                                                                                                                                                                                         |
| 3    |        | Changes the setpoint and reset of alarms and warnings.                                                                                                                                                                                                                                                                                                                                                                           |
| 4    |        | Enables radio communication with the Grundfos GO Remote and other products of the same type.                                                                                                                                                                                                                                                                                                                                     |
| 5    |        | Makes the pump ready for operation/starts and stops the pump.<br><b>Start:</b><br>If the button is pressed when the pump is stopped, the pump will only start if no other functions with higher priority have been enabled.<br><b>Stop:</b><br>If the button is pressed when the pump is running, the pump will always be stopped. When the pump is stopped via this button, the "Stop" text next to the button will illuminate. |

## Advanced control panel

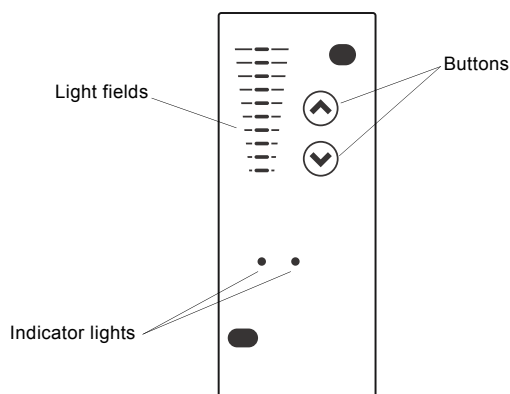


TM05 4849 1013

Fig. 93 Advanced control panel

| Pos. | Symbol | Description                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    |        | Grundfos Eye<br>Shows the operating status of the pump.                                                                                                                                                                                                                                                                                                                                                                          |
| 2    | -      | Graphical colour display.                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3    |        | Goes one step back.                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4    |        | Navigates between main menus, displays and digits.<br>When the menu is changed, the display will always show the top display of the new menu.                                                                                                                                                                                                                                                                                    |
| 5    |        | Navigates between submenus.<br><br>Saves changed values, resets alarms and expands the value field.<br>Enables communication with the Grundfos GO Remote.                                                                                                                                                                                                                                                                        |
| 6    |        | Makes the pump ready for operation/starts and stops the pump.<br><b>Start:</b><br>If the button is pressed when the pump is stopped, the pump will only start if no other functions with higher priority have been enabled.<br><b>Stop:</b><br>If the button is pressed when the pump is running, the pump will always be stopped. When the pump is stopped via this button, the "Stop" text next to the button will illuminate. |
| 6    |        | Goes to the "Home" menu.                                                                                                                                                                                                                                                                                                                                                                                                         |

## CRE pumps from 3 to 22 kW



TM05 8590 2613

**Fig. 94** Standard/advanced control panel

The pump control panel (fig. 94) incorporates the following buttons and indicator lights:

- buttons, ⬆ and ⬇, for setpoint setting
- light fields, yellow, for setpoint indication
- Indicator lights, green (operation) and red (fault).

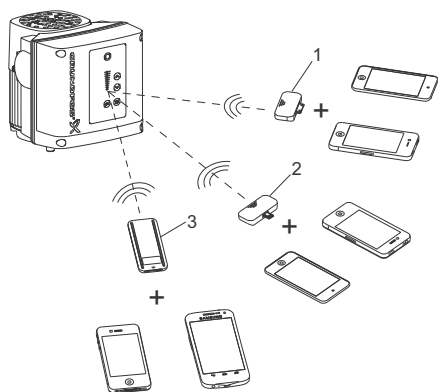
## Remote control

### Grundfos GO Remote

The Grundfos GO Remote can communicate with CRE pumps using either wireless radio or infrared connection.

The Grundfos GO Remote enables setting of functions and gives access to status overviews, technical product information and actual operating parameters.

The Grundfos GO Remote offers the following mobile interfaces (MI). See fig. 95.



TM06 0744 0914

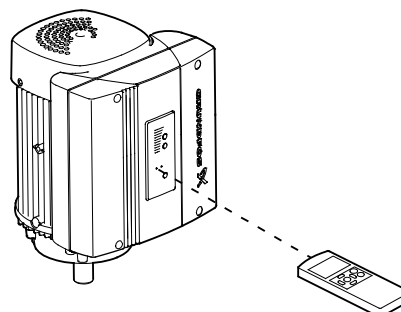
**Fig. 95** Grundfos GO Remote communicating with the pump via radio or infrared connection (IR)

| Pos. | Description                                                                                                                                                                                                                                      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Grundfos MI 202:<br>Add-on module which can be used in conjunction with an Apple iPhone or iPod with 30-pin connector and iOS 5.0 or later, e.g. fourth generation iPhone or iPod.                                                               |
| 2    | Grundfos MI 204:<br>Add-on module which can be used in conjunction with an Apple iPhone or iPod with lightning connector, e.g. fifth generation iPhone or iPod.<br>(The MI 204 is also available together with an Apple iPod touch and a cover.) |
| 3    | Grundfos MI 301:<br>Separate module enabling radio or infrared communication.<br>The module can be used in conjunction with an Android or iOS-based smart device with Bluetooth connection.                                                      |

### Grundfos R100 remote control

The Grundfos R100 remote control can communicate with CRE pumps using infrared connection.

The Grundfos R100 enables setting of functions and gives access to status overviews, technical product information and actual operating parameters.



TM03 0141 4104

**Fig. 96** Grundfos R100 remote control

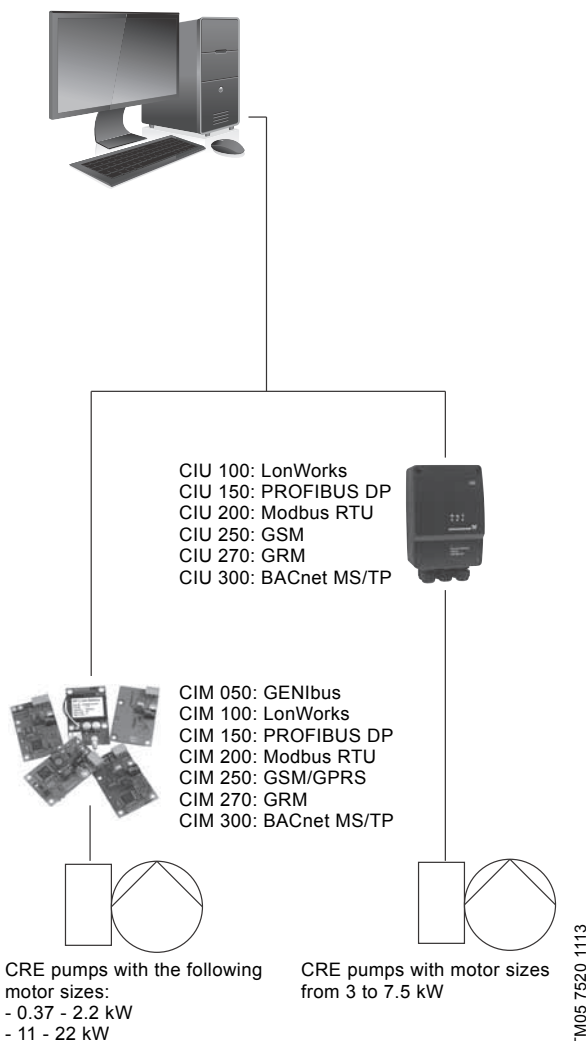
## Communication with CRE pumps

Communication with CRE pumps is possible via a central building management system, remote control or control panel.

### Central building management system

The operator can communicate with a CRE pump at a distance. Communication can take place via a central building management system allowing the operator to monitor and change control modes and setpoint settings. Communication between CRE pumps and a central building management system is enabled via a Grundfos CIM module or a Grundfos CIU unit, see fig. 97.

CRE pumps with motor sizes from 3 to 7.5 kW are fitted with a GENIbus module from factory. CRE pumps with motor sizes from 11 to 22 kW are fitted with a CIM 050 GENIbus module from factory.



**Fig. 97** Structure of a central building management system

\*) Grundfos Remote Monitoring. GRM makes it possible to access pump data on the web. Connection to GRM server is done via SMS or GPRS.

## Grundfos PC Tool E-products

Connection of a Grundfos PC Tool E-products offers a number of advantages during commissioning, operation and service of E-pumps.

The PC tool E-products enables these functions:

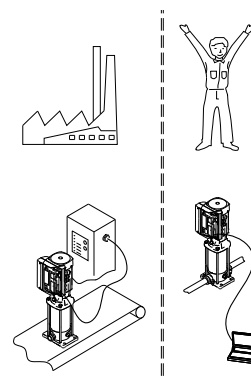
- monitoring of operational status of your E-product
- standard configuration of E-products
- custom configuration of E-products
- saving of logged data from E-products.

Via the PC Tool, it is possible to download special predefined configuration files (gsc files) to the pump. The configuration files may contain application-optimised operating parameters based on your specifications!

**Note:** When configuration files have been read in, it is still possible to make adjustments.

### Description

The Grundfos PC Tool E-products is a common user platform/user interface used throughout the entire production process of an E-pump. Furthermore, PC Tool E-products can be used by the customer for setting up, commissioning and servicing the E-pump.



**Fig. 98** PC Tool E-products used in production and on site by the customer

The Grundfos PC Tool E-products thus enables configuration or reconfiguration of your product to optimise it to exactly your application. And it is indispensable for fault finding and service.

The software for Grundfos PC Tool E-products must be ordered with the PC Tool Link package which contains hardware and cables. Contact Grundfos for further information.

TM03 9290 3707

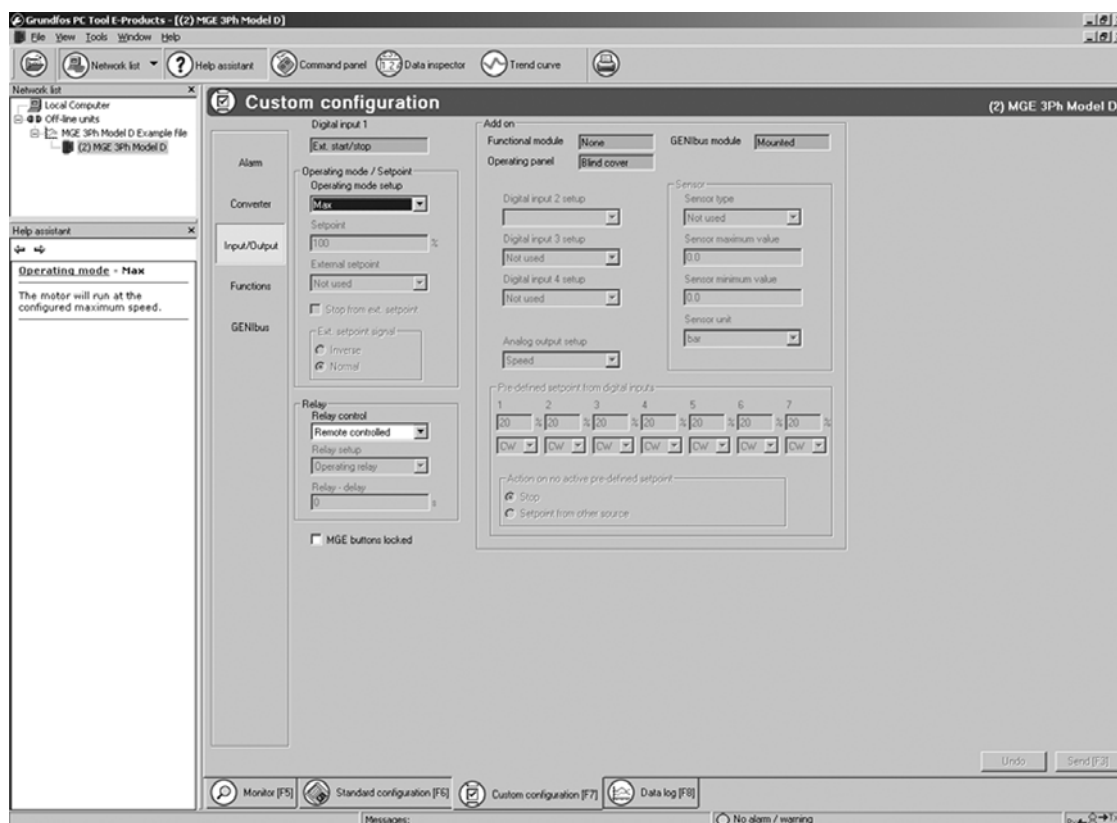


Fig. 99 PC Tool interface

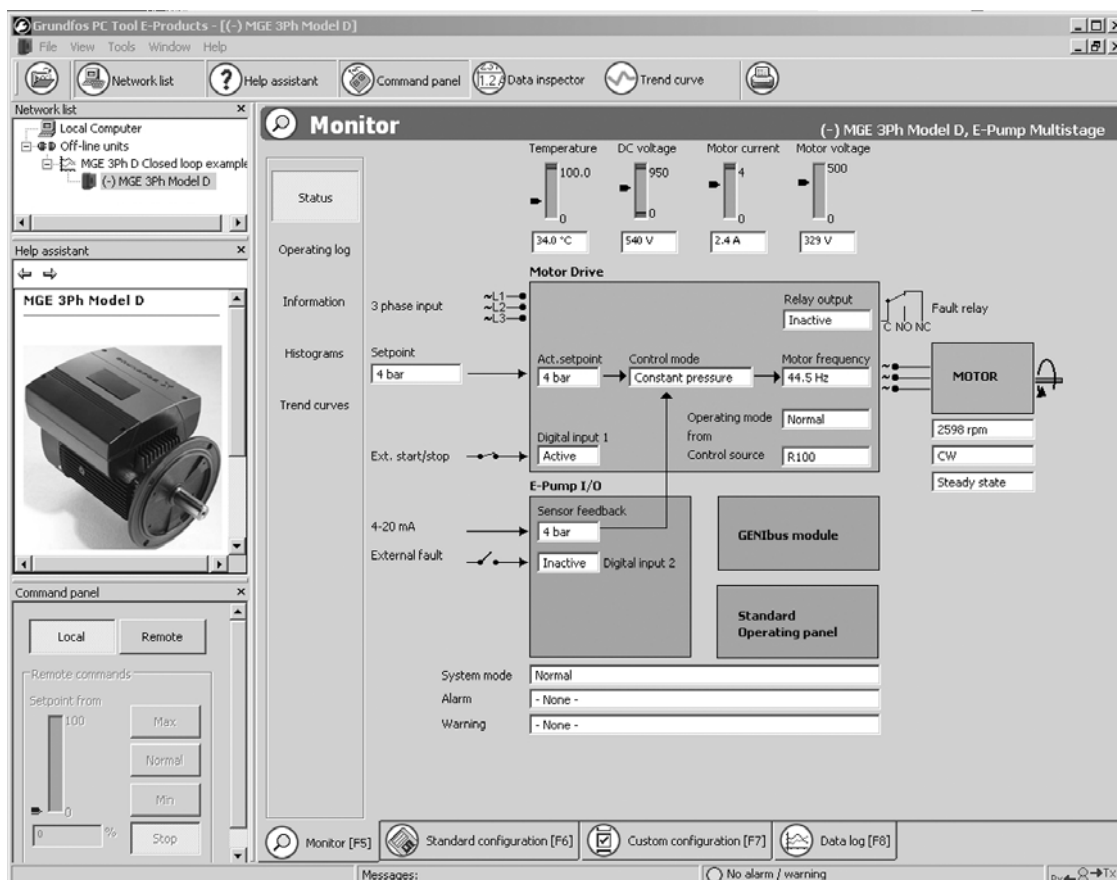


Fig. 100 Monitoring function

TM03 3712 0806

TM04 4607 1809

## Industrial custom-built E-solutions

### Pump running at over-synchronous speed

Pumps running at over-synchronous speed runs at speeds exceeding the standard, maximum speed e.g. 50/60 Hz.

By increasing the pump speed, the pump performance will increase even more due to the laws of affinity.

If you increase the speed of the pump with 20 % from 2,900 rpm to 3,470 rpm, the pump performance will increase by more than 70 %.

#### Affinity equation

The following affinity equations apply with close approximation to the change of speed of centrifugal pumps:

$$\frac{Q_x}{Q_n} = \frac{n_x}{n_n} \quad \frac{H_x}{H_n} = \left(\frac{n_x}{n_n}\right)^2 \quad \frac{P_x}{P_n} = \left(\frac{n_x}{n_n}\right)^3$$

H = pump head

Q = pump flow rate

P = pump input power

n = speed.

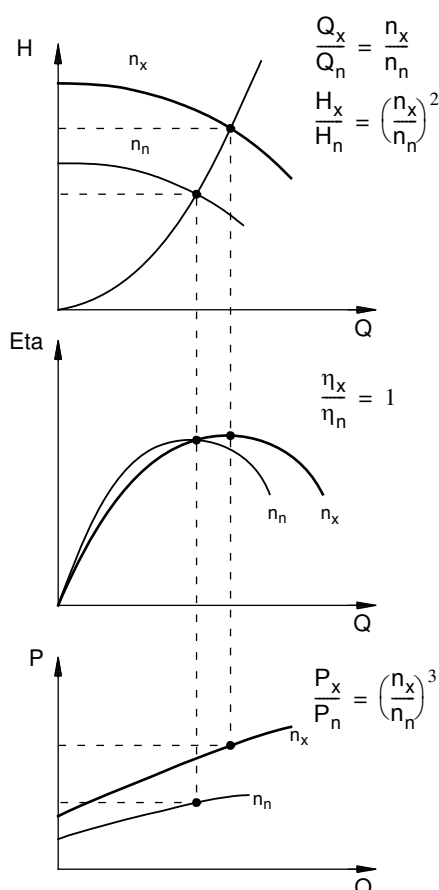


Fig. 101 Affinity equations

TM00 8720 3496

### Pump hydraulic limitations

Running over-synchronous speed will increase the differential pressure over the chambers and the entire chamber stack. This might affect the lifetime of the pump depending on the application. Therefore, do not exceed the pressure limits stated in the table below. Special chambers and software setup might be required.

| Pump type       | Maximum differential pressure over the chamber [bar] |                    |                      |
|-----------------|------------------------------------------------------|--------------------|----------------------|
|                 | Standard chamber                                     | Reinforced chamber | Laser-welded chamber |
| CR, CRI, CRN 1s | 0.9                                                  | -                  | -                    |
| CR, CRI, CRN 1  | 0.9                                                  | 2.2                | 2.2                  |
| CR, CRI, CRN 3  | 0.9                                                  | 2.2                | 2.2                  |
| CR, CRI, CRN 5  | 0.9                                                  | 1.4                | -                    |
| CR, CRI, CRN 10 | 2.2                                                  | -                  | -                    |
| CR, CRI, CRN 15 | 2.2                                                  | -                  | -                    |
| CR, CRI, CRN 20 | 2.2                                                  | -                  | -                    |
| CR, CRI, CRN 32 | 5.0                                                  | -                  | -                    |
| CR, CRI, CRN 45 | 5.0                                                  | -                  | -                    |
| CR, CRI, CRN 64 | 5.0                                                  | -                  | -                    |
| CR, CRI, CRN 90 | 5.0                                                  | -                  | -                    |

The durability of the different chamber types depends on the number of starts/stops of the pump.

The estimated maximum number of pump starts and stops is stated below:

| Chamber type         | Maximum number of starts and stops |
|----------------------|------------------------------------|
| Standard chamber     | 1,000,000                          |
| Reinforced chamber   | 300,000                            |
| Laser-welded chamber | 800,000                            |

The table below states the maximum differential pressure over the entire chamber stack.

| Pump type            | Maximum differential pressure over the entire chamber stack [bar] |
|----------------------|-------------------------------------------------------------------|
| CR, CRI, CRN 1-5     | 50                                                                |
| CR, CRI, CRN 10-20   | 30                                                                |
| CR, CRI, CRN 32-90   | 33                                                                |
| CR, CRI, CRN 120-150 | 21                                                                |

### Purpose and benefits

Traditionally, pumps are sized so that the maximum pressure and flow required in the application can be handled with a standard pump. For pumps working in conditions with various pressure and flow requirements, this can have the effect that the most common duty point is where the pumping efficiency is not optimal. By choosing a pumping solution that can reach over-synchronous speeds, the pump can be sized from most common duty point and speed up when more flow or pressure is required.

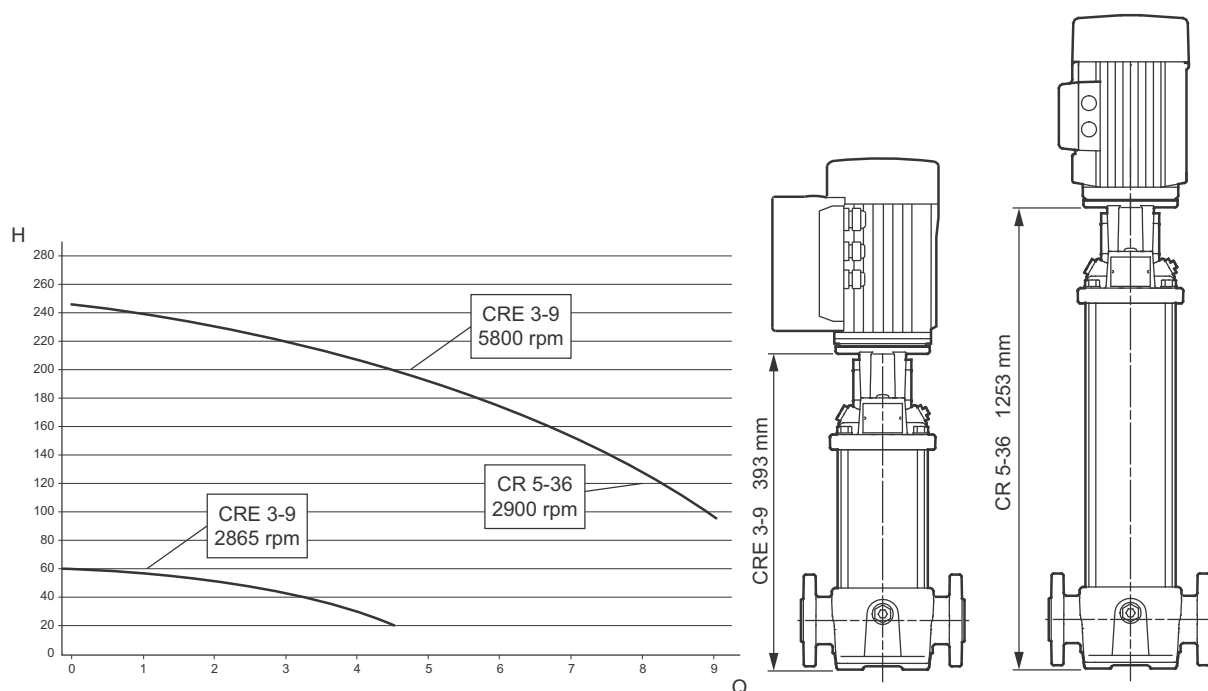
- Compact solution. Increasing RPM enables high pressure with few stages, requiring less space.

In applications where a high flow/pressure is needed momentarily, sizing can be done from the most used duty point with the ability to run over-synchronous speed for momentary high flow/pressure.

## Applications

This solution is ideal in cases where the pump weight and dimension are to be kept at a minimum and the pump performance is to be maintained.

The figure above illustrates how a pump can be down-sized and still deliver the same performance.



TM05 2686 2014

**Fig. 102** Comparison of performance: A CRE 3-9 running at over-synchronous speed equals the performance of a CR 5-36 running at rated maximum speed

## Availability

This function is available in these pump sizes:

| Single-phase pumps |                |
|--------------------|----------------|
| 2-pole             | 4-pole         |
| 0.37 - 1.5 kW      | 0.25 - 1.1 kW  |
| Three-phase pumps  |                |
| 2-pole             | 4-pole         |
| 0.37 - 22 kW       | 0.55 - 18.5 kW |

## Setup

This function is available in factory-configured products.

**Note:** Running at over-synchronous speed will affect the NPSH value, sufficient inlet pressure is therefore required. Sound pressure level emitted from the pump and motor will increase when increasing the speed.

## Pump operating at power limit

When a pump operates at the power limit, the MGE motor will deliver an output corresponding to the maximum load stated on the name plate. The maximum load will never be exceeded, see fig. 103.

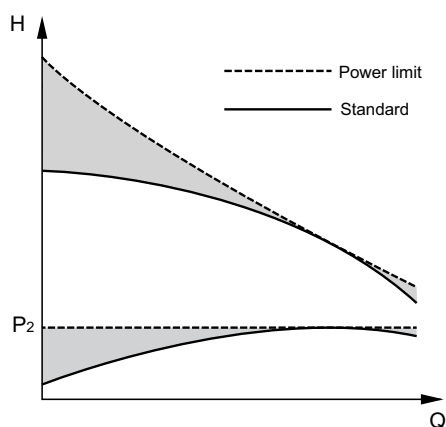


Fig. 103 Curves of a standard E-pump and a pump operating at power limit

### Purpose and benefits

When using a standard pump at a low flow, the power consumption will drop and the motor will have excess power available.

By setting the CRE pump to operate at a higher speed, the excess power can be used to provide a higher pressure. The power limit function will make sure that the motor load never exceeds its maximum by decreasing the speed until the motor is at its power limit.

In cases where an undersized motor is used with standard speed, the power limit function will still reduce the speed and protect the motor against overload at high flow. The solution offers the following benefits:

- reduced motor size
- reduced pump size.

Figure 104 shows that a pump operating at low flows and relatively high pressures (1) can be fitted with an undersize motor with a rated power that matches this operating range. At higher flows and relatively lower pressures (2), the motor will reduce its speed when the power limit is exceeded and follow a steeper curve corresponding to the power available.

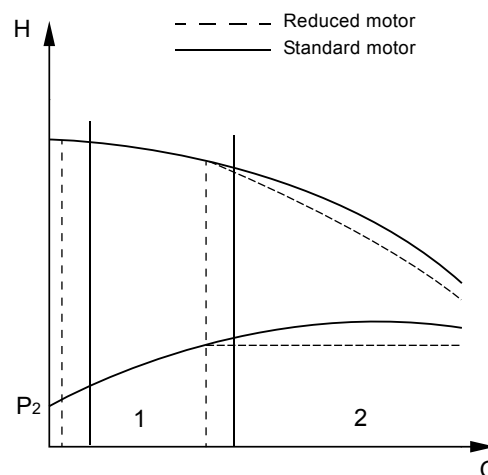


Fig. 104 Standard performance curve compared to a curve for a pump fitted with an undersized MGE motor

The MGE motor can be set to a higher speed than standard, enabling the pump to deliver more pressure. The pump will operate at this higher speed until the pump reaches the flow where the motor is loaded to its full rated power. If the flow is increased further, the motor will reduce its speed so as not to exceed its rated power.

Using this function can in some instances enable use of a smaller pump to reach the desired duty point compared to a pump running with standard maximum speed, see fig. 105.

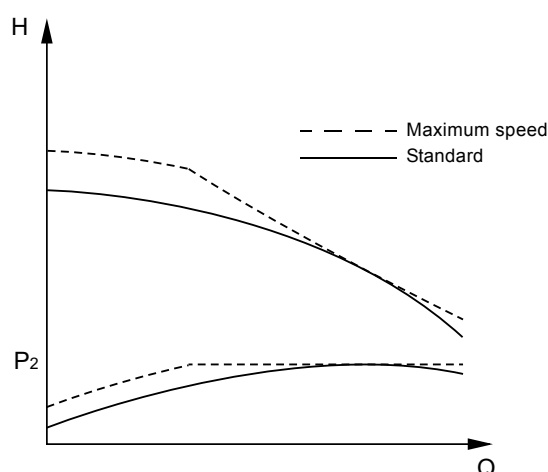


Fig. 105 Standard performance curve (60 Hz) compared to a performance curve for a pump running at maximum speed.

### Applications

The power limit function is primarily used in applications where the motor size is dimensioned to be as small as possible to reduce size or cost. Or in applications demanding a high maximum speed to achieve a high pressure at low flow. In both cases, the motor is protected by the power limit function at a higher flow where a lower speed is needed to prevent the motor from overloading.

#### Examples of application:

- Washing and cleaning
- boiler feed.

#### Availability

This function is available in these pump sizes:

| Single-phase pumps |                |
|--------------------|----------------|
| 2-pole             | 4-pole         |
| 0.37 - 1.5 kW      | 0.25 - 1.1 kW  |
| Three-phase pumps  |                |
| 2-pole             | 4-pole         |
| 0.37 - 22 kW       | 0.55 - 18.5 kW |

#### Setup

The power limit is always active in CRE pumps to protect the motor against overload. Pumps with undersized motor and pumps with higher maximum speed are available as factory-configured products.

**Note:** Running at over-synchronous speed will affect the NPSH value, sufficient inlet pressure is therefore required.

Sound pressure level emitted from the pump and motor may increase at higher speeds.

Furthermore the differential pressure over the chambers must be taken into consideration, see [Pump hydraulic limitations](#) on page 68.

### Low flow stop function

The stop function ensures that the pump stops when low or no flow is detected e.g. if the pump is pumping against a closed valve.

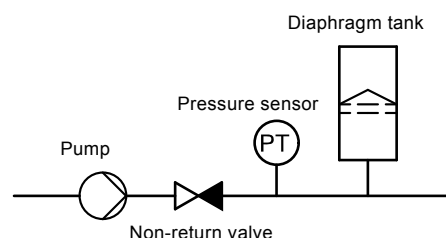
#### Purpose and benefits

The stop function provides these benefits:

- The energy consumption is limited and the system efficiency is improved.
- Unnecessary heating of the pumped liquid is avoided.
- Wear of the shaft seals is reduced.
- Noise from operation is reduced.

#### Applications

The stop function is used in systems with a diaphragm tank and where periodically low or no consumption can occur thus preventing the pump from running against closed valve.



TM03 8583 1907

#### Availability

This function is available in these pump sizes:

| Single-phase pumps |                |
|--------------------|----------------|
| 2-pole             | 4-pole         |
| 0.37 - 1.5 kW      | 0.25 - 1.1 kW  |
| Three-phase pumps  |                |
| 2-pole             | 4-pole         |
| 0.37 - 22 kW       | 0.55 - 18.5 kW |

#### Setup

This function is available in factory-configured products.



## Stabilising unstable pump curves

When the pump curve has a shape where it intersects the system curve at two points (A and B) with identical pressure but at different flows, the pump curve is defined as unstable, see fig. 106. This is especially problematic in systems with a flat system characteristic as it prevents the pump from being controlled to a flow which is lower than the flow at point B.

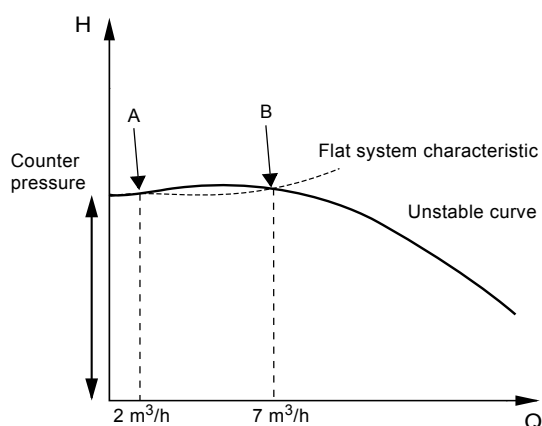


Fig. 106 Unstable pump curve

The E-motor can stabilise an unstable pump curve in the low flow area by changing to a higher speed.

Figure 107 illustrates how the pump curve is straightened out in this area. As the flow increases, the E-motor gradually reduces the speed to normal speed and the pump performance will follow the standard pump curve.

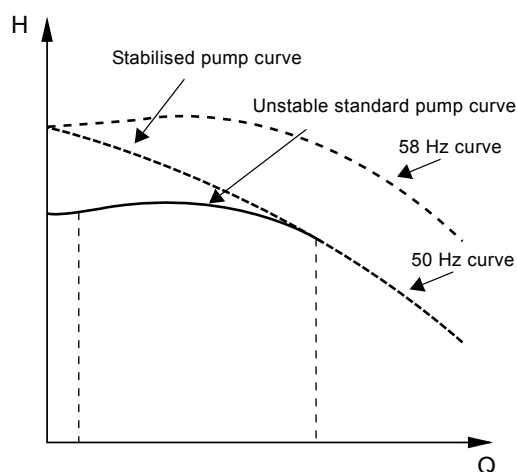


Fig. 107 Pump curve with a stabilised operating range

## Purpose and benefits

The purpose of stabilising an unstable pump is to enable normal control throughout the entire operating range. Thus fully stable operation is achieved, even in the low flow range. This enables the use of modern high-efficiency pumps in applications where this would otherwise not be possible.

## Applications

As mentioned unstable operation may occur in applications with a high counter pressure and a flat system characteristic.

### Examples of application:

- pumping of water to a water tower
- boiler feed.

**Note:** Sound pressure level emitted from the pump and motor may increase at higher speeds.

## Availability

This function is available in these pump sizes:

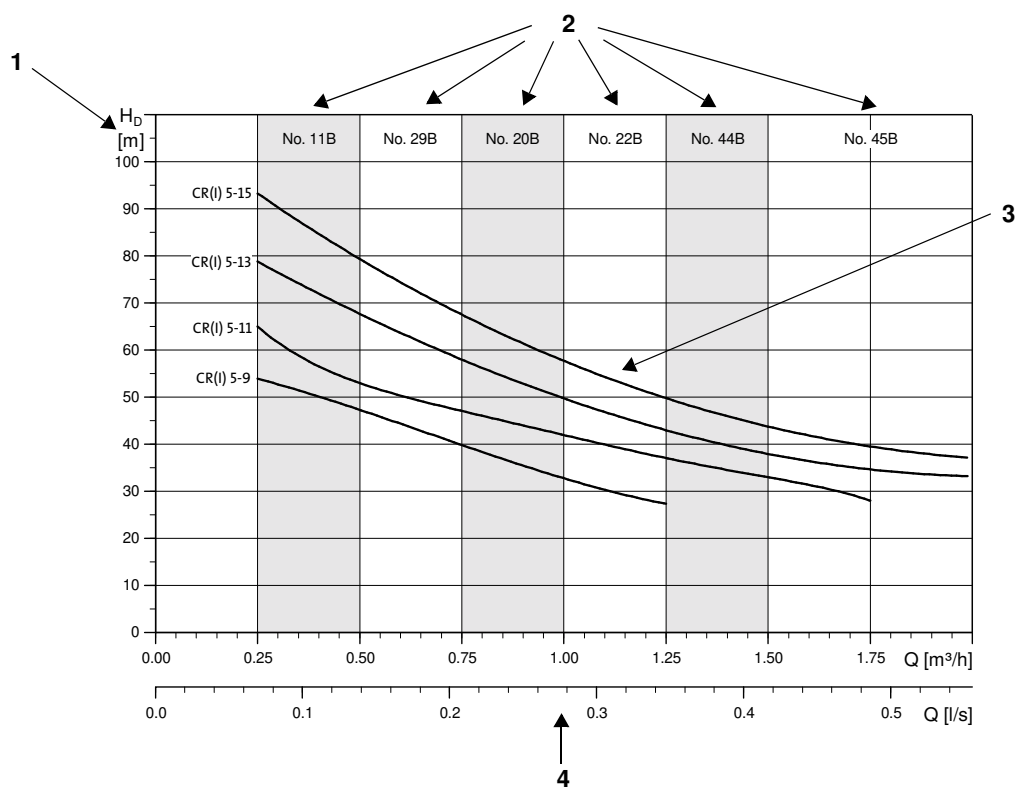
| Single-phase pumps |                |
|--------------------|----------------|
| 2-pole             | 4-pole         |
| 0.37 - 1.5 kW      | 0.25 - 1.1 kW  |
| Three-phase pumps  |                |
| 2-pole             | 4-pole         |
| 0.37 - 22 kW       | 0.55 - 18.5 kW |

## Setup

This function is available in factory-configured products.

## 12. How to read the curve charts

### CR deep-well



**Fig. 108** Example of curve chart of CR deep-well

| Pos. | Description                                                                                                      |
|------|------------------------------------------------------------------------------------------------------------------|
| 1    | The y-axis indicates the suction depth, $H_D$ , in metres.                                                       |
| 2    | Ejector numbers.                                                                                                 |
| 3    | QH curve of the individual pump. The bold curves indicate the recommended performance range for best efficiency. |
| 4    | The x-axis indicates the flow rate in $m^3/h$ and $l/s$ .                                                        |

TM01 9129 0303

## CR low-NPSH and CR pumps with 4-pole motor

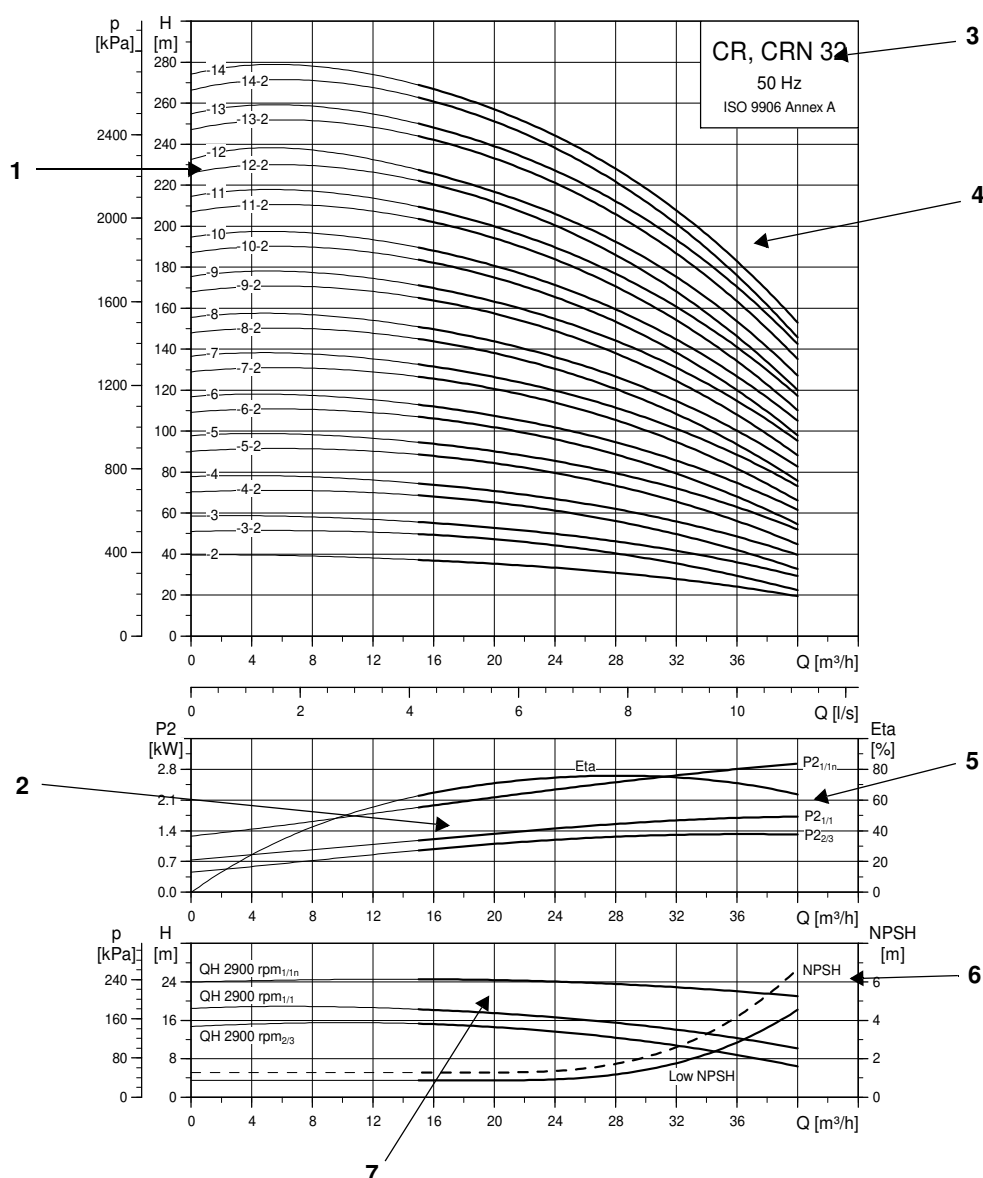


Fig. 109 Example of curve chart of CR low-NPSH

| Pos. | Description                                                                                                                                                                                                                                        |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Number of stages.<br>First figure: Number of stages.<br>Second figure: Number of reduced-diameter impellers.                                                                                                                                       |
| 2    | The power curves indicate pump input power per stage. Curves are shown for pump with one stage ( $P2_1$ ), low-NPSH stage ( $P2_{1n}$ ) and reduced-diameter impellers ( $P2_{2/3}$ ).                                                             |
| 3    | Pump type, frequency and ISO standard.                                                                                                                                                                                                             |
| 4    | QH curve for the individual pump.<br>The bold curves indicate the recommended duty range for best efficiency.                                                                                                                                      |
| 5    | The eta curve shows the efficiency of the pump. The eta curve is an average curve of all the pump types shown in the chart.<br>The efficiency of pumps with reduced-diameter impellers is approx. 2 % lower than the eta curve shown in the chart. |
| 6    | The NPSH curve is an average curve for all variants shown. When sizing pumps, add a safety margin of at least 0.5 m.                                                                                                                               |
| 7    | QH curve for each individual impeller. Curves for complete (1/1) and reduced-diameter (2/3) impellers are shown.                                                                                                                                   |

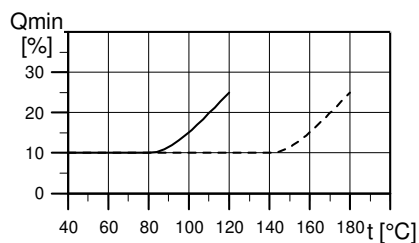
TM01 9129 0303

## Guidelines to curve charts

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

- Tolerances to ISO 9906:1999, 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.
- Kinematic viscosity of  $\nu = 1 \text{ mm}^2/\text{s}$  (1 cSt).
- Due to the risk of overheating, do not use the pumps must at a flow below the minimum flow rate.  
The QH curves apply to a rated motor speed of  $2900 \text{ min}^{-1}$ . 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.



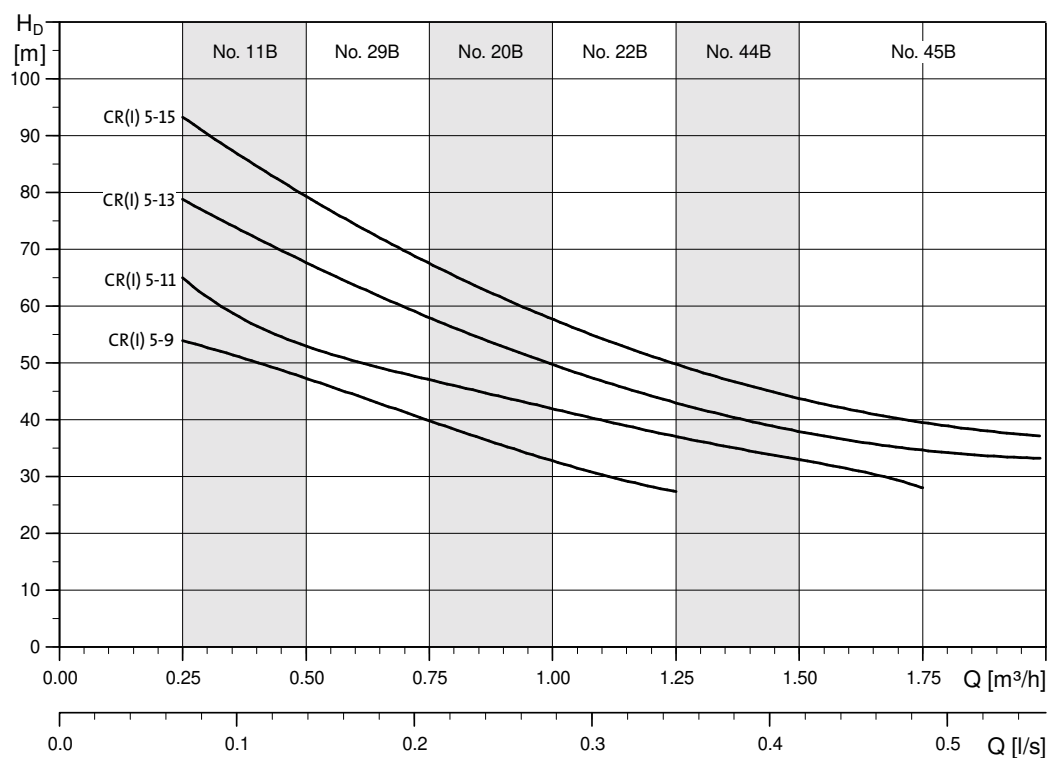
TMD1 2816 0303

**Fig. 110** Minimum flow rate

## 13. Performance curves and technical data

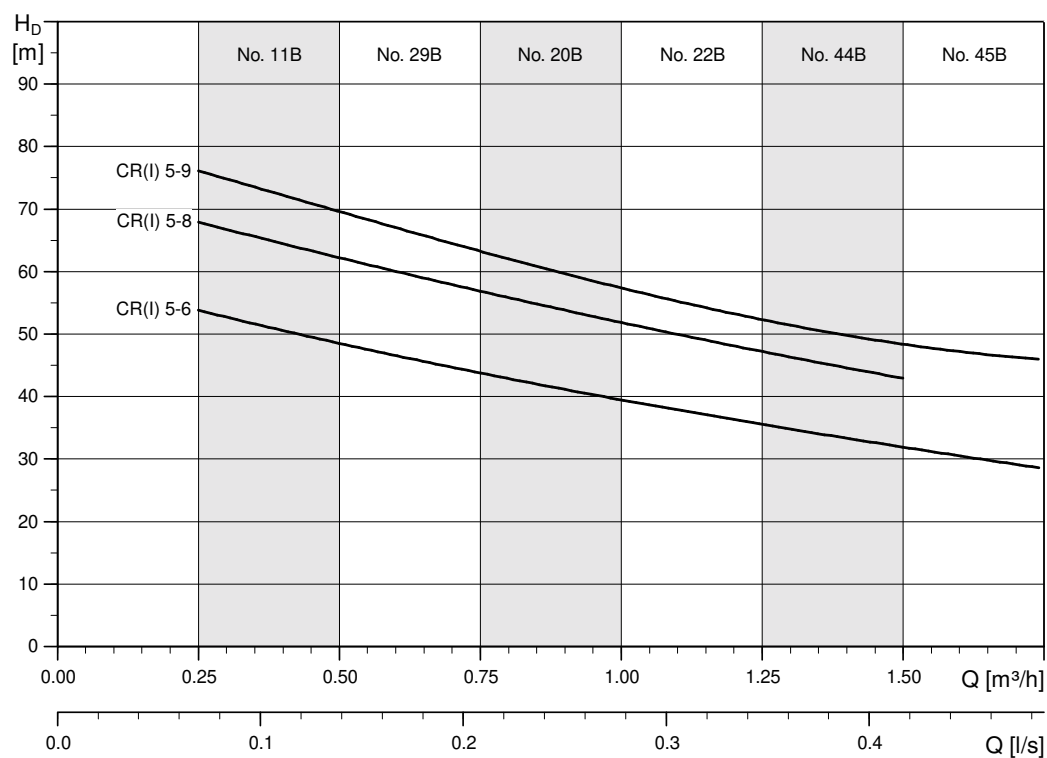
### CR deep-well

50 Hz



TM03 3096 1806

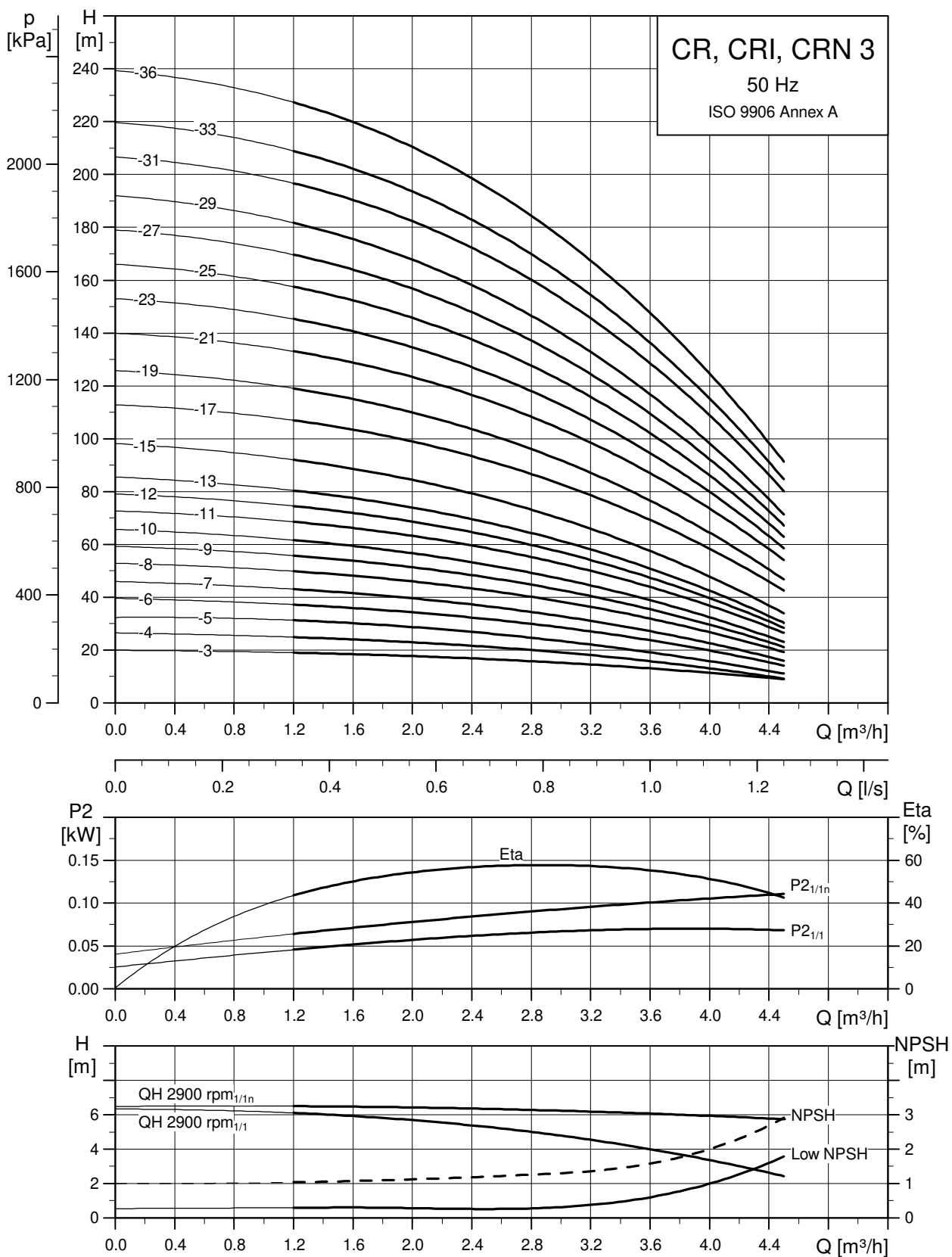
60 Hz



TM03 3971 1806

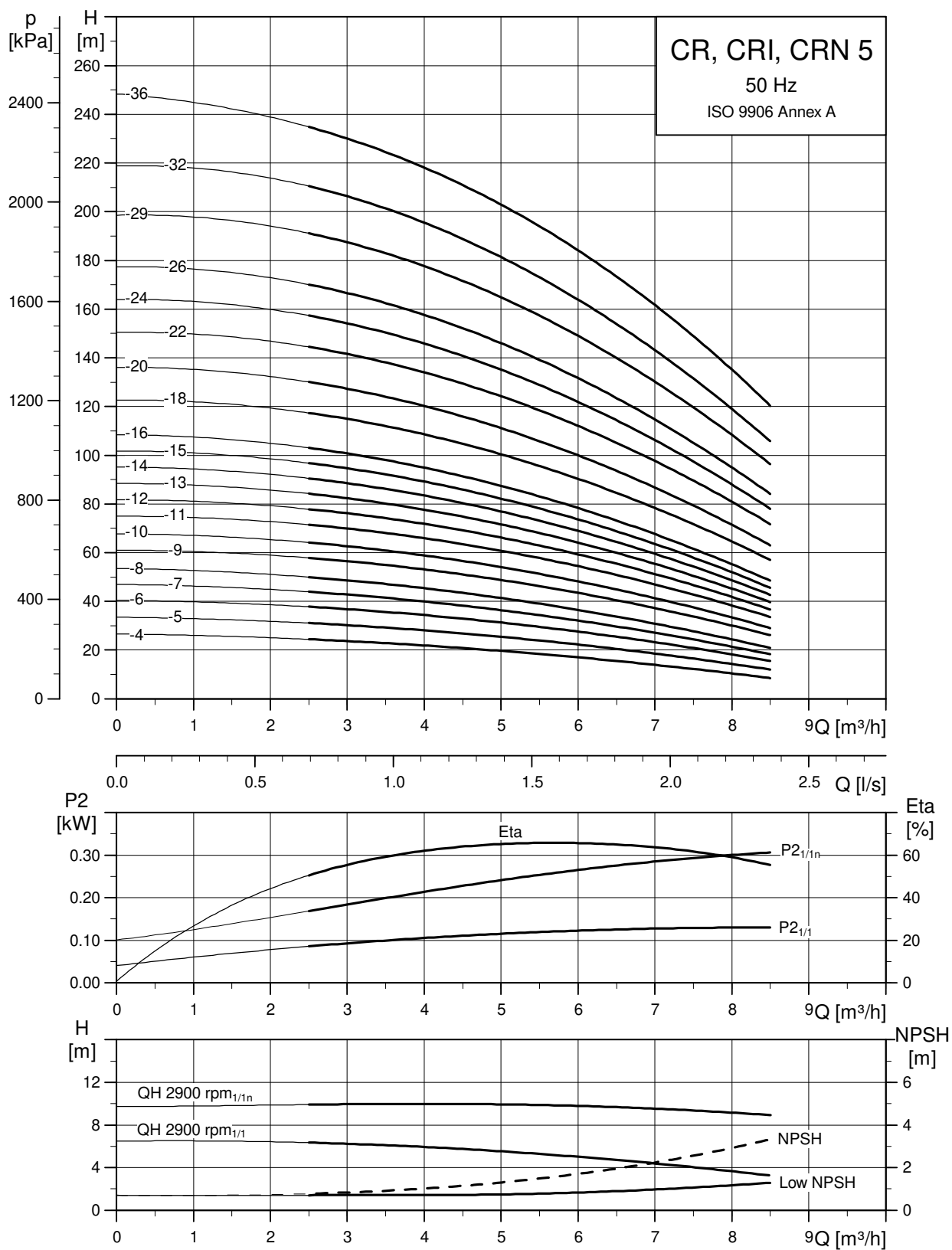
For information about dimensions of the individual pumps, see page [139](#).

## Low-NPSH pumps



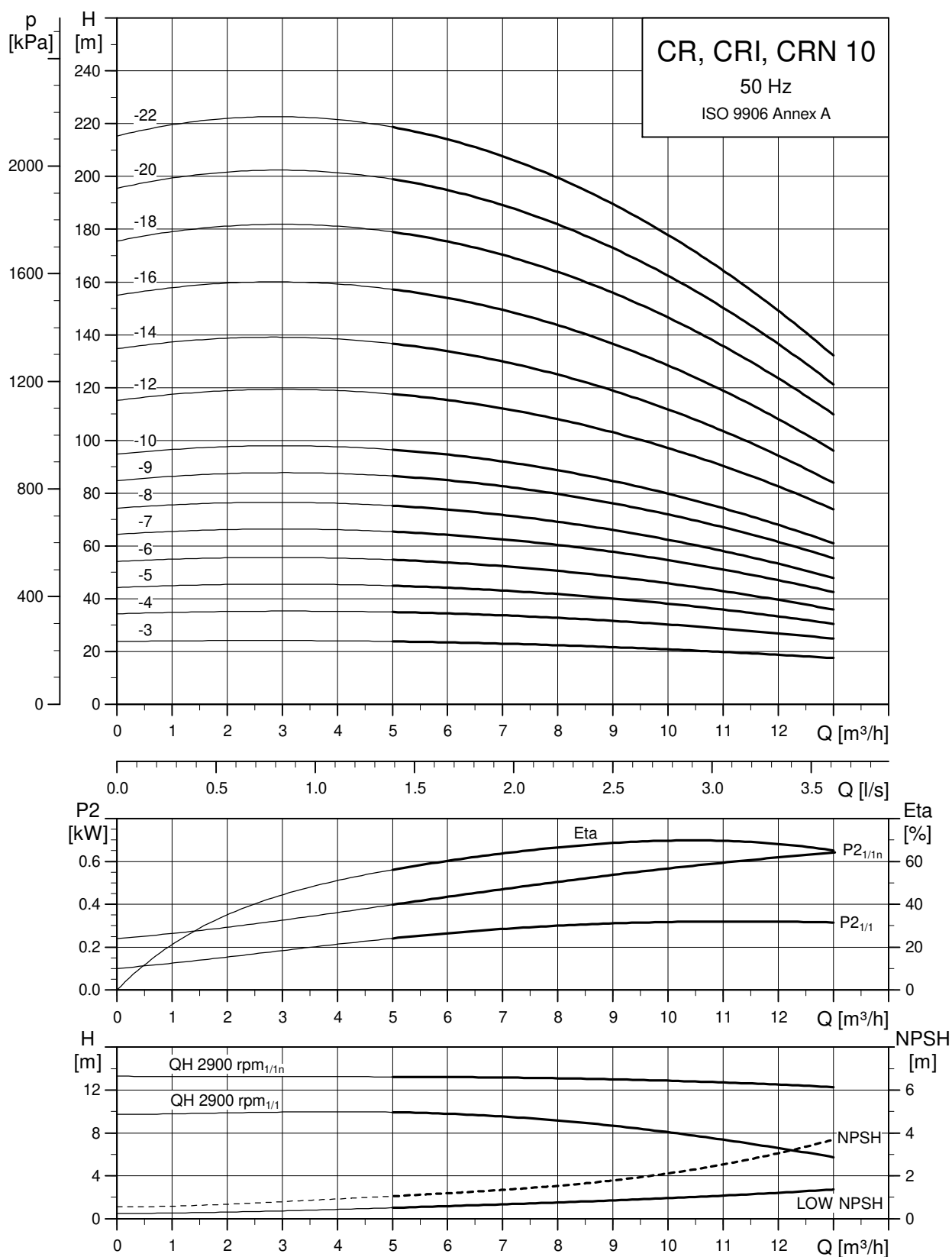
For information about dimensions of the individual pumps, see page [120](#).

TMX2 1186 1309



TMX2 1189 1309

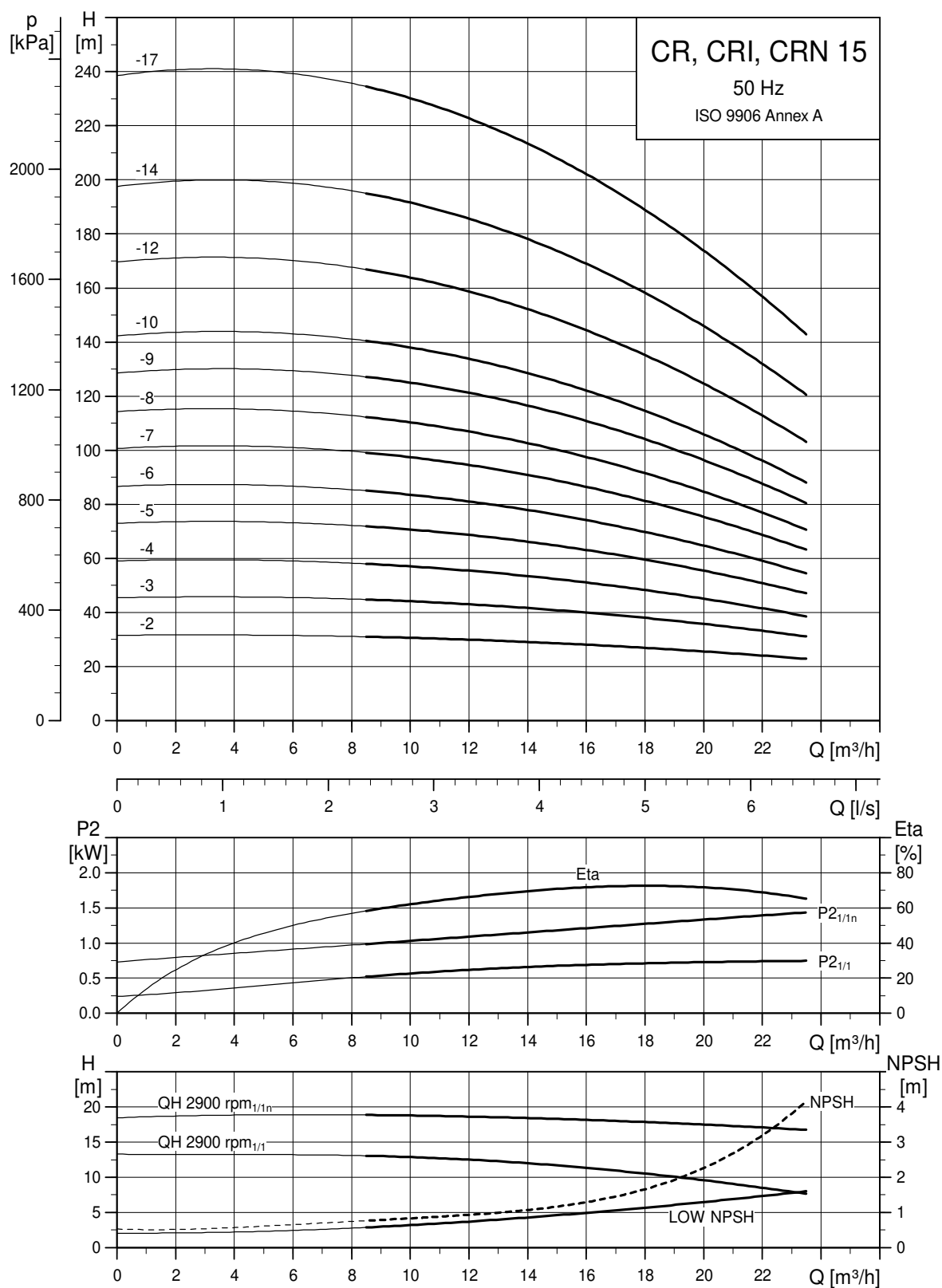
For information about dimensions of the individual pumps, see page [120](#).



For information about dimensions of the individual pumps, see page 121.

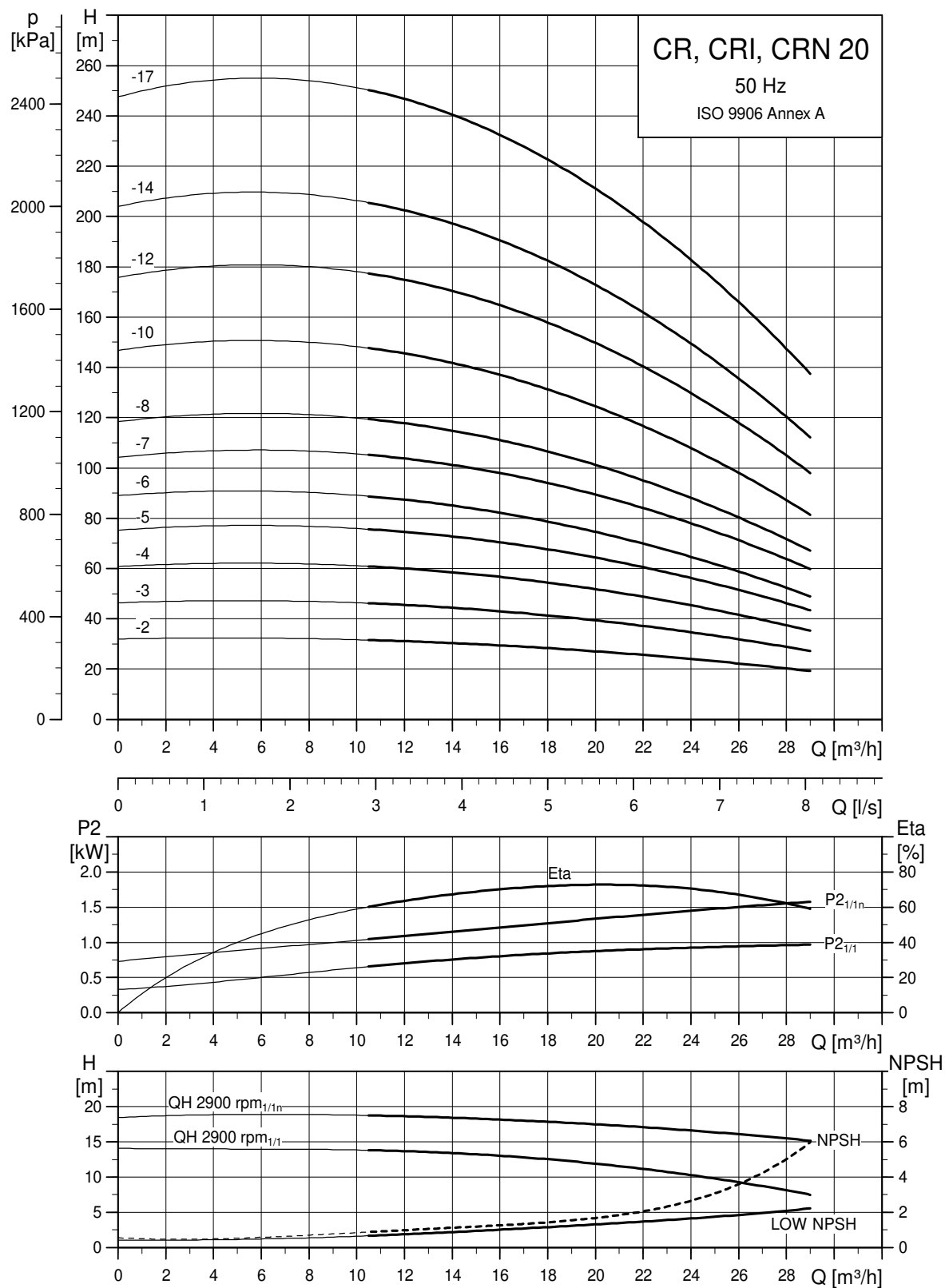
TM02 7391 1309





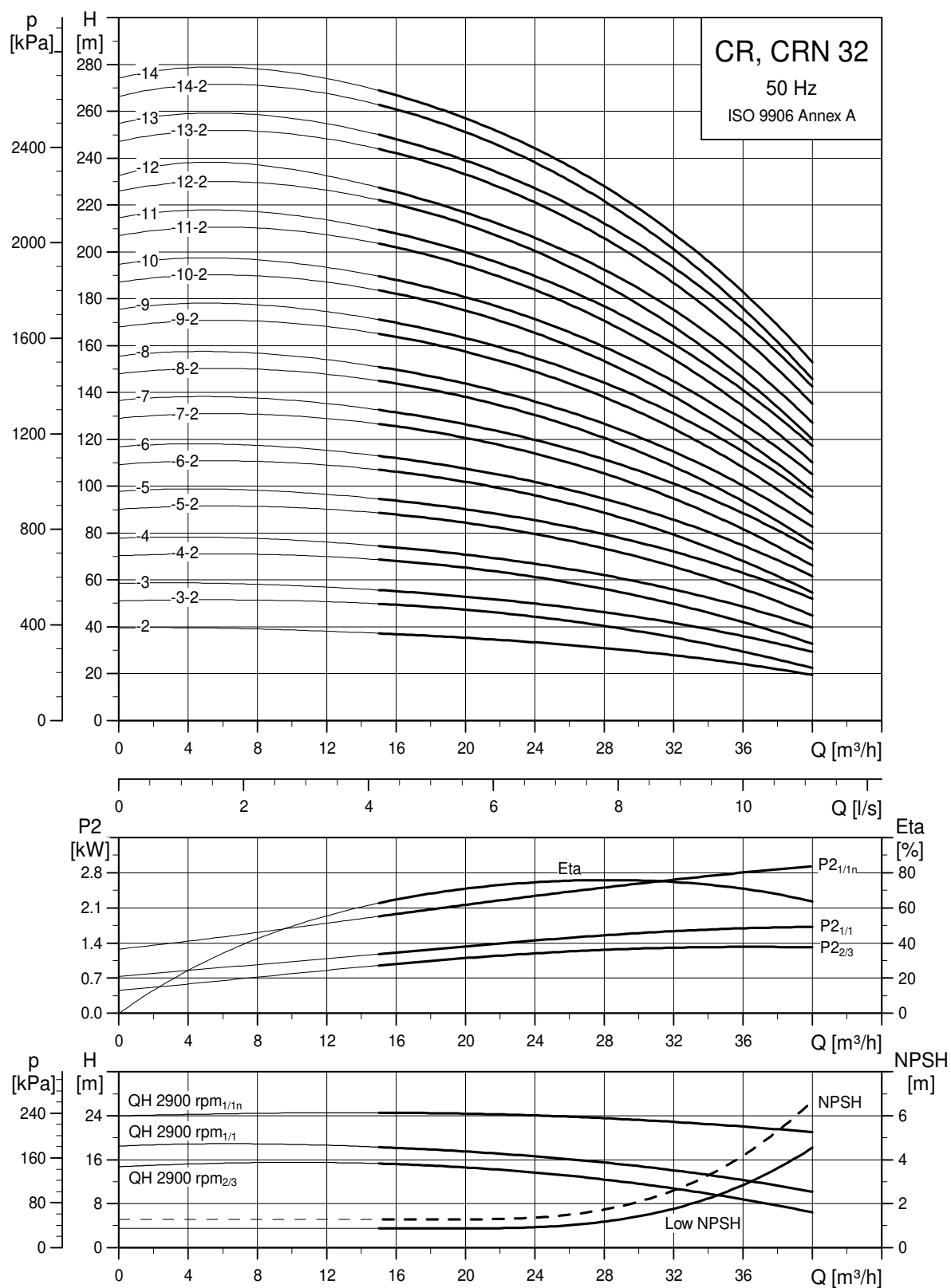
For information about dimensions of the individual pumps, see page [121](#).

TM02 7392 1309



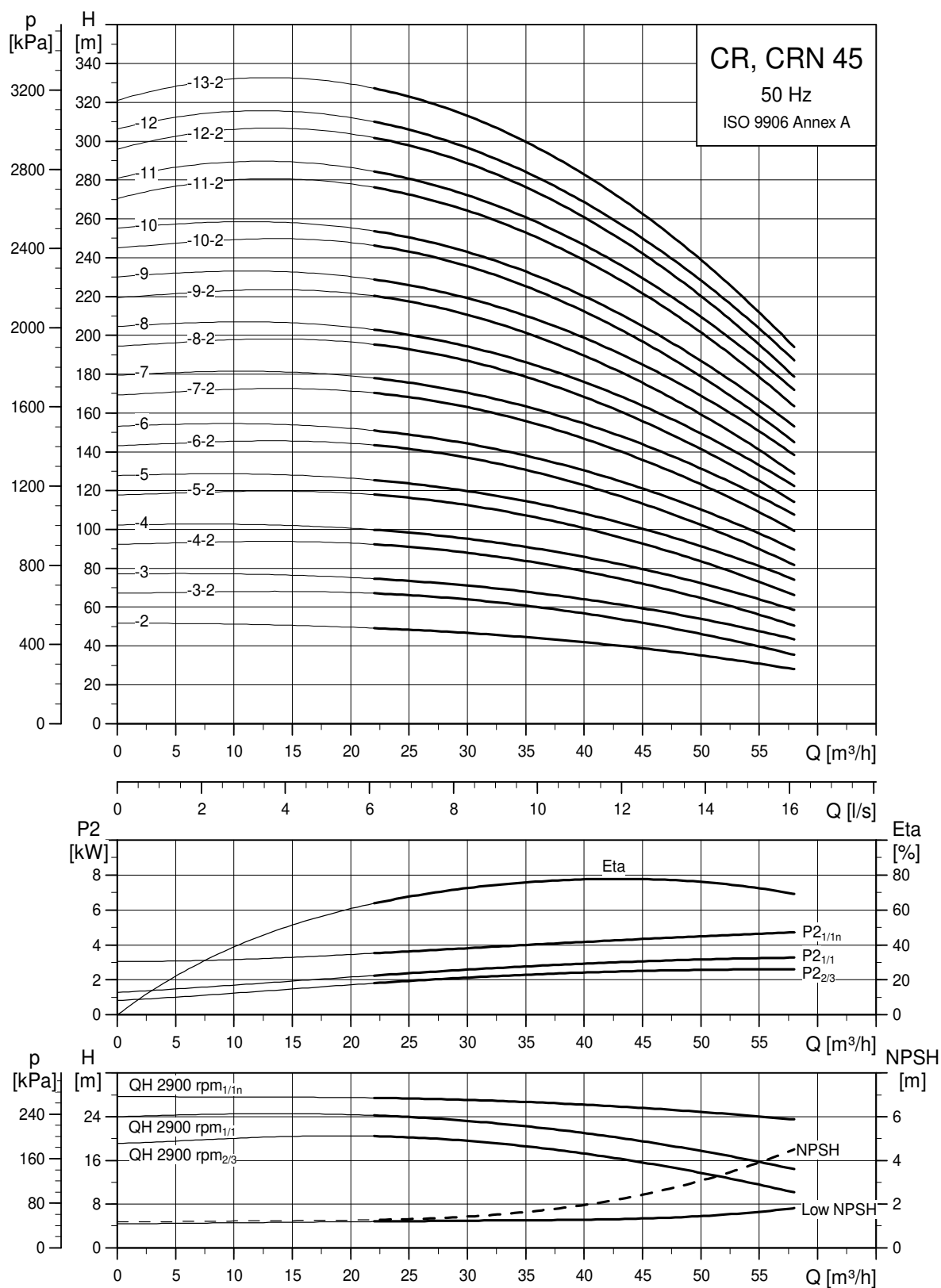
For information about dimensions of the individual pumps, see page 121.

TM02 7393 1309



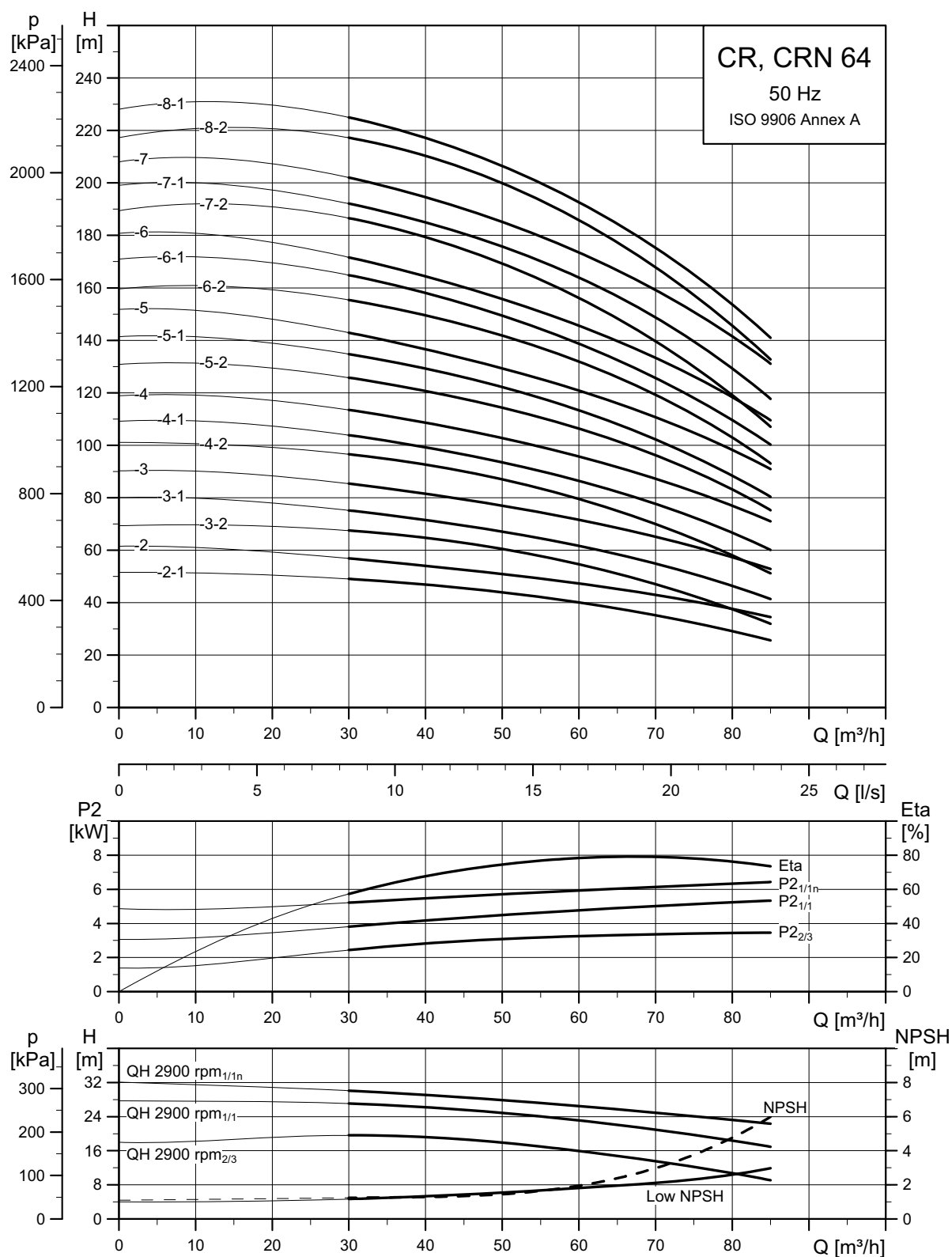
For information about dimensions of the individual pumps, see page [122](#).

TM01 9129 1309



TMX1 1451 1309

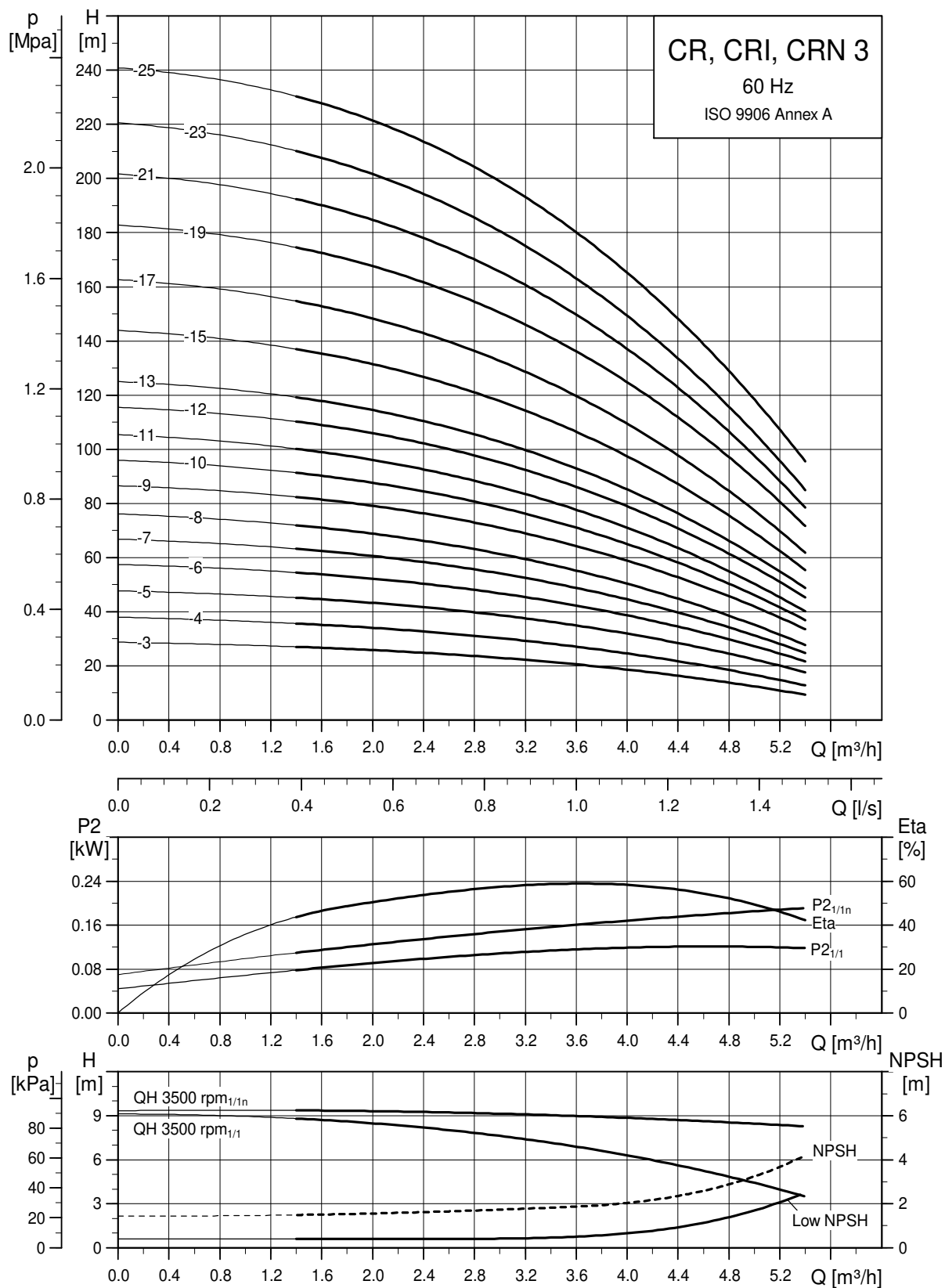
For information about dimensions of the individual pumps, see page [122](#).



For information about dimensions of the individual pumps, see page [123](#).

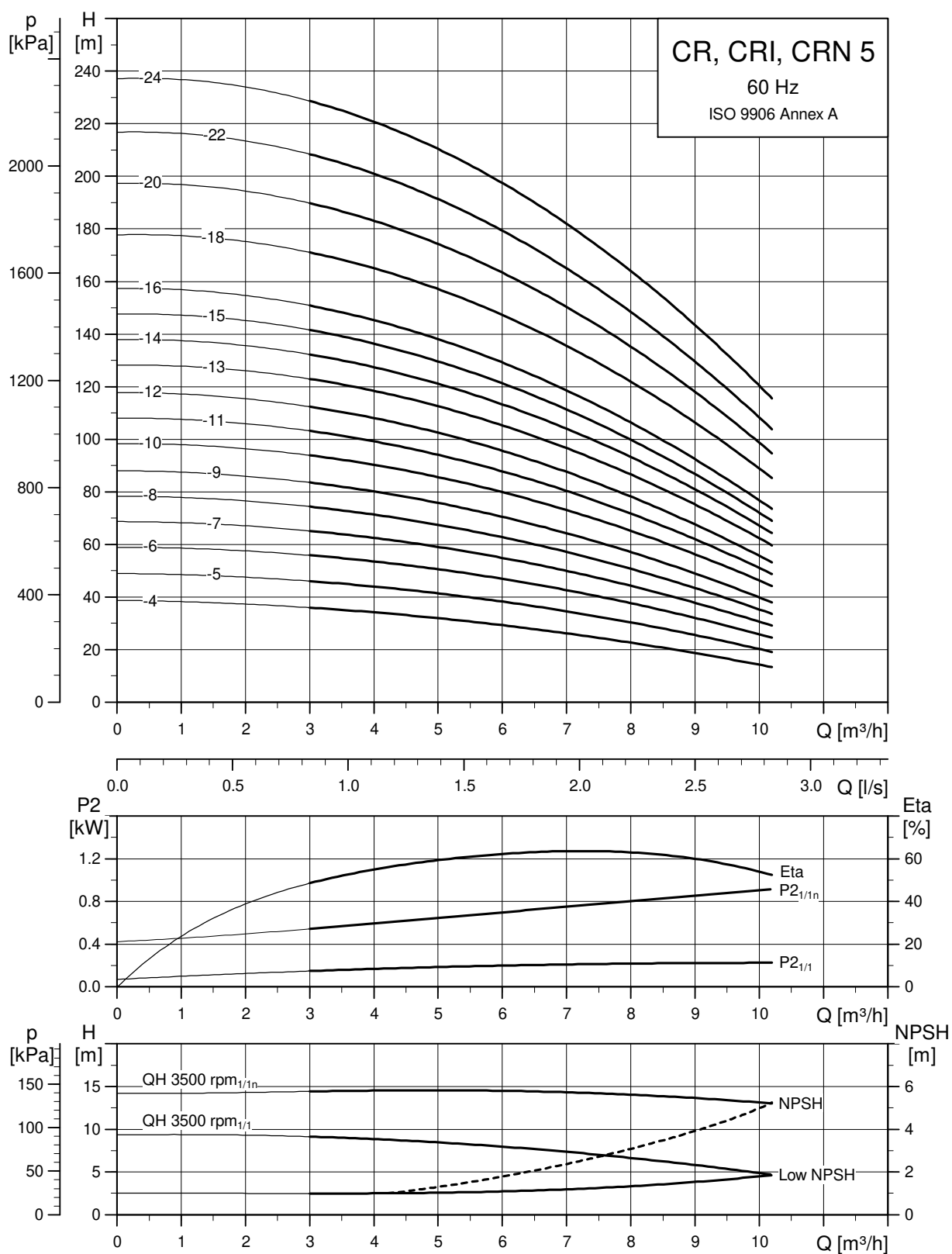
TM02 0753 1309

## Low-NPSH pumps



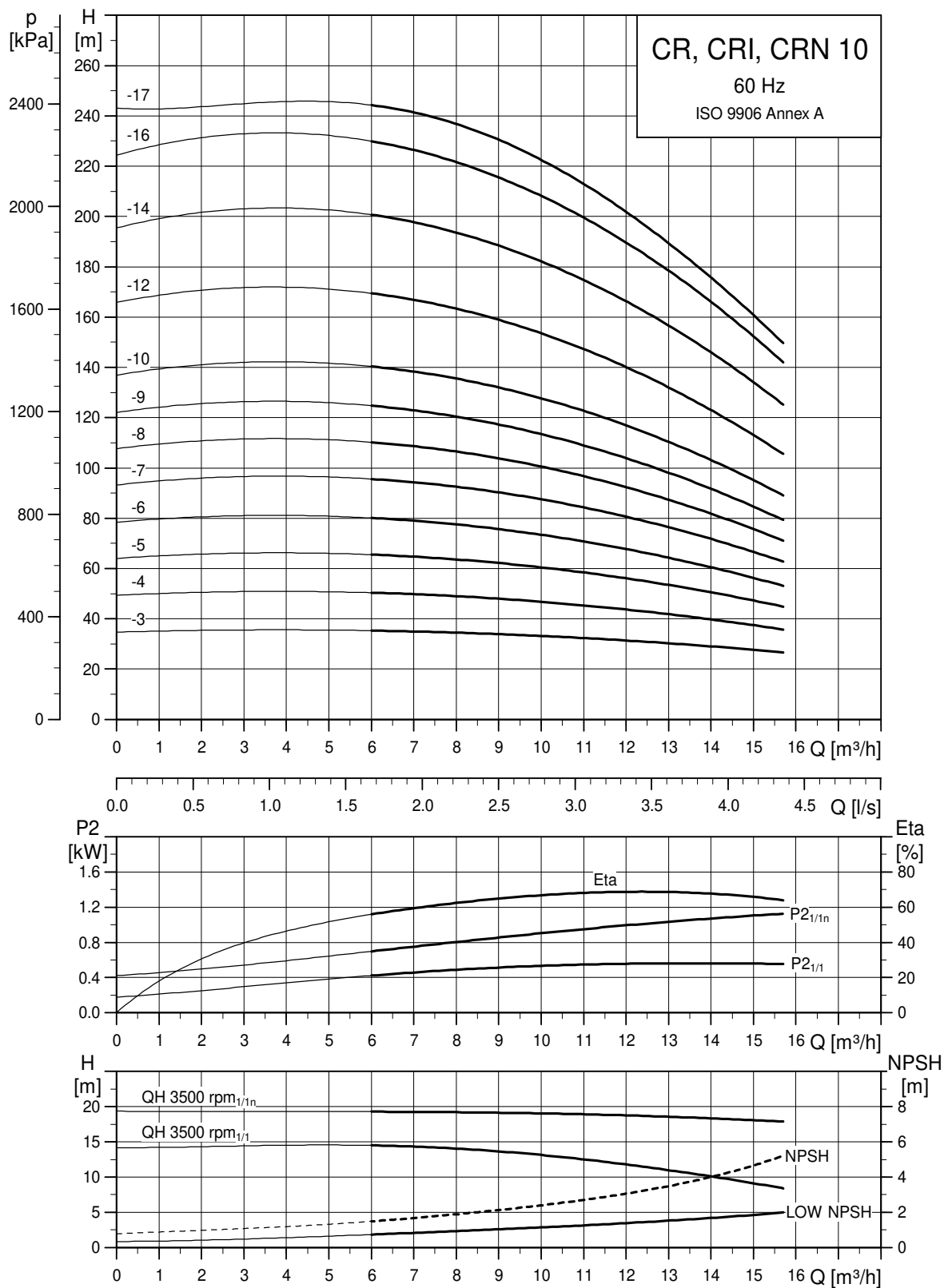
For information about dimensions of the individual pumps, see page 124.

TM02 2574 1309



TM02 2575 1309

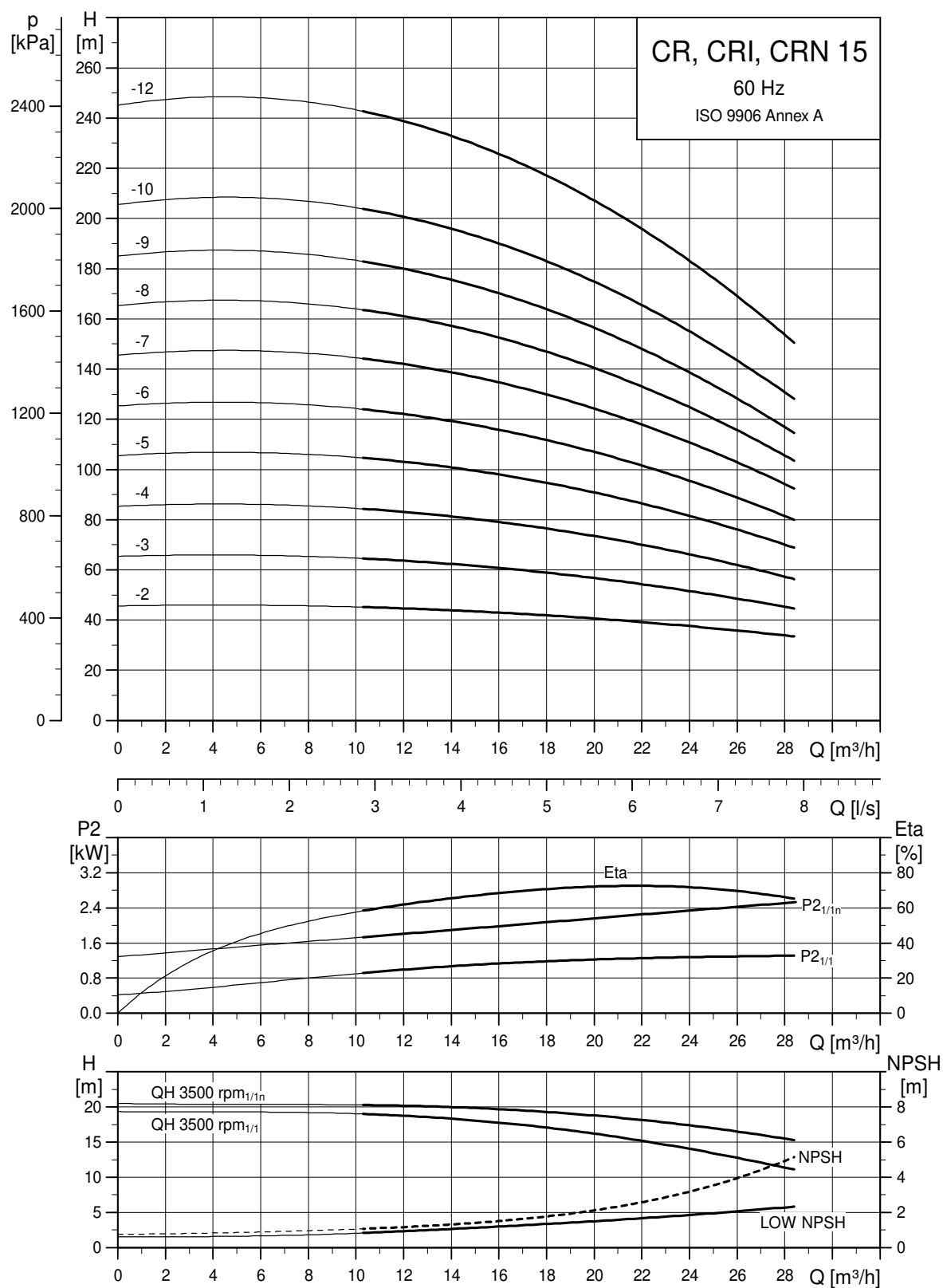
For information about dimensions of the individual pumps, see page [124](#).



For information about dimensions of the individual pumps, see page [125](#).

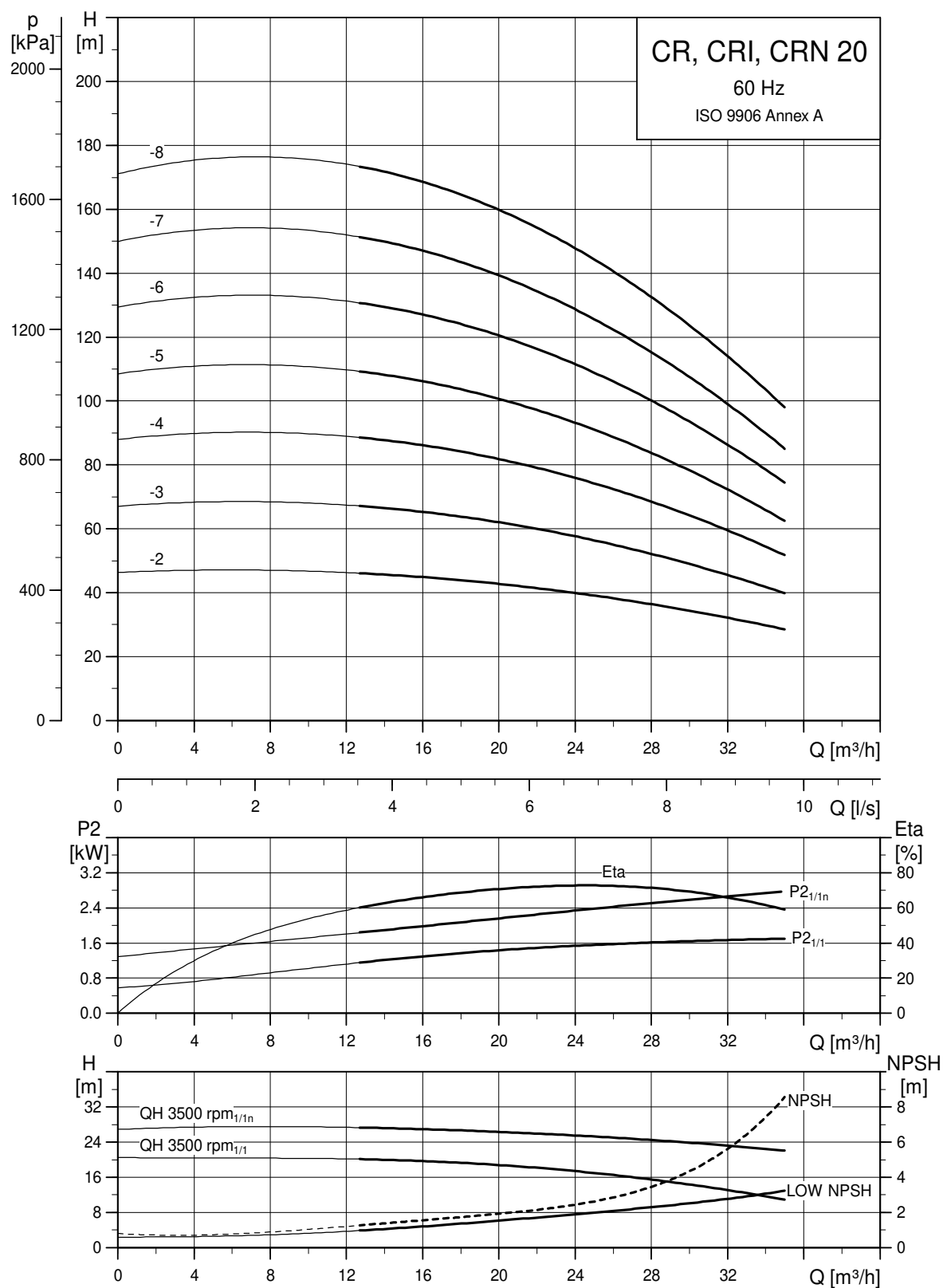
TM02 7394 1309





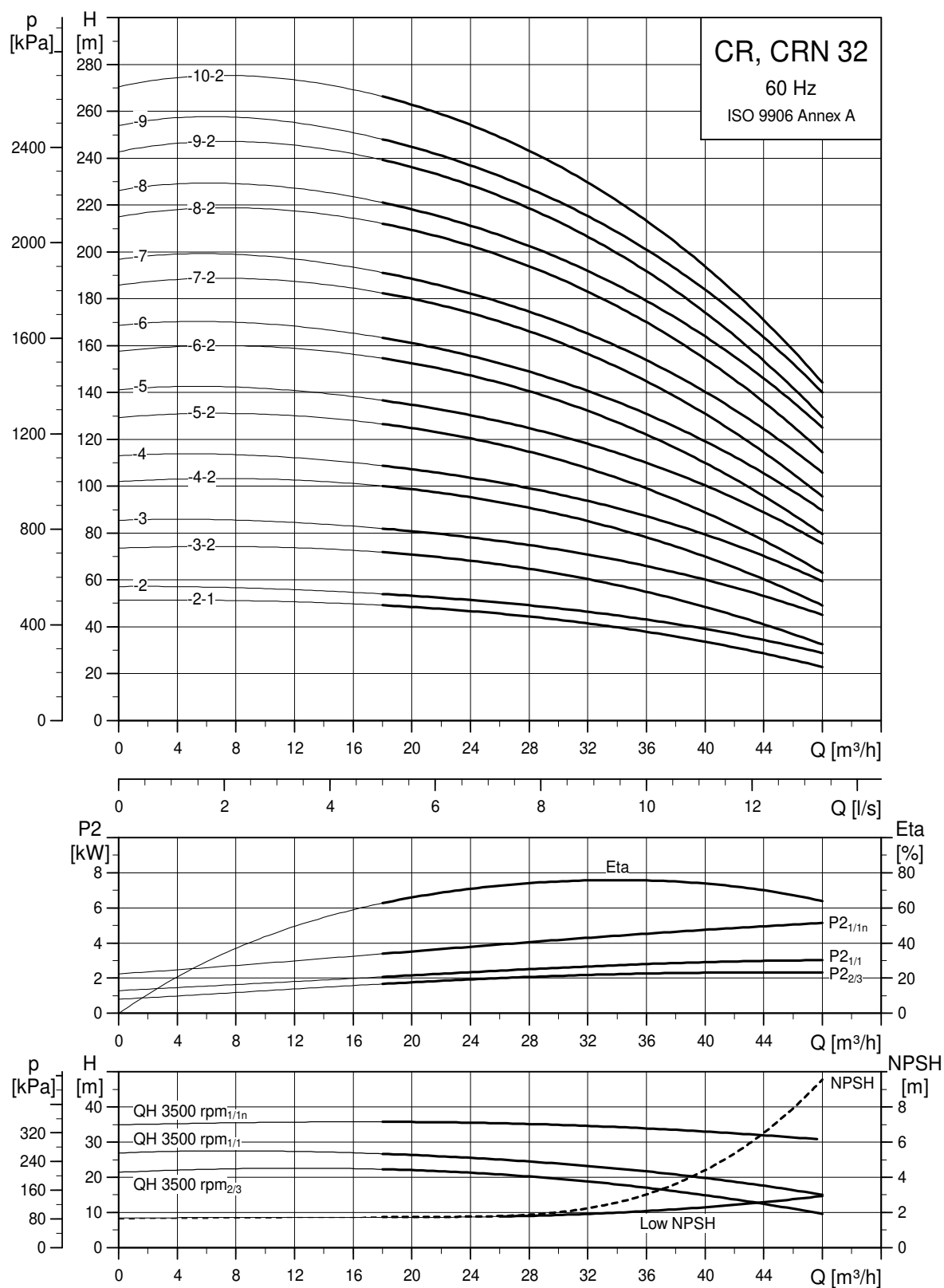
TM02 7395 1309

For information about dimensions of the individual pumps, see page 125.



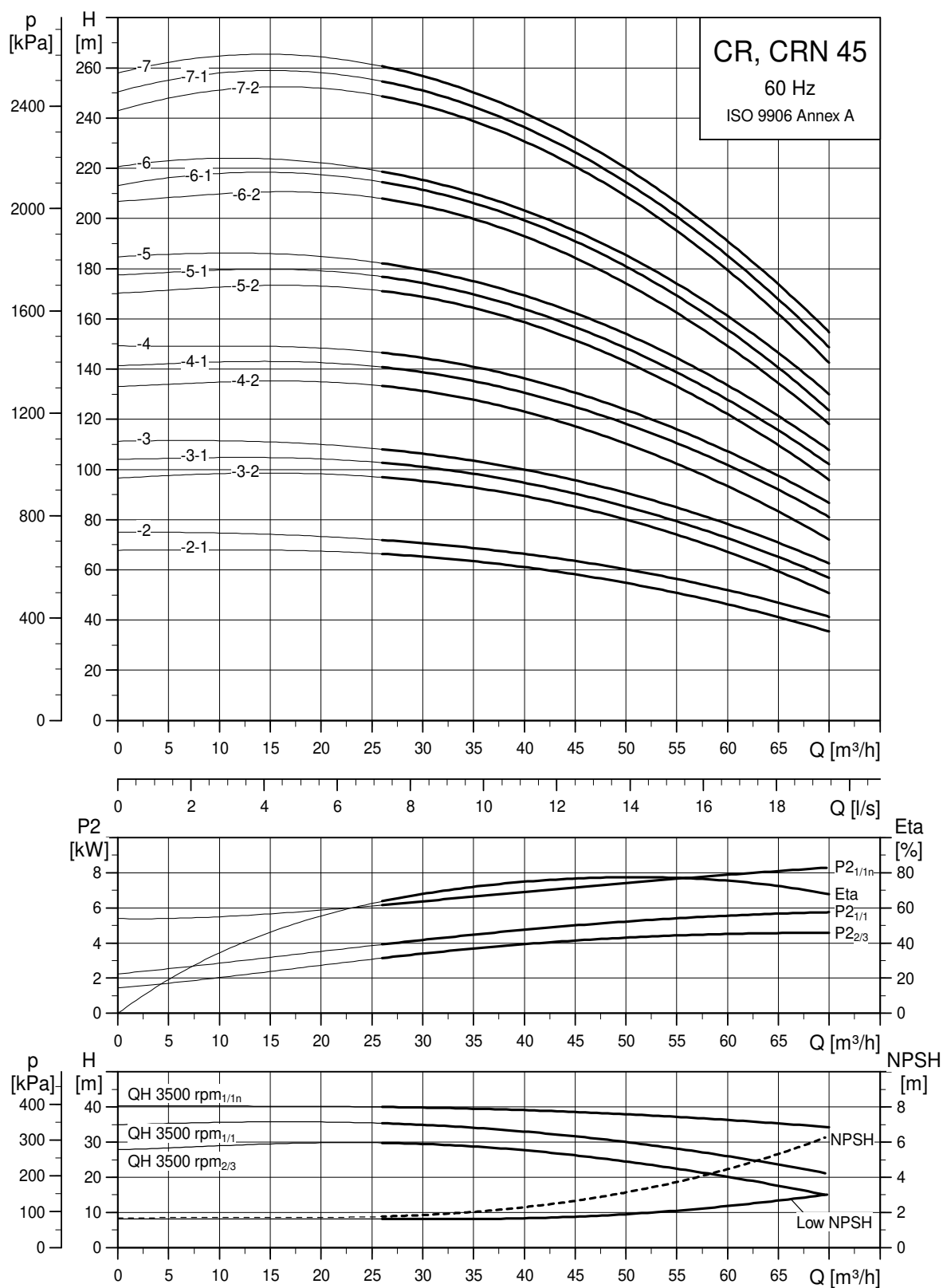
For information about dimensions of the individual pumps, see page [125](#).

TM02 7396 1309



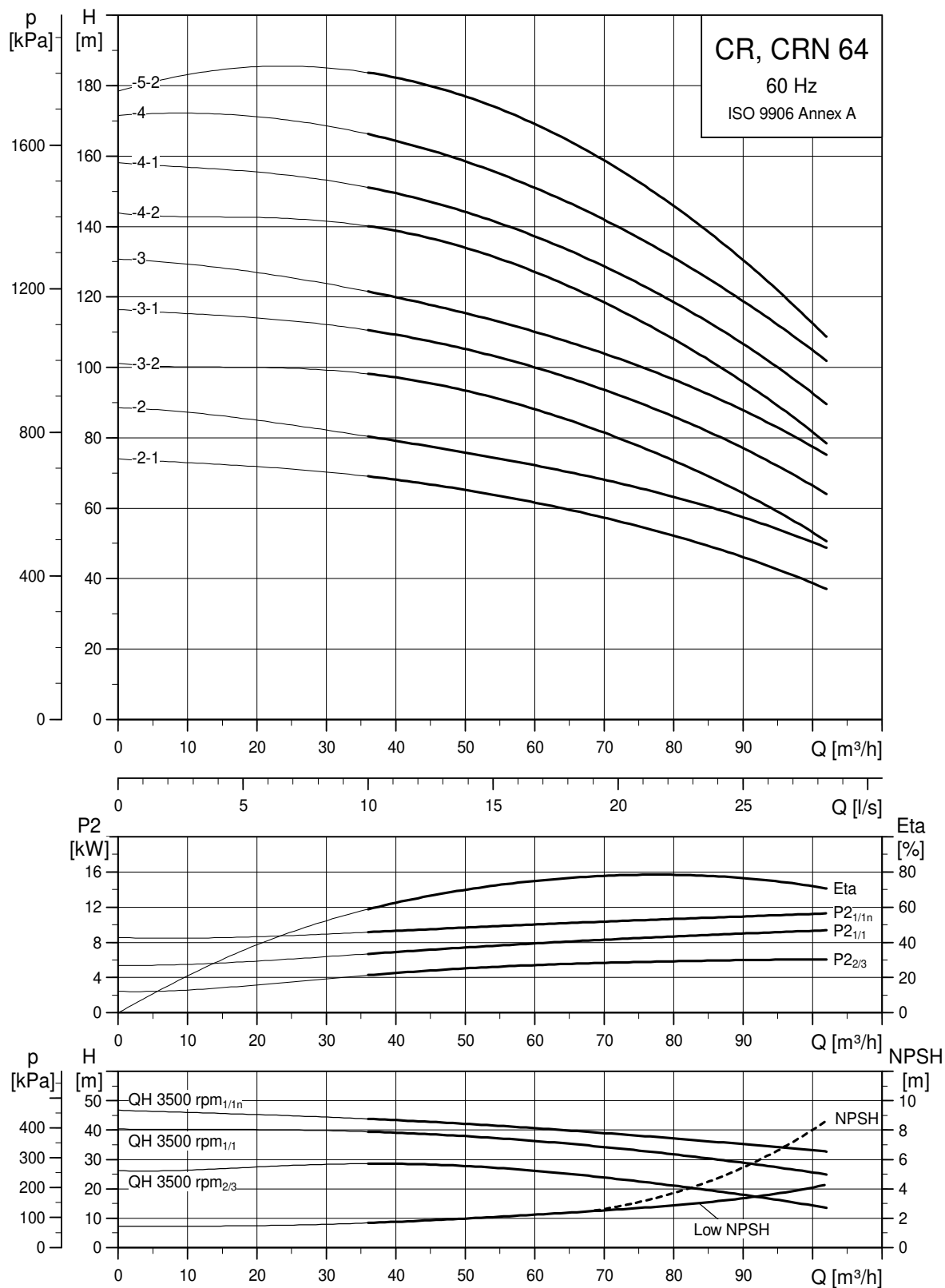
TM02 2578 1309

For information about dimensions of the individual pumps, see page [126](#).



TM02 2579 1309

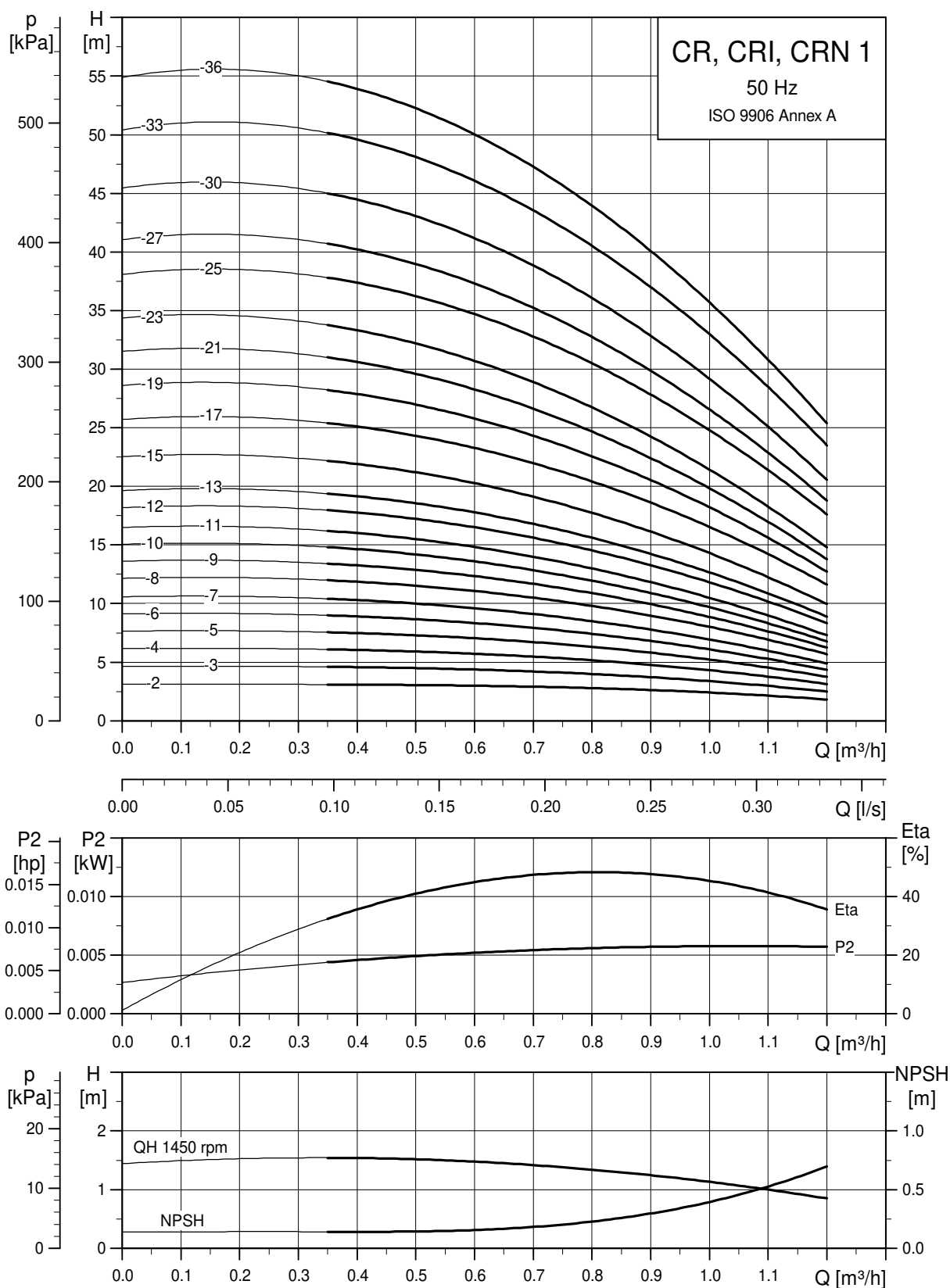
For information about dimensions of the individual pumps, see page [126](#).



TM02 2580 1309

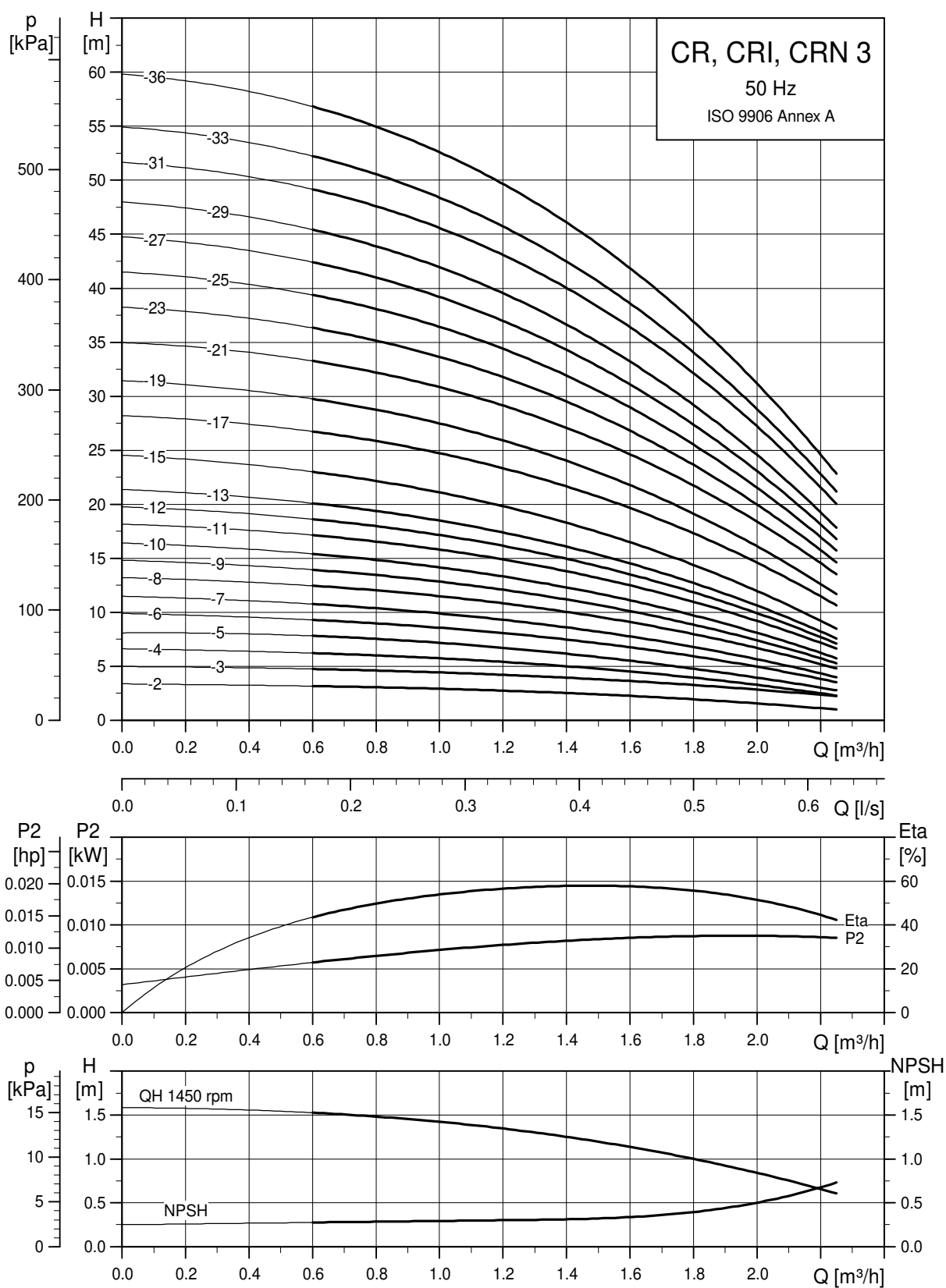
For information about dimensions of the individual pumps, see page 127.

## CR pumps with 4-pole motor



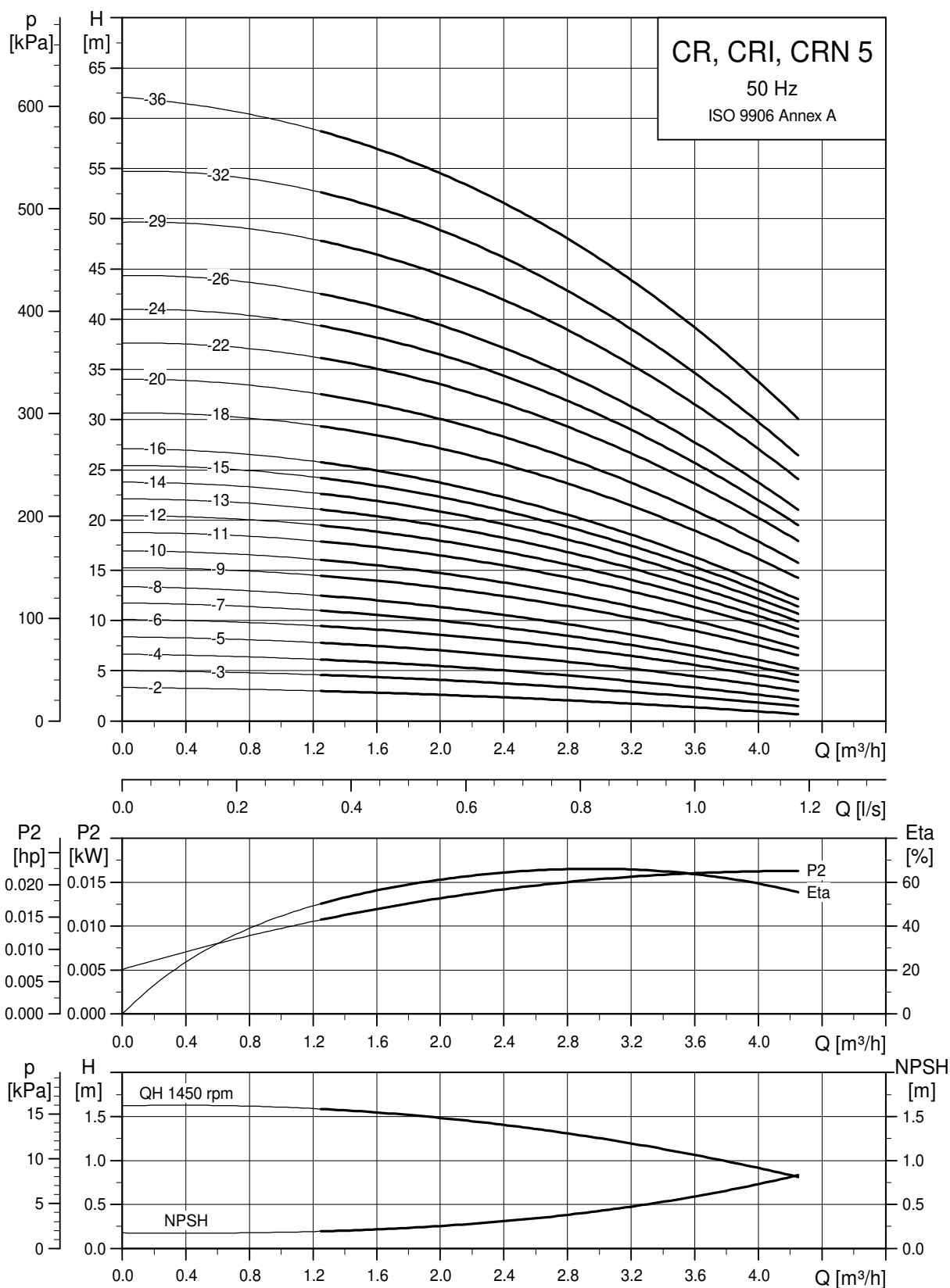
For information about dimensions of the individual pumps, see page [128](#).

TM02 2543 1309



TM02 2542 1309

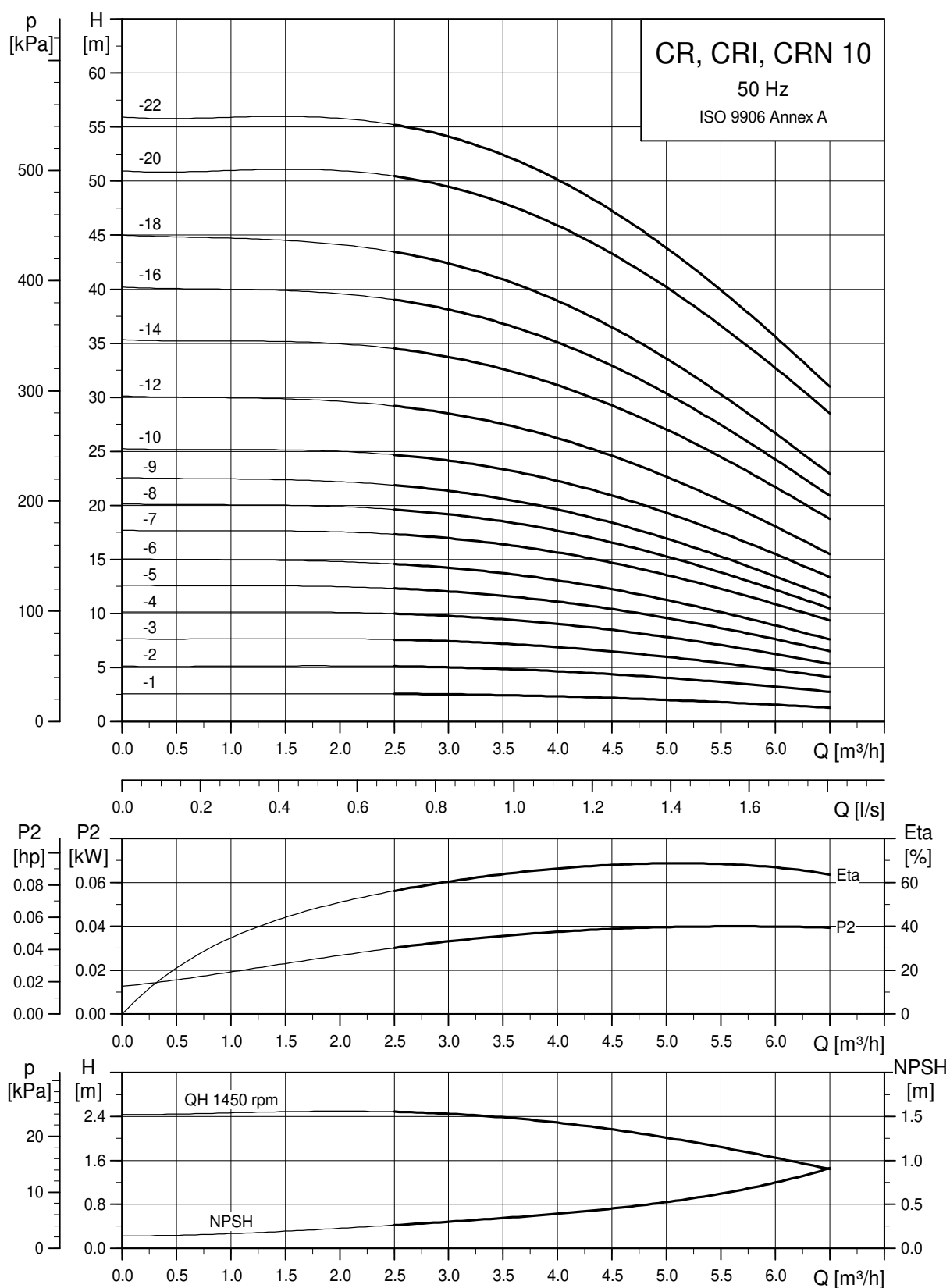
For information about dimensions of the individual pumps, see page [129](#).



For information about dimensions of the individual pumps, see page [129](#).

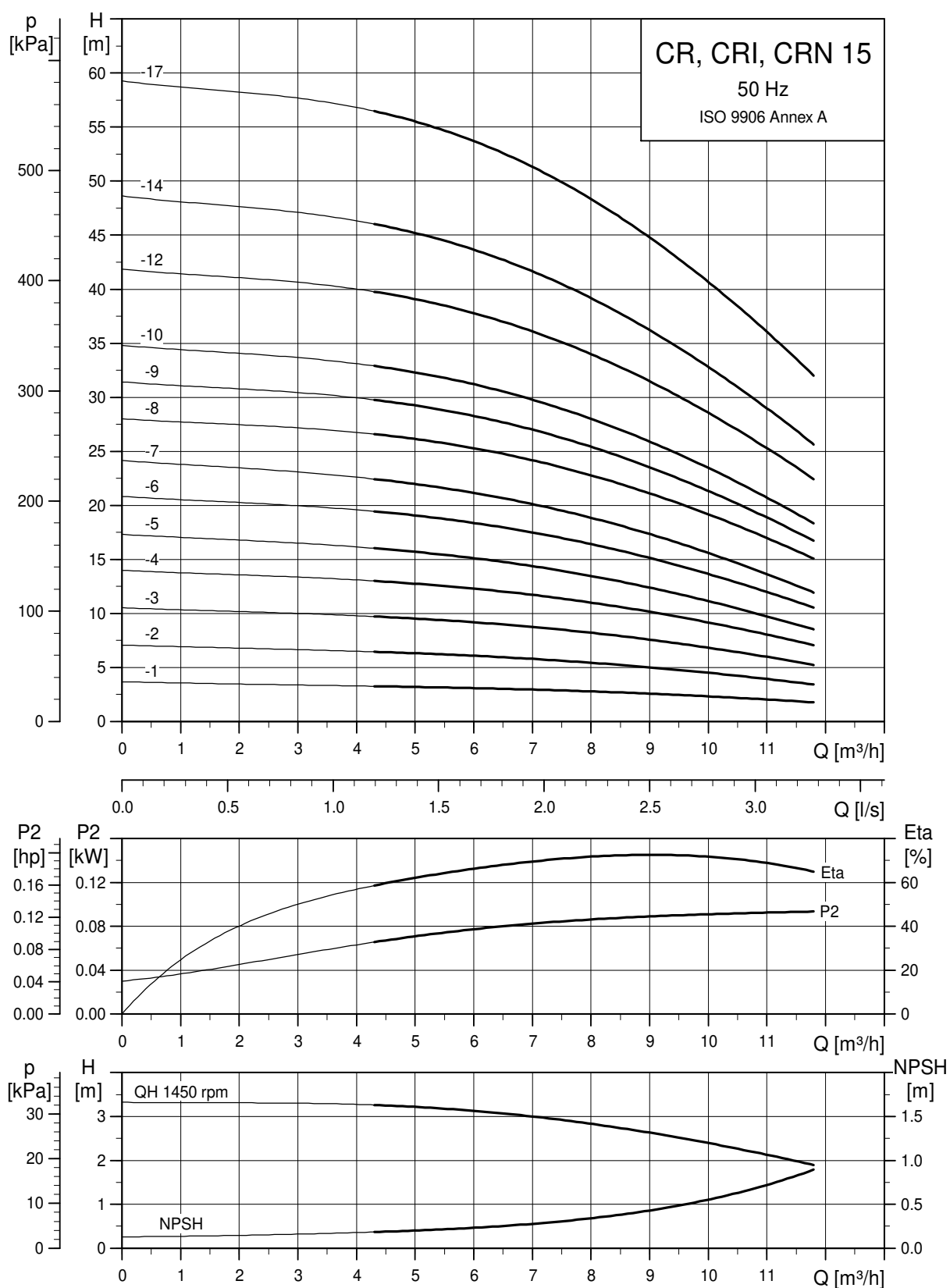
TM02 2541 1309





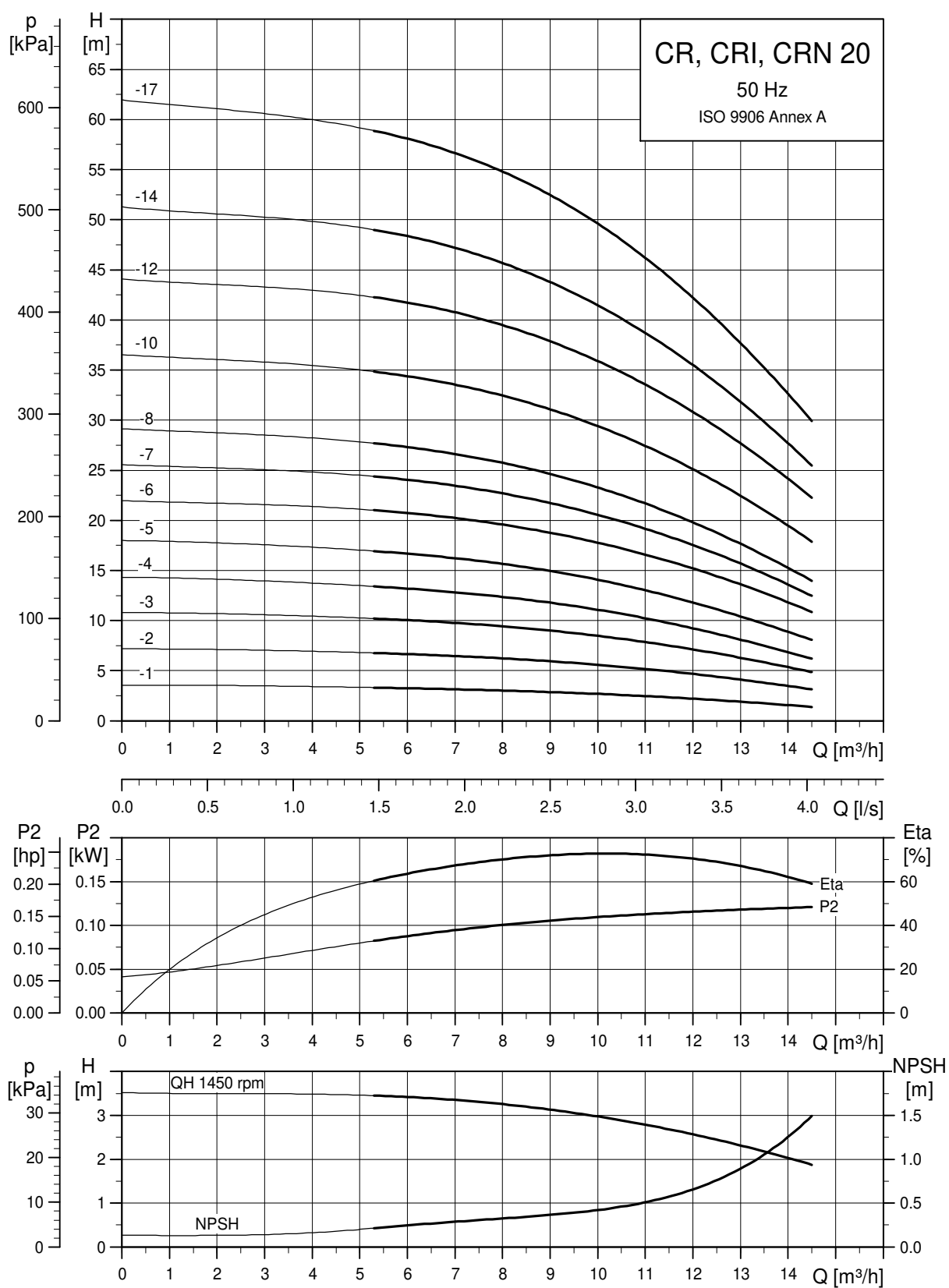
TM02 7273 1309

For information about dimensions of the individual pumps, see page 130.



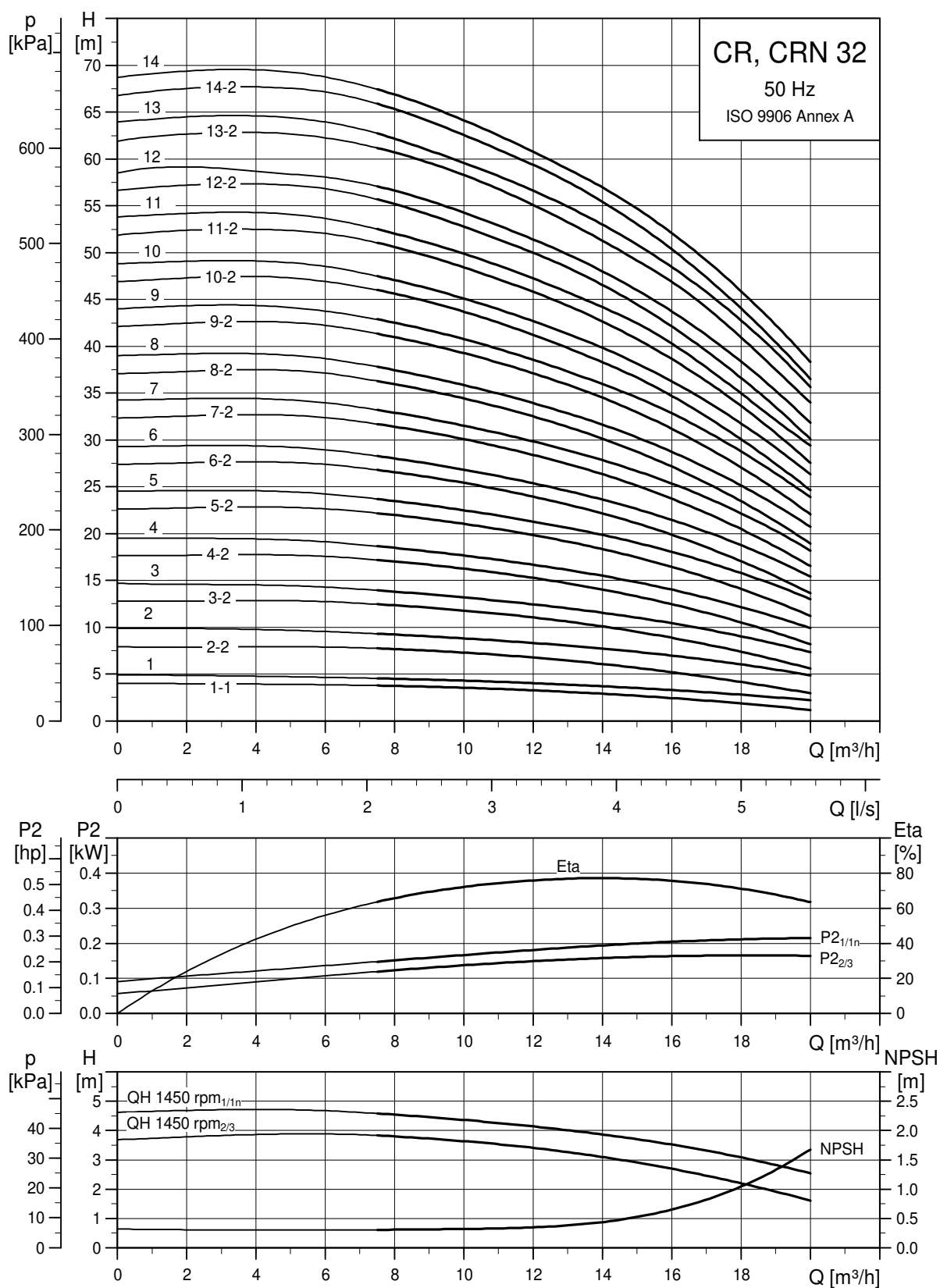
For information about dimensions of the individual pumps, see page 130.

TM02 7274 1309



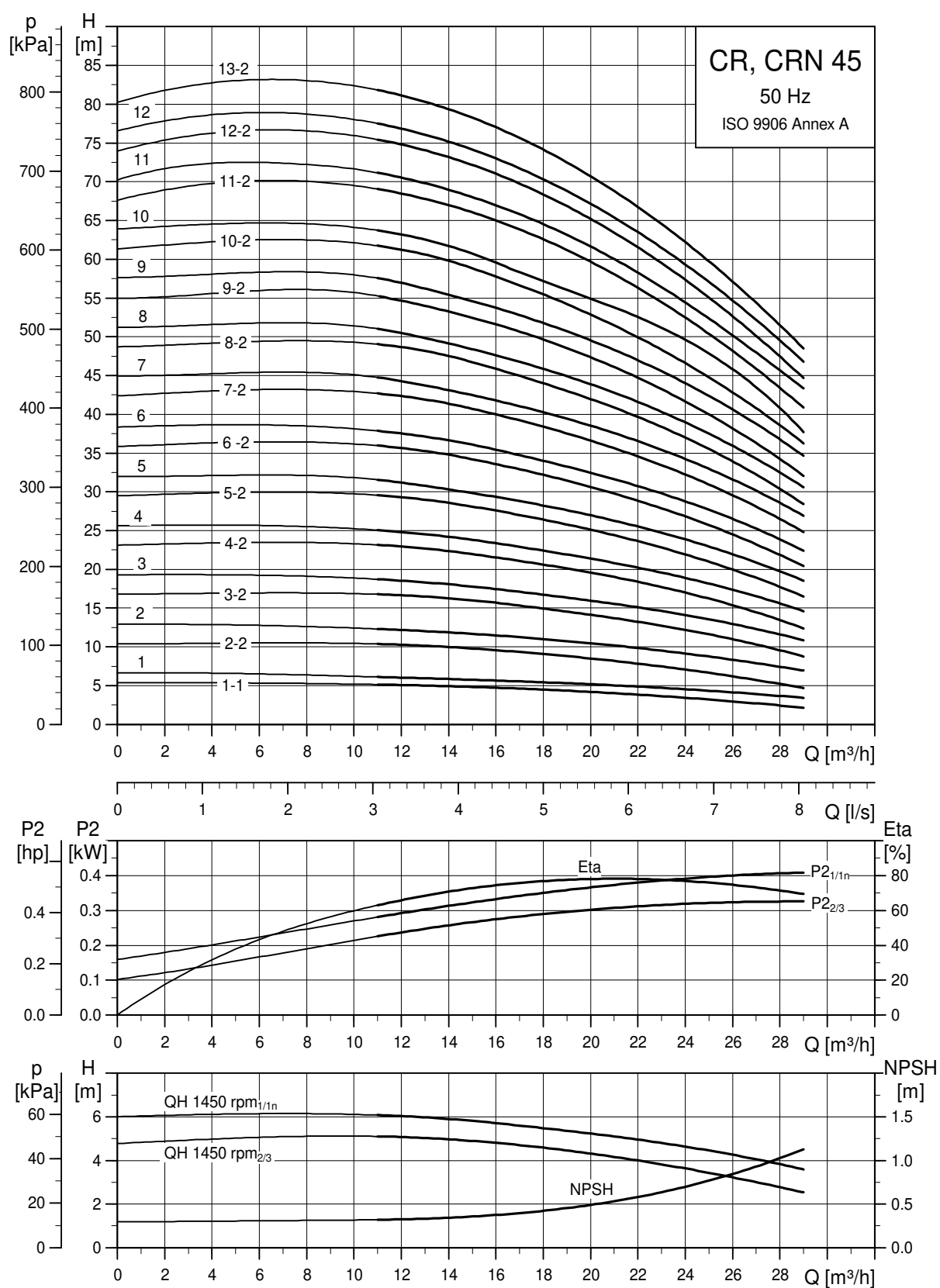
TM02 7275 1309

For information about dimensions of the individual pumps, see page 131.



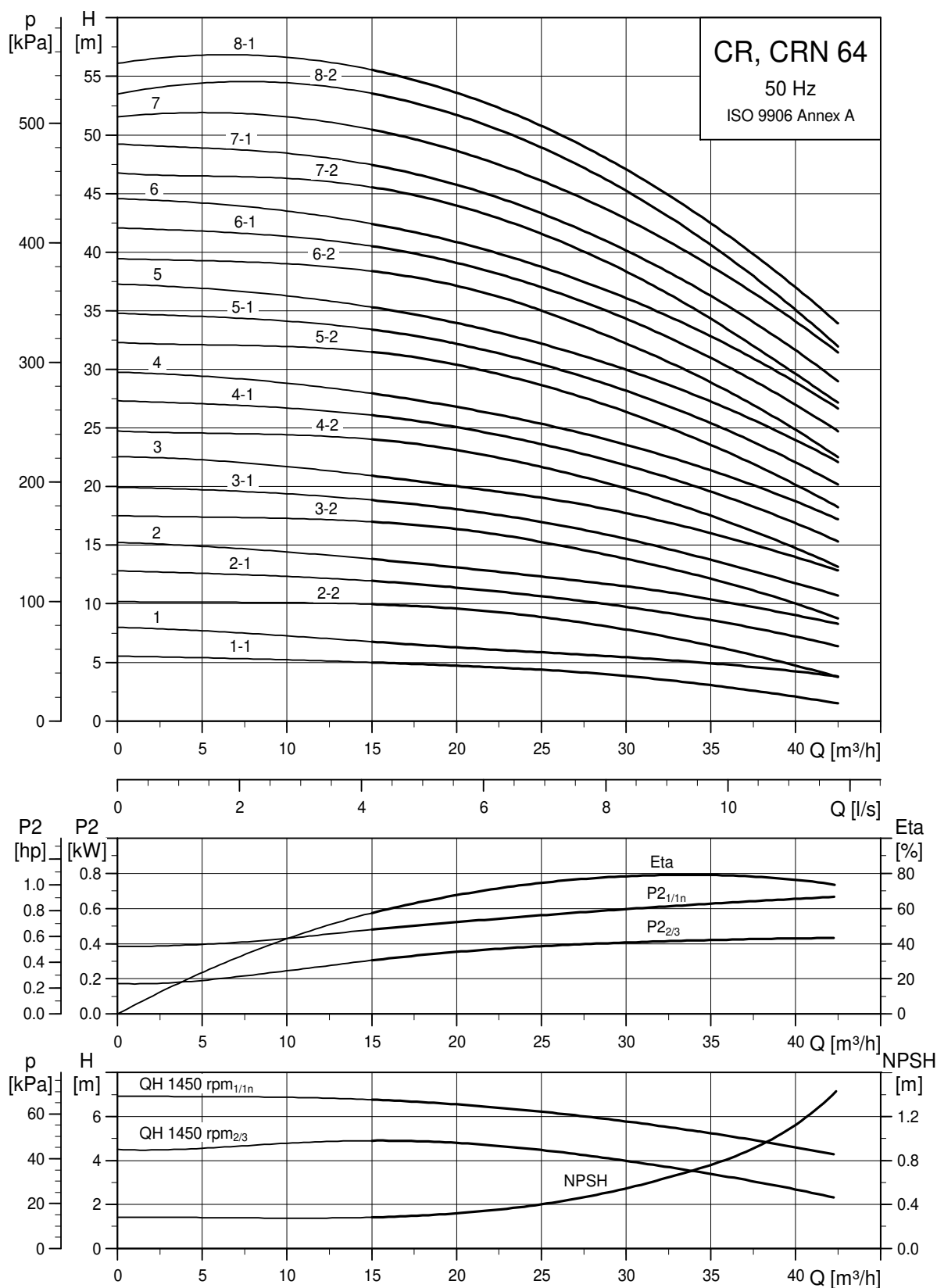
TM01 8153 1309

For information about dimensions of the individual pumps, see page 131.



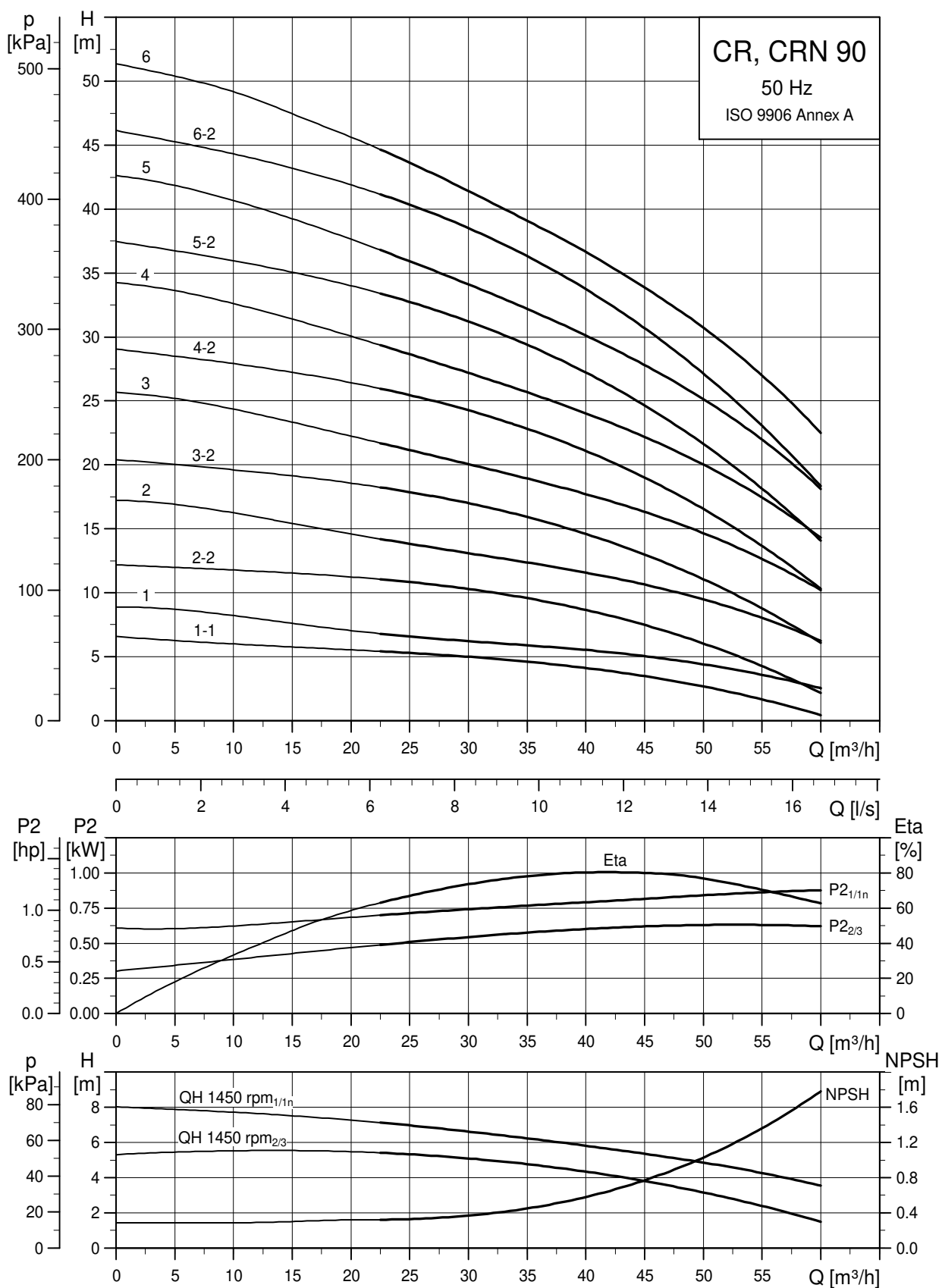
TM01 8154 1309

For information about dimensions of the individual pumps, see page [132](#).



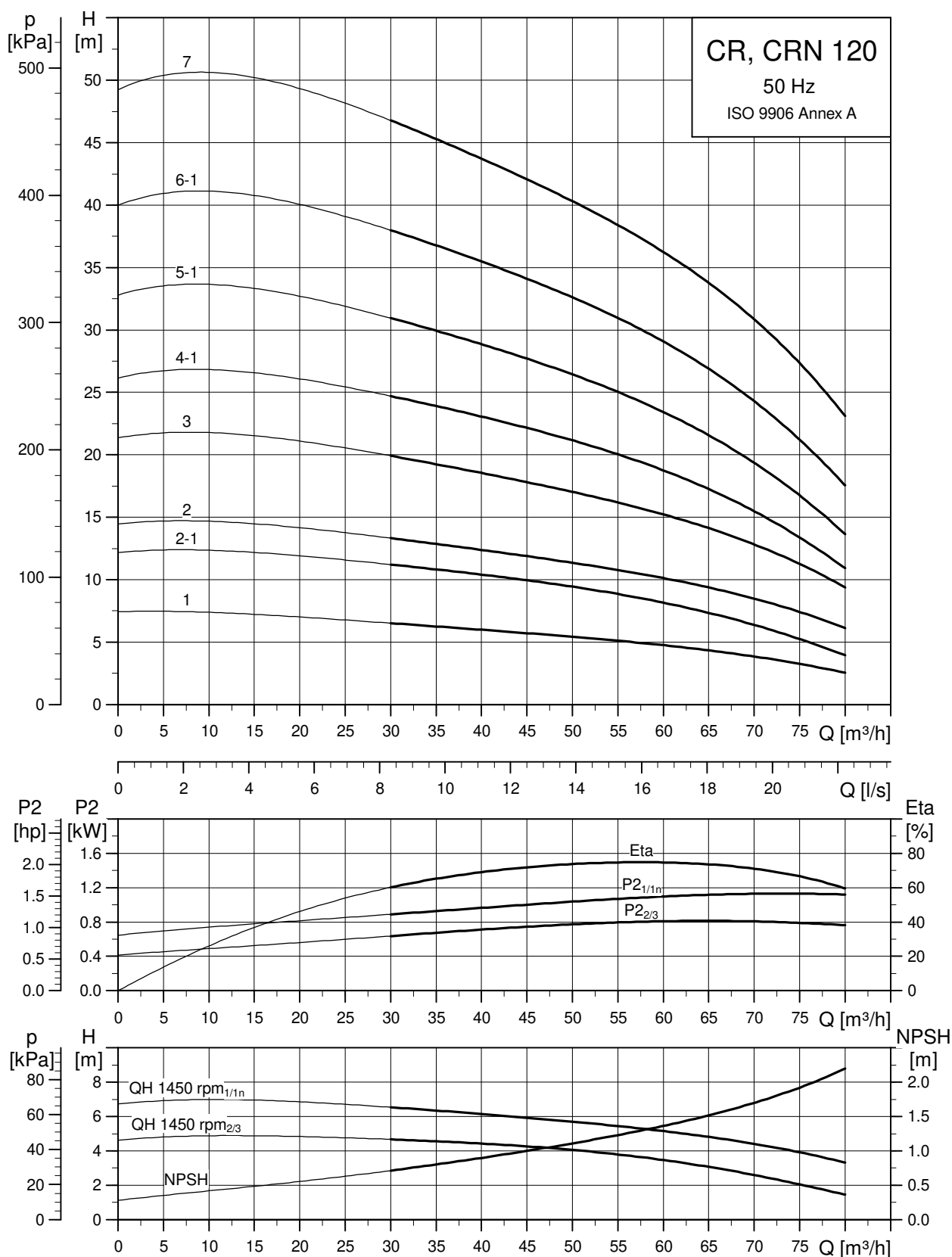
TM01 8155 1309

For information about dimensions of the individual pumps, see page 132.



TM01 8156 1309

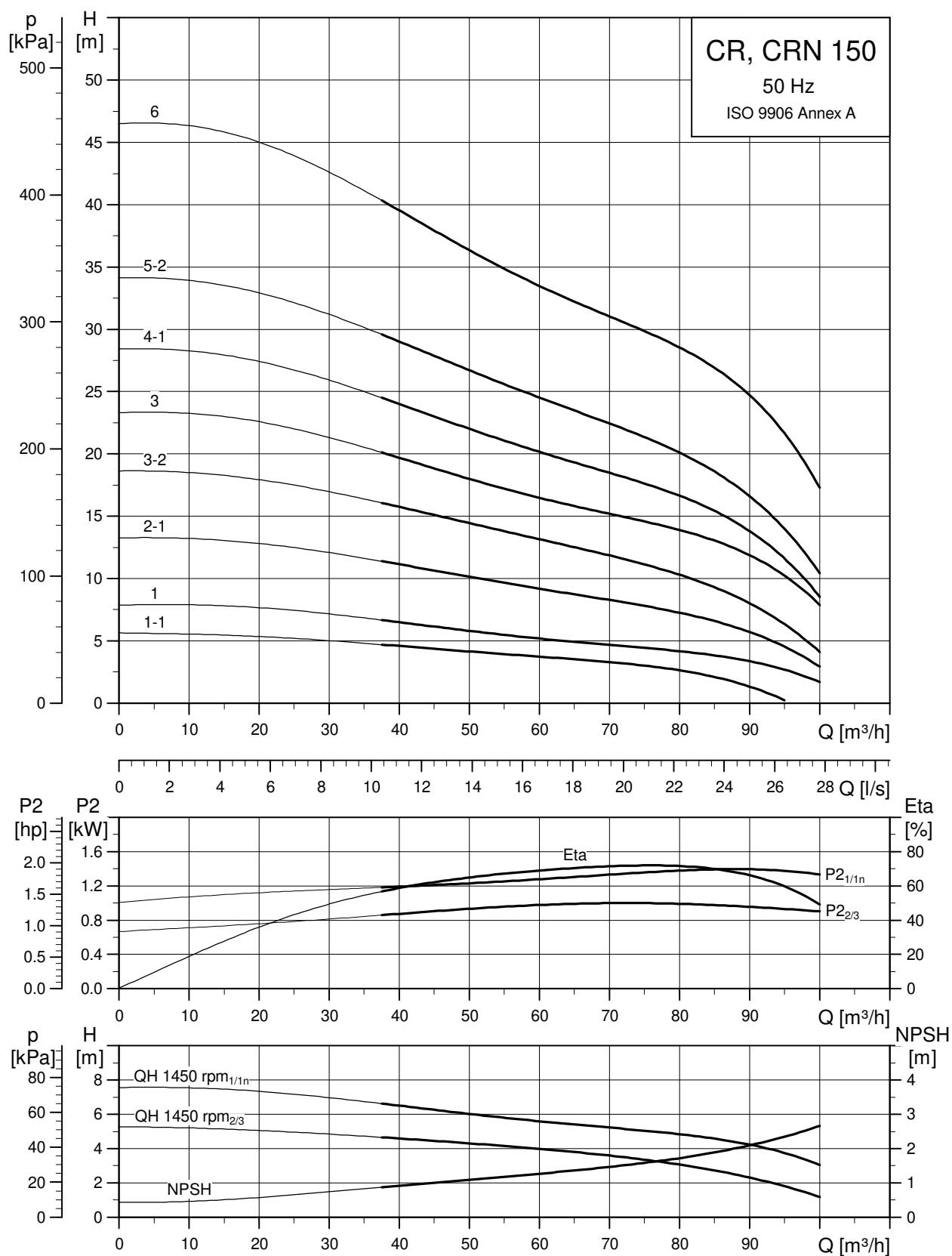
For information about dimensions of the individual pumps, see page [133](#).



TM03 9077 1309

For information about dimensions of the individual pumps, see page 133.

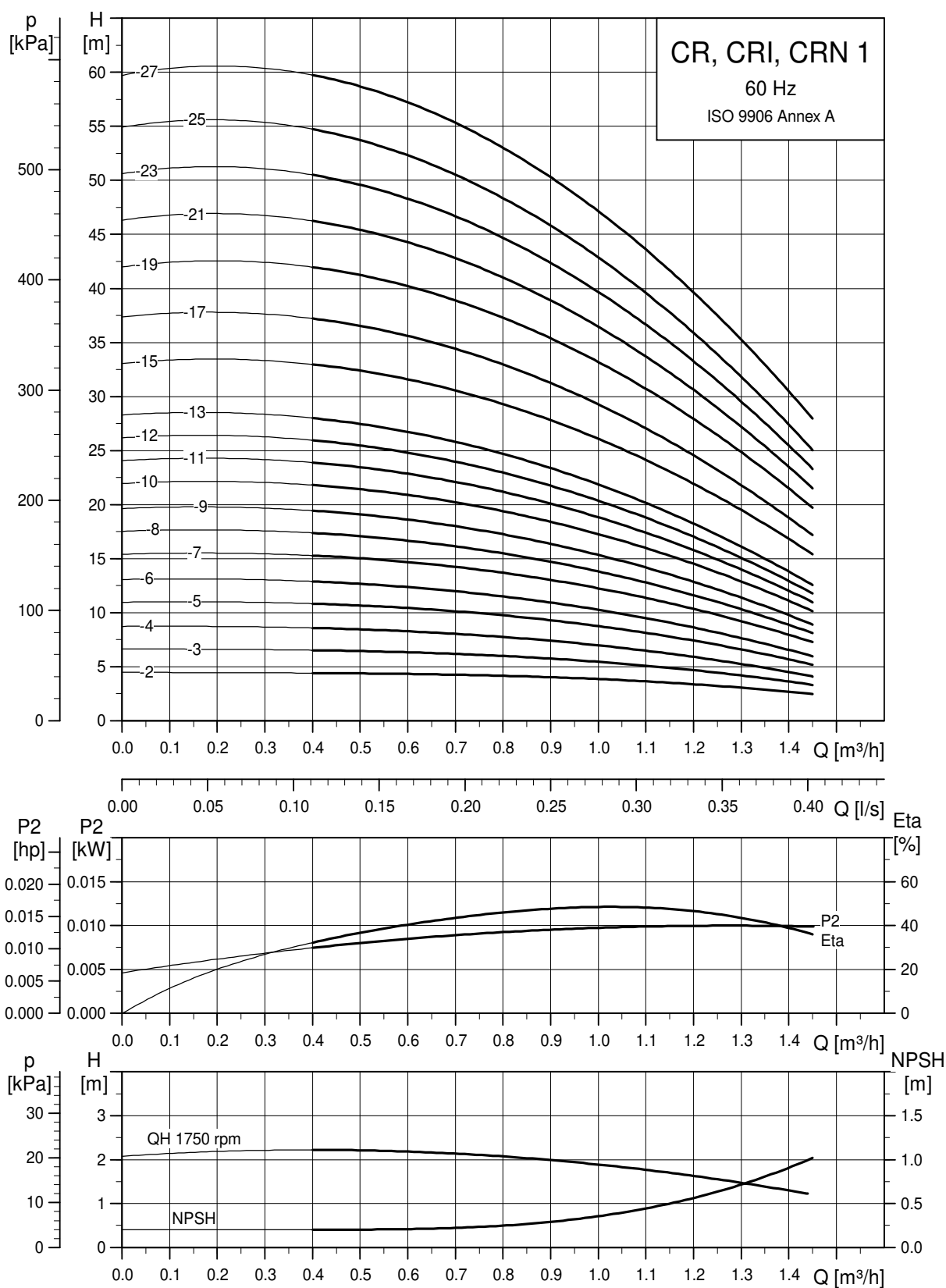




For information about dimensions of the individual pumps, see page 133.

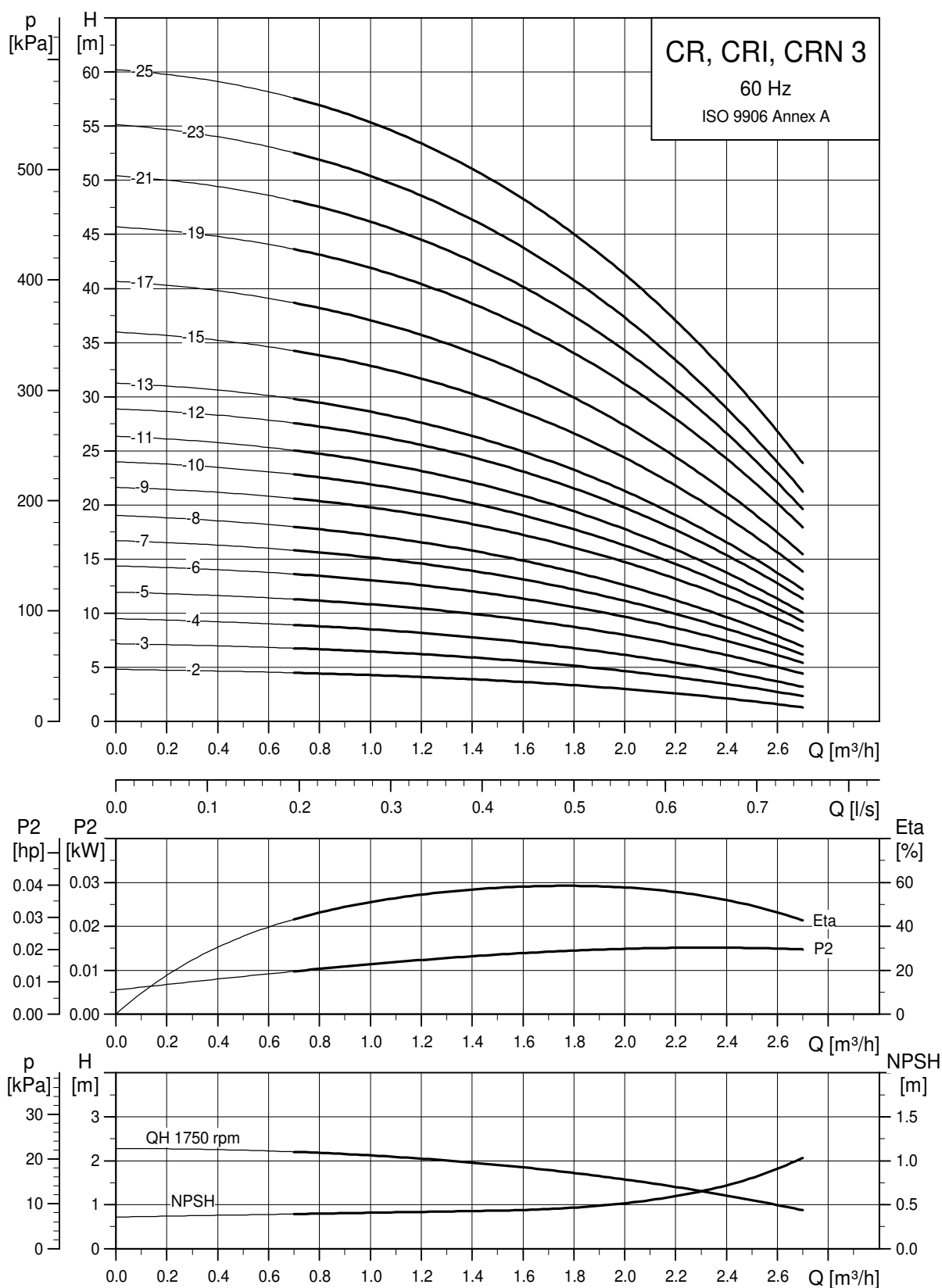
TM03 9078 1309

## CR pumps with 4-pole motor



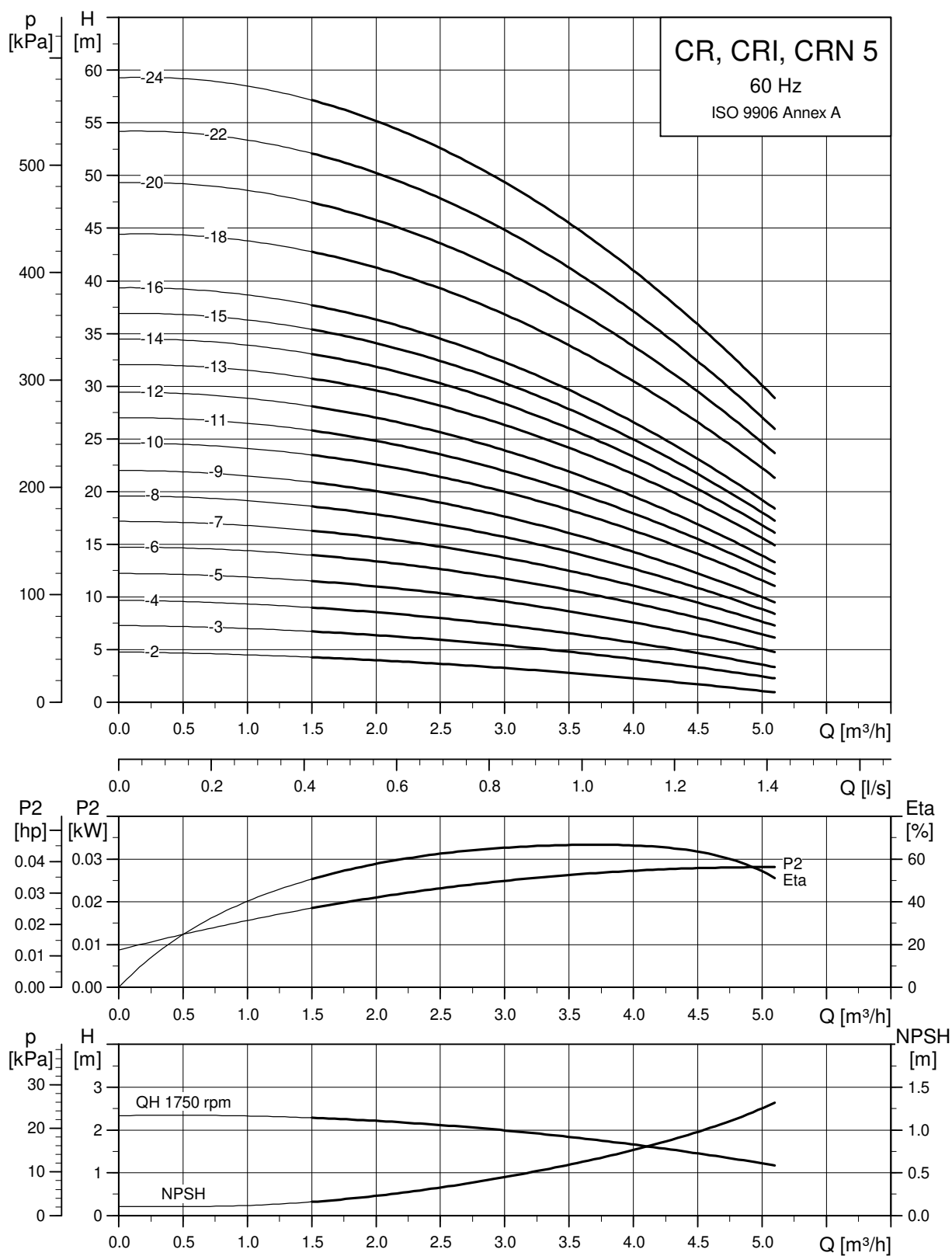
For information about dimensions of the individual pumps, see page [134](#).

TM02 2540 1309



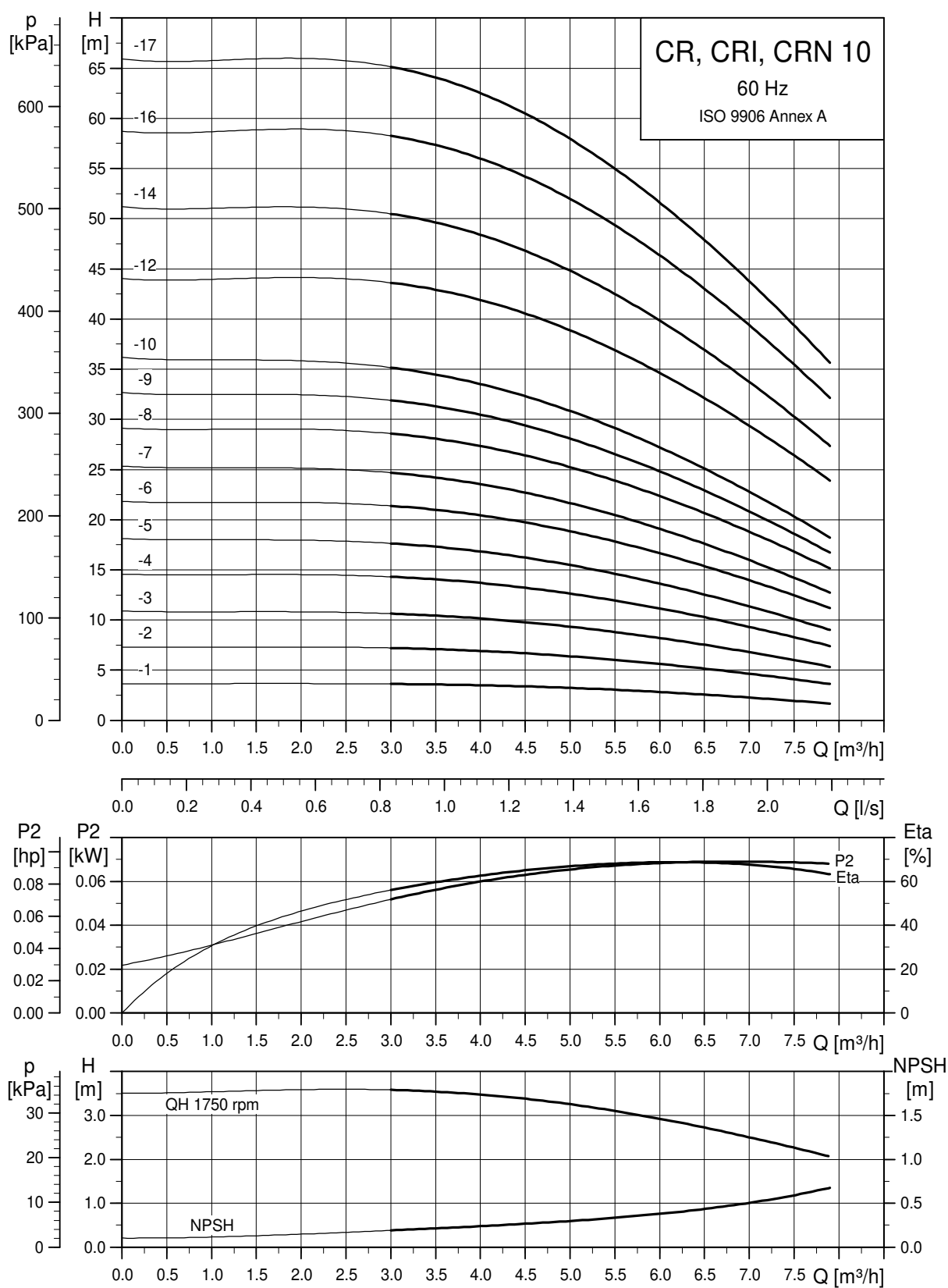
TM02 2539 1309

For information about dimensions of the individual pumps, see page 134.



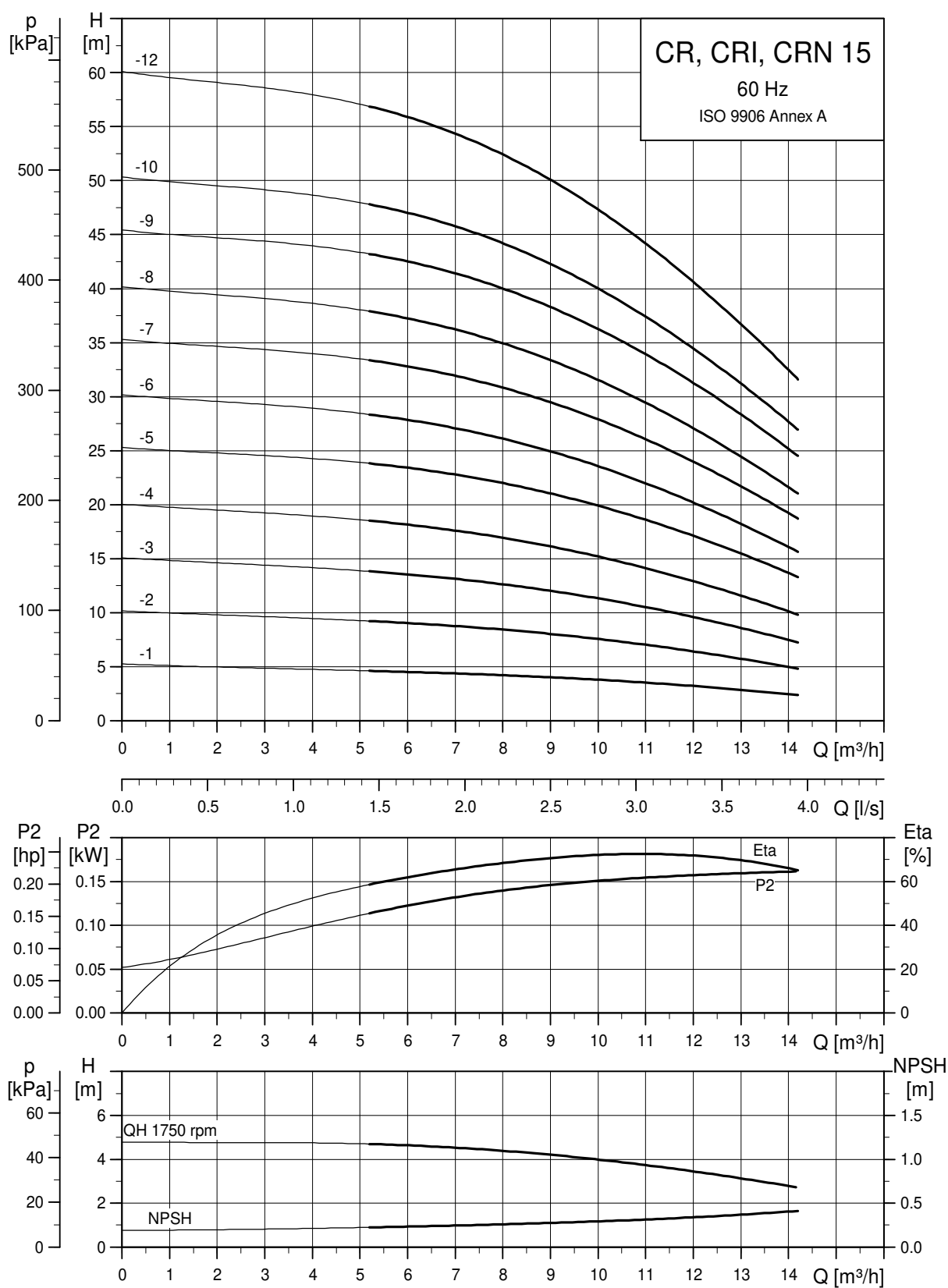
For information about dimensions of the individual pumps, see page 135.

TM02 2538 1309



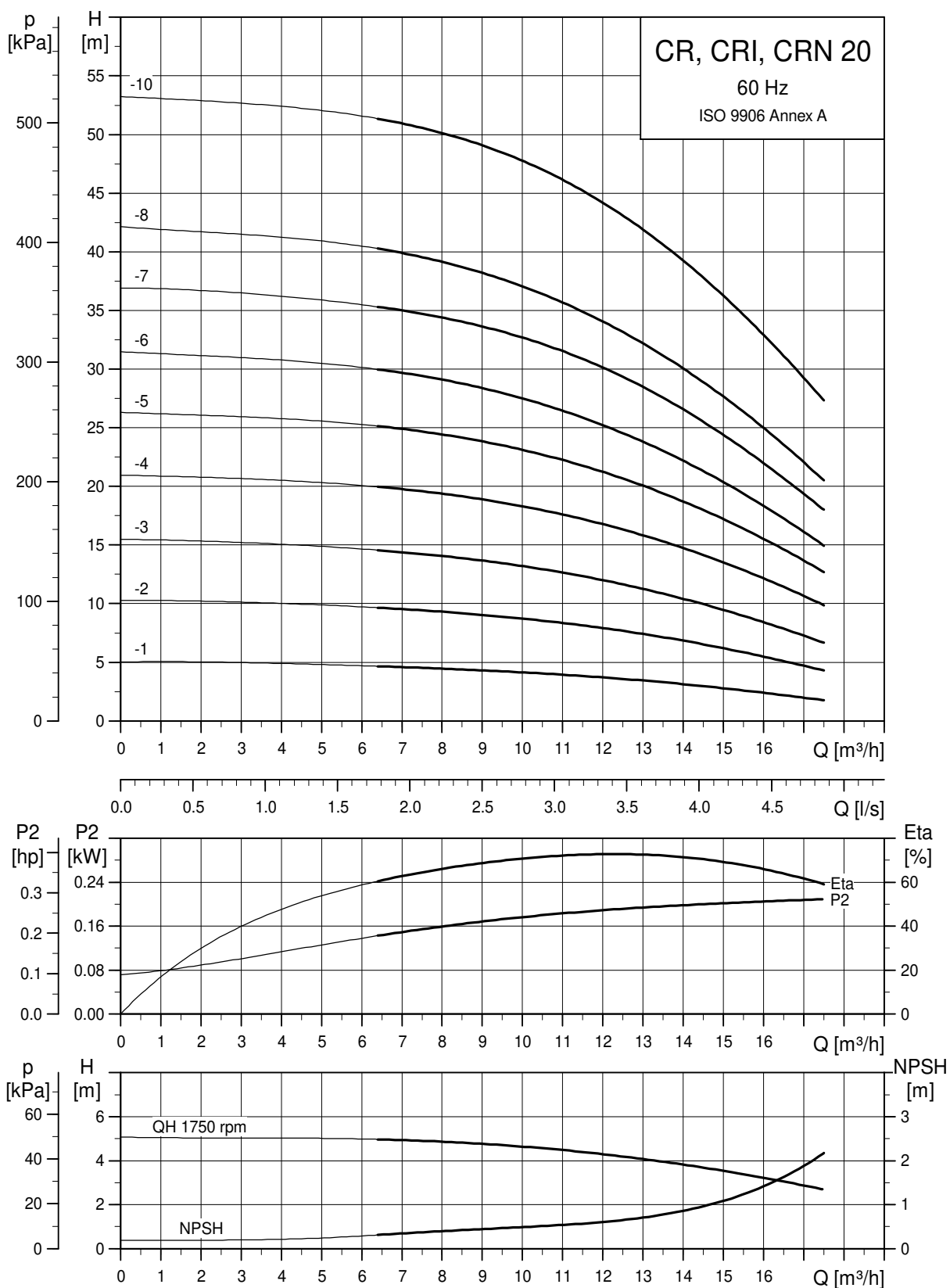
For information about dimensions of the individual pumps, see page [135](#).

TM02 7276 1309



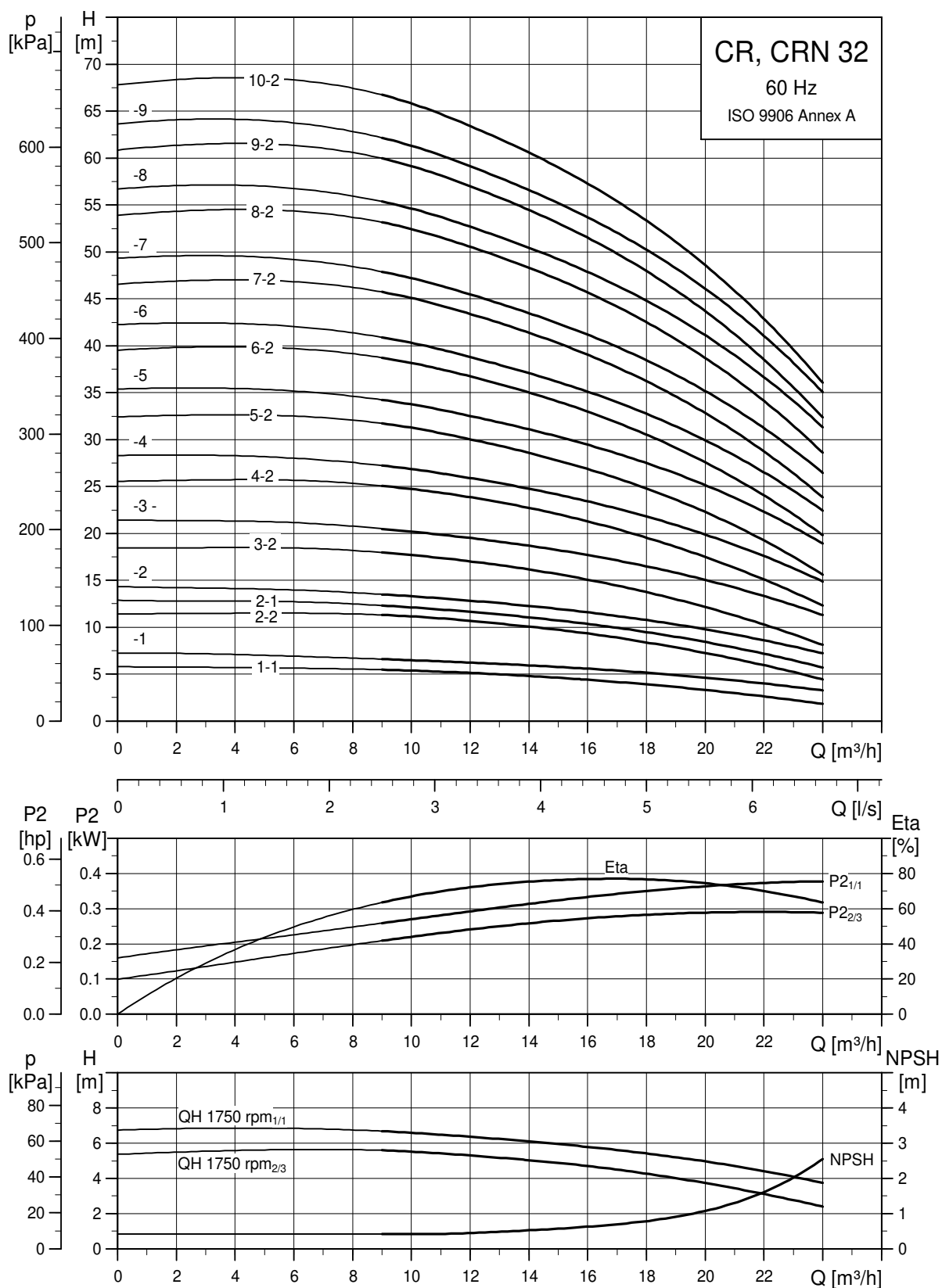
For information about dimensions of the individual pumps, see page 136.

TM02 7277 1309



TM02 7278 1309

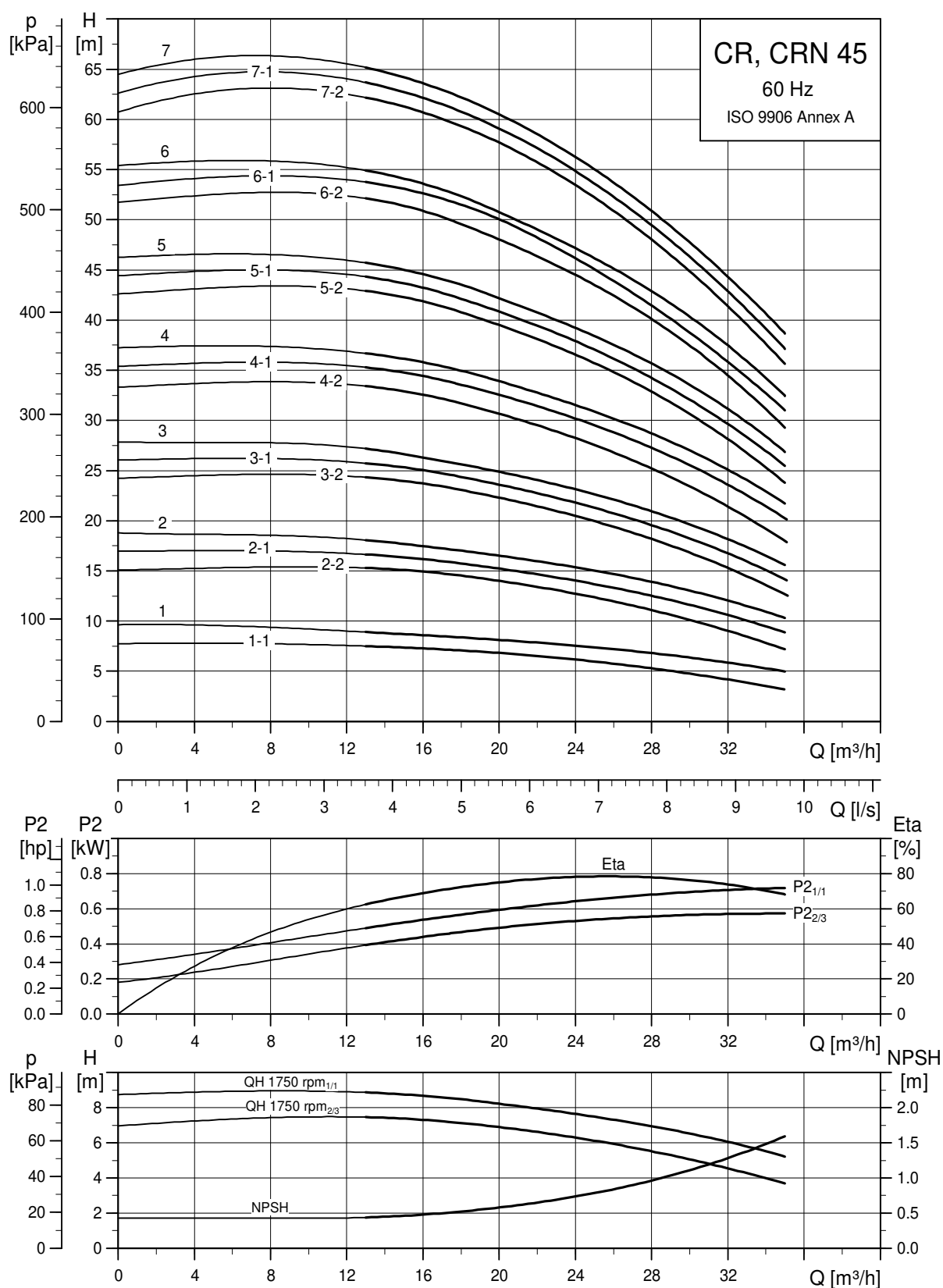
For information about dimensions of the individual pumps, see page [136](#).



TM01 8157 1309

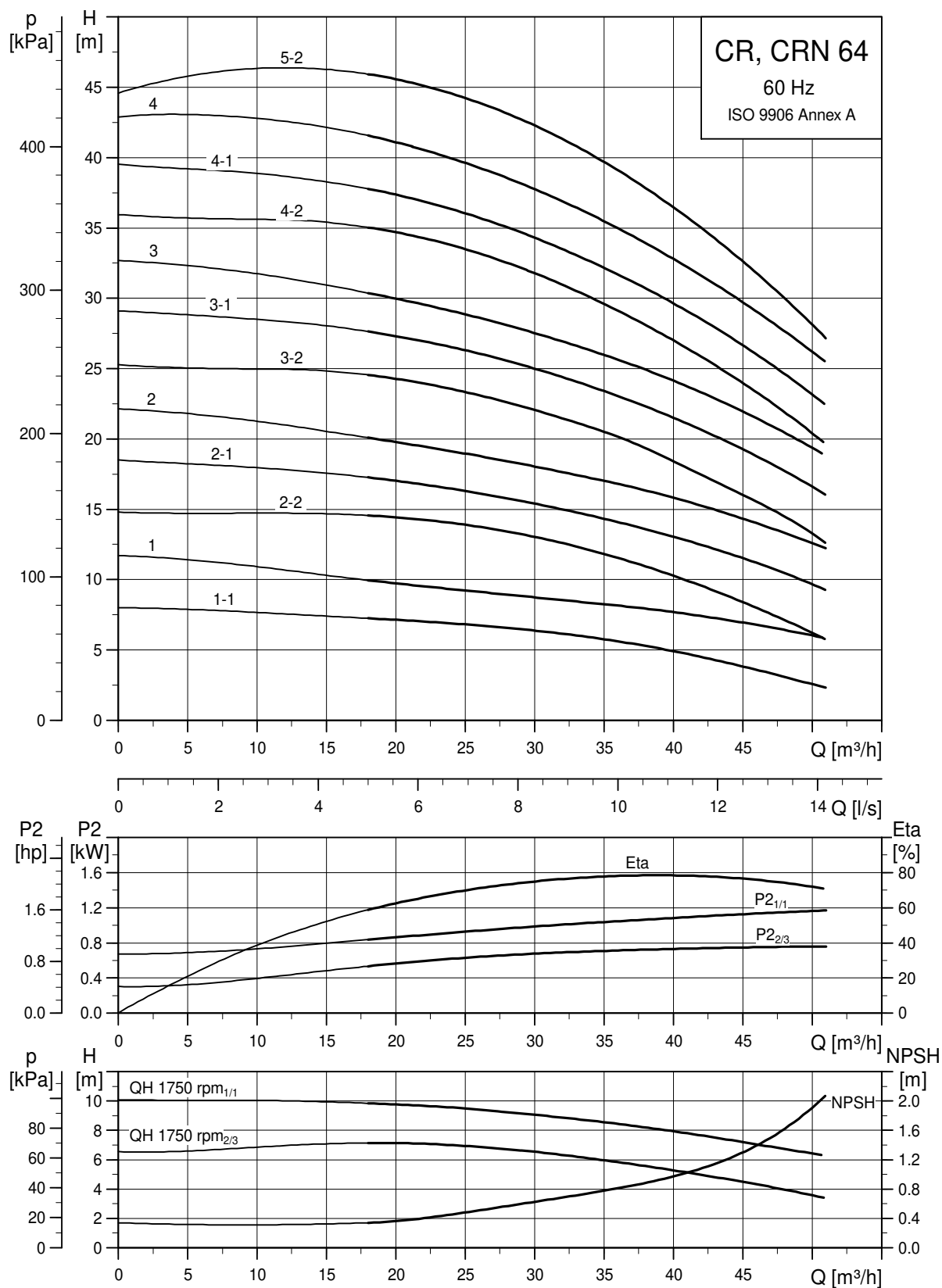
For information about dimensions of the individual pumps, see page 136.





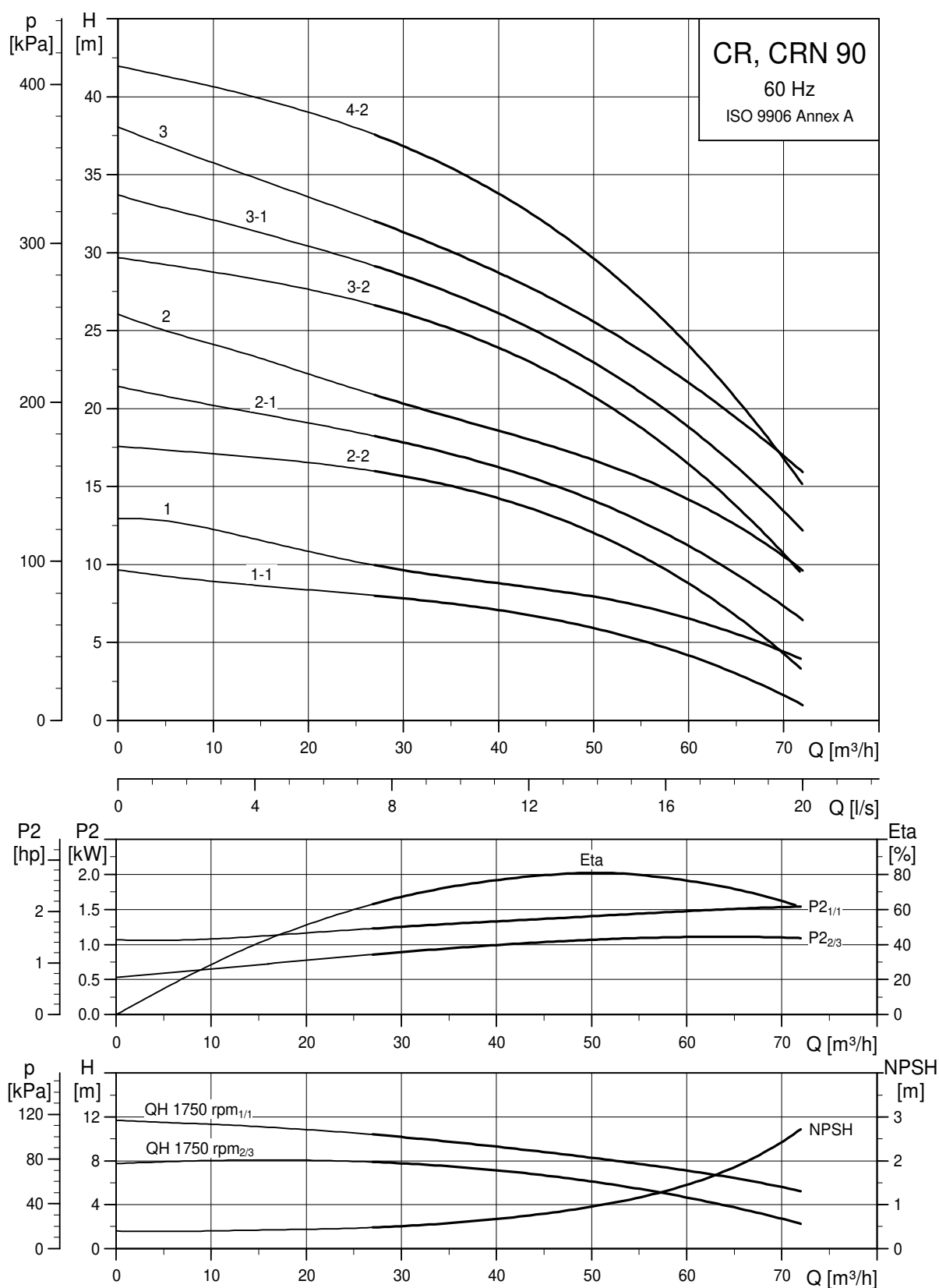
TM01 8158 1309

For information about dimensions of the individual pumps, see page 137.



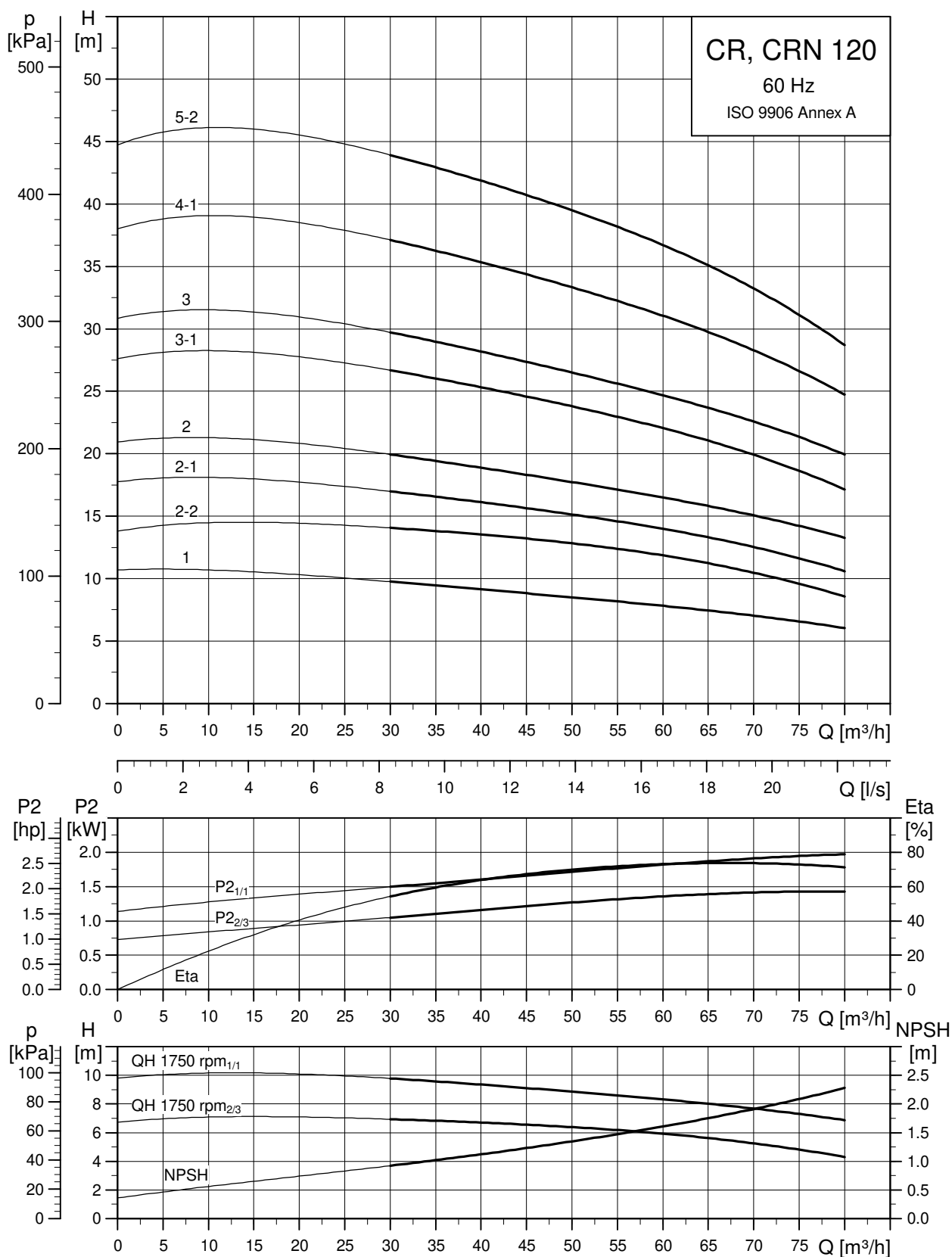
For information about dimensions of the individual pumps, see page 137.

TM01 8159 1309



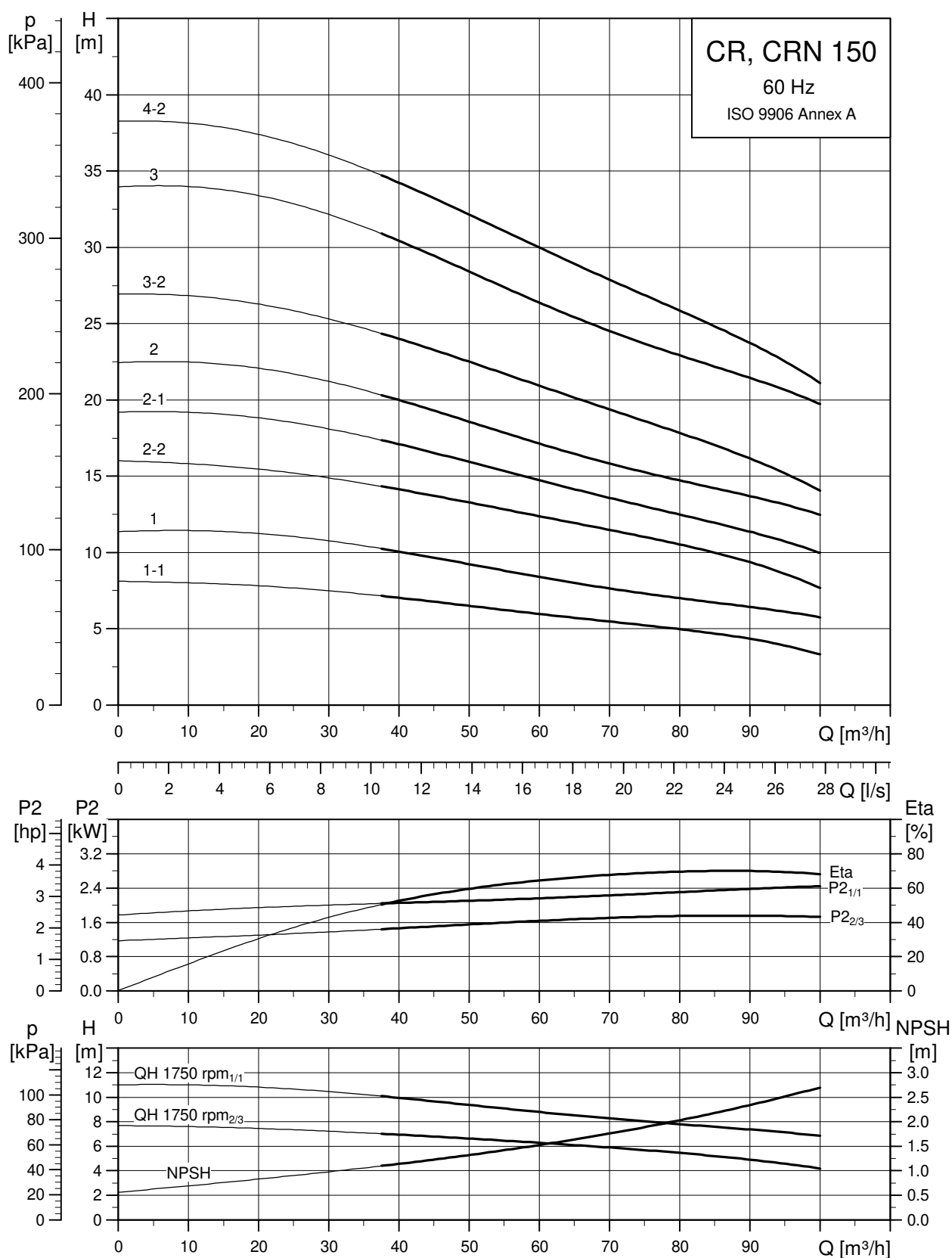
TM01 8160 1309

For information about dimensions of the individual pumps, see page 138.



TM03 9079 1309

For information about dimensions of the individual pumps, see page 138.



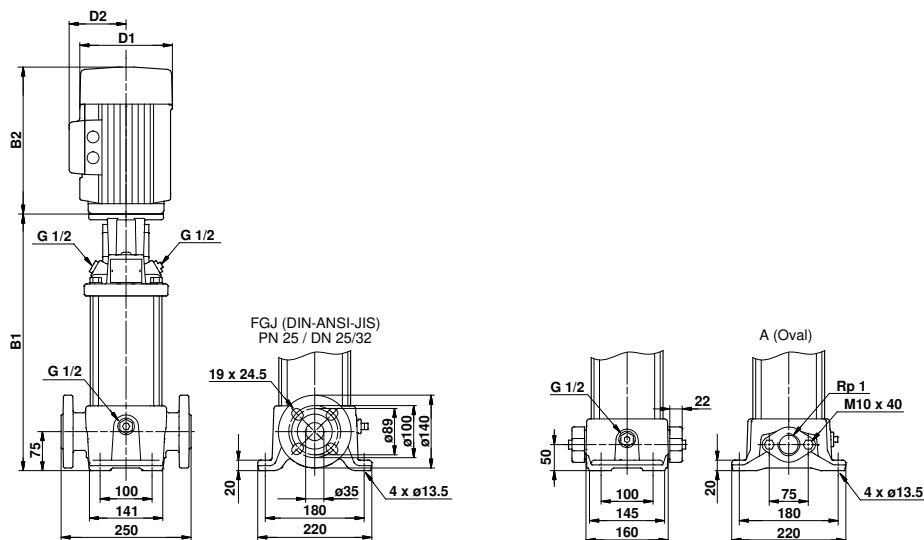
TM03 9080 1309

For information about dimensions of the individual pumps, see page 138.

## CR low-NPSH pumps

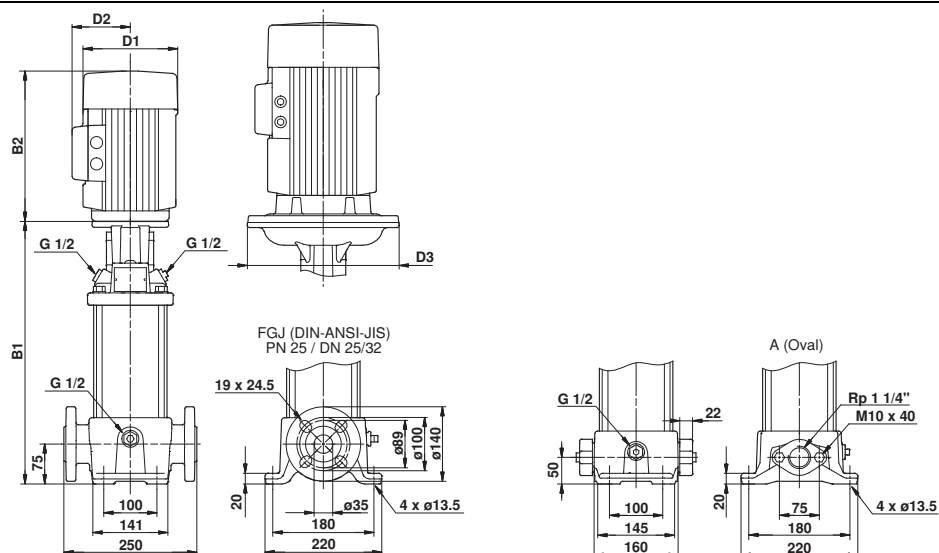
### Dimensional drawings

CR 1  
CR 3



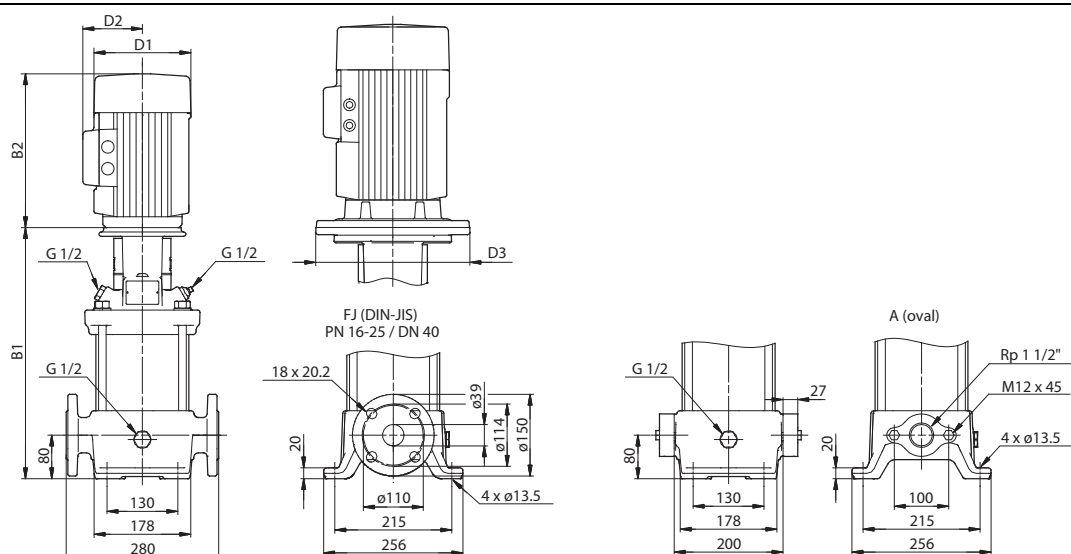
TM03 1721 2805

CR 5

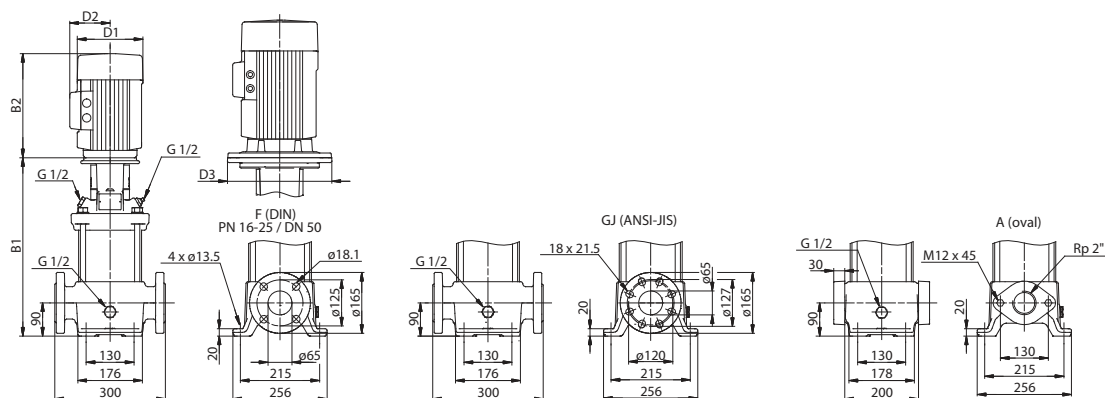


TM03 1723 2805

CR 10

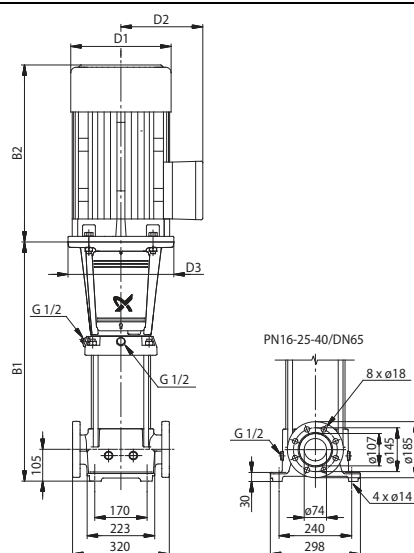


TM03 1725 2805

CR 15  
CR 20

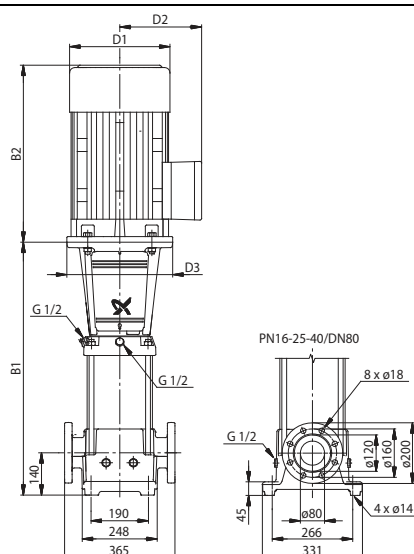
TM03 1727 2805

CR 32



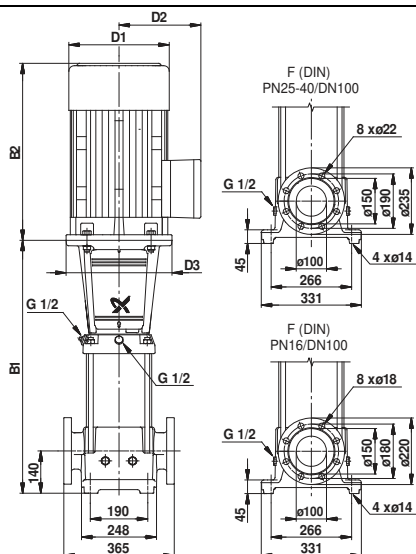
TM01 1749 5197

CR 45



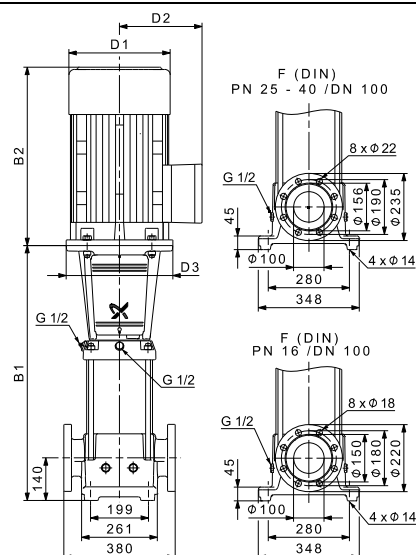
TM01 1751 5197

CR 64



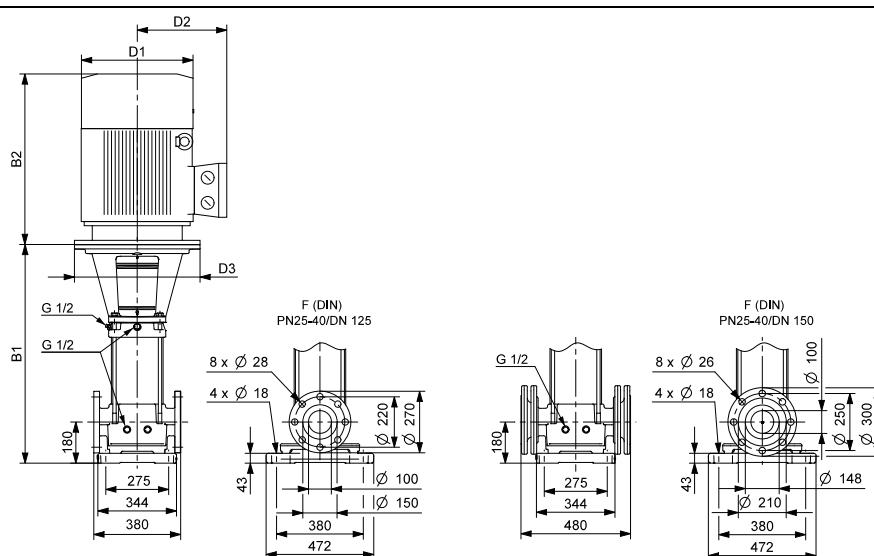
TM01 1753 5197

CR 90



TM01 1755 2203

CR 120  
CR 150



TM03 5999 4106



## CR low-NPSH pump

## Dimensions and weights

## CR 3 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |    |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |    | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3 | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |    |                 |             |
| CR 3-3    | 0.37             | 279            | 470     | 254         | 445     | 141 | 109 | -  | 23              | 18          |
| CR 3-4    | 0.37             | 297            | 488     | 272         | 463     | 141 | 109 | -  | 23              | 19          |
| CR 3-5    | 0.55             | 315            | 506     | 290         | 481     | 141 | 109 | -  | 24.5            | 19.5        |
| CR 3-6    | 0.55             | 333            | 524     | 308         | 499     | 141 | 109 | -  | 25              | 20          |
| CR 3-7    | 0.55             | 351            | 542     | 326         | 517     | 141 | 109 | -  | 25              | 21          |
| CR 3-8    | 0.75             | 375            | 606     | 350         | 581     | 141 | 109 | -  | 27              | 23          |
| CR 3-9    | 0.75             | 393            | 624     | 368         | 599     | 141 | 109 | -  | 28              | 23          |
| CR 3-10   | 0.75             | 411            | 642     | 386         | 617     | 141 | 109 | -  | 28              | 24          |
| CR 3-11   | 1.1              | 429            | 680     | 404         | 635     | 141 | 109 | -  | 31              | 26          |
| CR 3-12   | 1.1              | 447            | 698     | 422         | 653     | 141 | 109 | -  | 31              | 26          |
| CR 3-13   | 1.1              | 465            | 716     | 440         | 671     | 141 | 109 | -  | 31              | 27          |
| CR 3-15   | 1.1              | 501            | 752     | 476         | 707     | 141 | 109 | -  | 32              | 28          |
| CR 3-17   | 1.5              | 553            | 834     | 528         | 809     | 178 | 110 | -  | 40              | 36          |
| CR 3-19   | 1.5              | 589            | 870     | 564         | 845     | 178 | 110 | -  | 41              | 37          |
| CR 3-21   | 2.2              | 625            | 946     | 600         | 921     | 178 | 110 | -  | 42              | 38          |
| CR 3-23   | 2.2              | 661            | 982     | 636         | 957     | 178 | 110 | -  | 43              | 39          |
| CR 3-25   | 2.2              | 697            | 1018    | -           | -       | 178 | 110 | -  | 44              | -           |
| CR 3-27   | 2.2              | 733            | 1054    | -           | -       | 178 | 110 | -  | 45              | -           |
| CR 3-29   | 2.2              | 769            | 1090    | -           | -       | 178 | 110 | -  | 46              | -           |
| CR 3-31   | 3                | 809            | 1144    | -           | -       | 198 | 120 | -  | 51              | -           |
| CR 3-33   | 3                | 845            | 1180    | -           | -       | 198 | 120 | -  | 51              | -           |
| CR 3-36   | 3                | 899            | 1234    | -           | -       | 198 | 120 | -  | 53              | -           |

**Note:** CR 3 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 5 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |     |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |     | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3  | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |     |                 |             |
| CR 5-4    | 0.75             | 339            | 570     | 308         | 539     | 141 | 109 | -   | 26.5            | 21.5        |
| CR 5-5    | 0.75             | 366            | 597     | 341         | 572     | 141 | 109 | -   | 27              | 22          |
| CR 5-6    | 1.1              | 393            | 644     | 368         | 599     | 141 | 109 | -   | 30              | 25          |
| CR 5-7    | 1.1              | 420            | 671     | 395         | 626     | 141 | 109 | -   | 30              | 26          |
| CR 5-8    | 1.1              | 447            | 698     | 422         | 653     | 141 | 109 | -   | 31              | 26          |
| CR 5-9    | 1.5              | 490            | 771     | 465         | 746     | 178 | 110 | -   | 38              | 34          |
| CR 5-10   | 1.5              | 517            | 798     | 492         | 773     | 178 | 110 | -   | 39              | 34          |
| CR 5-11   | 2.2              | 544            | 865     | 519         | 840     | 178 | 110 | -   | 40              | 36          |
| CR 5-12   | 2.2              | 571            | 892     | 546         | 867     | 178 | 110 | -   | 41              | 36          |
| CR 5-13   | 2.2              | 598            | 919     | 573         | 894     | 178 | 110 | -   | 41              | 37          |
| CR 5-14   | 2.2              | 625            | 946     | 600         | 921     | 178 | 110 | -   | 42              | 37          |
| CR 5-15   | 2.2              | 652            | 973     | 627         | 948     | 178 | 110 | -   | 43              | 38          |
| CR 5-16   | 2.2              | 679            | 1000    | 654         | 975     | 178 | 110 | -   | 43              | 38          |
| CR 5-18   | 3                | 737            | 1072    | 712         | 1047    | 198 | 120 | -   | 48              | 44          |
| CR 5-20   | 3                | 791            | 1126    | 766         | 1101    | 198 | 120 | -   | 50              | 45          |
| CR 5-22   | 4                | 845            | 1217    | 820         | 1194    | 220 | 134 | -   | 62              | 56          |
| CR 5-24   | 4                | 899            | 1271    | -           | -       | 220 | 134 | -   | 63              | -           |
| CR 5-26   | 4                | 953            | 1325    | -           | -       | 220 | 134 | -   | 64              | -           |
| CR 5-29   | 4                | 1034           | 1406    | -           | -       | 220 | 134 | -   | 66              | -           |
| CR 5-32   | 5.5              | 1145           | 1536    | -           | -       | 220 | 134 | 300 | 82              | -           |
| CR 5-36   | 5.5              | 1253           | 1644    | -           | -       | 220 | 134 | 300 | 84              | -           |

**Note:** CR 5 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 10 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 10-3   | 1.1              | 407            | 658     | 407         | 658     | 141 | 109 | -               | 39         | 37          |
| CR 10-4   | 1.5              | 423            | 704     | 423         | 704     | 178 | 110 | -               | 47         | 45          |
| CR 10-5   | 2.2              | 453            | 774     | 453         | 734     | 178 | 110 | -               | 49         | 46          |
| CR 10-6   | 2.2              | 483            | 804     | 483         | 764     | 178 | 110 | -               | 50         | 47          |
| CR 10-7   | 3                | 518            | 853     | 518         | 853     | 198 | 120 | -               | 55         | 52          |
| CR 10-8   | 3                | 548            | 883     | 548         | 883     | 198 | 120 | -               | 56         | 53          |
| CR 10-9   | 4                | 578            | 950     | 578         | 950     | 220 | 134 | -               | 68         | 65          |
| CR 10-10  | 4                | 608            | 980     | 608         | 980     | 220 | 134 | -               | 69         | 66          |
| CR 10-12  | 4                | 668            | 1040    | 668         | 1040    | 220 | 134 | -               | 71         | 69          |
| CR 10-14  | 5.5              | 760            | 1151    | 760         | 1151    | 220 | 134 | 300             | 94         | 91          |
| CR 10-16  | 5.5              | 820            | 1211    | 820         | 1211    | 220 | 134 | 300             | 96         | 93          |
| CR 10-18  | 7.5              | 880            | 1259    | -           | -       | 220 | 134 | 300             | 113        | -           |
| CR 10-20  | 7.5              | 940            | 1319    | -           | -       | 220 | 134 | 300             | 115        | -           |
| CR 10-22  | 7.5              | 1000           | 1379    | -           | -       | 220 | 134 | 300             | 117        | -           |

**Note:** CR 10 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.

For information about electrical data, see pages 160 to 161.

## CR 15 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 15-2   | 3                | 420            | 755     | 415         | 750     | 198 | 120 | -               | 54         | 53          |
| CR 15-3   | 4                | 465            | 837     | 465         | 837     | 220 | 134 | -               | 66         | 65          |
| CR 15-4   | 4                | 510            | 882     | 510         | 882     | 220 | 134 | -               | 68         | 67          |
| CR 15-5   | 5.5              | 587            | 978     | 555         | 946     | 220 | 134 | -               | 75         | 74          |
| CR 15-6   | 5.5              | 632            | 1023    | 632         | 1023    | 220 | 134 | 300             | 91         | 90          |
| CR 15-7   | 7.5              | 677            | 1056    | 677         | 1068    | 220 | 134 | 300             | 108        | 107         |
| CR 15-8   | 7.5              | 722            | 1101    | -           | -       | 220 | 134 | 300             | 109        | -           |
| CR 15-9   | 11               | 844            | 1315    | -           | -       | 314 | 204 | 350             | 128        | -           |
| CR 15-10  | 11               | 889            | 1360    | -           | -       | 314 | 204 | 350             | 132        | -           |
| CR 15-12  | 11               | 979            | 1450    | -           | -       | 314 | 204 | 350             | 136        | -           |
| CR 15-14  | 15               | 1069           | 1540    | -           | -       | 314 | 204 | 350             | 177        | -           |
| CR 15-17  | 15               | 1204           | 1675    | -           | -       | 314 | 204 | 350             | 177        | -           |

**Note:** CR 15 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.

For information about electrical data, see pages 160 to 161.

## CR 20 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 20-2   | 3                | 420            | 755     | 415         | 736     | 178 | 110 | -               | 50         | 49          |
| CR 20-3   | 4                | 465            | 837     | 465         | 837     | 220 | 134 | -               | 66         | 65          |
| CR 20-4   | 5.5              | 542            | 933     | 542         | 933     | 220 | 134 | 300             | 88         | 87          |
| CR 20-5   | 7.5              | 587            | 966     | 587         | 978     | 220 | 134 | 300             | 102        | 101         |
| CR 20-6   | 7.5              | 632            | 1011    | 632         | 1023    | 220 | 134 | 300             | 105        | 104         |
| CR 20-7   | 11               | 754            | 1225    | 677         | 1148    | 314 | 204 | 300             | 139        | 138         |
| CR 20-8   | 11               | 799            | 1270    | -           | -       | 314 | 204 | 350             | 129        | -           |
| CR 20-10  | 11               | 889            | 1360    | -           | -       | 314 | 204 | 350             | 132        | -           |
| CR 20-12  | 15               | 979            | 1450    | -           | -       | 314 | 204 | 350             | 168        | -           |
| CR 20-14  | 15               | 1069           | 1540    | -           | -       | 314 | 204 | 350             | 172        | -           |
| CR 20-17  | 18.5             | 1204           | 1719    | -           | -       | 314 | 204 | 350             | 199        | -           |

**Note:** CR 20 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.

For information about electrical data, see pages 160 to 161.

## CR 32 low-NPSH pumps, 50 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 32-2    | 4                | 575            | 947     | -           | -       | 220 | 134 | 158             | 87         | -           |
| CR 32-3-2  | 5.5              | 645            | 1036    | -           | -       | 220 | 134 | 298             | 107        | -           |
| CR 32-3    | 5.5              | 645            | 1036    | -           | -       | 220 | 134 | 298             | 107        | -           |
| CR 32-4-2  | 7.5              | 715            | 1094    | -           | -       | 220 | 134 | 298             | 129        | -           |
| CR 32-4    | 7.5              | 715            | 1094    | -           | -       | 220 | 134 | 298             | 129        | -           |
| CR 32-5-2  | 11               | 895            | 1366    | -           | -       | 314 | 204 | 350             | 157        | -           |
| CR 32-5    | 11               | 895            | 1366    | -           | -       | 314 | 204 | 350             | 157        | -           |
| CR 32-6-2  | 11               | 965            | 1436    | -           | -       | 314 | 204 | 350             | 160        | -           |
| CR 32-6    | 11               | 965            | 1436    | -           | -       | 314 | 204 | 350             | 160        | -           |
| CR 32-7-2  | 15               | 1035           | 1506    | -           | -       | 314 | 204 | 350             | 195        | -           |
| CR 32-7    | 15               | 1035           | 1506    | -           | -       | 314 | 204 | 350             | 195        | -           |
| CR 32-8-2  | 15               | 1105           | 1576    | -           | -       | 314 | 204 | 350             | 198        | -           |
| CR 32-8    | 15               | 1105           | 1576    | -           | -       | 314 | 204 | 350             | 198        | -           |
| CR 32-9-2  | 18.5             | 1175           | 1690    | -           | -       | 314 | 204 | 350             | 223        | -           |
| CR 32-9    | 18.5             | 1175           | 1690    | -           | -       | 314 | 204 | 350             | 223        | -           |
| CR 32-10-2 | 18.5             | 1245           | 1760    | -           | -       | 314 | 204 | 350             | 226        | -           |
| CR 32-10   | 18.5             | 1245           | 1760    | -           | -       | 314 | 204 | 350             | 226        | -           |
| CR 32-11-2 | 22               | 1315           | 1856    | -           | -       | 314 | 204 | 350             | 247        | -           |
| CR 32-11   | 22               | 1315           | 1856    | -           | -       | 314 | 204 | 350             | 247        | -           |
| CR 32-12-2 | 22               | 1385           | 1926    | -           | -       | 314 | 204 | 350             | 251        | -           |
| CR 32-12   | 22               | 1385           | 1926    | -           | -       | 314 | 204 | 350             | 251        | -           |
| CR 32-13-2 | 30               | 1455           | 2066    | -           | -       | 415 | 300 | 400             | 322        | -           |
| CR 32-13   | 30               | 1455           | 2066    | -           | -       | 415 | 300 | 400             | 322        | -           |
| CR 32-14-2 | 30               | 1525           | 2136    | -           | -       | 415 | 300 | 400             | 325        | -           |
| CR 32-14   | 30               | 1525           | 2136    | -           | -       | 415 | 300 | 400             | 325        | -           |

**Note:** CR 32 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 45 low-NPSH pumps, 50 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 45-2    | 7.5              | 639            | 1018    | -           | -       | 220 | 134 | 298             | 122        | -           |
| CR 45-3-2  | 11               | 829            | 1300    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CR 45-3    | 11               | 829            | 1300    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CR 45-4-2  | 15               | 909            | 1380    | -           | -       | 314 | 204 | 350             | 189        | -           |
| CR 45-4    | 15               | 909            | 1380    | -           | -       | 314 | 204 | 350             | 189        | -           |
| CR 45-5-2  | 18.5             | 989            | 1504    | -           | -       | 314 | 204 | 350             | 216        | -           |
| CR 45-5    | 18.5             | 989            | 1504    | -           | -       | 314 | 204 | 350             | 216        | -           |
| CR 45-6-2  | 22               | 1069           | 1610    | -           | -       | 314 | 204 | 350             | 237        | -           |
| CR 45-6    | 22               | 1069           | 1610    | -           | -       | 314 | 204 | 350             | 237        | -           |
| CR 45-7-2  | 30               | 1149           | 1760    | -           | -       | 415 | 300 | 400             | 321        | -           |
| CR 45-7    | 30               | 1149           | 1760    | -           | -       | 415 | 300 | 400             | 321        | -           |
| CR 45-8-2  | 30               | 1229           | 1840    | -           | -       | 415 | 300 | 400             | 336        | -           |
| CR 45-8    | 30               | 1229           | 1840    | -           | -       | 415 | 300 | 400             | 336        | -           |
| CR 45-9-2  | 30               | 1309           | 1920    | -           | -       | 415 | 300 | 400             | 341        | -           |
| CR 45-9    | 37               | 1309           | 1945    | -           | -       | 415 | 300 | 400             | 361        | -           |
| CR 45-10-2 | 37               | 1389           | 2025    | -           | -       | 415 | 300 | 400             | 366        | -           |
| CR 45-10   | 37               | 1389           | 2025    | -           | -       | 415 | 300 | 400             | 366        | -           |
| CR 45-11-2 | 45               | 1469           | 2177    | -           | -       | 442 | 325 | 450             | 478        | -           |
| CR 45-11   | 45               | 1469           | 2177    | -           | -       | 442 | 325 | 450             | 478        | -           |
| CR 45-12-2 | 45               | 1549           | 2257    | -           | -       | 442 | 325 | 450             | 483        | -           |
| CR 45-12   | 45               | 1549           | 2257    | -           | -       | 442 | 325 | 450             | 483        | -           |
| CR 45-13-2 | 45               | 1629           | 2337    | -           | -       | 442 | 325 | 450             | 488        | -           |

**Note:** CR 45 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 64 low-NPSH pumps, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 64-2-1 | 11               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CR 64-2   | 11               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CR 64-3-2 | 15               | 836            | 1307    | -           | -       | 314 | 204 | 350             | 194        | -           |
| CR 64-3-1 | 15               | 836            | 1307    | -           | -       | 314 | 204 | 350             | 194        | -           |
| CR 64-3   | 18.5             | 836            | 1351    | -           | -       | 314 | 204 | 350             | 216        | -           |
| CR 64-4-2 | 18.5             | 919            | 1434    | -           | -       | 314 | 204 | 350             | 226        | -           |
| CR 64-4-1 | 22               | 919            | 1460    | -           | -       | 314 | 204 | 350             | 242        | -           |
| CR 64-4   | 22               | 919            | 1460    | -           | -       | 314 | 204 | 350             | 242        | -           |
| CR 64-5-2 | 30               | 1001           | 1612    | -           | -       | 415 | 300 | 400             | 316        | -           |
| CR 64-5-1 | 30               | 1001           | 1612    | -           | -       | 415 | 300 | 400             | 316        | -           |
| CR 64-5   | 30               | 1001           | 1612    | -           | -       | 415 | 300 | 400             | 316        | -           |
| CR 64-6-2 | 30               | 1084           | 1695    | -           | -       | 415 | 300 | 400             | 336        | -           |
| CR 64-6-1 | 37               | 1084           | 1720    | -           | -       | 415 | 300 | 400             | 356        | -           |
| CR 64-6   | 37               | 1084           | 1720    | -           | -       | 415 | 300 | 400             | 356        | -           |
| CR 64-7-2 | 37               | 1166           | 1802    | -           | -       | 415 | 300 | 400             | 376        | -           |
| CR 64-7-1 | 37               | 1166           | 1802    | -           | -       | 415 | 300 | 400             | 376        | -           |
| CR 64-7   | 45               | 1166           | 1874    | -           | -       | 442 | 325 | 450             | 440        | -           |
| CR 64-8-2 | 45               | 1249           | 1957    | -           | -       | 442 | 325 | 450             | 473        | -           |
| CR 64-8-1 | 45               | 1249           | 1957    | -           | -       | 442 | 325 | 450             | 473        | -           |

**Note:** CR 64 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 3 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 3-3    | 0.55             | 279            | 470     | 254         | 445     | 141 | 109 | -               | 24         | 19          |
| CR 3-4    | 0.55             | 297            | 488     | 272         | 463     | 141 | 109 | -               | 24         | 19          |
| CR 3-5    | 0.75             | 321            | 552     | 296         | 527     | 141 | 109 | -               | 26         | 22          |
| CR 3-6    | 1.1              | 339            | 590     | 314         | 545     | 141 | 109 | -               | 29         | 24          |
| CR 3-7    | 1.1              | 357            | 608     | 332         | 563     | 141 | 109 | -               | 29         | 24          |
| CR 3-8    | 1.1              | 375            | 626     | 350         | 581     | 141 | 109 | -               | 29         | 25          |
| CR 3-9    | 1.5              | 409            | 690     | 384         | 665     | 178 | 110 | -               | 37         | 32          |
| CR 3-10   | 1.5              | 427            | 708     | 402         | 683     | 178 | 110 | -               | 37         | 33          |
| CR 3-11   | 1.5              | 445            | 726     | 420         | 701     | 178 | 110 | -               | 38         | 33          |
| CR 3-12   | 2.2              | 463            | 784     | 438         | 759     | 178 | 110 | -               | 39         | 34          |
| CR 3-13   | 2.2              | 481            | 802     | 456         | 777     | 178 | 110 | -               | 39         | 34          |
| CR 3-15   | 2.2              | 517            | 838     | 492         | 813     | 178 | 110 | -               | 40         | 35          |
| CR 3-17   | 2.2              | 553            | 874     | 528         | 849     | 178 | 110 | -               | 41         | 36          |
| CR 3-19   | 3                | 593            | 928     | -           | -       | 198 | 120 | -               | 46         | -           |
| CR 3-21   | 3                | 629            | 964     | -           | -       | 198 | 120 | -               | 47         | -           |
| CR 3-23   | 3                | 665            | 1000    | -           | -       | 198 | 120 | -               | 47         | -           |
| CR 3-25   | 4                | 701            | 1073    | -           | -       | 220 | 134 | -               | 59         | -           |

**Note:** CR 3 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 5 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 5-4    | 1.1              | 339            | 590     | 314         | 545     | 141 | 109 | -               | 28         | 24          |
| CR 5-5    | 1.5              | 382            | 663     | 357         | 638     | 178 | 110 | -               | 36         | 32          |
| CR 5-6    | 2.2              | 409            | 730     | 384         | 705     | 178 | 110 | -               | 37         | 33          |
| CR 5-7    | 2.2              | 436            | 757     | 411         | 732     | 178 | 110 | -               | 38         | 33          |
| CR 5-8    | 2.2              | 463            | 784     | 438         | 759     | 178 | 110 | -               | 38         | 34          |
| CR 5-9    | 2.2              | 490            | 811     | 465         | 786     | 178 | 110 | -               | 39         | 34          |
| CR 5-10   | 3                | 521            | 856     | 496         | 831     | 198 | 120 | -               | 44         | 39          |
| CR 5-11   | 3                | 548            | 883     | 523         | 858     | 198 | 120 | -               | 44         | 40          |
| CR 5-12   | 3                | 575            | 910     | 550         | 885     | 198 | 120 | -               | 45         | 40          |
| CR 5-13   | 4                | 602            | 974     | 577         | 949     | 220 | 134 | -               | 56         | 52          |
| CR 5-14   | 4                | 629            | 1001    | 604         | 976     | 220 | 134 | -               | 57         | 53          |
| CR 5-15   | 4                | 656            | 1028    | 631         | 1003    | 220 | 134 | -               | 58         | 53          |
| CR 5-16   | 4                | 683            | 1055    | 658         | 1030    | 220 | 134 | -               | 58         | 54          |
| CR 5-18   | 5.5              | 767            | 1158    | -           | -       | 220 | 134 | 300             | 74         | -           |
| CR 5-20   | 5.5              | 821            | 1212    | -           | -       | 220 | 134 | 300             | 75         | -           |
| CR 5-22   | 5.5              | 875            | 1266    | -           | -       | 220 | 134 | 300             | 76         | -           |
| CR 5-24   | 7.5              | 929            | 1308    | -           | -       | 220 | 134 | 300             | 79         | -           |

**Note:** CR 5 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 10 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 10-3   | 2.2              | 423            | 744     | 423         | 744     | 198 | 120 | -               | 47         | 44          |
| CR 10-4   | 3                | 428            | 763     | 428         | 763     | 198 | 120 | -               | 52         | 49          |
| CR 10-5   | 4                | 458            | 830     | 458         | 830     | 220 | 134 | -               | 64         | 61          |
| CR 10-6   | 4                | 488            | 860     | 488         | 860     | 220 | 134 | -               | 65         | 62          |
| CR 10-7   | 5.5              | 550            | 941     | 550         | 941     | 220 | 134 | 300             | 87         | 84          |
| CR 10-8   | 5.5              | 580            | 971     | 580         | 971     | 220 | 134 | 300             | 88         | 85          |
| CR 10-9   | 5.5              | 610            | 1001    | 610         | 1001    | 220 | 134 | 300             | 89         | 86          |
| CR 10-10  | 7.5              | 640            | 1019    | 640         | 1019    | 220 | 134 | 300             | 104        | 101         |
| CR 10-12  | 7.5              | 700            | 1079    | -           | -       | 220 | 134 | 300             | 106        | -           |
| CR 10-14  | 11               | 837            | 1308    | -           | -       | 314 | 204 | 350             | 129        | -           |
| CR 10-16  | 11               | 897            | 1368    | -           | -       | 314 | 204 | 350             | 131        | -           |
| CR 10-17  | 11               | 957            | 1428    | -           | -       | 314 | 204 | 350             | 133        | -           |

**Note:** CR 10 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 15 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 15-2   | 5.5              | 452            | 843     | 420         | 811     | 220 | 134 | -               | 71         | 70          |
| CR 15-3   | 5.5              | 497            | 888     | 465         | 856     | 220 | 134 | -               | 72         | 71          |
| CR 15-4   | 7.5              | 542            | 921     | 542         | 921     | 220 | 134 | 300             | 103        | 102         |
| CR 15-5   | 11               | 664            | 1135    | 587         | 1058    | 314 | 204 | 300             | 136        | 135         |
| CR 15-6   | 11               | 709            | 1180    | -           | -       | 314 | 204 | 350             | 126        | -           |
| CR 15-7   | 15               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 152        | -           |
| CR 15-8   | 15               | 799            | 1270    | -           | -       | 314 | 204 | 350             | 154        | -           |
| CR 15-9   | 15               | 844            | 1315    | -           | -       | 314 | 204 | 350             | 163        | -           |
| CR 15-10  | 18.5             | 889            | 1404    | -           | -       | 314 | 204 | 350             | 175        | -           |
| CR 15-12  | 18.5             | 979            | 1494    | -           | -       | 314 | 204 | 350             | 190        | -           |

**Note:** CR 15 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 20 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 20-2   | 5.5              | 452            | 843     | 420         | 811     | 220 | 134 | -               | 71         | 70          |
| CR 20-3   | 7.5              | 497            | 876     | 497         | 876     | 220 | 134 | 300             | 102        | 101         |
| CR 20-4   | 11               | 619            | 1090    | 542         | 1013    | 314 | 204 | 350             | 134        | 133         |
| CR 20-5   | 11               | 664            | 1135    | 664         | 1135    | 314 | 204 | 350             | 124        | 123         |
| CR 20-6   | 15               | 709            | 1180    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CR 20-7   | 15               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 159        | -           |
| CR 20-8   | 18.5             | 799            | 1314    | -           | -       | 314 | 204 | 350             | 171        | -           |

**Note:** CR 20 low-NPSH pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 32 low-NPSH pumps, 60 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 32-2-1  | 5.5              | 575            | 966     | -           | -       | 220 | 148 | 298             | 98         | -           |
| CR 32-2    | 7.5              | 575            | 954     | -           | -       | 220 | 134 | 298             | 112        | -           |
| CR 32-3-2  | 11               | 755            | 1226    | -           | -       | 314 | 204 | 350             | 146        | -           |
| CR 32-3    | 11               | 755            | 1226    | -           | -       | 314 | 204 | 350             | 146        | -           |
| CR 32-4-2  | 11               | 825            | 1296    | -           | -       | 314 | 204 | 350             | 154        | -           |
| CR 32-4    | 15               | 825            | 1296    | -           | -       | 314 | 204 | 350             | 186        | -           |
| CR 32-5-2  | 15               | 895            | 1366    | -           | -       | 314 | 204 | 350             | 189        | -           |
| CR 32-5    | 18.5             | 895            | 1410    | -           | -       | 314 | 204 | 350             | 211        | -           |
| CR 32-6-2  | 18.5             | 965            | 1480    | -           | -       | 314 | 204 | 350             | 214        | -           |
| CR 32-6    | 18.5             | 965            | 1480    | -           | -       | 314 | 204 | 350             | 214        | -           |
| CR 32-7-2  | 22               | 1035           | 1576    | -           | -       | 314 | 204 | 350             | 233        | -           |
| CR 32-7    | 22               | 1035           | 1576    | -           | -       | 314 | 204 | 350             | 233        | -           |
| CR 32-8-2  | 30               | 1105           | 1716    | -           | -       | 415 | 300 | 400             | 305        | -           |
| CR 32-8    | 30               | 1105           | 1716    | -           | -       | 415 | 300 | 400             | 305        | -           |
| CR 32-9-2  | 30               | 1175           | 1786    | -           | -       | 415 | 300 | 400             | 308        | -           |
| CR 32-9    | 30               | 1175           | 1786    | -           | -       | 415 | 300 | 400             | 308        | -           |
| CR 32-10-2 | 30               | 1245           | 1856    | -           | -       | 415 | 300 | 400             | 311        | -           |

**Note:** CR 32 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 45 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 45-2-1 | 11               | 749            | 1220    | -           | -       | 314 | 204 | 350             | 147        | -           |
| CR 45-2   | 15               | 749            | 1220    | -           | -       | 314 | 204 | 350             | 179        | -           |
| CR 45-3-2 | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 205        | -           |
| CR 45-3-1 | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 205        | -           |
| CR 45-3   | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 205        | -           |
| CR 45-4-2 | 22               | 909            | 1450    | -           | -       | 314 | 204 | 350             | 227        | -           |
| CR 45-4-1 | 30               | 909            | 1520    | -           | -       | 415 | 300 | 400             | 296        | -           |
| CR 45-4   | 30               | 909            | 1520    | -           | -       | 415 | 300 | 400             | 296        | -           |
| CR 45-5-2 | 30               | 989            | 1600    | -           | -       | 415 | 300 | 400             | 301        | -           |
| CR 45-5-1 | 30               | 989            | 1600    | -           | -       | 415 | 300 | 400             | 301        | -           |
| CR 45-5   | 30               | 989            | 1600    | -           | -       | 415 | 300 | 400             | 301        | -           |
| CR 45-6-2 | 37               | 1069           | 1705    | -           | -       | 415 | 300 | 400             | 326        | -           |
| CR 45-6-1 | 37               | 1069           | 1705    | -           | -       | 415 | 300 | 400             | 326        | -           |
| CR 45-6   | 37               | 1069           | 1705    | -           | -       | 415 | 300 | 400             | 326        | -           |
| CR 45-7-2 | 45               | 1149           | 1857    | -           | -       | 442 | 325 | 450             | 405        | -           |
| CR 45-7-1 | 45               | 1149           | 1857    | -           | -       | 442 | 325 | 450             | 405        | -           |
| CR 45-7   | 45               | 1149           | 1857    | -           | -       | 442 | 325 | 450             | 405        | -           |

**Note:** CR 45 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 64 low-NPSH pumps, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 64-2-1 | 18.5             | 754            | 1269    | -           | -       | 314 | 204 | 350             | 205        | -           |
| CR 64-2   | 22               | 754            | 1295    | -           | -       | 314 | 204 | 350             | 221        | -           |
| CR 64-3-2 | 22               | 836            | 1377    | -           | -       | 314 | 204 | 350             | 232        | -           |
| CR 64-3-1 | 30               | 836            | 1447    | -           | -       | 415 | 300 | 400             | 301        | -           |
| CR 64-3   | 30               | 836            | 1447    | -           | -       | 415 | 300 | 400             | 301        | -           |
| CR 64-4-2 | 37               | 919            | 1555    | -           | -       | 415 | 300 | 400             | 331        | -           |
| CR 64-4-1 | 37               | 919            | 1555    | -           | -       | 415 | 300 | 400             | 331        | -           |
| CR 64-4   | 45               | 919            | 1627    | -           | -       | 442 | 325 | 450             | 395        | -           |
| CR 64-5-2 | 45               | 1001           | 1709    | -           | -       | 442 | 325 | 450             | 400        | -           |

**Note:** CR 64 low-NPSH pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).



**CR pumps with 4-pole motor****Dimensions and weights****CR 1 with 4-pole motor, 50 Hz**

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 1-2    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 160             | 22         | 17          |
| CR 1-3    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 160             | 22         | 17          |
| CR 1-4    | 0.25             | 297            | 488     | 272         | 463     | 141 | 109 | 160             | 22         | 18          |
| CR 1-5    | 0.25             | 315            | 506     | 290         | 481     | 141 | 109 | 160             | 23         | 18          |
| CR 1-6    | 0.25             | 333            | 524     | 308         | 499     | 141 | 109 | 160             | 23         | 19          |
| CR 1-7    | 0.25             | 351            | 542     | 326         | 517     | 141 | 109 | 160             | 24         | 19          |
| CR 1-8    | 0.25             | 369            | 560     | 344         | 535     | 141 | 109 | 160             | 25         | 20          |
| CR 1-9    | 0.25             | 387            | 578     | 362         | 553     | 141 | 109 | 160             | 25         | 20          |
| CR 1-10   | 0.25             | 405            | 596     | 380         | 571     | 141 | 109 | 160             | 25         | 21          |
| CR 1-11   | 0.25             | 423            | 614     | 398         | 589     | 141 | 109 | 160             | 26         | 21          |
| CR 1-12   | 0.25             | 447            | 638     | 422         | 613     | 141 | 109 | 160             | 28         | 23          |
| CR 1-13   | 0.25             | 465            | 656     | 440         | 631     | 141 | 109 | 160             | 28         | 24          |
| CR 1-15   | 0.25             | 501            | 692     | 476         | 667     | 141 | 109 | 160             | 29         | 25          |
| CR 1-17   | 0.25             | 537            | 728     | 512         | 703     | 141 | 109 | 160             | 32         | 28          |
| CR 1-19   | 0.25             | 573            | 764     | 548         | 739     | 141 | 109 | 160             | 33         | 28          |
| CR 1-21   | 0.25             | 609            | 800     | 584         | 775     | 141 | 109 | 160             | 34         | 29          |
| CR 1-23   | 0.25             | 645            | 836     | 620         | 811     | 141 | 109 | 160             | 35         | 30          |
| CR 1-25   | 0.25             | 697            | 888     | -           | -       | 141 | 109 | 160             | 43         | -           |
| CR 1-27   | 0.25             | 733            | 924     | -           | -       | 141 | 109 | 160             | 43         | -           |
| CR 1-30   | 0.25             | 787            | 978     | -           | -       | 141 | 109 | 160             | 45         | -           |
| CR 1-33   | 0.25             | 841            | 1032    | -           | -       | 141 | 109 | 160             | 46         | -           |
| CR 1-36   | 0.25             | 895            | 1086    | -           | -       | 141 | 109 | 160             | 48         | -           |

**Note:** 4-pole CR 1 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 3 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |     |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|-----|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |     |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |     | D1  | D2  | D3              | DIN flange | Oval flange |
| B1        | B1 + B2          | B1             | B1 + B2 |             |     |     |     |                 |            |             |
| CR 3-2    | 0.25             | 279            | 470     | 254         | 445 | 141 | 109 | 160             | 22         | 17          |
| CR 3-3    | 0.25             | 279            | 470     | 254         | 445 | 141 | 109 | 160             | 22         | 17          |
| CR 3-4    | 0.25             | 297            | 488     | 272         | 463 | 141 | 109 | 160             | 22         | 18          |
| CR 3-5    | 0.25             | 315            | 506     | 290         | 481 | 141 | 109 | 160             | 23         | 18          |
| CR 3-6    | 0.25             | 333            | 524     | 308         | 499 | 141 | 109 | 160             | 24         | 19          |
| CR 3-7    | 0.25             | 351            | 542     | 326         | 517 | 141 | 109 | 160             | 24         | 20          |
| CR 3-8    | 0.25             | 375            | 566     | 350         | 541 | 141 | 109 | 160             | 26         | 22          |
| CR 3-9    | 0.25             | 393            | 584     | 368         | 559 | 141 | 109 | 160             | 27         | 22          |
| CR 3-10   | 0.25             | 411            | 602     | 386         | 577 | 141 | 109 | 160             | 27         | 23          |
| CR 3-11   | 0.25             | 429            | 620     | 404         | 595 | 141 | 109 | 160             | 30         | 25          |
| CR 3-12   | 0.25             | 447            | 638     | 422         | 613 | 141 | 109 | 160             | 30         | 25          |
| CR 3-13   | 0.25             | 465            | 656     | 440         | 631 | 141 | 109 | 160             | 30         | 26          |
| CR 3-15   | 0.25             | 501            | 692     | 476         | 667 | 141 | 109 | 160             | 31         | 27          |
| CR 3-17   | 0.25             | 553            | 744     | 528         | 719 | 141 | 109 | 160             | 39         | 35          |
| CR 3-19   | 0.25             | 589            | 780     | 564         | 755 | 141 | 109 | 160             | 40         | 36          |
| CR 3-21   | 0.25             | 625            | 816     | 600         | 791 | 141 | 109 | 160             | 41         | 37          |
| CR 3-23   | 0.25             | 661            | 852     | 636         | 827 | 141 | 109 | 160             | 42         | 38          |
| CR 3-25   | 0.25             | 697            | 888     | -           | -   | 141 | 109 | 160             | 43         | -           |
| CR 3-27   | 0.25             | 733            | 924     | -           | -   | 141 | 109 | 160             | 44         | -           |
| CR 3-29   | 0.37             | 769            | 960     | -           | -   | 141 | 109 | 160             | 46         | -           |
| CR 3-31   | 0.37             | 809            | 1000    | -           | -   | 141 | 109 | 160             | 51         | -           |
| CR 3-33   | 0.37             | 845            | 1036    | -           | -   | 141 | 109 | 160             | 51         | -           |
| CR 3-36   | 0.37             | 899            | 1090    | -           | -   | 141 | 109 | 160             | 53         | -           |

**Note:** 4-pole CR 3 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 5 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |      |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |      |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |      | D1  | D2  | D3              | DIN flange | Oval flange |
| B1        | B1 + B2          | B1             | B1 + B2 |             |      |     |     |                 |            |             |
| CR 5-2    | 0.25             | 279            | 470     | 254         | 445  | 141 | 109 | 160             | 22         | 17          |
| CR 5-3    | 0.25             | 306            | 497     | 281         | 472  | 141 | 109 | 160             | 23         | 19          |
| CR 5-4    | 0.25             | 333            | 524     | 308         | 499  | 141 | 109 | 160             | 24         | 19          |
| CR 5-5    | 0.25             | 366            | 557     | 341         | 532  | 141 | 109 | 160             | 26         | 21          |
| CR 5-6    | 0.25             | 393            | 584     | 368         | 559  | 141 | 109 | 160             | 29         | 24          |
| CR 5-7    | 0.25             | 420            | 611     | 395         | 586  | 141 | 109 | 160             | 29         | 25          |
| CR 5-8    | 0.25             | 447            | 638     | 422         | 613  | 141 | 109 | 160             | 30         | 25          |
| CR 5-9    | 0.25             | 490            | 681     | 465         | 656  | 141 | 109 | 160             | 37         | 33          |
| CR 5-10   | 0.25             | 517            | 708     | 492         | 683  | 141 | 109 | 160             | 38         | 33          |
| CR 5-11   | 0.25             | 544            | 735     | 519         | 710  | 141 | 109 | 160             | 39         | 35          |
| CR 5-12   | 0.25             | 571            | 762     | 546         | 737  | 141 | 109 | 160             | 40         | 35          |
| CR 5-13   | 0.25             | 598            | 789     | 573         | 764  | 141 | 109 | 160             | 40         | 36          |
| CR 5-14   | 0.25             | 625            | 816     | 600         | 791  | 141 | 109 | 160             | 41         | 36          |
| CR 5-15   | 0.25             | 652            | 843     | 627         | 818  | 141 | 109 | 160             | 42         | 37          |
| CR 5-16   | 0.37             | 679            | 870     | 654         | 845  | 141 | 109 | 160             | 43         | 38          |
| CR 5-18   | 0.37             | 737            | 928     | 712         | 903  | 141 | 109 | 160             | 48         | 44          |
| CR 5-20   | 0.37             | 791            | 982     | 766         | 957  | 141 | 109 | 160             | 50         | 45          |
| CR 5-22   | 0.37             | 845            | 1036    | 820         | 1011 | 141 | 109 | 160             | 62         | 56          |
| CR 5-24   | 0.55             | 899            | 1130    | -           | -    | 141 | 109 | 200             | 62         | -           |
| CR 5-26   | 0.55             | 953            | 1184    | -           | -    | 141 | 109 | 200             | 63         | -           |
| CR 5-29   | 0.55             | 1034           | 1265    | -           | -    | 141 | 109 | 200             | 65         | -           |
| CR 5-32   | 0.55             | 1145           | 1376    | -           | -    | 141 | 109 | 200             | 81         | -           |
| CR 5-36   | 0.75             | 1253           | 1534    | -           | -    | 178 | 109 | 200             | 83         | -           |

**Note:** 4-pole CR 5 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 10 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 10-1   | 0.25             | 343            | 534     | 343         | 534     | 141 | 109 | 160             | 33         | 30          |
| CR 10-2   | 0.25             | 347            | 538     | 347         | 538     | 141 | 109 | 160             | 35         | 33          |
| CR 10-3   | 0.25             | 377            | 568     | 377         | 568     | 141 | 109 | 160             | 38         | 36          |
| CR 10-4   | 0.25             | 423            | 614     | 423         | 614     | 141 | 109 | 160             | 46         | 44          |
| CR 10-5   | 0.25             | 453            | 644     | 453         | 644     | 141 | 109 | 160             | 48         | 45          |
| CR 10-6   | 0.25             | 483            | 674     | 483         | 674     | 141 | 109 | 160             | 49         | 46          |
| CR 10-7   | 0.37             | 518            | 709     | 518         | 709     | 141 | 109 | 160             | 55         | 52          |
| CR 10-8   | 0.37             | 548            | 739     | 548         | 739     | 141 | 109 | 160             | 56         | 53          |
| CR 10-9   | 0.37             | 578            | 769     | 578         | 769     | 141 | 109 | 160             | 57         | 54          |
| CR 10-10  | 0.55             | 608            | 839     | 608         | 839     | 141 | 109 | 200             | 68         | 65          |
| CR 10-12  | 0.6              | 668            | 899     | 668         | 899     | 141 | 109 | 200             | 70         | 68          |
| CR 10-14  | 0.75             | 760            | 1041    | 760         | 1041    | 178 | 109 | 200             | 93         | 90          |
| CR 10-16  | 0.75             | 820            | 1101    | 820         | 1101    | 178 | 109 | 200             | 95         | 92          |
| CR 10-18  | 0.75             | 880            | 1161    | -           | -       | 178 | 109 | 200             | 100        | -           |
| CR 10-20  | 1.1              | 940            | 1261    | -           | -       | 178 | 110 | 200             | 98         | -           |
| CR 10-22  | 1.1              | 1000           | 1321    | -           | -       | 178 | 110 | 200             | 100        | -           |

**Note:** 4-pole CR 10 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 15 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 15-1   | 0.25             | 400            | 591     | 400         | 591     | 141 | 109 | 160             | 41         | 40          |
| CR 15-2   | 0.25             | 415            | 606     | 415         | 606     | 141 | 109 | 160             | 49         | 48          |
| CR 15-3   | 0.37             | 465            | 656     | 465         | 656     | 141 | 109 | 160             | 55         | 54          |
| CR 15-4   | 0.55             | 510            | 741     | 510         | 741     | 141 | 109 | 200             | 67         | 66          |
| CR 15-5   | 0.55             | 555            | 786     | 555         | 786     | 141 | 109 | 200             | 68         | 67          |
| CR 15-6   | 0.75             | 632            | 913     | 632         | 913     | 178 | 109 | 200             | 90         | 89          |
| CR 15-7   | 0.75             | 677            | 958     | 677         | 958     | 178 | 109 | 200             | 92         | 91          |
| CR 15-8   | 1.1              | 722            | 1043    | -           | -       | 178 | 110 | 200             | 92         | -           |
| CR 15-9   | 1.1              | 767            | 1088    | -           | -       | 178 | 110 | 200             | 93         | -           |
| CR 15-10  | 1.1              | 889            | 1210    | -           | -       | 178 | 110 | 200             | 125        | -           |
| CR 15-12  | 1.5              | 979            | 1260    | -           | -       | 178 | 110 | 200             | 134        | -           |
| CR 15-14  | 1.5              | 1069           | 1350    | -           | -       | 178 | 110 | 200             | 138        | -           |
| CR 15-17  | 2.2              | 1204           | 1525    | -           | -       | 198 | 120 | 250             | 157        | -           |

**Note:** 4-pole CR 15 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 20 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 20-1   | 0.25             | 400            | 591     | 400         | 591     | 141 | 109 | 160             | 41         | 40          |
| CR 20-2   | 0.37             | 415            | 606     | 415         | 606     | 141 | 109 | 160             | 50         | 49          |
| CR 20-3   | 0.55             | 465            | 696     | 465         | 696     | 141 | 109 | 200             | 65         | 64          |
| CR 20-4   | 0.6              | 542            | 773     | 542         | 773     | 141 | 109 | 200             | 87         | 86          |
| CR 20-5   | 0.75             | 587            | 868     | 587         | 868     | 178 | 109 | 200             | 89         | 88          |
| CR 20-6   | 1.1              | 632            | 953     | 632         | 953     | 178 | 110 | 200             | 88         | -           |
| CR 20-7   | 1.1              | 677            | 998     | 677         | 998     | 178 | 110 | 200             | 90         | -           |
| CR 20-8   | 1.1              | 799            | 1120    | -           | -       | 178 | 110 | 200             | 122        | -           |
| CR 20-10  | 1.5              | 889            | 1170    | -           | -       | 178 | 110 | 200             | 130        | -           |
| CR 20-12  | 2.2              | 979            | 1300    | -           | -       | 198 | 120 | 250             | 148        | -           |
| CR 20-14  | 2.2              | 1069           | 1390    | -           | -       | 198 | 120 | 250             | 152        | -           |
| CR 20-17  | 2.2              | 1204           | 1525    | -           | -       | 198 | 120 | 250             | 187        | -           |

**Note:** 4-pole CR 20 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 32 with 4-pole motor, 50 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 32-1-1  | 1.5              | 505            | 786     | -           | -       | 178 | 110 | 200             | 61         | -           |
| CR 32-1    | 1.5              | 505            | 786     | -           | -       | 178 | 110 | 200             | 62         | -           |
| CR 32-2-2  | 1.5              | 575            | 856     | -           | -       | 178 | 110 | 200             | 76         | -           |
| CR 32-2    | 1.5              | 575            | 856     | -           | -       | 178 | 110 | 200             | 87         | -           |
| CR 32-3-2  | 1.5              | 645            | 926     | -           | -       | 178 | 110 | 200             | 107        | -           |
| CR 32-3    | 1.5              | 645            | 926     | -           | -       | 178 | 110 | 200             | 107        | -           |
| CR 32-4-2  | 1.5              | 715            | 996     | -           | -       | 178 | 110 | 200             | 117        | -           |
| CR 32-4    | 1.5              | 715            | 996     | -           | -       | 178 | 110 | 200             | 117        | -           |
| CR 32-5-2  | 1.5              | 895            | 1176    | -           | -       | 178 | 110 | 200             | 155        | -           |
| CR 32-5    | 1.5              | 895            | 1176    | -           | -       | 178 | 110 | 200             | 155        | -           |
| CR 32-6-2  | 1.5              | 965            | 1246    | -           | -       | 178 | 110 | 200             | 158        | -           |
| CR 32-6    | 1.5              | 965            | 1246    | -           | -       | 178 | 110 | 200             | 158        | -           |
| CR 32-7-2  | 1.5              | 1035           | 1316    | -           | -       | 178 | 110 | 200             | 175        | -           |
| CR 32-7    | 1.5              | 1035           | 1316    | -           | -       | 178 | 110 | 200             | 175        | -           |
| CR 32-8-2  | 2.2              | 1105           | 1426    | -           | -       | 198 | 120 | 250             | 178        | -           |
| CR 32-8    | 2.2              | 1105           | 1426    | -           | -       | 198 | 120 | 250             | 178        | -           |
| CR 32-9-2  | 2.2              | 1175           | 1496    | -           | -       | 198 | 120 | 250             | 211        | -           |
| CR 32-9    | 2.2              | 1175           | 1496    | -           | -       | 198 | 120 | 250             | 211        | -           |
| CR 32-10-2 | 2.2              | 1245           | 1566    | -           | -       | 198 | 120 | 250             | 214        | -           |
| CR 32-10   | 2.2              | 1245           | 1566    | -           | -       | 198 | 120 | 250             | 214        | -           |
| CR 32-11-2 | 2.2              | 1315           | 1636    | -           | -       | 198 | 120 | 250             | 250        | -           |
| CR 32-11   | 3                | 1315           | 1650    | -           | -       | 198 | 120 | 250             | 249        | -           |
| CR 32-12-2 | 3                | 1385           | 1720    | -           | -       | 198 | 120 | 250             | 253        | -           |
| CR 32-12   | 3                | 1385           | 1720    | -           | -       | 198 | 120 | 250             | 253        | -           |
| CR 32-13-2 | 3                | 1455           | 1790    | -           | -       | 198 | 120 | 250             | 321        | -           |
| CR 32-13   | 3                | 1455           | 1790    | -           | -       | 198 | 120 | 250             | 321        | -           |
| CR 32-14-2 | 3                | 1525           | 1860    | -           | -       | 198 | 120 | 250             | 324        | -           |
| CR 32-14   | 3                | 1525           | 1860    | -           | -       | 198 | 120 | 250             | 324        | -           |

**Note:** 4-pole CR 32 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages 160 to 161.

## CR 45 with 4-pole motor, 50 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 45-1-1  | 1.5              | 559            | 840     | -           | -       | 178 | 110 | 200             | 80         | -           |
| CR 45-1    | 1.5              | 559            | 840     | -           | -       | 178 | 110 | 200             | 91         | -           |
| CR 45-2-2  | 1.5              | 639            | 920     | -           | -       | 178 | 110 | 200             | 108        | -           |
| CR 45-2    | 1.5              | 639            | 920     | -           | -       | 178 | 110 | 200             | 110        | -           |
| CR 45-3-2  | 1.5              | 829            | 1110    | -           | -       | 178 | 110 | 200             | 149        | -           |
| CR 45-3    | 1.5              | 829            | 1110    | -           | -       | 178 | 110 | 200             | 149        | -           |
| CR 45-4-2  | 1.5              | 909            | 1190    | -           | -       | 178 | 110 | 200             | 169        | -           |
| CR 45-4    | 2.2              | 909            | 1230    | -           | -       | 198 | 120 | 250             | 169        | -           |
| CR 45-5-2  | 2.2              | 989            | 1310    | -           | -       | 198 | 120 | 250             | 204        | -           |
| CR 45-5    | 2.2              | 989            | 1310    | -           | -       | 198 | 120 | 250             | 204        | -           |
| CR 45-6-2  | 3                | 1069           | 1404    | -           | -       | 198 | 120 | 250             | 239        | -           |
| CR 45-6    | 3                | 1069           | 1404    | -           | -       | 198 | 120 | 250             | 239        | -           |
| CR 45-7-2  | 3                | 1149           | 1484    | -           | -       | 198 | 120 | 250             | 320        | -           |
| CR 45-7    | 3                | 1149           | 1484    | -           | -       | 198 | 120 | 250             | 320        | -           |
| CR 45-8-2  | 4                | 1229           | 1601    | -           | -       | 220 | 134 | 250             | 336        | -           |
| CR 45-8    | 4                | 1229           | 1601    | -           | -       | 220 | 134 | 250             | 336        | -           |
| CR 45-9-2  | 4                | 1309           | 1681    | -           | -       | 220 | 134 | 250             | 341        | -           |
| CR 45-9    | 4                | 1309           | 1681    | -           | -       | 220 | 134 | 250             | 361        | -           |
| CR 45-10-2 | 4                | 1389           | 1761    | -           | -       | 220 | 134 | 250             | 366        | -           |
| CR 45-10   | 4                | 1389           | 1761    | -           | -       | 220 | 134 | 250             | 366        | -           |
| CR 45-11-2 | 5.5              | 1469           | 1860    | -           | -       | 260 | 159 | 300             | 487        | -           |
| CR 45-11   | 5.5              | 1469           | 1860    | -           | -       | 260 | 159 | 300             | 487        | -           |
| CR 45-12-2 | 5.5              | 1549           | 1940    | -           | -       | 260 | 159 | 300             | 492        | -           |
| CR 45-12   | 5.5              | 1549           | 1940    | -           | -       | 260 | 159 | 300             | 492        | -           |
| CR 45-13-2 | 5.5              | 1629           | 2020    | -           | -       | 260 | 159 | 300             | 497        | -           |

**Note:** 4-pole CR 45 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 64 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 64-1-1 | 1.5              | 561            | 842     | -           | -       | 178 | 110 | 200             | 91         | -           |
| CR 64-1   | 1.5              | 561            | 842     | -           | -       | 178 | 110 | 200             | 102        | -           |
| CR 64-2-2 | 1.5              | 644            | 925     | -           | -       | 178 | 110 | 200             | 114        | -           |
| CR 64-2-1 | 1.5              | 754            | 1035    | -           | -       | 178 | 110 | 200             | 149        | -           |
| CR 64-2   | 1.5              | 754            | 1035    | -           | -       | 178 | 110 | 200             | 149        | -           |
| CR 64-3-2 | 2.2              | 836            | 1157    | -           | -       | 198 | 120 | 250             | 174        | -           |
| CR 64-3-1 | 2.2              | 836            | 1157    | -           | -       | 198 | 120 | 250             | 174        | -           |
| CR 64-3   | 2.2              | 836            | 1157    | -           | -       | 198 | 120 | 250             | 204        | -           |
| CR 64-4-2 | 3                | 919            | 1254    | -           | -       | 198 | 120 | 250             | 213        | -           |
| CR 64-4-1 | 3                | 919            | 1254    | -           | -       | 198 | 120 | 250             | 244        | -           |
| CR 64-4   | 3                | 919            | 1254    | -           | -       | 198 | 120 | 250             | 244        | -           |
| CR 64-5-2 | 3                | 1001           | 1336    | -           | -       | 198 | 120 | 250             | 315        | -           |
| CR 64-5-1 | 4                | 1001           | 1373    | -           | -       | 220 | 134 | 250             | 316        | -           |
| CR 64-5   | 4                | 1001           | 1373    | -           | -       | 220 | 134 | 250             | 316        | -           |
| CR 64-6-2 | 4                | 1084           | 1456    | -           | -       | 220 | 134 | 250             | 336        | -           |
| CR 64-6-1 | 4                | 1084           | 1456    | -           | -       | 220 | 134 | 250             | 356        | -           |
| CR 64-6   | 4                | 1084           | 1456    | -           | -       | 220 | 134 | 250             | 356        | -           |
| CR 64-7-2 | 5.5              | 1166           | 1557    | -           | -       | 260 | 159 | 300             | 385        | -           |
| CR 64-7-1 | 5.5              | 1166           | 1557    | -           | -       | 260 | 159 | 300             | 385        | -           |
| CR 64-7   | 5.5              | 1166           | 1557    | -           | -       | 260 | 159 | 300             | 449        | -           |
| CR 64-8-2 | 5.5              | 1249           | 1640    | -           | -       | 260 | 159 | 300             | 482        | -           |

**Note:** 4-pole CR 90 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 90 with 4-pole motor, 50 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 90-1-1 | 1.5              | 571            | 852     | -           | -       | 178 | 110 | 200             | 80.4       | -           |
| CR 90-1   | 1.5              | 571            | 852     | -           | -       | 178 | 110 | 200             | 80.4       | -           |
| CR 90-2-2 | 1.5              | 773            | 1054    | -           | -       | 178 | 110 | 200             | 85.3       | -           |
| CR 90-2   | 2.2              | 773            | 1094    | -           | -       | 198 | 120 | 250             | 85.6       | -           |
| CR 90-3-2 | 2.2              | 865            | 1186    | -           | -       | 198 | 120 | 250             | 90.7       | -           |
| CR 90-3   | 3                | 865            | 1200    | -           | -       | 198 | 120 | 250             | 94.7       | -           |
| CR 90-4-2 | 4                | 957            | 1329    | -           | -       | 220 | 134 | 250             | 110.7      | -           |
| CR 90-4   | 4                | 957            | 1329    | -           | -       | 220 | 134 | 250             | 110.7      | -           |
| CR 90-5-2 | 4                | 1049           | 1421    | -           | -       | 220 | 134 | 250             | 117.2      | -           |
| CR 90-5   | 5.5              | 1049           | 1440    | -           | -       | 260 | 159 | 300             | 128.4      | -           |
| CR 90-6-2 | 5.5              | 1141           | 1532    | -           | -       | 260 | 159 | 300             | 134.1      | -           |
| CR 90-6   | 5.5              | 1141           | 1532    | -           | -       | 260 | 159 | 300             | 133.4      | -           |

**Note:** 4-pole CR 90 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 120 with 4-pole motor, 50 HZ

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 120-1   | 1.5              | 834            | 1115    | -           | -       | 178 | 110 | 200             | 113        | -           |
| CR 120-2-1 | 2.2              | 990            | 1311    | -           | -       | 198 | 120 | 250             | 131        | -           |
| CR 120-2   | 3                | 990            | 1325    | -           | -       | 198 | 120 | 250             | 133        | -           |
| CR 120-3   | 4                | 1145           | 1517    | -           | -       | 220 | 134 | 250             | 148        | -           |
| CR 120-4-1 | 5.5              | 1301           | 1692    | -           | -       | 260 | 159 | 300             | 185        | -           |
| CR 120-5-1 | 5.5              | 1456           | 1847    | -           | -       | 260 | 159 | 300             | 194        | -           |
| CR 120-6-1 | 7.5              | 1642           | 2071    | -           | -       | 260 | 159 | 300             | 220        | -           |
| CR 120-7   | 11               | 1797           | 2342    | -           | -       | 314 | 204 | 350             | 267        | -           |

**Note:** 4-pole CR 120 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 150 with 4-pole motor, 50 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 150-1-1 | 1.5              | 834            | 1115    | -           | -       | 178 | 110 | 200             | 113        | -           |
| CR 150-1   | 2.2              | 834            | 1155    | -           | -       | 198 | 120 | 250             | 122        | -           |
| CR 150-2-1 | 3                | 990            | 1325    | -           | -       | 198 | 120 | 250             | 133        | -           |
| CR 150-3-2 | 4                | 1145           | 1517    | -           | -       | 220 | 134 | 250             | 148        | -           |
| CR 150-3   | 5.5              | 1145           | 1536    | -           | -       | 260 | 159 | 300             | 175        | -           |
| CR 150-4-1 | 5.5              | 1301           | 1692    | -           | -       | 260 | 159 | 300             | 184        | -           |
| CR 150-5-2 | 7.5              | 1486           | 1915    | -           | -       | 260 | 159 | 300             | 210        | -           |
| CR 150-6   | 11               | 1642           | 2187    | -           | -       | 314 | 204 | 350             | 258        | -           |

**Note:** 4-pole CR 150 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 1 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 1-2    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 105             | 22         | 17          |
| CR 1-3    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 105             | 22         | 17          |
| CR 1-4    | 0.25             | 297            | 488     | 272         | 463     | 141 | 109 | 105             | 22         | 18          |
| CR 1-5    | 0.25             | 315            | 506     | 290         | 481     | 141 | 109 | 105             | 23         | 19          |
| CR 1-6    | 0.25             | 333            | 524     | 308         | 499     | 141 | 109 | 105             | 24         | 19          |
| CR 1-7    | 0.25             | 357            | 548     | 332         | 523     | 141 | 109 | 105             | 26         | 21          |
| CR 1-8    | 0.25             | 375            | 566     | 350         | 541     | 141 | 109 | 105             | 26         | 22          |
| CR 1-9    | 0.25             | 393            | 584     | 368         | 559     | 141 | 109 | 105             | 27         | 22          |
| CR 1-10   | 0.25             | 411            | 602     | 386         | 577     | 141 | 109 | 105             | 29         | 25          |
| CR 1-11   | 0.25             | 429            | 620     | 404         | 595     | 141 | 109 | 105             | 30         | 25          |
| CR 1-12   | 0.25             | 447            | 638     | 422         | 613     | 141 | 109 | 105             | 30         | 25          |
| CR 1-13   | 0.25             | 465            | 656     | 440         | 631     | 141 | 109 | 105             | 30         | 26          |
| CR 1-15   | 0.25             | 517            | 708     | 492         | 683     | 141 | 109 | 105             | 38         | 34          |
| CR 1-17   | 0.25             | 553            | 744     | 528         | 719     | 141 | 109 | 105             | 39         | 35          |
| CR 1-19   | 0.25             | 589            | 780     | -           | -       | 141 | 109 | 105             | 41         | -           |
| CR 1-21   | 0.25             | 625            | 816     | -           | -       | 141 | 109 | 105             | 41         | -           |
| CR 1-23   | 0.25             | 661            | 852     | -           | -       | 141 | 109 | 105             | 42         | -           |
| CR 1-25   | 0.25             | 697            | 888     | -           | -       | 141 | 109 | 105             | 43         | -           |
| CR 1-27   | 0.37             | 737            | 928     | -           | -       | 141 | 109 | 105             | 49         | -           |

**Note:** 4-pole CR 1 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 3 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 3-2    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 105             | 22         | 17          |
| CR 3-3    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 105             | 23         | 18          |
| CR 3-4    | 0.25             | 297            | 488     | 272         | 463     | 141 | 109 | 105             | 23         | 18          |
| CR 3-5    | 0.25             | 321            | 512     | 296         | 487     | 141 | 109 | 105             | 25         | 21          |
| CR 3-6    | 0.25             | 339            | 530     | 314         | 505     | 141 | 109 | 105             | 28         | 23          |
| CR 3-7    | 0.25             | 357            | 548     | 332         | 523     | 141 | 109 | 105             | 28         | 23          |
| CR 3-8    | 0.25             | 375            | 566     | 350         | 541     | 141 | 109 | 105             | 28         | 24          |
| CR 3-9    | 0.25             | 409            | 600     | 384         | 575     | 141 | 109 | 105             | 36         | 31          |
| CR 3-10   | 0.25             | 427            | 618     | 402         | 593     | 141 | 109 | 105             | 36         | 32          |
| CR 3-11   | 0.25             | 445            | 636     | 420         | 611     | 141 | 109 | 105             | 37         | 32          |
| CR 3-12   | 0.25             | 463            | 654     | 438         | 629     | 141 | 109 | 105             | 38         | 33          |
| CR 3-13   | 0.25             | 481            | 672     | 456         | 647     | 141 | 109 | 105             | 38         | 33          |
| CR 3-15   | 0.25             | 517            | 708     | 492         | 683     | 141 | 109 | 105             | 39         | 34          |
| CR 3-17   | 0.37             | 553            | 744     | 528         | 719     | 141 | 109 | 105             | 41         | 36          |
| CR 3-19   | 0.37             | 593            | 784     | -           | -       | 141 | 109 | 105             | 46         | -           |
| CR 3-21   | 0.37             | 629            | 820     | -           | -       | 141 | 109 | 105             | 47         | -           |
| CR 3-23   | 0.37             | 665            | 856     | -           | -       | 141 | 109 | 105             | 47         | -           |
| CR 3-25   | 0.55             | 701            | 932     | -           | -       | 141 | 109 | 120             | 58         | -           |

**Note:** 4-pole CR 3 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 5 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 5-2    | 0.25             | 279            | 470     | 254         | 445     | 141 | 109 | 105             | 22         | 18          |
| CR 5-3    | 0.25             | 312            | 503     | 287         | 478     | 141 | 109 | 105             | 27         | 22          |
| CR 5-4    | 0.25             | 339            | 530     | 314         | 505     | 141 | 109 | 105             | 27         | 23          |
| CR 5-5    | 0.25             | 382            | 573     | 357         | 548     | 141 | 109 | 105             | 35         | 31          |
| CR 5-6    | 0.25             | 409            | 600     | 384         | 575     | 141 | 109 | 105             | 36         | 32          |
| CR 5-7    | 0.25             | 436            | 627     | 411         | 602     | 141 | 109 | 105             | 37         | 32          |
| CR 5-8    | 0.25             | 463            | 654     | 438         | 629     | 141 | 109 | 105             | 37         | 33          |
| CR 5-9    | 0.25             | 490            | 681     | 465         | 656     | 141 | 109 | 105             | 38         | 33          |
| CR 5-10   | 0.37             | 521            | 712     | 496         | 687     | 141 | 109 | 105             | 44         | 39          |
| CR 5-11   | 0.37             | 548            | 739     | 523         | 714     | 141 | 109 | 105             | 44         | 40          |
| CR 5-12   | 0.37             | 575            | 766     | 550         | 741     | 141 | 109 | 105             | 45         | 40          |
| CR 5-13   | 0.37             | 602            | 793     | 577         | 768     | 141 | 109 | 105             | 56         | 52          |
| CR 5-14   | 0.55             | 629            | 860     | 604         | 835     | 141 | 109 | 120             | 56         | 52          |
| CR 5-15   | 0.55             | 656            | 887     | 631         | 862     | 141 | 109 | 120             | 57         | 52          |
| CR 5-16   | 0.55             | 683            | 914     | 658         | 889     | 141 | 109 | 120             | 57         | 53          |
| CR 5-18   | 0.55             | 767            | 998     | -           | -       | 141 | 109 | 120             | 73         | -           |
| CR 5-20   | 0.75             | 821            | 1052    | -           | -       | 141 | 109 | 120             | 74         | -           |
| CR 5-22   | 0.75             | 875            | 1106    | -           | -       | 141 | 109 | 120             | 75         | -           |
| CR 5-24   | 0.75             | 929            | 1160    | -           | -       | 141 | 109 | 120             | 78         | -           |

**Note:** 4-pole CR 5 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).

## CR 10 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 10-1   | 0.25             | 347            | 538     | 347         | 538     | 141 | 109 | 105             | 35         | 32          |
| CR 10-2   | 0.25             | 363            | 554     | 363         | 554     | 141 | 109 | 105             | 44         | 42          |
| CR 10-3   | 0.25             | 393            | 584     | 393         | 584     | 141 | 109 | 105             | 46         | 43          |
| CR 10-4   | 0.37             | 428            | 619     | 428         | 619     | 141 | 109 | 105             | 52         | 49          |
| CR 10-5   | 0.37             | 458            | 649     | 458         | 649     | 141 | 109 | 105             | 53         | 50          |
| CR 10-6   | 0.55             | 488            | 719     | 488         | 719     | 141 | 109 | 120             | 64         | 61          |
| CR 10-7   | 0.55             | 550            | 781     | 550         | 781     | 141 | 109 | 120             | 86         | 83          |
| CR 10-8   | 0.75             | 580            | 811     | 580         | 811     | 141 | 109 | 120             | 87         | 84          |
| CR 10-9   | 0.75             | 610            | 841     | 610         | 841     | 141 | 109 | 120             | 88         | 85          |
| CR 10-10  | 0.75             | 640            | 871     | 640         | 871     | 141 | 109 | 120             | 91         | 88          |
| CR 10-12  | 1.1              | 700            | 981     | -           | -       | 178 | 110 | 135             | 89         | -           |
| CR 10-14  | 1.1              | 837            | 1118    | -           | -       | 178 | 110 | 135             | 122        | -           |
| CR 10-16  | 1.5              | 897            | 1178    | -           | -       | 178 | 110 | 135             | 129        | -           |
| CR 10-17  | 1.5              | 957            | 1238    | -           | -       | 178 | 110 | 135             | 131        | -           |

**Note:** 4-pole CR 10 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages [160](#) to [161](#).



## CR 15 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 15-1   | 0.25             | 415            | 606     | 415         | 606     | 141 | 109 | 105             | 48         | 47          |
| CR 15-2   | 0.37             | 420            | 611     | 420         | 611     | 141 | 109 | 105             | 54         | 53          |
| CR 15-3   | 0.55             | 465            | 696     | 465         | 696     | 141 | 109 | 120             | 65         | 64          |
| CR 15-4   | 0.75             | 542            | 773     | 542         | 773     | 141 | 109 | 120             | 87         | 86          |
| CR 15-5   | 1.1              | 587            | 868     | 587         | 868     | 178 | 110 | 135             | 87         | 86          |
| CR 15-6   | 1.1              | 709            | 990     | -           | -       | 178 | 110 | 135             | 119        | -           |
| CR 15-7   | 1.5              | 754            | 1035    | -           | -       | 178 | 110 | 135             | 125        | -           |
| CR 15-8   | 1.5              | 799            | 1080    | -           | -       | 178 | 110 | 135             | 127        | -           |
| CR 15-9   | 2.2              | 844            | 1179    | -           | -       | 198 | 120 | 160             | 143        | -           |
| CR 15-10  | 2.2              | 889            | 1224    | -           | -       | 198 | 120 | 160             | 145        | -           |
| CR 15-12  | 2.2              | 979            | 1314    | -           | -       | 198 | 120 | 160             | 178        | -           |

**Note:** 4-pole CR 15 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 20 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 20-1   | 0.25             | 415            | 606     | 415         | 606     | 141 | 109 | 105             | 49         | 48          |
| CR 20-2   | 0.55             | 420            | 651     | 420         | 651     | 141 | 109 | 120             | 64         | 63          |
| CR 20-3   | 0.75             | 497            | 728     | 497         | 728     | 141 | 109 | 120             | 86         | 85          |
| CR 20-4   | 1.1              | 542            | 823     | 542         | 823     | 178 | 110 | 135             | 85         | 84          |
| CR 20-5   | 1.5              | 664            | 945     | 664         | 945     | 178 | 110 | 135             | 122        | 121         |
| CR 20-6   | 1.5              | 709            | 990     | -           | -       | 178 | 110 | 135             | 124        | -           |
| CR 20-7   | 2.2              | 754            | 1089    | -           | -       | 198 | 120 | 160             | 139        | -           |
| CR 20-8   | 2.2              | 799            | 1134    | -           | -       | 198 | 120 | 160             | 141        | -           |
| CR 20-10  | 3                | 889            | 1224    | -           | -       | 198 | 120 | 160             | 174        | -           |

**Note:** 4-pole CR 20 pumps are also available as CRI and CRN pumps with PJE and CA connection.  
For information about electrical data, see pages 160 to 161.

## CR 32 with 4-pole motor, 60 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 32-1-1  | 1.5              | 505            | 786     | -           | -       | 178 | 110 | 135             | 62         | -           |
| CR 32-1    | 1.5              | 505            | 786     | -           | -       | 178 | 110 | 135             | 66         | -           |
| CR 32-2-2  | 1.5              | 575            | 856     | -           | -       | 178 | 110 | 135             | 98         | -           |
| CR 32-2-1  | 1.5              | 575            | 856     | -           | -       | 178 | 110 | 135             | 98         | -           |
| CR 32-2    | 1.5              | 575            | 856     | -           | -       | 178 | 110 | 135             | 100        | -           |
| CR 32-3-2  | 1.5              | 755            | 1036    | -           | -       | 178 | 110 | 135             | 144        | -           |
| CR 32-3    | 1.5              | 755            | 1036    | -           | -       | 178 | 110 | 135             | 144        | -           |
| CR 32-4-2  | 1.5              | 825            | 1106    | -           | -       | 178 | 110 | 135             | 152        | -           |
| CR 32-4    | 2.2              | 825            | 1160    | -           | -       | 198 | 120 | 160             | 166        | -           |
| CR 32-5-2  | 2.2              | 895            | 1230    | -           | -       | 198 | 120 | 160             | 169        | -           |
| CR 32-5    | 2.2              | 895            | 1230    | -           | -       | 198 | 120 | 160             | 199        | -           |
| CR 32-6-2  | 2.2              | 965            | 1300    | -           | -       | 198 | 120 | 160             | 202        | -           |
| CR 32-6    | 2.2              | 965            | 1300    | -           | -       | 198 | 120 | 160             | 202        | -           |
| CR 32-7-2  | 3                | 1035           | 1370    | -           | -       | 198 | 120 | 160             | 235        | -           |
| CR 32-7    | 3                | 1035           | 1370    | -           | -       | 198 | 120 | 160             | 235        | -           |
| CR 32-8-2  | 3                | 1105           | 1440    | -           | -       | 198 | 120 | 160             | 304        | -           |
| CR 32-8    | 3                | 1105           | 1440    | -           | -       | 198 | 120 | 160             | 304        | -           |
| CR 32-9-2  | 4                | 1175           | 1547    | -           | -       | 220 | 134 | 160             | 308        | -           |
| CR 32-9    | 4                | 1175           | 1547    | -           | -       | 220 | 134 | 160             | 308        | -           |
| CR 32-10-2 | 4                | 1245           | 1617    | -           | -       | 220 | 134 | 160             | 311        | -           |

**Note:** 4-pole CR 32 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages 160 to 161.

## CR 45 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |   |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |   |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |   | D1  | D2  | D3              | DIN flange | Oval flange |
| B1        | B1 + B2          | B1             | B1 + B2 |             |   |     |     |                 |            |             |
| CR 45-1-1 | 1.5              | 559            | 840     | -           | - | 178 | 110 | 135             | 102        | -           |
| CR 45-1   | 1.5              | 559            | 840     | -           | - | 178 | 110 | 135             | 104        | -           |
| CR 45-2-2 | 1.5              | 749            | 1030    | -           | - | 178 | 110 | 135             | 145        | -           |
| CR 45-2-1 | 1.5              | 749            | 1030    | -           | - | 178 | 110 | 135             | 145        | -           |
| CR 45-2   | 2.2              | 749            | 1084    | -           | - | 198 | 120 | 160             | 159        | -           |
| CR 45-3-2 | 2.2              | 829            | 1164    | -           | - | 198 | 120 | 160             | 193        | -           |
| CR 45-3-1 | 2.2              | 829            | 1164    | -           | - | 198 | 120 | 160             | 193        | -           |
| CR 45-3   | 2.2              | 829            | 1164    | -           | - | 198 | 120 | 160             | 193        | -           |
| CR 45-4-2 | 3                | 909            | 1244    | -           | - | 198 | 120 | 160             | 229        | -           |
| CR 45-4-1 | 3                | 909            | 1244    | -           | - | 198 | 120 | 160             | 295        | -           |
| CR 45-4   | 3                | 909            | 1244    | -           | - | 198 | 120 | 160             | 295        | -           |
| CR 45-5-2 | 4                | 989            | 1361    | -           | - | 220 | 134 | 160             | 301        | -           |
| CR 45-5-1 | 4                | 989            | 1361    | -           | - | 220 | 134 | 160             | 301        | -           |
| CR 45-5   | 4                | 989            | 1361    | -           | - | 220 | 134 | 160             | 301        | -           |
| CR 45-6-2 | 4                | 1069           | 1441    | -           | - | 220 | 134 | 160             | 326        | -           |
| CR 45-6-1 | 5.5              | 1069           | 1448    | -           | - | 260 | 159 | 300             | 335        | -           |
| CR 45-6   | 5.5              | 1069           | 1448    | -           | - | 260 | 159 | 300             | 335        | -           |
| CR 45-7-2 | 5.5              | 1149           | 1528    | -           | - | 260 | 159 | 300             | 414        | -           |
| CR 45-7-1 | 5.5              | 1149           | 1528    | -           | - | 260 | 159 | 300             | 414        | -           |
| CR 45-7   | 5.5              | 1149           | 1528    | -           | - | 260 | 159 | 300             | 414        | -           |

**Note:** 4-pole CR 45 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages 160 to 161.

## CR 64 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |   |                 |     |     |            |             |
|-----------|------------------|----------------|---------|-------------|---|-----------------|-----|-----|------------|-------------|
|           |                  | Dimension [mm] |         |             |   | Net weight [kg] |     |     |            |             |
|           |                  | DIN flange     |         | Oval flange |   | D1              | D2  | D3  | DIN flange | Oval flange |
| B1        | B1 + B2          | B1             | B1 + B2 |             |   |                 |     |     |            |             |
| CR 64-1-1 | 1.5              | 561            | 842     | -           | - | 178             | 110 | 135 | 104        | -           |
| CR 64-1   | 1.5              | 671            | 952     | -           | - | 178             | 110 | 135 | 139        | -           |
| CR 64-2-2 | 2.2              | 754            | 1089    | -           | - | 198             | 120 | 160 | 163        | -           |
| CR 64-2-1 | 2.2              | 754            | 1089    | -           | - | 198             | 120 | 160 | 193        | -           |
| CR 64-2   | 3                | 754            | 1089    | -           | - | 198             | 120 | 160 | 223        | -           |
| CR 64-3-2 | 3                | 836            | 1171    | -           | - | 198             | 120 | 160 | 234        | -           |
| CR 64-3-1 | 4                | 836            | 1208    | -           | - | 220             | 134 | 160 | 301        | -           |
| CR 64-3   | 4                | 836            | 1208    | -           | - | 220             | 134 | 160 | 301        | -           |
| CR 64-4-2 | 4                | 919            | 1291    | -           | - | 220             | 134 | 160 | 331        | -           |
| CR 64-4-1 | 5.5              | 919            | 1298    | -           | - | 260             | 159 | 300 | 340        | -           |
| CR 64-4   | 5.5              | 919            | 1298    | -           | - | 260             | 159 | 300 | 404        | -           |
| CR 64-5-2 | 5.5              | 1001           | 1380    | -           | - | 260             | 159 | 300 | 409        | -           |

**Note:** 4-pole CR 64 pumps are also available as CRN pumps with PJE connection.  
For information about electrical data, see pages 160 to 161.

## CR 90 with 4-pole motor, 60 Hz

| Pump type | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 90-1-1 | 1.5              | 681            | 962     | -           | -       | 178 | 110 | 135             | 144        | -           |
| CR 90-1   | 2.2              | 681            | 1016    | -           | -       | 198 | 120 | 160             | 158        | -           |
| CR 90-2-2 | 3                | 773            | 1108    | -           | -       | 198 | 120 | 160             | 193        | -           |
| CR 90-2-1 | 3                | 773            | 1108    | -           | -       | 198 | 120 | 160             | 224        | -           |
| CR 90-2   | 4                | 773            | 1145    | -           | -       | 220 | 134 | 160             | 291        | -           |
| CR 90-3-2 | 4                | 865            | 1237    | -           | -       | 220 | 134 | 160             | 331        | -           |
| CR 90-3-1 | 5.5              | 865            | 1244    | -           | -       | 260 | 159 | 300             | 340        | -           |
| CR 90-3   | 5.5              | 865            | 1244    | -           | -       | 260 | 159 | 300             | 404        | -           |
| CR 90-4-2 | 5.5              | 957            | 1336    | -           | -       | 260 | 159 | 300             | 419        | -           |

**Note:** 4-pole pumps are also available as CRN pumps with PJE connection.

For information about electrical data, see pages [160](#) to [161](#).

## CR 120 with 4-pole motor, 60 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 120-1   | 2.2              | 834            | 1169    | -           | -       | 198 | 120 | 270             | 119        | -           |
| CR 120-2-2 | 3                | 990            | 1325    | -           | -       | 198 | 120 | 270             | 134        | -           |
| CR 120-2-1 | 4                | 990            | 1362    | -           | -       | 220 | 134 | 270             | 143        | -           |
| CR 120-2   | 5.5              | 990            | 1369    | -           | -       | 260 | 159 | 300             | 148        | -           |
| CR 120-3-1 | 5.5              | 1145           | 1524    | -           | -       | 260 | 159 | 300             | 153        | -           |
| CR 120-3   | 7.5              | 1175           | 1604    | -           | -       | 260 | 159 | 300             | 168        | -           |
| CR 120-4-1 | 11               | 1331           | 1802    | -           | -       | 314 | 204 | 350             | 209        | -           |
| CR 120-5-2 | 11               | 1486           | 1957    | -           | -       | 314 | 204 | 350             | 218        | -           |

**Note:** 4-pole CR 120 pumps are also available as CRN pumps with PJE connection.

For information about electrical data, see pages [160](#) to [161](#).

## CR 150 with 4-pole motor, 60 Hz

| Pump type  | Motor P2<br>[kW] | CR             |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CR 150-1-1 | 2.2              | 834            | 1169    | -           | -       | 198 | 120 | 270             | 119        | -           |
| CR 150-1   | 3                | 834            | 1169    | -           | -       | 198 | 120 | 270             | 125        | -           |
| CR 150-2-2 | 4                | 990            | 1362    | -           | -       | 220 | 134 | 270             | 144        | -           |
| CR 150-2-1 | 5.5              | 990            | 1369    | -           | -       | 260 | 159 | 300             | 149        | -           |
| CR 150-2   | 5.5              | 990            | 1369    | -           | -       | 260 | 159 | 300             | 149        | -           |
| CR 150-3-2 | 7.5              | 1175           | 1604    | -           | -       | 260 | 159 | 300             | 168        | -           |
| CR 150-3   | 11               | 1175           | 1646    | -           | -       | 314 | 204 | 350             | 199        | -           |
| CR 150-4-2 | 11               | 1331           | 1802    | -           | -       | 314 | 204 | 350             | 208        | -           |

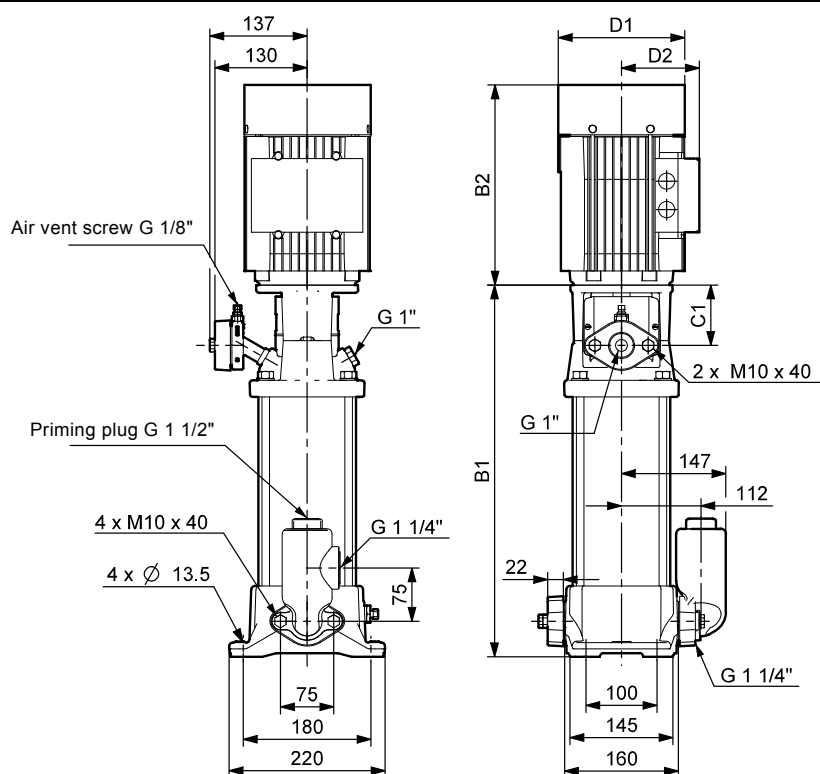
**Note:** 4-pole CR 150 pumps are also available as CRN pumps with PJE connection.

For information about electrical data, see pages [160](#) to [161](#).

## CR deep-well pumps

### Dimensional drawing

CR 5



TM03 8261 0907

**CR deep-well pumps, 50 Hz****Dimensions and weights**

| Pump       | Motor<br>P2<br>[kW] | Dimensions [mm] |         |    |     |     | Suction<br>depth<br>[m] | Flow<br>rate<br>[m <sup>3</sup> /h] | Ejector<br>No | Pressure class,<br>plastic pipe<br>[kp/cm <sup>2</sup> ] | Pipe dimensions [mm]                |                                      | Largest<br>ejector<br>diameter<br>[mm] |
|------------|---------------------|-----------------|---------|----|-----|-----|-------------------------|-------------------------------------|---------------|----------------------------------------------------------|-------------------------------------|--------------------------------------|----------------------------------------|
|            |                     | B1              | B1 + B2 | C1 | D1  | D2  |                         |                                     |               |                                                          | Ejector inlet:<br>external/internal | Ejector outlet:<br>external/internal |                                        |
| CR(I) 5-9  | 1.5                 | 465             | 746     | 85 | 178 | 110 | 54                      | 0.25                                | 11            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 42                      | 0.68                                | 29            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 35                      | 0.92                                | 20            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 27                      | 1.25                                | 22            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
| CR(I) 5-11 | 2.2                 | 519             | 840     | 85 | 178 | 110 | 65                      | 0.25                                | 11            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 50                      | 0.62                                | 29            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 45                      | 0.85                                | 20            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 40                      | 1.10                                | 22            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 35                      | 1.37                                | 44            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 28                      | 1.75                                | 45            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
| CR(I) 5-13 | 2.2                 | 573             | 894     | 85 | 178 | 110 | 79                      | 0.25                                | 11            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 63                      | 0.62                                | 29            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 54                      | 0.87                                | 20            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 45                      | 1.17                                | 22            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 40                      | 1.39                                | 44            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 33                      | 1.99                                | 45            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
| CR(I) 5-15 | 2.2                 | 627             | 948     | 85 | 178 | 110 | 93                      | 0.25                                | 11            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 73                      | 0.63                                | 29            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 62                      | 0.88                                | 20            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|            |                     |                 |         |    |     |     | 53                      | 1.14                                | 22            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 46                      | 1.40                                | 44            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|            |                     |                 |         |    |     |     | 37                      | 1.99                                | 45            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |

**Note:** For information about electrical data, see pages 160 to 161.

**CR deep-well pumps, 60 Hz****Dimensions and weights**

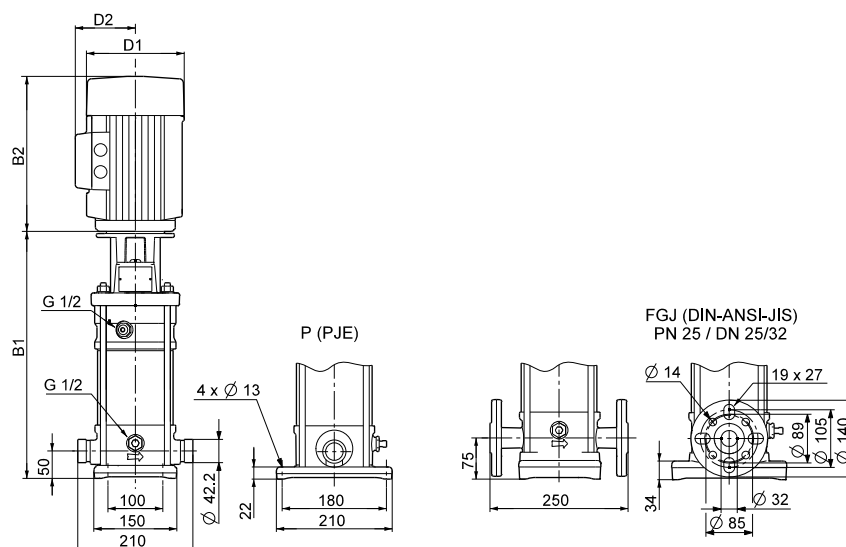
| Pump      | Motor<br>P2<br>[kW] | Dimensions [mm] |         |    |     |     | Suction<br>depth,<br>[m] | Flow<br>rate<br>[m <sup>3</sup> /h] | Ejector<br>No | Pressure class,<br>plastic pipe<br>[kp/cm <sup>2</sup> ] | Pipe dimensions [mm]                |                                      | Largest<br>ejector<br>diameter<br>[mm] |
|-----------|---------------------|-----------------|---------|----|-----|-----|--------------------------|-------------------------------------|---------------|----------------------------------------------------------|-------------------------------------|--------------------------------------|----------------------------------------|
|           |                     | B1              | B1 + B2 | C1 | D1  | D2  |                          |                                     |               |                                                          | Ejector inlet:<br>external/internal | Ejector outlet:<br>external/internal |                                        |
| CR(I) 5-6 | 2.2                 | 384             | 705     | 85 | 179 | 110 | 52                       | 0.33                                | 11            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 45                       | 0.69                                | 29            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 41                       | 0.91                                | 20            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 37                       | 1.16                                | 22            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 34                       | 1.35                                | 44            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 30                       | 1.65                                | 45            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
| CR(I) 5-8 | 2.2                 | 438             | 759     | 85 | 179 | 110 | 65                       | 0.38                                | 11            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|           |                     |                 |         |    |     |     | 60                       | 0.60                                | 29            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 53                       | 0.94                                | 20            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 50                       | 1.10                                | 22            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 45                       | 1.37                                | 44            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
| CR(I) 5-9 | 2.2                 | 465             | 786     | 85 | 179 | 110 | 73                       | 0.37                                | 11            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|           |                     |                 |         |    |     |     | 65                       | 0.68                                | 29            | 10 + 10                                                  | 32/22.8                             | 40/28.4                              | 80                                     |
|           |                     |                 |         |    |     |     | 60                       | 0.88                                | 20            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 55                       | 1.11                                | 22            | 10 + 6                                                   | 32/22.8                             | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 50                       | 1.39                                | 44            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |
|           |                     |                 |         |    |     |     | 47                       | 1.63                                | 45            | 6 + 6                                                    | 32/26                               | 40/32.6                              | 76                                     |

**Note:** For information about electrical data, see pages 160 to 161.

## CRN pumps with magnetic drive

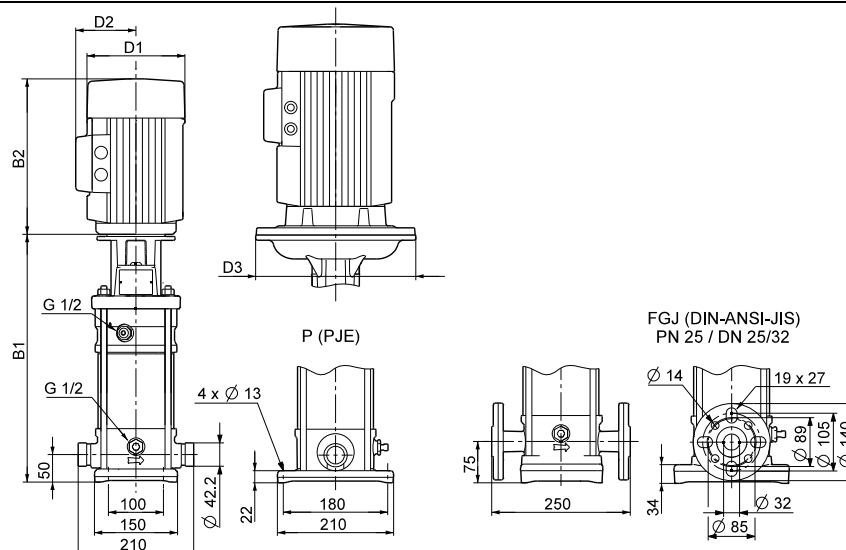
### Dimensional drawings

CRN 1  
CRN 3



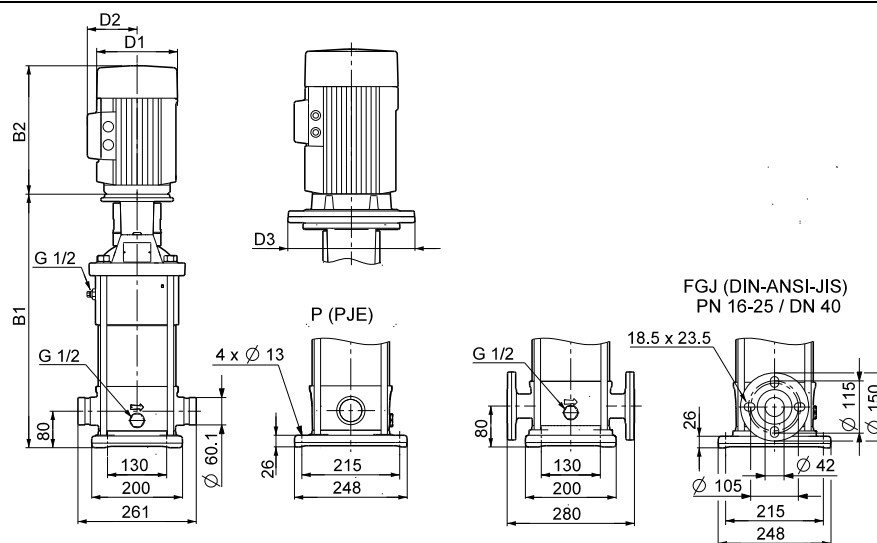
TM03 9137 3407

CRN 5

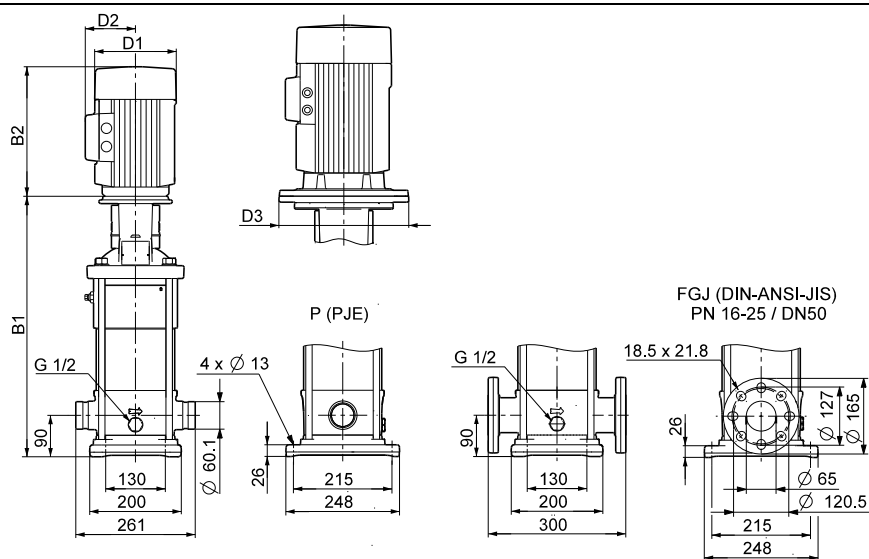


TM03 9138 3407

CRN 10

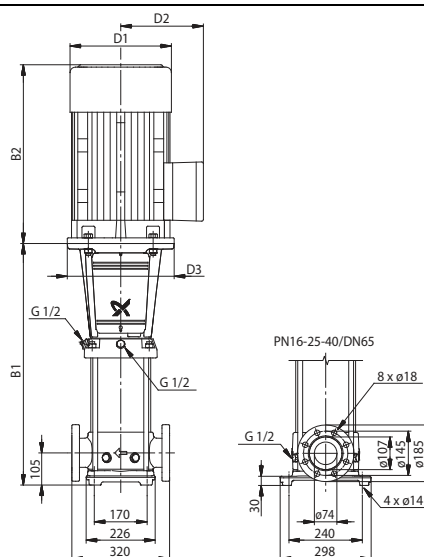


TM03 9140 3407

CRN 15  
CRN 20

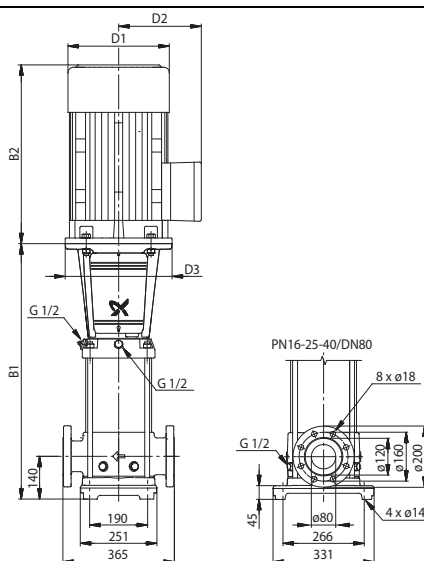
TM03 9139 3407

CRN 32



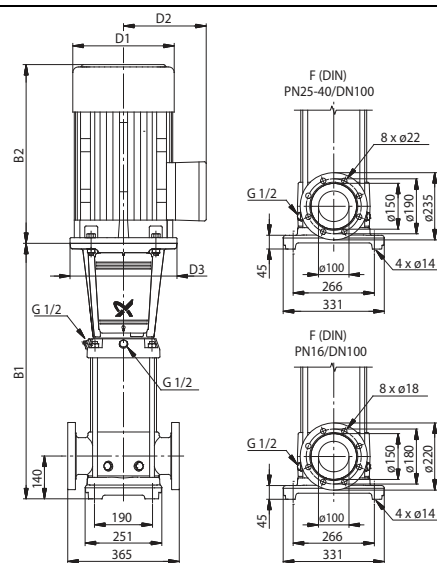
TM01 1750 2203

CRN 45



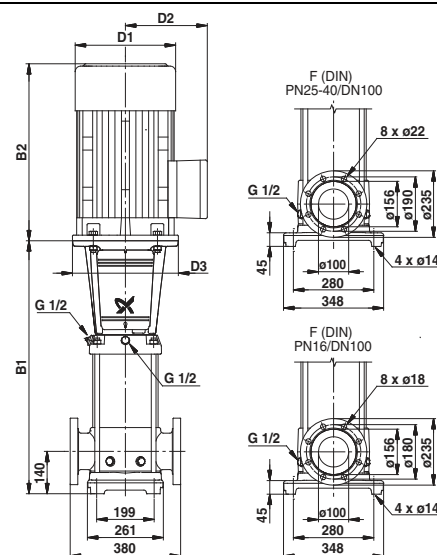
TM01 1752 2203

CRN 64



TM01 1754 0904

CRN 90



TM02 1570 2203



## CRN pumps with magnetic drive

## Dimensions and weights

## CRN 1s - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |    |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |    | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3 | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |    |                 |             |
| CRN 1s-2  | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 24              | 20          |
| CRN 1s-3  | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 25              | 20          |
| CRN 1s-4  | 0.37             | 385            | 576     | 360         | 551     | 141 | 109 | -  | 25              | 21          |
| CRN 1s-5  | 0.37             | 403            | 594     | 378         | 569     | 141 | 109 | -  | 25              | 21          |
| CRN 1s-6  | 0.37             | 421            | 612     | 396         | 587     | 141 | 109 | -  | 26              | 22          |
| CRN 1s-7  | 0.37             | 439            | 630     | 414         | 605     | 141 | 109 | -  | 26              | 22          |
| CRN 1s-8  | 0.37             | 457            | 648     | 432         | 623     | 141 | 109 | -  | 27              | 22          |
| CRN 1s-9  | 0.37             | 475            | 666     | 450         | 641     | 141 | 109 | -  | 27              | 23          |
| CRN 1s-10 | 0.37             | 493            | 684     | 468         | 659     | 141 | 109 | -  | 27              | 23          |
| CRN 1s-11 | 0.55             | 511            | 702     | 486         | 677     | 141 | 109 | -  | 29              | 24          |
| CRN 1s-12 | 0.55             | 529            | 720     | 504         | 695     | 141 | 109 | -  | 29              | 25          |
| CRN 1s-13 | 0.55             | 547            | 738     | 522         | 713     | 141 | 109 | -  | 30              | 25          |
| CRN 1s-15 | 0.55             | 583            | 774     | 558         | 749     | 141 | 109 | -  | 30              | 26          |
| CRN 1s-17 | 0.55             | 619            | 810     | 594         | 785     | 141 | 109 | -  | 31              | 27          |
| CRN 1s-19 | 0.75             | 655            | 886     | 630         | 861     | 141 | 109 | -  | 33              | 28          |
| CRN 1s-21 | 0.75             | 697            | 928     | 672         | 903     | 141 | 109 | -  | 35              | 30          |
| CRN 1s-23 | 0.75             | 733            | 964     | 708         | 939     | 141 | 109 | -  | 35              | 31          |
| CRN 1s-25 | 1.1              | 769            | 1000    | 744         | 975     | 141 | 109 | -  | 39              | 35          |
| CRN 1s-27 | 1.1              | 805            | 1036    | 780         | 1011    | 141 | 109 | -  | 39              | 35          |
| CRN 1s-30 | 1.1              | 859            | 1090    | 834         | 1065    | 141 | 109 | -  | 40              | 36          |
| CRN 1s-33 | 1.1              | 913            | 1144    | 888         | 1119    | 141 | 109 | -  | 41              | 37          |
| CRN 1s-36 | 1.1              | 967            | 1198    | 942         | 1173    | 141 | 109 | -  | 43              | 38          |

For information about electrical data, see pages 160 to 161.

## CRN 1 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |    |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |    | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3 | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |    |                 |             |
| CRN 1-2   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 24              | 20          |
| CRN 1-3   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 25              | 20          |
| CRN 1-4   | 0.37             | 385            | 576     | 360         | 551     | 141 | 109 | -  | 25              | 21          |
| CRN 1-5   | 0.37             | 403            | 594     | 378         | 569     | 141 | 109 | -  | 25              | 21          |
| CRN 1-6   | 0.37             | 421            | 612     | 396         | 587     | 141 | 109 | -  | 26              | 22          |
| CRN 1-7   | 0.55             | 439            | 630     | 414         | 605     | 141 | 109 | -  | 26              | 22          |
| CRN 1-8   | 0.55             | 457            | 648     | 432         | 623     | 141 | 109 | -  | 27              | 22          |
| CRN 1-9   | 0.55             | 475            | 666     | 450         | 641     | 141 | 109 | -  | 27              | 23          |
| CRN 1-10  | 0.55             | 493            | 684     | 468         | 659     | 141 | 109 | -  | 27              | 23          |
| CRN 1-11  | 0.75             | 511            | 702     | 486         | 677     | 141 | 109 | -  | 29              | 24          |
| CRN 1-12  | 0.75             | 535            | 720     | 504         | 695     | 141 | 109 | -  | 29              | 25          |
| CRN 1-13  | 0.75             | 553            | 738     | 522         | 713     | 141 | 109 | -  | 30              | 25          |
| CRN 1-15  | 0.75             | 589            | 774     | 558         | 749     | 141 | 109 | -  | 30              | 26          |
| CRN 1-17  | 1.1              | 625            | 810     | 594         | 785     | 141 | 109 | -  | 31              | 27          |
| CRN 1-19  | 1.1              | 661            | 886     | 630         | 861     | 141 | 109 | -  | 33              | 28          |
| CRN 1-21  | 1.1              | 697            | 928     | 672         | 903     | 141 | 109 | -  | 35              | 30          |
| CRN 1-23  | 1.1              | 733            | 964     | 708         | 939     | 141 | 109 | -  | 35              | 31          |
| CRN 1-25  | 1.5              | 785            | 1000    | 744         | 975     | 141 | 109 | -  | 39              | 35          |
| CRN 1-27  | 1.5              | 821            | 1036    | 780         | 1011    | 141 | 109 | -  | 39              | 35          |
| CRN 1-30  | 1.5              | 875            | 1090    | 834         | 1065    | 141 | 109 | -  | 40              | 36          |
| CRN 1-33  | 2.2              | 929            | 1144    | 888         | 1119    | 141 | 109 | -  | 41              | 37          |
| CRN 1-36  | 2.2              | 983            | 1198    | 942         | 1173    | 141 | 109 | -  | 43              | 38          |

For information about electrical data, see pages 160 to 161.

## CRN 3 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 3-2   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -               | 24         | 20          |
| CRN 3-3   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -               | 25         | 20          |
| CRN 3-4   | 0.37             | 385            | 576     | 360         | 551     | 141 | 109 | -               | 25         | 21          |
| CRN 3-5   | 0.55             | 403            | 594     | 378         | 569     | 141 | 109 | -               | 26         | 22          |
| CRN 3-6   | 0.55             | 421            | 612     | 396         | 587     | 141 | 109 | -               | 27         | 22          |
| CRN 3-7   | 0.55             | 439            | 630     | 414         | 605     | 141 | 109 | -               | 27         | 23          |
| CRN 3-8   | 0.75             | 463            | 694     | 438         | 669     | 141 | 109 | -               | 30         | 25          |
| CRN 3-9   | 0.75             | 481            | 712     | 456         | 687     | 141 | 109 | -               | 30         | 26          |
| CRN 3-10  | 0.75             | 499            | 730     | 474         | 705     | 141 | 109 | -               | 30         | 26          |
| CRN 3-11  | 1.1              | 517            | 748     | 492         | 723     | 141 | 109 | -               | 33         | 29          |
| CRN 3-12  | 1.1              | 535            | 766     | 510         | 741     | 141 | 109 | -               | 33         | 29          |
| CRN 3-13  | 1.1              | 553            | 784     | 528         | 759     | 141 | 109 | -               | 34         | 30          |
| CRN 3-15  | 1.1              | 589            | 820     | 564         | 795     | 141 | 109 | -               | 35         | 30          |
| CRN 3-17  | 1.5              | 641            | 922     | 616         | 897     | 178 | 110 | -               | 43         | 39          |
| CRN 3-19  | 1.5              | 677            | 958     | 652         | 933     | 178 | 110 | -               | 44         | 39          |
| CRN 3-21  | 2.2              | 713            | 1034    | 688         | 1009    | 178 | 110 | -               | 45         | 41          |
| CRN 3-23  | 2.2              | 749            | 1070    | 724         | 1045    | 178 | 110 | -               | 46         | 42          |
| CRN 3-25  | 2.2              | 785            | 1106    | 760         | 1081    | 178 | 110 | -               | 47         | 42          |
| CRN 3-27  | 2.2              | 821            | 1142    | 796         | 1117    | 178 | 110 | -               | 47         | 43          |
| CRN 3-29  | 2.2              | 857            | 1178    | 832         | 1153    | 178 | 110 | -               | 48         | 44          |
| CRN 3-31  | 3                | 897            | 1232    | 872         | 1207    | 198 | 120 | -               | 53         | 49          |
| CRN 3-33  | 3                | 933            | 1268    | 908         | 1243    | 198 | 120 | -               | 54         | 50          |
| CRN 3-36  | 3                | 987            | 1322    | 962         | 1297    | 198 | 120 | -               | 55         | 51          |

For information about electrical data, see pages 160 to 161.

## CRN 5 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 5-2   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -               | 26         | 21          |
| CRN 5-3   | 0.55             | 394            | 585     | 369         | 560     | 141 | 109 | -               | 27         | 23          |
| CRN 5-4   | 0.75             | 421            | 652     | 396         | 627     | 141 | 109 | -               | 28         | 24          |
| CRN 5-5   | 0.75             | 454            | 685     | 429         | 660     | 141 | 109 | -               | 30         | 26          |
| CRN 5-6   | 1.1              | 481            | 712     | 456         | 687     | 141 | 109 | -               | 33         | 29          |
| CRN 5-7   | 1.1              | 508            | 739     | 483         | 714     | 141 | 109 | -               | 33         | 29          |
| CRN 5-8   | 1.1              | 535            | 766     | 510         | 741     | 141 | 109 | -               | 34         | 30          |
| CRN 5-9   | 1.5              | 578            | 859     | 553         | 834     | 178 | 110 | -               | 41         | 37          |
| CRN 5-10  | 1.5              | 605            | 886     | 580         | 861     | 178 | 110 | -               | 42         | 37          |
| CRN 5-11  | 2.2              | 632            | 953     | 607         | 928     | 178 | 110 | -               | 43         | 39          |
| CRN 5-12  | 2.2              | 659            | 980     | 634         | 955     | 178 | 110 | -               | 43         | 39          |
| CRN 5-13  | 2.2              | 686            | 1007    | 661         | 982     | 178 | 110 | -               | 44         | 40          |
| CRN 5-14  | 2.2              | 713            | 1034    | 688         | 1009    | 178 | 110 | -               | 45         | 40          |
| CRN 5-15  | 2.2              | 740            | 1061    | 715         | 1036    | 178 | 110 | -               | 45         | 41          |
| CRN 5-16  | 3                | 767            | 1102    | 742         | 1077    | 178 | 110 | -               | 49         | 44          |
| CRN 5-18  | 3                | 825            | 1160    | 800         | 1135    | 198 | 120 | -               | 51         | 47          |
| CRN 5-20  | 3                | 879            | 1214    | 854         | 1189    | 198 | 120 | -               | 52         | 48          |
| CRN 5-22  | 4                | 933            | 1305    | 908         | 1280    | 220 | 134 | -               | 65         | 61          |
| CRN 5-24  | 4                | 987            | 1359    | 962         | 1334    | 220 | 134 | -               | 67         | 62          |
| CRN 5-26  | 4                | 1041           | 1413    | 1016        | 1388    | 220 | 134 | -               | 68         | 64          |
| CRN 5-29  | 5.5              | 1122           | 1513    | 1097        | 1488    | 220 | 134 | 300             | 77         | 72          |
| CRN 5-32  | 5.5              | 1254           | 1645    | 1229        | 1620    | 220 | 134 | 300             | 92         | 88          |
| CRN 5-36  | 5.5              | 1362           | 1753    | 1337        | 1728    | 220 | 134 | 300             | 94         | 90          |

For information about electrical data, see pages 160 to 161.

## CRN 10 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 10-1  | 0.55             | 443            | 634     | 443         | 634     | 141 | 109 | -               | 40         | 36          |
| CRN 10-2  | 0.75             | 447            | 678     | 447         | 678     | 141 | 109 | -               | 41         | 38          |
| CRN 10-3  | 1.1              | 477            | 708     | 477         | 708     | 141 | 109 | -               | 45         | 41          |
| CRN 10-4  | 1.5              | 523            | 804     | 523         | 804     | 178 | 110 | -               | 53         | 49          |
| CRN 10-5  | 2.2              | 553            | 874     | 553         | 874     | 178 | 110 | -               | 55         | 51          |
| CRN 10-6  | 2.2              | 583            | 904     | 583         | 904     | 178 | 110 | -               | 56         | 52          |
| CRN 10-7  | 3                | 618            | 953     | 618         | 953     | 198 | 120 | -               | 61         | 57          |
| CRN 10-8  | 3                | 648            | 983     | 648         | 983     | 198 | 120 | -               | 62         | 59          |
| CRN 10-9  | 4                | 678            | 1050    | 678         | 1050    | 198 | 120 | -               | 74         | 71          |
| CRN 10-10 | 4                | 708            | 1080    | 708         | 1080    | 220 | 134 | -               | 74         | 71          |
| CRN 10-12 | 5.5              | 768            | 1159    | 768         | 1159    | 220 | 134 | 300             | 76         | 73          |
| CRN 10-14 | 5.5              | 860            | 1251    | 860         | 1251    | 220 | 134 | 300             | 99         | 95          |
| CRN 10-16 | 5.5              | 920            | 1311    | 920         | 1311    | 220 | 134 | 300             | 101        | 97          |
| CRN 10-18 | 7.5              | 980            | 1359    | 980         | 1359    | 260 | 159 | 300             | 121        | 118         |
| CRN 10-20 | 7.5              | 1040           | 1419    | 1040        | 1419    | 260 | 159 | 300             | 123        | 120         |
| CRN 10-22 | 11               | 1100           | 1571    | 1100        | 1571    | 314 | 204 | 350             | 191        | 157         |

For information about electrical data, see pages 160 to 161.

## CRN 15 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 15-1  | 1.1              | 490            | 721     | 490         | 721     | 141 | 109 | -               | 45         | 40          |
| CRN 15-2  | 2.2              | 505            | 826     | 505         | 826     | 178 | 110 | -               | 53         | 48          |
| CRN 15-3  | 3                | 555            | 890     | 555         | 890     | 198 | 120 | -               | 59         | 54          |
| CRN 15-4  | 4                | 600            | 972     | 600         | 972     | 220 | 134 | -               | 71         | 67          |
| CRN 15-5  | 5.5              | 645            | 1036    | 645         | 1036    | 220 | 134 | 300             | 73         | 68          |
| CRN 15-6  | 5.5              | 722            | 1113    | 722         | 1113    | 220 | 134 | 300             | 95         | 90          |
| CRN 15-7  | 7.5              | 767            | 1146    | 767         | 1146    | 260 | 159 | 300             | 111        | 107         |
| CRN 15-8  | 7.5              | 812            | 1191    | 812         | 1191    | 260 | 159 | 300             | 115        | 110         |
| CRN 15-9  | 7.5              | 857            | 1236    | 857         | 1236    | 260 | 159 | 300             | 117        | 112         |
| CRN 15-10 | 11               | 979            | 1450    | 979         | 1450    | 314 | 204 | 350             | 141        | 136         |
| CRN 15-12 | 11               | 1069           | 1540    | 1069        | 1540    | 314 | 204 | 350             | 143        | 139         |
| CRN 15-14 | 15               | 1159           | 1630    | 1159        | 1630    | 314 | 204 | 350             | 165        | 161         |
| CRN 15-17 | 15               | 1294           | 1765    | 1294        | 1765    | 314 | 204 | 350             | 184        | 180         |

For information about electrical data, see pages 160 to 161.

## CRN 20 - MAGdrive, 50 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 20-1  | 1.1              | 487            | 718     | 487         | 718     | 141 | 109 | -               | 46         | 41          |
| CRN 20-2  | 2.2              | 503            | 824     | 503         | 824     | 178 | 110 | -               | 54         | 49          |
| CRN 20-3  | 4                | 553            | 925     | 553         | 925     | 220 | 134 | -               | 71         | 66          |
| CRN 20-4  | 5.5              | 630            | 1021    | 630         | 1021    | 220 | 134 | 300             | 93         | 88          |
| CRN 20-5  | 5.5              | 675            | 1066    | 675         | 1066    | 220 | 134 | 300             | 94         | 89          |
| CRN 20-6  | 7.5              | 720            | 1099    | 720         | 1099    | 260 | 159 | 300             | 113        | 108         |
| CRN 20-7  | 7.5              | 765            | 1144    | 765         | 1144    | 260 | 159 | 300             | 114        | 110         |
| CRN 20-8  | 11               | 887            | 1358    | 887         | 1358    | 314 | 204 | 350             | 137        | 132         |
| CRN 20-10 | 11               | 977            | 1448    | 977         | 1448    | 314 | 204 | 350             | 141        | 136         |
| CRN 20-12 | 15               | 1067           | 1538    | 1067        | 1538    | 314 | 204 | 350             | 176        | 171         |
| CRN 20-14 | 15               | 1157           | 1628    | 1157        | 1628    | 314 | 204 | 350             | 179        | 175         |
| CRN 20-17 | 18.5             | 1292           | 1807    | 1292        | 1807    | 314 | 204 | 350             | 206        | 202         |

For information about electrical data, see pages 160 to 161.

**CRN 32 - MAGdrive, 50 Hz**

| Pump type   | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|             |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|             |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|             |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 32-1-1  | 1.5              | 505            | 786     | -           | -       | 178 | 110 | 270             | 69         | -           |
| CRN 32-1    | 2.2              | 505            | 826     | -           | -       | 178 | 110 | 270             | 69         | -           |
| CRN 32-2-2  | 3                | 575            | 910     | -           | -       | 198 | 120 | 270             | 76         | -           |
| CRN 32-2    | 4                | 575            | 947     | -           | -       | 220 | 134 | 270             | 87         | -           |
| CRN 32-3-2  | 5.5              | 666            | 1057    | -           | -       | 220 | 134 | 300             | 102        | -           |
| CRN 32-3    | 5.5              | 666            | 1057    | -           | -       | 220 | 134 | 300             | 102        | -           |
| CRN 32-4-2  | 7.5              | 715            | 1094    | -           | -       | 260 | 159 | 300             | 121        | -           |
| CRN 32-4    | 7.5              | 715            | 1094    | -           | -       | 260 | 159 | 300             | 121        | -           |
| CRN 32-5-2  | 11               | 895            | 1366    | -           | -       | 314 | 204 | 350             | 148        | -           |
| CRN 32-5    | 11               | 895            | 1366    | -           | -       | 314 | 204 | 350             | 148        | -           |
| CRN 32-6-2  | 11               | 965            | 1436    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CRN 32-6    | 11               | 965            | 1436    | -           | -       | 314 | 204 | 350             | 151        | -           |
| CRN 32-7-2  | 15               | 1035           | 1506    | -           | -       | 314 | 204 | 350             | 193        | -           |
| CRN 32-7    | 15               | 1035           | 1506    | -           | -       | 314 | 204 | 350             | 193        | -           |
| CRN 32-8-2  | 15               | 1105           | 1576    | -           | -       | 314 | 204 | 350             | 199        | -           |
| CRN 32-8    | 15               | 1105           | 1576    | -           | -       | 314 | 204 | 350             | 199        | -           |
| CRN 32-9-2  | 18.5             | 1175           | 1690    | -           | -       | 314 | 204 | 350             | 199        | -           |
| CRN 32-9    | 18.5             | 1175           | 1690    | -           | -       | 314 | 204 | 350             | 199        | -           |
| CRN 32-10-2 | 18.5             | 1245           | 1760    | -           | -       | 314 | 204 | 350             | 202        | -           |
| CRN 32-10   | 18.5             | 1245           | 1760    | -           | -       | 314 | 204 | 350             | 202        | -           |
| CRN 32-11-2 | 22               | 1315           | 1856    | -           | -       | 314 | 204 | 350             | 276        | -           |
| CRN 32-11   | 22               | 1315           | 1856    | -           | -       | 314 | 204 | 350             | 176        | -           |
| CRN 32-12-2 | 22               | 1385           | 1926    | -           | -       | 314 | 204 | 350             | 280        | -           |
| CRN 32-12   | 22               | 1385           | 1926    | -           | -       | 314 | 204 | 350             | 280        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 32 pumps are also available with PJE connection.**CRN 45 - MAGdrive, 50 Hz**

| Pump type  | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 45-1-1 | 3                | 559            | 894     | -           | -       | 198 | 120 | 270             | 81         | -           |
| CRN 45-1   | 4                | 559            | 931     | -           | -       | 220 | 134 | 270             | 92         | -           |
| CRN 45-2-2 | 5.5              | 660            | 1051    | -           | -       | 220 | 134 | 300             | 107        | -           |
| CRN 45-2   | 7.5              | 639            | 1018    | -           | -       | 260 | 159 | 300             | 121        | -           |
| CRN 45-3-2 | 11               | 829            | 1300    | -           | -       | 314 | 204 | 350             | 153        | -           |
| CRN 45-3   | 11               | 829            | 1300    | -           | -       | 314 | 204 | 350             | 153        | -           |
| CRN 45-4-2 | 15               | 909            | 1380    | -           | -       | 314 | 204 | 350             | 185        | -           |
| CRN 45-4   | 15               | 909            | 1380    | -           | -       | 314 | 204 | 350             | 195        | -           |
| CRN 45-5-2 | 18.5             | 989            | 1504    | -           | -       | 314 | 204 | 350             | 195        | -           |
| CRN 45-5   | 18.5             | 989            | 1504    | -           | -       | 314 | 204 | 350             | 195        | -           |
| CRN 45-6-2 | 22               | 1069           | 1610    | -           | -       | 314 | 204 | 350             | 273        | -           |
| CRN 45-6   | 22               | 1069           | 1610    | -           | -       | 314 | 204 | 350             | 273        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 45 pumps are also available with PJE connection.

**CRN 64 - MAGdrive, 50 Hz**

| Pump type  | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 64-1-1 | 4                | 561            | 933     | -           | -       | 220 | 134 | 270             | 95         | -           |
| CRN 64-1   | 7.5              | 561            | 940     | -           | -       | 260 | 159 | 300             | 118        | -           |
| CRN 64-2-2 | 11               | 644            | 1115    | -           | -       | 314 | 204 | 350             | 152        | -           |
| CRN 64-2-1 | 11               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 152        | -           |
| CRN 64-2   | 15               | 754            | 1225    | -           | -       | 314 | 204 | 350             | 170        | -           |
| CRN 64-3-2 | 15               | 836            | 1307    | -           | -       | 314 | 204 | 350             | 193        | -           |
| CRN 64-3-1 | 18.5             | 836            | 1351    | -           | -       | 314 | 204 | 350             | 191        | -           |
| CRN 64-3   | 18.5             | 836            | 1351    | -           | -       | 314 | 204 | 350             | 191        | -           |
| CRN 64-4-2 | 22               | 919            | 1460    | -           | -       | 314 | 204 | 350             | 266        | -           |
| CRN 64-4-1 | 22               | 919            | 1460    | -           | -       | 314 | 204 | 350             | 266        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 64 pumps are also available with PJE connection.**CRN 90 - MAGdrive, 50 Hz**

| Pump type  | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|            |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN 90-1-1 | 5.5              | 592            | 983     | -           | -       | 220 | 134 | 300             | 111        | -           |
| CRN 90-1   | 7.5              | 571            | 950     | -           | -       | 260 | 159 | 300             | 125        | -           |
| CRN 90-2-2 | 15               | 773            | 1244    | -           | -       | 314 | 204 | 350             | 177        | -           |
| CRN 90-2   | 18.5             | 773            | 1288    | -           | -       | 314 | 204 | 350             | 192        | -           |
| CRN 90-3-2 | 18.5             | 865            | 1380    | -           | -       | 314 | 204 | 350             | 197        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 90 pumps are also available with PJE connection.**CRN 1s - MAGdrive, 60 Hz**

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN1s-2   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -               | 24         | 20          |
| CRN1s-3   | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -               | 25         | 20          |
| CRN1s-4   | 0.37             | 385            | 576     | 360         | 551     | 141 | 109 | -               | 25         | 21          |
| CRN1s-5   | 0.37             | 403            | 594     | 378         | 569     | 141 | 109 | -               | 25         | 21          |
| CRN1s-6   | 0.55             | 421            | 612     | 396         | 587     | 141 | 109 | -               | 27         | 23          |
| CRN1s-7   | 0.55             | 439            | 630     | 414         | 605     | 141 | 109 | -               | 27         | 23          |
| CRN1s-8   | 0.55             | 457            | 648     | 432         | 623     | 141 | 109 | -               | 28         | 23          |
| CRN1s-9   | 0.75             | 475            | 666     | 450         | 641     | 141 | 109 | -               | 29         | 25          |
| CRN1s-10  | 0.75             | 493            | 684     | 468         | 659     | 141 | 109 | -               | 29         | 25          |
| CRN1s-11  | 0.75             | 511            | 702     | 486         | 677     | 141 | 109 | -               | 30         | 25          |
| CRN1s-12  | 0.75             | 529            | 720     | 504         | 695     | 141 | 109 | -               | 30         | 26          |
| CRN1s-13  | 0.75             | 547            | 738     | 522         | 713     | 141 | 109 | -               | 31         | 26          |
| CRN1s-15  | 1.1              | 583            | 774     | 558         | 749     | 141 | 109 | -               | 40         | 36          |
| CRN1s-17  | 1.1              | 619            | 810     | 594         | 785     | 141 | 109 | -               | 40         | 36          |
| CRN1s-19  | 1.1              | 655            | 886     | 630         | 861     | 141 | 109 | -               | 41         | 36          |
| CRN1s-21  | 1.5              | 713            | 994     | 688         | 969     | 178 | 110 | -               | 44         | 39          |
| CRN1s-23  | 1.5              | 749            | 1030    | 724         | 1005    | 178 | 110 | -               | 44         | 40          |
| CRN1s-25  | 1.5              | 785            | 1066    | 760         | 1041    | 178 | 110 | -               | 44         | 40          |
| CRN1s-27  | 2.2              | 821            | 1142    | 796         | 1117    | 178 | 110 | -               | 45         | 41          |

For information about electrical data, see pages 160 to 161.

## CRN 1 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |    |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |    | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3 | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |    |                 |             |
| CRN1-2    | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 24              | 20          |
| CRN1-3    | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 25              | 20          |
| CRN1-4    | 0.55             | 385            | 576     | 360         | 551     | 141 | 109 | -  | 26              | 22          |
| CRN1-5    | 0.55             | 403            | 594     | 378         | 569     | 141 | 109 | -  | 26              | 22          |
| CRN1-6    | 0.75             | 421            | 612     | 396         | 587     | 141 | 109 | -  | 28              | 24          |
| CRN1-7    | 0.75             | 439            | 630     | 414         | 605     | 141 | 109 | -  | 28              | 24          |
| CRN1-8    | 0.75             | 457            | 648     | 432         | 623     | 141 | 109 | -  | 28              | 24          |
| CRN1-9    | 1.1              | 475            | 666     | 450         | 641     | 141 | 109 | -  | 37              | 33          |
| CRN1-10   | 1.1              | 493            | 684     | 468         | 659     | 141 | 109 | -  | 37              | 33          |
| CRN1-11   | 1.1              | 511            | 742     | 486         | 717     | 141 | 109 | -  | 37              | 33          |
| CRN1-12   | 1.1              | 535            | 766     | 510         | 741     | 141 | 109 | -  | 39              | 35          |
| CRN1-13   | 1.5              | 569            | 850     | 544         | 825     | 178 | 110 | -  | 41              | 36          |
| CRN1-15   | 1.5              | 605            | 886     | 580         | 861     | 178 | 110 | -  | 41              | 37          |
| CRN1-17   | 1.5              | 641            | 922     | 616         | 897     | 178 | 110 | -  | 42              | 38          |
| CRN1-19   | 2.2              | 677            | 998     | 652         | 973     | 178 | 110 | -  | 42              | 38          |
| CRN1-21   | 2.2              | 713            | 1034    | 688         | 1009    | 178 | 110 | -  | 43              | 39          |
| CRN1-23   | 2.2              | 749            | 1070    | 724         | 1045    | 178 | 110 | -  | 44              | 40          |
| CRN1-25   | 3                | 790            | 1125    | 765         | 1100    | 198 | 120 | -  | 54              | 50          |
| CRN1-27   | 3                | 826            | 1161    | 801         | 1136    | 198 | 120 | -  | 55              | 51          |

For information about electrical data, see pages 160 to 161.

## CRN 3 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |    |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |    | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3 | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |    |                 |             |
| CRN3-2    | 0.37             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 24              | 20          |
| CRN3-3    | 0.55             | 367            | 558     | 342         | 533     | 141 | 109 | -  | 26              | 21          |
| CRN3-4    | 0.75             | 385            | 576     | 360         | 551     | 141 | 109 | -  | 27              | 23          |
| CRN3-5    | 0.75             | 403            | 594     | 378         | 569     | 141 | 109 | -  | 27              | 23          |
| CRN3-6    | 1.1              | 421            | 612     | 396         | 587     | 141 | 109 | -  | 36              | 31          |
| CRN3-7    | 1.1              | 439            | 630     | 414         | 605     | 141 | 109 | -  | 36              | 32          |
| CRN3-8    | 1.1              | 463            | 694     | 438         | 669     | 141 | 109 | -  | 38              | 33          |
| CRN3-9    | 1.5              | 497            | 778     | 472         | 753     | 178 | 110 | -  | 39              | 35          |
| CRN3-10   | 1.5              | 515            | 796     | 490         | 771     | 178 | 110 | -  | 39              | 35          |
| CRN3-11   | 1.5              | 533            | 814     | 508         | 789     | 178 | 110 | -  | 39              | 35          |
| CRN3-12   | 2.2              | 551            | 872     | 526         | 847     | 178 | 110 | -  | 39              | 35          |
| CRN3-13   | 2.2              | 569            | 890     | 544         | 865     | 178 | 110 | -  | 40              | 36          |
| CRN3-15   | 2.2              | 605            | 926     | 580         | 901     | 178 | 110 | -  | 41              | 36          |
| CRN3-17   | 3                | 646            | 981     | 621         | 956     | 198 | 120 | -  | 51              | 47          |
| CRN3-19   | 3                | 682            | 1017    | 657         | 992     | 198 | 120 | -  | 52              | 47          |
| CRN3-21   | 3                | 718            | 1053    | 693         | 1028    | 198 | 120 | -  | 52              | 48          |
| CRN3-23   | 4                | 754            | 1126    | 729         | 1101    | 198 | 120 | -  | 69              | 65          |
| CRN3-25   | 4                | 790            | 1162    | 765         | 1137    | 198 | 120 | -  | 70              | 65          |

For information about electrical data, see pages 160 to 161.

## CRN 5 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |     |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |     | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3  | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |     |                 |             |
| CRN5-2    | 0.75             | 367            | 558     | 342         | 533     | 141 | 109 | -   | 27              | 22          |
| CRN5-3    | 1.1              | 394            | 585     | 369         | 560     | 141 | 109 | -   | 35              | 31          |
| CRN5-4    | 1.1              | 421            | 652     | 396         | 627     | 141 | 109 | -   | 35              | 31          |
| CRN5-5    | 1.5              | 470            | 751     | 445         | 726     | 178 | 110 | -   | 39              | 35          |
| CRN5-6    | 2.2              | 497            | 818     | 472         | 793     | 178 | 110 | -   | 39              | 35          |
| CRN5-7    | 2.2              | 524            | 845     | 499         | 820     | 178 | 110 | -   | 39              | 35          |
| CRN5-8    | 2.2              | 551            | 872     | 526         | 847     | 178 | 110 | -   | 40              | 36          |
| CRN5-9    | 3                | 583            | 918     | 558         | 893     | 198 | 120 | -   | 49              | 45          |
| CRN5-10   | 3                | 610            | 945     | 585         | 920     | 198 | 120 | -   | 50              | 45          |
| CRN5-11   | 3                | 637            | 972     | 612         | 947     | 198 | 120 | -   | 50              | 46          |
| CRN5-12   | 4                | 664            | 1036    | 639         | 1011    | 198 | 120 | -   | 65              | 61          |
| CRN5-13   | 4                | 691            | 1063    | 666         | 1038    | 198 | 120 | -   | 66              | 62          |
| CRN5-14   | 4                | 719            | 1089.6  | 694         | 1064.6  | 198 | 120 | -   | 67              | 62          |
| CRN5-15   | 4                | 745            | 1116.6  | 720         | 1091.6  | 198 | 120 | -   | 67              | 62          |
| CRN5-16   | 5.5              | 817            | 1208.4  | 792         | 1183.4  | 220 | 134 | 300 | 76              | 71          |
| CRN5-18   | 5.5              | 875            | 1266.4  | 850         | 1241.4  | 220 | 134 | 300 | 76              | 72          |
| CRN5-20   | 5.5              | 929            | 1320.4  | 904         | 1295.4  | 220 | 134 | 300 | 77              | 73          |

For information about electrical data, see pages 160 to 161.

## CRN 10 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |     |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |     | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3  | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |     |                 |             |
| CRN10-1   | 0.75             | 443            | 634     | 443         | 634     | 141 | 109 | -   | 41              | 37          |
| CRN10-2   | 1.5              | 463            | 743.5   | 463         | 743.5   | 178 | 110 | -   | 50              | 47          |
| CRN10-3   | 2.2              | 493            | 813.5   | 493         | 813.5   | 178 | 110 | -   | 51              | 47          |
| CRN10-4   | 3                | 528            | 863     | 528         | 863     | 198 | 120 | -   | 61              | 57          |
| CRN10-5   | 4                | 558            | 930     | 558         | 930     | 198 | 120 | -   | 78              | 74          |
| CRN10-6   | 4                | 588            | 1026    | 588         | 1026    | 198 | 120 | -   | 79              | 75          |
| CRN10-7   | 5.5              | 635            | 1026    | 635         | 1026    | 220 | 134 | 300 | 86              | 82          |
| CRN10-8   | 5.5              | 665            | 1056    | 665         | 1056    | 220 | 134 | 300 | 87              | 84          |
| CRN10-9   | 7.5              | 695            | 1074    | 695         | 1074    | 260 | 159 | 300 | 97              | 94          |
| CRN10-10  | 7.5              | 725            | 1104    | 725         | 1104    | 260 | 159 | 300 | 97              | 94          |
| CRN10-12  | 7.5              | 785            | 1164    | 785         | 1164    | 260 | 159 | 300 | 97              | 94          |
| CRN10-14  | 11               | 902            | 1373    | 902         | 1373    | 314 | 204 | 350 | 152             | 148         |
| CRN10-16  | 11               | 962            | 1433    | 962         | 1433    | 314 | 204 | 350 | 154             | 150         |

For information about electrical data, see pages 160 to 161.

## CRN 15 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |     |                 |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----|-----------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     |     | Net weight [kg] |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3  | DIN flange      | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |     |                 |             |
| CRN15-1   | 1.5              | 506            | 786.5   | 506         | 786.5   | 178 | 110 | -   | 46              | 41          |
| CRN15-2   | 3                | 510            | 845     | 510         | 845     | 198 | 120 | -   | 56              | 51          |
| CRN15-3   | 5.5              | 572            | 963     | 572         | 963     | 220 | 134 | 300 | 75              | 70          |
| CRN15-4   | 7.5              | 617            | 996     | 617         | 996     | 260 | 159 | 300 | 87              | 83          |
| CRN15-5   | 7.5              | 645            | 1024    | 645         | 1024    | 260 | 159 | 300 | 87              | 83          |
| CRN15-6   | 11               | 764            | 1235    | 764         | 1235    | 314 | 204 | 350 | 148             | 143         |
| CRN15-7   | 11               | 809            | 1280    | 809         | 1280    | 314 | 204 | 350 | 152             | 148         |
| CRN15-8   | 15               | 854            | 1325    | 854         | 1325    | 314 | 204 | 350 | 173             | 168         |
| CRN15-9   | 15               | 899            | 1370    | 899         | 1370    | 314 | 204 | 350 | 175             | 170         |
| CRN15-10  | 15               | 979            | 1450    | 979         | 1450    | 314 | 204 | 350 | 175             | 170         |
| CRN15-12  | 18.5             | 1069           | 1584    | 1069        | 1584    | 314 | 204 | 350 | 169             | 164         |

For information about electrical data, see pages 160 to 161.

## CRN 20 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN20-1   | 2.2              | 503            | 823.5   | 503         | 823.5   | 178 | 110 | -               | 52         | 47          |
| CRN20-2   | 4                | 508            | 880     | 508         | 880     | 198 | 120 | -               | 76         | 71          |
| CRN20-3   | 7.5              | 570            | 949     | 570         | 949     | 260 | 159 | 300             | 87         | 82          |
| CRN20-4   | 11               | 740            | 1211    | 740         | 1211    | 314 | 204 | 350             | 146        | 141         |
| CRN20-5   | 11               | 785            | 1256    | 785         | 1256    | 314 | 204 | 350             | 147        | 142         |
| CRN20-6   | 15               | 830            | 1301    | 830         | 1301    | 314 | 204 | 350             | 170        | 165         |
| CRN20-7   | 15               | 875            | 1346    | 875         | 1346    | 314 | 204 | 350             | 171        | 167         |
| CRN20-8   | 18.5             | 887            | 1402    | 887         | 1402    | 314 | 204 | 350             | 163        | 159         |

For information about electrical data, see pages 160 to 161.

## CRN 32 - MAGdrive, 60 Hz

| Pump type  | Motor P2<br>[kW] | CRN MAGdrive   |         |             |             |     |     |                 |            |             |
|------------|------------------|----------------|---------|-------------|-------------|-----|-----|-----------------|------------|-------------|
|            |                  | Dimension [mm] |         |             |             |     |     | Net weight [kg] |            |             |
|            |                  | DIN flange     |         | Oval flange |             | D1  | D2  | D3              | DIN flange | Oval flange |
| B1         | B1 + B2          | B1             | B1 + B2 | DIN flange  | Oval flange |     |     |                 |            |             |
| CRN32-1-1  | 3                | 505            | 840     | -           | -           | 198 | 120 | -               | 77         | -           |
| CRN32-1    | 5.5              | 505            | 896     | -           | -           | 220 | 134 | 300             | 96         | -           |
| CRN32-2-2  | 5.5              | 575            | 966     | -           | -           | 220 | 134 | 300             | 101        | -           |
| CRN 32-2-1 | 5.5              | 575            | 966     | -           | -           | 220 | 134 | 300             | 101        | -           |
| CRN32-2    | 7.5              | 575            | 954     | -           | -           | 260 | 159 | 300             | 108        | -           |
| CRN32-3-2  | 11               | 690            | 1161    | -           | -           | 314 | 204 | 350             | 155        | -           |
| CRN32-3    | 11               | 690            | 1161    | -           | -           | 314 | 204 | 350             | 155        | -           |
| CRN32-4-2  | 15               | 757            | 1228    | -           | -           | 314 | 204 | 350             | 179        | -           |
| CRN32-4    | 15               | 757            | 1228    | -           | -           | 314 | 204 | 350             | 179        | -           |
| CRN32-5-2  | 15               | 895            | 1366    | -           | -           | 314 | 204 | 350             | 180        | -           |
| CRN32-5    | 18.5             | 895            | 1410    | -           | -           | 314 | 204 | 350             | 172        | -           |
| CRN32-6-2  | 18.5             | 965            | 1480    | -           | -           | 314 | 204 | 350             | 172        | -           |
| CRN32-6    | 22               | 965            | 1506    | -           | -           | 314 | 204 | 350             | 238        | -           |
| CRN32-7-2  | 22               | 1035           | 1576    | -           | -           | 314 | 204 | 350             | 266        | -           |
| CRN32-7    | 22               | 1035           | 1576    | -           | -           | 314 | 204 | 350             | 266        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 32 pumps are also available with PJE connection.

## CRN 45 - MAGdrive, 60 Hz

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN45-1-1 | 5.5              | 559            | 950     | -           | -       | 220 | 134 | 300             | 106        | -           |
| CRN45-1   | 7.5              | 559            | 938     | -           | -       | 260 | 159 | 300             | 116        | -           |
| CRN45-2-2 | 11               | 770            | 1241    | -           | -       | 314 | 204 | 350             | 160        | -           |
| CRN45-2-1 | 15               | 749            | 1220    | -           | -       | 314 | 204 | 350             | 178        | -           |
| CRN45-2   | 15               | 749            | 1220    | -           | -       | 314 | 204 | 350             | 178        | -           |
| CRN45-3-2 | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 169        | -           |
| CRN45-3-1 | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 169        | -           |
| CRN45-3   | 18.5             | 829            | 1344    | -           | -       | 314 | 204 | 350             | 169        | -           |
| CRN45-4-2 | 22               | 909            | 1450    | -           | -       | 314 | 204 | 350             | 268        | -           |

For information about electrical data, see pages 160 to 161.

**Note:** CRN 45 pumps are also available with PJE connection.



**CRN 64 - MAGdrive, 60 Hz**

| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN64-1-1 | 7.5              | 561            | 940     | -           | -       | 260 | 159 | 300             | 111        | -           |
| CRN64-1   | 11               | 671            | 1142    | -           | -       | 314 | 204 | 350             | 158        | -           |
| CRN64-2-2 | 15               | 644            | 1115    | -           | -       | 314 | 204 | 350             | 173        | -           |
| CRN64-2-1 | 18.5             | 754            | 1269    | -           | -       | 314 | 204 | 350             | 168        | -           |
| CRN64-2   | 22               | 754            | 1295    | -           | -       | 314 | 204 | 350             | 243        | -           |
| CRN64-3-2 | 22               | 836            | 1377    | -           | -       | 314 | 204 | 350             | 166        | -           |

For information about electrical data, see pages [160](#) to [161](#).

**Note:** CRN 64 pumps are also available with PJE connection.

**CRN 90 - MAGdrive, 60 Hz**

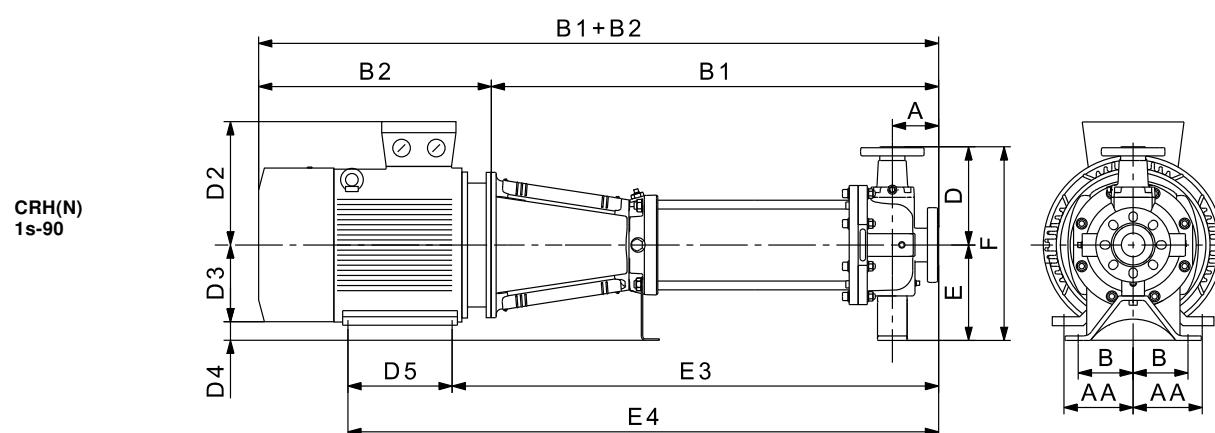
| Pump type | Motor P2<br>[kW] | CRN MAGdrive   |         |             |         |     |     |                 |            |             |
|-----------|------------------|----------------|---------|-------------|---------|-----|-----|-----------------|------------|-------------|
|           |                  | Dimension [mm] |         |             |         |     |     | Net weight [kg] |            |             |
|           |                  | DIN flange     |         | Oval flange |         | D1  | D2  | D3              | DIN flange | Oval flange |
|           |                  | B1             | B1 + B2 | B1          | B1 + B2 |     |     |                 |            |             |
| CRN90-1-1 | 11               | 702            | 1173    | -           | -       | 314 | 204 | 350             | 164        | -           |
| CRN90-1   | 15               | 681            | 1152    | -           | -       | 314 | 204 | 350             | 182        | -           |
| CRN90-2-2 | 22               | 773            | 1314    | -           | -       | 314 | 204 | 350             | 250        | -           |

For information about electrical data, see pages [160](#) to [161](#).

**Note:** CRN 90 pumps are also available with PJE connection.

## CRH(N) pumps

## Dimensional drawings



TM05 1523 3211

|             | CRH(N) 1s-5                                          | CRH(N) 10-20 | CRH(N) 32 | CRH(N) 45 | CRH(N) 64-90 |
|-------------|------------------------------------------------------|--------------|-----------|-----------|--------------|
| Inlet [mm]  | 40                                                   | 50           | 50        | 80        | 100          |
| Outlet [mm] | 25                                                   | 50           | 50        | 80        | 100          |
| Ref.        | Dim. [mm]                                            |              |           |           |              |
| A           | 102                                                  | 102          | 102       | 102       | 102          |
| B           | 76                                                   | 124          | 124       | 124       | 124          |
| AA          | According to specifications for CR horizontal pumps. |              |           |           |              |
| D           | 165                                                  | 191          | 191       | 229       | 280          |
| E           | 134                                                  | 210          | 210       | 210       | 210          |
| F           | 299                                                  | 401          | 401       | 439       | 490          |
| Note        | Ref. AA is only applicable with motors 5.5 - 45 kW.  |              |           |           |              |

**CRH(N) pumps****Dimensions and weights****CRH(N) 1s, 50 Hz**

| Pump type   | Motor P2 [kW] | CR             |     |         |     |    |    |    |    |    |                 |     |
|-------------|---------------|----------------|-----|---------|-----|----|----|----|----|----|-----------------|-----|
|             |               | Dimension [mm] |     |         |     |    |    |    |    |    | Net weight [kg] |     |
|             |               | DIN flange     |     |         | D2  | D3 | D4 | D5 | E3 | E4 | DIN             | DIN |
|             |               | B1             | B2  | B1 + B2 |     |    |    |    |    |    | CR              | CRN |
| CRH(N)1s-2  | 0.37          | 309            | 191 | 500     | 109 | 71 | 63 | -  | -  | -  | 24              | 21  |
| CRH(N)1s-3  | 0.37          | 309            | 191 | 500     | 109 | 71 | 63 | -  | -  | -  | 24              | 22  |
| CRH(N)1s-4  | 0.37          | 327            | 191 | 518     | 109 | 71 | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)1s-5  | 0.37          | 345            | 191 | 536     | 109 | 71 | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)1s-6  | 0.37          | 363            | 191 | 554     | 109 | 71 | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)1s-7  | 0.37          | 381            | 191 | 572     | 109 | 71 | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)1s-8  | 0.37          | 399            | 191 | 590     | 109 | 71 | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)1s-9  | 0.37          | 417            | 191 | 608     | 109 | 71 | 63 | -  | -  | -  | 27              | 24  |
| CRH(N)1s-10 | 0.37          | 435            | 191 | 626     | 109 | 71 | 63 | -  | -  | -  | 27              | 24  |
| CRH(N)1s-11 | 0.37          | 453            | 191 | 644     | 109 | 71 | 63 | -  | -  | -  | 27              | 25  |
| CRH(N)1s-12 | 0.37          | 471            | 191 | 662     | 109 | 71 | 63 | -  | -  | -  | 28              | 25  |
| CRH(N)1s-13 | 0.37          | 489            | 191 | 680     | 109 | 71 | 63 | -  | -  | -  | 28              | 25  |
| CRH(N)1s-15 | 0.55          | 525            | 191 | 716     | 109 | 71 | 63 | -  | -  | -  | 30              | 27  |
| CRH(N)1s-17 | 0.55          | 561            | 191 | 752     | 109 | 71 | 63 | -  | -  | -  | 31              | 28  |
| CRH(N)1s-19 | 0.55          | 597            | 191 | 788     | 109 | 71 | 63 | -  | -  | -  | 31              | 28  |
| CRH(N)1s-21 | 0.75          | 655            | 231 | 886     | 109 | 80 | 54 | -  | -  | -  | 34              | 32  |
| CRH(N)1s-23 | 0.75          | 691            | 231 | 922     | 109 | 80 | 54 | -  | -  | -  | 35              | 32  |
| CRH(N)1s-25 | 0.75          | 727            | 231 | 958     | 109 | 80 | 54 | -  | -  | -  | 35              | 33  |
| CRH(N)1s-27 | 1.1           | 763            | 231 | 994     | 109 | 80 | 54 | -  | -  | -  | 38              | 36  |
| CRH(N)1s-30 | 1.1           | 817            | 231 | 1048    | 109 | 80 | 54 | -  | -  | -  | 40              | 37  |
| CRH(N)1s-33 | 1.1           | 871            | 231 | 1102    | 109 | 80 | 54 | -  | -  | -  | 41              | 38  |
| CRH(N)1s-36 | 1.1           | 925            | 231 | 1156    | 109 | 80 | 54 | -  | -  | -  | 42              | 40  |

For information about electrical data, see pages [160](#) to [161](#).**CRH(N) 1, 50 Hz**

| Pump type  | Motor P2 [kW] | CR             |     |         |     |    |    |    |    |    |                 |     |
|------------|---------------|----------------|-----|---------|-----|----|----|----|----|----|-----------------|-----|
|            |               | Dimension [mm] |     |         |     |    |    |    |    |    | Net weight [kg] |     |
|            |               | DIN flange     |     |         | D2  | D3 | D4 | D5 | E3 | E4 | DIN             | DIN |
|            |               | B1             | B2  | B1 + B2 |     |    |    |    |    |    | CR              | CRN |
| CRH(N)1-2  | 0.37          | 309            | 191 | 500     | 109 | 71 | 63 | -  | -  | -  | 24              | 21  |
| CRH(N)1-3  | 0.37          | 309            | 191 | 500     | 109 | 71 | 63 | -  | -  | -  | 24              | 22  |
| CRH(N)1-4  | 0.37          | 327            | 191 | 518     | 109 | 71 | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)1-5  | 0.37          | 345            | 191 | 536     | 109 | 71 | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)1-6  | 0.37          | 363            | 191 | 554     | 109 | 71 | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)1-7  | 0.37          | 381            | 191 | 572     | 109 | 71 | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)1-8  | 0.55          | 399            | 191 | 590     | 109 | 71 | 63 | -  | -  | -  | 27              | 24  |
| CRH(N)1-9  | 0.55          | 417            | 191 | 608     | 109 | 71 | 63 | -  | -  | -  | 27              | 25  |
| CRH(N)1-10 | 0.55          | 435            | 191 | 626     | 109 | 71 | 63 | -  | -  | -  | 28              | 25  |
| CRH(N)1-11 | 0.55          | 453            | 191 | 644     | 109 | 71 | 63 | -  | -  | -  | 28              | 25  |
| CRH(N)1-12 | 0.75          | 477            | 231 | 708     | 109 | 80 | 54 | -  | -  | -  | 30              | 28  |
| CRH(N)1-13 | 0.75          | 495            | 231 | 726     | 109 | 80 | 54 | -  | -  | -  | 31              | 28  |
| CRH(N)1-15 | 0.75          | 531            | 231 | 762     | 109 | 80 | 54 | -  | -  | -  | 32              | 29  |
| CRH(N)1-17 | 1.1           | 567            | 231 | 798     | 109 | 80 | 54 | -  | -  | -  | 35              | 32  |
| CRH(N)1-19 | 1.1           | 603            | 231 | 834     | 109 | 80 | 54 | -  | -  | -  | 36              | 33  |
| CRH(N)1-21 | 1.1           | 639            | 231 | 870     | 109 | 80 | 54 | -  | -  | -  | 36              | 34  |
| CRH(N)1-23 | 1.1           | 675            | 231 | 906     | 109 | 80 | 54 | -  | -  | -  | 37              | 35  |
| CRH(N)1-25 | 1.5           | 727            | 321 | 1048    | 110 | 90 | 44 | -  | -  | -  | 45              | 42  |
| CRH(N)1-27 | 1.5           | 763            | 321 | 1084    | 110 | 90 | 44 | -  | -  | -  | 46              | 43  |
| CRH(N)1-30 | 1.5           | 817            | 321 | 1138    | 110 | 90 | 44 | -  | -  | -  | 47              | 44  |
| CRH(N)1-33 | 2.2           | 871            | 321 | 1192    | 110 | 90 | 44 | -  | -  | -  | 49              | 46  |
| CRH(N)1-36 | 2.2           | 925            | 321 | 1246    | 110 | 90 | 44 | -  | -  | -  | 50              | 47  |

For information about electrical data, see pages [160](#) to [161](#).

## CRH(N) 3, 50 Hz

| Pump type  | Motor P2 [kW] | CR             |     |         |     |     |    |    |    |    |                 |     |
|------------|---------------|----------------|-----|---------|-----|-----|----|----|----|----|-----------------|-----|
|            |               | Dimension [mm] |     |         |     |     |    |    |    |    | Net weight [kg] |     |
|            |               | DIN flange     |     |         | D2  | D3  | D4 | D5 | E3 | E4 | DIN             | DIN |
|            |               | B1             | B2  | B1 + B2 |     |     |    |    |    |    | CR              | CRN |
| CRH(N)3-2  | 0.37          | 309            | 191 | 500     | 109 | 71  | 63 | -  | -  | -  | 24              | 21  |
| CRH(N)3-3  | 0.37          | 309            | 191 | 500     | 109 | 71  | 63 | -  | -  | -  | 24              | 22  |
| CRH(N)3-4  | 0.37          | 327            | 191 | 518     | 109 | 71  | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)3-5  | 0.37          | 345            | 191 | 536     | 109 | 71  | 63 | -  | -  | -  | 25              | 22  |
| CRH(N)3-6  | 0.55          | 363            | 191 | 554     | 109 | 71  | 63 | -  | -  | -  | 26              | 23  |
| CRH(N)3-7  | 0.55          | 381            | 191 | 572     | 109 | 71  | 63 | -  | -  | -  | 27              | 24  |
| CRH(N)3-8  | 0.75          | 405            | 231 | 636     | 109 | 80  | 54 | -  | -  | -  | 29              | 26  |
| CRH(N)3-9  | 0.75          | 423            | 231 | 654     | 109 | 80  | 54 | -  | -  | -  | 29              | 27  |
| CRH(N)3-10 | 0.75          | 441            | 231 | 672     | 109 | 80  | 54 | -  | -  | -  | 30              | 27  |
| CRH(N)3-11 | 1.1           | 459            | 231 | 690     | 109 | 80  | 54 | -  | -  | -  | 32              | 30  |
| CRH(N)3-12 | 1.1           | 477            | 231 | 708     | 109 | 80  | 54 | -  | -  | -  | 33              | 30  |
| CRH(N)3-13 | 1.1           | 495            | 231 | 726     | 109 | 80  | 54 | -  | -  | -  | 33              | 31  |
| CRH(N)3-15 | 1.1           | 531            | 231 | 762     | 109 | 80  | 54 | -  | -  | -  | 34              | 32  |
| CRH(N)3-17 | 1.5           | 583            | 321 | 904     | 110 | 90  | 44 | -  | -  | -  | 42              | 39  |
| CRH(N)3-19 | 1.5           | 619            | 321 | 940     | 110 | 90  | 44 | -  | -  | -  | 43              | 40  |
| CRH(N)3-21 | 2.2           | 655            | 321 | 976     | 110 | 90  | 44 | -  | -  | -  | 44              | 41  |
| CRH(N)3-23 | 2.2           | 691            | 321 | 1012    | 110 | 90  | 44 | -  | -  | -  | 45              | 42  |
| CRH(N)3-25 | 2.2           | 727            | 321 | 1048    | 110 | 90  | 44 | -  | -  | -  | 46              | 42  |
| CRH(N)3-27 | 2.2           | 763            | 321 | 1084    | 110 | 90  | 44 | -  | -  | -  | 46              | 43  |
| CRH(N)3-29 | 2.2           | 799            | 321 | 1120    | 110 | 90  | 44 | -  | -  | -  | 47              | 44  |
| CRH(N)3-31 | 3             | 840            | 335 | 1175    | 120 | 100 | 34 | -  | -  | -  | 54              | 51  |
| CRH(N)3-33 | 3             | 876            | 335 | 1211    | 120 | 100 | 34 | -  | -  | -  | 55              | 52  |
| CRH(N)3-36 | 3             | 930            | 335 | 1265    | 120 | 100 | 34 | -  | -  | -  | 56              | 53  |

For information about electrical data, see pages 160 to 161.

## CRH(N) 5, 50 Hz

| Pump type  | Motor P2 [kW] | CR             |     |         |     |     |    |     |      |      |                 |            |
|------------|---------------|----------------|-----|---------|-----|-----|----|-----|------|------|-----------------|------------|
|            |               | Dimension [mm] |     |         |     |     |    |     |      |      | Net weight [kg] |            |
|            |               | DIN flange     |     |         | D2  | D3  | D4 | D5  | E3   | E4   | DIN<br>CR       | DIN<br>CRN |
|            |               | B1             | B2  | B1 + B2 |     |     |    |     |      |      |                 |            |
| CRH(N)5-2  | 0.37          | 309            | 191 | 500     | 109 | 71  | 63 | -   | -    | -    | 24              | 21         |
| CRH(N)5-3  | 0.55          | 336            | 191 | 527     | 109 | 71  | 63 | -   | -    | -    | 26              | 23         |
| CRH(N)5-4  | 0.55          | 363            | 191 | 554     | 109 | 71  | 63 | -   | -    | -    | 26              | 23         |
| CRH(N)5-5  | 0.75          | 396            | 231 | 627     | 109 | 80  | 54 | -   | -    | -    | 28              | 26         |
| CRH(N)5-6  | 1.1           | 423            | 231 | 654     | 109 | 80  | 54 | -   | -    | -    | 31              | 29         |
| CRH(N)5-7  | 1.1           | 450            | 231 | 681     | 109 | 80  | 54 | -   | -    | -    | 32              | 29         |
| CRH(N)5-8  | 1.1           | 477            | 231 | 708     | 109 | 80  | 54 | -   | -    | -    | 32              | 30         |
| CRH(N)5-9  | 1.5           | 520            | 321 | 841     | 110 | 90  | 44 | -   | -    | -    | 40              | 37         |
| CRH(N)5-10 | 1.5           | 547            | 321 | 868     | 110 | 90  | 44 | -   | -    | -    | 40              | 38         |
| CRH(N)5-11 | 2.2           | 574            | 321 | 895     | 110 | 90  | 44 | -   | -    | -    | 42              | 39         |
| CRH(N)5-12 | 2.2           | 601            | 321 | 922     | 110 | 90  | 44 | -   | -    | -    | 42              | 39         |
| CRH(N)5-13 | 2.2           | 628            | 321 | 949     | 110 | 90  | 44 | -   | -    | -    | 43              | 40         |
| CRH(N)5-14 | 2.2           | 655            | 321 | 976     | 110 | 90  | 44 | -   | -    | -    | 43              | 40         |
| CRH(N)5-15 | 2.2           | 682            | 321 | 1003    | 110 | 90  | 44 | -   | -    | -    | 44              | 41         |
| CRH(N)5-16 | 2.2           | 709            | 321 | 1030    | 110 | 90  | 44 | -   | -    | -    | 45              | 41         |
| CRH(N)5-18 | 3             | 768            | 335 | 1103    | 120 | 100 | 34 | -   | -    | -    | 52              | 49         |
| CRH(N)5-20 | 3             | 822            | 335 | 1157    | 120 | 100 | 34 | -   | -    | -    | 53              | 50         |
| CRH(N)5-22 | 4             | 876            | 372 | 1248    | 134 | 112 | 22 | -   | -    | -    | 63              | 60         |
| CRH(N)5-24 | 4             | 930            | 372 | 1302    | 134 | 112 | 22 | -   | -    | -    | 64              | 62         |
| CRH(N)5-26 | 4             | 984            | 372 | 1356    | 134 | 112 | 22 | -   | -    | -    | 66              | 63         |
| CRH(N)5-29 | 4             | 1065           | 372 | 1437    | 134 | 112 | 22 | -   | -    | -    | 67              | 64         |
| CRH(N)5-32 | 5.5           | 1175           | 391 | 1566    | 134 | 132 | 2  | 140 | 1294 | 1434 | 83              | 80         |
| CRH(N)5-36 | 5.5           | 1283           | 391 | 1674    | 134 | 132 | 2  | 140 | 1402 | 1542 | 86              | 82         |

For information about electrical data, see pages 160 to 161.

## CRH(N) 10, 50 Hz

| Pump type   | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |      |                 |     |
|-------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|------|-----------------|-----|
|             |               | Dimension [mm] |     |         |     |     |     |     |      |      | Net weight [kg] |     |
|             |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
|             |               | B1             | B2  | B1 + B2 |     |     |     |     |      |      | CR              | CRN |
| CRH(N)10-1  | 0.37          | 414            | 191 | 605     | 109 | 71  | 139 | -   | -    | -    | 58              | 52  |
| CRH(N)10-2  | 0.75          | 430            | 231 | 661     | 109 | 80  | 130 | -   | -    | -    | 60              | 54  |
| CRH(N)10-3  | 1.1           | 464            | 231 | 695     | 109 | 80  | 130 | -   | -    | -    | 63              | 58  |
| CRH(N)10-4  | 1.5           | 494            | 321 | 815     | 109 | 90  | 120 | -   | -    | -    | 71              | 66  |
| CRH(N)10-5  | 2.2           | 524            | 321 | 845     | 110 | 90  | 120 | -   | -    | -    | 73              | 68  |
| CRH(N)10-6  | 2.2           | 584            | 321 | 905     | 110 | 90  | 120 | -   | -    | -    | 74              | 69  |
| CRH(N)10-7  | 3             | 614            | 335 | 949     | 120 | 100 | 110 | -   | -    | -    | 81              | 76  |
| CRH(N)10-8  | 3             | 644            | 335 | 979     | 120 | 100 | 110 | -   | -    | -    | 82              | 77  |
| CRH(N)10-9  | 3             | 674            | 335 | 1009    | 120 | 100 | 110 | -   | -    | -    | 83              | 78  |
| CRH(N)10-10 | 4             | 816            | 372 | 1188    | 134 | 112 | 98  | -   | -    | -    | 93              | 88  |
| CRH(N)10-12 | 4             | 876            | 372 | 1248    | 134 | 112 | 98  | -   | -    | -    | 95              | 90  |
| CRH(N)10-14 | 5.5           | 936            | 391 | 1327    | 134 | 132 | 78  | 140 | 1055 | 1195 | 118             | 113 |
| CRH(N)10-16 | 5.5           | 996            | 391 | 1387    | 134 | 132 | 78  | 140 | 1115 | 1255 | 120             | 115 |
| CRH(N)10-18 | 7.5           | 1056           | 379 | 1435    | 159 | 132 | 78  | 178 | 1125 | 1303 | 133             | 128 |
| CRH(N)10-20 | 7.5           | 1116           | 379 | 1495    | 159 | 132 | 78  | 178 | 1185 | 1363 | 136             | 130 |
| CRH(N)10-22 | 7.5           | 1176           | 379 | 1555    | 159 | 132 | 78  | 178 | 1245 | 1423 | 138             | 132 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 15, 50 Hz

| Pump type   | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |     |                 |     |
|-------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|-----|-----------------|-----|
|             |               | Dimension [mm] |     |         |     |     |     |     |      |     | Net weight [kg] |     |
|             |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4  | DIN             | DIN |
|             |               | B1             | B2  | B1 + B2 |     |     |     |     |      |     | CR              | CRN |
| CRH(N)15-1  | 1.1           | 442            | 231 | 673     | 109 | 80  | 130 | -   | -    | -   | 62              | 57  |
| CRH(N)15-2  | 2.2           | 458            | 231 | 689     | 110 | 90  | 120 | -   | -    | -   | 70              | 65  |
| CRH(N)15-3  | 3             | 508            | 335 | 843     | 120 | 100 | 110 | -   | -    | -   | 77              | 73  |
| CRH(N)15-4  | 4             | 553            | 372 | 925     | 134 | 112 | 98  | -   | -    | -   | 88              | 83  |
| CRH(N)15-5  | 4             | 598            | 372 | 970     | 134 | 112 | 98  | -   | -    | -   | 89              | 85  |
| CRH(N)15-6  | 5.5           | 672            | 391 | 1063    | 134 | 132 | 78  | 140 | 791  | 931 | 111             | 107 |
| CRH(N)15-7  | 5.5           | 717            | 391 | 1108    | 134 | 132 | 78  | 140 | 836  | 0   | 113             | 108 |
| CRH(N)15-8  | 7.5           | 762            | 379 | 1141    | 159 | 132 | 78  | 178 | 831  | 0   | 125             | 121 |
| CRH(N)15-9  | 7.5           | 807            | 379 | 1186    | 159 | 132 | 78  | 178 | 876  | 0   | 127             | 122 |
| CRH(N)15-10 | 11            | 965            | 471 | 1436    | 204 | 160 | 50  | 210 | 1103 | 0   | 169             | 165 |
| CRH(N)15-12 | 11            | 1055           | 471 | 1526    | 204 | 160 | 50  | 210 | 1193 | 0   | 173             | 168 |
| CRH(N)15-14 | 11            | 1145           | 471 | 1616    | 204 | 160 | 50  | 210 | 1283 | 0   | 177             | 171 |
| CRH(N)15-17 | 11            | 1280           | 471 | 1751    | 204 | 160 | 50  | 210 | 1418 | 0   | 195             | 189 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 20, 50 Hz

| Pump type   | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |      |                 |     |
|-------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|------|-----------------|-----|
|             |               | Dimension [mm] |     |         |     |     |     |     |      |      | Net weight [kg] |     |
|             |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
|             |               | B1             | B2  | B1 + B2 |     |     |     |     |      |      | CR              | CRN |
| CRH(N)20-1  | 1.1           | 509            | 231 | 740     | 109 | 80  | 130 | -   | -    | -    | 62              | 57  |
| CRH(N)20-2  | 2.2           | 525            | 321 | 846     | 110 | 90  | 120 | -   | -    | -    | 70              | 65  |
| CRH(N)20-3  | 4             | 575            | 372 | 947     | 134 | 112 | 98  | -   | -    | -    | 86              | 82  |
| CRH(N)20-4  | 5.5           | 649            | 391 | 1040    | 134 | 132 | 78  | 140 | 768  | 908  | 108             | 104 |
| CRH(N)20-5  | 5.5           | 694            | 391 | 1085    | 134 | 132 | 78  | 140 | 813  | 953  | 110             | 105 |
| CRH(N)20-6  | 7.5           | 739            | 379 | 1118    | 159 | 132 | 78  | 178 | 808  | 986  | 122             | 117 |
| CRH(N)20-7  | 7.5           | 784            | 379 | 1163    | 159 | 132 | 78  | 178 | 853  | 1031 | 123             | 119 |
| CRH(N)20-8  | 11            | 942            | 471 | 1413    | 204 | 160 | 50  | 210 | 1080 | 1290 | 166             | 161 |
| CRH(N)20-10 | 11            | 1032           | 471 | 1503    | 204 | 160 | 50  | 210 | 1170 | 1380 | 169             | 165 |
| CRH(N)20-12 | 15            | 1122           | 471 | 1593    | 204 | 160 | 50  | 210 | 1260 | 1470 | 186             | 181 |
| CRH(N)20-14 | 15            | 1212           | 471 | 1683    | 204 | 160 | 50  | 210 | 1350 | 1560 | 190             | 184 |
| CRH(N)20-17 | 18.5          | 1347           | 545 | 1892    | 204 | 180 | 30  | 254 | 1485 | 1739 | 208             | 202 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 32, 50 Hz

| Pump type     | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |      |                 |     |
|---------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|------|-----------------|-----|
|               |               | Dimension [mm] |     |         |     |     |     |     |      |      | Net weight [kg] |     |
|               |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
|               |               | B1             | B2  | B1 + B2 |     |     |     |     |      |      | CR              | CRN |
| CRH(N)32-1-1  | 1.5           | 533            | 321 | 854     | 110 | 90  | 120 | -   | -    | -    | 81              | 77  |
| CRH(N)32-1    | 2.2           | 533            | 321 | 854     | 110 | 90  | 120 | -   | -    | -    | 82              | 77  |
| CRH(N)32-2-2  | 3             | 603            | 335 | 938     | 120 | 100 | 110 | -   | -    | -    | 90              | 86  |
| CRH(N)32-2    | 4             | 603            | 372 | 975     | 134 | 112 | 98  | -   | -    | -    | 99              | 95  |
| CRH(N)32-3-2  | 5.5           | 673            | 391 | 1064    | 134 | 132 | 78  | 140 | 792  | 932  | 114             | 109 |
| CRH(N)32-3    | 5.5           | 673            | 391 | 1064    | 134 | 132 | 78  | 140 | 792  | 932  | 114             | 109 |
| CRH(N)32-4-2  | 7.5           | 743            | 391 | 1134    | 159 | 132 | 78  | 178 | 812  | 990  | 129             | 124 |
| CRH(N)32-4    | 7.5           | 743            | 391 | 1134    | 159 | 132 | 78  | 178 | 812  | 990  | 129             | 124 |
| CRH(N)32-5-2  | 11            | 923            | 471 | 1394    | 204 | 160 | 50  | 210 | 1061 | 1271 | 176             | 171 |
| CRH(N)32-5    | 11            | 923            | 471 | 1394    | 204 | 160 | 50  | 210 | 1061 | 1271 | 176             | 171 |
| CRH(N)32-6-2  | 11            | 993            | 471 | 1464    | 204 | 160 | 50  | 210 | 1131 | 1341 | 179             | 174 |
| CRH(N)32-6    | 11            | 993            | 471 | 1464    | 204 | 160 | 50  | 210 | 1131 | 1341 | 179             | 174 |
| CRH(N)32-7-2  | 15            | 1063           | 471 | 1534    | 204 | 160 | 50  | 210 | 1201 | 1411 | 195             | 190 |
| CRH(N)32-7    | 15            | 1063           | 471 | 1534    | 204 | 160 | 50  | 210 | 1201 | 1411 | 195             | 190 |
| CRH(N)32-8-2  | 15            | 1133           | 471 | 1604    | 204 | 160 | 50  | 210 | 1271 | 1481 | 201             | 196 |
| CRH(N)32-8    | 15            | 1133           | 471 | 1604    | 204 | 160 | 50  | 210 | 1271 | 1481 | 201             | 196 |
| CRH(N)32-9-2  | 18.5          | 1203           | 515 | 1718    | 204 | 160 | 50  | 254 | 1341 | 1595 | 217             | 213 |
| CRH(N)32-9    | 18.5          | 1203           | 515 | 1718    | 204 | 160 | 50  | 254 | 1341 | 1595 | 217             | 213 |
| CRH(N)32-10-2 | 18.5          | 1273           | 515 | 1788    | 204 | 160 | 50  | 254 | 1411 | 1665 | 220             | 216 |
| CRH(N)32-10   | 18.5          | 1273           | 515 | 1788    | 204 | 160 | 50  | 254 | 1411 | 1665 | 220             | 216 |
| CRH(N)32-11-2 | 22            | 1343           | 541 | 1884    | 204 | 180 | 30  | 241 | 1494 | 1735 | 238             | 233 |
| CRH(N)32-11   | 22            | 1343           | 541 | 1884    | 204 | 180 | 30  | 241 | 1494 | 1735 | 238             | 233 |
| CRH(N)32-12-2 | 22            | 1413           | 541 | 1954    | 204 | 180 | 30  | 241 | 1564 | 1805 | 241             | 237 |
| CRH(N)32-12   | 22            | 1413           | 541 | 1954    | 204 | 180 | 30  | 241 | 1564 | 1805 | 241             | 237 |
| CRH(N)32-13-2 | 30            | 1483           | 610 | 2093    | 300 | 200 | 10  | 305 | 1675 | 1980 | 347             | 342 |
| CRH(N)32-13   | 30            | 1483           | 610 | 2093    | 300 | 200 | 10  | 305 | 1675 | 1980 | 347             | 342 |
| CRH(N)32-14-2 | 30            | 1553           | 610 | 2163    | 300 | 200 | 10  | 305 | 1745 | 2050 | 350             | 345 |
| CRH(N)32-14   | 30            | 1553           | 610 | 2163    | 300 | 200 | 10  | 305 | 1745 | 2050 | 350             | 345 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 45, 50 Hz

| Pump type     | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |      |                 |     |
|---------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|------|-----------------|-----|
|               |               | Dimension [mm] |     |         |     |     |     |     |      |      | Net weight [kg] |     |
|               |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
|               |               | B1             | B2  | B1 + B2 |     |     |     |     |      |      | CR              | CRN |
| CRH(N)45-1-1  | 3             | 549            | 335 | 884     | 120 | 100 | 154 | -   | -    | -    | 99              | 101 |
| CRH(N)45-1    | 4             | 549            | 372 | 921     | 134 | 112 | 142 | -   | -    | -    | 108             | 110 |
| CRH(N)45-2-2  | 5.5           | 629            | 391 | 1020    | 134 | 132 | 122 | 140 | 748  | 888  | 123             | 125 |
| CRH(N)45-2    | 7.5           | 629            | 379 | 1008    | 159 | 132 | 122 | 178 | 698  | 876  | 135             | 137 |
| CRH(N)45-3-2  | 11            | 819            | 471 | 1290    | 204 | 160 | 94  | 210 | 957  | 1167 | 182             | 184 |
| CRH(N)45-3    | 11            | 819            | 471 | 1290    | 204 | 160 | 94  | 210 | 957  | 1167 | 182             | 184 |
| CRH(N)45-4-2  | 15            | 899            | 471 | 1370    | 204 | 160 | 94  | 210 | 1037 | 1247 | 199             | 201 |
| CRH(N)45-4    | 15            | 899            | 471 | 1370    | 204 | 160 | 94  | 210 | 1037 | 1247 | 199             | 201 |
| CRH(N)45-5-2  | 18.5          | 979            | 515 | 1494    | 204 | 160 | 94  | 254 | 1117 | 1371 | 216             | 218 |
| CRH(N)45-5    | 18.5          | 979            | 515 | 1494    | 204 | 160 | 94  | 254 | 1117 | 1371 | 216             | 218 |
| CRH(N)45-6-2  | 22            | 1059           | 541 | 1600    | 204 | 180 | 74  | 241 | 1210 | 1451 | 236             | 238 |
| CRH(N)45-6    | 22            | 1059           | 541 | 1600    | 204 | 180 | 74  | 241 | 1210 | 1451 | 236             | 238 |
| CRH(N)45-7-2  | 30            | 1139           | 610 | 1749    | 300 | 200 | 54  | 305 | 1331 | 1636 | 343             | 345 |
| CRH(N)45-7    | 30            | 1139           | 610 | 1749    | 300 | 200 | 54  | 305 | 1331 | 1636 | 343             | 345 |
| CRH(N)45-8-2  | 30            | 1219           | 610 | 1829    | 300 | 200 | 54  | 305 | 1411 | 1716 | 347             | 349 |
| CRH(N)45-8    | 30            | 1219           | 610 | 1829    | 300 | 200 | 54  | 305 | 1411 | 1716 | 347             | 349 |
| CRH(N)45-9-2  | 30            | 1299           | 610 | 1909    | 300 | 200 | 54  | 305 | 1491 | 1796 | 351             | 353 |
| CRH(N)45-9    | 37            | 1299           | 667 | 1966    | 300 | 200 | 54  | 305 | 1489 | 1794 | 381             | 383 |
| CRH(N)45-10-2 | 37            | 1379           | 667 | 2046    | 300 | 200 | 54  | 305 | 1569 | 1874 | 386             | 387 |
| CRH(N)45-10   | 37            | 1379           | 667 | 2046    | 300 | 200 | 54  | 305 | 1569 | 1874 | 386             | 387 |
| CRH(N)45-11-2 | 45            | 1465           | 709 | 2174    | 325 | 225 | 29  | 286 | 1673 | 1959 | 474             | 476 |
| CRH(N)45-11   | 45            | 1459           | 709 | 2168    | 325 | 225 | 29  | 286 | 1667 | 1953 | 474             | 476 |
| CRH(N)45-12-2 | 45            | 1539           | 709 | 2248    | 325 | 225 | 29  | 286 | 1747 | 2033 | 479             | 480 |
| CRH(N)45-12   | 45            | 1539           | 709 | 2248    | 325 | 225 | 29  | 286 | 1747 | 2033 | 479             | 480 |
| CRH(N)45-13-2 | 45            | 1619           | 709 | 2328    | 325 | 225 | 29  | 286 | 1827 | 2113 | 483             | 485 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 64, 50 Hz

| Pump type    | Motor P2 [kW] | CR             |     |      |     |     |     |     |      |      |                 |     |
|--------------|---------------|----------------|-----|------|-----|-----|-----|-----|------|------|-----------------|-----|
|              |               | Dimension [mm] |     |      |     |     |     |     |      |      | Net weight [kg] |     |
|              |               | DIN flange     |     |      | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
| B1           | B2            | B1 + B2        | CR  | CRN  |     |     |     |     |      |      |                 |     |
| CRH(N)64-1-1 | 4             | 580            | 372 | 952  | 134 | 112 | 142 | -   | -    | -    | 121             | 114 |
| CRH(N)64-1   | 5.5           | 580            | 391 | 971  | 134 | 132 | 122 | 140 | 699  | 839  | 133             | 125 |
| CRH(N)64-2-2 | 7.5           | 662            | 379 | 1041 | 159 | 132 | 122 | 178 | 731  | 909  | 149             | 142 |
| CRH(N)64-2-1 | 11            | 772            | 471 | 1243 | 204 | 160 | 94  | 210 | 910  | 1120 | 193             | 186 |
| CRH(N)64-2   | 11            | 772            | 471 | 1243 | 204 | 160 | 94  | 210 | 910  | 1120 | 193             | 186 |
| CRH(N)64-3-2 | 15            | 854            | 471 | 1325 | 204 | 160 | 94  | 210 | 992  | 1202 | 210             | 203 |
| CRH(N)64-3-1 | 15            | 854            | 471 | 1325 | 204 | 160 | 94  | 210 | 992  | 1202 | 210             | 203 |
| CRH(N)64-3   | 18.5          | 854            | 515 | 1369 | 204 | 160 | 94  | 254 | 992  | 1246 | 223             | 216 |
| CRH(N)64-4-2 | 18.5          | 936            | 515 | 1451 | 204 | 160 | 94  | 254 | 1074 | 1328 | 228             | 221 |
| CRH(N)64-4-1 | 22            | 936            | 541 | 1477 | 204 | 180 | 74  | 241 | 1087 | 1328 | 242             | 234 |
| CRH(N)64-4   | 22            | 936            | 541 | 1477 | 204 | 180 | 74  | 241 | 1087 | 1328 | 242             | 234 |
| CRH(N)64-5-2 | 30            | 1018           | 610 | 1628 | 204 | 200 | 54  | 305 | 1210 | 1515 | 348             | 341 |
| CRH(N)64-5-1 | 30            | 1018           | 610 | 1628 | 300 | 200 | 54  | 305 | 1210 | 1515 | 348             | 341 |
| CRH(N)64-5   | 30            | 1018           | 610 | 1628 | 300 | 200 | 54  | 305 | 1210 | 1515 | 348             | 341 |
| CRH(N)64-6-2 | 30            | 1100           | 610 | 1710 | 300 | 200 | 54  | 305 | 1292 | 1597 | 354             | 348 |
| CRH(N)64-6-1 | 37            | 1100           | 667 | 1767 | 300 | 200 | 54  | 305 | 1292 | 1597 | 384             | 378 |
| CRH(N)64-6   | 37            | 1100           | 667 | 1767 | 300 | 200 | 54  | 305 | 1292 | 1597 | 384             | 378 |
| CRH(N)64-7-2 | 37            | 1182           | 667 | 1849 | 300 | 200 | 54  | 305 | 1374 | 1679 | 389             | 382 |
| CRH(N)64-7-1 | 37            | 1182           | 667 | 1849 | 300 | 200 | 54  | 305 | 1374 | 1679 | 389             | 382 |
| CRH(N)64-7   | 45            | 1188           | 709 | 1897 | 325 | 225 | 29  | 286 | 1378 | 1664 | 473             | 467 |
| CRH(N)64-8-2 | 45            | 1270           | 709 | 1979 | 325 | 225 | 29  | 286 | 1478 | 1764 | 478             | 471 |
| CRH(N)64-8-1 | 45            | 1270           | 709 | 1979 | 325 | 225 | 29  | 286 | 1478 | 1764 | 478             | 471 |

For information about electrical data, see pages 160 to 161.

## CRH(N) 90, 50 Hz

| Pump type    | Motor P2 [kW] | CR             |     |         |     |     |     |     |      |      |                 |     |
|--------------|---------------|----------------|-----|---------|-----|-----|-----|-----|------|------|-----------------|-----|
|              |               | Dimension [mm] |     |         |     |     |     |     |      |      | Net weight [kg] |     |
|              |               | DIN flange     |     |         | D2  | D3  | D4  | D5  | E3   | E4   | DIN             | DIN |
|              |               | B1             | B2  | B1 + B2 |     |     |     |     |      |      | CR              | CRN |
| CRH(N)90-1-1 | 5.5           | 590            | 391 | 981     | 134 | 132 | 122 | 140 | 709  | 849  | 133             | 127 |
| CRH(N)90-1   | 7.5           | 590            | 379 | 969     | 159 | 132 | 122 | 310 | 659  | 969  | 145             | 139 |
| CRH(N)90-2-2 | 11            | 792            | 471 | 1263    | 204 | 160 | 94  | 333 | 930  | 1263 | 193             | 187 |
| CRH(N)90-2   | 15            | 792            | 471 | 1263    | 204 | 160 | 94  | 333 | 930  | 1263 | 206             | 200 |
| CRH(N)90-3-2 | 18.5          | 884            | 515 | 1399    | 204 | 160 | 94  | 377 | 1022 | 1399 | 224             | 218 |
| CRH(N)90-3   | 22            | 884            | 541 | 1425    | 204 | 180 | 74  | 390 | 1035 | 1425 | 238             | 232 |
| CRH(N)90-4-2 | 30            | 976            | 610 | 1586    | 300 | 200 | 54  | 418 | 1168 | 1586 | 345             | 339 |
| CRH(N)90-4   | 30            | 976            | 610 | 1586    | 300 | 200 | 54  | 418 | 1168 | 1586 | 345             | 339 |
| CRH(N)90-5-2 | 37            | 1068           | 667 | 1735    | 300 | 200 | 54  | 477 | 1258 | 1735 | 382             | 376 |
| CRH(N)90-5   | 37            | 1068           | 667 | 1735    | 300 | 200 | 54  | 477 | 1258 | 1735 | 382             | 376 |
| CRH(N)90-6-2 | 45            | 1166           | 709 | 1875    | 325 | 225 | 29  | 501 | 1374 | 1875 | 471             | 466 |
| CRH(N)90-6   | 45            | 1166           | 709 | 1875    | 325 | 225 | 29  | 501 | 1374 | 1875 | 471             | 466 |

For information about electrical data, see pages 160 to 161.



## 14. Motor data

### Standard 2-pole motors for CR, CRI, CRN, 50 Hz

| Motor P2 [kW] | Frame size | Standard voltage [V] | I <sub>1/1</sub> [A] | Cos φ <sub>1/1</sub> | η [%] | I <sub>start</sub> [%] | Speed [min <sup>-1</sup> ] | MG                                                                                  |
|---------------|------------|----------------------|----------------------|----------------------|-------|------------------------|----------------------------|-------------------------------------------------------------------------------------|
| 0.37          | 71         | 220-240Δ/380-415Y    | 1.74/1.00            | 0.80-0.70            | 78.5  | 490-530                | 2850-2880                  |  |
| 0.55          | 71         | 220-240Δ/380-415Y    | 2.50/1.44            | 0.80-0.70            | 80.0  | 580-620                | 2830-2850                  |                                                                                     |
| 0.75          | 80         | 220-240Δ/380-415Y    | 3.30/1.90            | 0.81-0.71            | 80.7  | 580-620                | 2840-2870                  |                                                                                     |
| 1.1           | 80         | 220-240Δ/380-415Y    | 4.35/2.50            | 0.83-0.76            | 82.7  | 450-500                | 2840-2870                  |                                                                                     |
| 1.5           | 90         | 220-240Δ/380-415Y    | 5.45/3.15            | 0.87-0.82            | 84.2  | 850-930                | 2890-2910                  |                                                                                     |
| 2.2           | 90         | 380-415Δ             | 4.45                 | 0.89-0.87            | 85.9  | 850-950                | 2890-2910                  |                                                                                     |
| 3             | 100        | 380-415Δ             | 6.30                 | 0.87-0.82            | 87.1  | 840-920                | 2900-2920                  |                                                                                     |
| 4             | 112        | 380-415Δ             | 7.90                 | 0.87                 | 88.1  | 1000-1110              | 2920-2940                  |                                                                                     |
| 5.5           | 132        | 380-415Δ             | 11.0                 | 0.87-0.82            | 89.2  | 1080-1180              | 2920-2940                  |                                                                                     |
| 7.5           | 132        | 380-415Δ/660-690Y    | 14.4-14.0/8.30-8.10  | 0.88-0.82            | 90.1  | 780-910                | 2910-2920                  |                                                                                     |
| 11            | 160        | 380-415Δ/660-690Y    | 20.8-19.8/12.0-11.8  | 0.88-0.84            | 91.2  | 660-780                | 2940-2950                  |                                                                                     |
| 15            | 160        | 380-415Δ/660-690Y    | 28.0-26.0/16.2-15.6  | 0.89-0.87            | 91.9  | 660-780                | 2930-2950                  |                                                                                     |
| 18.5          | 160        | 380-415Δ/660-690Y    | 34.5-32.5/20.0-18.8  | 0.89-0.85            | 92.4  | 830-980                | 2940-2950                  |                                                                                     |
| 22            | 180        | 380-415Δ/660-690Y    | 39.5/22.8            | 0.90                 | 92.7  | 830-830                | 2950                       |                                                                                     |
|               |            |                      |                      |                      |       |                        |                            | TM03 1711 2805                                                                      |
|               |            |                      |                      |                      |       |                        |                            | Siemens                                                                             |
| 30            | 200        | 380-420Δ/660-725Y    | 56.0-51.0/32.0-29.5  | 0.86                 | 93.3  | 660-660                | 2955                       |  |
| 37            | 200        | 380-420Δ/660-725Y    | 68.0-63.0/39.0-36.0  | 0.87                 | 93.7  | 670-670                | 2955                       |                                                                                     |
| 45            | 225        | 380-420Δ/660-725Y    | 81.0-74.0/47.0-43.0  | 0.89                 | 94.0  | 690-690                | 2960                       |                                                                                     |
| 55            | 250        | 380-420Δ/660-725Y    | 99.0-90.0/57.0-52.0  | 0.89                 | 94.3  | 670-670                | 2975                       |                                                                                     |
| 75            | 280        | 380-420Δ/660-725Y    | 136-122/78.0-70.0    | 0.89                 | 94.7  | 680-680                | 2975                       |                                                                                     |
|               |            |                      |                      |                      |       |                        |                            | TM03 1710 2805                                                                      |

### Standard 4-pole motors for CR, CRI, CRN, 50 Hz

| Motor P2 [kW] | Frame size | Standard voltage [V] | I <sub>1/1</sub> [A] | Cos φ <sub>1/1</sub> | η [%] | I <sub>start</sub> [%] | Speed [min <sup>-1</sup> ] | MG                                                                                    |
|---------------|------------|----------------------|----------------------|----------------------|-------|------------------------|----------------------------|---------------------------------------------------------------------------------------|
| 0.25          | 71         | 220-240Δ/380-415Y    | 1.48/0.85            | 0.75-0.65            | 69.0  | 400-440                | 1400-1420                  |  |
| 0.37          | 71         | 220-240Δ/380-415Y    | 1.90/1.10            | 0.77-0.67            | 71.0  | 400-440                | 1400-1420                  |                                                                                       |
| 0.55          | 80         | 220-240Δ/380-415Y    | 2.60/1.50            | 0.79-0.70            | 77.0  | 430-470                | 1390-1410                  |                                                                                       |
| 0.75          | 90         | 220-240Δ/380-415Y    | 3.30/1.90            | 0.76-0.71            | 82.5  | 660-720                | 1440-1450                  |                                                                                       |
| 1.1           | 90         | 220-240Δ/380-415Y    | 4.85/2.80            | 0.71-0.64            | 84.1  | 820-900                | 1450-1460                  |                                                                                       |
| 1.5           | 90         | 220-240Δ/380-415Y    | 6.15-6.30/3.55-3.65  | 0.75-0.68            | 85.3  | 730-790                | 1450-1460                  |                                                                                       |
| 2.2           | 100        | 380-415Δ             | 4.90                 | 0.79-0.73            | 86.7  | 600-660                | 1450                       |                                                                                       |
| 3.0           | 100        | 380-415Δ             | 6.30                 | 0.82-0.76            | 87.7  | 700-770                | 1440-1450                  |                                                                                       |
| 4.0           | 112        | 380-415Δ             | 9.30                 | 0.75-0.68            | 88.6  | 790-870                | 1460                       |                                                                                       |
| 5.5           | 132        | 380-415Δ/660-690Y    | 11.0-11.0/6.35-6.35  | 0.86-0.80            | 89.6  | 700-760                | 1460                       |                                                                                       |
| 7.5           | 132        | 380-415Δ/660-690Y    | 14.9-14.2/8.60-8.40  | 0.86-0.82            | 90.4  | 680-780                | 1460                       |                                                                                       |
| 11.0          | 160        | 380-415Δ/660-690Y    | 21.2-20.4/12.2-12.0  | 0.86-0.81            | 91.4  | 710-810                | 1470-1475                  |                                                                                       |
| 15.0          | 160        | 380-415Δ/660-690Y    | 29.0-28.0/16.8-16.4  | 0.86-0.82            | 92.1  | 760-870                | 1460-1470                  |                                                                                       |
|               |            |                      |                      |                      |       |                        |                            | TM03 1711 2805                                                                        |

## Standard 2-pole motors for CR, CRI, CRN, 60 Hz

| Motor<br>P2<br>[kW] | Frame<br>size | Standard voltage<br>[V] | I <sub>1/1</sub><br>[A] | Cos φ <sub>1/1</sub> | η<br>[%]  | I <sub>start</sub><br>[%] | Speed<br>[min <sup>-1</sup> ] | MG                                                                                  |
|---------------------|---------------|-------------------------|-------------------------|----------------------|-----------|---------------------------|-------------------------------|-------------------------------------------------------------------------------------|
| 0.37                | 71            | 220-255Δ/380-440Y       | 1.50-1.44/0.87-0.83     | 0.85-0.76            | 79.0-80   | 550-650                   | 3410-3470                     |  |
| 0.55                | 71            | 220-255Δ/380-440Y       | 2.15-2.05/1.25-1.20     | 0.85-0.76            | 81.5-83   | 500-600                   | 3390-3460                     |                                                                                     |
| 0.75                | 80            | 220-255Δ/380-440Y       | 2.95-2.75/1.70-1.60     | 0.86-0.77            | 77.0      | 600-740                   | 3410-3470                     |                                                                                     |
| 1.1                 | 80            | 220-255Δ/380-440Y       | 4.15-4.00/2.40-2.30     | 0.88-0.80            | 82.5-84.0 | 430-500                   | 3420-3470                     |                                                                                     |
| 1.5                 | 90            | 220-277Δ/380-480Y       | 5.35-4.70/3.10-2.70     | 0.90-0.81            | 84.0-85.5 | 780-1050                  | 3470-3530                     |                                                                                     |
| 2.2                 | 90            | 380-480Δ                | 4.45-3.70               | 0.91-0.85            | 85.5-86.5 | 780-1100                  | 3470-3530                     |                                                                                     |
| 3.0                 | 100           | 380-480Δ                | 6.20-5.40               | 0.91-0.84            | 87.5-88.5 | 860-1100                  | 3480-3530                     |                                                                                     |
| 4.0                 | 112           | 380-480Δ                | 7.80-6.80               | 0.91-0.82            | 88.5      | 1000-1470                 | 3510-3540                     |                                                                                     |
| 5.5                 | 132           | 380-480Δ                | 10.6-9.30               | 0.90-0.80            | 89.5      | 1020-1480                 | 3510-3550                     |                                                                                     |
| 7.5                 | 132           | 380-480Δ/660-690Y       | 14.2-12.0/8.20-8.10     | 0.90-0.82            | 89.5-90.2 | 680-1050                  | 3490-3530                     |                                                                                     |
| 11                  | 160           | 380-480Δ/660-690Y       | 20.8-17.2/12.0-11.6     | 0.89-0.83            | 90.2-91.0 | 580-890                   | 3520-3550                     |                                                                                     |
| 15                  | 160           | 380-480Δ/660-690Y       | 28.0-22.4/16.2-15.6     | 0.90-0.86            | 90.2-91.0 | 580-890                   | 3520-3550                     |                                                                                     |
| 18.5                | 160           | 380-480Δ/660-690Y       | 34.5-28.0/20.0-16.6     | 0.89-0.84            | 91.0-91.7 | 670-1100                  | 3520-3560                     |                                                                                     |
| 22                  | 180           | 380-480Δ/660-690Y       | 40.0-32.5/23.0-22.2     | 0.91                 | 91.7      | 650-1040                  | 3520-3560                     |                                                                                     |
| 30*                 | 200           | 380-420Δ/660-725Y       | 56.0-50.0/32.0-29.0     | 0.89                 | 92.4      | 610-610                   | 3545                          |  |
| 37*                 | 200           | 380-420Δ/660-725Y       | 69.0-62.0/38.5-35.0     | 0.90                 | 93.0      | 580-580                   | 3540                          |                                                                                     |
| 45*                 | 225           | 380-420Δ/660-725Y       | 81.0-73.0/47.0-43.0     | 0.90                 | 93.6      | 560-560                   | 3550                          |                                                                                     |
| 55*                 | 250           | 380-420Δ/660-725Y       | 99.0-90.0/57.0-52.0     | 0.90                 | 93.6      | 560-560                   | 3570                          |                                                                                     |
| 75*                 | 280           | 380-420Δ/660-725Y       | 136-122/79.0-72.0       | 0.90                 | 94.1      | 550-550                   | 3570                          |                                                                                     |

\* Siemens motors operating at 440-480Δ voltage may be loaded with a service factor of 1.15.

## Standard 4-pole motors for CR, CRI, CRN, 60 Hz

| Motor<br>P2<br>[kW] | Frame<br>size | Standard voltage<br>[V] | I <sub>1/1</sub><br>[A] | Cos φ <sub>1/1</sub> | η<br>[%]  | I <sub>start</sub><br>[%] | Speed<br>[min <sup>-1</sup> ] | MG                                                                                    |
|---------------------|---------------|-------------------------|-------------------------|----------------------|-----------|---------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| 0.25                | 71            | 220-255Δ/380-440Y       | 1.21/0.70               | 0.80-0.69            | 71-72     | 400-470                   | 1680-1720                     |  |
| 0.37                | 71            | 220-255Δ/380-440Y       | 1.72/0.99               | 0.82-0.72            | 73-74     | 400-470                   | 1680-1720                     |                                                                                       |
| 0.55                | 80            | 220-255Δ/380-440Y       | 2.40/1.40               | 0.83-0.75            | 77-80     | 390-470                   | 1660-1710                     |                                                                                       |
| 0.75                | 90            | 220-277Δ/380-480Y       | 3.10-2.95/1.80-1.70     | 0.79-0.67            | 82.5-85.5 | 590-750                   | 1730-1760                     |                                                                                       |
| 1.1                 | 90            | 220-277Δ/380-480Y       | 4.50/2.60               | 0.76-0.60            | 84.0      | 710-910                   | 1740-1770                     |                                                                                       |
| 1.5                 | 90            | 220-277Δ/380-480Y       | 5.90-5.65/3.40-3.25     | 0.78-0.65            | 84.0-86.5 | 660-930                   | 1740-1770                     |                                                                                       |
| 2.2                 | 100           | 380-480Δ                | 4.70-4.30               | 0.83-0.71            | 87.5      | 590-760                   | 1740-1760                     |                                                                                       |
| 3.0                 | 100           | 380-480Δ                | 6.10-5.50               | 0.85-0.73            | 87.5-89.5 | 620-880                   | 1730-1760                     |                                                                                       |
| 4.0                 | 112           | 380-480Δ                | 8.60-8.30               | 0.79-0.64            | 87.5-89.5 | 770-910                   | 1750-1770                     |                                                                                       |
| 5.5                 | 132           | 380-480Δ/660-690Y       | 11.0-9.40/6.35-6.20     | 0.88-0.79            | 89.5-89.5 | 670-850                   | 1750-1770                     |                                                                                       |
| 7.5                 | 132           | 380-480Δ/660-690Y       | 14.7-12.5/8.50-8.25     | 0.88-0.80            | 89.5-91.7 | 590-890                   | 1740-1770                     |                                                                                       |
| 11.0                | 160           | 380-480Δ/660-690Y       | 20.8-17.8/12.0-11.8     | 0.90-0.81            | 91.0      | 650-970                   | 1760-1780                     |                                                                                       |
| 15.0                | 160           | 380-480Δ/660-690Y       | 29.0-24.2/16.6-16.4     | 0.88-0.81            | 91.0-93.0 | 650-980                   | 1760-1770                     |                                                                                       |

## 15. 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.

### **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)**

For saline or chloride-containing liquids such as sea water or for oxidising agents such as hypochlorites, Grundfos offers CRT(E) pumps made of titanium.

See the separate data booklet on CRT(E) available on [www.grundfos.com](http://www.grundfos.com) (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

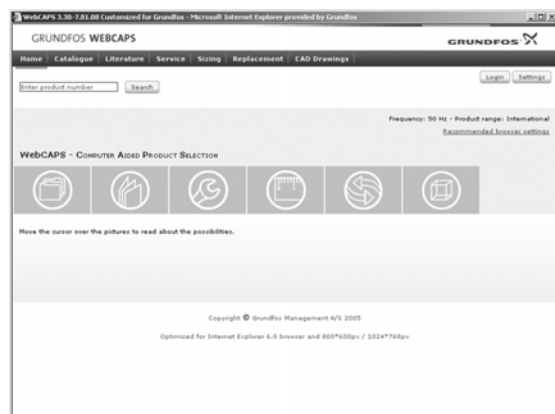
|          |                                                                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|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

| Pumped liquid                                      | Chemical formula                                         | Note       | Liquid concentration, liquid temperature | CR(E), CRI(E) | CRN(E) |
|----------------------------------------------------|----------------------------------------------------------|------------|------------------------------------------|---------------|--------|
| Acetic acid                                        | CH <sub>3</sub> COOH                                     | -          | 5 %, 20 °C                               | -             | HQQE   |
| Acetone                                            | CH <sub>3</sub> COCH <sub>3</sub>                        | 1, F       | 100 %, 20 °C                             | -             | HQQE   |
| Alkaline degreasing agent                          |                                                          | D, F       | -                                        | HQQE          | -      |
| Ammonium bicarbonate                               | NH <sub>4</sub> HCO <sub>3</sub>                         | E          | 20 %, 30 °C                              | -             | HQQE   |
| Ammonium hydroxide                                 | NH <sub>4</sub> OH                                       | -          | 20 %, 40 °C                              | HQQE          | -      |
| Aviation fuel                                      |                                                          | 1, 3, 4, F | 100 %, 20 °C                             | HQBV          | -      |
| Benzoic acid                                       | C <sub>6</sub> H <sub>5</sub> COOH                       | H          | 0.5 %, 20 °C                             | -             | HQQV   |
| Boiler water                                       |                                                          | -          | < 120 °C                                 | HQQE          | -      |
|                                                    |                                                          | F          | 120-180 °C                               | -             | -      |
| Calcareous water                                   |                                                          | -          | < 90 °C                                  | HQQE          | -      |
| Calcium acetate (as coolant with inhibitor)        | Ca(CH <sub>3</sub> COO) <sub>2</sub>                     | D, E       | 30 %, 50 °C                              | HQQE          | -      |
| Calcium hydroxide                                  | Ca (OH) <sub>2</sub>                                     | E          | Saturated solution, +50 °C               | HQQE          | -      |
| Chloride-containing water                          |                                                          | F          | < 30 °C, max. 500 ppm                    | -             | HQQE   |
| Chromic acid                                       | H <sub>2</sub> CrO <sub>4</sub>                          | H          | 1 %, 20 °C                               | -             | HQQV   |
| Citric acid                                        | HOC(CH <sub>2</sub> CO <sub>2</sub> H) <sub>2</sub> COOH | H          | 5 %, 40 °C                               | -             | HQQE   |
| Completely desalinated water (demineralised water) |                                                          | -          | 120 °C                                   | -             | HQQE   |
| Condensate                                         |                                                          | -          | 120 °C                                   | HQQE          | -      |
| Copper sulphate                                    | CuSO <sub>4</sub>                                        | 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 <sub>2</sub> H <sub>5</sub> OH                         | 1, F       | 100 %, 20 °C                             | HQQE          | -      |
| Ethylene glycol                                    | HOCH <sub>2</sub> CH <sub>2</sub> OH                     | D, E       | 50 %, 50 °C                              | HQQE          | -      |
| Formic acid                                        | HCOOH                                                    | -          | 5 %, 20 °C                               | -             | HQQE   |
| Glycerine (glycerol)                               | OHCH <sub>2</sub> CH(OH)CH <sub>2</sub> 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 <sub>3</sub> CHOHCH <sub>3</sub>                      | 1, F       | 100 %, 20 °C                             | HQQE          | -      |
| Lactic acid                                        | CH <sub>3</sub> CH(OH)COOH                               | E, H       | 10 %, 20 °C                              | -             | HQQV   |
| Linoleic acid                                      | C <sub>17</sub> H <sub>31</sub> COOH                     | E, 3       | 100 %, 20 °C                             | HQQV          | -      |
| Methanol (methyl alcohol)                          | CH <sub>3</sub> OH                                       | 1, F       | 100 %, 20 °C                             | HQQE          | -      |
| Motor oil                                          |                                                          | E, 2, 3    | 100 %, 80 °C                             | HQQV          | -      |
| Naphthalene                                        | C <sub>10</sub> H <sub>8</sub>                           | E, H       | 100 %, 80 °C                             | HQQV          | -      |
| Nitric acid                                        | HNO <sub>3</sub>                                         | F          | 1 %, 20 °C                               | -             | HQQE   |
| Oil-containing water                               |                                                          | -          | < 100 °C                                 | HQQV          | -      |
| Olive oil                                          |                                                          | D, E, 3    | 100 %, 80 °C                             | HQQV          | -      |
| Oxalic acid                                        | (COOH) <sub>2</sub>                                      | H          | 1 %, 20 °C                               | -             | HQQE   |
| Ozone-containing water                             | (O <sub>3</sub> )                                        | -          | < 100 °C                                 | -             | HQQE   |
| Peanut oil                                         |                                                          | D, E, 3    | 100 %, 80 °C                             | HQQV          | -      |
| Petrol                                             |                                                          | 1, 3, 4, F | 100 %, 20 °C                             | HQBV          | -      |
| Phosphoric acid                                    | H <sub>3</sub> PO <sub>4</sub>                           | E          | 20 %, 20 °C                              | -             | HQQE   |
| Propanol                                           | C <sub>3</sub> H <sub>7</sub> OH                         | 1, F       | 100 %, 20 °C                             | HQQE          | -      |
| Propylene glycol                                   | CH <sub>3</sub> CH(OH)CH <sub>2</sub> OH                 | D, E       | 50 %, 90 °C                              | HQQE          | -      |
| Potassium carbonate                                | K <sub>2</sub> CO <sub>3</sub>                           | 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 <sub>4</sub>                                        | -          | 5 %, 20 °C                               | -             | HQQE   |
| Rape seed oil                                      |                                                          | D, E, 3    | 100 %, 80 °C                             | HQQV          | -      |
| Salicylic acid                                     | C <sub>6</sub> H <sub>4</sub> (OH)COOH                   | H          | 0.1 %, 20 °C                             | -             | HQQE   |
| Silicone oil                                       |                                                          | E, 3       | 100 %                                    | HQQV          | -      |

| Pumped liquid                | Chemical formula         | Note    | Liquid concentration,<br>liquid temperature   | CR(E),<br>CRI(E) | CRN(E) |
|------------------------------|--------------------------|---------|-----------------------------------------------|------------------|--------|
| Sodium bicarbonate           | $\text{NaHCO}_3$         | E       | 10 %, 60 °C                                   | -                | HQQE   |
| Sodium chloride (as coolant) | $\text{NaCl}$            | D, E    | 30 %, < 5 °C, pH > 8                          | HQQE             | -      |
| Sodium hydroxide             | $\text{NaOH}$            | E       | 20 %, 50 °C                                   | -                | HQQE   |
| Sodium hypochlorite          | $\text{NaOCl}$           | F       | 0.1 %, 20 °C                                  | -                | HQQV   |
| Sodium nitrate               | $\text{NaNO}_3$          | E       | 10 %, 60 °C                                   | -                | HQQE   |
| Sodium phosphate             | $\text{Na}_3\text{PO}_4$ | E, H    | 10 %, 60 °C                                   | -                | HQQE   |
| Sodium sulphate              | $\text{Na}_2\text{SO}_4$ | E, H    | 10 %, 60 °C                                   | -                | HQQE   |
| Softened water               |                          | -       | < 120 °C                                      | -                | HQQE   |
| Soya oil                     |                          | D, E, 3 | 100 %, 80 °C                                  | HQQV             | -      |
| Sulphuric acid               | $\text{H}_2\text{SO}_4$  | F       | 1 %, 20 °C                                    | -                | HQQV   |
| Sulphurous acid              | $\text{H}_2\text{SO}_3$  | -       | 1 %, 20 °C                                    | -                | HQQE   |
| Unsalted swimming-pool water |                          | -       | Approx. 2 ppm free chlorine ( $\text{Cl}_2$ ) | HQQE             | -      |

## 16. Further product information

### WebCAPS

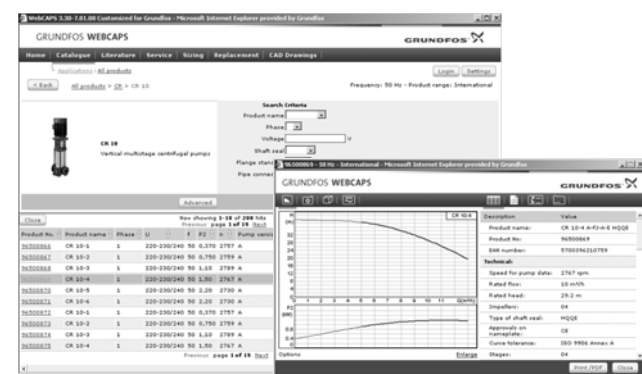


WebCAPS is a **Web-based Computer Aided Product Selection** program available on [www.grundfos.com](http://www.grundfos.com).

WebCAPS contains detailed information on more than 220,000 Grundfos products in more than 30 languages.

Information in WebCAPS is divided into six sections:

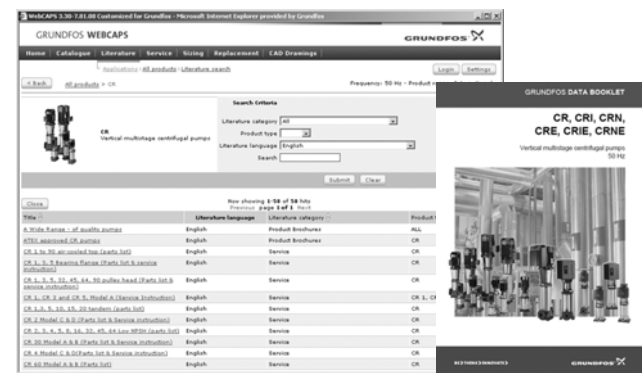
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



#### Catalogue

Based on fields of application and pump types, this section contains the following:

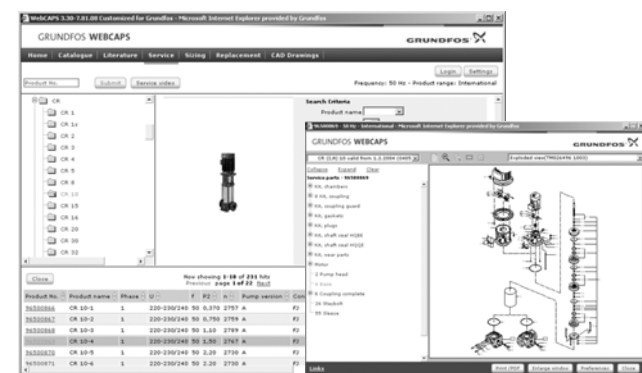
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



#### Literature

This section contains 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, the 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 size a product:

- 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.

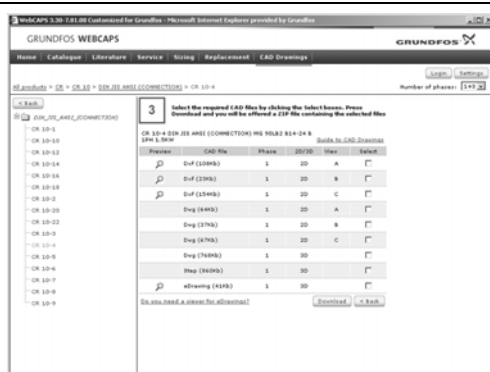


### Replacement

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. 111 WinCAPS DVD

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 220,000 Grundfos products in more than 30 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 DVD and updated once a year.

## GO CAPS

Mobile solution for professionals on the GO!



CAPS functionality on the mobile workplace.



Subject to alterations.



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