

CR, CRN, CRNE high pressure

Vertical, multistage centrifugal pumps
50/60 Hz



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1. Product introduction

This data booklet deals with CR, CRN, CRNE pumps for high-pressure applications.

A high pressure can be achieved in two ways:

- One pump with frequency-controlled high-speed motor:
 - CRNE-HS, pump sizes 1 and 3.
- Feed pump and high-pressure pump connected in series:
 - CR, CRN, pump sizes 120 to 150
 - CRN-SF, pump sizes 3 to 90.

The high-pressure pump is available in two designs, depending on pump size.

- CRNE-HS and CRN-SF:
The chamber stack is upside-down compared to a CR standard pump.
- CR, CRN:
Standard pump with or without bearing flange.

The pumps described in this data booklet are a CR or CRN standard pump as feed pump connected in series with a larger pump, the high-pressure pump.

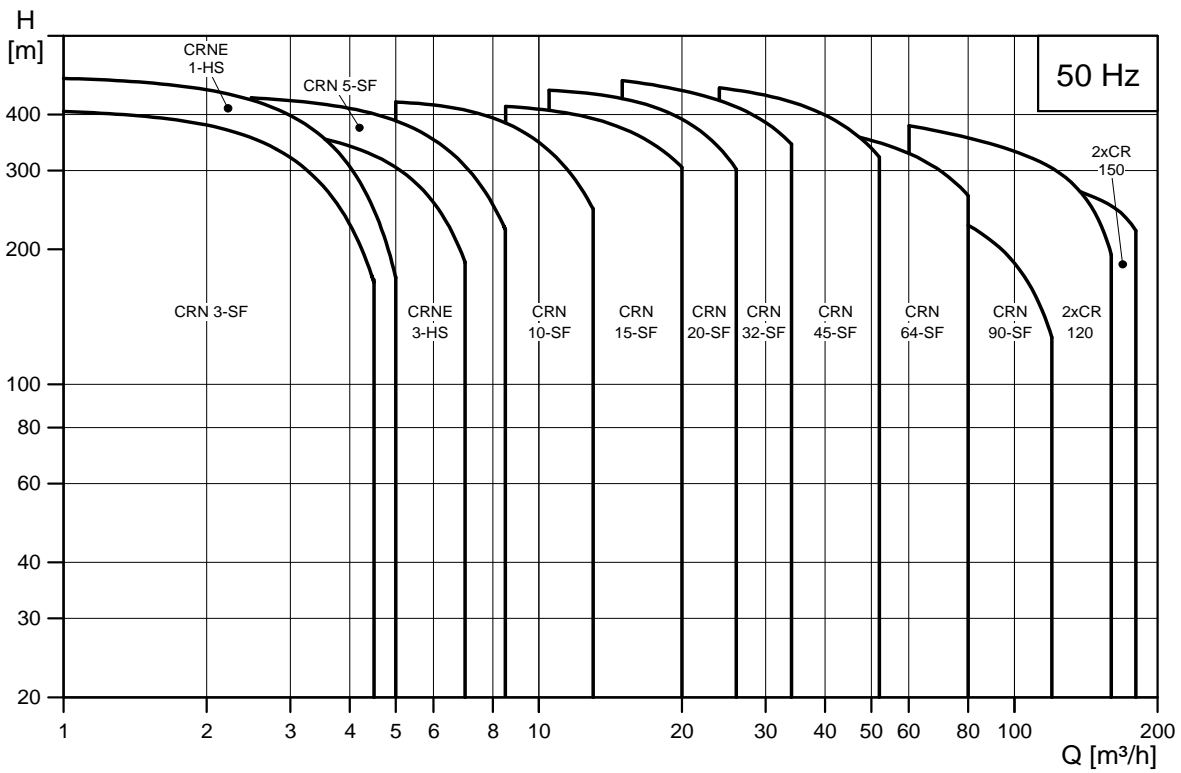
For use of other CR pumps as high-pressure pump, see the CR data booklet "Custom-built pumps" in WebCAPS on www.grundfos.com.

The pressure generated by the high-pressure pump makes special demands on the design. This data booklet primarily describes the following aspects where the high-pressure pump differs from the standard pump:

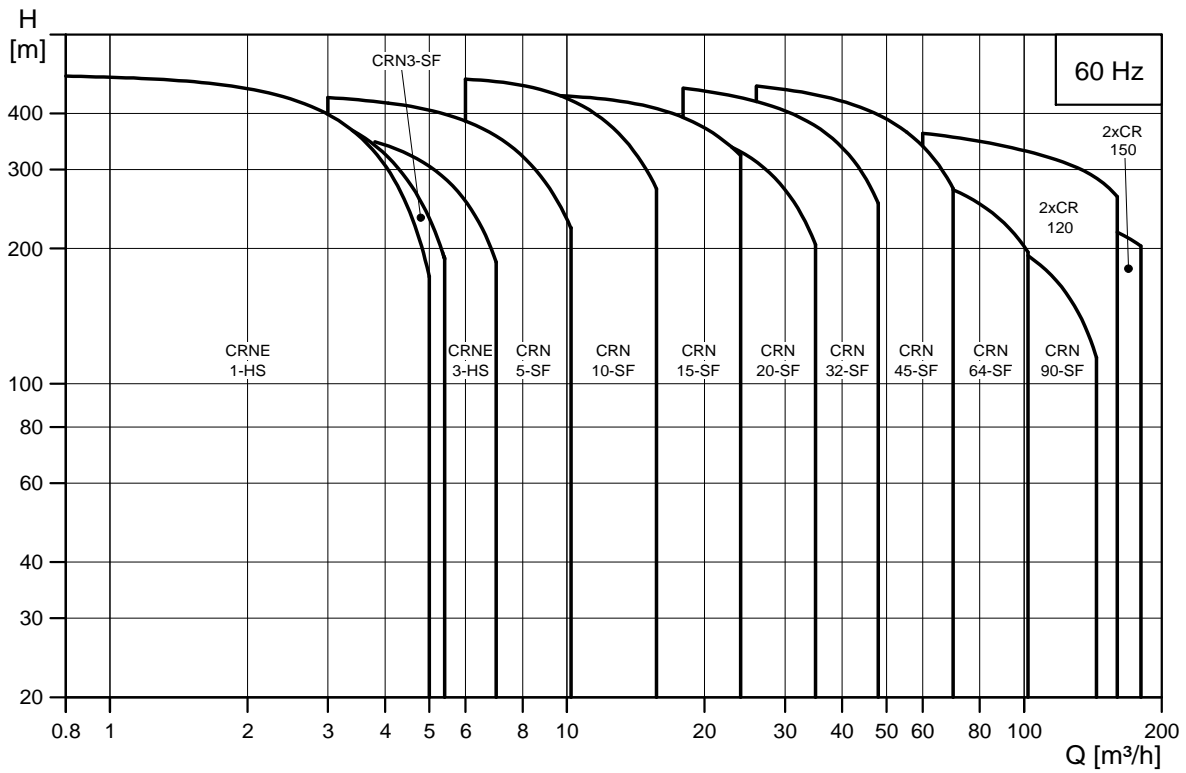
- design
- operating conditions
- performance curves
- dimensions.

The performance curves and dimensional sketches on pages 22 to 72 show the high-pressure pump connected in series with a standard pump with various numbers of stages.

2. Performance range



TM02 1689 3412



TM02 1687 3412

EuP ready

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

Minimum efficiency index (MEI)

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

3. Product range

CRNE-HS and CRN-SF

Range	CRNE1 HS	CRNE3 HS	CRN 3 SF	GRN 5 SF	CRN 10 SF	CRN 15 SF	CRN 20 SF	CRN 32 SF	CRN 45 SF	CRN 64 SF	CRN 90 SF	2 x CR, CRN 120	2 x CR, CRN 150
Rated flow rate, 50 Hz [m ³ /h]	1	3	3	5	10	15	20	32	45	64	90	120	150
Rated flow rate, 60 Hz [m ³ /h]	1.2	3.6	3.6	6	12	18	24	38	54	77	108	144	180
Flow range, 50 Hz [m ³ /h]	0.8 - 5	1-7	1.2 - 4.5	2.5 - 8.5	5-13	9-24	11-29	15-40	22-58	30-85	45-120	60-160	75-180
Flow range, 60 Hz [m ³ /h]	0.8 - 5	1-7	1.4 - 5.4	3 - 10.2	6-16	10-29	13-35	18-48	26-70	36-102	54-146	60-160	75-180
Max. pressure, 50 Hz [bar]	47	41	44	47	44	47	48	50	49	41	37	42	39
Max. pressure, 60 Hz [bar]	48	42	48	48	47	47	47	49	49	34	30	38	31
Motor power [kW]	4.0 - 7.5	4.0 - 7.5	0.37 - 4.0	0.55 - 5.5	0.75 - 7.5	3-15	4 - 18.5	11-30	11-45	11-45	7.5 - 45	11-75	11-75
Temperature range [°C]	-20 to +120							-30 to +120 ¹⁾			-30 to +120 ^{1) + 2)}		
Version													
CR: Cast iron and stainless steel EN/DIN 1.4301/AISI 304	-	-	-	-	-	-	-	-	-	-	-	•	•
CRN, CRNE: Stainless steel EN/DIN 1.4401/AISI 316	•	•	•	•	•	•	•	•	•	•	•	•	•
Pipe connection													
Flange (FGJ)	DN 25/32	DN 25/32	DN 25/32	DN 25/32	DN 50	DN 50	DN 50	-	-	-	-	DN 125	DN 125
Flange, on request	-	-	-	-	-	-	-	-	-	-	-	DN 150	DN 150
PJE, Victaulic coupling (P)	•	•	•	•	•	•	•	•	•	•	•	-	-
Tri-Clamp (CX)	DN 32	DN 32	DN 32	DN 32	DN 50	DN 50	DN 50	-	-	-	-	-	-
System													
One pump with high-speed motor	•	•	•	-	-	-	-	-	-	-	-	-	-
Two pumps connected in series	-	-	-	•	•	•	•	•	•	•	•	•	•

• Available.

- Not available.

1) CRN 32 to 150 with HQQE shaft seal: -40 to +120 °C.

2) CR, CRN 120 and 150 with 55 or 75 kW motors with HBQE shaft seal: 0 to +120 °C.

4. Applications

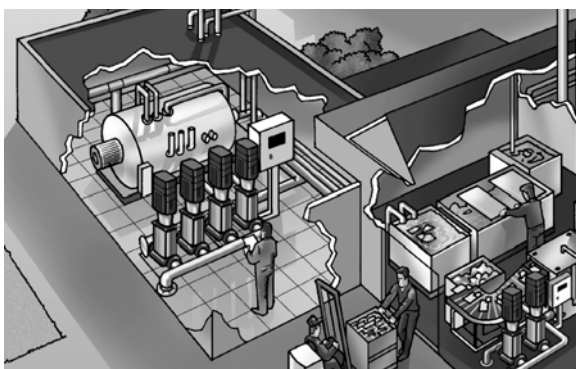
The CR, CRN high-pressure series is a multi-purpose pump range suitable for a large variety of applications demanding reliable and cost-efficient supply.

The CR, CRN can handle a variety of liquids from potable water to industrial liquids within very wide temperature, flow and pressure ranges.

The lists below show some general examples of applications requiring a high pressure.

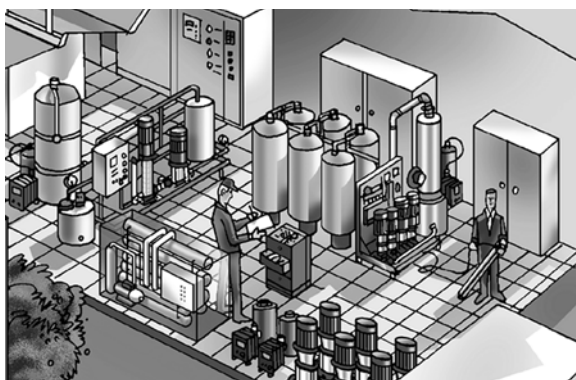
Pressure boosting

- Process water systems
- washing and cleaning systems
- high-pressure washdown systems
- boiler feed and condensate systems.



Water treatment

- Ultra-filtration systems
- reverse osmosis systems.



Pump

The CRNE-HS is a single-pump solution capable of generating up to 50 bar.

The CRNE-HS pump is a non-self-priming, vertical, multistage centrifugal pump fitted with a high-speed Grundfos MGE motor with integrated frequency converter.

The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down. Consequently, the pumped liquid flows in the opposite direction.

This special design ensures that the shaft seal is not affected by the pump outlet pressure.

The base, pump head cover and all components in contact with the pumped liquid are made of stainless steel.

The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions

Liquid temperature:	-20 to +120 °C.
Ambient temperature:	Maximum +40 °C.
Minimum inlet pressure:	2 bar.
Maximum inlet pressure:	25 bar.
Maximum operating pressure:	50 bar.

Materials

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
2	Pump head cover	Stainless steel	1.4408	CF8M (equal to AISI 316)
3	Shaft	Stainless steel	1.4401 1.4460	AISI 316 AISI 329
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, FXM		
8	Base	Stainless steel	1.4408	CF8M (equal to AISI 316)
9	Neck ring	PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, HQQK		
11	Base plate	Cast iron EN-GJL-200 ¹⁾	EN-JL1030	ASTM 25B
	Other rubber parts	EPDM, FKM, FFKM, FXM		

¹⁾ Stainless steel available on request.

CRNE 1 and 3 HS



Fig. 1 CRNE 3 HS pump

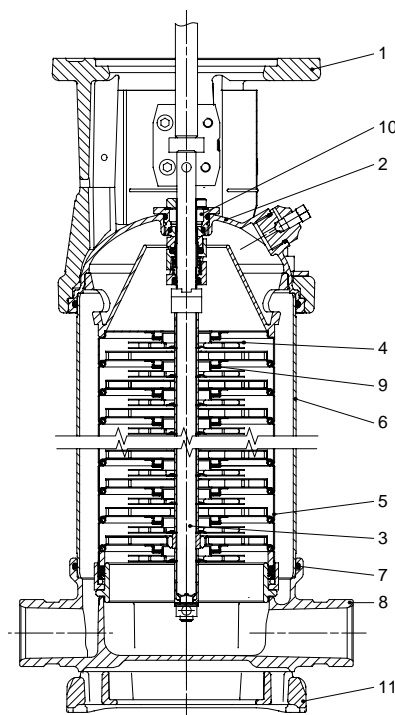


Fig. 2 Sectional drawing of CRNE 1 and 3 HS

TM02 8470 0204

TM02 1686 2803

Pump

The CRN-SF is a double-pump system capable of generating up to 50 bar.

The system consists of two pumps connected in series. One pump is a standard pump for feeding, i.e. CRN. The other pump is a high-pressure pump especially designed for high pressures, i.e. CRN-SF. The CRN-SF pump is a non-self-priming, vertical, multistage centrifugal pump fitted with a Grundfos standard motor. The CRN-SF pump is also available with a Grundfos MGE motor with integrated frequency converter. When the pump is fitted with an MGE motor, the pump designation is CRNE-SF.

The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down. Consequently, the pumped liquid flows in the opposite direction.

This special design ensures that the shaft seal is not affected by the pump outlet pressure.

The base, pump head cover and vital pump components are made of stainless steel.

The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions

Liquid temperature:	-40 to +120 °C.
Ambient temperature:	See page 13.
Minimum inlet pressure:	2 bar.
Maximum inlet pressure:	25 bar.
Maximum operating pressure:	50 bar.

Materials

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	Cast iron	EN-GJS-450-10	
2	Pump head cover	Stainless steel	1.4408	CF8M (equal to AISI 316)
3	Shaft	Stainless steel	1.4460	AISI 329
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, FXM	1.0037	
8	Base	Stainless steel	1.4408	CF8M (equal to AISI 316)
9	Neck ring	PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, HQQK		
11	Base plate	Cast iron EN-GJL-200 ¹⁾	0.6020	ASTM 25B
	Other rubber parts	EPDM, FKM, FFKM, FXM		

¹⁾ Stainless steel available on request.

CRN 3, 5, 10, 15, 20 SF



Fig. 3 CRN 10 and CRN 10 SF pump system

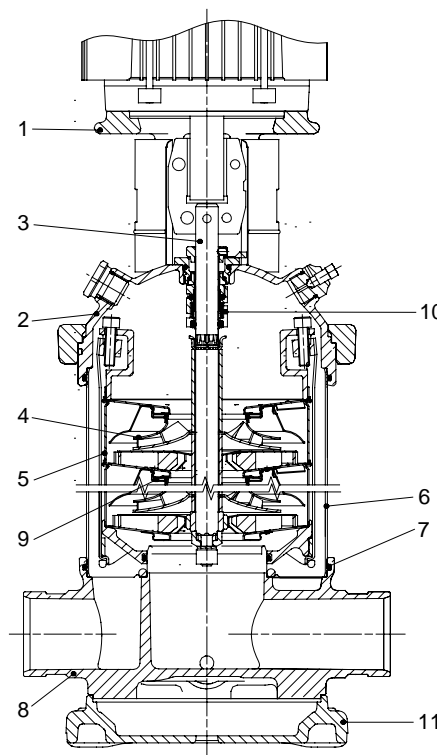


Fig. 4 Sectional drawing of CRN 3, 5, 10, 15, 20 SF

GR7767

TM02 7336 3203

Pump

The CRN-SF is a double-pump system capable of generating up to 50 bar.

The system consists of two pumps connected in series. One pump is a standard pump for feeding, i.e. CRN. The other pump is a high-pressure pump especially designed for high pressures, i.e. CRN-SF. The CRN-SF pump is a non-self-priming, vertical, multistage centrifugal pump fitted with a Grundfos standard motor. The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down. Consequently, the pumped liquid flows in the opposite direction.

This special design ensures that the shaft seal is not affected by the pump outlet pressure.

The base, pump head cover and vital pump components are made of stainless steel.

The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions

Liquid temperature:	-40 to +120 °C.
Ambient temperature:	See page 13.
Minimum inlet pressure:	2 bar.
Maximum inlet pressure:	25 bar.
Maximum operating pressure:	50 bar.

Materials

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	Stainless steel	1.4408	CF8M (equal to AISI 316)
2	Motor stool	Cast iron	EN-GJL-200 ¹⁾ EN-GJS-450-10 ²⁾	
3	Shaft	Stainless steel	1.4460	
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, FXM	1.0037	
8	Base	Stainless steel	1.4408	CF8M (equal to AISI 316)
9	Neck ring	Carbon-graphite-filled PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, HQQK		
11	Bearing ring	Bronze/ carbon-graphite-filled PTFE		
12	Bottom bearing ring	TC/TC ³⁾		
13	Base plate	Stainless steel	1.4408	
	Other rubber parts	EPDM, FKM		

1) 30 and 37 kW motor.

2) 45 kW motor.

3) TC = tungsten carbide (cemented).

CRN 32, 45, 64, 90 SF



Fig. 5 CRN 45 and CRN 45 SF pump system

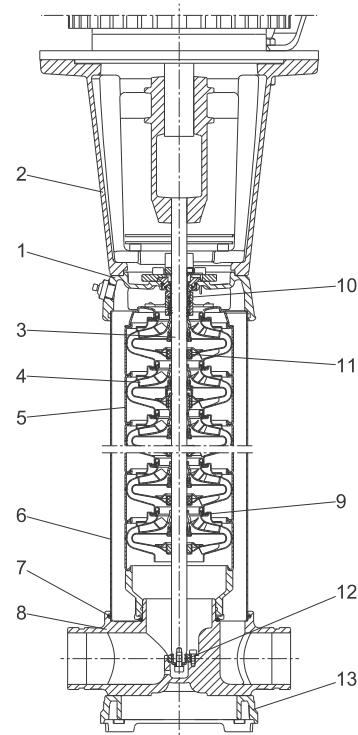


Fig. 6 Sectional drawing of CRN 32, 45, 64, 90 SF

TM05 5135 3212

TM05 5408 3712

Pump

2 x CR, CRN is a double-pump system capable of generating up to 40 bar.

The system consists of two pumps connected in series. One pump is a standard pump for feeding. The other pump is a high-pressure pump.

The CR, CRN pump is a non-self-priming, vertical, multistage centrifugal pump fitted with a Grundfos standard motor.

CR

The base and pump head are made of cast iron.

CRN

The base, pump head and all components in contact with the pumped liquid are made of stainless steel.

Operating conditions

Liquid temperature CR:	-30 to +120 °C.
Liquid temperature CRN:	-40 to +120 °C.
Ambient temperature:	See page 13.
Minimum inlet pressure:	2 bar.
Maximum inlet pressure:	20 bar.
Maximum operating pressure:	40 bar.

Materials

Pos.	Designation	Material	EN/DIN	AISI/ASTM
1	Pump head	CR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		CRN: Stainless steel	1.4408	A 351 CF8M
2	Motor stool (11-45 kW)	Cast iron EN-GJL-200	EN-JL1030	A48-30 B
		Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
3	Shaft	Stainless steel	CR: 1.4057 CRN: 1.4462	AISI 431 SAF 2205
4	Impeller	Stainless steel	CR: 1.4301	CR: AISI 304
5	Chamber		CRN: 1.4401	CRN: AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, FXM		
8	Base	CR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		CRN: Stainless steel	1.4408	A 351 CF8M
9	Base plate	Cast iron EN-GJS-500-7 ¹⁾	EN-JS1050	A 536 65-45-12
10	Neck ring	PTFE		
11	Shaft seal ²⁾	SiC/SiC (∅22) Carbon/SiC (∅32)		
12	Support bearing	PTFE		
13	Bearing ring	SiC/SiC		
14	Base plate, CRN only	Cast iron EN-GJS-500-7 ¹⁾	EN-JS1050	A 536 65-45-12
		Other rubber parts	EPDM, FKM, FFKM, FXM	

¹⁾ Stainless steel available on request.

²⁾ ∅22 mm shaft, 11-45 kW.
∅32 mm shaft, 55-75 kW.

**2 x CR 120 and 150
2 x CRN 120 and 150**



Fig. 7 2 x CR, CRN double-pump system

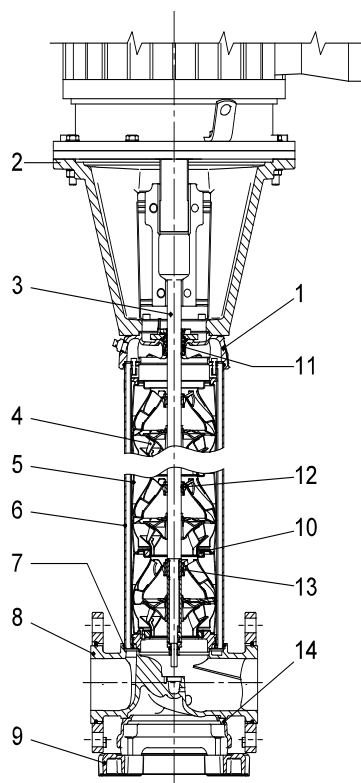


Fig. 8 Sectional drawing of a CR(N) pump

TM05 5135 3312

TM03 8836 2607

Type keys

CRNE 1 and 3 HS

Example	CRNE 3 -23 HS -P -G -E -HQQE
Type range: CRNE	
Flow rate [m ³ /h]	
Number of impellers	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

CRN 3, 5, 10, 15 and 20 SF

Example	CRN 5 -34 -SF -P -G -E -HQQE
Type range: CRN	
Flow rate [m ³ /h]	
Number of impellers	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

CRN 32, 45, 64, 90, 120 and 150

Example	CRN 32 -2 -1 -A -F -G -E -HQQE
Type range: CR, CRN	
Flow rate [m ³ /h]	
Number of stages	
Number of reduced-diameter impellers, if any	
Code for pump version	
Code for pipe connection	
Code for materials	
Code for rubber parts	
Code for shaft seal	

Codes

Example	A	-F	-A	-E	-H	QQ	E
Pump version							
A	Basic version						
B	Oversize motor						
E	Pump with certificate/approval						
F	CR pump for high temperatures (air-cooled top assembly)						
H	Horizontal version						
HS	High-pressure pump with high-speed MGE motor						
I	Different pressure rating						
J	Pump w/different max. speed ¹⁾						
K	Pump with low NPSH						
M	Magnetic drive						
N	Fitted with sensor						
P	Undersize motor						
R	Horizontal version with bearing bracket						
SF	High-pressure pump						
X	Special version						
Pipe connection							
A	Oval flange						
B	NPT thread						
CA	FlexiClamp (CRN(E) 1, 3, 5, 10, 15, 20)						
F	DIN flange						
G	ANSI flange						
J	JIS flange						
N	Changed diameter of ports						
P	PJE coupling						
X	Special version						
Materials							
A	Basic version, cast iron/1.4301						
D	Carbon-graphite-filled PTFE (bearings)						
G	Wetted parts 1.4401/AISI 316						
GI	All parts of stainless steel, wetted parts 1.4401/AISI 316						
I	Wetted parts 1.4301/AISI 304						
II	All parts of stainless steel, wetted parts 1.4301/AISI 304						
K	Bronze (bearings)						
S	SiC bearings + PTFE neck rings						
X	Special version						
Rubber parts							
E	EPDM						
F	FXM						
K	FFKM						
V	FKM						
Shaft seal							
H	Balanced cartridge seal						
B	Carbon						
Q	Silicon carbide						
U	Tungsten carbide						
E	EPDM						
F	FXM						
K	FFKM						
V	FKM						

¹⁾ The output frequency of the frequency converter of the motor differs from the standard 50 Hz. In this situation, the frequency is approximately 75 Hz.

Operating range of shaft seal for high-pressure pump

The actual operating range of the shaft seal for the high-pressure pump depends on operating pressure, type of shaft seal and liquid temperature.

The following temperature ranges apply to clean water.

Standard shaft seal	Motor size [kW]	Description	Temperature range [°C]
HQQE	0.37 - 45	O-ring, cartridge, balanced seal, SiC/SiC, EPDM	-40 to +120
HBQE ¹⁾	55-75	O-ring, cartridge, balanced seal, carbon/SiC, EPDM	0 to +120
HQQV	0.37 - 45	O-ring, cartridge, balanced seal, SiC/SiC, FKM	-20 to +90
HBQV ¹⁾	55-75	O-ring, cartridge, balanced seal, carbon/SiC, FKM	0 to +90

¹⁾ Available as HQQE and HQQV on request.

Motor protection

Grundfos MG and Siemens motors

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

Three-phase Grundfos motors from 3 to 22 kW have a built-in thermistor (PTC) according to DIN 44082 (IEC 34-11: TP 211).

Three-phase motors **must** be connected to a motor-protective circuit breaker according to local regulations.

Grundfos MGE motors

The MGE motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).

CRNE pumps require no external motor protection.

Terminal box positions

As standard, the terminal box is fitted on the inlet side of the pump.

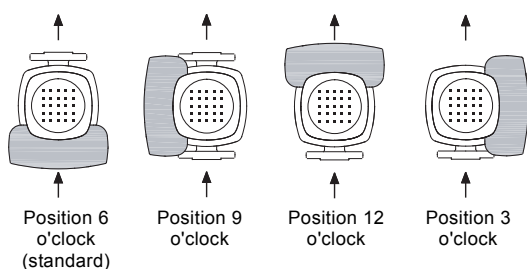


Fig. 9 Terminal box positions

Ambient temperature

Motor power [kW]	Motor make	Motor efficiency class	Maximum ambient temperature [°C]	Maximum altitude above sea level [m]
0.37 - 0.55	Grundfos MG	-	+40	1000
0.75 - 22	Grundfos MG	IE2-IE3	+60	3500
0.37 - 2.2	Grundfos MGE	-*	+50	1000
3-22	Grundfos MGE	IE3	+40	1000
30-75	Siemens	IE3	+55	2750

* Even though the MGE motor (0.37 to 2.2 kW) has no defined efficiency class, the efficiency is still above the IE4 level including both motor and electronics.

If the ambient temperature exceeds the above maximum ambient temperatures, the motor must not be fully loaded due to the risk of overheating.

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

Pumped liquids

The pumps are suitable for thin, clean, non-flammable liquids, not containing solid particles or fibres that may attack the pump mechanically or chemically.

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

In such situations, the pump should be fitted with a larger motor.

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, for example seawater and some acids, may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

If in doubt, contact Grundfos.

Installation altitude

Installation altitude is the height above sea level of the installation site. Motors installed at maximum altitude can be loaded 100 %.

Motors installed above maximum altitude must not be fully loaded due to the low density and consequently low cooling effect of the air.

MG and Siemens motors

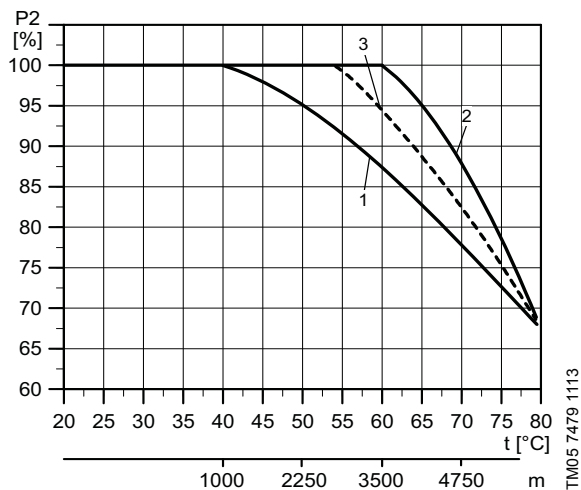


Fig. 10 Derating of motor output (P2) in relation to altitude above sea level

Pos.	Motor power [kW]	Motor make
1	0.37 - 0.55	Grundfos MG
2	0.75 - 22	Grundfos MG
3	30-75	Siemens

MGE motors

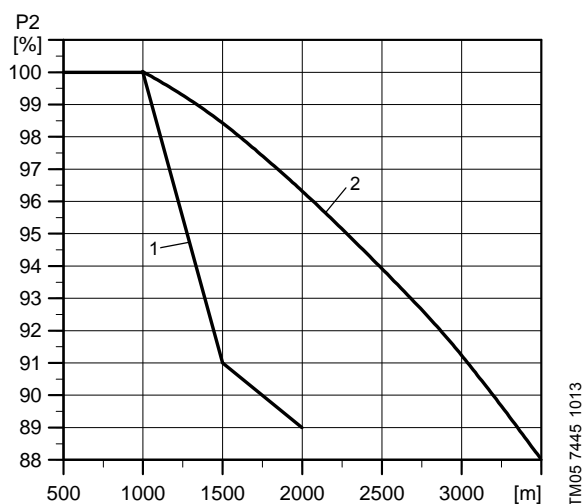
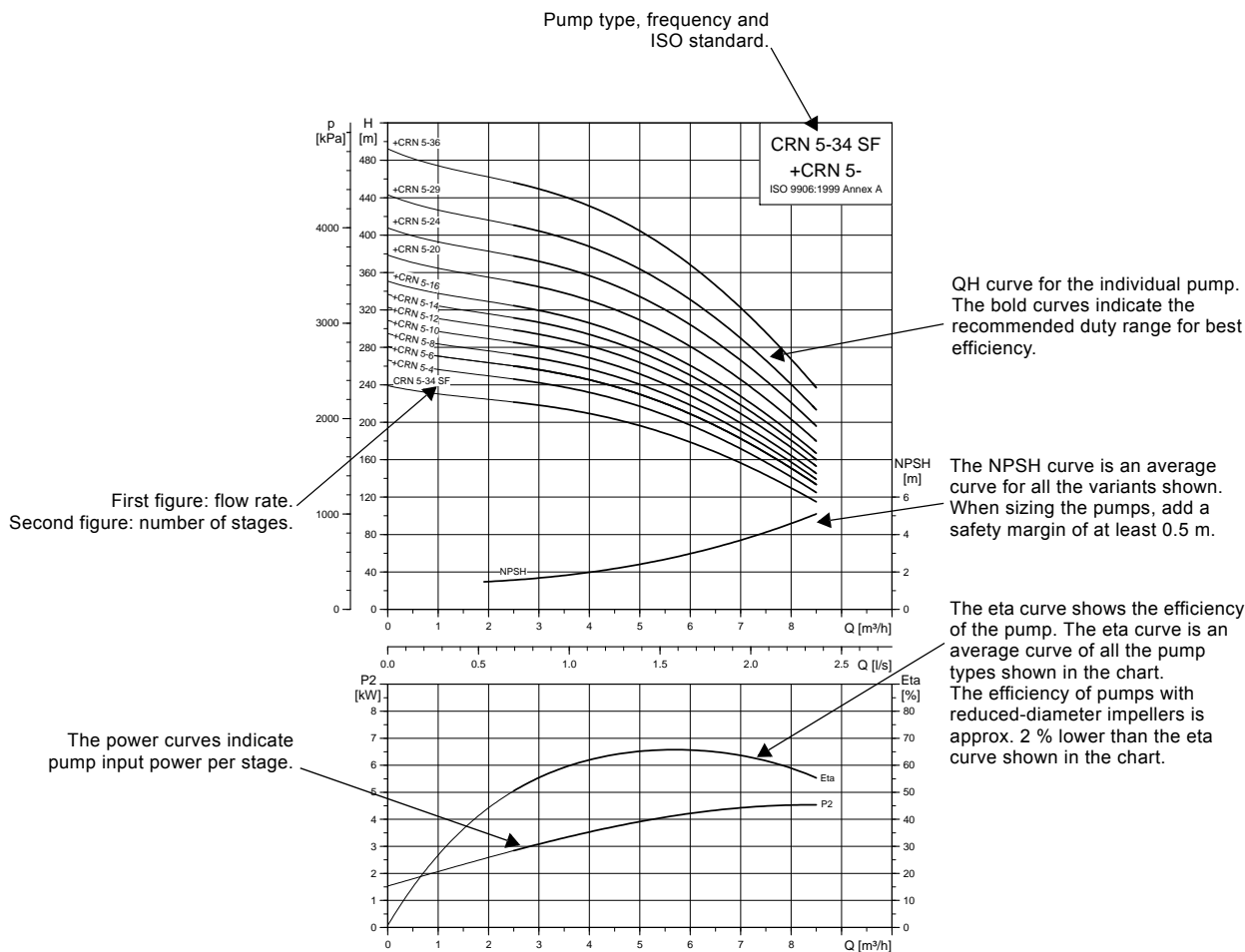


Fig. 11 Derating of motor output (P2) in relation to altitude above sea level

Pos.	Motor power [kW]	Motor make
1	0.37 - 2.2	Grundfos MGE
2	3-22	Grundfos MGE

How to read the curve charts



TM02 7447 0513

Fig. 12 How to read the curve charts

Guidelines to performance curves

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 MG or MGE motors.
- Measurements have been made with airless water at a temperature of 20 °C.
- The curves apply to the following kinematic viscosity: $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt).

Due to the risk of overheating, the pumps should not be used at a flow below the minimum flow rate.

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

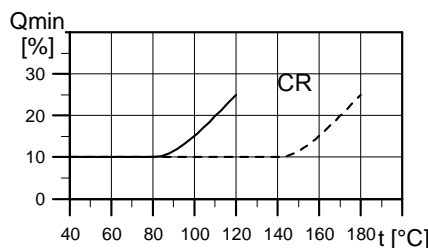


Fig. 13 Minimum flow rate

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5. Selection and sizing

Selection of high-pressure pumps

Pump size

Base the selection of pump size on these parameters:

- required flow and pressure at the draw-off point
- pressure loss as a result of height differences
- friction loss in the pipework

It may be necessary to account for pressure loss in connection with long pipes, bends, valves, etc.

- best efficiency at the estimated duty point.

Efficiency

If the pump is expected to always operate in the same duty point, select a pump which is operating in a duty point corresponding to the best efficiency of the pump. In the case of varying consumption, select a pump with its best efficiency within the duty range representing the highest power consumption, i.e. typically the duty range covering the greater part of the duty time.

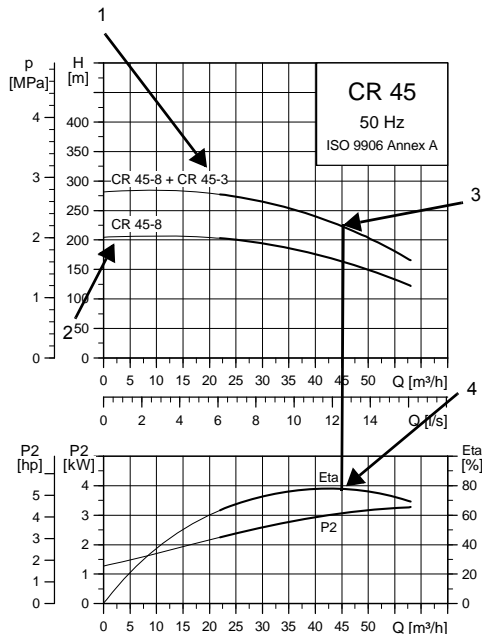


Fig. 14 Example of a duty point

Pos.	Description
1	Feed pump
2	High-pressure pump
3	Duty point
4	Best efficiency

Minimum inlet pressure, NPSH

We recommend calculation of the inlet pressure "H" in these situations:

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

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

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

p_b	Barometric pressure in bar. Barometric pressure can be set to 1 bar. In closed systems, p_b indicates the system pressure in bar.
NPSH	Net Positive Suction Head in metres head. To be read from the NPSH curve at the highest flow the pump will be delivering.
H_f	Friction loss in inlet pipe in metres head. At the highest flow the pump will be delivering.
H_v	Vapour pressure in metres head. To be read from the vapour pressure scale. " H_v " depends on the liquid temperature " T_m ".
H_s	Safety margin = minimum 0.5 metres head.

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

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

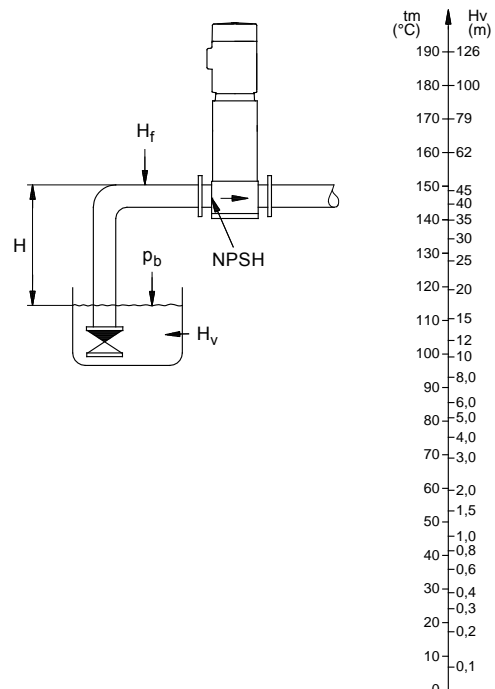


Fig. 15 Minimum inlet pressure, NPSH

Note: To avoid cavitation, **do not** select a pump with a duty point too far to the right on the NPSH curve. Always check the NPSH value of the pump at the highest possible flow.

Inlet pressure and operating pressure

Do not exceed the limit values stated on pages 8 to 11 as regards these pressures:

- minimum inlet pressure
- maximum inlet pressure
- maximum operating pressure.

Shaft seal

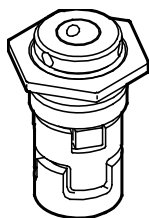
As standard, the CR, CRN high-pressure range is fitted with an HQQE shaft seal suitable for the most common high-pressure applications.

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

- type of pumped liquid
- liquid temperature.

Grundfos offers a wide range of shaft seal variants to meet specific demands.

For proper lubrication of the shaft seal, be sure to note the operating conditions for the pump. See [Operating conditions](#) on page 8.

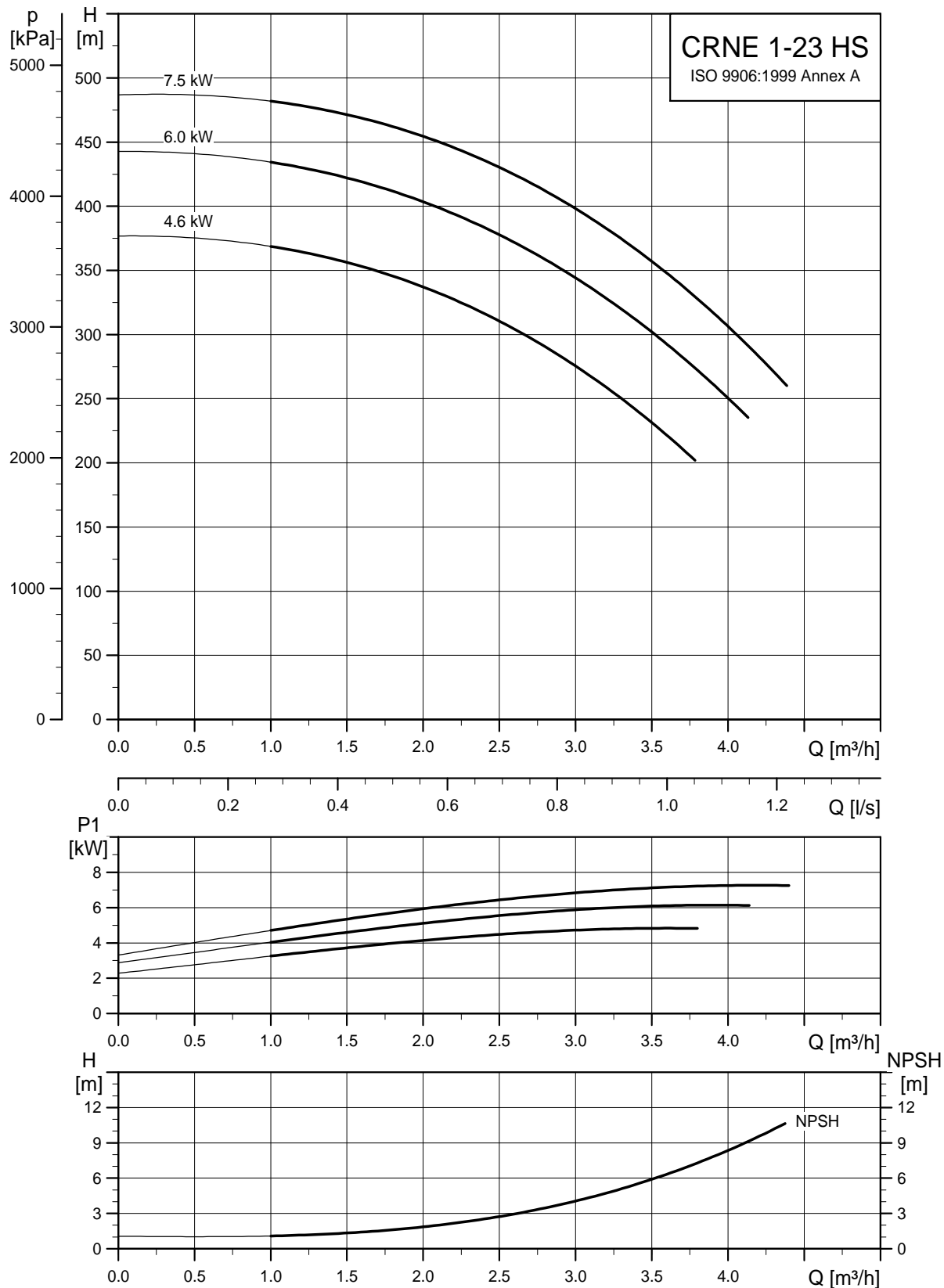


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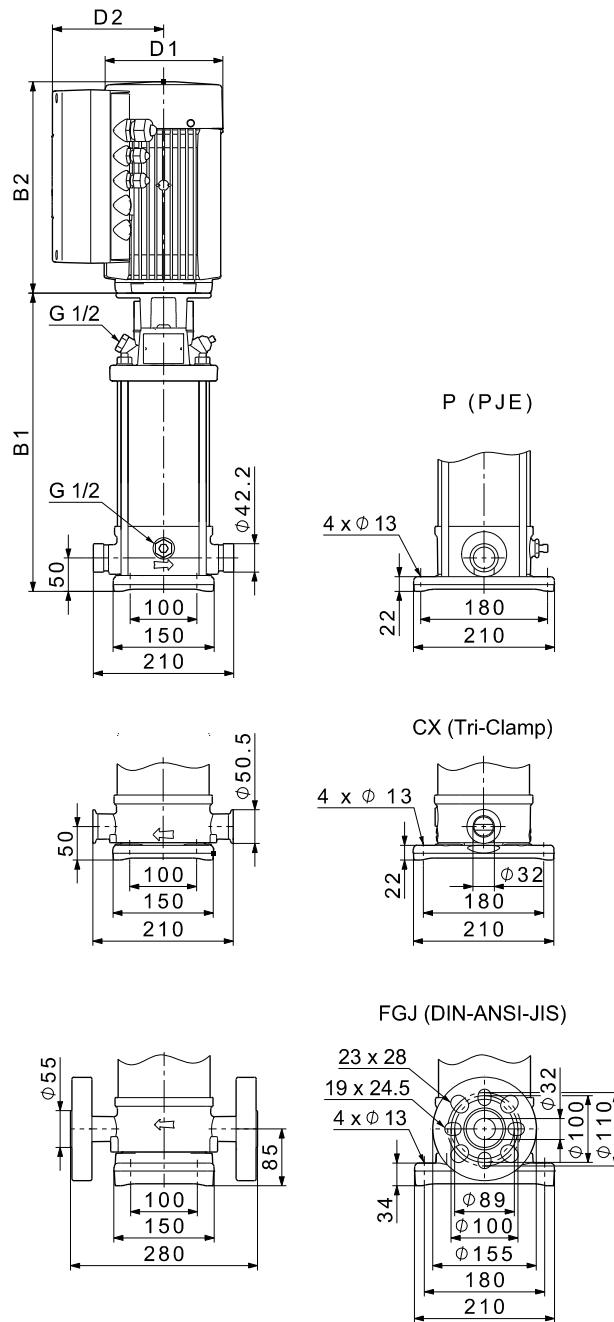
Fig. 16 Shaft seal

6. Performance curves and technical data

CRNE 1 HS, 50/60 Hz



Dimensional sketches

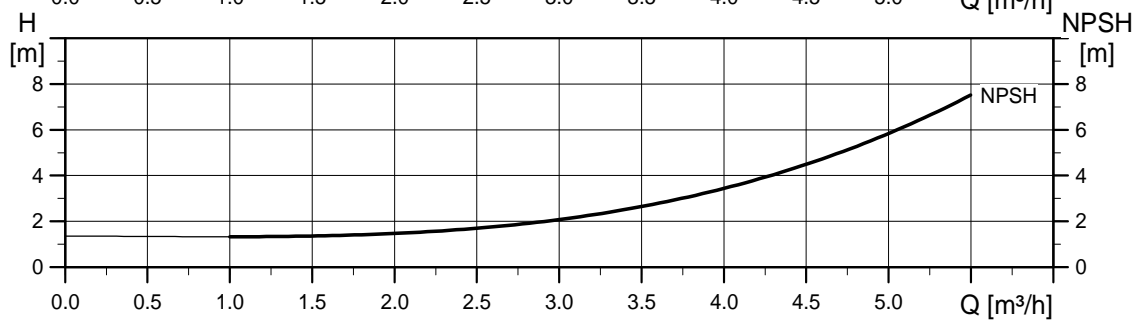
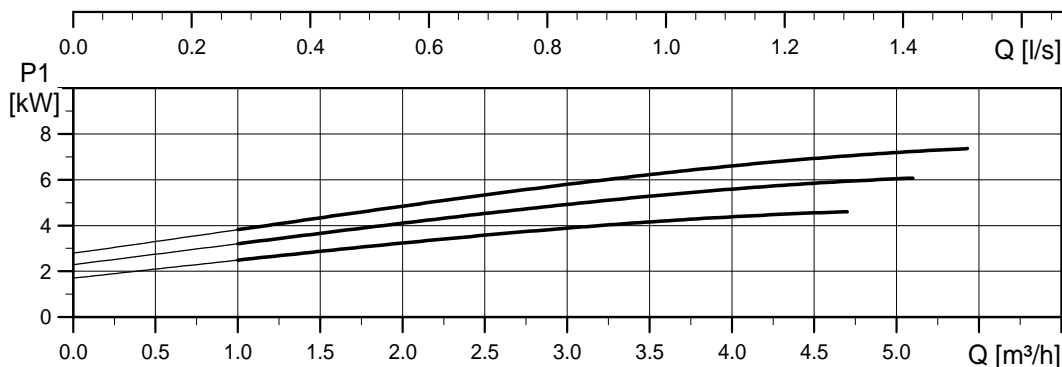
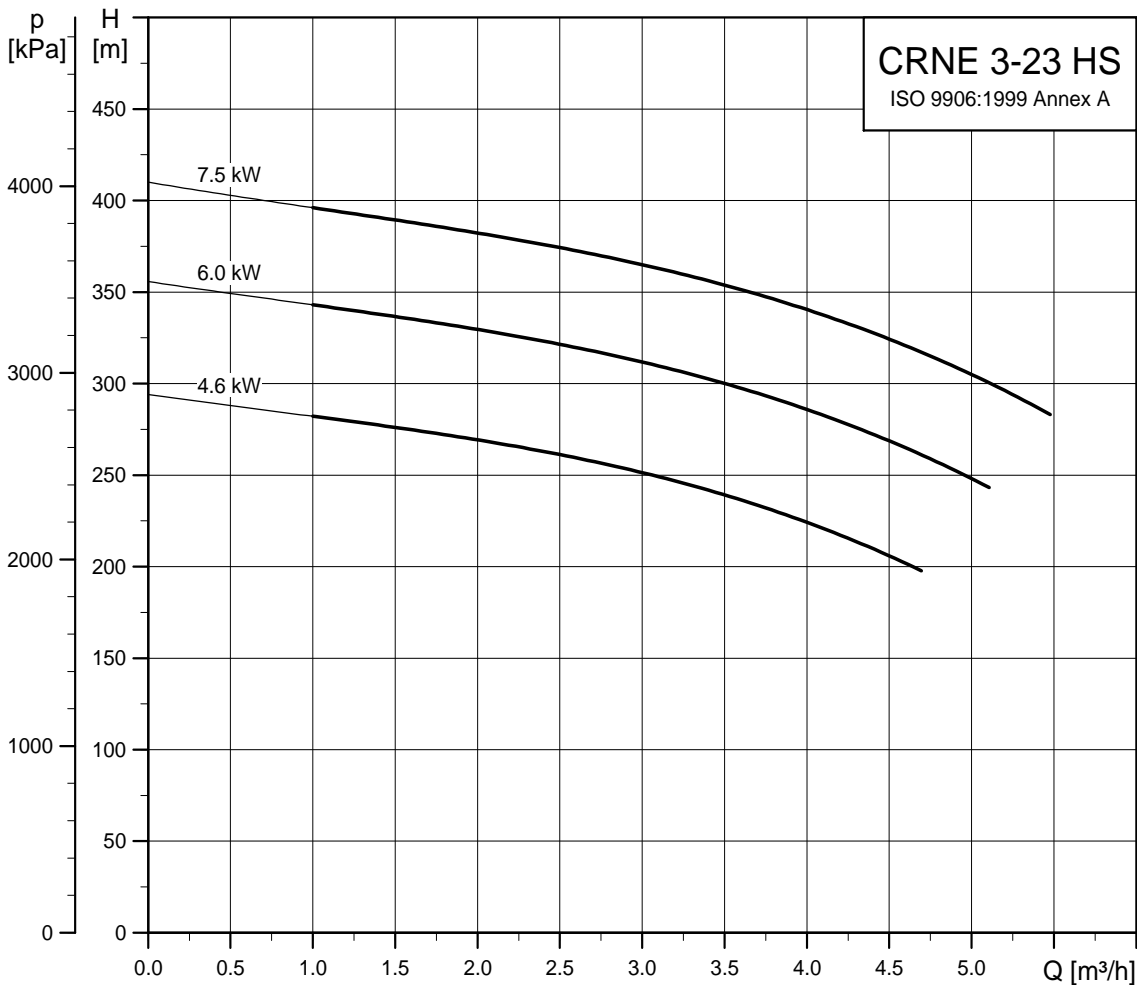


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Dimensions and weights

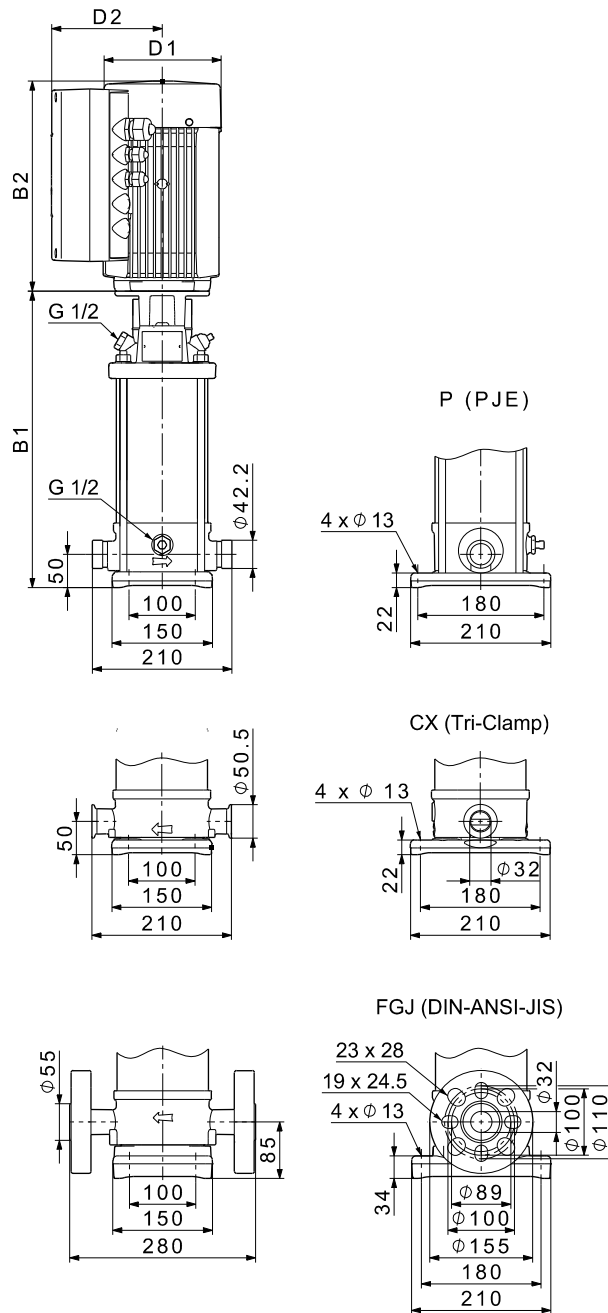
Pump type	Motor P ₂ [kW]	Dimension [mm]							Net weight [kg]	
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
		B1	B1+B2	B1	B1+B2					
CRNE 1-23 HS	4.6	680	1052	715	1106	220	188	160	62	75
CRNE 1-23 HS	6	680	1071	715	1106	220	188	200	66	75
CRNE 1-23 HS	7.5	680	1071	715	1106	260	213	200	71	78

CRNE 3 HS, 50/60 Hz



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Dimensional sketches

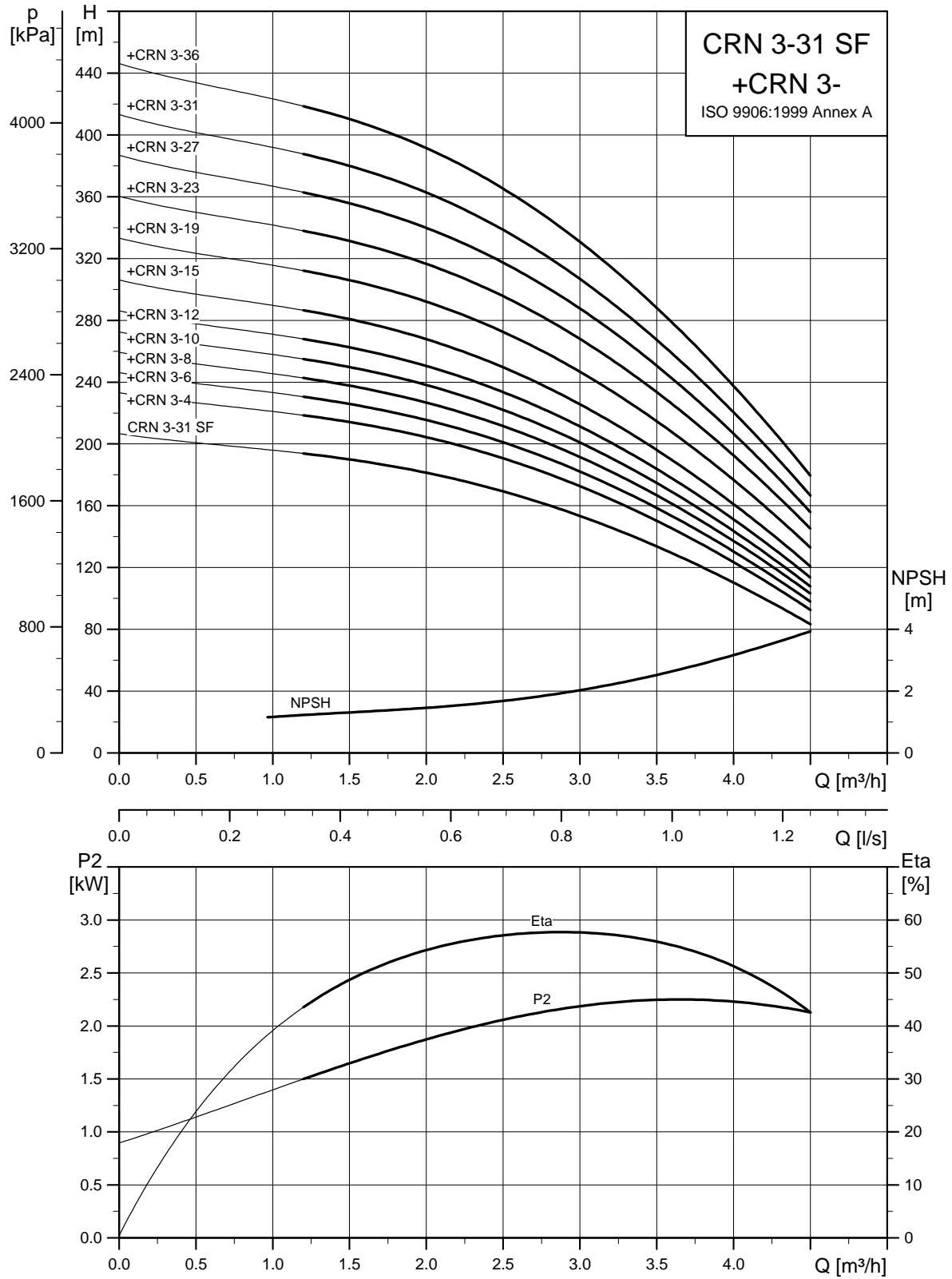


TM02 8298 0513

Dimensions and weights

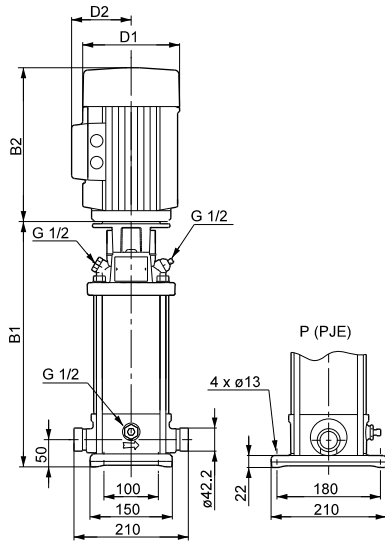
Pump type	Motor P ₂ [kW]	Dimension [mm]							Net weight [kg]	
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
		B1	B1+B2	B1	B1+B2					
CRNE 3-23 HS	4.6	680	1052	715	1087	220	188	160	62	68
CRNE 3-23 HS	6	680	1071	715	1106	220	188	200	62	69
CRNE 3-23 HS	7.5	680	1071	715	1106	260	213	200	71	77

CRN 3 SF, 50 Hz

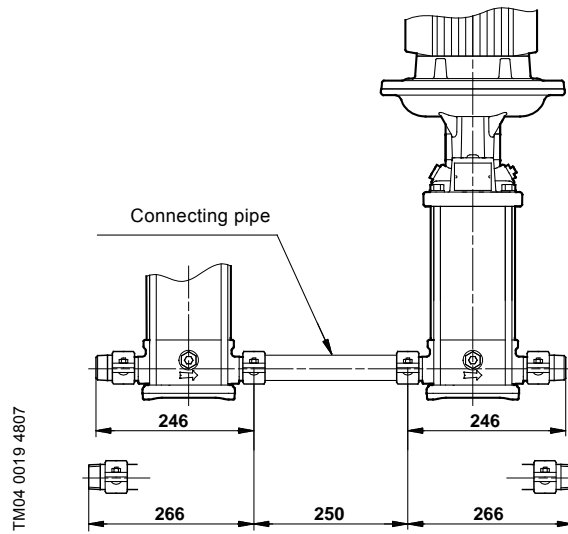


TM03 9794 1113

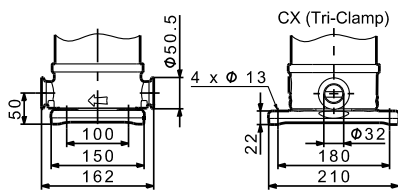
Dimensional sketches



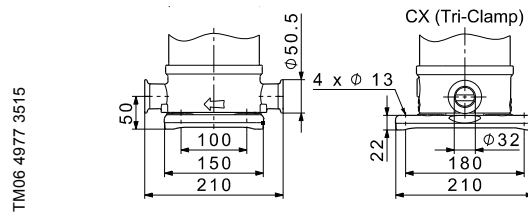
CRN feed pump/CRN-SF high-pressure pump



CRN feed pump, connecting pipe and CRN-SF high-pressure pump

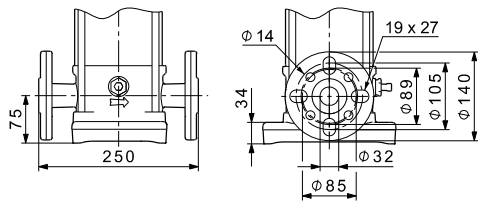


CRN feed pump



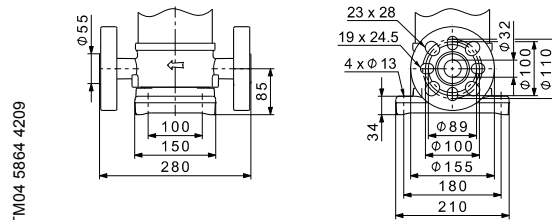
CRN-SF high-pressure pump

FGJ (DIN-ANSI-JIS), PN 25 / DN 25/32



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 25/32



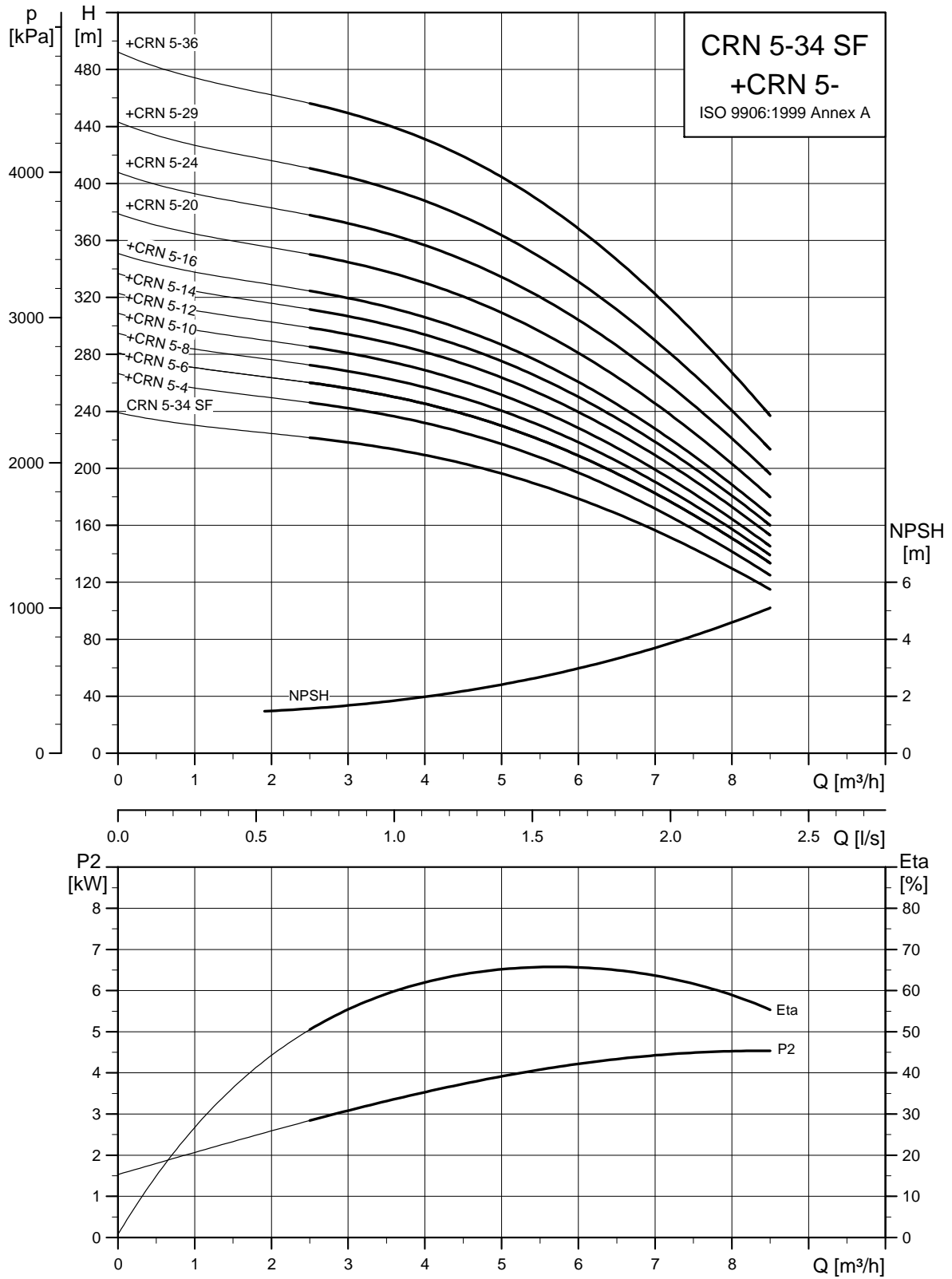
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN								CRNE							
		Dimension [mm]						Net weight [kg]		Dimension [mm]						Net weight [kg]	
		PJE/CX		FGJ		D1	D2	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2					B1	B1+B2	B1	B1+B2						
CRN 3-4	0.37	275	466	300	491	141	109	17	21	-	-	-	-	-	-	-	
CRN 3-6	0.55	311	502	336	527	141	109	18	23	-	-	-	-	-	-	-	
CRN 3-8	0.75	353	584	378	609	141	109	21	26	-	-	-	-	-	-	-	
CRN 3-10	0.75	389	620	414	645	141	109	22	26	-	-	-	-	-	-	-	
CRN 3-12	1.1	425	676	450	701	141	109	25	29	-	-	-	-	-	-	-	
CRN 3-15	1.1	479	730	504	755	141	109	26	31	-	-	-	-	-	-	-	
CRN 3-19	1.5	567	848	592	873	178	110	34	39	-	-	-	-	-	-	-	
CRN 3-23	2.2	639	960	664	985	178	110	37	41	-	-	-	-	-	-	-	
CRN 3-27	2.2	711	1032	736	1057	178	110	38	42	-	-	-	-	-	-	-	
CRN 3-31	3	788	1123	813	1148	198	120	46	50	-	-	-	-	-	-	-	
CRN 3-36	3	878	1213	903	1238	198	120	48	52	-	-	-	-	-	-	-	
CRN 3-31 SF*	3	820	1192	855	1227	198	120	43	50	820	1192	855	1227	198	177	53	60

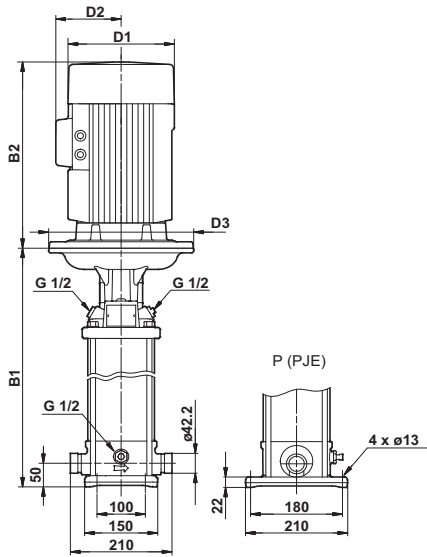
* High-pressure pump

CRN 5 SF, 50 Hz

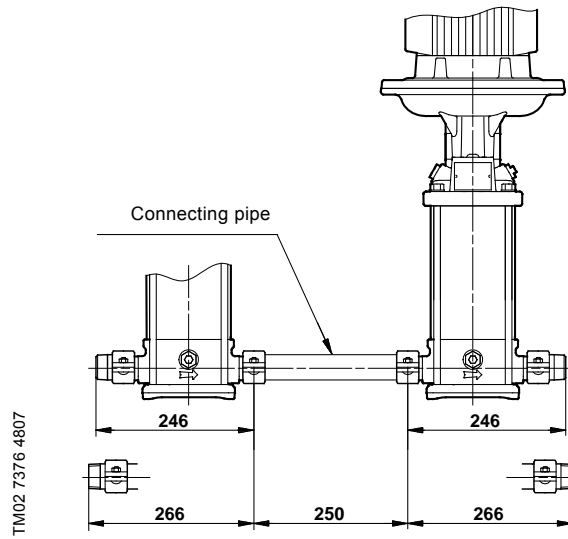


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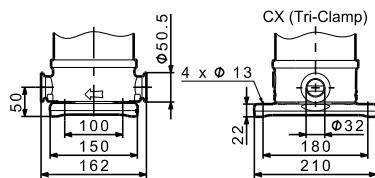
Dimensional sketches



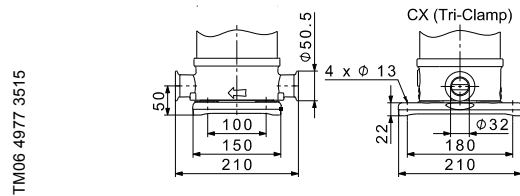
CRN feed pump/CRN-SF high-pressure pump



CRN feed pump, connecting pipe and CRN-SF high-pressure pump

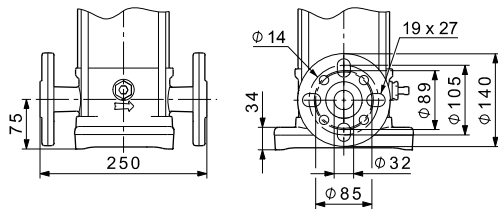


CRN feed pump



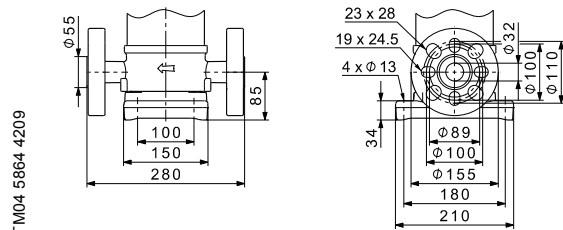
CRN-SF high-pressure pump

FGJ (DIN-ANSI-JIS), PN 25 / DN 25/32



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 25/32



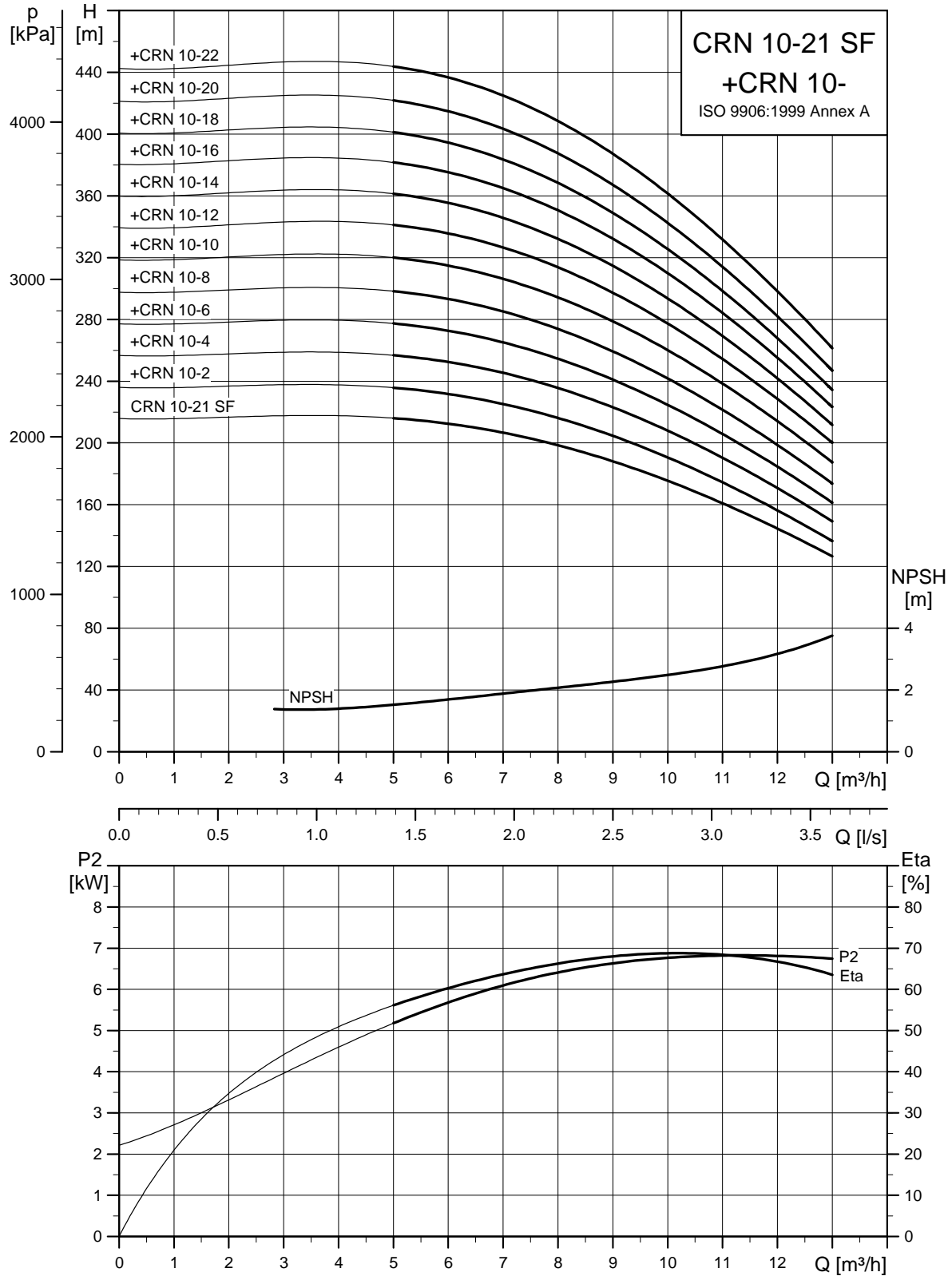
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN										CRNE											
		Dimension [mm]									Net weight [kg]		Dimension [mm]									Net weight [kg]	
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ				
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2										
CRN 5-4	0.55	311	502	336	527	141	109	-	18	22	-	-	-	-	-	-	-	-	-				
CRN 5-6	1.1	371	622	396	647	141	109	-	24	28	-	-	-	-	-	-	-	-	-				
CRN 5-8	1.1	425	676	450	701	141	109	-	25	29	-	-	-	-	-	-	-	-	-				
CRN 5-10	1.5	495	776	520	801	178	110	-	32	37	-	-	-	-	-	-	-	-	-				
CRN 5-12	2.2	549	870	574	895	178	110	-	34	38	-	-	-	-	-	-	-	-	-				
CRN 5-14	2.2	603	924	628	949	178	110	-	35	40	-	-	-	-	-	-	-	-	-				
CRN 5-16	2.2	657	978	682	1003	178	110	-	36	41	-	-	-	-	-	-	-	-	-				
CRN 5-20	3	770	1105	795	1130	198	120	-	45	49	-	-	-	-	-	-	-	-	-				
CRN 5-24	4	878	1250	903	1275	220	134	-	56	61	-	-	-	-	-	-	-	-	-				
CRN 5-29	4	1013	1385	1038	1410	220	134	-	59	64	-	-	-	-	-	-	-	-	-				
CRN 5-36	5.5	1231	1622	1256	1647	220	134	300	77	81	-	-	-	-	-	-	-	-	-				
CRN 5-34 SF*	5.5	1228	1619	1228	1619	220	134	300	76	76	1228	1619	1228	1619	220	188	300	83	83				

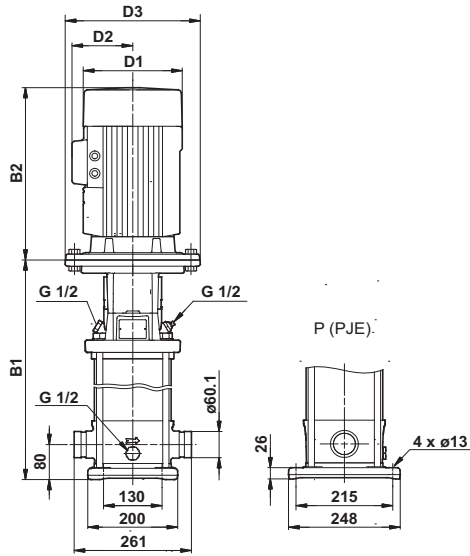
* High-pressure pump

CRN 10 SF, 50 Hz

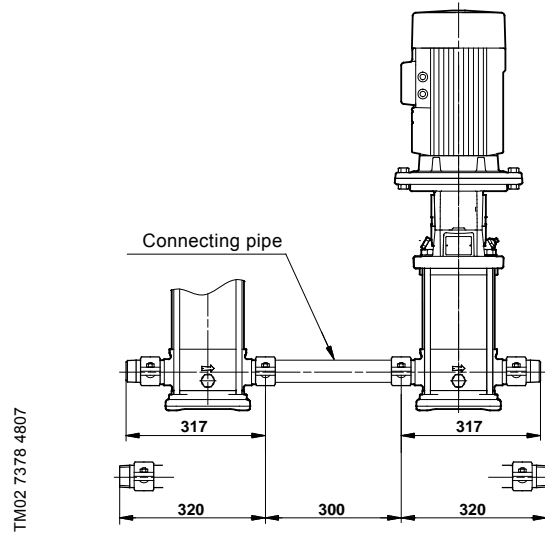


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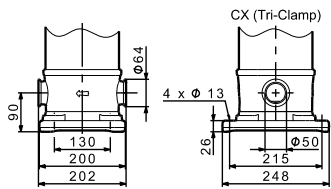
Dimensional sketches



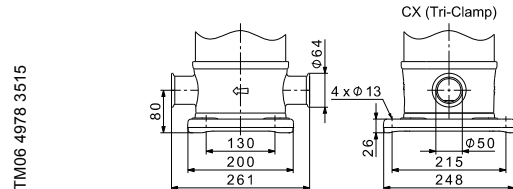
CRN feed pump/CRN-SF high-pressure pump



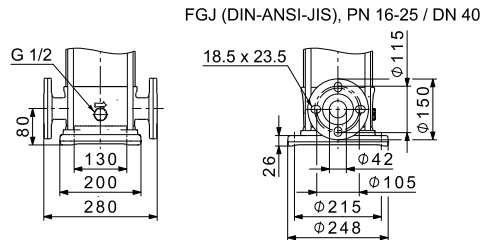
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



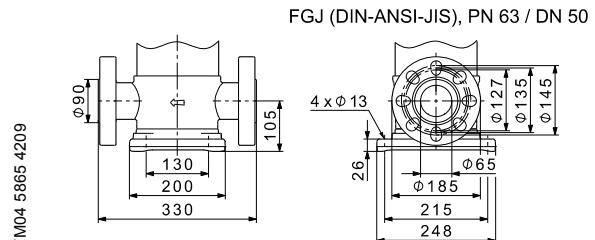
CRN feed pump



CRN-SF high-pressure pump



CRN feed pump



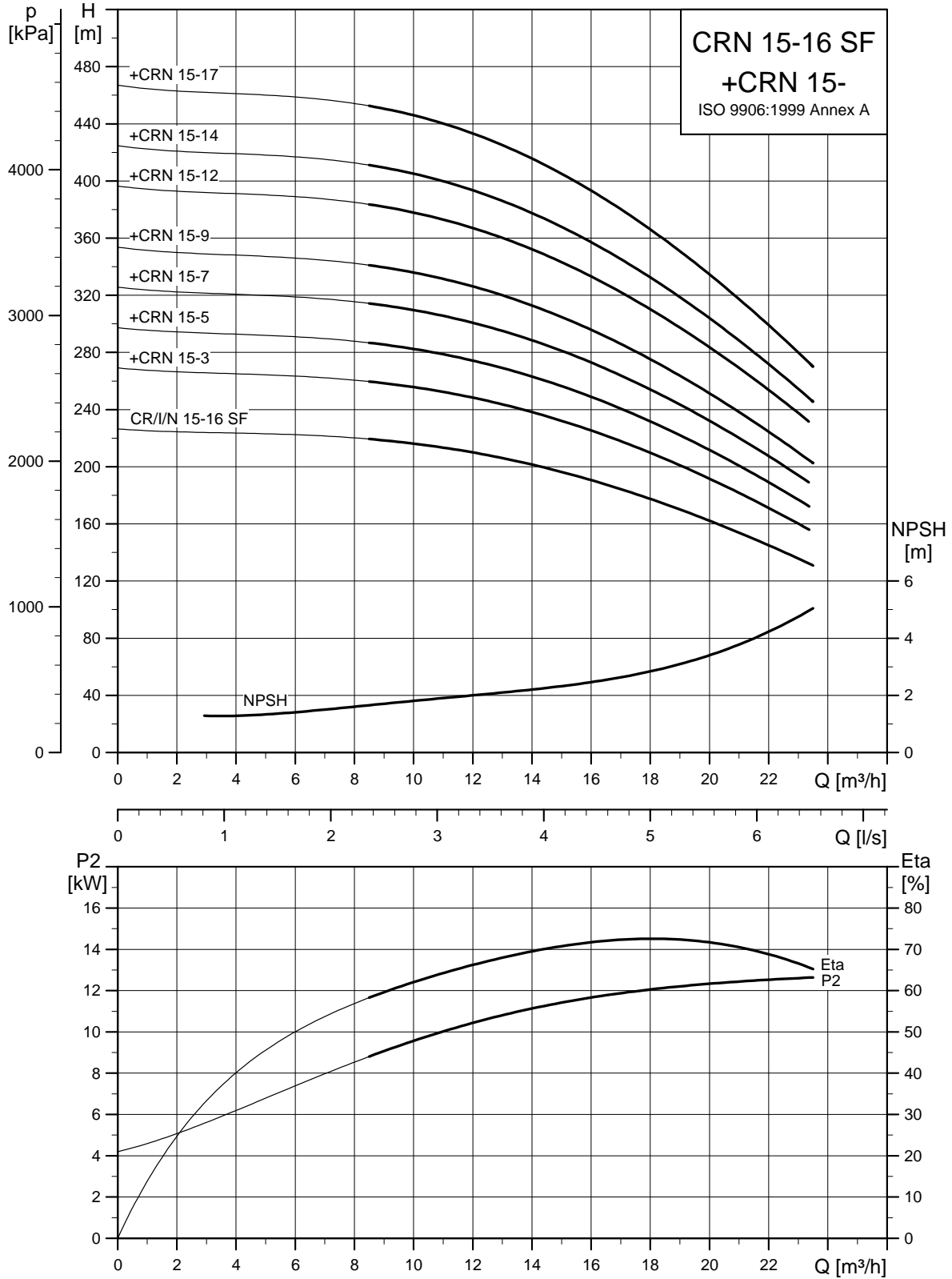
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX	FGJ		D1	D2	D3	PJE/CX	FGJ	
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 10-2	0.75	357	588	357	588	141	109	-	31	34	-	-	-	-	-	-	-	-	
CRN 10-4	1.5	433	714	433	714	178	110	-	42	46	-	-	-	-	-	-	-	-	
CRN 10-6	2.2	493	814	493	814	178	110	-	45	49	-	-	-	-	-	-	-	-	
CRN 10-8	3	558	893	558	893	198	120	-	54	57	-	-	-	-	-	-	-	-	
CRN 10-10	4	618	990	618	990	220	134	-	65	68	-	-	-	-	-	-	-	-	
CRN 10-12	4	678	1050	678	1050	220	134	-	67	70	-	-	-	-	-	-	-	-	
CRN 10-14	5.5	770	1161	770	1161	220	134	300	89	93	-	-	-	-	-	-	-	-	
CRN 10-16	5.5	830	1221	830	1221	220	134	300	91	95	-	-	-	-	-	-	-	-	
CRN 10-18	7.5	890	1269	890	1269	260	159	300	104	108	-	-	-	-	-	-	-	-	
CRN 10-20	7.5	950	1329	950	1329	260	159	300	106	110	-	-	-	-	-	-	-	-	
CRN 10-22	7.5	1010	1389	1010	1389	260	159	300	108	112	-	-	-	-	-	-	-	-	
CRN 10-21 SF*	7.5	1010	1389	1035	1414	260	159	300	109	109	1025	1404	1050	1429	260	213	300	107	117

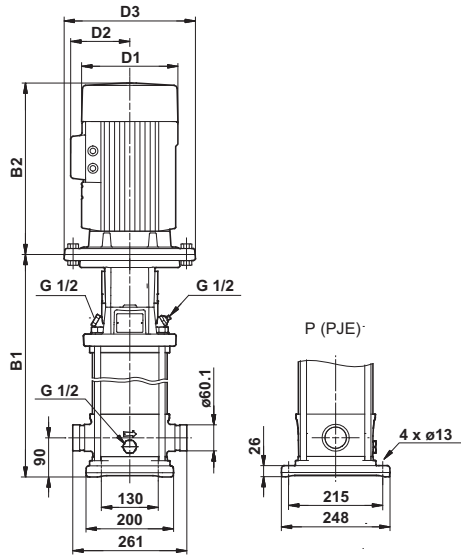
* High-pressure pump

CRN 15 SF, 50 Hz

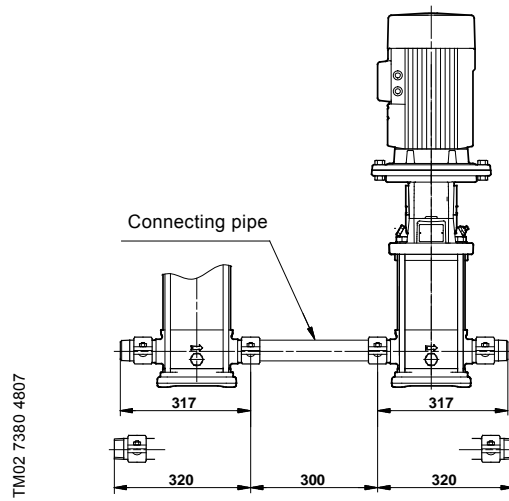


TM02 7352 1113

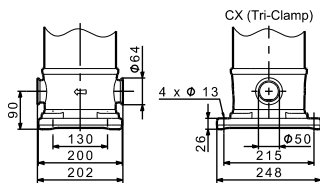
Dimensional sketches



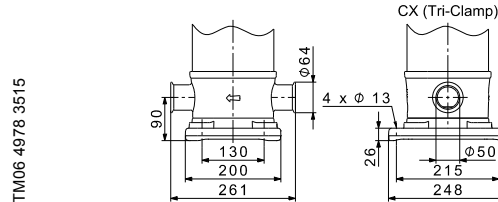
CRN feed pump/CRN-SF high-pressure pump



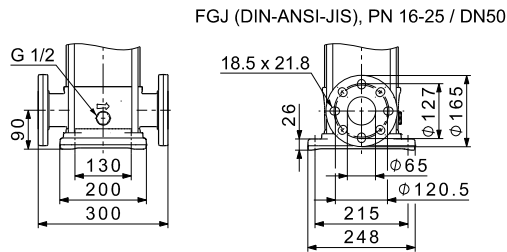
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



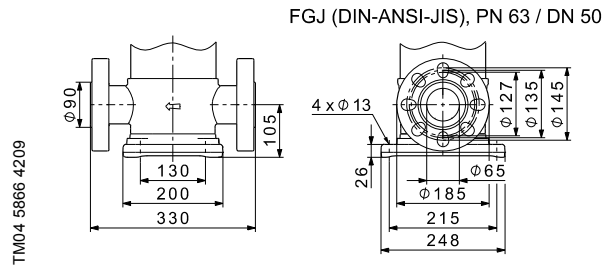
CRN feed pump



CRN-SF high-pressure pump



CRN feed pump



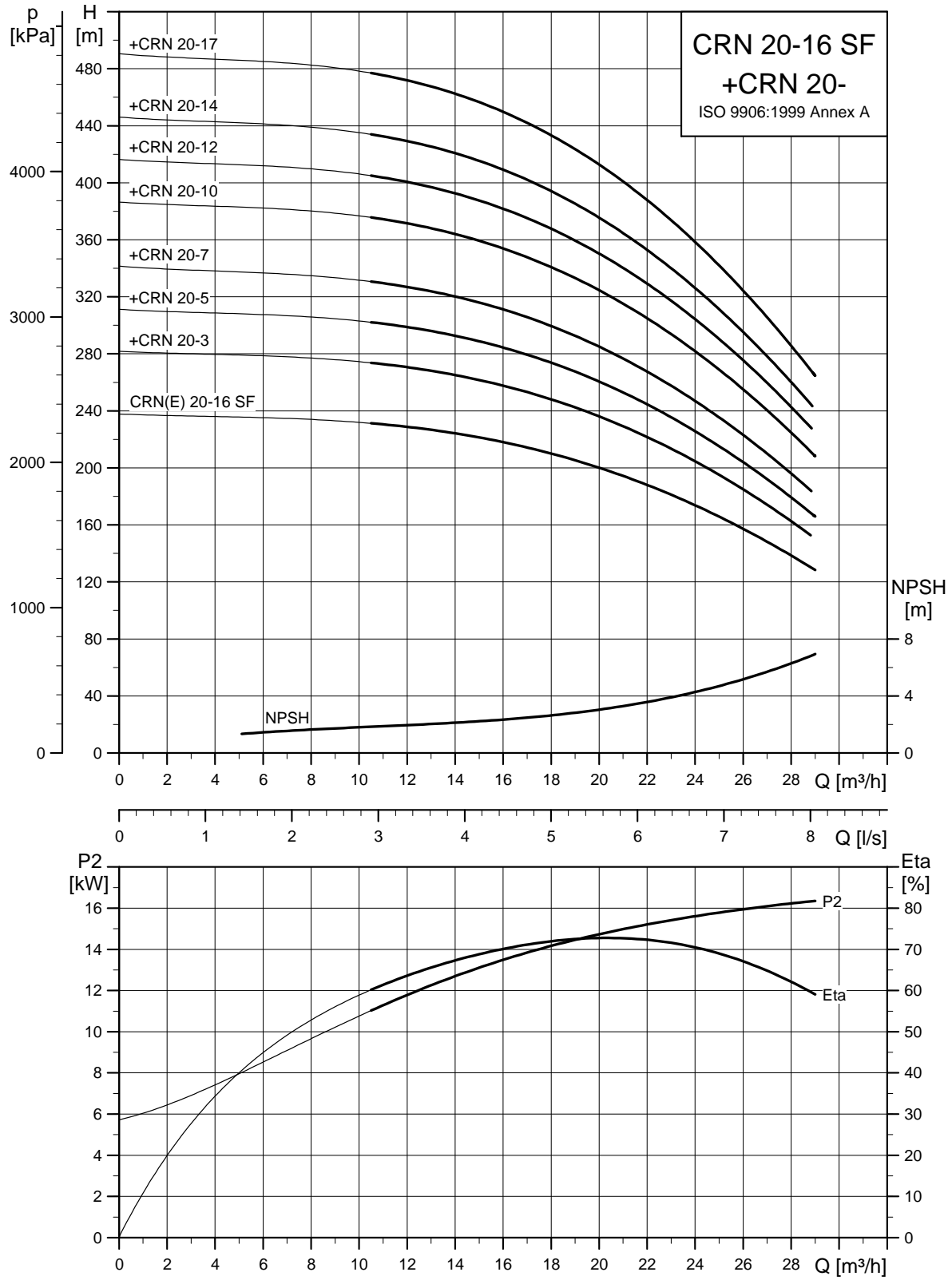
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 15-3	3	463	798	463	798	198	120	-	50	55	-	-	-	-	-	-	-	-	-
CRN 15-5	4	553	925	553	925	220	134	-	62	67	-	-	-	-	-	-	-	-	-
CRN 15-7	5.5	675	1066	675	1066	220	134	300	86	90	-	-	-	-	-	-	-	-	-
CRN 15-9	7.5	765	1144	765	1144	260	159	300	100	104	-	-	-	-	-	-	-	-	-
CRN 15-12	11	977	1448	977	1448	314	204	350	145	150	-	-	-	-	-	-	-	-	-
CRN 15-14	11	1067	1538	1067	1538	314	204	350	149	153	-	-	-	-	-	-	-	-	-
CRN 15-17	15	1202	1673	1202	1673	314	204	350	167	171	-	-	-	-	-	-	-	-	-
CRN 15-16 SF*	15	1202	1673	1202	1673	314	204	350	142	142	1217	1688	1217	1688	314	308	350	214	214

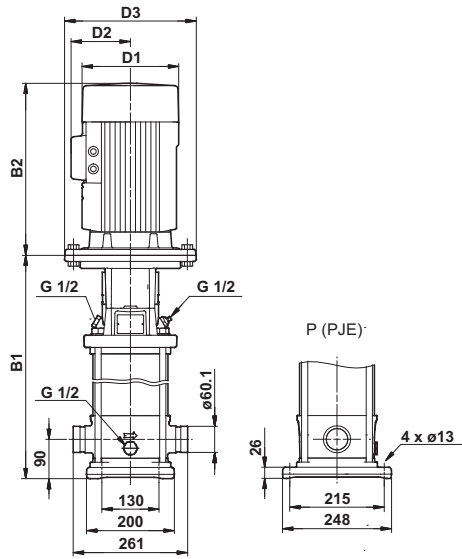
* High-pressure pump

CRN 20 SF, 50 Hz

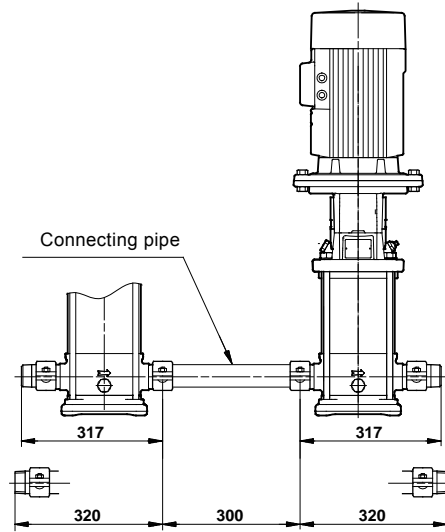


TM02 7353 1113

Dimensional sketches



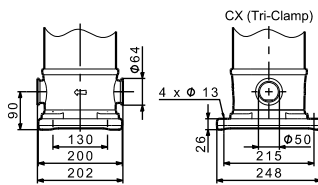
CRN feed pump/CRN-SF high-pressure pump



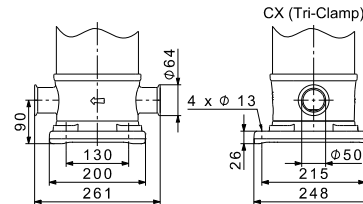
TM02 7380 4807

TM02 7381 3303

CRN feed pump, connecting pipe and CRN-SF high-pressure pump



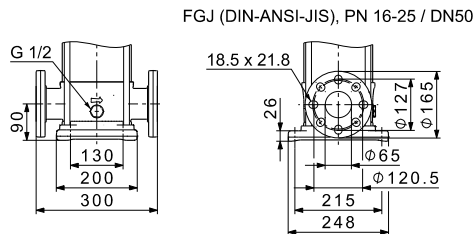
CRN feed pump



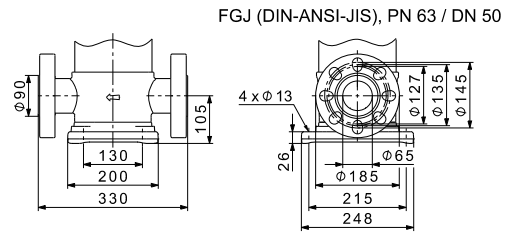
TM06 4978 3515

TM04 5861 4209

CRN-SF high-pressure pump



CRN feed pump



TM04 5866 4209

TM04 5863 4209

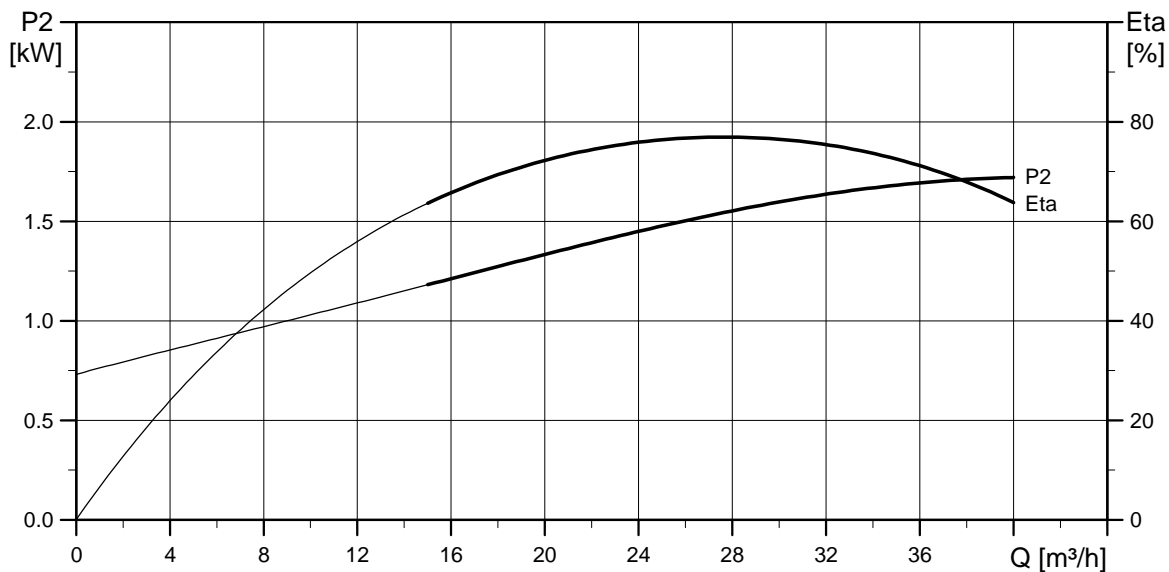
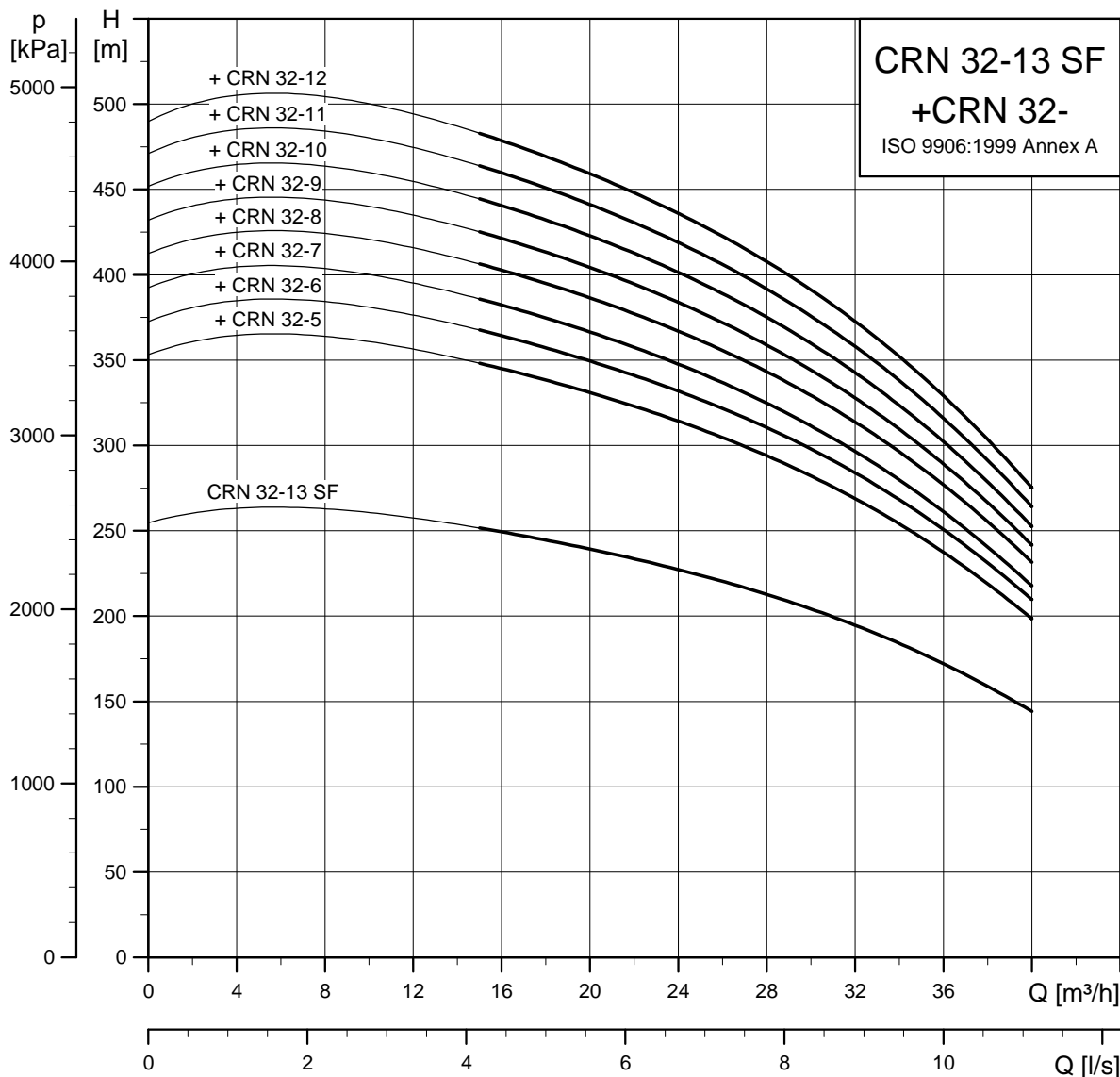
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 20-3	4	463	835	463	835	220	134	-	59	64	-	-	-	-	-	-	-	-	-
CRN 20-5	5.5	585	976	585	976	220	134	300	82	87	-	-	-	-	-	-	-	-	-
CRN 20-7	7.5	675	1054	675	1054	260	159	300	96	101	-	-	-	-	-	-	-	-	-
CRN 20-10	11	887	1358	887	1358	314	204	350	142	147	-	-	-	-	-	-	-	-	-
CRN 20-12	15	977	1448	977	1448	314	204	350	158	163	-	-	-	-	-	-	-	-	-
CRN 20-14	15	1067	1538	1067	1538	314	204	350	162	166	-	-	-	-	-	-	-	-	-
CRN 20-17	18.5	1202	1717	1202	1717	314	204	350	180	184	-	-	-	-	-	-	-	-	-
CRN 20-16 SF*	18.5	1202	1717	1202	1717	314	204	350	151	159	1217	1732	1232	1747	314	308	350	226	236

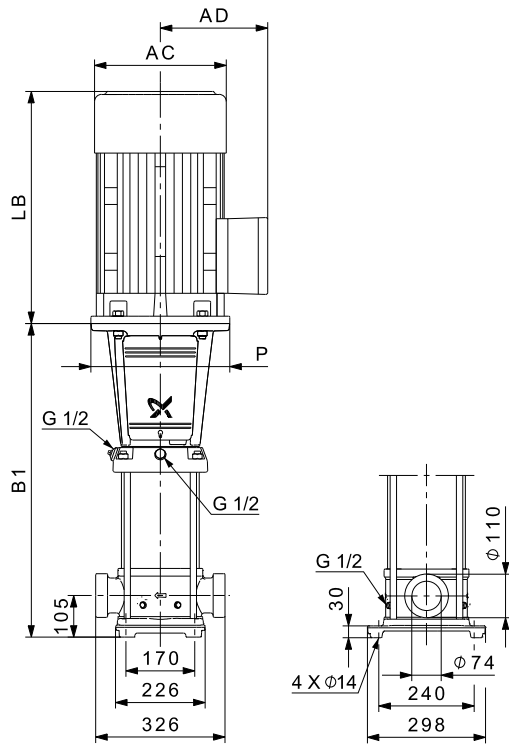
* High-pressure pump

CRN 32 SF, 50 Hz

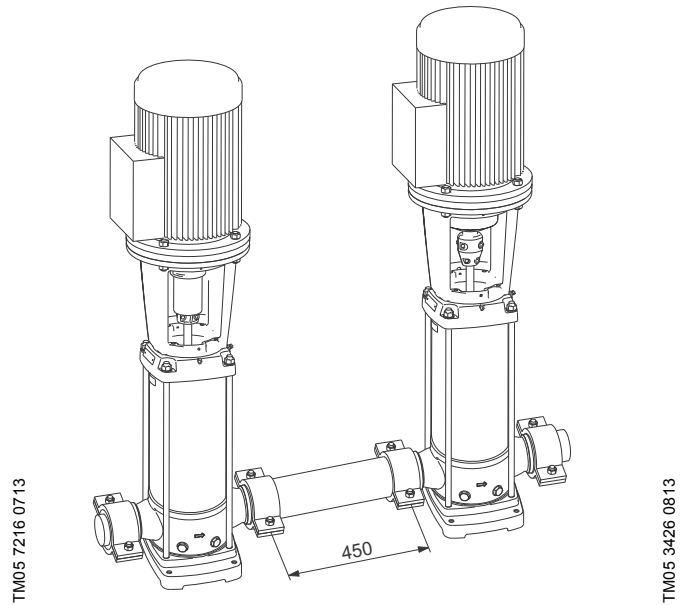


TM02 1679 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



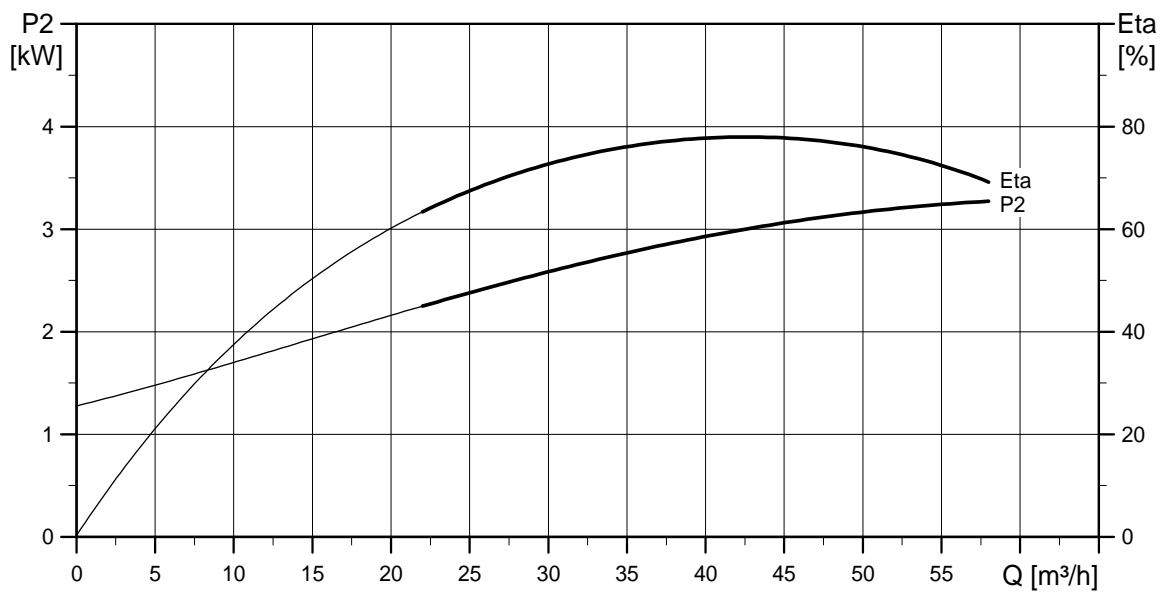
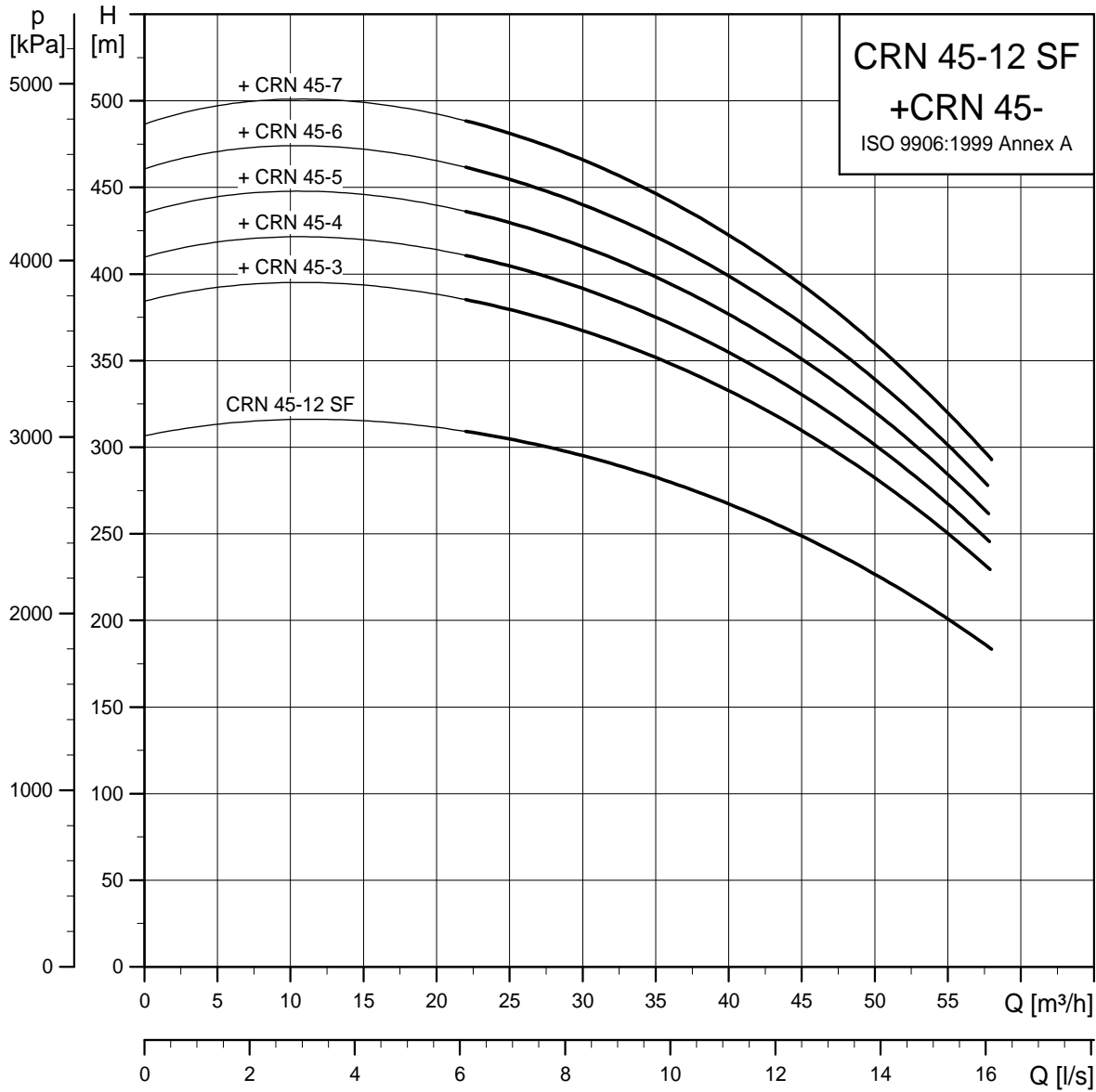
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 32-5	11	895	1366	314	204	350	153
CRN 32-6	11	965	1436	314	204	350	156
CRN 32-7	15	1035	1506	314	204	350	172
CRN 32-8	15	1105	1576	314	204	350	178
CRN 32-9	18.5	1175	1690	314	204	350	194
CRN 32-10	18.5	1245	1760	314	204	350	198
CRN 32-11	22	1315	1856	314	204	350	215
CRN 32-12	22	1385	1926	314	204	350	218
CRN 32-13 SF*	30	1525	2135	396	315	400	327

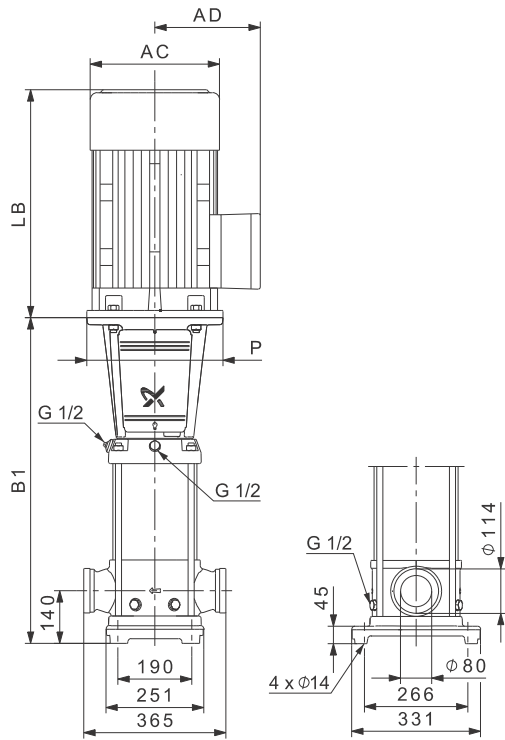
* High-pressure pump

CRN 45 SF, 50 Hz

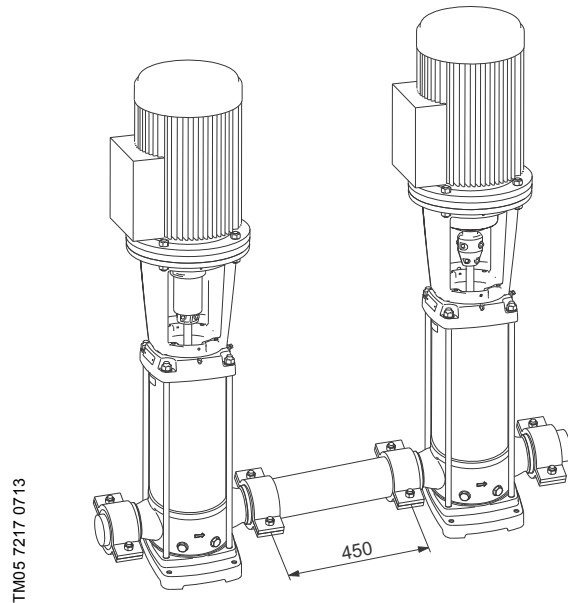


TM02 1680 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



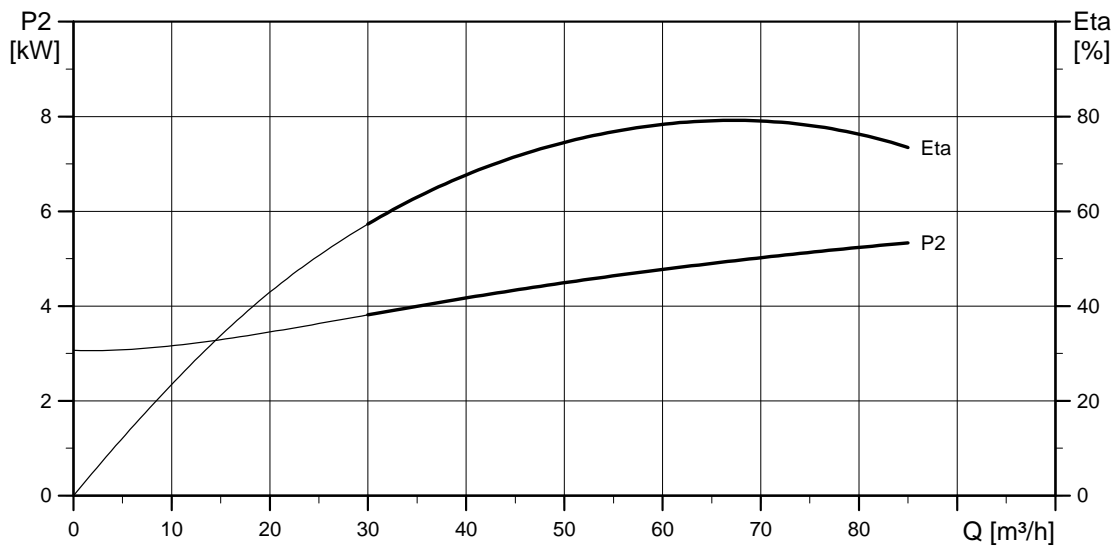
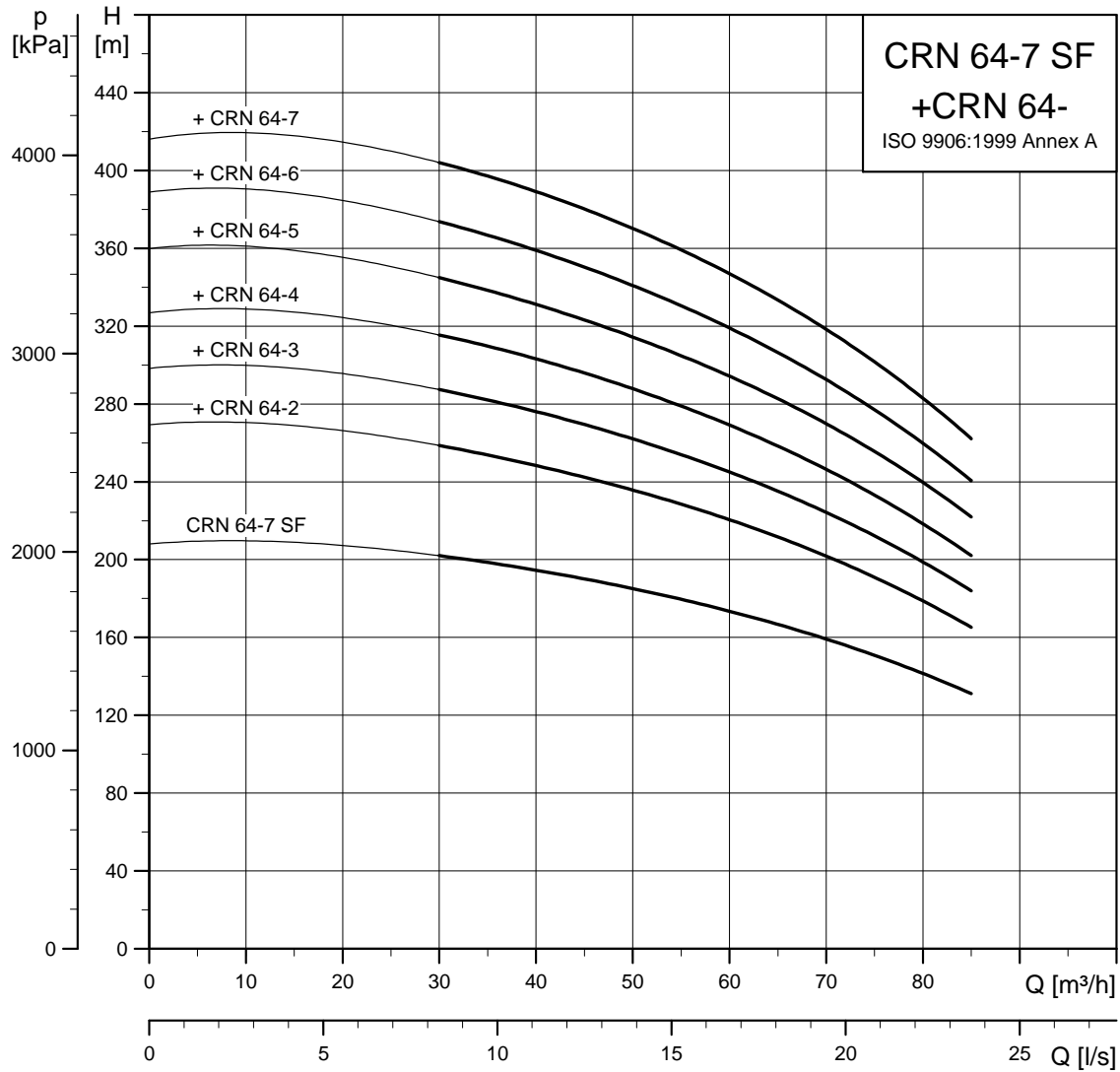
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 45-3	11	829	1300	314	204	350	156
CRN 45-4	15	909	1380	314	204	350	172
CRN 45-5	18.5	989	1504	314	204	350	188
CRN 45-6	22	1069	1610	314	204	350	210
CRN 45-7	30	1149	1760	396	315	400	331
CRN 45-12 SF*	45	1629	2338	439	338	450	450

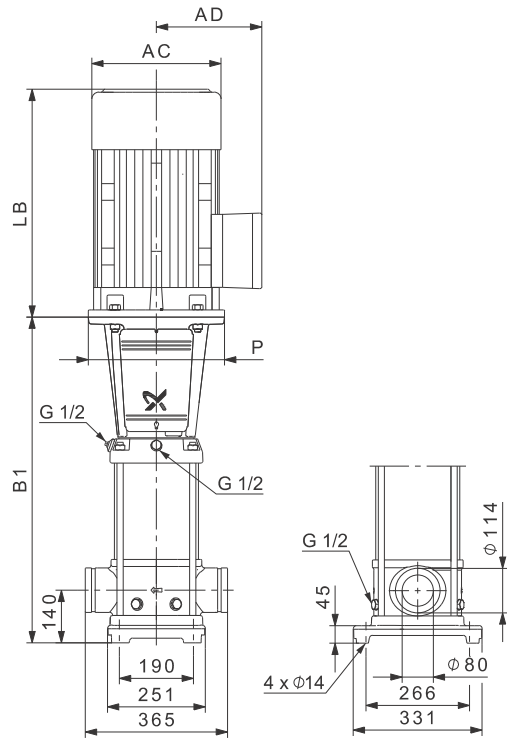
* High-pressure pump

CRN 64 SF, 50 Hz

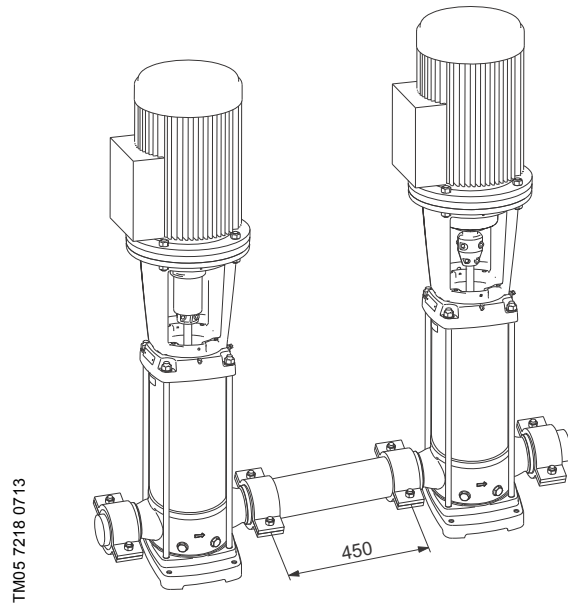


TM02 1681 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



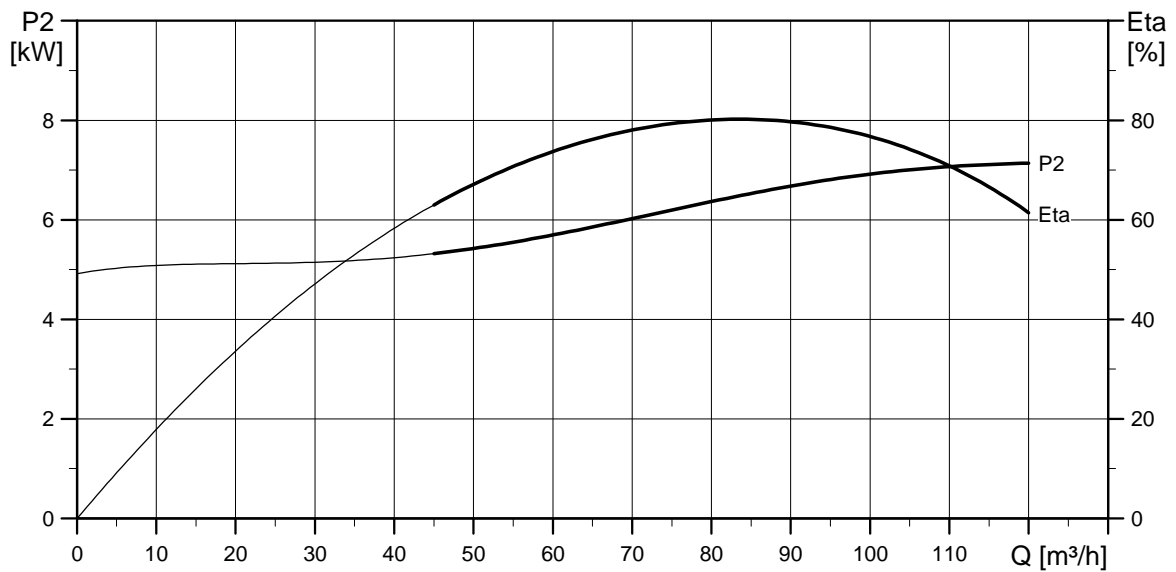
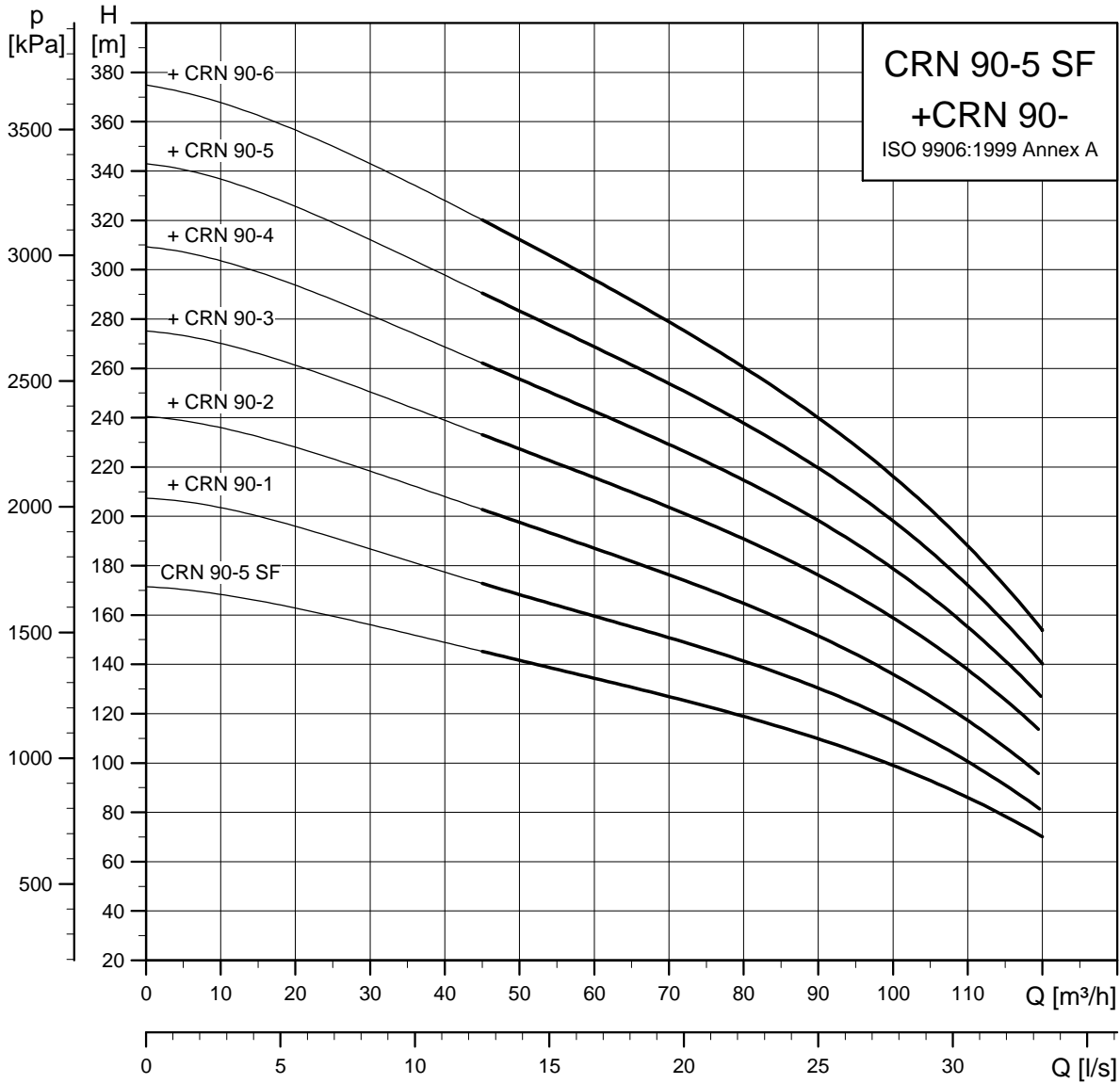
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 64-2	11	754	1225	314	204	350	155
CRN 64-3	18.5	836	1351	314	204	350	184
CRN 64-4	22	919	1460	314	204	350	204
CRN 64-5	30	1001	1612	396	315	400	326
CRN 64-6	37	1084	1720	396	315	400	355
CRN 64-7	45	1166	1874	439	338	450	434
CRN 64-7 SF*	45	1166	1958	439	338	450	443

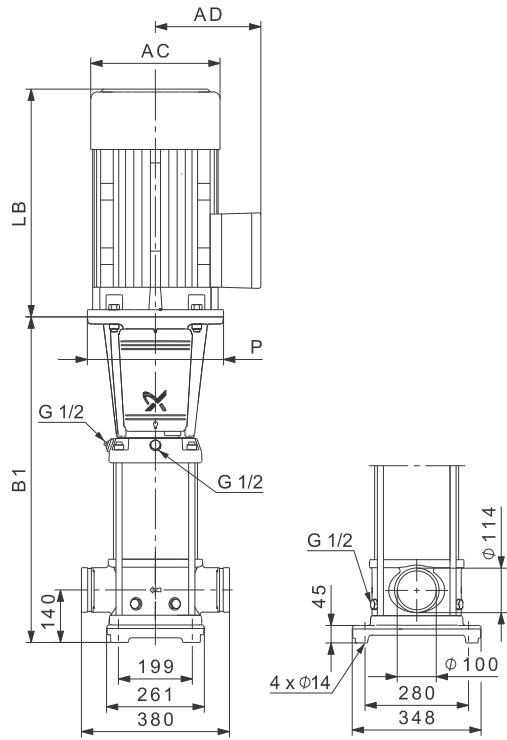
* High-pressure pump

CRN 90 SF, 50 Hz

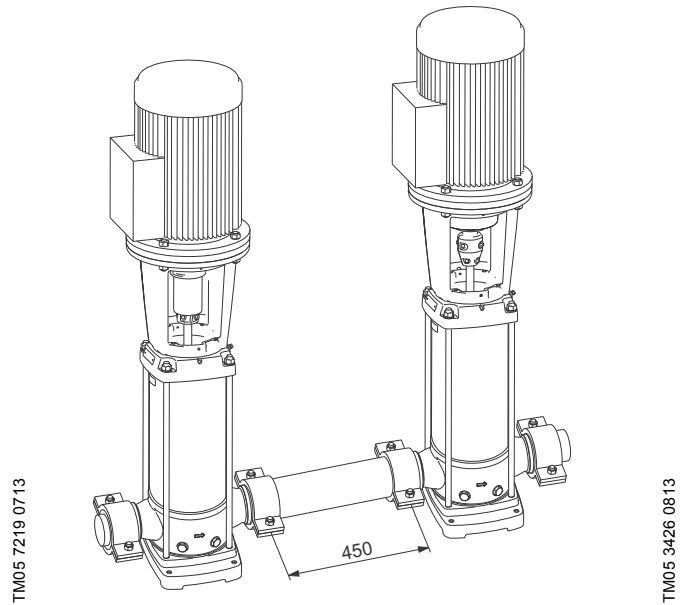


TM02 1682 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



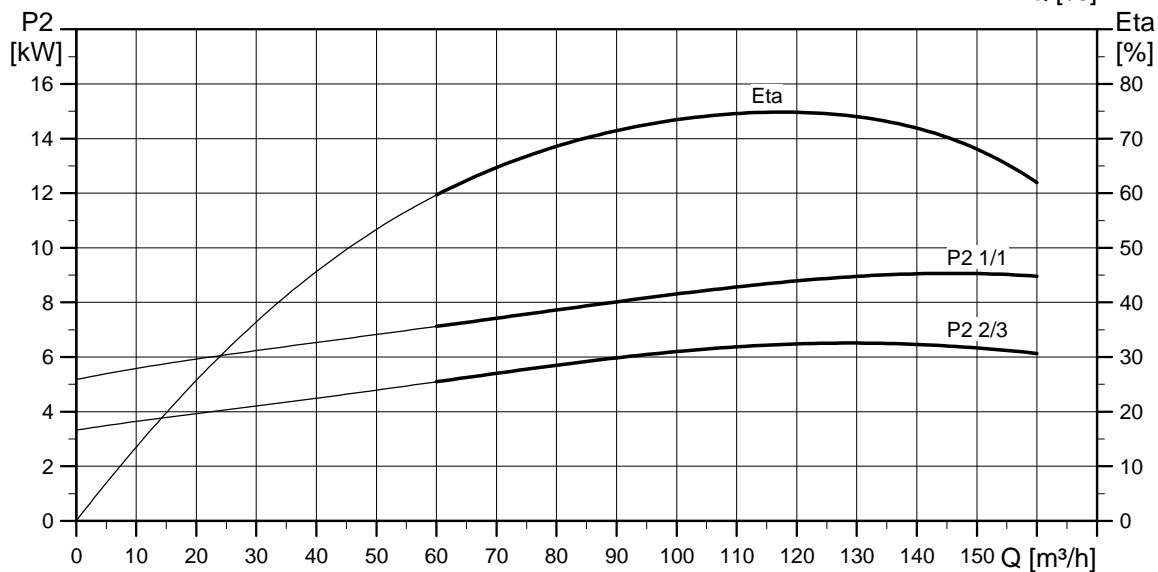
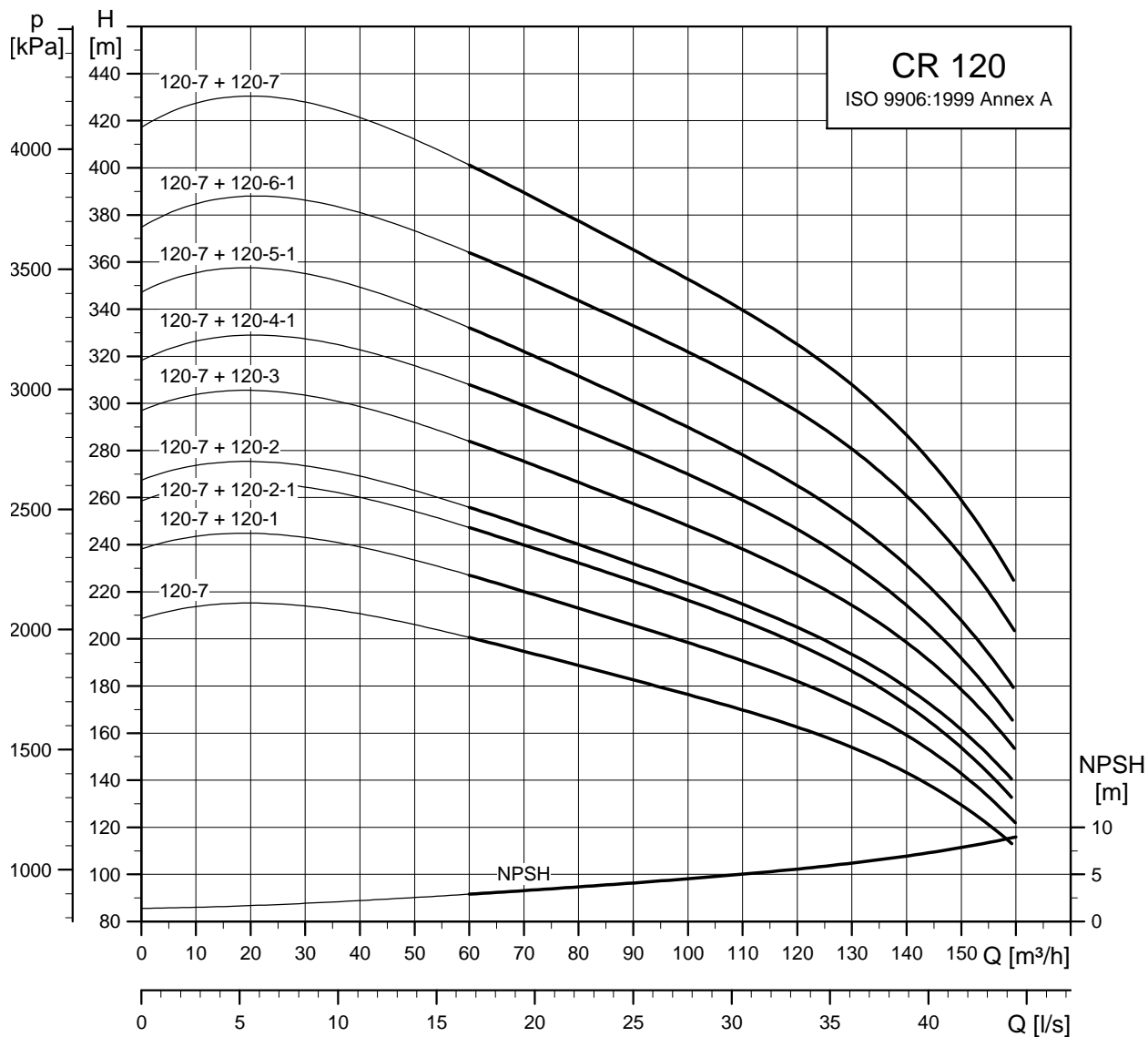
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 90-1	7.5	571	950	260	159	300	113
CRN 90-2	15	773	1244	314	204	350	175
CRN 90-3	22	865	1406	314	204	350	207
CRN 90-4	30	957	1568	396	315	400	330
CRN 90-5	37	1049	1685	396	315	400	360
CRN 90-6	45	1141	1849	439	338	450	439
CRN 90-5 SF*	37	1049	1808	396	315	400	368

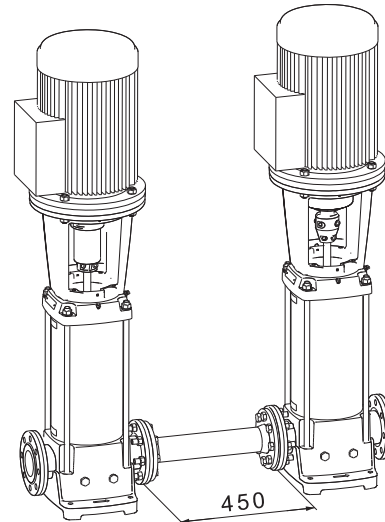
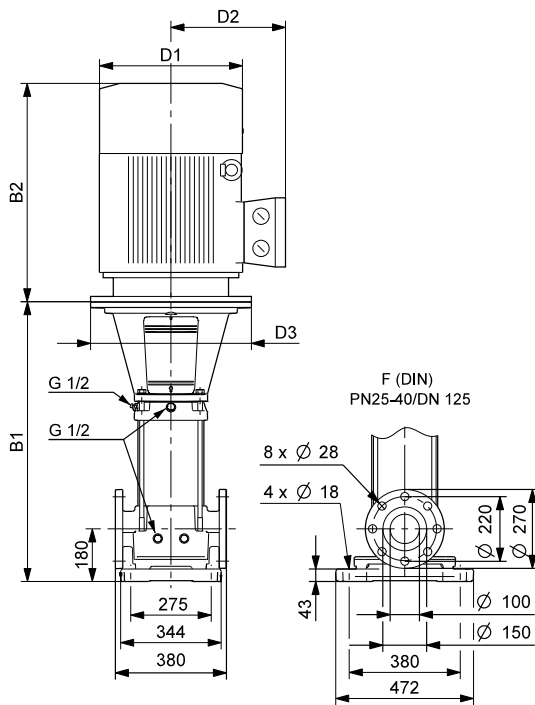
* High-pressure pump

CR 120, 50 Hz



TM03 9698 1113

Dimensional sketches



TM03 9704 4407

TM02 1650 0513

CR feed pump/CR high-pressure pump

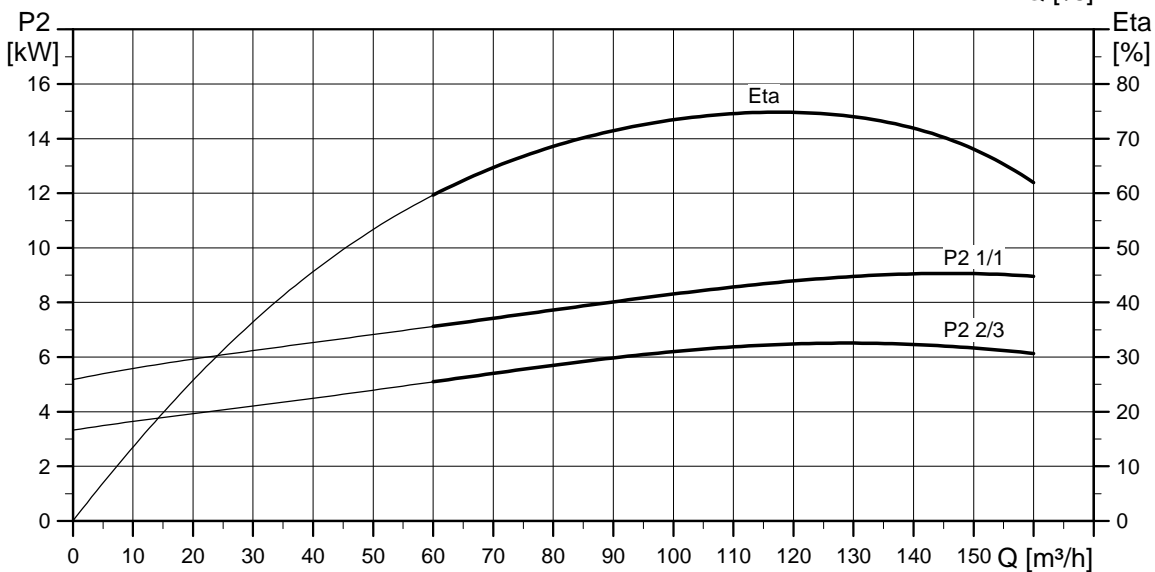
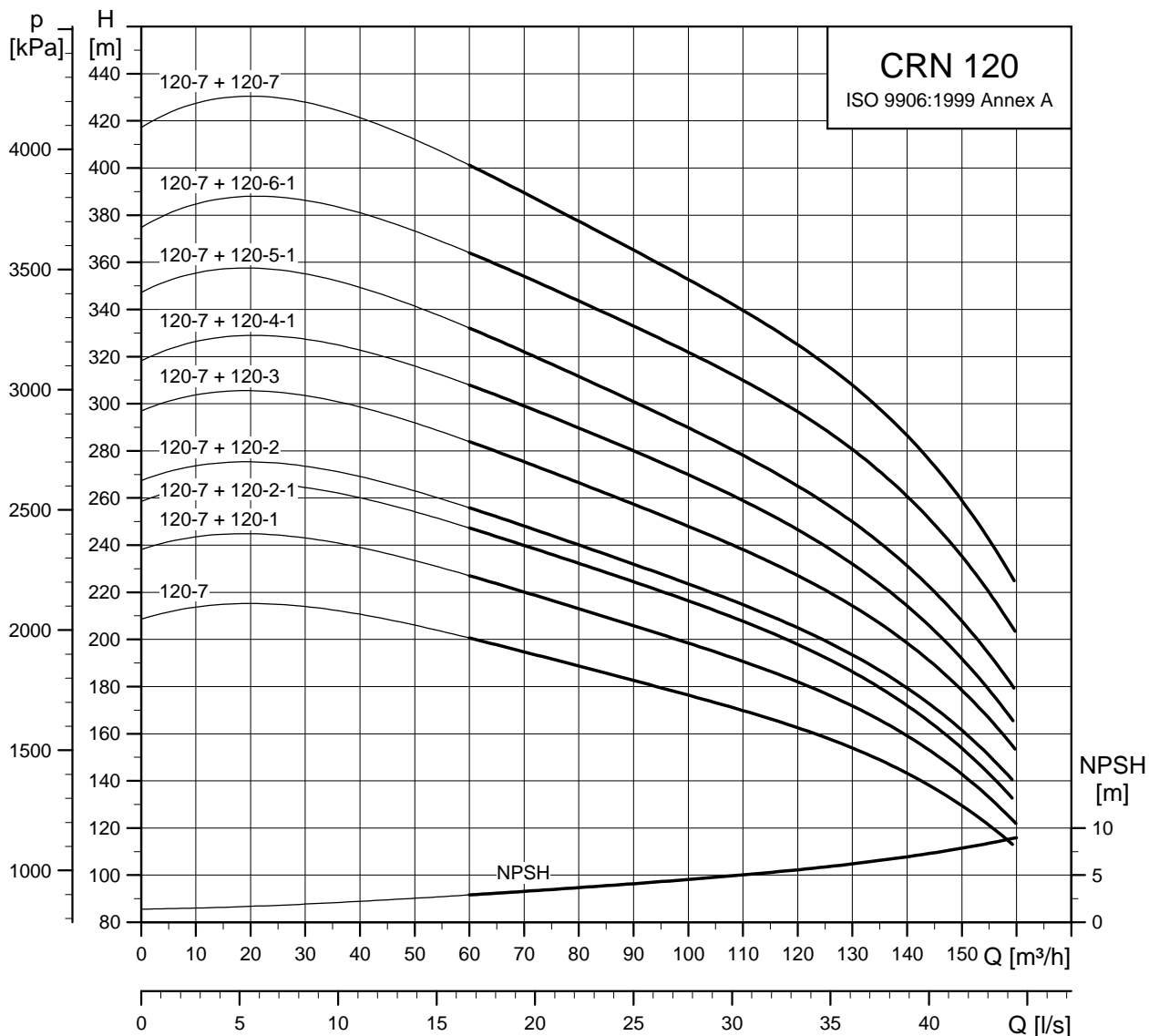
CR feed pump, connecting pipe and CR high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CR 120-1	11	834	1305	314	204	350	191
CR 120-2-1	18.5	990	1505	314	204	350	227
CR 120-2	22	990	1531	314	204	350	240
CR 120-3	30	1145	1756	396	315	400	368
CR 120-4-1	37	1301	1937	396	315	400	392
CR 120-5-1	45	1456	2164	439	338	450	487
CR 120-6-1	55	1642	2389	487	410	550	627
CR 120-7	75	1797	2617	540	433	550	741
CR 120-7*	75	1797	2617	540	433	550	741

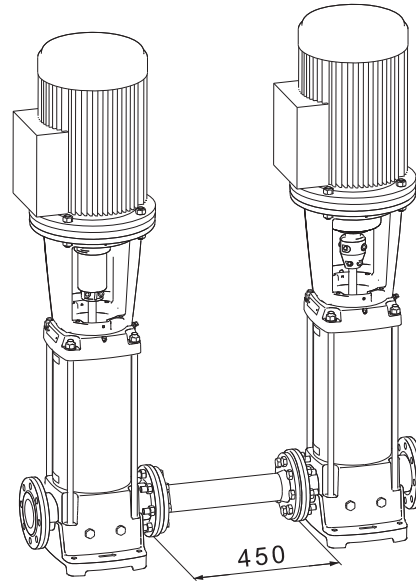
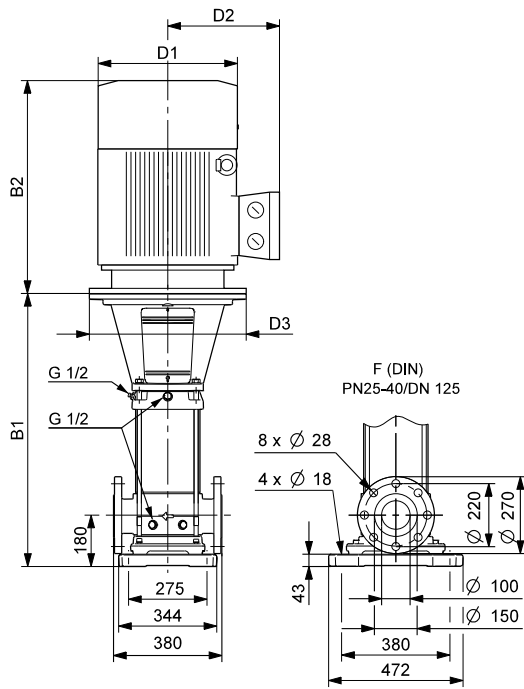
* High-pressure pump

CRN 120, 50 Hz



TM03 8814 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump

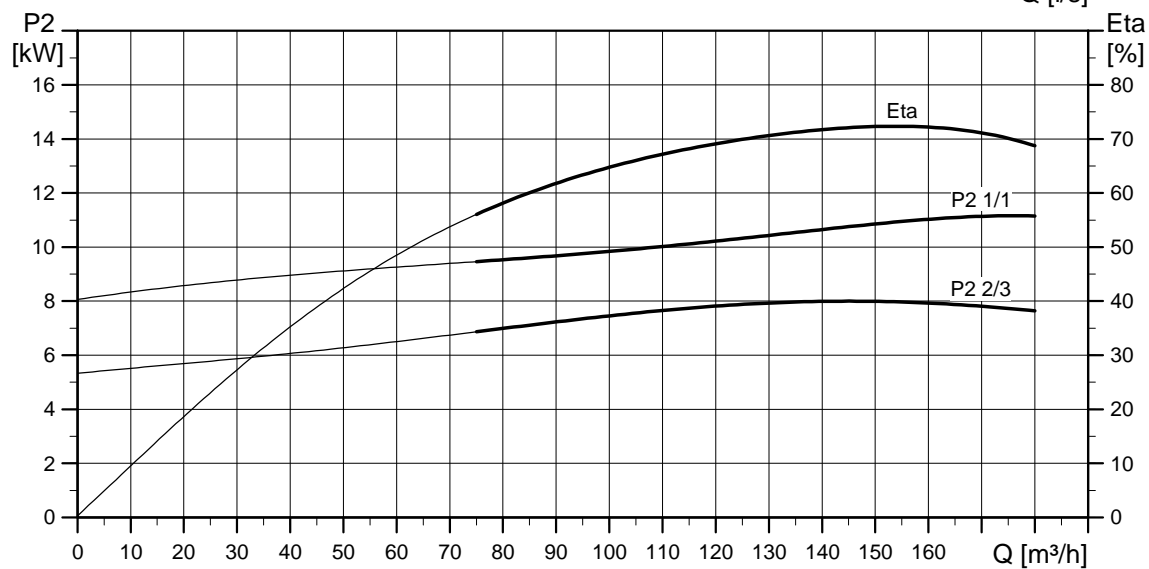
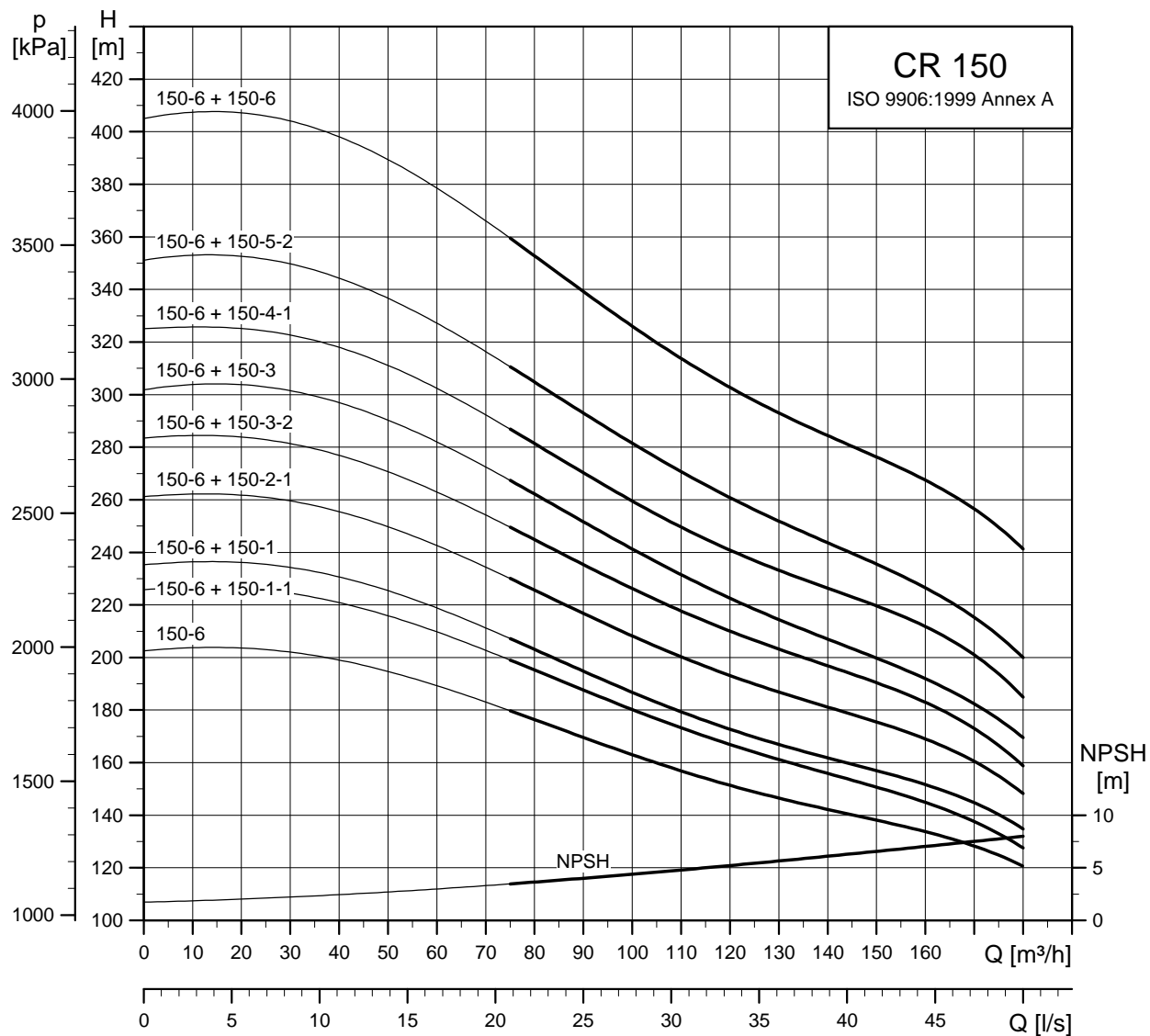
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 120-1	11	834	1305	314	204	350	195
CRN 120-2-1	18.5	990	1505	314	204	350	231
CRN 120-2	22	990	1531	314	204	350	245
CRN 120-3	30	1145	1756	396	315	400	372
CRN 120-4-1	37	1301	1937	396	315	400	397
CRN 120-5-1	45	1456	2164	439	338	450	491
CRN 120-6-1	55	1642	2389	487	410	550	631
CRN 120-7	75	1797	2617	540	433	550	755
CRN 120-7*	75	1797	2617	540	433	550	755

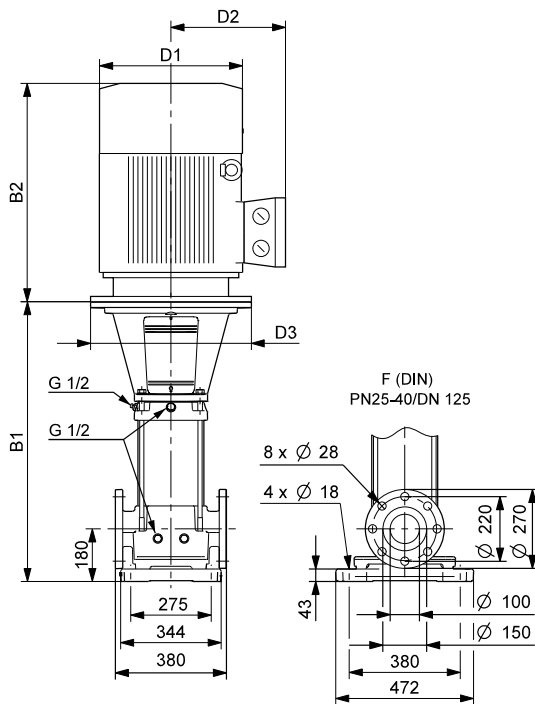
* High-pressure pump

CR 150, 50 Hz

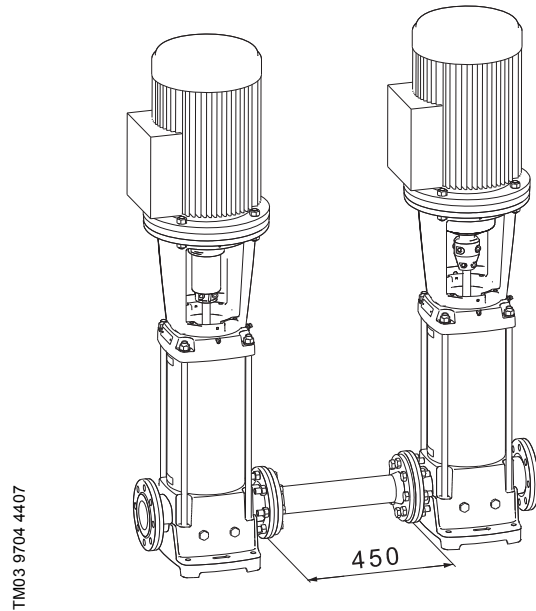


TM03 9699 1113

Dimensional sketches



CR feed pump/CR high-pressure pump



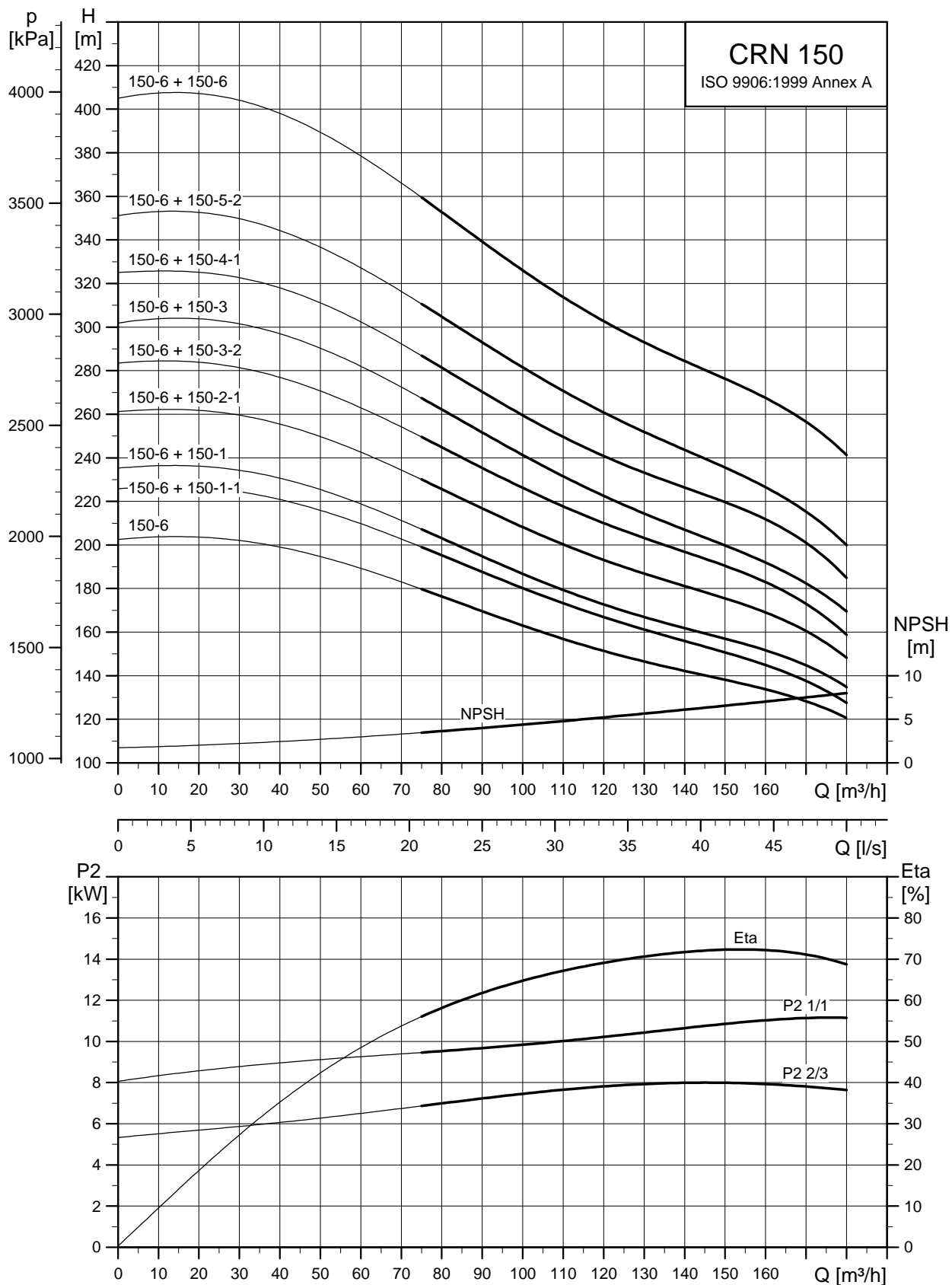
CR feed pump, connecting pipe and CR high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CR 150-1-1	11	834	1305	314	204	350	191
CR 150-1	15	834	1305	314	204	350	204
CR 150-2-1	22	990	1531	314	204	350	241
CR 150-3-2	30	1145	1756	396	315	400	368
CR 150-3	37	1145	1781	396	315	400	383
CR 150-4-1	45	1301	2009	439	338	450	477
CR 150-5-2	55	1486	2233	487	410	550	617
CR 150-6	75	1642	2462	540	433	550	733
CR 150-6*	75	1642	2462	540	433	550	733

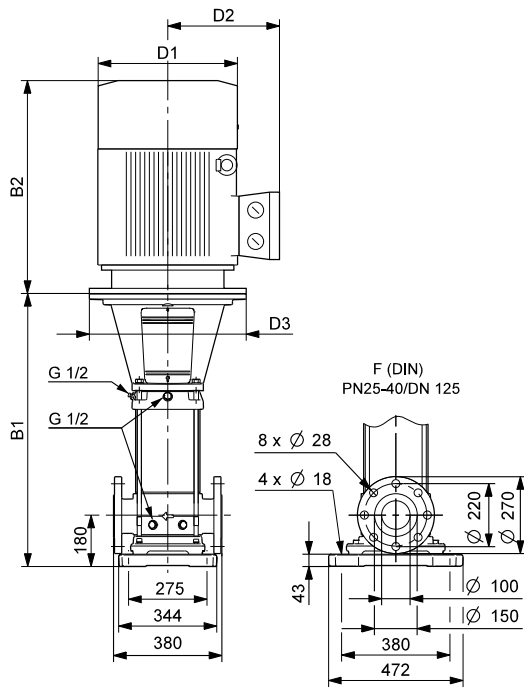
* High-pressure pump

CRN 150, 50 Hz

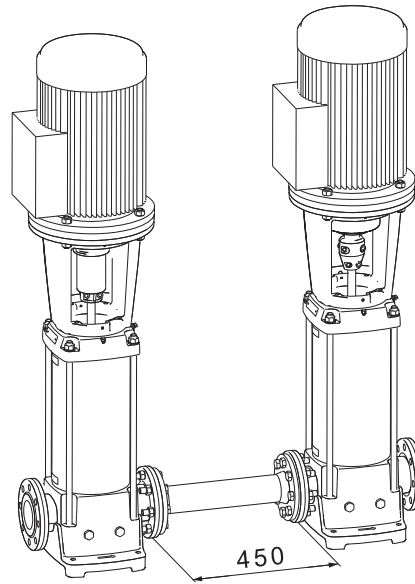


TM03 8815 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



TM03 9705 4407

TM02 1650 0801

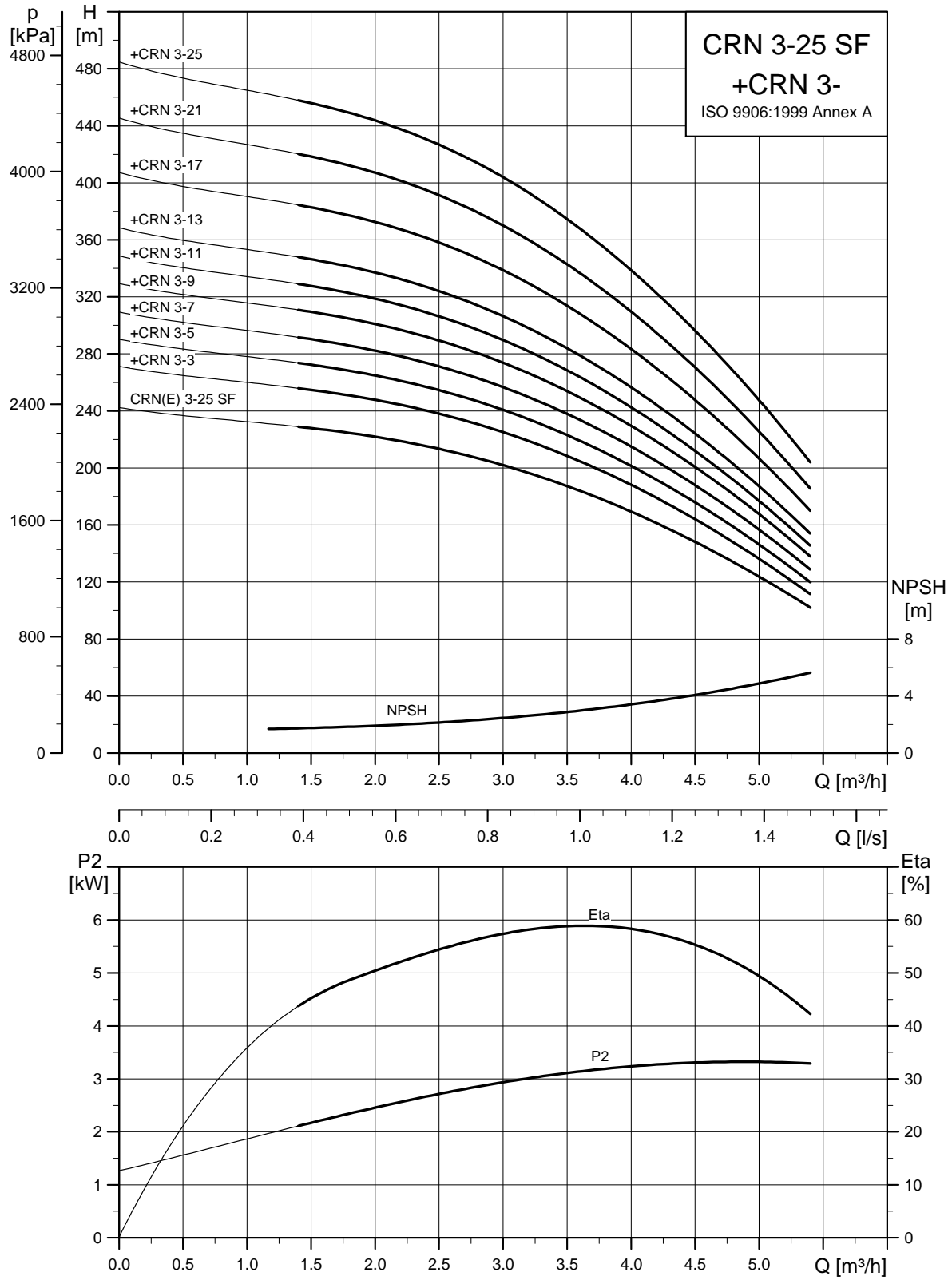
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 150-1-1	11	834	1305	314	204	350	195
CRN 150-1	15	834	1305	314	204	350	208
CRN 150-2-1	22	990	1531	314	204	350	245
CRN 150-3-2	30	1145	1756	396	315	400	372
CRN 150-3	37	1145	1781	396	315	400	387
CRN 150-4-1	45	1301	2009	439	338	450	481
CRN 150-5-2	55	1486	2233	487	410	550	621
CRN 150-6	75	1642	2462	540	433	550	736
CRN 150-6*	75	1642	2462	540	433	550	736

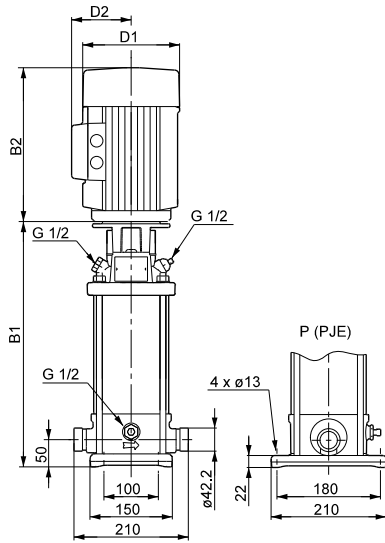
* High-pressure pump

CRN 3 SF, 60 Hz

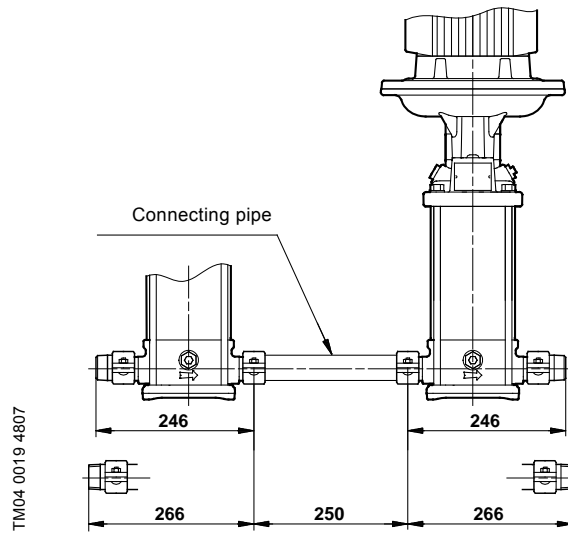


TM03 9795 1113

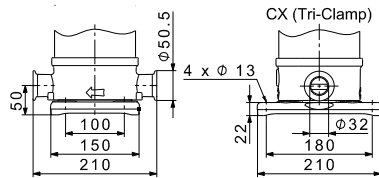
Dimensional sketches



CRN feed pump/CRN-SF high-pressure pump



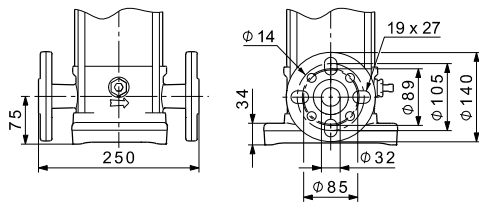
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



CRN feed pump/CRN-SF high-pressure pump

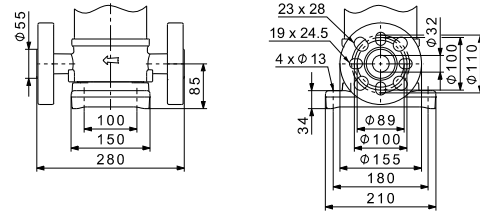
TM04 5859 4209

FGJ (DIN-ANSI-JIS), PN 25 / DN 25/32



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 25/32



CRN-SF high-pressure pump

TM04 5864 4209

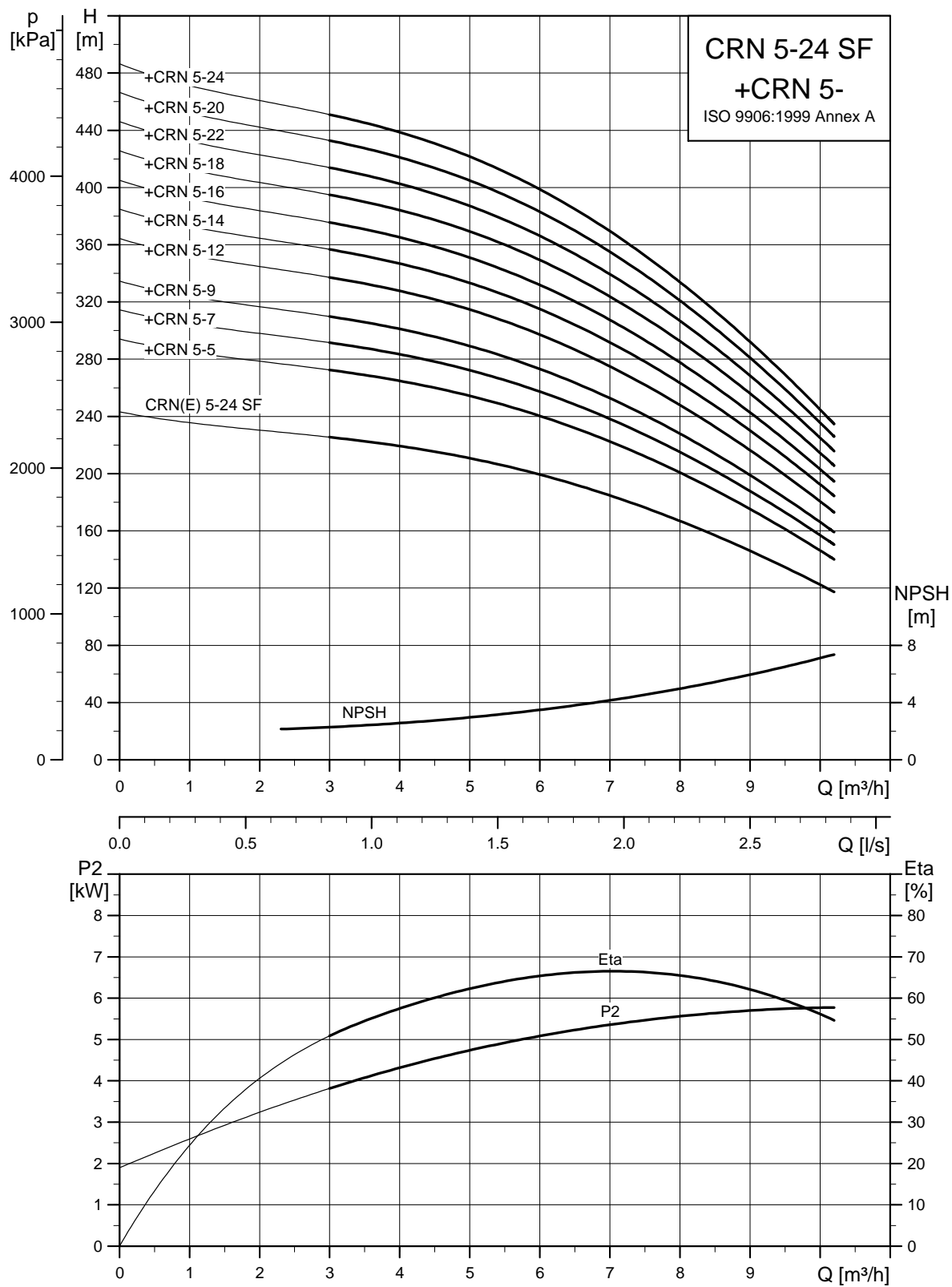
TM04 5862 4209

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN								CRNE							
		Dimension [mm]						Net weight [kg]		Dimension [mm]						Net weight [kg]	
		PJE/CX		FGJ		D1	D2	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2					B1	B1+B2	B1	B1+B2						
CRN 3-3	0.55	257	448	282	473	141	109	17	21	-	-	-	-	-	-	-	
CRN 3-5	0.75	299	530	324	555	141	109	20	24	-	-	-	-	-	-	-	
CRN 3-7	1.1	335	586	360	611	141	109	23	27	-	-	-	-	-	-	-	
CRN 3-9	1.5	387	668	412	693	178	110	30	35	-	-	-	-	-	-	-	
CRN 3-11	1.5	423	704	448	729	178	110	31	35	-	-	-	-	-	-	-	
CRN 3-13	2.2	459	780	484	805	178	110	33	37	-	-	-	-	-	-	-	
CRN 3-17	2.2	531	852	556	877	178	110	34	38	-	-	-	-	-	-	-	
CRN 3-21	3	608	943	633	968	198	120	42	46	-	-	-	-	-	-	-	
CRN 3-25	4	680	1052	705	1077	220	134	53	57	-	-	-	-	-	-	-	
CRN 3-25 SF*	4	708	1080	743	1115	220	134	44	60	708	1080	743	1115	220	188	63	70

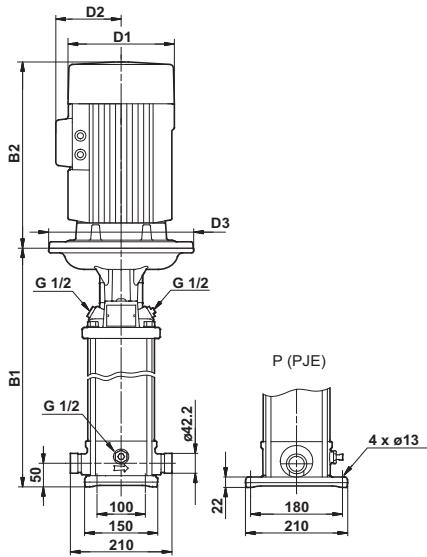
* High-pressure pump

CRN 5 SF, 60 Hz

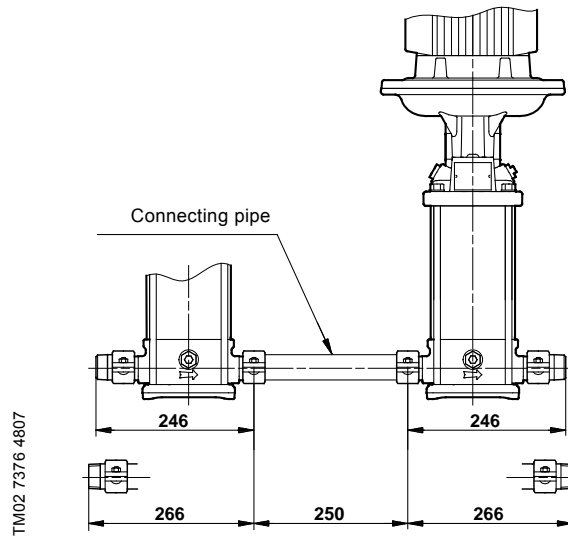


TM02 7448 1113

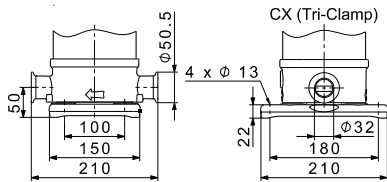
Dimensional sketches



CRN feed pump/CRN-SF high-pressure pump



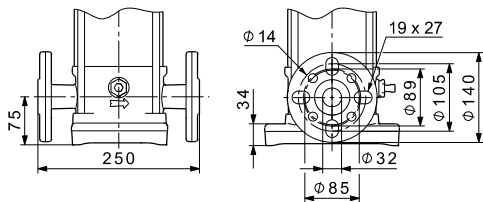
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



CRN feed pump/CRN-SF high-pressure pump

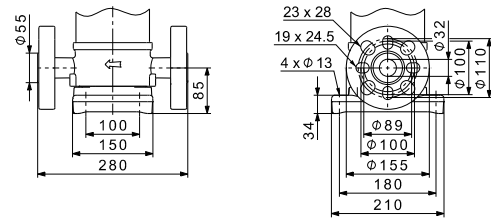
TM04 5859 4209

FGJ (DIN-ANSI-JIS), PN 25 / DN 25/32



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 25/32



CRN-SF high-pressure pump

TM04 5864 4209

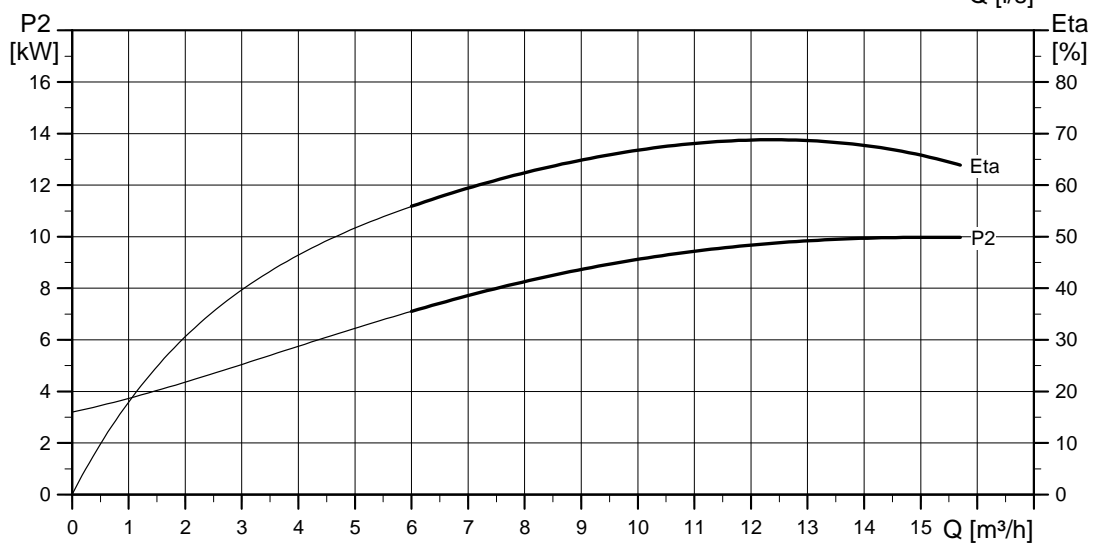
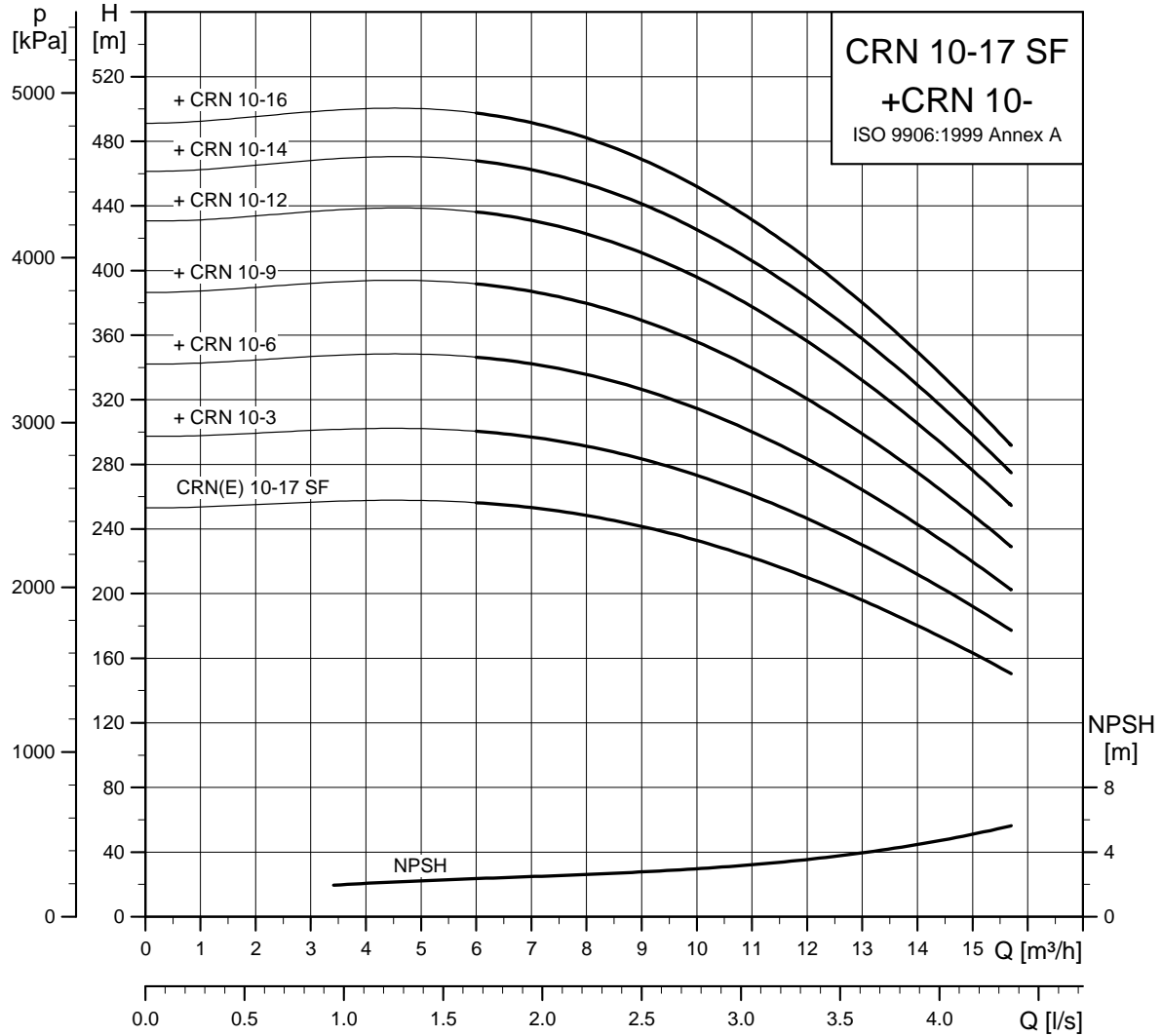
TM04 5862 4209

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX	FGJ		D1	D2	D3	PJE/CX	FGJ	
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 5-5	1.5	360	641	385	666	178	110	-	30	34	-	-	-	-	-	-	-	-	-
CRN 5-7	2.2	414	735	439	760	178	110	-	31	35	-	-	-	-	-	-	-	-	-
CRN 5-9	2.2	468	789	493	814	178	110	-	32	37	-	-	-	-	-	-	-	-	-
CRN 5-12	3	554	889	579	914	198	120	-	41	45	-	-	-	-	-	-	-	-	-
CRN 5-14	4	608	980	633	1005	220	134	-	51	55	-	-	-	-	-	-	-	-	-
CRN 5-16	4	662	1034	687	1059	220	134	-	52	56	-	-	-	-	-	-	-	-	-
CRN 5-18	5.5	745	1136	770	1161	220	134	300	67	71	-	-	-	-	-	-	-	-	-
CRN 5-20	5.5	799	1190	824	1215	220	134	300	68	72	-	-	-	-	-	-	-	-	-
CRN 5-22	5.5	853	1244	878	1269	220	134	300	69	73	-	-	-	-	-	-	-	-	-
CRN 5-24	7.5	907	1286	932	1311	260	159	300	81	85	-	-	-	-	-	-	-	-	-
CRN 5-24 SF*	7.5	904	1283	904	1283	260	159	300	60	81	904	1283	939	1318	260	213	300	80	87

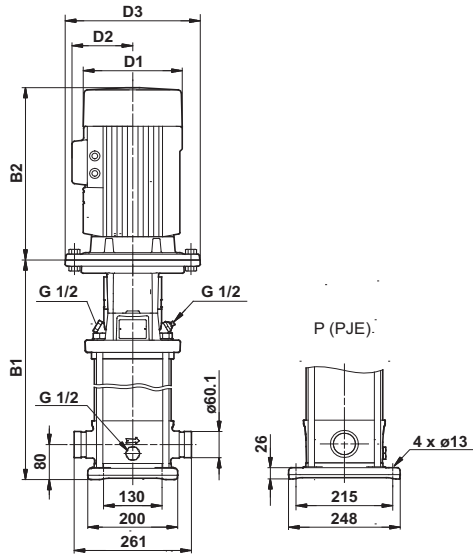
* High-pressure pump

CRN 10 SF, 60 Hz

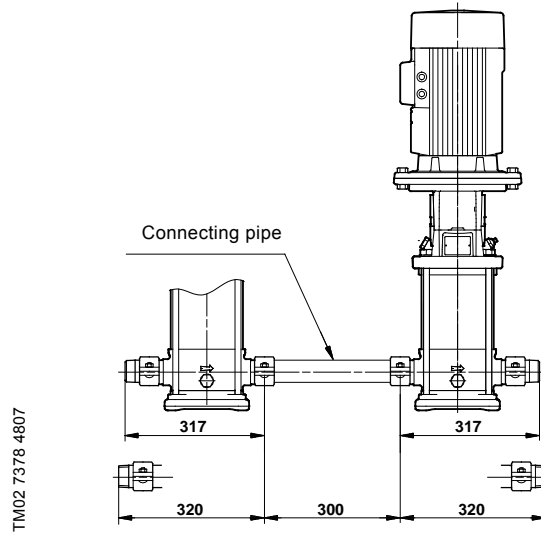


TM02 7354 1113

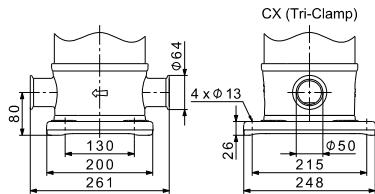
Dimensional sketches



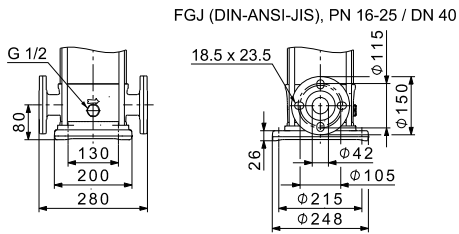
CRN feed pump/CRN-SF high-pressure pump



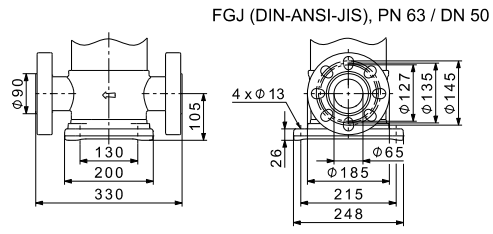
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



CRN feed pump/CRN-SF high-pressure pump



CRN feed pump



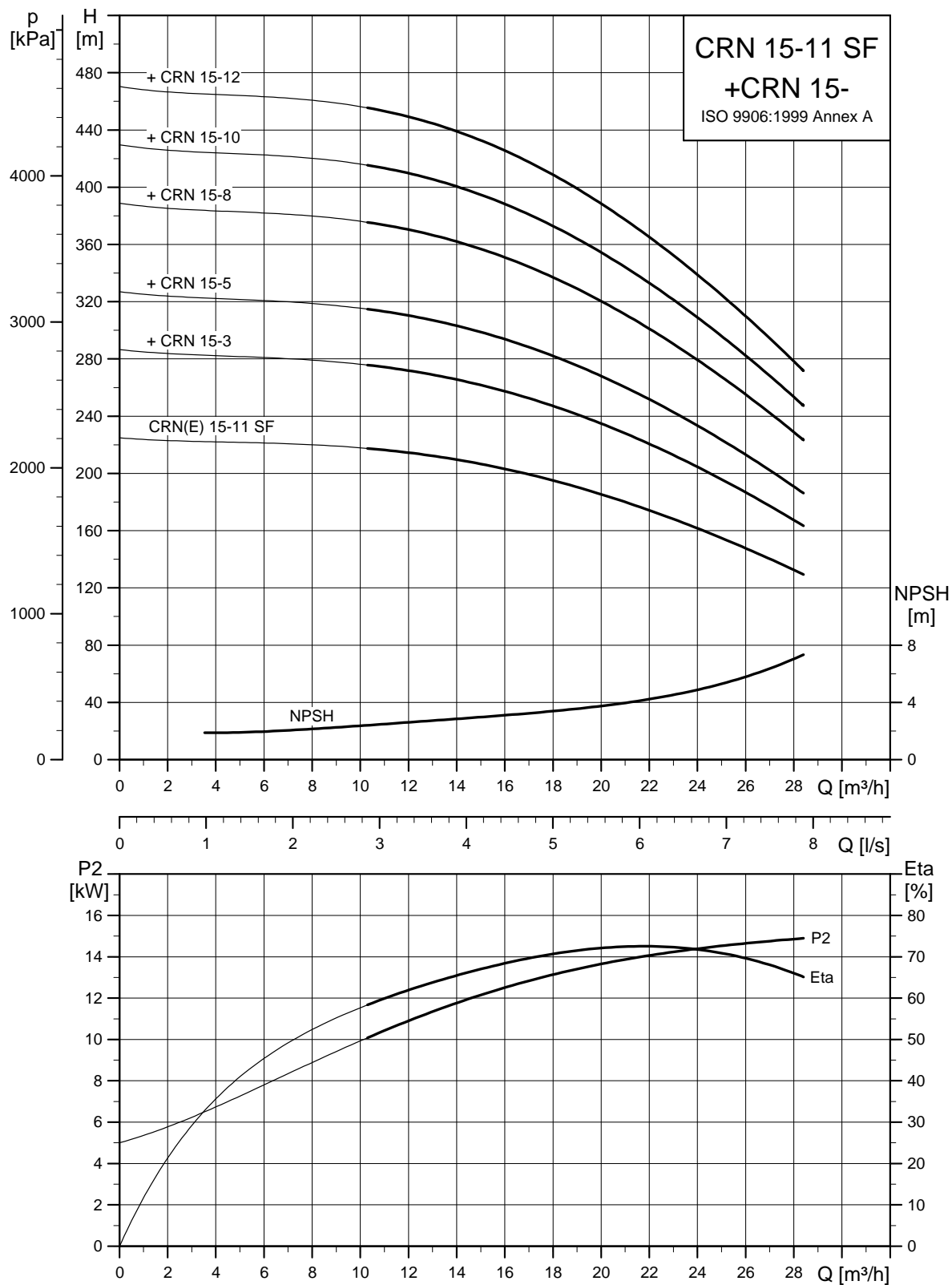
CRN-SF high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 10-3	2.2	403	724	403	724	178	110	-	42	45	-	-	-	-	-	-	-	-	-
CRN 10-6	4	498	870	498	870	220	134	-	60	64	-	-	-	-	-	-	-	-	-
CRN 10-9	5.5	620	1011	620	1011	220	134	300	84	87	-	-	-	-	-	-	-	-	-
CRN 10-12	7.5	710	1089	710	1089	260	159	300	98	101	-	-	-	-	-	-	-	-	-
CRN 10-14	11	847	1318	847	1318	314	204	350	140	144	-	-	-	-	-	-	-	-	-
CRN 10-16	11	907	1378	907	1378	314	204	350	143	146	-	-	-	-	-	-	-	-	-
CRN 10-17 SF*	11	967	1438	967	1438	314	204	350	190	125	967	1438	1007	1478	314	308	350	128	198

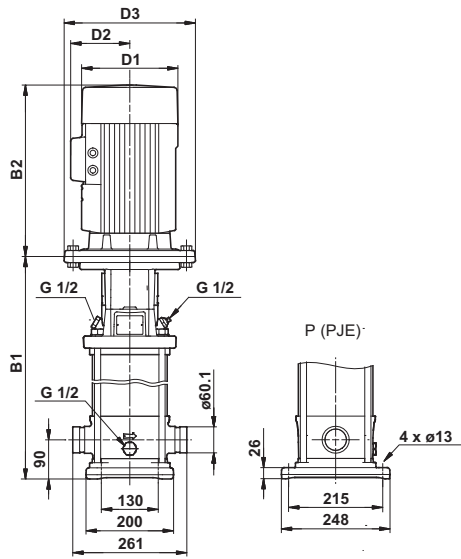
* High-pressure pump

CRN 15 SF, 60 Hz

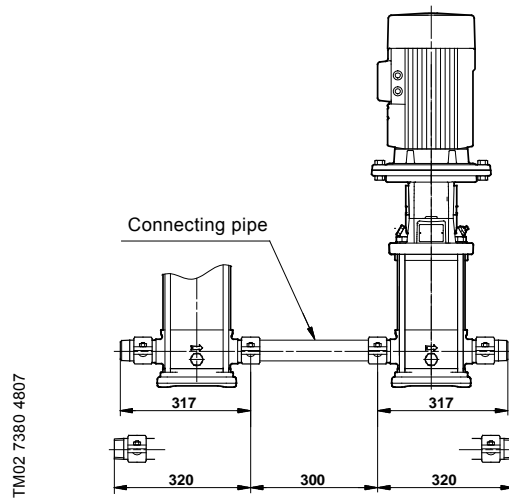


TM02 7355 1113

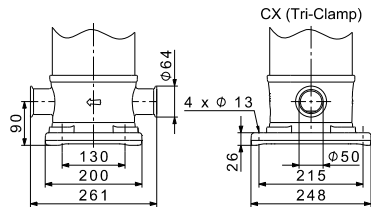
Dimensional sketches



CRN feed pump/CRN-SF high-pressure pump



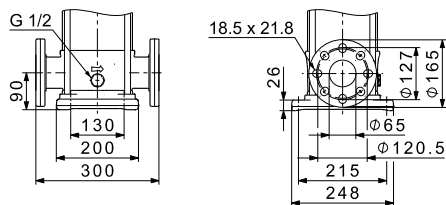
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



CRN feed pump/CRN-SF high-pressure pump

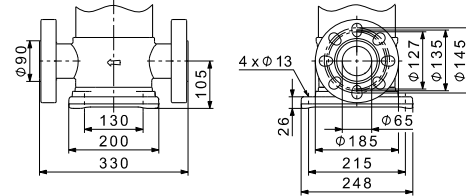
TM04 5861 4209

FGJ (DIN-ANSI-JIS), PN 16-25 / DN50



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 50



CRN-SF high-pressure pump

TM04 5866 4209

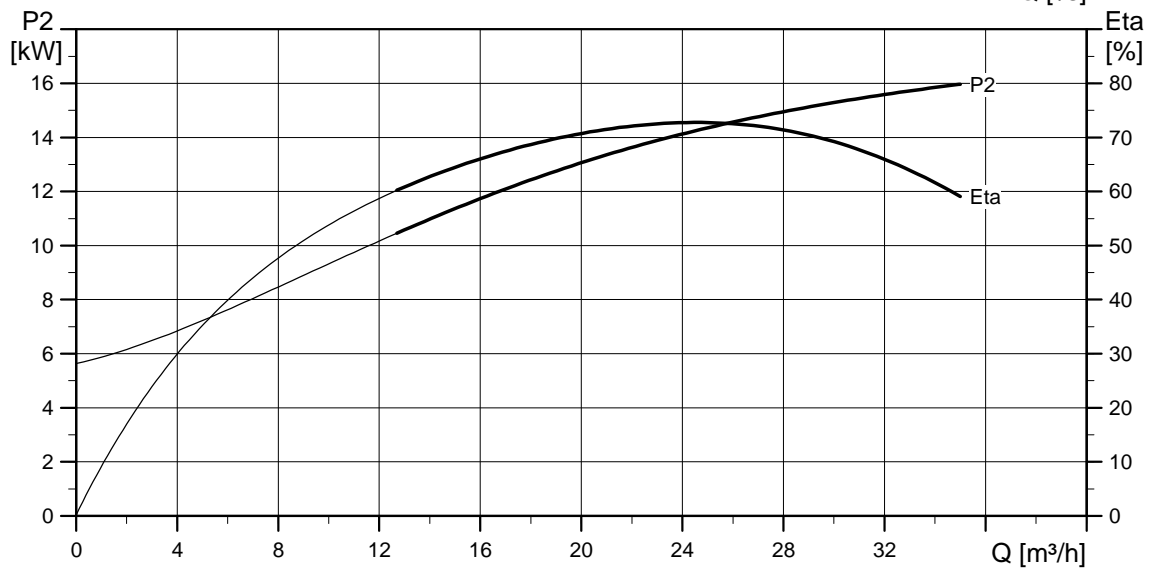
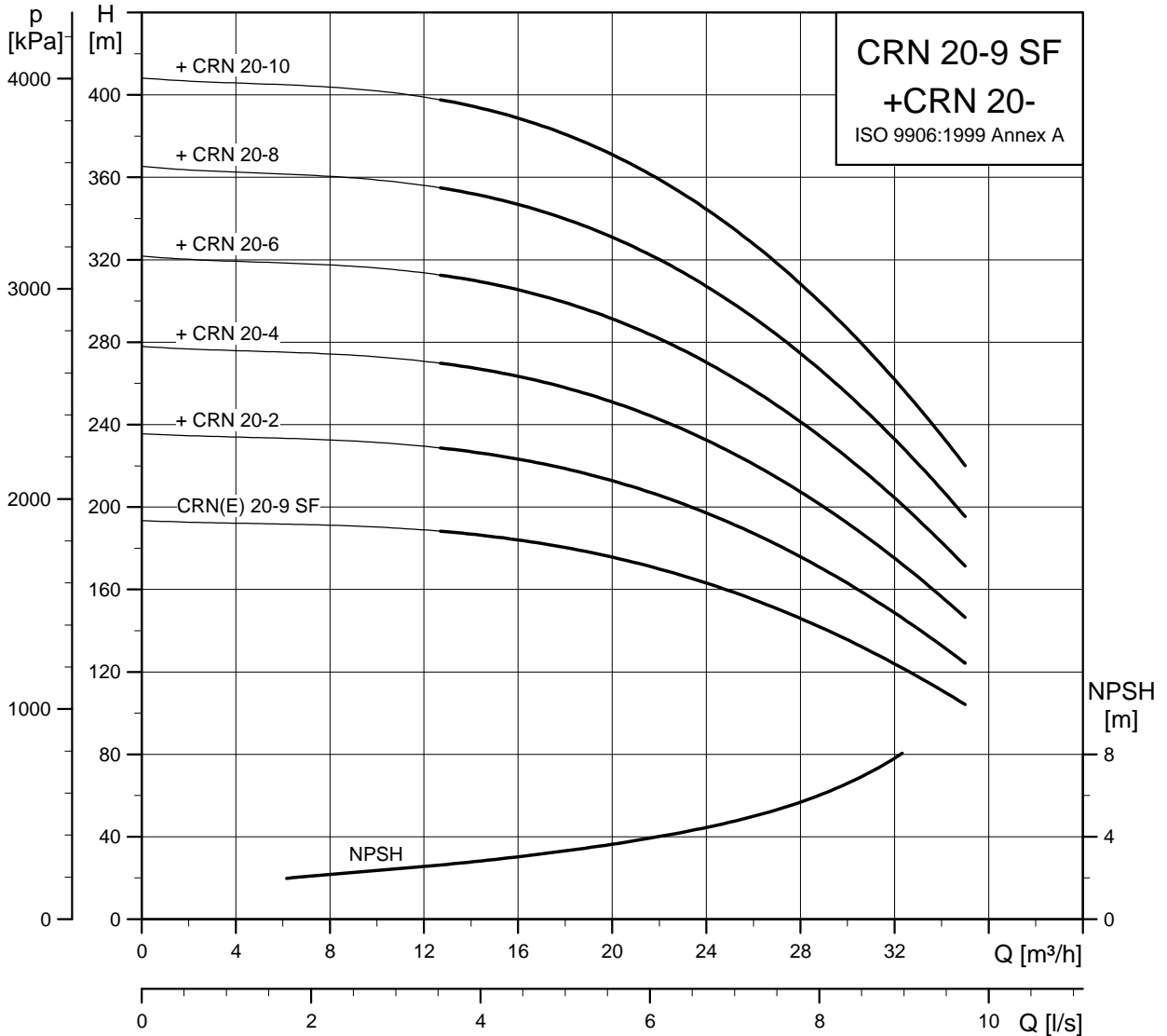
TM04 5863 4209

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 15-3	4	463	835	463	835	220	134	-	59	64	-	-	-	-	-	-	-	-	-
CRN 15-5	7.5	585	964	585	964	260	159	300	93	98	-	-	-	-	-	-	-	-	-
CRN 15-8	11	797	1268	797	1268	314	204	350	138	143	-	-	-	-	-	-	-	-	-
CRN 15-10	15	887	1358	887	1358	314	204	350	155	160	-	-	-	-	-	-	-	-	-
CRN 15-12	18.5	977	1492	977	1492	314	204	350	171	176	-	-	-	-	-	-	-	-	-
CRN 15-11 SF*	15	977	1448	977	1448	314	204	350	164	148	977	1448	1007	1478	314	308	350	204	214

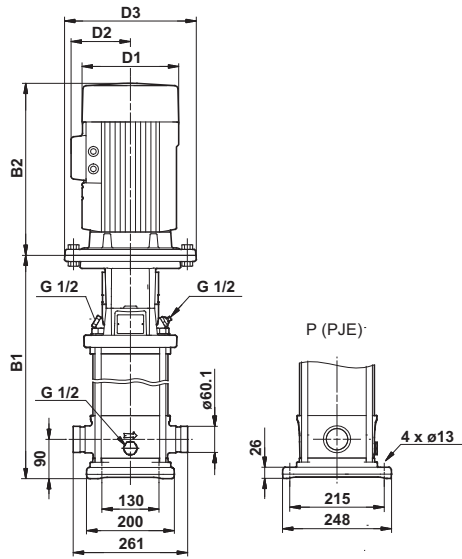
* High-pressure pump

CRN 20 SF, 60 Hz

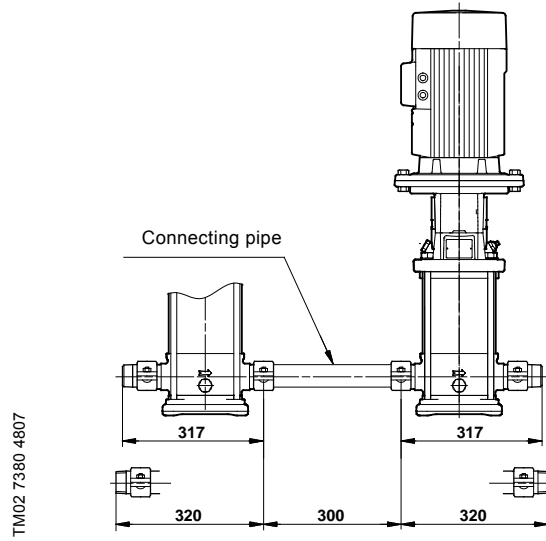


TM02 7356 1113

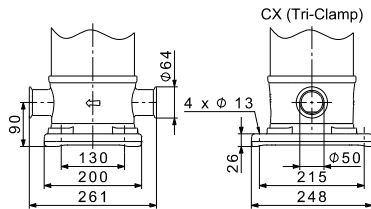
Dimensional sketches



CRN feed pump/CRN-SF high-pressure pump



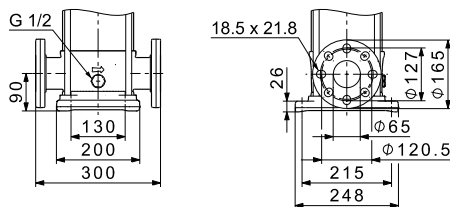
CRN feed pump, connecting pipe and CRN-SF high-pressure pump



CRN feed pump/CRN-SF high-pressure pump

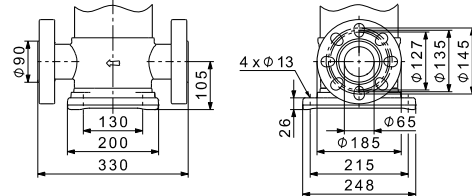
TM04 5861 4209

FGJ (DIN-ANSI-JIS), PN 16-25 / DN50



CRN feed pump

FGJ (DIN-ANSI-JIS), PN 63 / DN 50



CRN-SF high-pressure pump

TM04 5866 4209

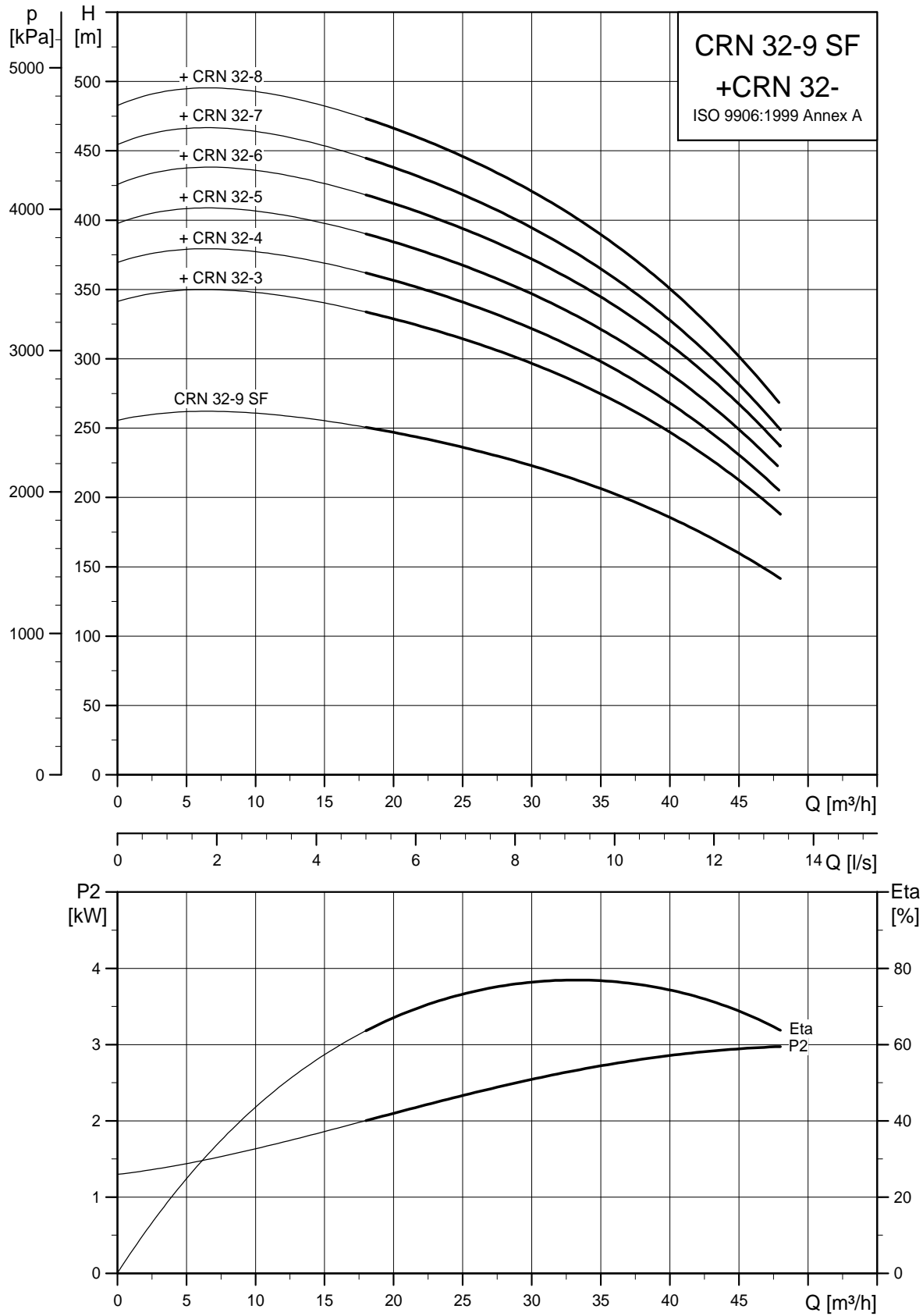
TM04 5863 4209

Dimensions and weights

Pump type	Motor P ₂ [kW]	CRN									CRNE								
		Dimension [mm]						Net weight [kg]			Dimension [mm]						Net weight [kg]		
		PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ	PJE/CX		FGJ		D1	D2	D3	PJE/CX	FGJ
B1	B1+B2	B1	B1+B2							B1	B1+B2	B1	B1+B2						
CRN 20-2	4	418	790	418	790	220	134	-	58	62	-	-	-	-	-	-	-	-	-
CRN 20-4	7.5	540	919	540	919	260	159	300	91	96	-	-	-	-	-	-	-	-	-
CRN 20-6	11	707	1178	707	1178	314	204	350	135	140	-	-	-	-	-	-	-	-	-
CRN 20-8	15	797	1268	797	1268	314	204	350	151	156	-	-	-	-	-	-	-	-	-
CRN 20-10	18.5	887	1402	887	1402	314	204	350	168	173	-	-	-	-	-	-	-	-	-
CRN 20-9 SF*	18.5	887	1402	887	1402	314	204	350	136	148	902	1417	917	1432	314	308	350	213	223

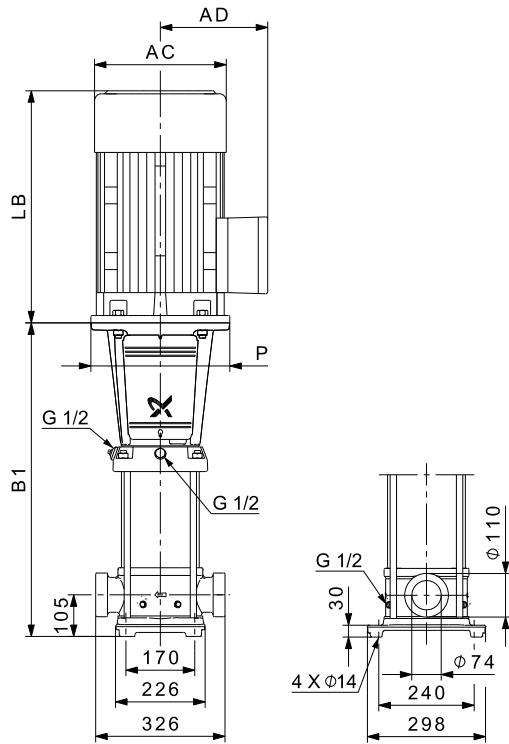
* High-pressure pump

CRN 32 SF, 60 Hz

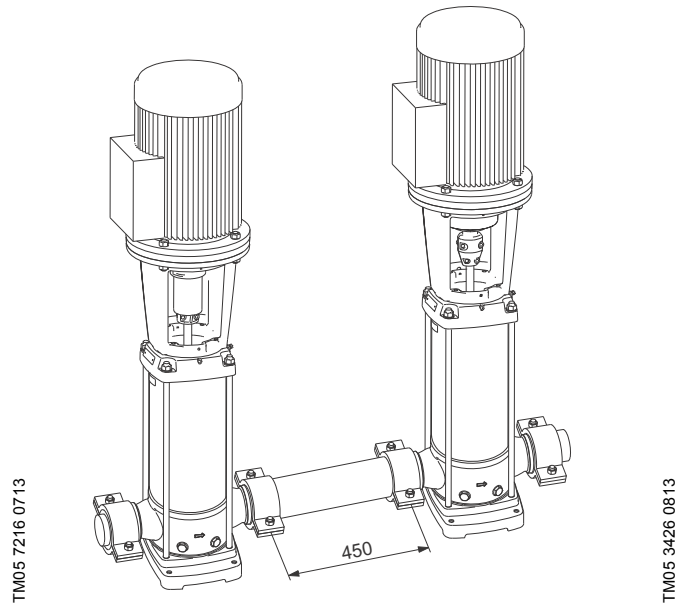


TM02 1683 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



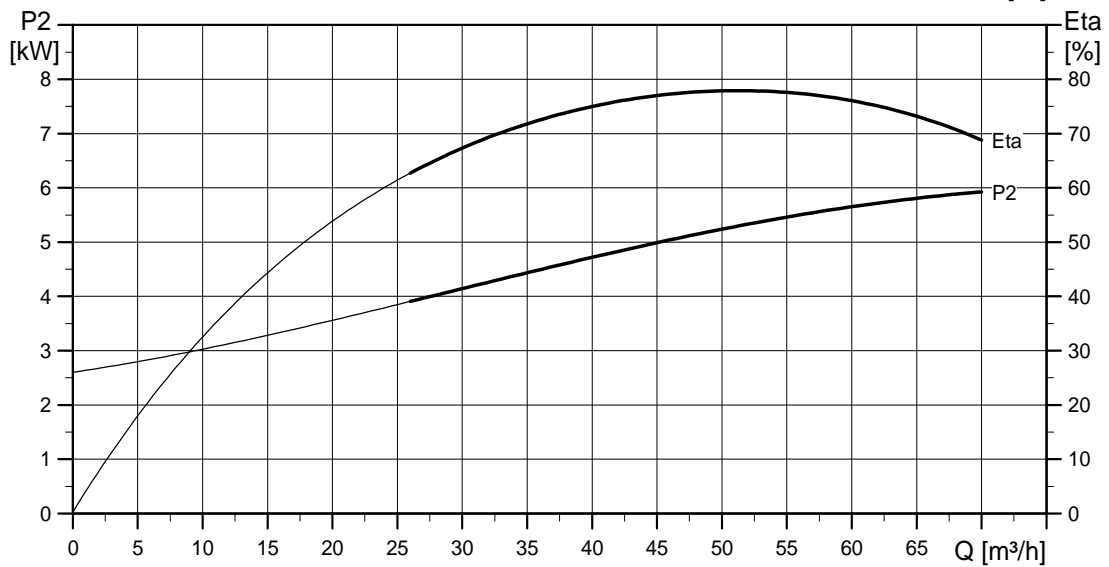
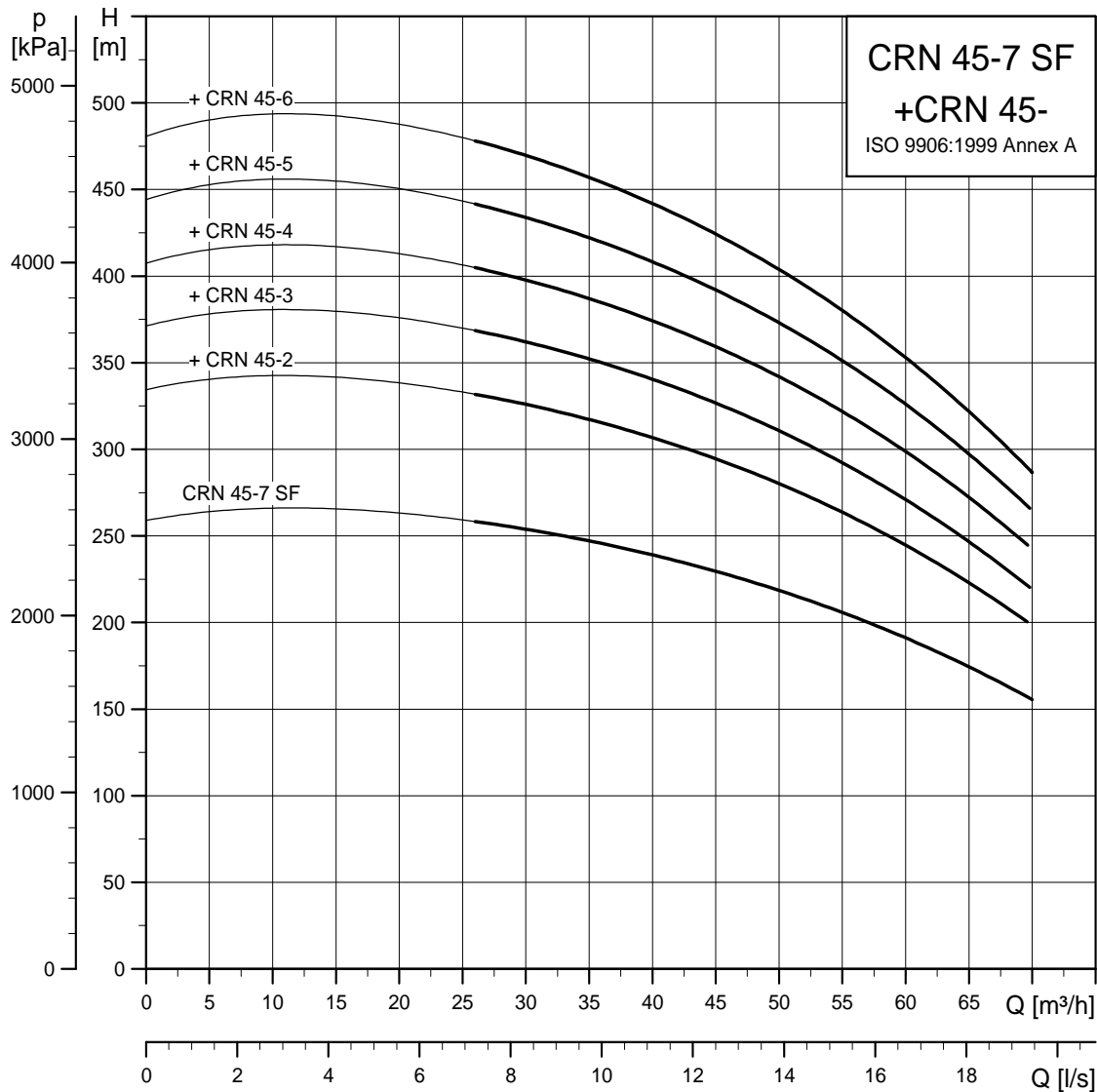
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 32-3	11	755	1226	314	204	350	147
CRN 32-4	15	825	1296	314	204	350	162
CRN 32-5	18.5	895	1410	314	204	350	177
CRN 32-6	18.5	965	1480	314	204	350	181
CRN 32-7	22	1035	1576	314	204	350	199
CRN 32-8	30	1105	1716	396	315	400	322
CRN 32-9 SF*	30	1245	1855	396	315	400	323

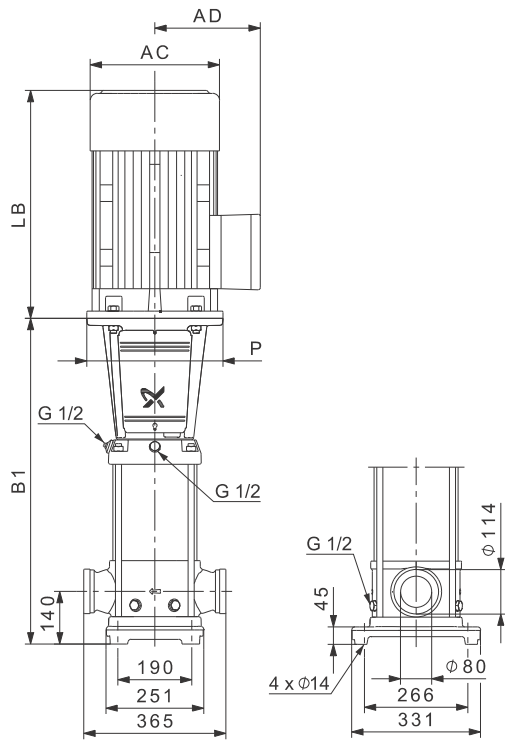
* High-pressure pump

CRN 45 SF, 60 Hz

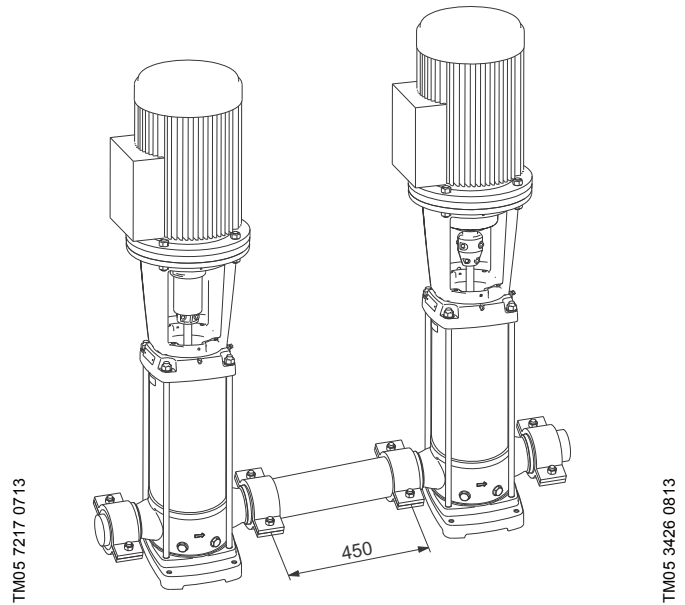


TM02 1684 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



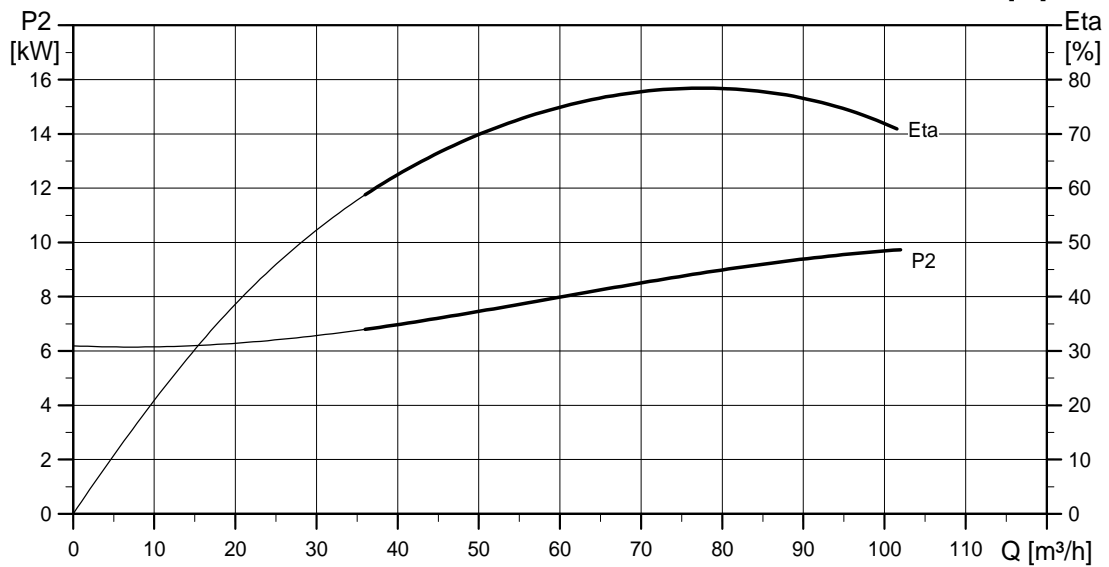
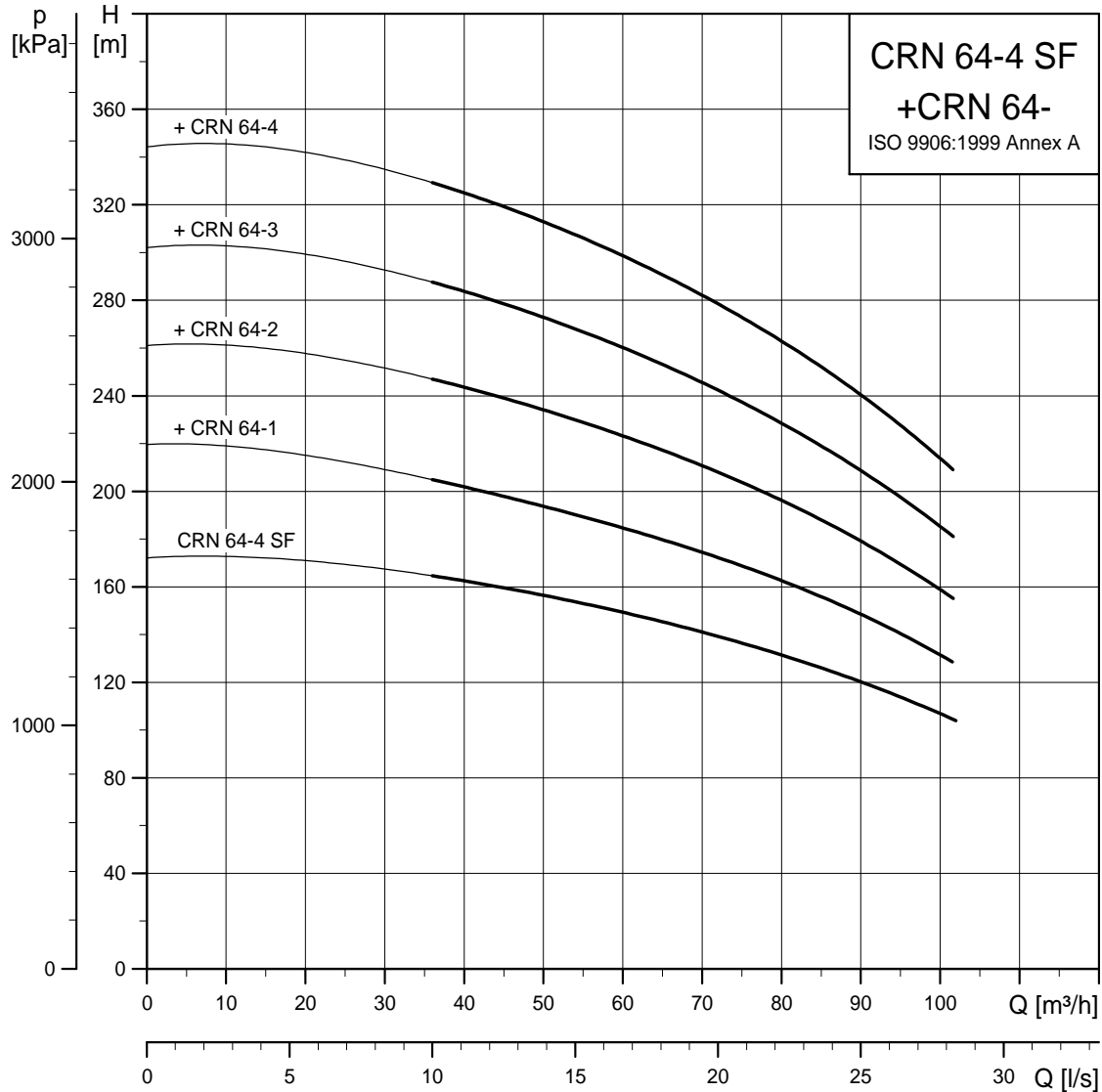
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 45-2	15	749	1220	314	204	350	164
CRN 45-3	18.5	829	1344	314	204	350	181
CRN 45-4	30	909	1520	396	315	400	317
CRN 45-5	30	989	1600	396	315	400	320
CRN 45-6	37	1069	1705	396	315	400	352
CRN 45-7 SF*	45	1229	1938	439	338	450	438

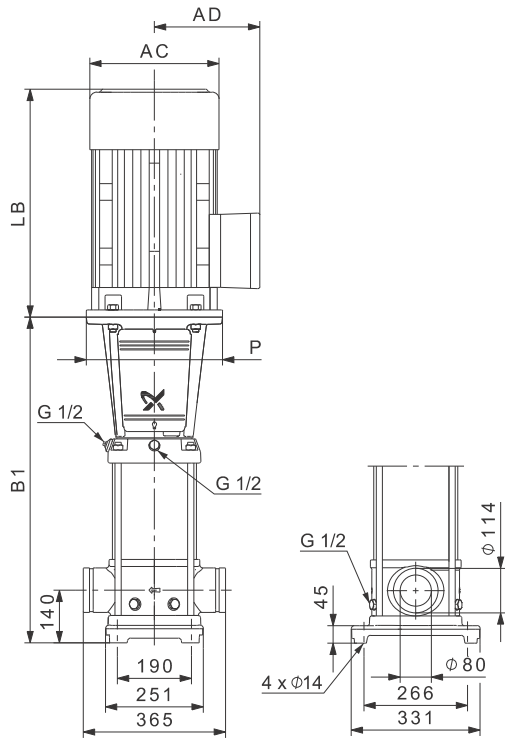
* High-pressure pump

CRN 64 SF, 60 Hz

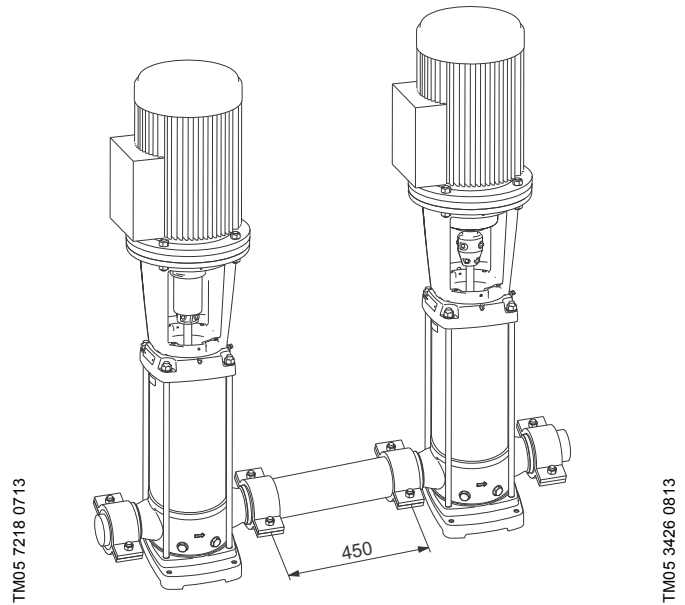


TM02 1685 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



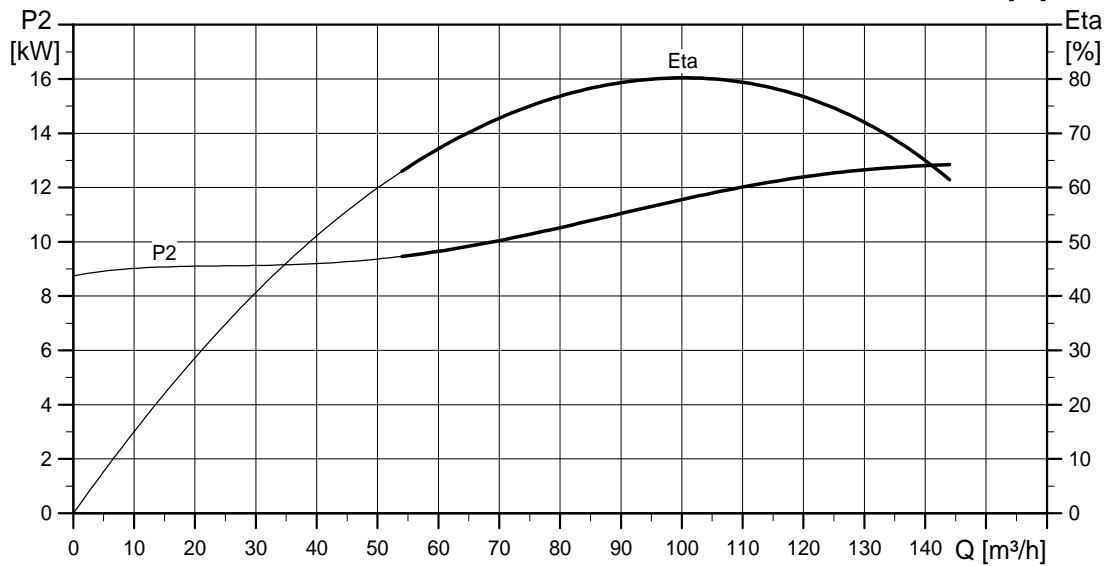
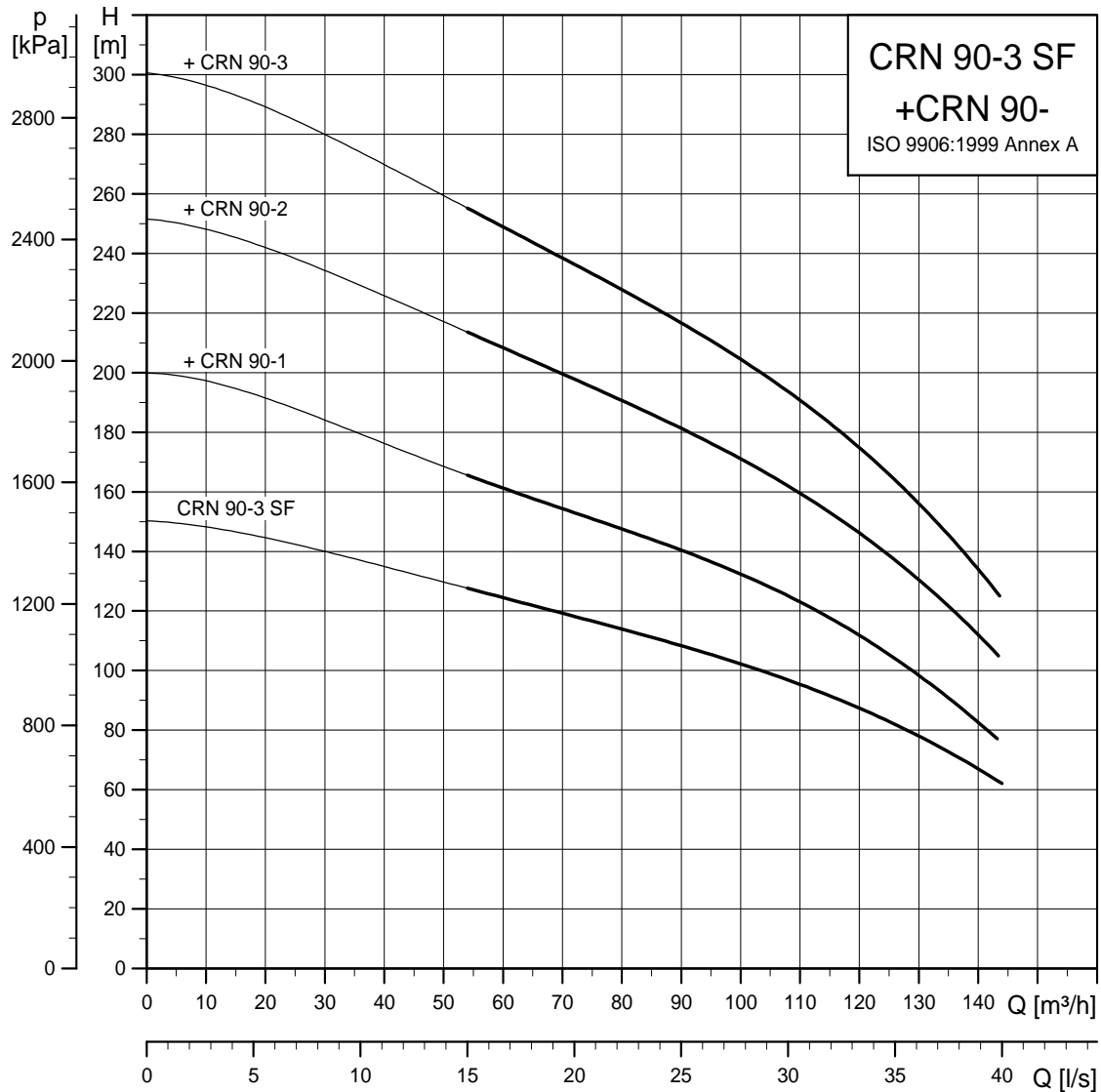
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 64-1	11	671	1142	314	204	350	151
CRN 64-2	22	754	1295	314	204	350	195
CRN 64-3	30	836	1447	396	315	400	317
CRN 64-4	45	919	1627	439	338	450	421
CRN 64-4 SF*	45	1166	1710	439	338	450	429

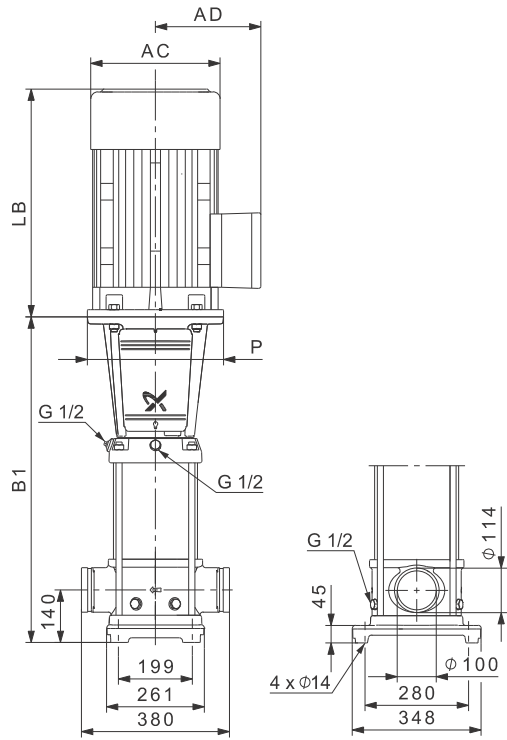
* High-pressure pump

CRN 90 SF, 60 Hz

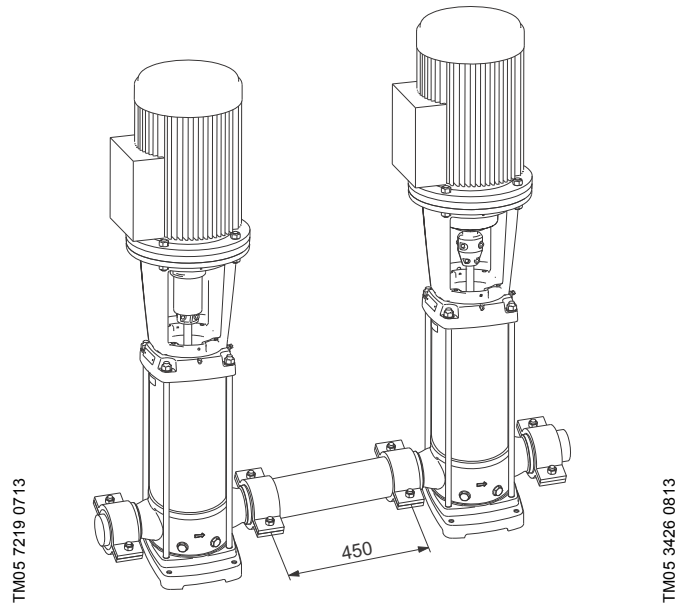


TM02 1686 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



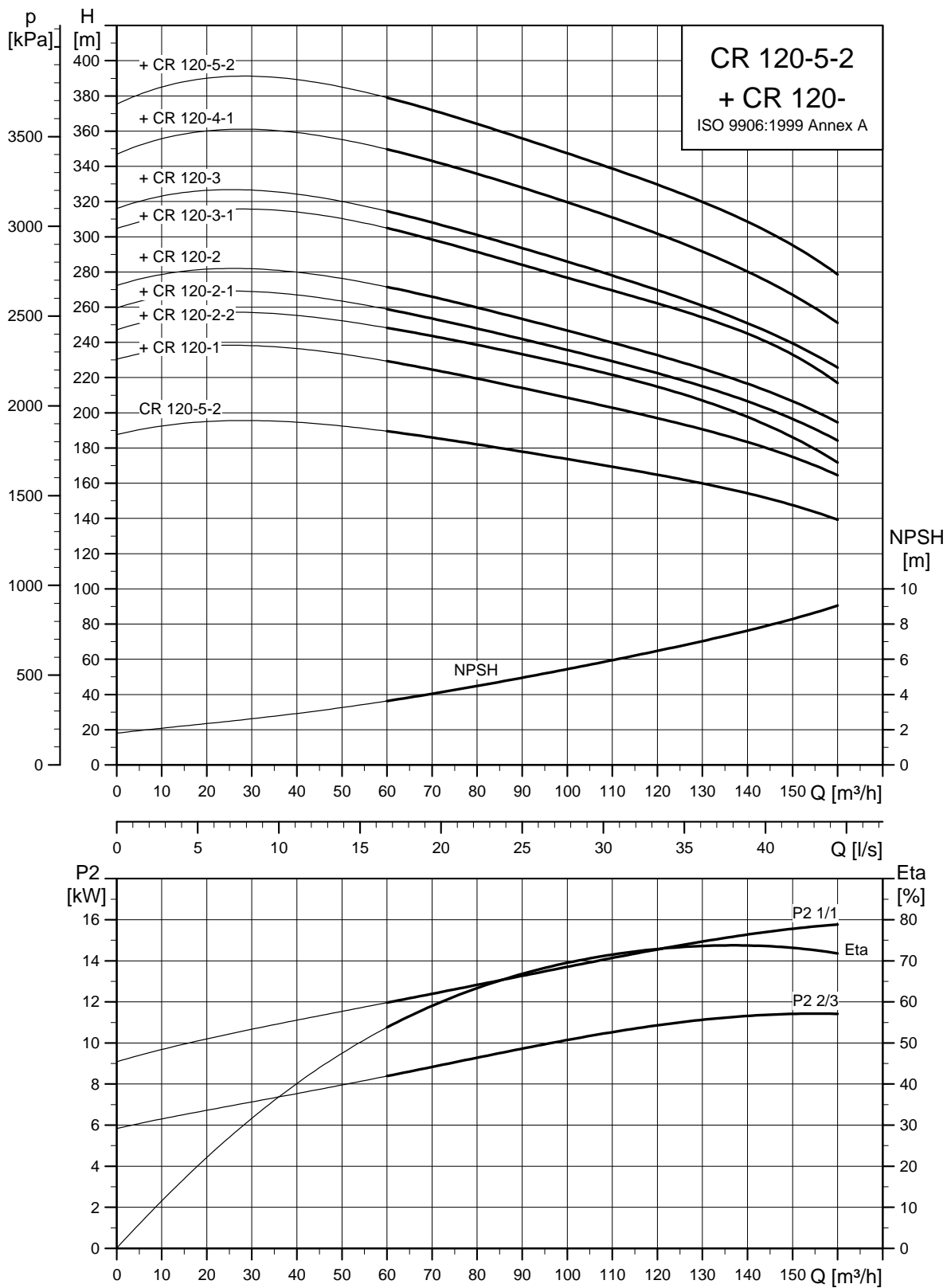
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 90-1	15	681	1152	314	204	350	170
CRN 90-2	30	773	1384	396	315	400	320
CRN 90-3	45	865	1573	439	338	450	424
CRN 90-3 SF*	45	1049	1666	439	338	450	433

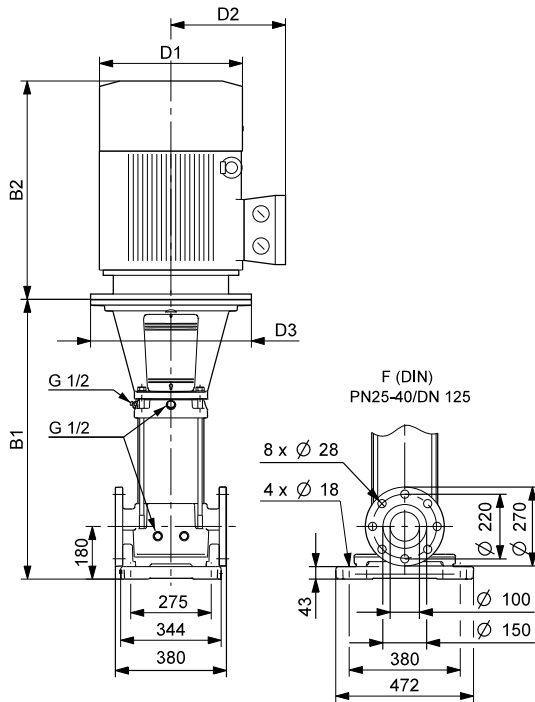
* High-pressure pump

CR 120, 60 Hz

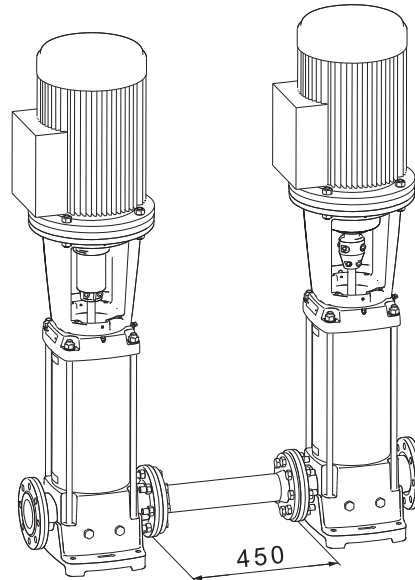


TM03 9700 1113

Dimensional sketches



CR feed pump/CR high-pressure pump



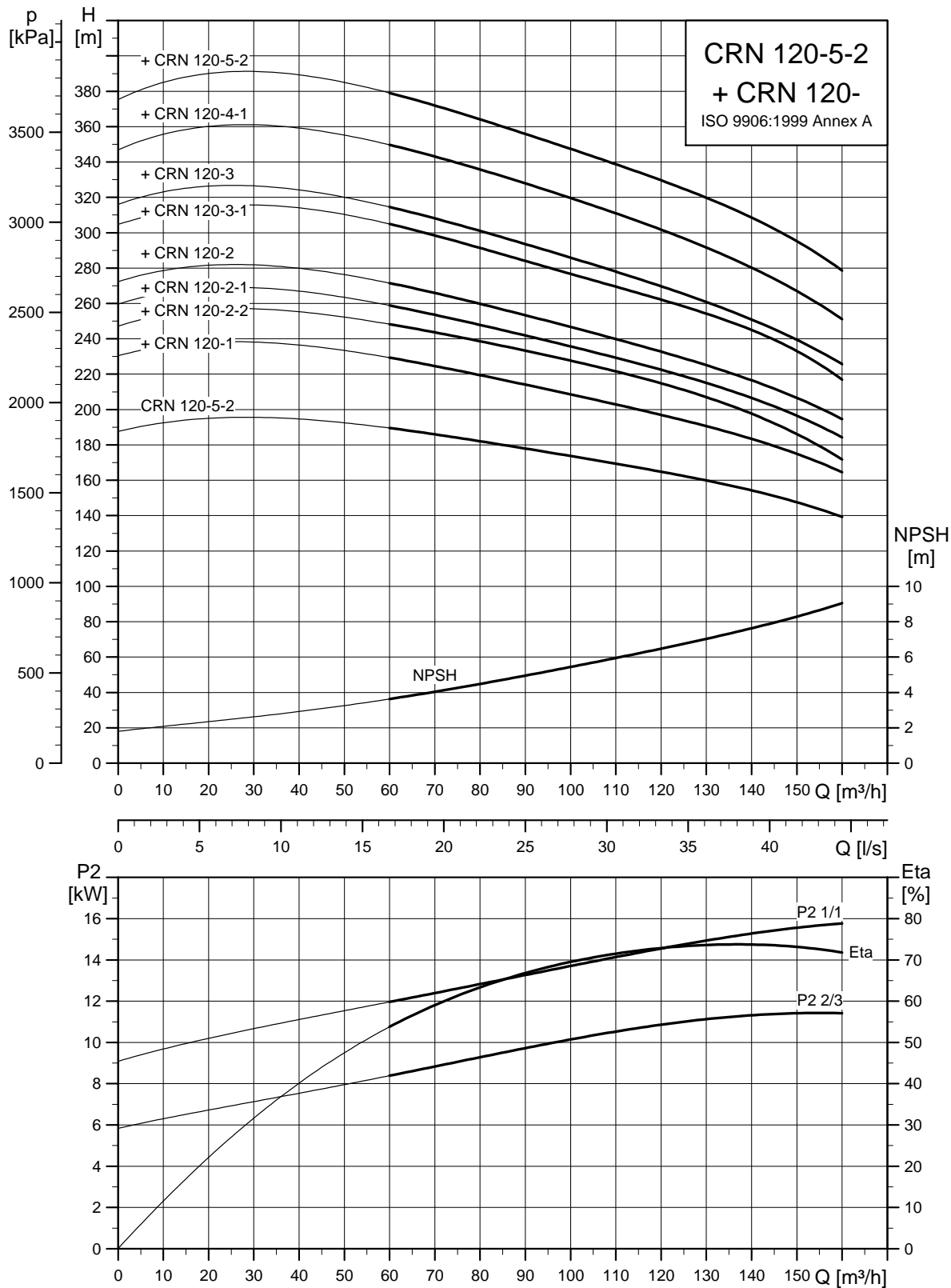
CR feed pump, connecting pipe and CR high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CR 120-1	18.5	834	1349	314	204	350	217
CR 120-2-2	30	990	1601	396	315	400	358
CR 120-2-1	30	990	1601	396	315	400	358
CR 120-2	37	990	1626	396	315	400	373
CR 120-3-1	45	1145	1853	439	338	450	467
CR 120-3	55	1175	1922	487	410	550	592
CR 120-4-1	75	1331	2151	540	433	550	712
CR 120-5-2	75	1486	2306	540	433	550	722
CR 120-5-2*	75	1486	2306	540	433	550	722

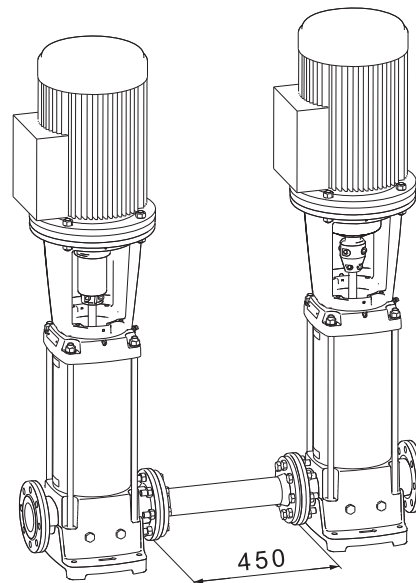
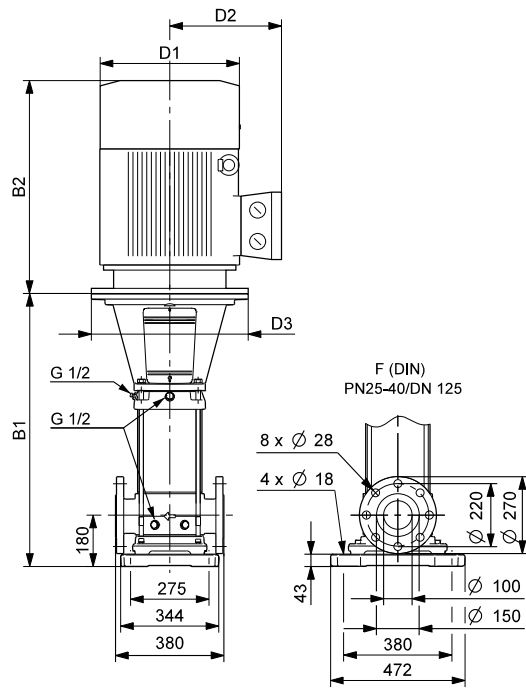
* High-pressure pump

CRN 120, 60 Hz



TM03 8816 1113

Dimensional sketches



TM03 9705 4407

TM02 1650 0801

CRN feed pump/CRN high-pressure pump

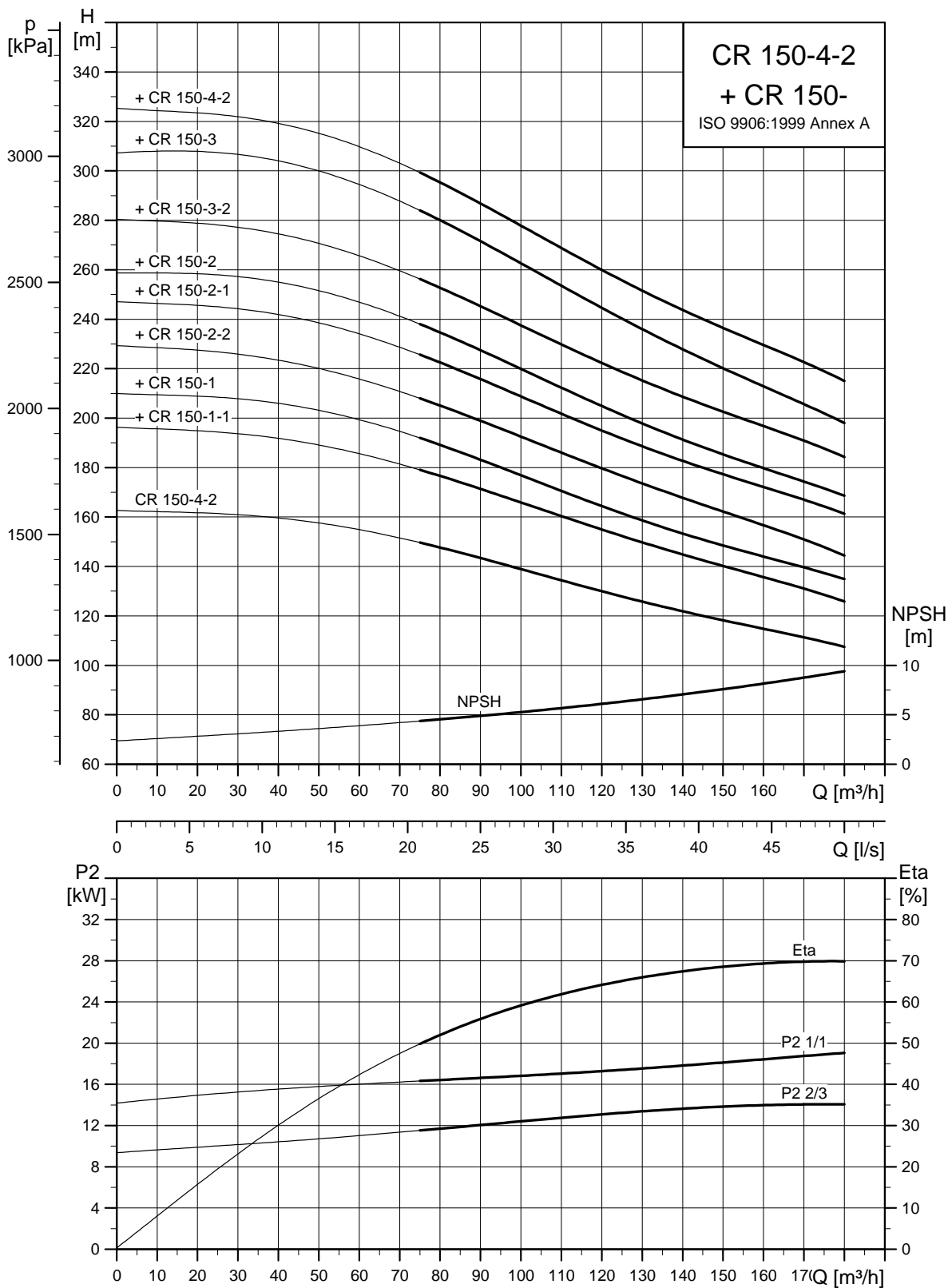
CRN feed pump, connecting pipe and CRN high-pressure pump

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 120-1	18.5	834	1349	314	204	350	221
CRN 120-2-2	30	990	1601	396	315	400	362
CRN 120-2-1	30	990	1601	396	315	400	362
CRN 120-2	37	990	1626	396	315	400	377
CRN 120-3-1	45	1145	1853	439	338	450	471
CRN 120-3	55	1175	1922	487	410	550	596
CRN 120-4-1	75	1331	2151	540	433	550	716
CRN 120-5-2	75	1486	2306	540	433	550	726
CRN 120-5-2*	75	1486	2306	540	433	550	726

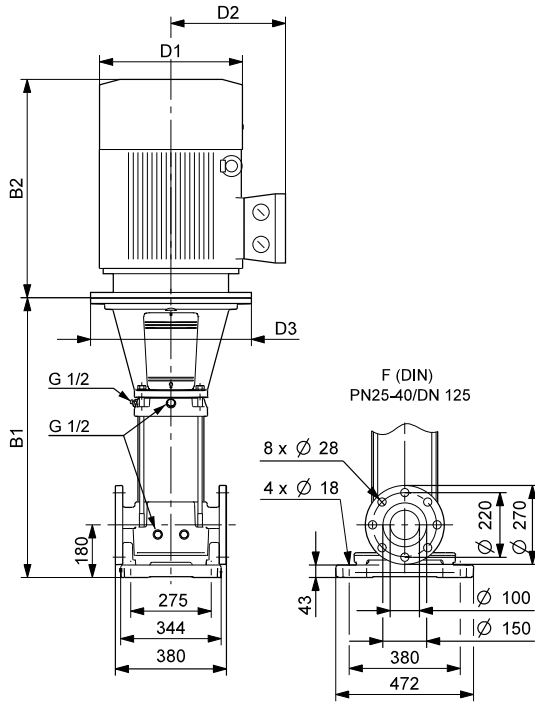
* High-pressure pump

CR 150, 60 Hz

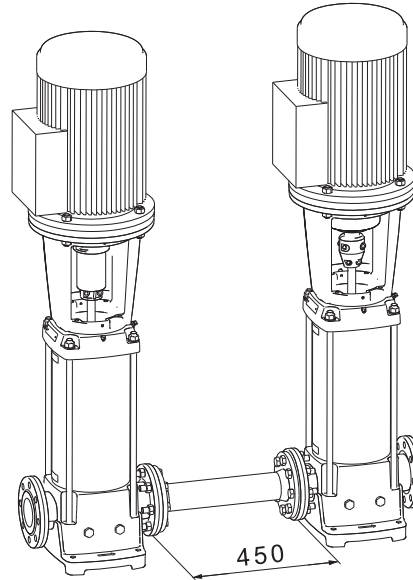


TM03 9701 1113

Dimensional sketches



CR feed pump/CR high-pressure pump



TM03 9704 4407

CR feed pump, connecting pipe and CR high-pressure pump

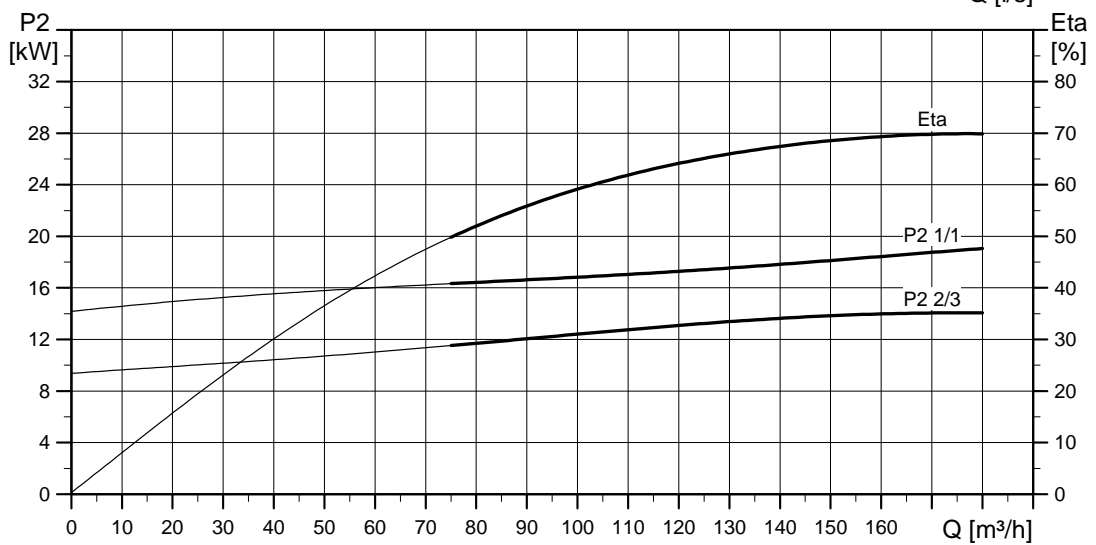
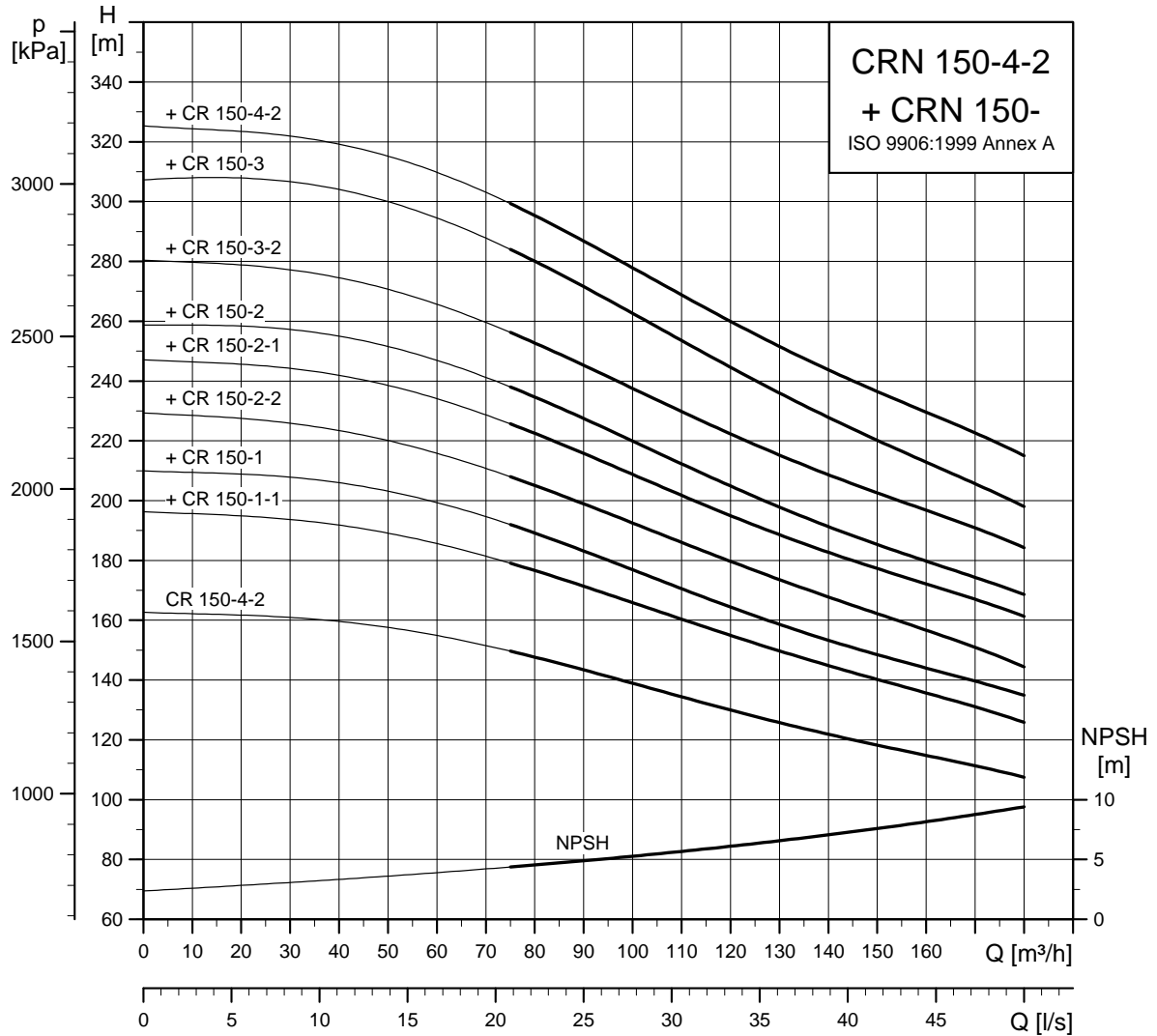
TM02 1650 0801

Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CR 150-1-1	18.5	834	1349	314	204	350	217
CR 150-1	22	834	1375	314	204	350	231
CR 150-2-2	30	990	1601	396	315	400	358
CR 150-2-1	37	990	1626	396	315	400	373
CR 150-2	45	990	1698	439	338	450	457
CR 150-3-2	55	1175	1922	487	410	550	593
CR 150-3	75	1175	1995	540	433	550	702
CR 150-4-2	75	1331	2151	540	433	550	712
CR 150-4-2*	75	1331	2151	540	433	550	712

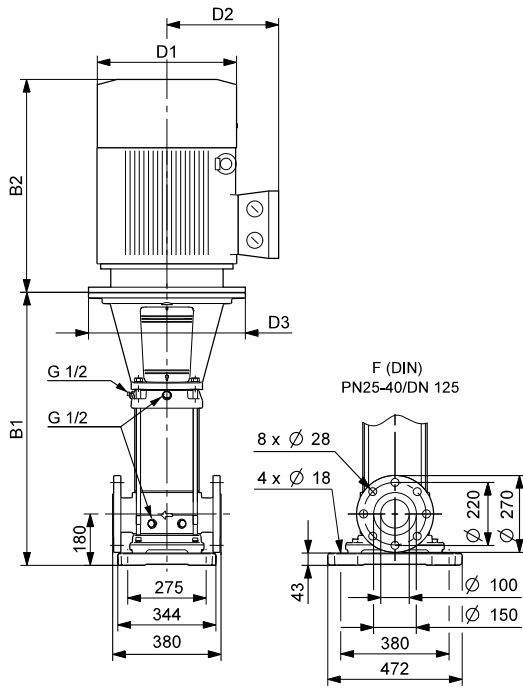
* High-pressure pump

CRN 150, 60 Hz

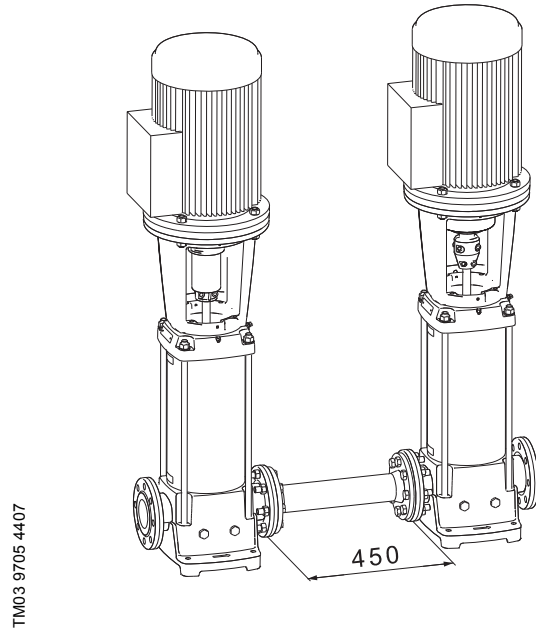


TM03 8817 1113

Dimensional sketches



CRN feed pump/CRN high-pressure pump



CRN feed pump, connecting pipe and CRN high-pressure pump



Dimensions and weights

Pump type	Motor P ₂ [kW]	Dimension [mm]					Net weight [kg]
		B1	B1+B2	D1	D2	D3	
CRN 150-1-1	18.5	834	1349	314	204	350	221
CRN 150-1	22	834	1375	314	204	350	235
CRN 150-2-2	30	990	1601	396	315	400	362
CRN 150-2-1	37	990	1626	396	315	400	377
CRN 150-2	45	990	1698	439	338	450	462
CRN 150-3-2	55	1175	1922	487	410	550	596
CRN 150-3	75	1175	1995	540	433	550	706
CRN 150-4-2	75	1331	2151	540	433	550	716
CRN 150-4-2*	75	1331	2151	540	433	550	716

* High-pressure pump

7. Motor data


Standard motors for CR, CRN high pressure, 50 Hz

Motor P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	I_{start} [%]	Speed [min ⁻¹]	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	
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 1711 2805


TM03 1710 2805

E-motors for CRNE-HS, 50 Hz

Motor P2 [kW]	Frame size	Phases	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	CRNE 1-23 [min ⁻¹]	CRNE 3-23 [min ⁻¹]	MGE
4.6	112	3	380-480	9.30 - 7.4	0.94	83.0	4800	4100	
6.0	132	3	380-480	12.0 - 9.5	0.94	84.0	5200	4500	
7.5	132	3	380-480	14.6 - 11.6	0.94	86.0	5500	4800	


Gr8972

E-motors for CRNE-SF, 50 Hz

Motor P2 [kW]	Frame size	Phases	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	MGE
3.0	100	3	380-480	6.20 - 5	0.94 - 0.92	83.0	
5.5	132	3	380-480	11.0 - 8.8	0.94 - 0.93	86.6	
7.5	132	3	380-480	14.8 - 11.6	0.94 - 0.95	86.7	
15	160	3	380-480	30.0 - 26	0.91 - 0.86	86.8	
18.5	160	3	380-480	37.0 - 31	0.91 - 0.88	88.7	


TM03 1712 2805

Standard motors for CR, CRN high pressure, 60 Hz


Motor P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	I_{start} [%]	Speed [min ⁻¹]	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	 TM03 1711 2805
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.

E-motors for CRNE-HS, 60 Hz

Motor P2 [kW]	Frame size	Phases	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	CRNE 1-23 [min ⁻¹]	CRNE 3-23 [min ⁻¹]	MGE
4.6	112	3	380-480	9.30-7.4	0.94	83.0	4800	4100	 G18972
6.0	132	3	380-480	12.0-9.5	0.94	84.0	5200	4500	
7.5	132	3	380-480	14.6-11.6	0.94	86.0	5500	4800	

E-motors for CRNE-SF, 60 Hz

Motor P2 [kW]	Frame size	Phases	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	MGE
4.0	112	3	380-480	8.10 - 6.6	0.94 - 0.92	85.0	 TM03 1712 2805
7.5	132	3	380-480	14.8 - 11.6	0.94 - 0.95	89.9	
11	160	3	380-480	22.5 - 18.8	0.90 - 0.90	91.7	
15	160	3	380-480	30.0 - 26	0.91 - 0.86	92.5	
18.5	160	3	380-480	37.0 - 31	0.91 - 0.88	92.1	

8. Accessories

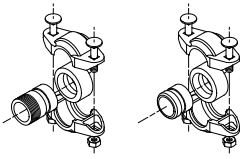
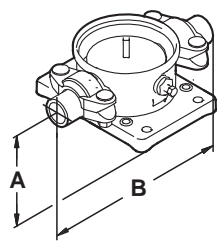
PJE couplings

Sets with and without pipe stubs as well as connecting pipe between feed pump and high-pressure pump are available as accessories for pumps with PJE (Victaulic) couplings.

PJE couplings with pipe stub

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

A set consists of two coupling halves (Victaulic type 77), one gasket, one pipe stub (for welding or threaded), bolts and nuts.

Coupling	Pump type	Pipe stub	PN [bar]	A	B	Pipe connection	Rubber parts	Number of coupling sets required	Product number	
	TM00 3808 1094 CRNE-HS 1 CRNE-HS 3 CRN 3-SF CRN 5-SF	Threaded	80	50	320	R 1 1/4	EPDM	2	419911	
								FKM	2	419905
								EPDM	2	419912
		For welding	80	50	280	DN 32	FKM	2	419904	
	TM03 8890 2707 CRN 10-SF CRN 15-SF CRN 20-SF CRN 32-SF CRN 45-SF CRN 64-SF CRN 90-SF	Threaded	70	80	377	R 2	EPDM	2	339911	
								FKM	2	339918
		For welding	70	80	371	DN 50	EPDM	2	339910	
								FKM	2	339917
		For welding	70	105	422	DN 80	EPDM	2	98144746	
								FKM	2	98144749
		For welding	70	140	467	DN 100	EPDM	2	98144752	
						FKM	2	98144755		
		For welding	70	140	467	DN 100	EPDM	2	98144752	
							FKM	2	98144755	
		For welding	70	140	482	DN 100	EPDM	2	98144752	
							FKM	2	98144755	

PJE coupling without pipe stub

A set consists of one coupling, one gasket, bolts and nuts.

Pump type	Pipe connection	Product number	
		EPDM	FKM
CRN 3 SF CRN 5 SF	DN 32	ID1781	ID6742
CRN 10 SF CRN 15 SF CRN 20 SF	DN 50	ID2643	ID6743
CRN 32 SF	DN 80	ID5530	ID8311
CRN 45 SF CRN 64 SF CRN 90 SF	DN 100	96483370	96428783

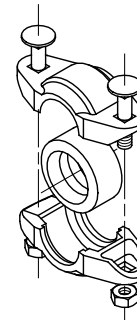
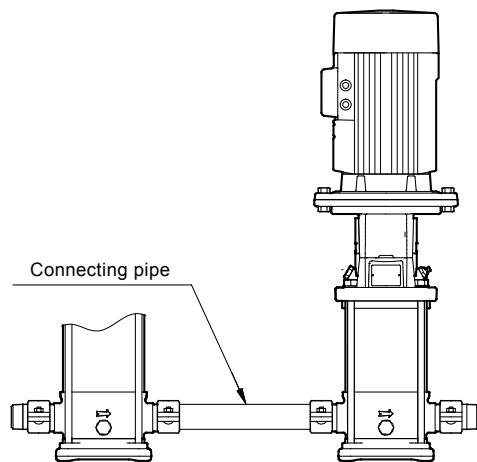


Fig. 17 PJE coupling

TM01 6505 2599

Connecting pipe

Pump type	Pipe connection	Product number
CRN 3 SF CRN 5 SF	DN 32	400132
CRN 10 SF CRN 15 SF CRN 20 SF	DN 50	420138
CRN 32 SF	DN 80	98144757
CRN 45 SF CRN 64 SF CRN 90 SF	DN 100	98144759



TM01 1984 1906

Fig. 18 Connecting pipe

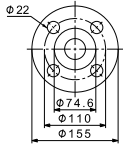
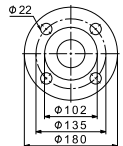
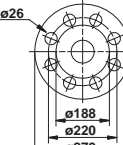
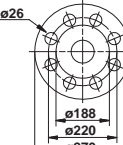
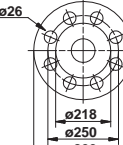
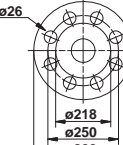
Flange connections

Counter flanges, adapter kit and support blocks are available as accessories for pumps with flange connections.

Counter flanges

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

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

Counter flange	Pump type	Description	Rated pressure	Pipe connection	Product number
	TM04 5657 4209 CRN 3 SF CRN 5 SF	For welding	63 bar, EN 1092-1	32 mm, nominal	97504185
	TM04 5658 4209 CRN 10 SF CRN 15 SF CRN 20 SF	For welding	63 bar, EN 1092-1	50 mm, nominal	97504183
	TM03 8892 2707 CR 120 CR 150	For welding	40 bar, EN 1092-2	125 mm, nominal	96750475
	TM03 8892 2707 CRN 120 CRN 150	For welding	40 bar, EN 1092-2	125 mm, nominal	96750477
	TM03 8891 2707 CR 120¹⁾ CR 150¹⁾	For welding	40 bar, EN 1092-2	150 mm, nominal	96750476
	TM03 8891 2707 CRN 120¹⁾ CRN 150¹⁾	For welding	40 bar, EN 1092-2	150 mm, nominal	96750478

¹⁾ CR, CRN 120 and 150 pumps are supplied with DN 125 flanges as standard.

Adapter kit

DN 150 flanges are available for CR, CRN 120 and 150 pumps. To use DN 150 flanges, two adapter kits must be ordered per pump.

Adapter kit	Pump type	Pipe connection	Number of flange kits required	Product number
	CR 120 CR 150	150 mm, nominal	2	96638169
	CRN 120 CRN 150	150 mm, nominal	2	96638180

Support blocks

The vertical height from the bottom of the base to the centre of the connection port is higher on CRNE-HS and CRN(E)-SF pumps with flange connections than on standard CRN pumps.

When a CRN-SF pump (high-pressure pump) is connected to a standard CRN pump (feed pump), the difference in height will cause a misalignment. The misalignment can be eliminated by fitting support blocks to the standard pump.

The following support blocks are available as accessories.

Pump type	Height of support blocks [mm]	Product number
CRN 3 SF CRN 5 SF	10	97528978
CRN 10 SF	25	97528980
CRN 15 SF CRN 20 SF	15	97529002

Tri-Clamp connections

Sets with pipe stubs are available as accessories for pumps with Tri-Clamp connections. A set consists of one clamping ring, one pipe stub and one gasket.

Pump type	Nominal diameter [mm]	Clamping ring		Pipe stub				Gasket		Number of connection sets required	Product number
		A [mm]	B [mm]	A [mm]	B [mm]	C [mm]	D [mm]	A [mm]	B [mm]		
CRNE 1, 3 HS CRN(E) 1, 3, 5 SF	32	102	60	21.5	50.5	32	36	32.2	50.5	2	97549395
CRN(E) 10, 15, 20 SF	50	123	75	21.5	65	50	54	50.2	64	2	97549397

Pressure sensors for CRNE-HS

Danfoss pressure sensor kit, consisting of

- Danfoss pressure transmitter, type MBS3000, with 2 m screened cable
Connection: G 1/2 A (DIN 16288 - B6kt)
- 5 cable clips (black)
- Instruction manual PT (00400212).

Pressure range [bar]	Temperature range [°C]	Product number
0-40	-40 to +85	96483573
0-60		96483574

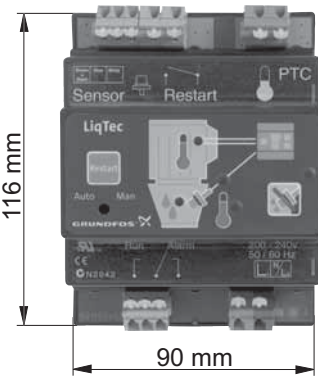
LiqTec

A LiqTec dry-running protection unit protects the pump and process against dry running and temperatures exceeding +130 °C ± 5 °C.

Connected to the motor PTC sensor, the LiqTec also monitors the motor temperature.

The LiqTec is prepared for DIN rail mounting in control cabinet.

Enclosure class: IPX0.

LiqTec unit	Pump type	Voltage [V]	LiqTec	Sensor 1/2"	Cable 5 m	Extension cable 15 m	Product number
		200-240	•	•	•	-	96556429
	CR CRN	80-130	•	•	•	-	96556430
		-	-	-	-	•	96443676

9. Grundfos Product Center

Online search and sizing tool to help you make the right choice.

<http://product-selection.grundfos.com>



"SIZING" enables you to size a pump based on entered data and selection choices.

"REPLACEMENT" enables you to find a replacement product. Search results will include information on the following:

- the lowest purchase price
- the lowest energy consumption
- the lowest total life cycle cost.

The screenshot shows the Grundfos Product Center website. At the top, there is a navigation bar with the logo and menu items: HOME, FIND PRODUCT, COMPARE, YOUR PROJECTS, SAVED ITEMS, HELP. Below this is a search bar with a 'SEARCH' button. The main content area features four large buttons: 'SIZING' (Enter pump sizing), 'CATALOGUE' (Products and services), 'REPLACEMENT' (Replace an old pump with a new), and 'LIQUIDS' (Find pump by liquid). Below these is a 'QUICK SIZING' section with input fields for 'Flow (Q)*' (m³/h) and 'Head (H)*' (m), and radio buttons for 'Select what to size by': 'Size by application', 'Size by pump design', and 'Size by pump family'. A 'START SIZING' button is also present. At the bottom, there are links for 'ADVANCED SIZING' with options for 'Advanced sizing by application' and 'Guided selection'.

"CATALOGUE" gives you access to the Grundfos product catalogue.

"LIQUIDS" enables you to find pumps designed for aggressive, flammable or other special liquids.

All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

Subject to alterations.

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ECM: 1168750