

HIGH HEAD VERTICAL MULTISTAGE CENTRIFUGAL PUMPS

SCR, SCR N HIGH HEAD PRESSURE BOOSTER 50/60 Hz Booklet



SHAKTI

THE POWER OF INNOVATION, EFFICIENCY & TECHNOLOGY.



India : Toll Free No. 1800 103 5555 Other Countries : +91-7292 410500

SHAKTI PUMPS (INDIA) LTD.

Sector - 3, Pithampur - 454774, Dist. - Dhar, (M.P.) - INDIA
Fax: +91-7292 410645, E-mail: info@shaktipumps.com, sales@shaktipumps.com,
Visit us at : www.shaktipumps.com

Nov/2017-18/L1/500 VC - 700277 Nov 2017/R1 SAP No. 2900000828

CONTENT

Product data

Performance range	1
Introduction	2
Product range	3
Applications	3
SCRNE 1 and 3 HS	4
SCRN 3, 5, 10, 15, 20 SF	5
2 x SCR 32, 45, 64 and 90	6
2 x SCRN 32, 45, 64 and 90	6
2 x SCR 120 and 150	7
2 x SCRN 120 and 150	7
Type key	8
Codes	8
Operating range of the shaft seal for the high-pressure pump	9
Terminal box positions	9
Ambient temperature	9
Pumped liquids	10

Selection and sizing

Selection of high-pressure pumps	11-12
----------------------------------	-------

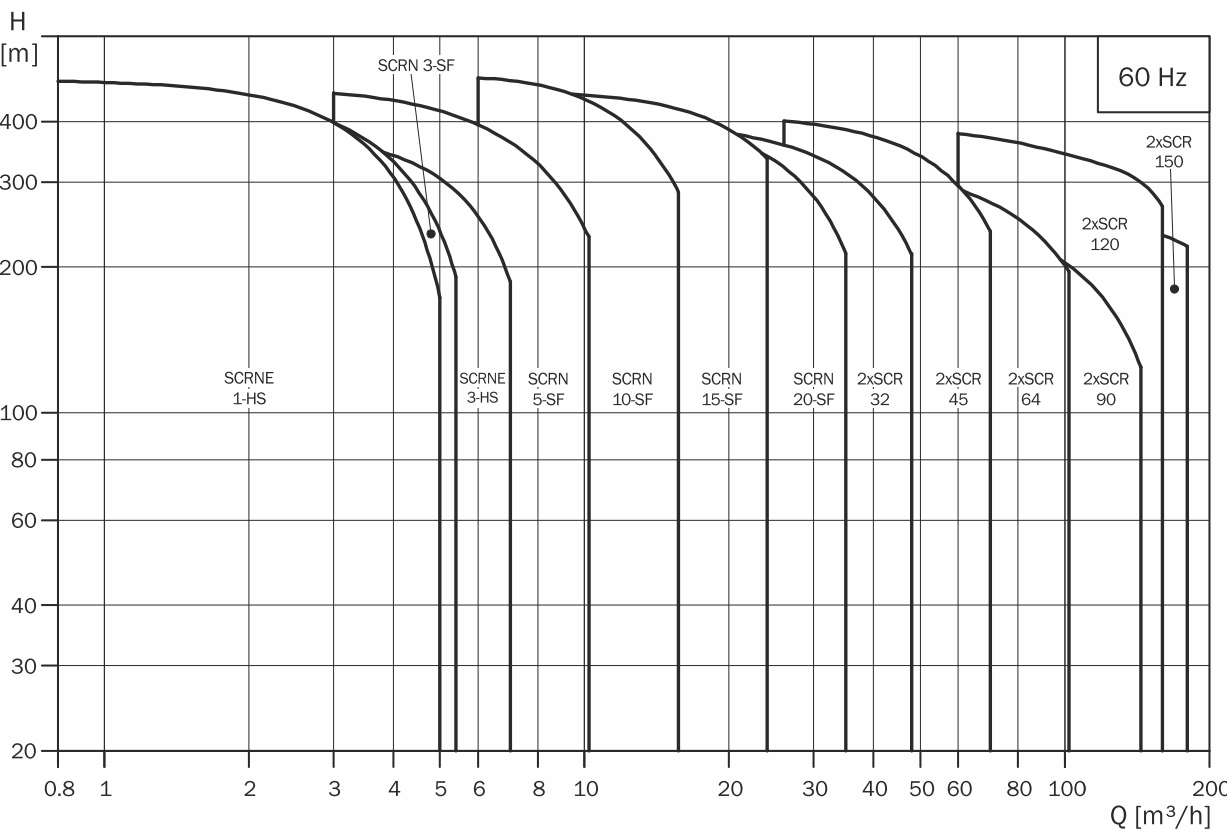
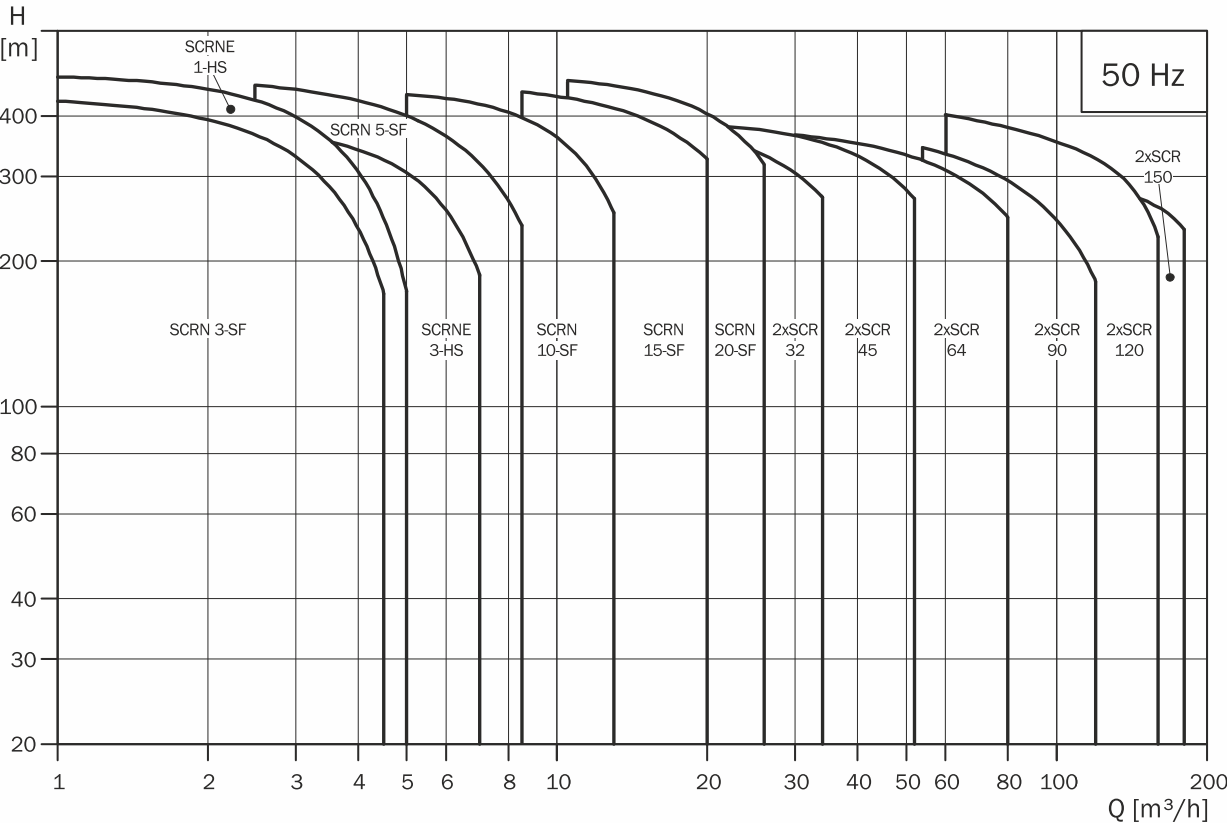
Performance curves/ Technical data

SCRN 1 HS - 50/60 Hz	13-14
SCRN 3 HS - 50/60 Hz	15-16
SCRN 3 SF, 50 Hz	17-18
SCRN 5 SF, 50 Hz	19-20
SCRN 10 SF, 50 Hz	21-22
SCRN 15 SF, 50 Hz	23-24
SCRN 20 SF, 50 Hz	25-26
SCR 32, 50 Hz	27-28
SCRN 32, 50 Hz	29-30
SCR 45, 50 Hz	31-32
SCRN 45, 50 Hz	33-34
SCR 64, 50 Hz	35-36
SCRN 64, 50 Hz	37-38
SCR 90, 50 Hz	39-40
SCRN 90, 50 Hz	41-42
SCR 120, 50 Hz	43-44
SCRN 120, 50 Hz	45-46
SCR 150, 50 Hz	47-48
SCRN 150, 50 Hz	49-50
SCRN 3 SF, 60 Hz	51-52
SCRN 5 SF, 60 Hz	53-54
SCRN 10 SF, 60 Hz	55-56
SCRN 15 SF, 60 Hz	57-58
SCRN 20 SF, 60 Hz	59-60

SCR 32, 60 Hz	61-62
SCRN 32, 60 Hz	63-64
SCR 45, 60 Hz	65-66
SCRN 45, 60 Hz	67-68
SCR 64, 60 Hz	69-70
SCRN 64, 60 Hz	71-72
SCR 90, 60 Hz	73-74
SCRN 90, 60 Hz	75-76
SCR 120, 60 Hz	77-78
SCRN 120, 60 Hz	79-80
SCR 150, 60 Hz	81-82
SCRN 150, 60 Hz	83-84
Accessories	85-88

Product data

Performance range



Product data

Introduction

This data booklet deals with SCR and SCRNE pumps for high-pressure applications.

A high pressure is achieved in two ways:

- Single pump with frequency-controlled high-speed motor, type HS
 - SCRNE-HS, pump sizes 1 and 3.
- Feed pump + high-pressure pump connected in series.
 - SCRN-SF, pump sizes 3 to 20
 - SCR, SCRNE, pump sizes 32 to 150.

The high-pressure pump comes in two designs depending on pump size.

- SCRNE-HS and SCRNE-SF: The chamber stack is up-side-down compared to a SCR standard pump.
- SCR, SCRNE: Standard pump with or without bearing flange.

The pumps in this data booklet are a SCR or SCRNE standard pump as feed pump connected in series to a larger pump, the high-pressure pump.

For use of other SCR pumps as high-pressure pump, see the SCR data booklet "Custom-built pumps".

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

- design
- operating conditions
- performance curves
- dimensions.

The performance curves and dimensional tables show the high-pressure pump connected in series with a standard pump with various numbers of stages.

Product data

Performance range

Range	SCRNE 1 HS	SCRNE 3 HS	SCRN 3 SF	SCRN 5 SF	SCRN 10 SF	SCRN 15 SF	SCRN 20 SF	2 x SCR SCRN 32	2 x SCR SCRN 45	2 x SCR SCRN 64	2 x SCR SCRN 90	2 x SCR SCRN 120	2 x SCR SCRN 150
Nominal flow rate, 50 Hz [m ³ /h]	1	3	3	5	10	15	20	32	45	64	90	120	150
Nominal 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	39	39	39	40	40	39
Max. pressure, 60 Hz [bar]	48	42	48	48	47	47	47	40	40	36	33	37	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	11-18.5	11-30	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													
SCR, SCRE: Cast iron and stainless steel EN/DIN 1.4301/AISI 304	-	-	-	-	-	-	-	•	•	•	•	•	•
SCRN, SCRNE: 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 65	DN 80	DN 100	DN 100	DN 125	DN 125
Flange - on request	-	-	-	-	-	-	-	DN 80	DN 100	DN 125	DN 125	DN 150	DN 150
PJE - 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 in series	-	-	-	•	•	•	•	•	•	•	•	•	•

- Available
 - On request
- 1) SCRN 32 to SCRN 150 with HQQE shaft seal: -40 °C to 120 °C

2) SCR, SCRN 120 and 150 with 55 or 75 kW motors with HBQE shaft seal: 0 °C to 120 °C

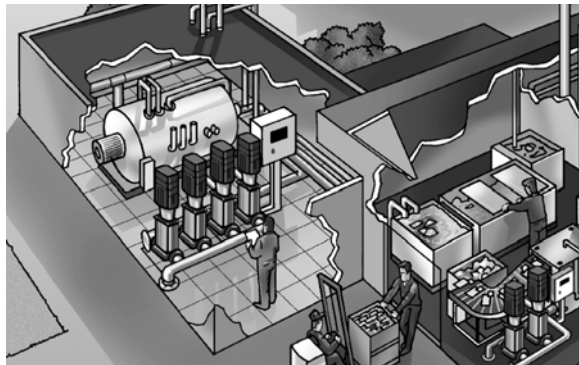
Applications

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

SCR, SCRN handles a variety of liquids from potable water to industrial liquids within a very wide temperature, flow and pressure scale. Below is a list representing some general examples of applications requiring a high pressure.

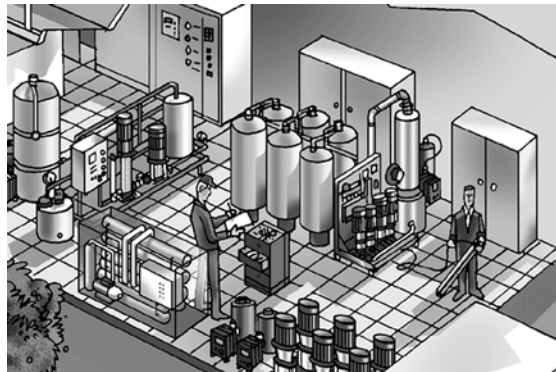
Pressure boosting

- Process water systems
- Washing and cleaning systems
- High-pressure washdown systems
- Boiler feed and condensate systems.



Water treatment

- Ultra-filtration systems
- Reverse osmosis systems.



Product data

SCRNE 1 and 3 HS



Fig. 1 SCRNE 3-HS pump

Pump

SCRNE-HS is a single pump solution capable of generating up to 48 bar.

The SCRNE-HS pump is a non-self-priming, vertical multistage centrifugal pump fitted with a high-speed Shakti motor with integrated frequency converter, type SMG.

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

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

The base, the pump head cover as well as parts in contact with the pumped liquid are made from stainless steel.

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

Operating conditions - high-pressure pump

- Liquid temperature: -20 °C to +120 °C.
- Ambient temperature: Maximum +40 °C.
- Minimum inlet pressure: See page 11.
- Maximum inlet pressure: 15/25 bar
(static/operation).
- Maximum operating pressure: 50 bar.

Materials

Pos.	Description	Materials	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 (eq. 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, and FXM		
8	Base	Stainless steel	1.4408	CF8M (eq. to AISI 316)
9	Neck ring	PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, and HQQK		
11	Base plate	Cast iron EN-GJL-200 ¹⁾	EN-JL1030	ASTM 25B
	Other rubber parts	EPDM, FKM, FFKM, and FXM		

¹⁾ Stainless steel on request

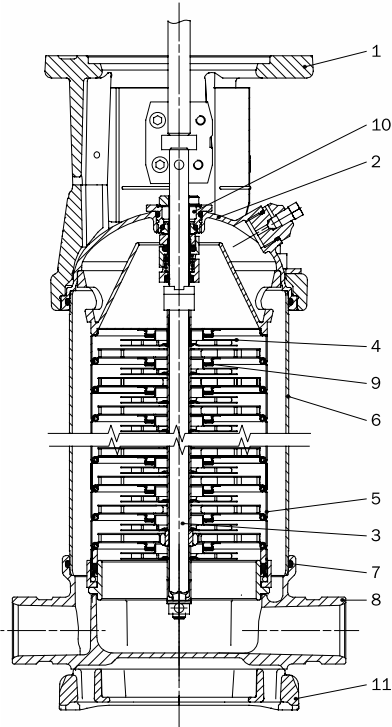


Fig. 2 Sectional drawing of SCRNE 1 and 3-HS

Product data

SCRN 3, 5, 10, 15, 20 SF



Fig. 3 SCR 10 + SCR 10 SF pump system

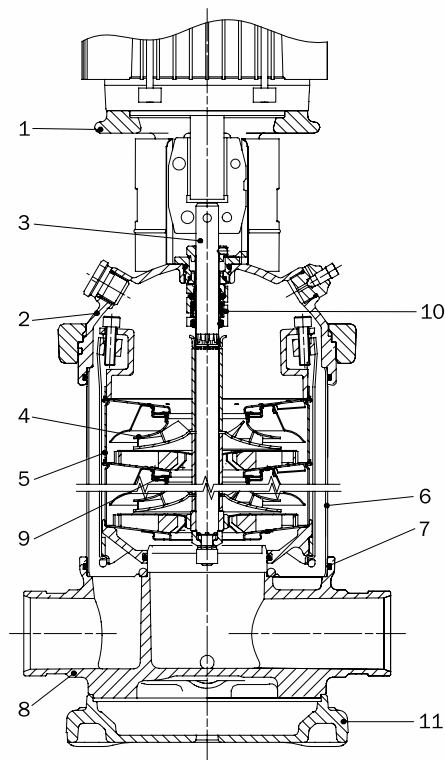


Fig. 4 Sectional drawing of SCR 3, 5, 10, 15, 20 SF

Pump

SCRN-SF is a double pump system capable of generating up to 48 bar. The system consists of two pumps in series. The first pump is a standard pump for feeding. The second pump is a high-pressure pump especially designed for high pressures. The SCRN-SF pump is a non-self-priming, vertical multistage centrifugal pump fitted with a Shakti standard motor. The SCRN-SF pump is also available with a Shakti motor with integrated frequency converter, type SMG. When fitted with this motor the pump designation is SCRNE-SF. The direction of rotation is the opposite of that of standard pumps, and the chamber stack is turned upside-down, as a result of which the pumped liquid flows in the opposite direction.

This special design ensures that the shaft seal is not affected by the pump discharge pressure. The base, the pump head cover as well as vital pump components are made from stainless steel. The pump has a maintenance-free mechanical cartridge shaft seal.

Operating conditions - high-pressure pump

Liquid temperature: -20 °C to +120 °C.
Ambient temperature: See page 09.
Minimum inlet pressure: 2 bar.
Maximum inlet pressure:
SCRN 3, 5 SF 15/25 bar
SCRN 10, 15 20 SF 10/25 bar
(static/operation)
Maximum operating pressure: 50 bar.

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
1	Pump head	Cast iron	EN-GJS-450-10	
2	Pump head cover	Stainless steel	1.4408	CF8M (eq. 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, and FXM	1.0037	
8	Base	Stainless steel	1.4408	CF8M (eq. to AISI 316)
9	Neck ring	PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, and HQQK		
11	Base plate	Cast iron EN-GJL-200 ¹⁾	0.6020	ASTM 25B
	Other rubber parts	EPDM, FKM, FFKM, and FXM		

¹⁾ Stainless steel on request

Product data

2 x SCR 32, 45, 64 and 90
2 x SCR 32, 45, 64 and 90

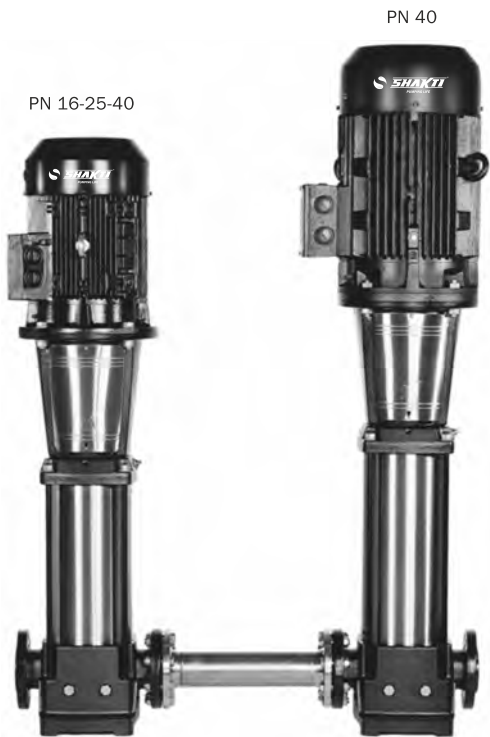


Fig. 5 2 x SCR, SCR 32, 45, 64 and 90 double-pump system

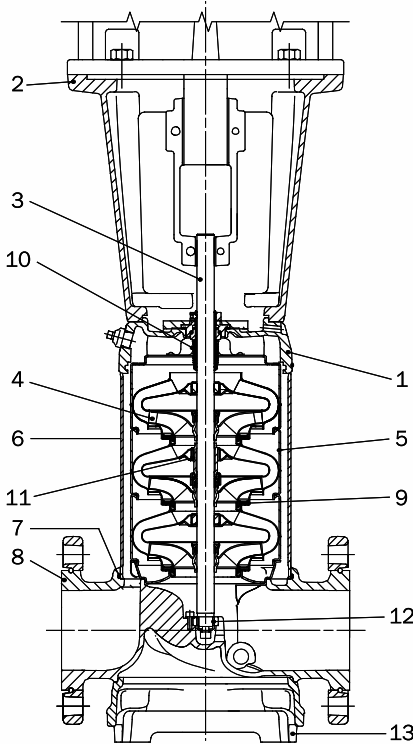


Fig. 6 Sectional drawing of a SCR(N) pump

Pump

2 x SCR, SCR 32, 45, 64 and 90 is a double-pump system capable of generating up to 40 bar. The system consists of two pumps in series. The first pump is a standard pump for feeding. The second pump is a high-pressure pump especially designed for high pressures. If the maximum pressure from the feed pump exceeds 15 bar, the high-pressure pump must have a bearing flange to be capable of handling the higher inlet pressure.

SCRN

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

Operating conditions - high-pressure pump

Liquid temperature, SCR: -30 °C to +120 °C.
Liquid temperature, SCR 32, 45, 64 and 90: -40 °C to +120 °C.
Ambient temperature: See page 09.
Maximum inlet pressure:
without bearing flange 15 bar.
with bearing flange 25 bar.
Maximum operating pressure: 40 bar.

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
1	Pump head	SCR: Cast iron EN-GJS-500-7	EN-JS1050	
		SCRN: Cast iron steel	1.4408	CF8M (eq. to AISI 316)
2	Motor stool	Cast iron EN-GJL-200	EN-JL1030	ASTM 25B
3	Shaft	Stainless steel	1.4462	
4	Impeller	Stainless steel	1.4401	AISI 316
5	Chamber	Stainless steel	1.4401	AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, and FXM		
8	Base	SCR: Cast iron EN-GJS-500-7	EN-JS1050	
		SCRN: Stainless steel	1.4408	CF8M (eq. to AISI 316)
9	Neck ring	Carbon-graphite filled PTFE		
10	Shaft seal	HQQE, HQQV, HQQF, and HQQK		
11	Bearing ring	Bronze/carbon-graphite filled PTFE		
12	Bottom bearing ring	TC/TC ¹⁾		
13	Base plate	Cast iron EN-GJS-500-7	EN-JS1050	ASTM 80-55-06
		Stainless steel		
	Other rubber parts	EPDM, FKM, FFKM, and FXM		

¹⁾ TC = Tungsten carbide (cemented)

Product data

2x SCR 120 and 150
2x SCR(N) 120 and 150

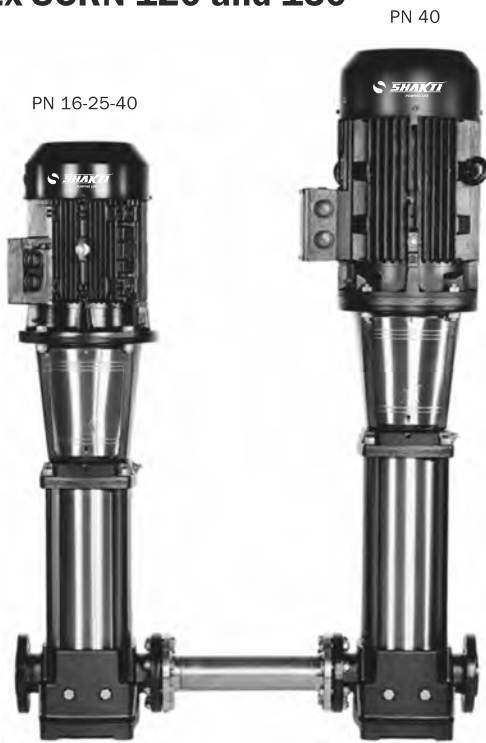


Fig. 7 2 x SCR, SCR(N) double-pump system

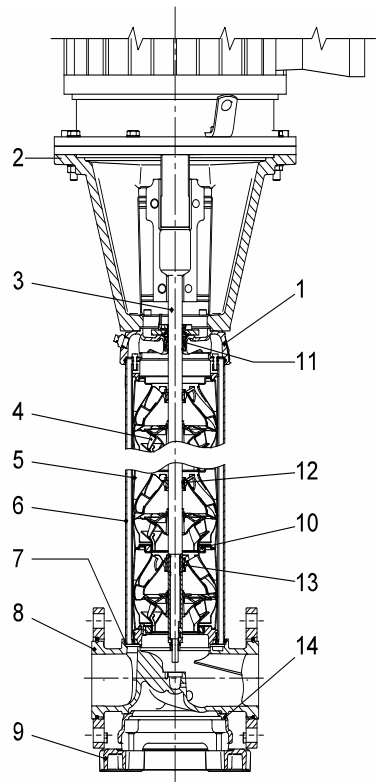


Fig. 8 Sectional drawing of a SCR(N) pump

Pump

2 x SCR, SCR(N) is a double-pump system capable of generating up to 40 bar.

The system consists of two pumps in series. The first pump is a standard pump for feeding. The second pump is a high-pressure pump.

The SCR, SCR(N) pump is a non-self-priming, vertical multi-stage centrifugal pump fitted with a shakti standard motor.

SCRN

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

SCR

The base and the pump head are made of cast iron.

Operating conditions - high-pressure pump

Liquid temperature, SCR: -30 °C to +120 °C.
Liquid temperature, SCR(N): -40 °C to +120 °C.
Ambient temperature: See page 09.
Maximum inlet pressure: 20 bar.
Maximum operating pressure: 40 bar.

Materials

Pos.	Designation	Materials	EN/DIN	AISI/ASTM
1	Pump head	SCR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		SCRN: Stainless steel	1.4408	A 351 CF 8M
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	SCR: 1.4057 SCRN: 1.4462	AISI 431 SAF 2205
4	Impeller	Stainless steel	SCR: 1.4301	SCR: AISI 304
5	Chamber		SCRN: 1.4401	SCRN: AISI 316
6	Sleeve	Stainless steel	1.4401	AISI 316
7	O-ring for sleeve	EPDM, FKM, FFKM, and FXM		
8	Base	SCR: Cast iron EN-GJS-500-7	EN-JS1050	A 536 65-45-12
		SCRN: Stainless steel	1.4408	A 351 CF 8M
9	Base plate	Cast iron EN-GJS-500-7 ¹⁾	EN-JS1050	A 536 65-45-12
10	Neck ring	PTFE		
11	Shaft seal ²⁾	SiC/SiC (∅ 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, and FXM	

¹⁾ Stainless steel available on request.

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

Product data

Type Key

SCRNE 1 and 3 HS

Example	SCRNE 3 -23 HS -P -G -E -HQQE
Type range: SCRNE	
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	

SCRN 3, 5, 10, 15 and 20 SF

Example	SCRN 5 -34 -SF -P -G -E -HQQE
Type range: SCR(N)	
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	

2 x SCR(N) 32, 45, 64, 90, 120 and 150

Example	SCRN 32 -2 -1 -A -F -G -E -HQQE
Type range: SCR, SCR(N)	
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	SCR pump for high temperatures (air-cooled top assembly)						
H	Horizontal version						
HS	High-pressure pump with high-speed SMGE 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 (SCRI(E), SCR(N)(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 stainless steel, wetted parts 1.4401/AISI 316						
I	Wetted parts 1.4301/AISI 304						
II	All parts stainless steel, wetted parts 1.4301/AISI 304						
K	Bronze (bearings)						
S	SiC bearings + PTFE neck rings						
X	Special version						
Code for 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.

Product data

Operating range of the shaft seal for the 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.

Operating conditions of the shaft seal for the SCR high-pressure pump

Standard shaft seal	Motor size [kW]	Description	Max. 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

SMG Shakti Motors

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

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

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

SMGE motors

SCRE, SCRIE, SCRNE pumps require no external motor protection. The SMG motor incorporates thermal protection against slow overloading and blocking (IEC 34-11: TP 211).

Terminal box positions

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

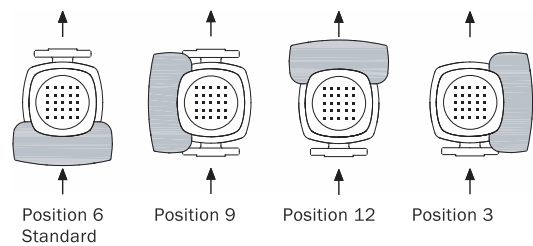


Fig. 9 Terminal box positions

Ambient temperature

Motor power [kW]	Motor make	Motor efficiency class	Maximum ambient temperature [°C]	Maximum altitude above sea level [m]
0.37-0.75	Shakti SMG	EFF 2	+40	1000
1.1-22	Shakti SMG	EFF 1	+60	3500
30-75	SMG	EFF 1	+55	2750

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

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

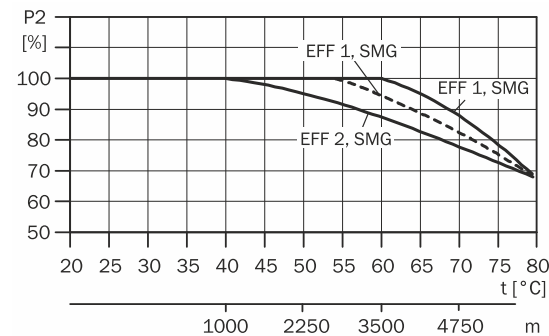


Fig. 10 Motor output in relation to temperature/altitude

Pumped liquids

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

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

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

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 (e.g. seawater and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion. If in doubt, contact Shakti.

Product data

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

1. Tolerances to ISO 9906, Annex A, if indicated.
2. The motors used for the measurements are standard Shakti motors.
3. Measurements have been made with airless water at a temperature of 20 °C.
4. The curves apply to a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt).
5. 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 nominal flow rate in relation to the liquid temperature. The dotted line shows a SCR pumps fitted with an air-cooled top assembly.

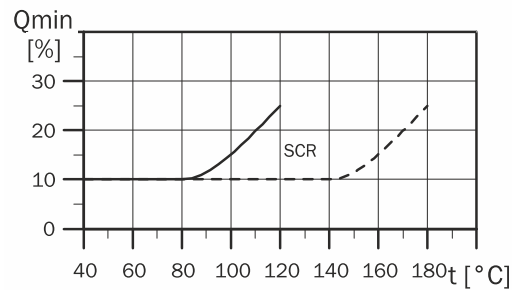


Fig. 11 Minimum flow rate

Selection and sizing

Selection of high-pressure pumps

Pump size

Selection of pump size should be based 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 or valves, etc.
- Best efficiency at the estimated duty point.

Efficiency

If the pump is expected always to operate at the same duty point, select a pump which is operating at a duty point corresponding with the best efficiency of the pump.

In case of varying consumption, select a pump which best efficiency falls within the duty range representing the highest power consumption, i.e. typically the duty range covering the greater part of the duty time.

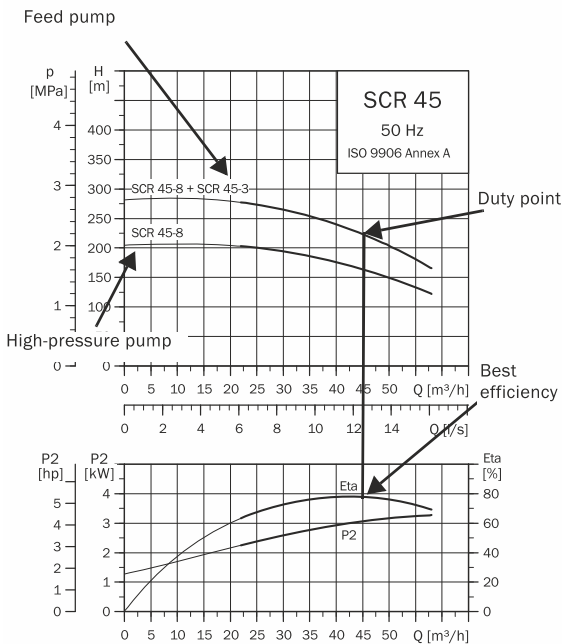


Fig. 12 Example of a duty point

Minimum inlet pressure, NPSH

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

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

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

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

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

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

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

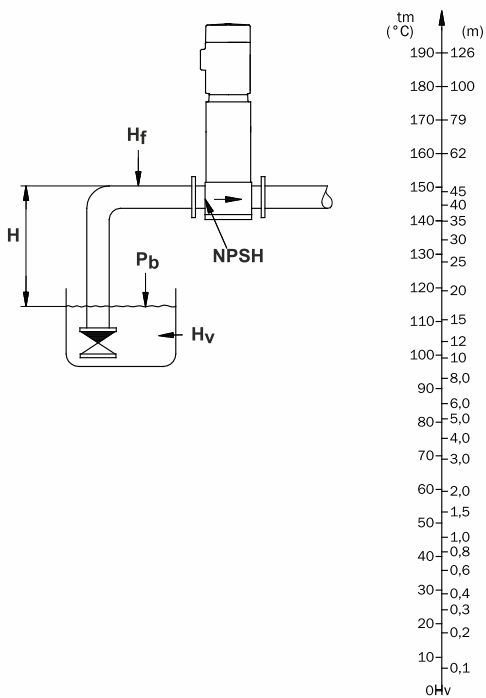


Fig. 13 Minimum inlet pressure - NPSH

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

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

Selection and sizing

Shaft seal

As standard, the SCR, SCRN high-pressure range is fitted with a 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.

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

Inlet pressure and operating pressure

Do not exceed the limit values stated on pages 6 and 9 as regards these pressures:

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

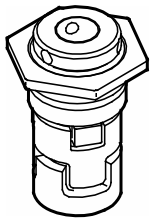
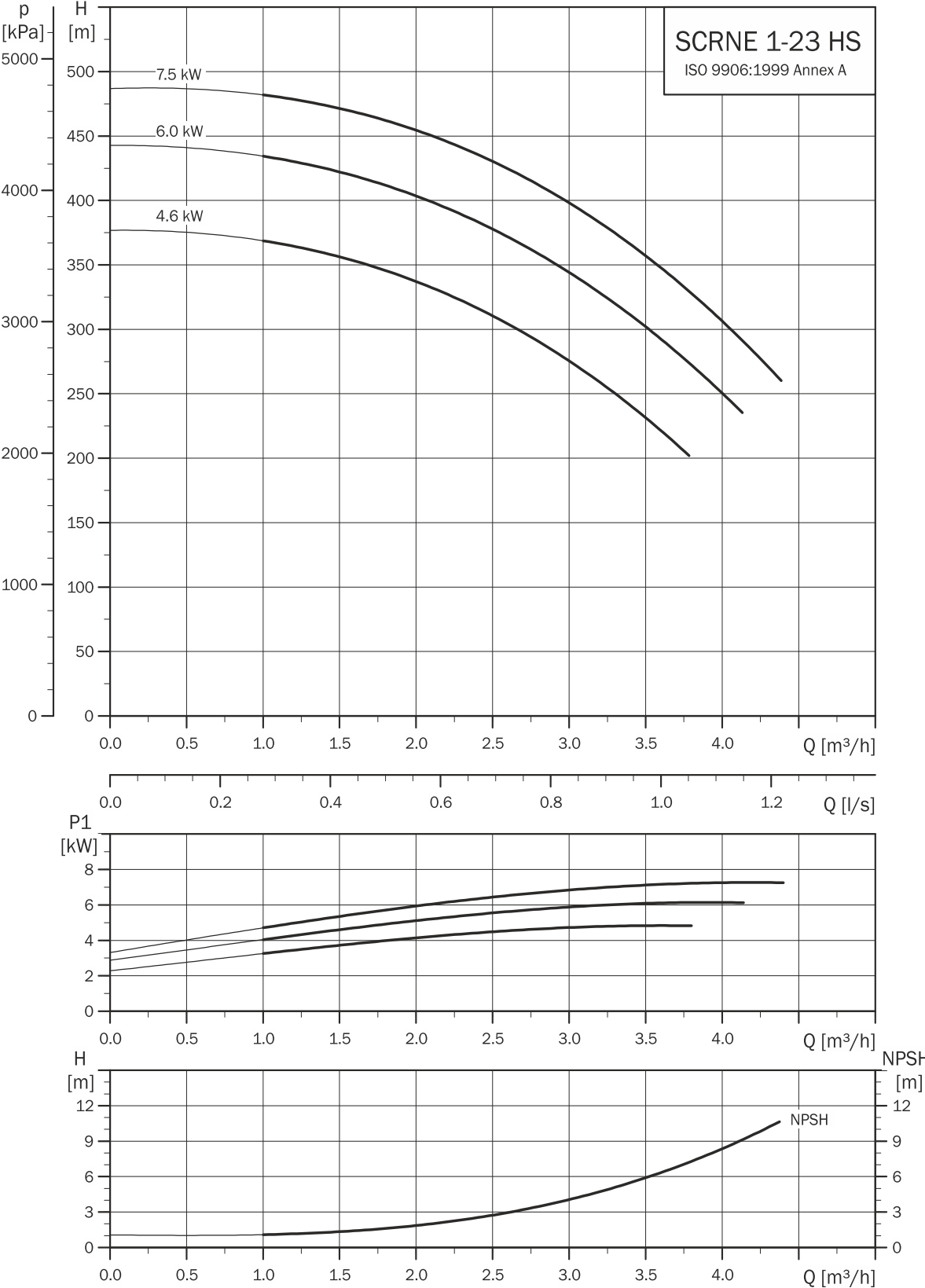


Fig. 14 Shaft seal (cartridge type)

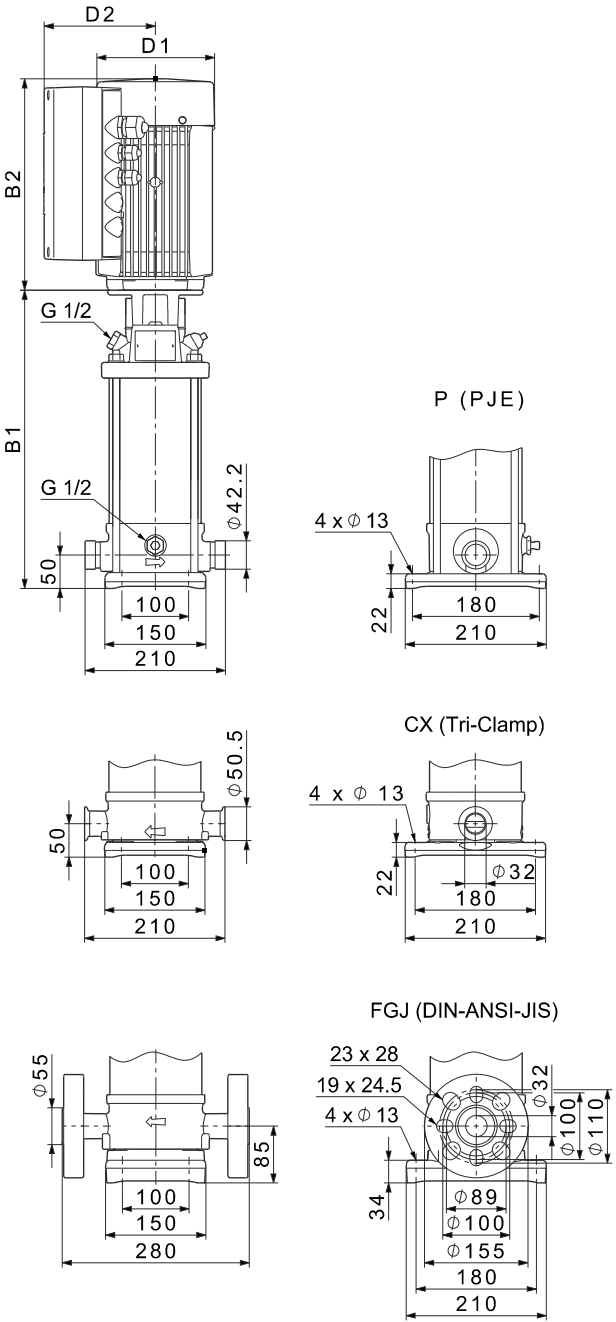
Performance curves/Technical data

SCRNE 1 HS - 50/60 Hz



Technical data

Dimensional sketch

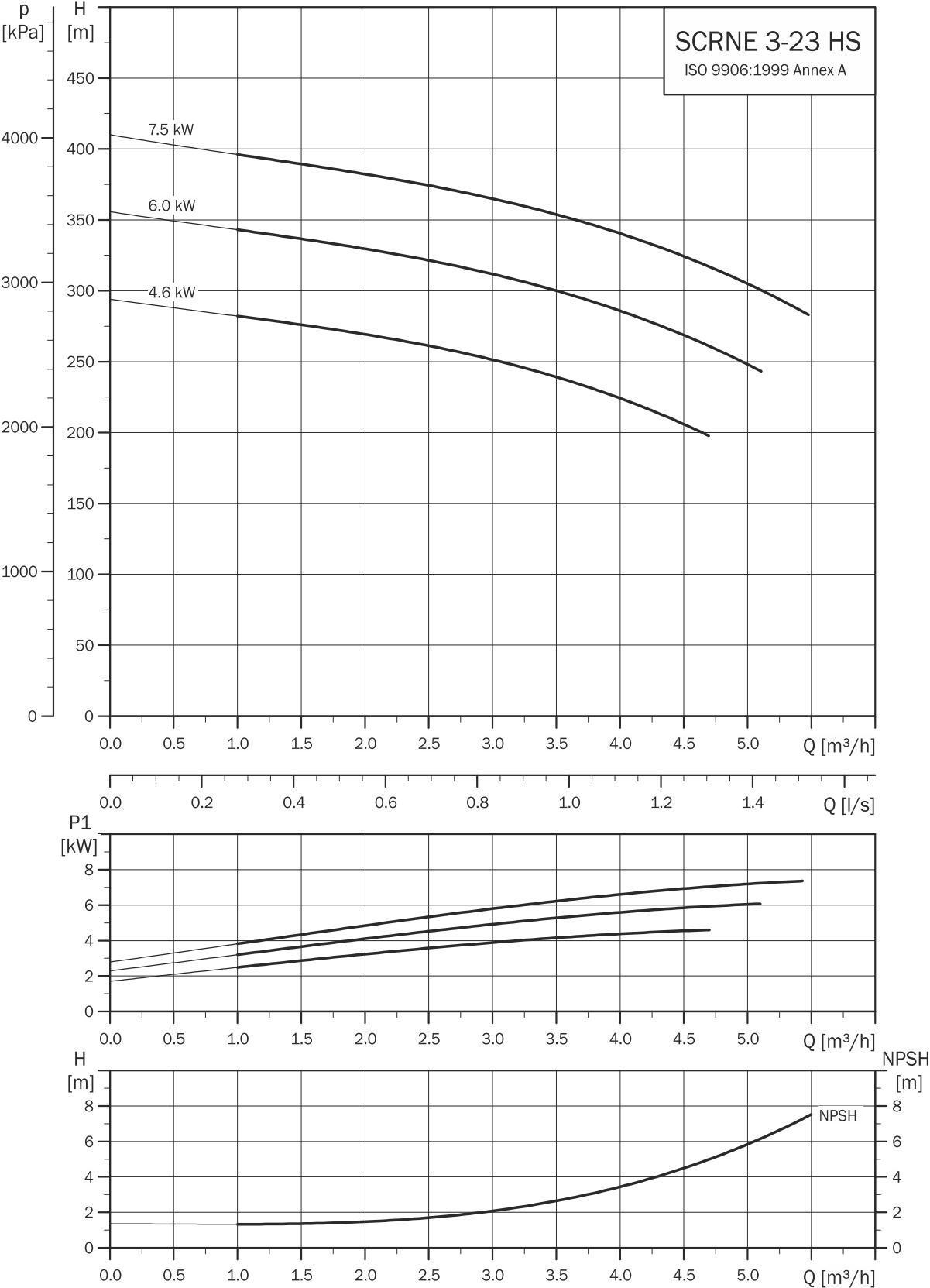


Dimensions and weights

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						
SCRNE 1-23 HS	4.6	680	1052	715	1106	220	188	160	62	75	
SCRNE 1-23 HS	6	680	1071	715	1106	220	188	200	66	75	
SCRNE 1-23 HS	7.5	680	1071	715	1106	260	213	200	71	78	

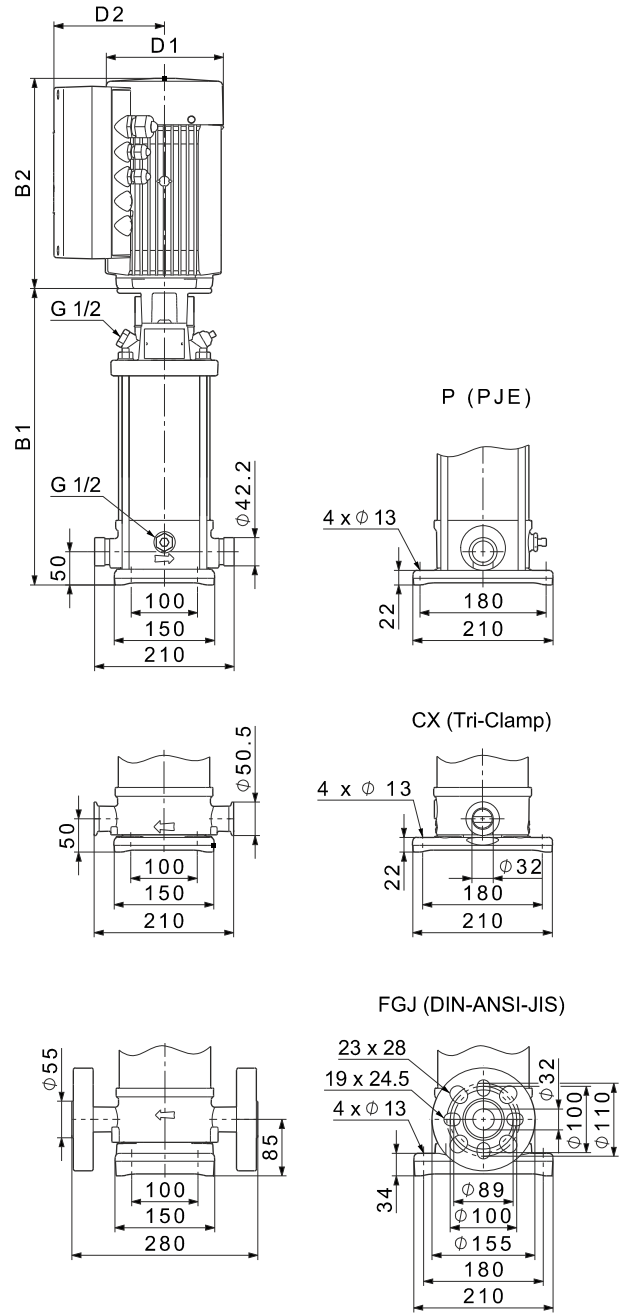
Performance curves

SCRNE 3 HS - 50/60 Hz



Technical data

Dimensional sketch

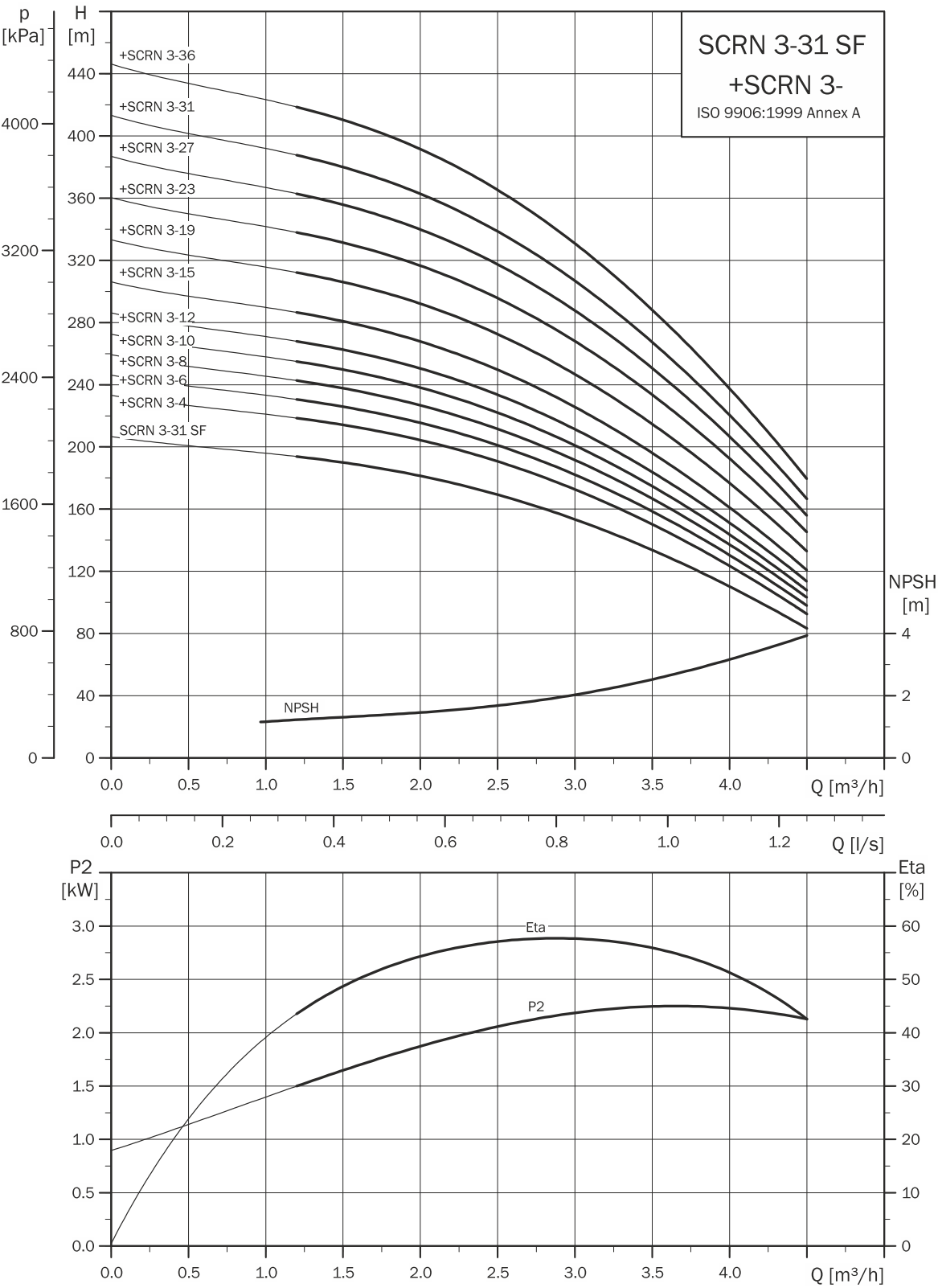


Dimensions and weights

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						
SCRNE 3-23 HS	4.6	680	1052	715	1087	220	188	160	62	68	
SCRNE 3-23 HS	6	680	1071	715	1106	220	188	200	62	69	
SCRNE 3-23 HS	7.5	680	1071	715	1106	260	213	200	71	77	

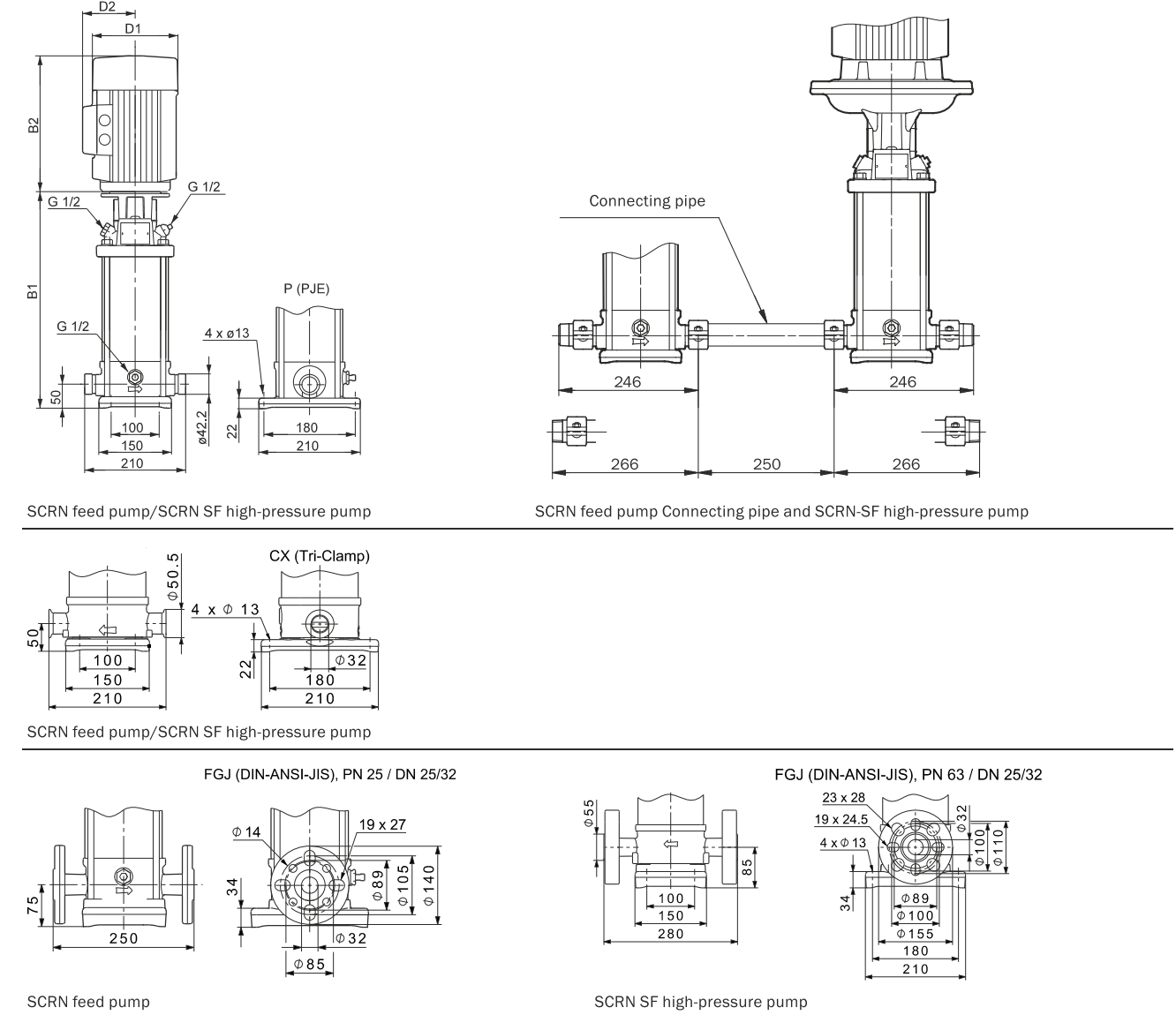
Performance curves

SCRN 3 SF, 50 Hz



Technical data

Dimensional sketches



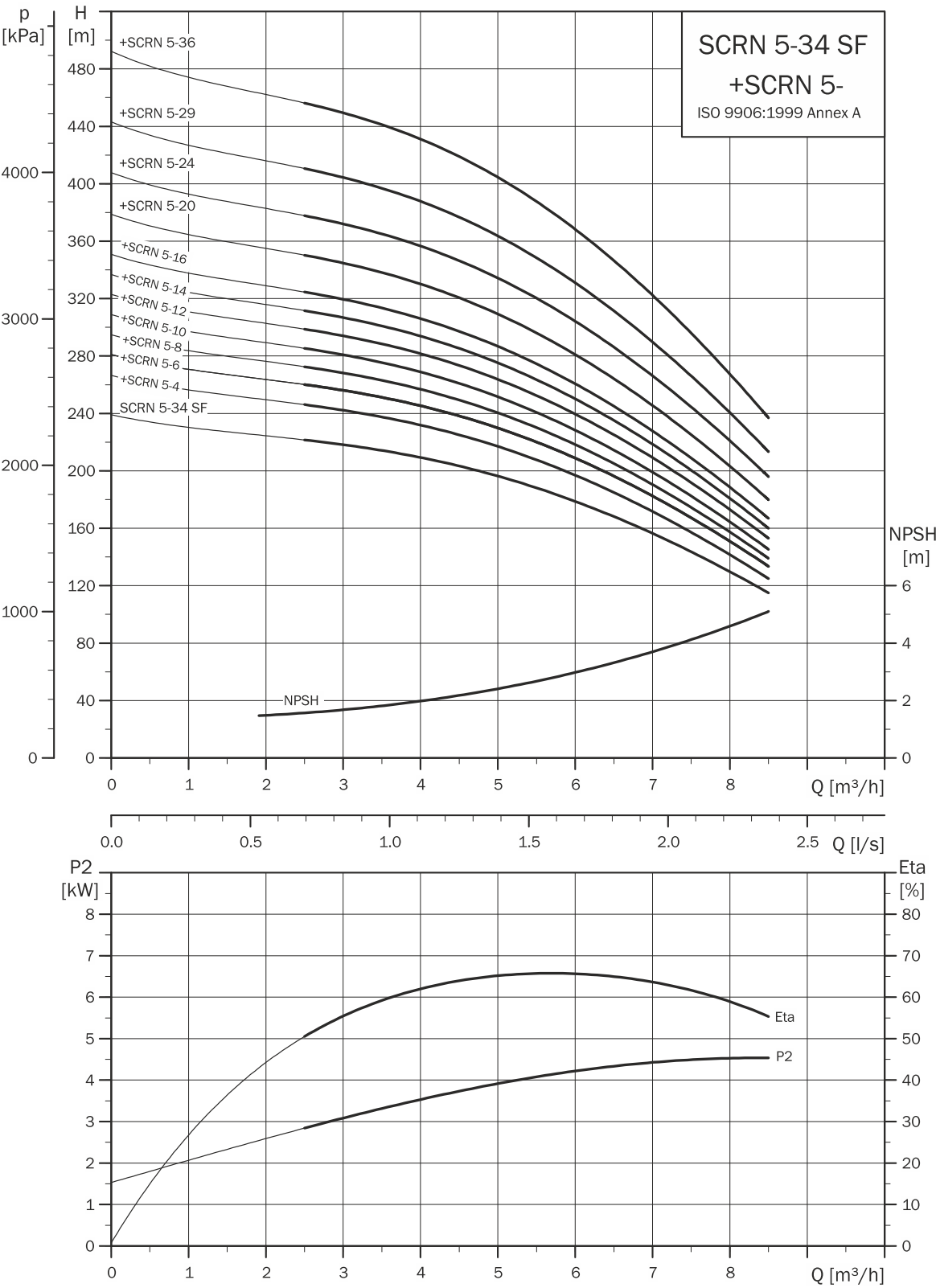
Dimensions and weights

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

* High-pressure pump

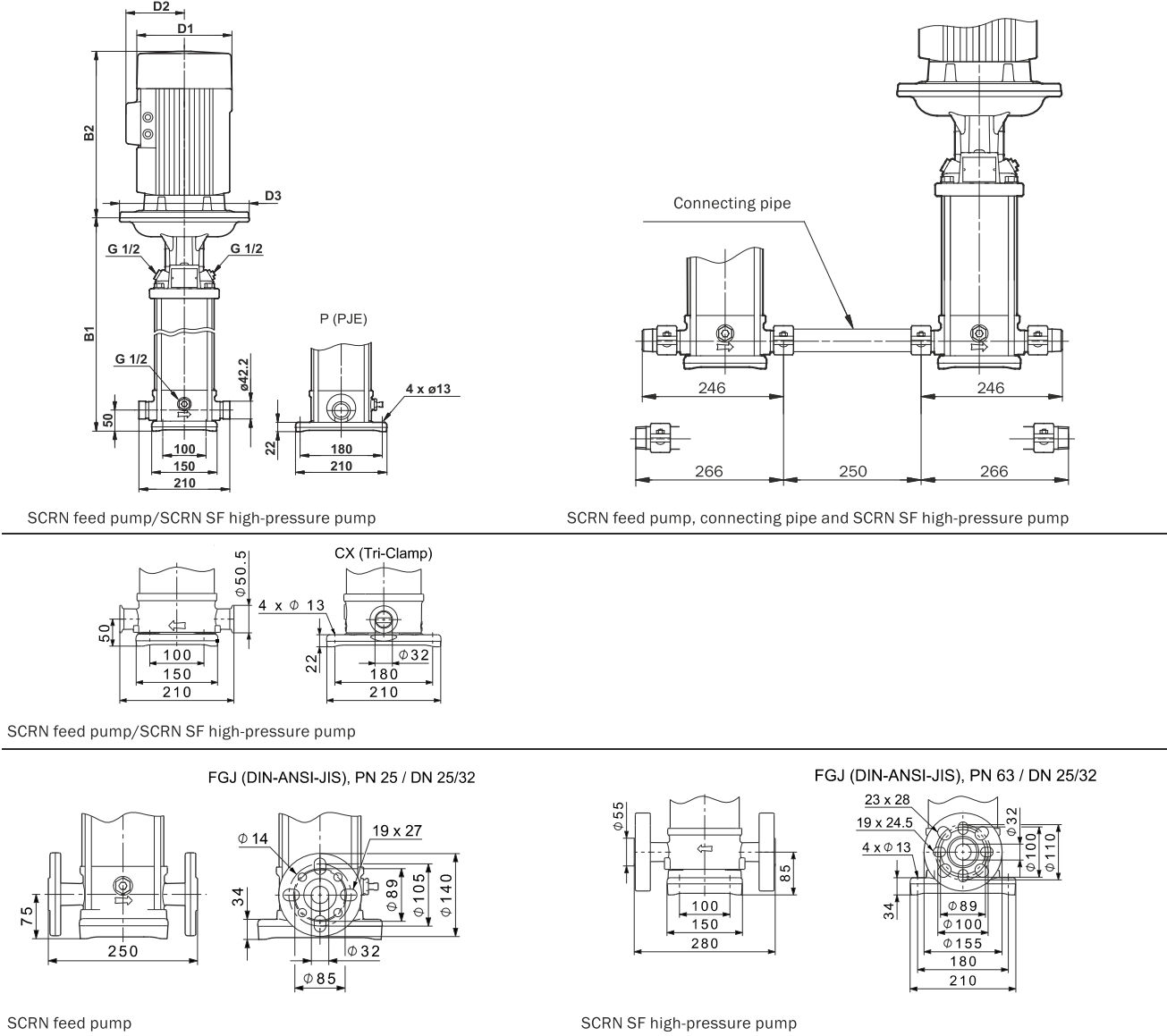
Performance curves

SCRN 5 SF, 50 Hz



Technical data

Dimensional sketches



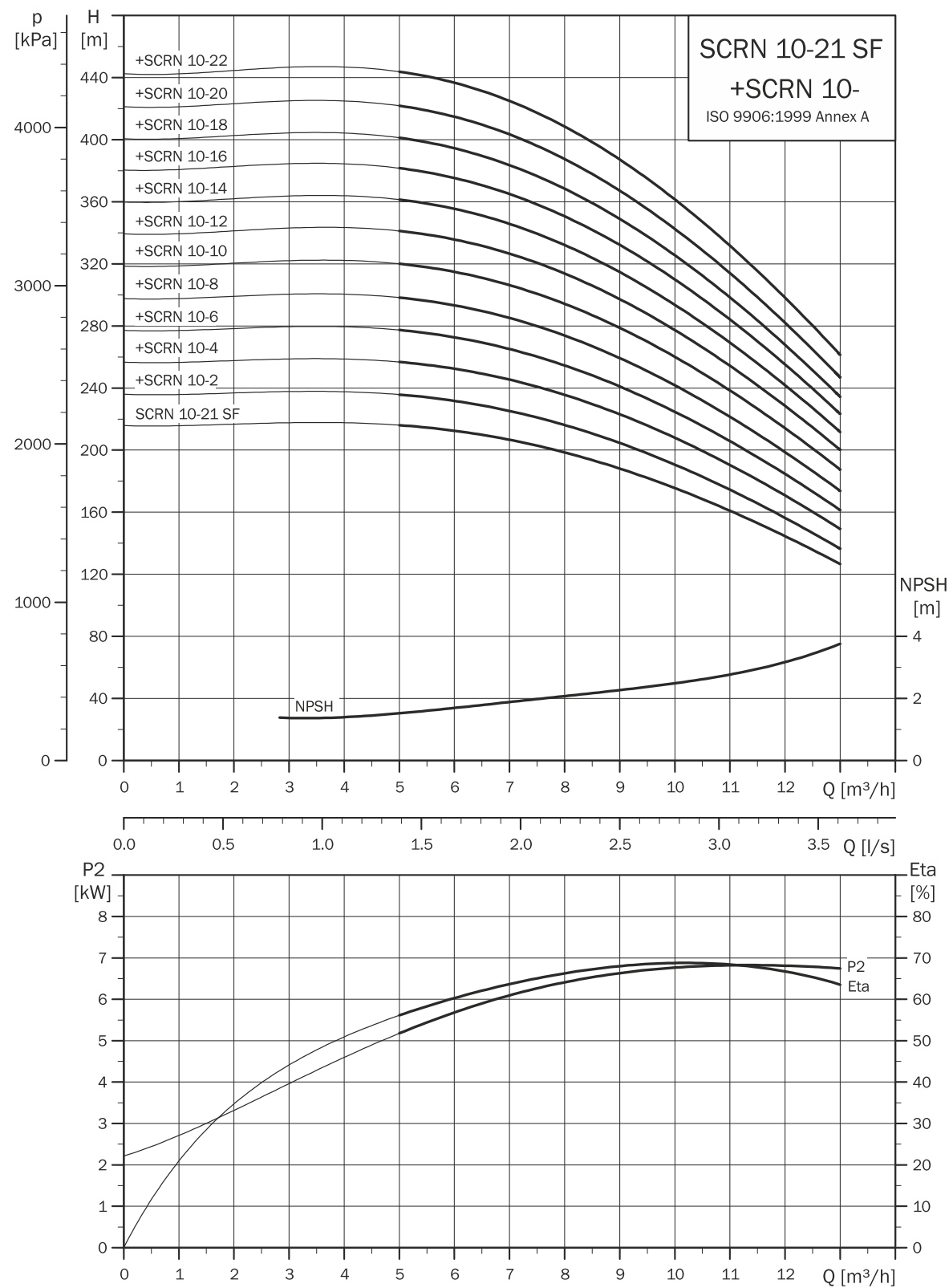
Dimensions and weights

Pump type	Motor P ₂ [kW]	SCRN										SCRNE									
		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						
SCRN 5-4	0.55	311	502	336	527	141	109	-	18	22		-	-	-	-	-	-	-	-	-	-
SCRN 5-6	1.1	371	622	396	647	141	109	-	24	28		-	-	-	-	-	-	-	-	-	-
SCRN 5-8	1.1	425	676	450	701	141	109	-	25	29		-	-	-	-	-	-	-	-	-	-
SCRN 5-10	1.5	495	776	520	801	178	110	-	32	37		-	-	-	-	-	-	-	-	-	-
SCRN 5-12	2.2	549	870	574	895	178	110	-	34	38		-	-	-	-	-	-	-	-	-	-
SCRN 5-14	2.2	603	924	628	949	178	110	-	35	40		-	-	-	-	-	-	-	-	-	-
SCRN 5-16	2.2	657	978	682	1003	178	110	-	36	41		-	-	-	-	-	-	-	-	-	-
SCRN 5-20	3	770	1105	795	1130	198	120	-	45	49		-	-	-	-	-	-	-	-	-	-
SCRN 5-24	4	878	1250	903	1275	220	134	-	56	61		-	-	-	-	-	-	-	-	-	-
SCRN 5-29	4	1013	1385	1038	1410	220	134	-	59	64		-	-	-	-	-	-	-	-	-	-
SCRN 5-36	5.5	1231	1622	1256	1647	220	134	300	77	81		-	-	-	-	-	-	-	-	-	-
SCRN(E) 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

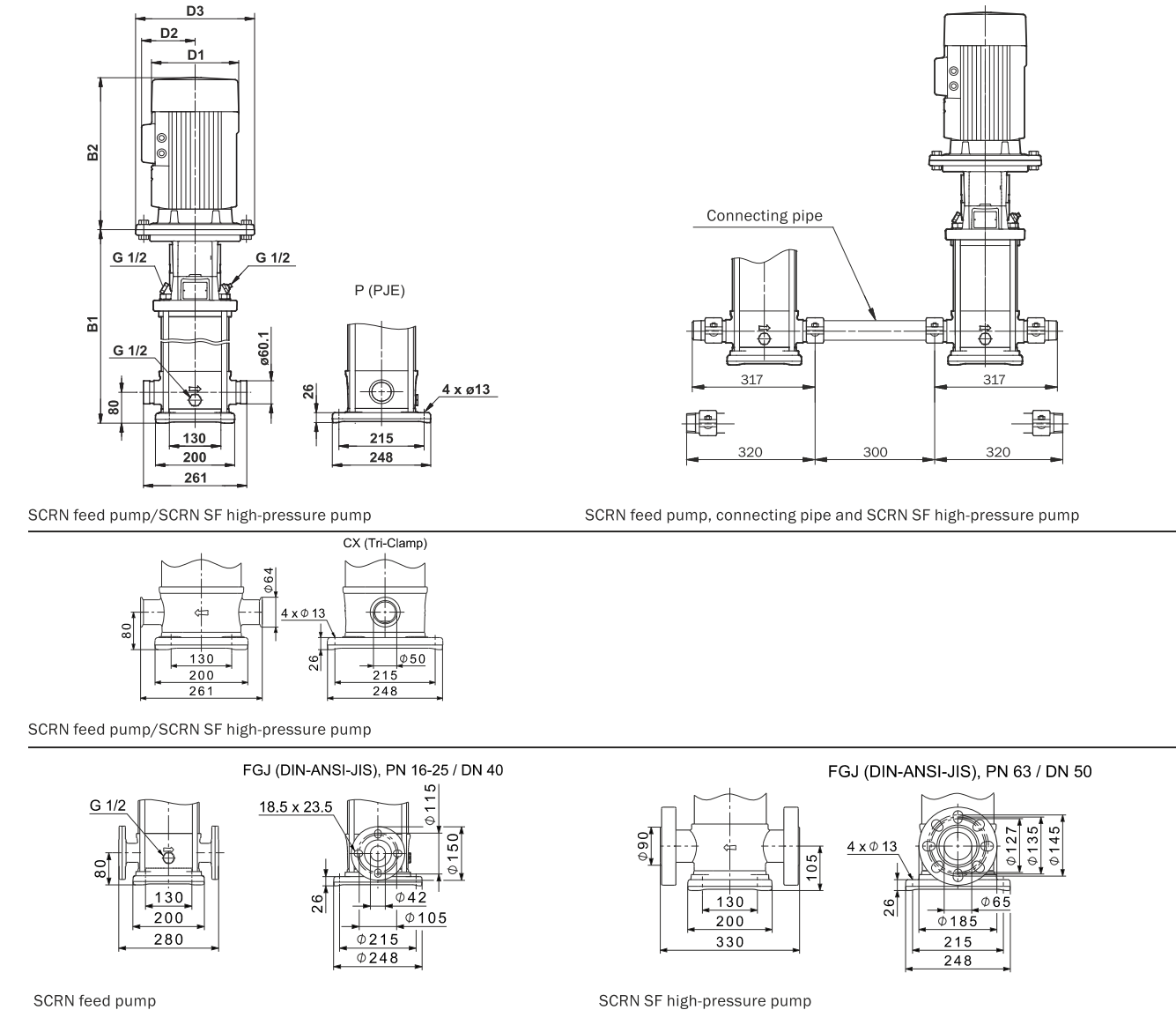
Performance curves

SCRN 10 SF, 50 Hz



Technical data

Dimensional sketches



Dimensions and weights

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

* High-pressure pump

SCRN 15 SF, 50 Hz

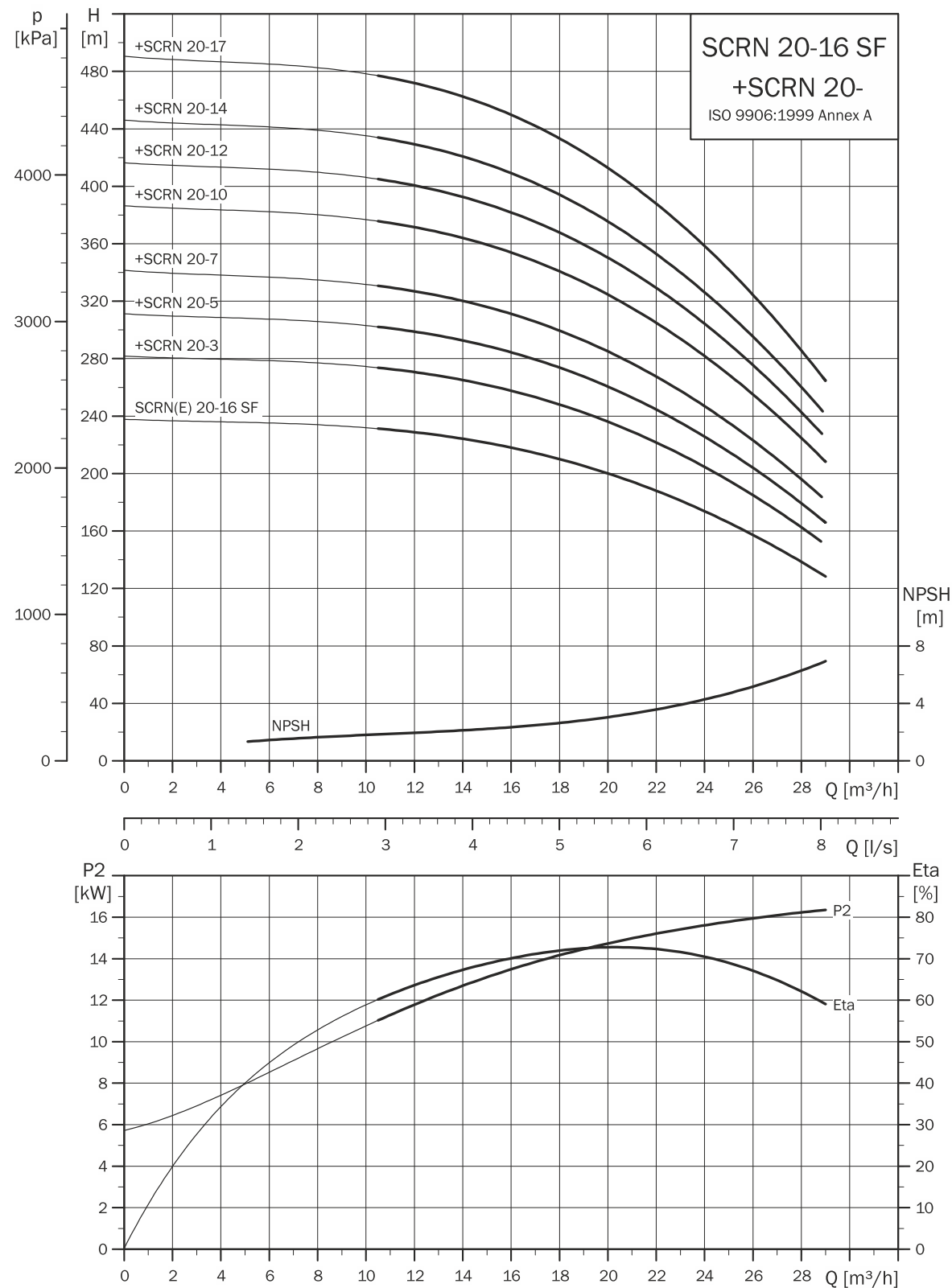


Dimensions and weights

* High-pressure pump

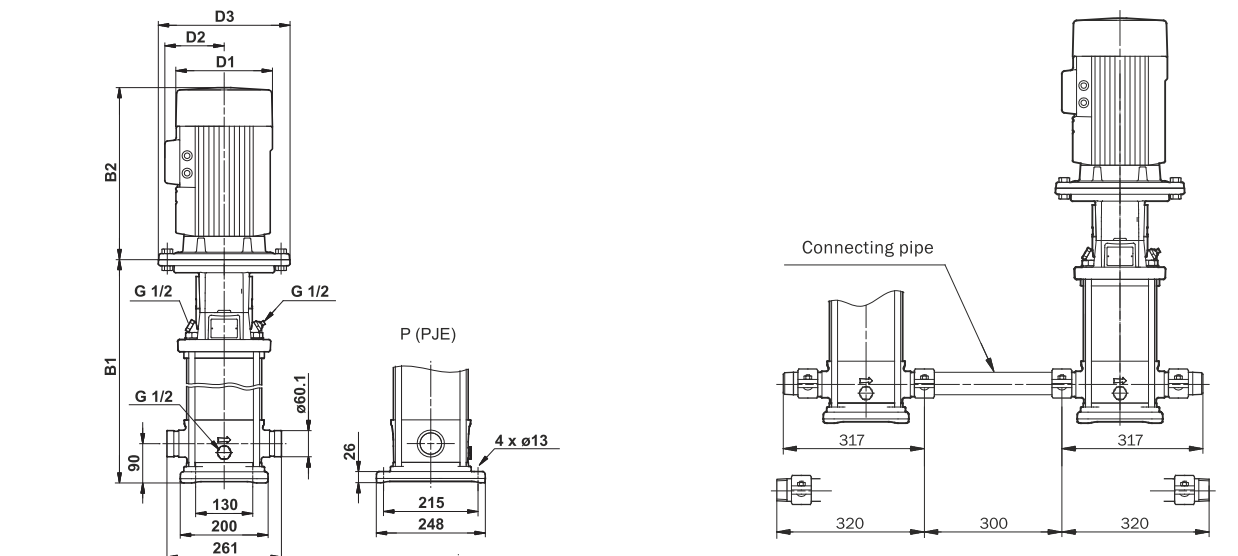
Performance curves

SCRN 20 SF, 50 Hz



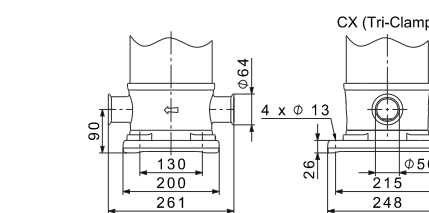
Technical data

Dimensional sketches

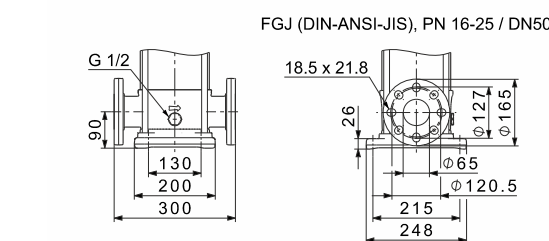


SCRN feed pump/SCRN SF high-pressure pump

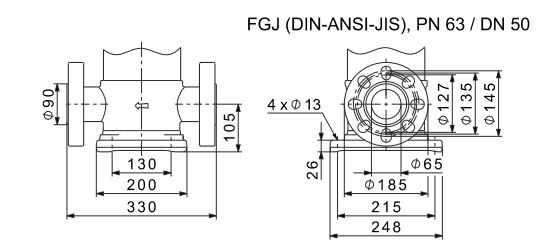
SCRN feed pump, connecting pipe and SCRN SF high-pressure pump



SCRN feed pump/SCRN SF high-pressure pump



SCRN feed pump



SCRN SF high-pressure pump

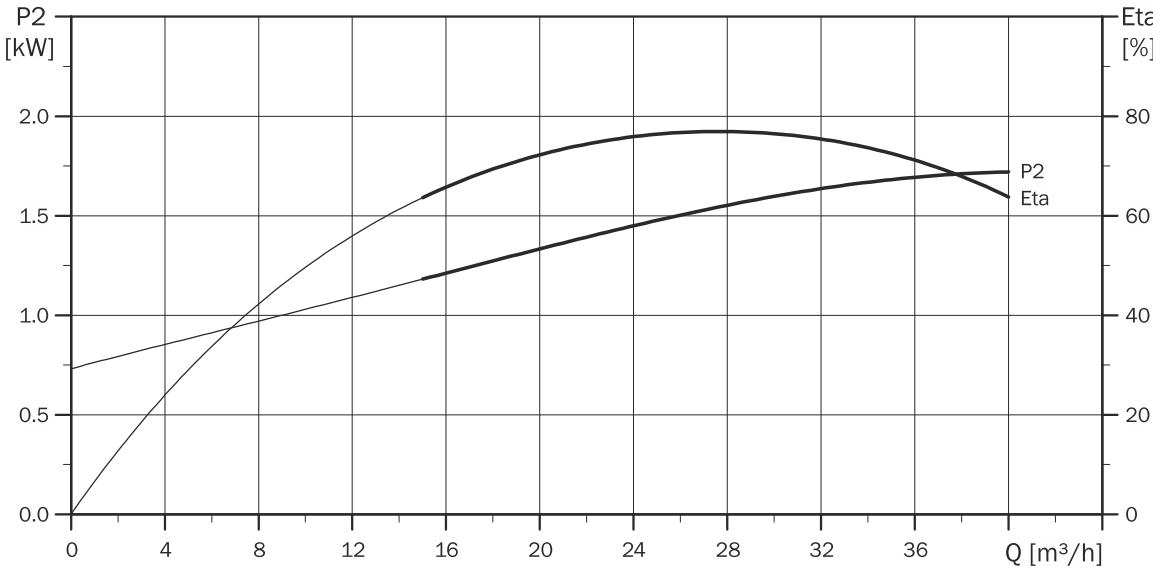
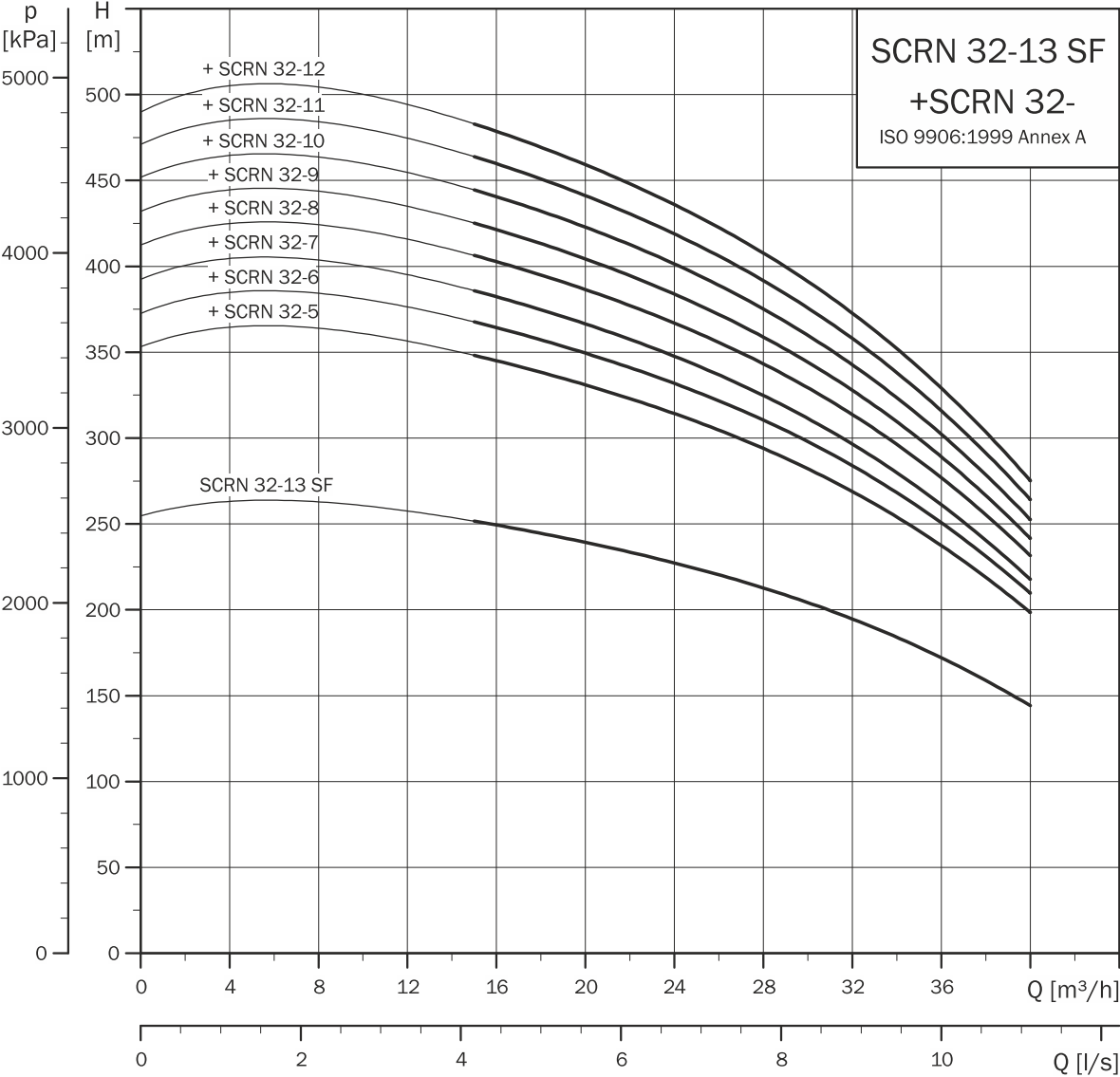
Dimensions and weights

Pump type	Motor P ₂ [kW]	SCRN										SCRNE									
		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							
SCRN 20-3	4	463	835	463	835	220	134	-	59	64	-	-	-	-	-	-	-	-	-		
SCRN 20-5	5.5	585	976	585	976	220	134	300	82	87	-	-	-	-	-	-	-	-	-		
SCRN 20-7	7.5	675	1054	675	1054	260	159	300	96	101	-	-	-	-	-	-	-	-	-		
SCRN 20-10	11	887	1358	887	1358	314	204	350	142	147	-	-	-	-	-	-	-	-	-		
SCRN 20-12	15	977	1448	977	1448	314	204	350	158	163	-	-	-	-	-	-	-	-	-		
SCRN 20-14	15	1067	1538	1067	1538	314	204	350	162	166	-	-	-	-	-	-	-	-	-		
SCRN 20-17	18.5	1202	1717	1202	1717	314	204	350	180	184	-	-	-	-	-	-	-	-	-		
SCRN(E)20-16SF	18.5	1202	1717	1202	1717	314	204	350	151	159	1217	1732	1232	1747	314	308	350	226	236		

* High-pressure pump

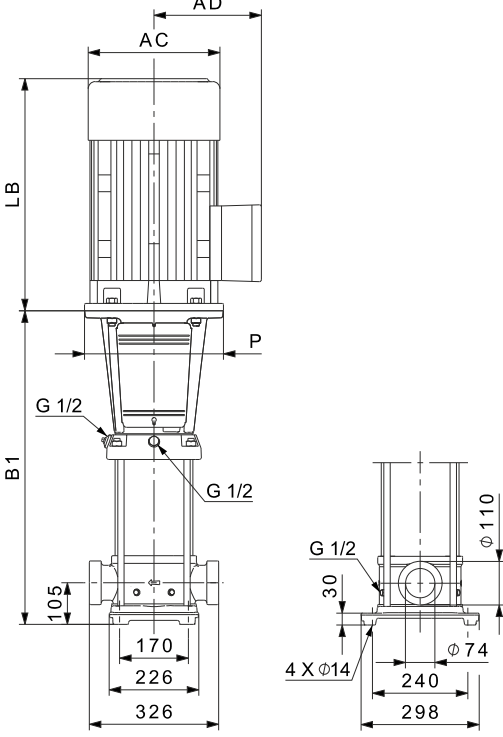
Performance curves

SCRN 32, 50 Hz

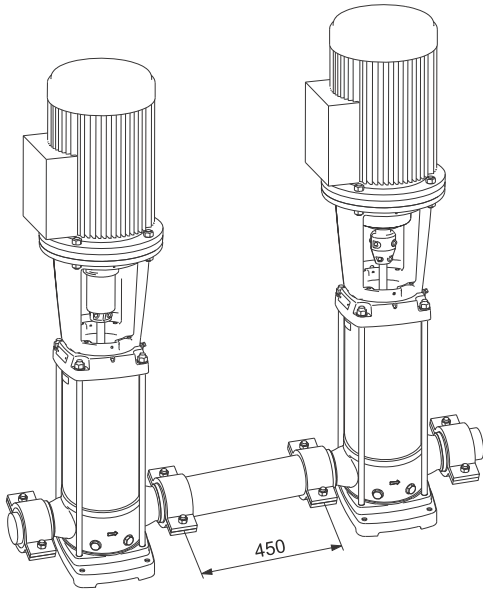


Technical data

Dimensional sketches



SCRN feed pump/SCRN SF high-pressure pump



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

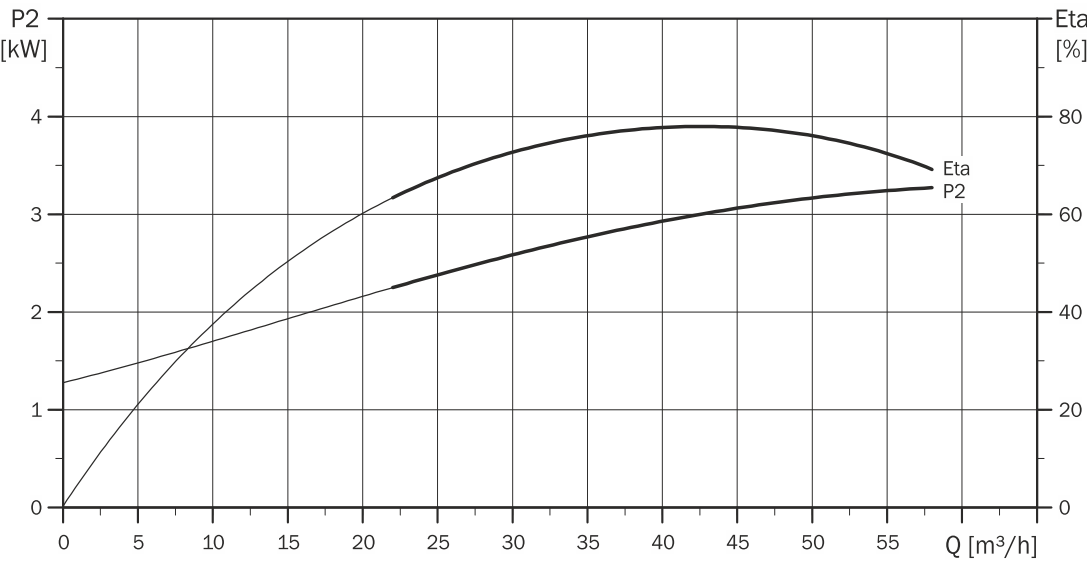
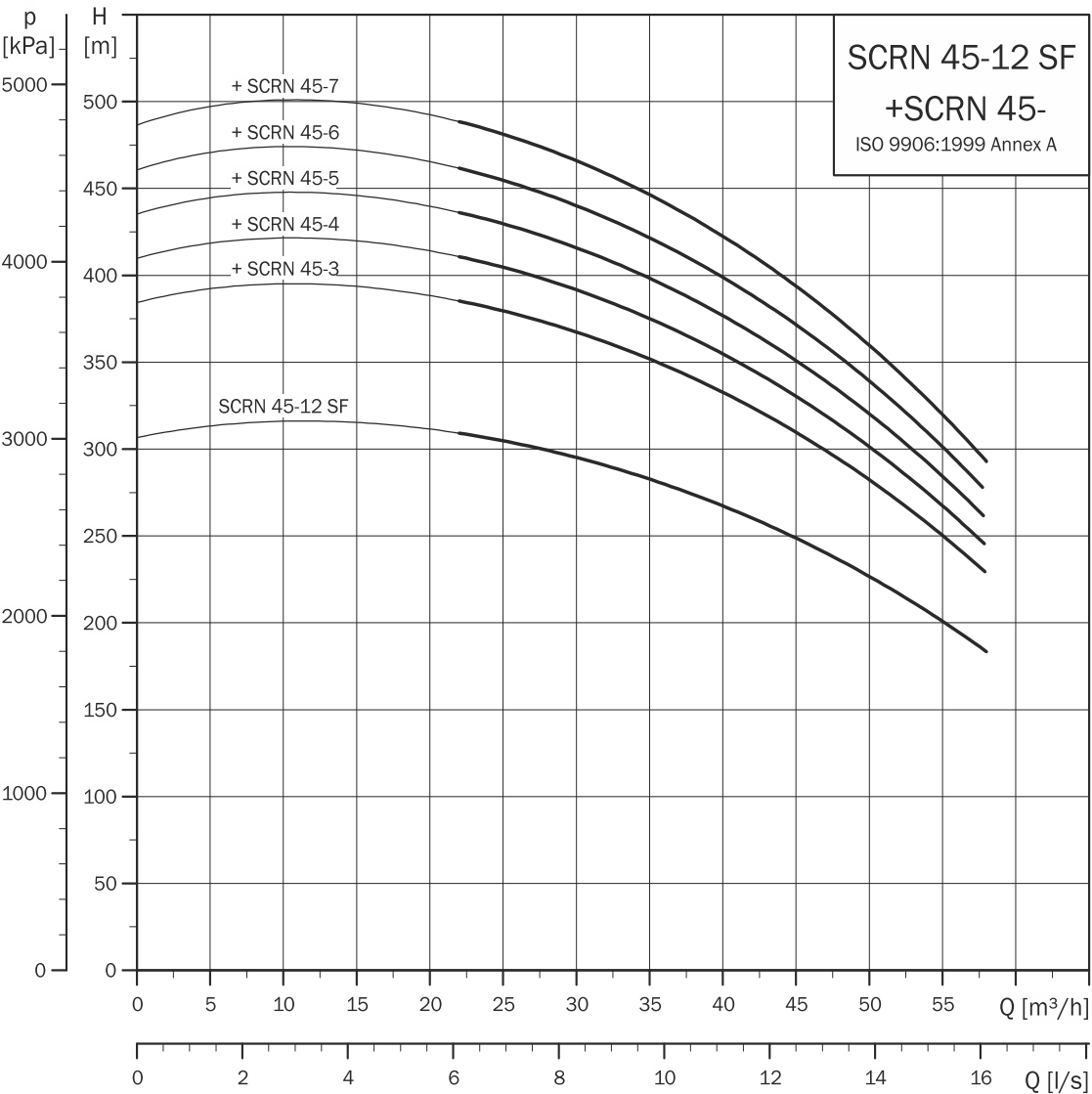
Dimensions and weights

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

* High-pressure pump

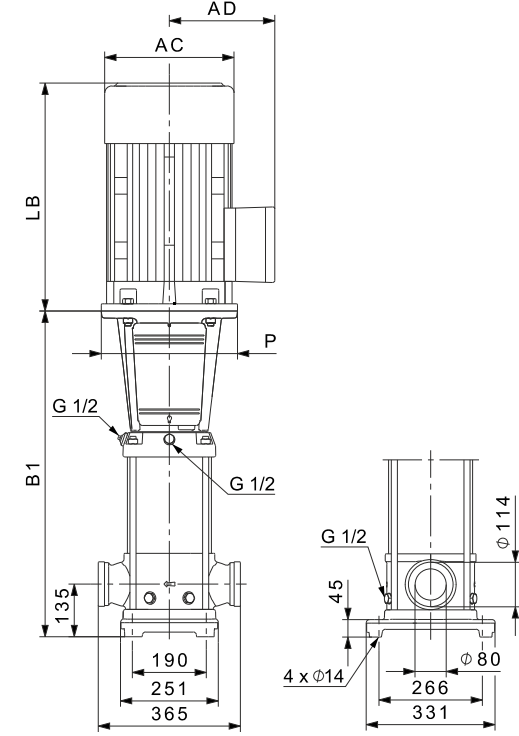
Performance curves

SCRN 45, 50 Hz

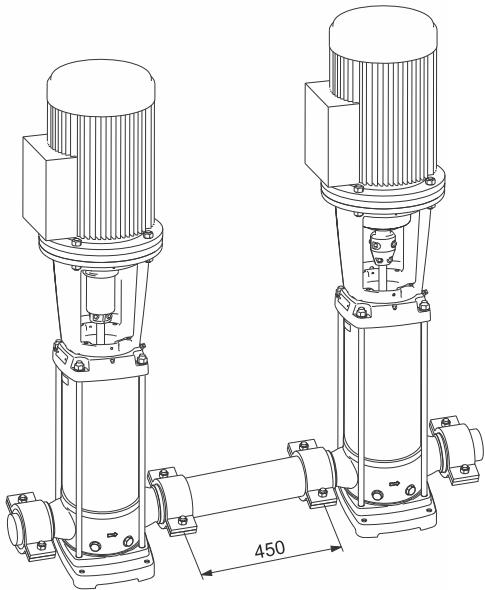


Technical data

Dimensional sketches



SCR N feed pump/SCR N SF high-pressure pump



SCR N feed pump, connecting pipe and SCR N SF high-pressure pump

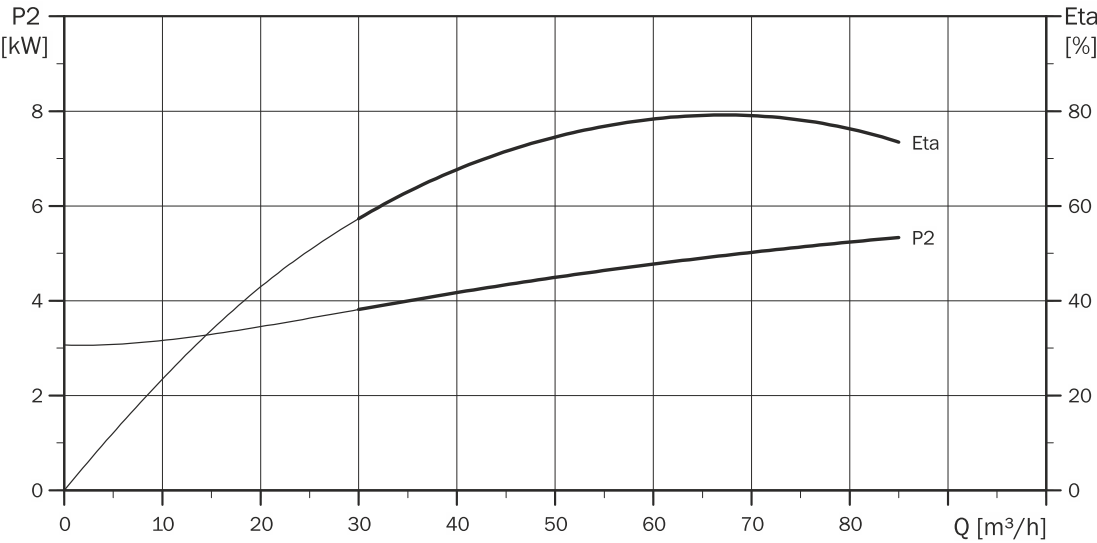
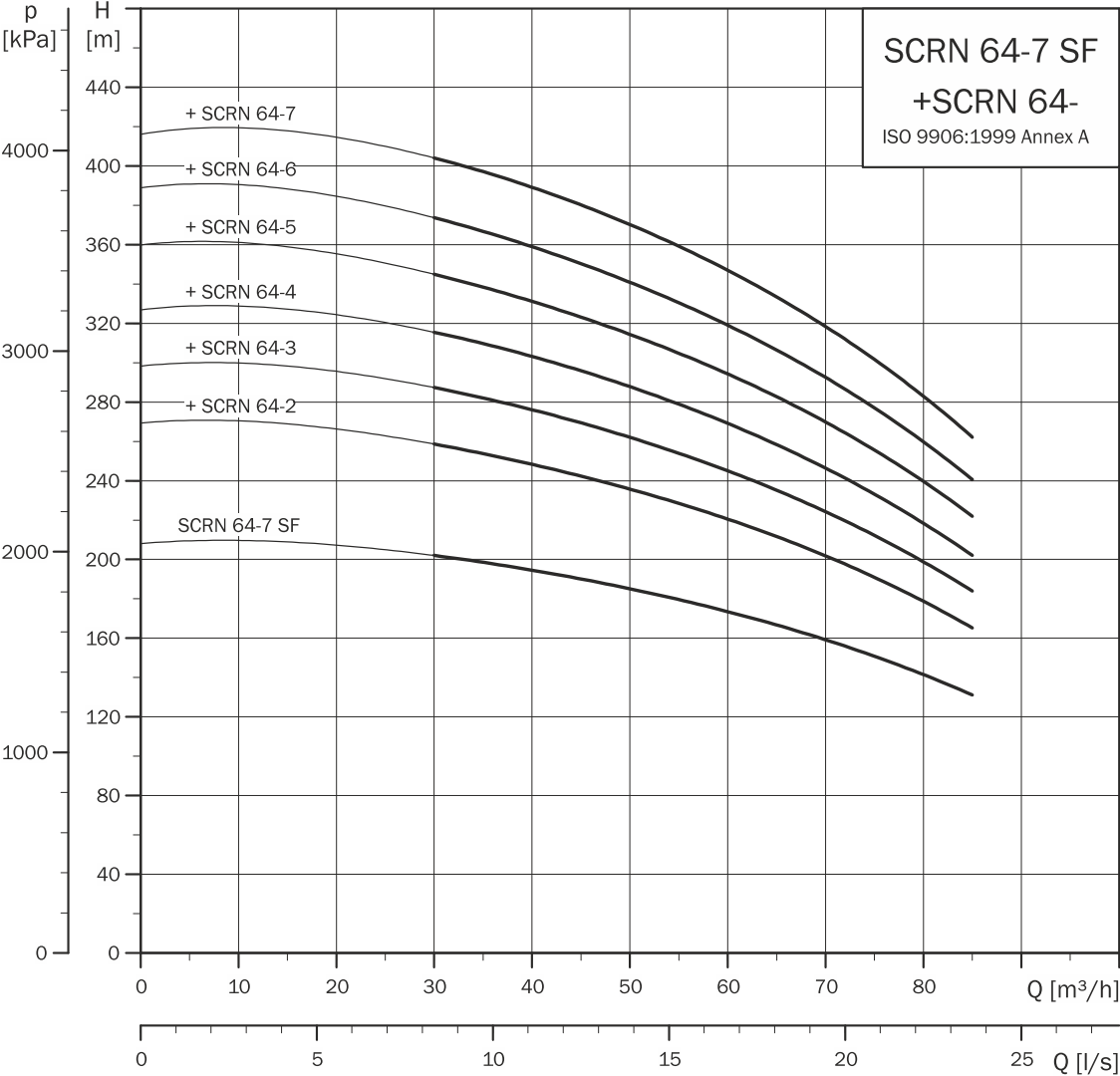
Dimensions and weights

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

* High-pressure pump

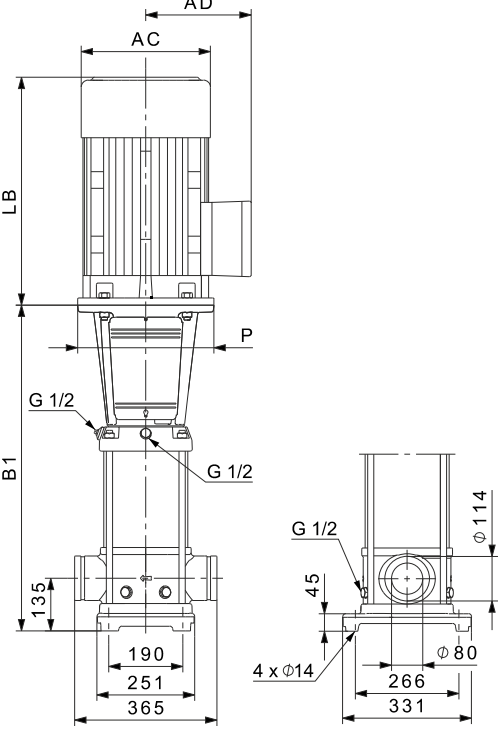
Performance curves

SCR 64, 50 Hz

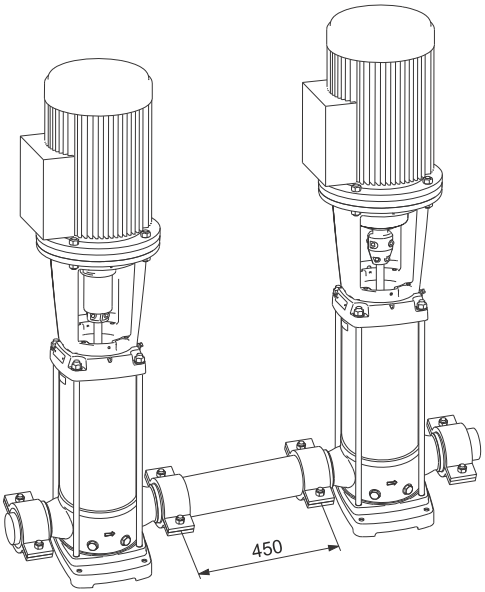


Technical data

Dimensional sketches



SCRN feed pump/SCRN SF high-pressure pump



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

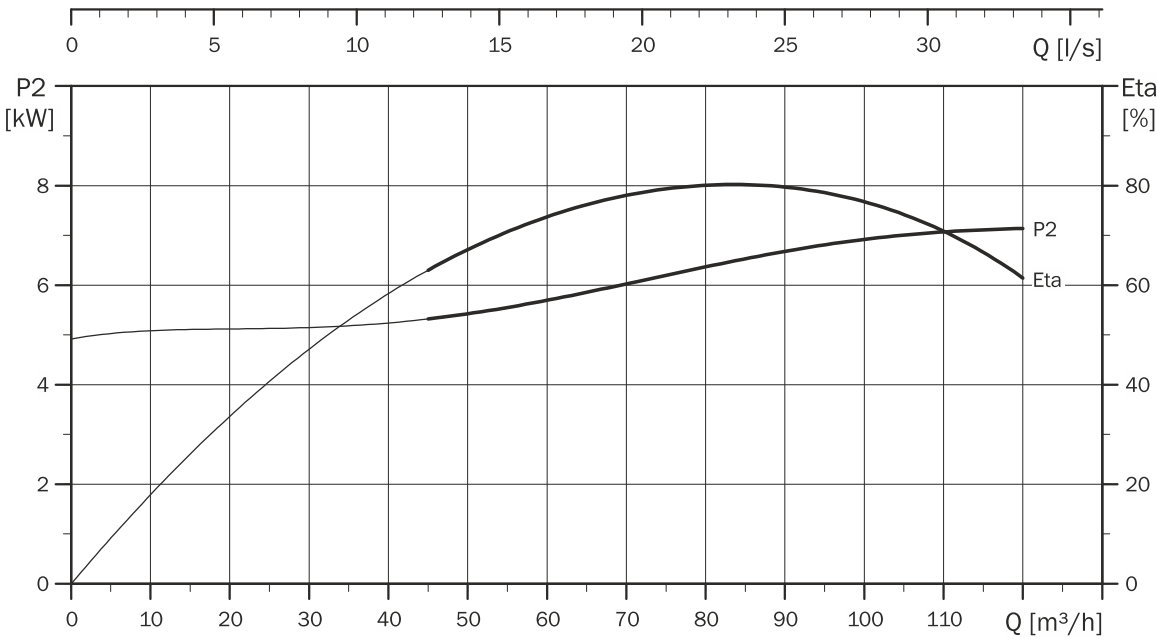
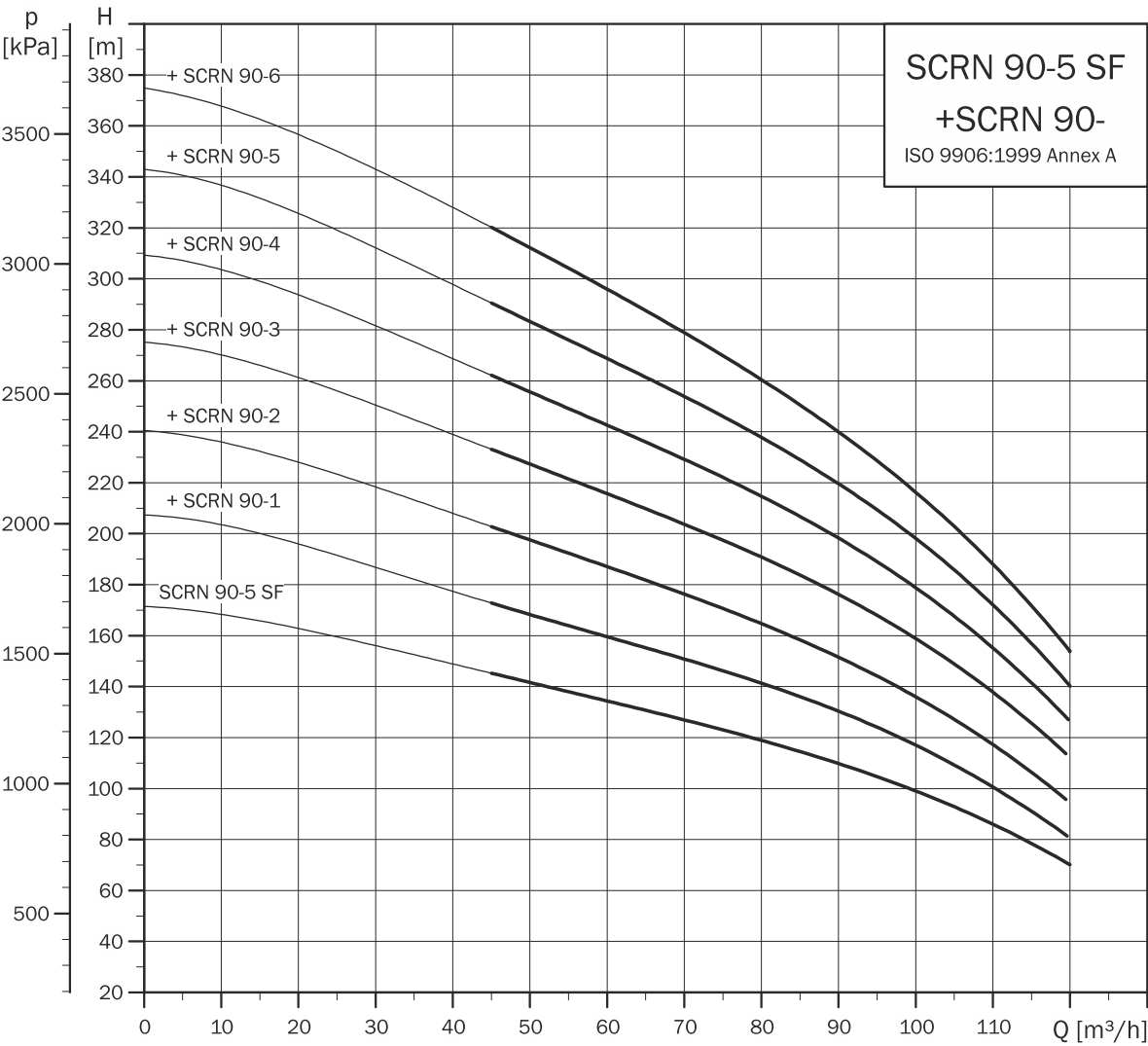
Dimensions and weights

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

* High-pressure pump

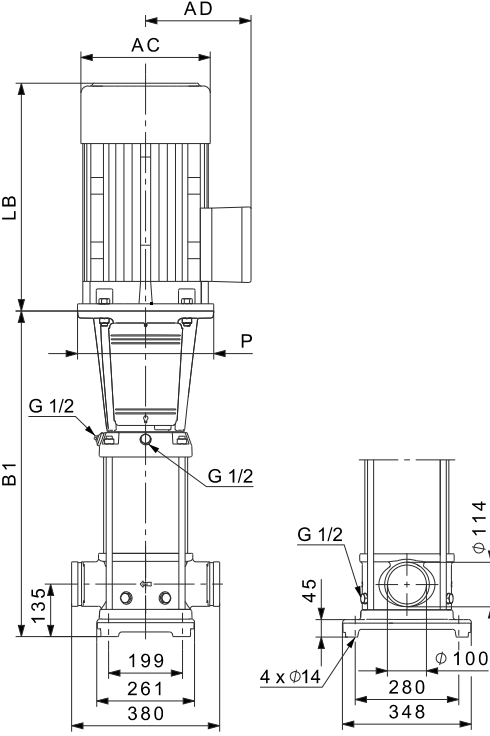
Performance curves

SCRN 90, 50 Hz

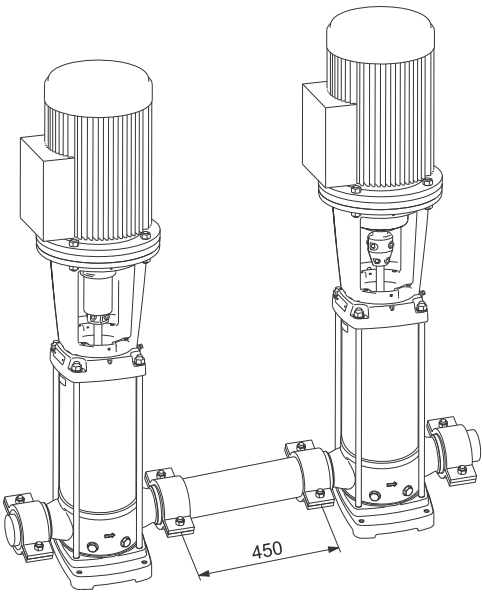


Technical data

Dimensional sketches



SCRN feed pump/SCRN SF high-pressure pump



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

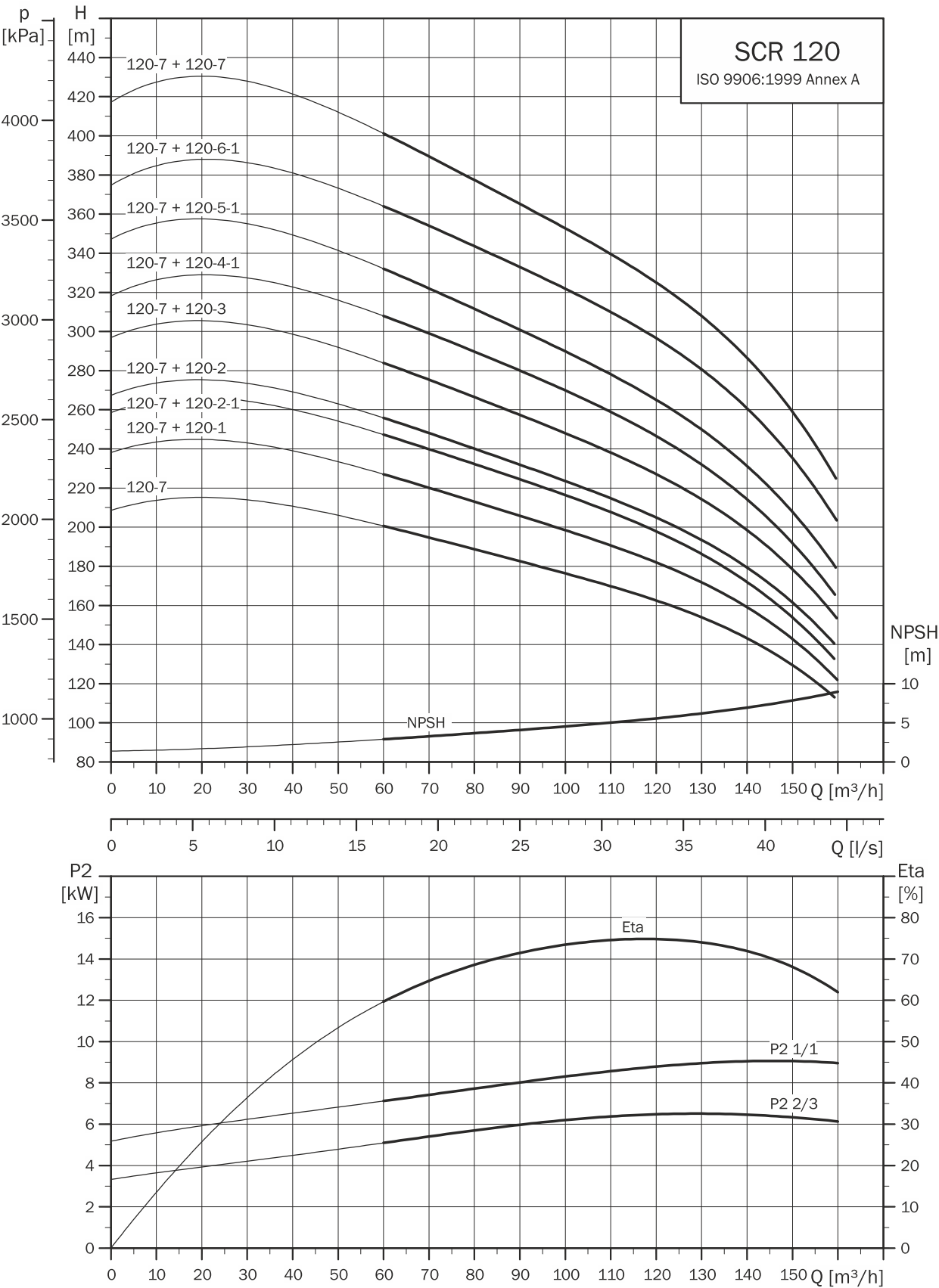
Dimensions and weights

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

* High-pressure pump

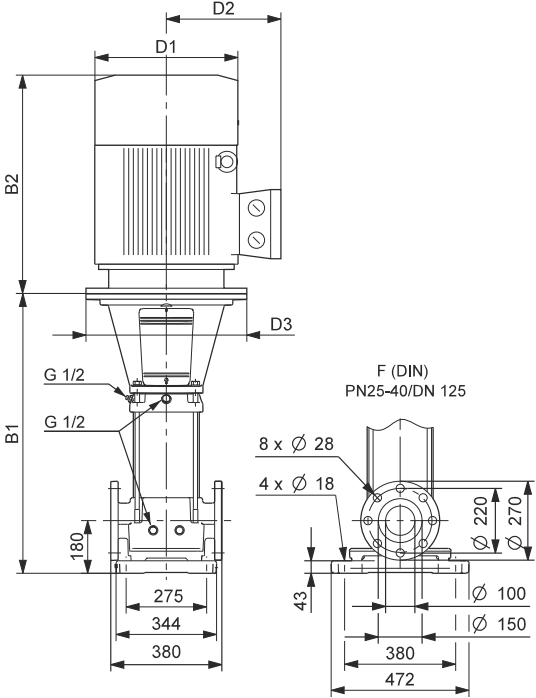
Performance curves

SCR 120, 50 Hz

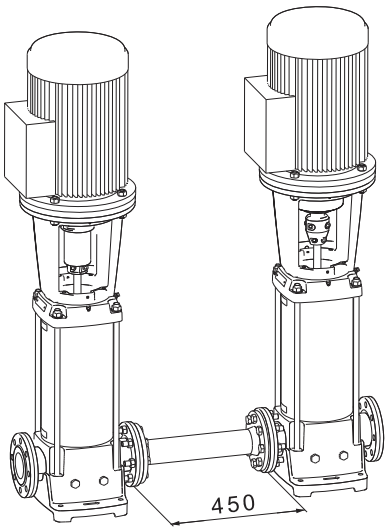


Technical data

Dimensional sketches



SCR feed pump/SCR high-pressure pump



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

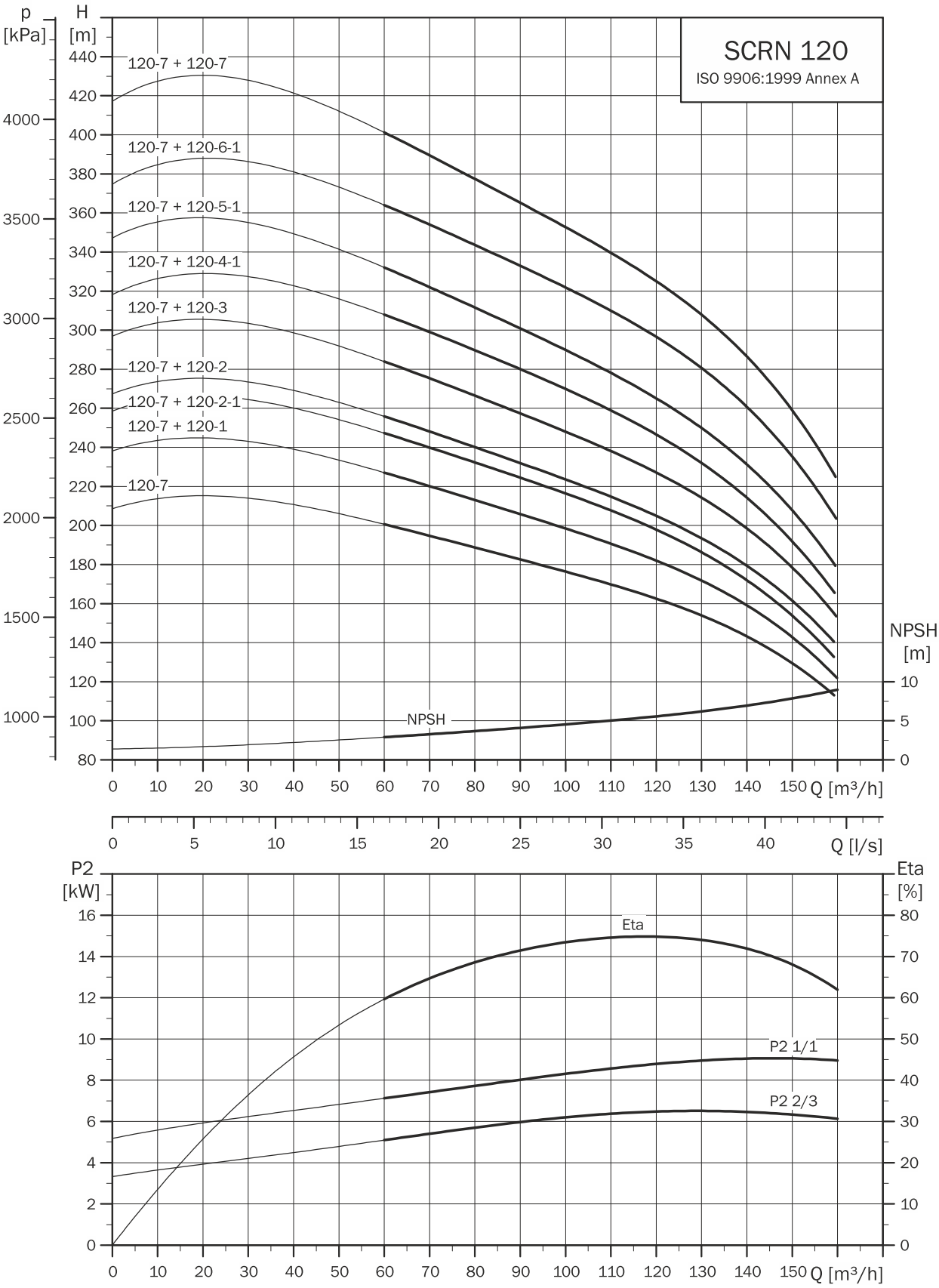
Dimensions and weights

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

* High-pressure pump

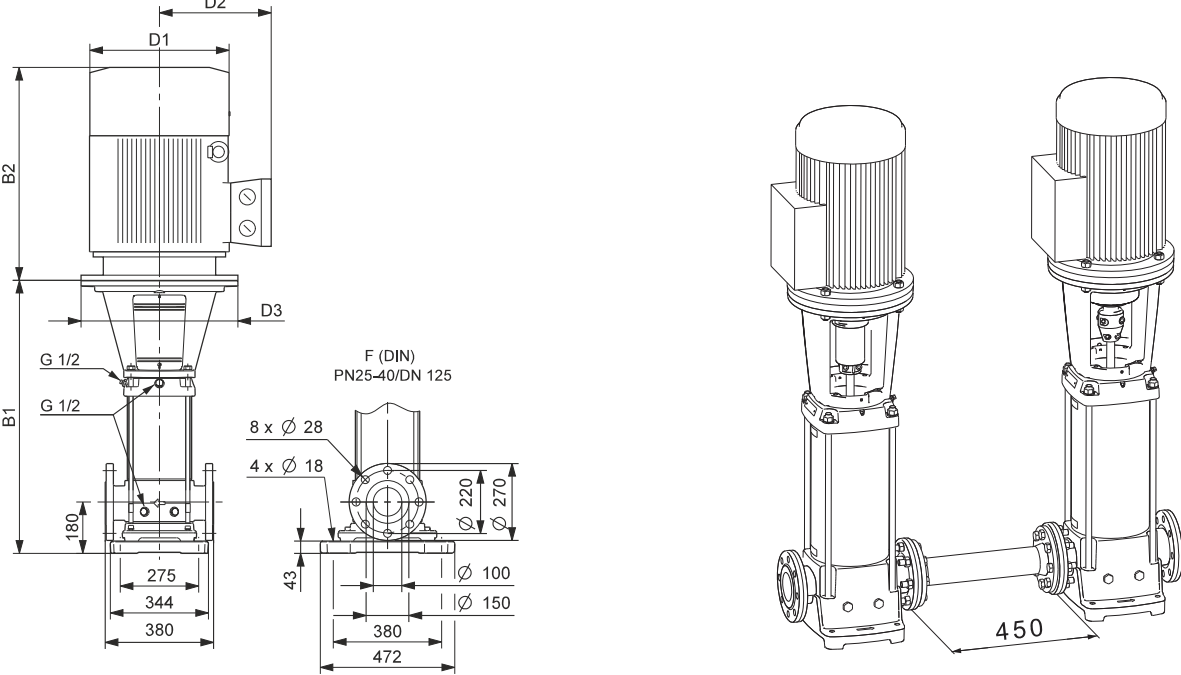
Performance curves

SCRN 120, 50 Hz



Technical data

Dimensional sketches



SCR N feed pump/SCR N high-pressure pump

SCR N feed pump, connecting pipe and SCR N high-pressure pump

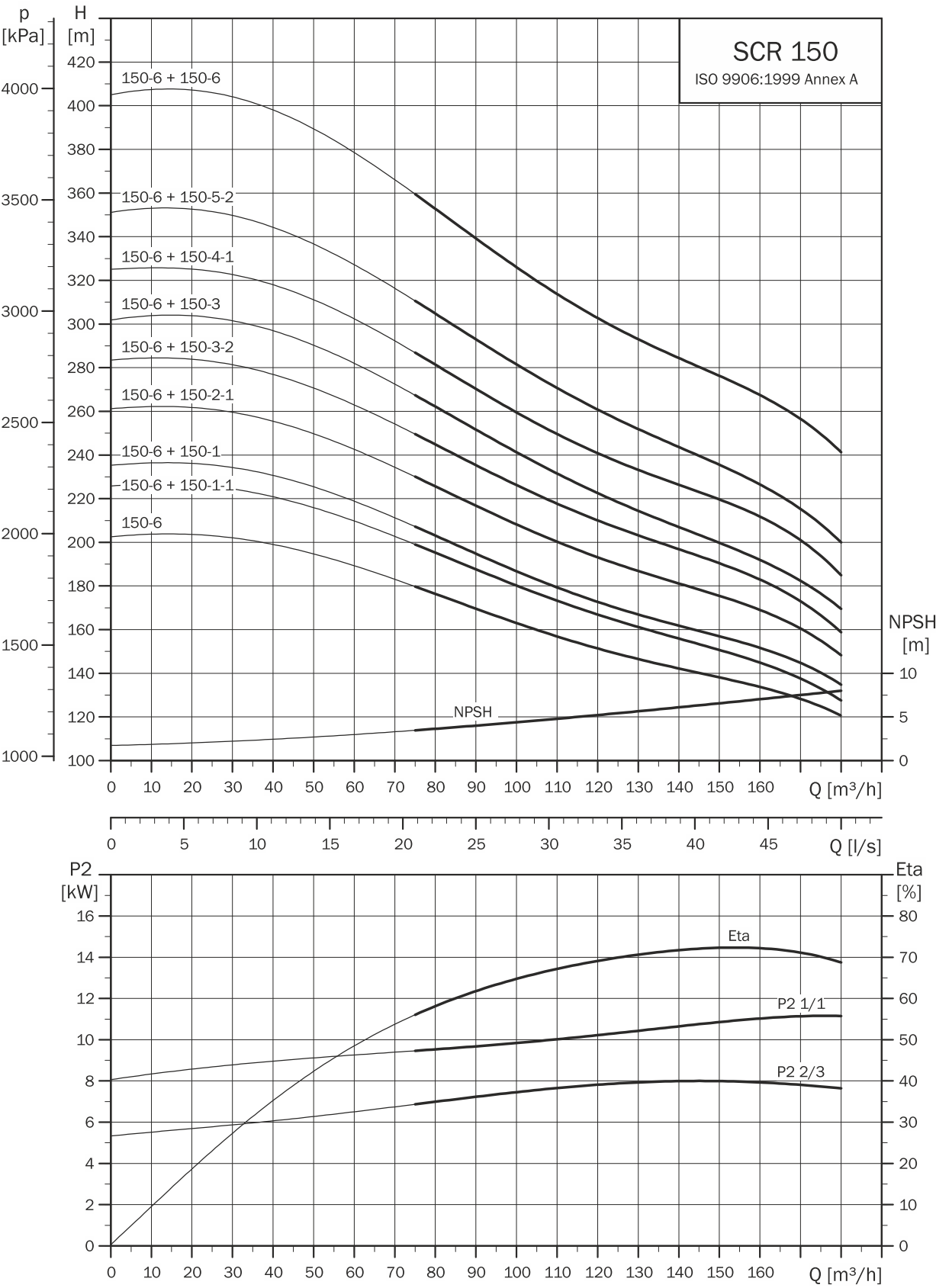
Dimensions and weights

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

* High-pressure pump

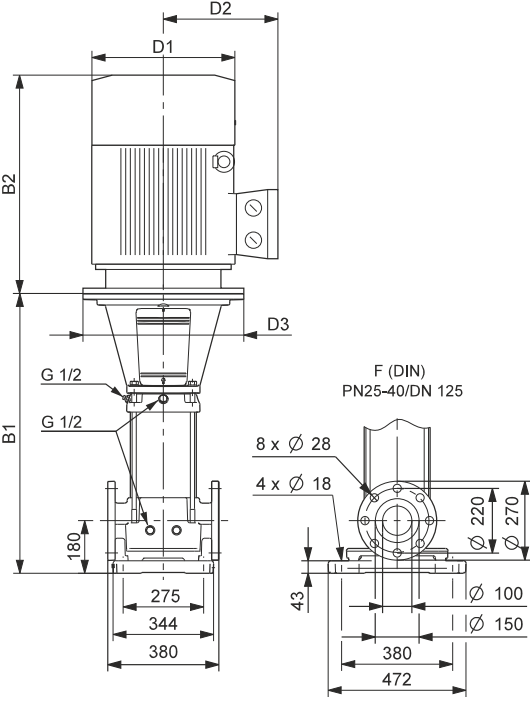
Performance curves

SCR 150, 50 Hz

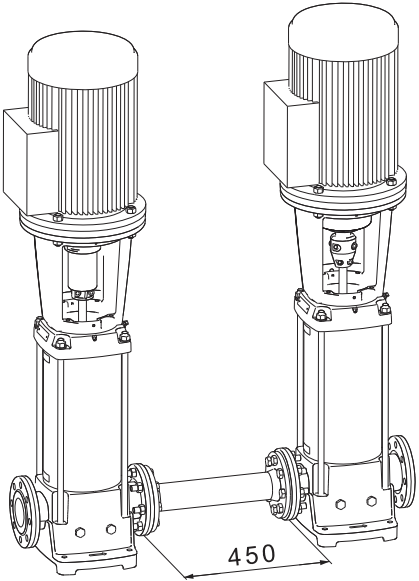


Technical data

Dimensional sketches



SCRN feed pump/SCRN SF high-pressure pump



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

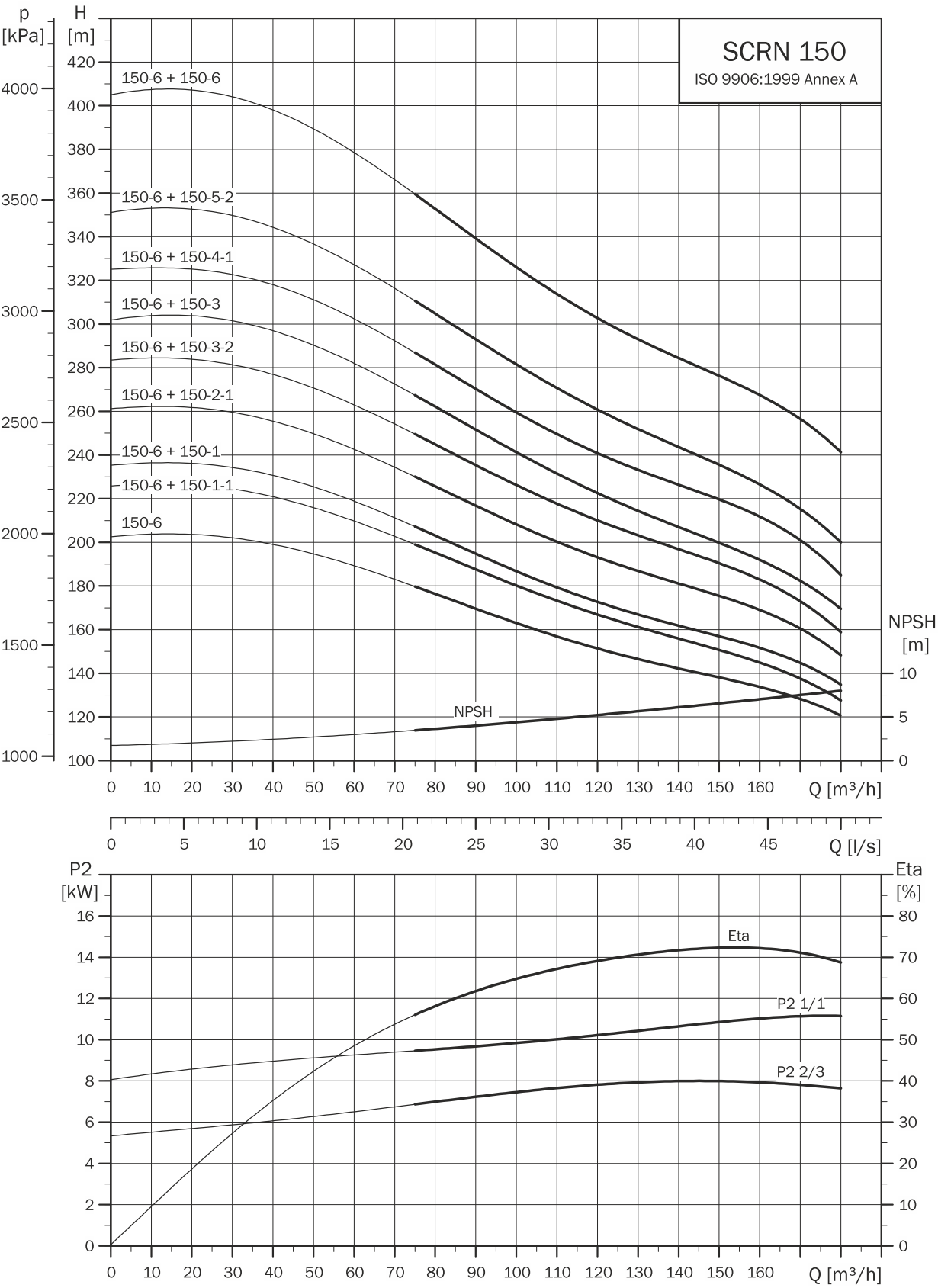
Dimensions and weights

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

* High-pressure pump

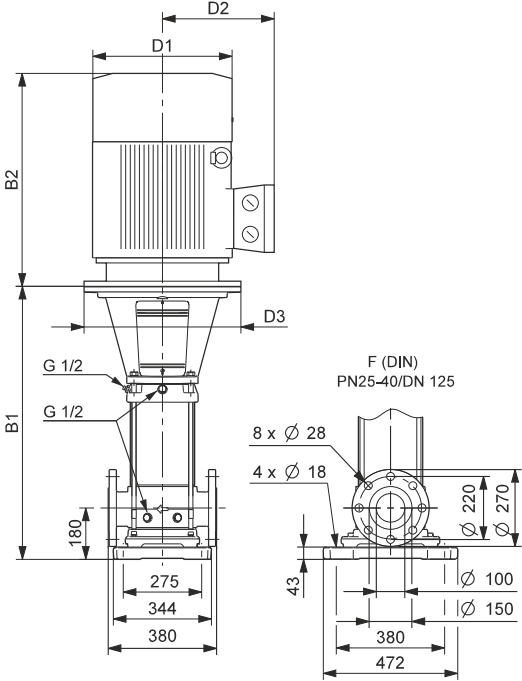
Performance curves

SCRN 150, 50 Hz

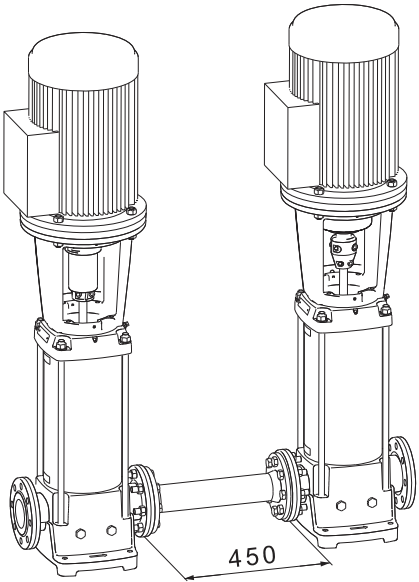


Technical data

Dimensional sketches



SCRN feed pump/SCRN SF high-pressure pump



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

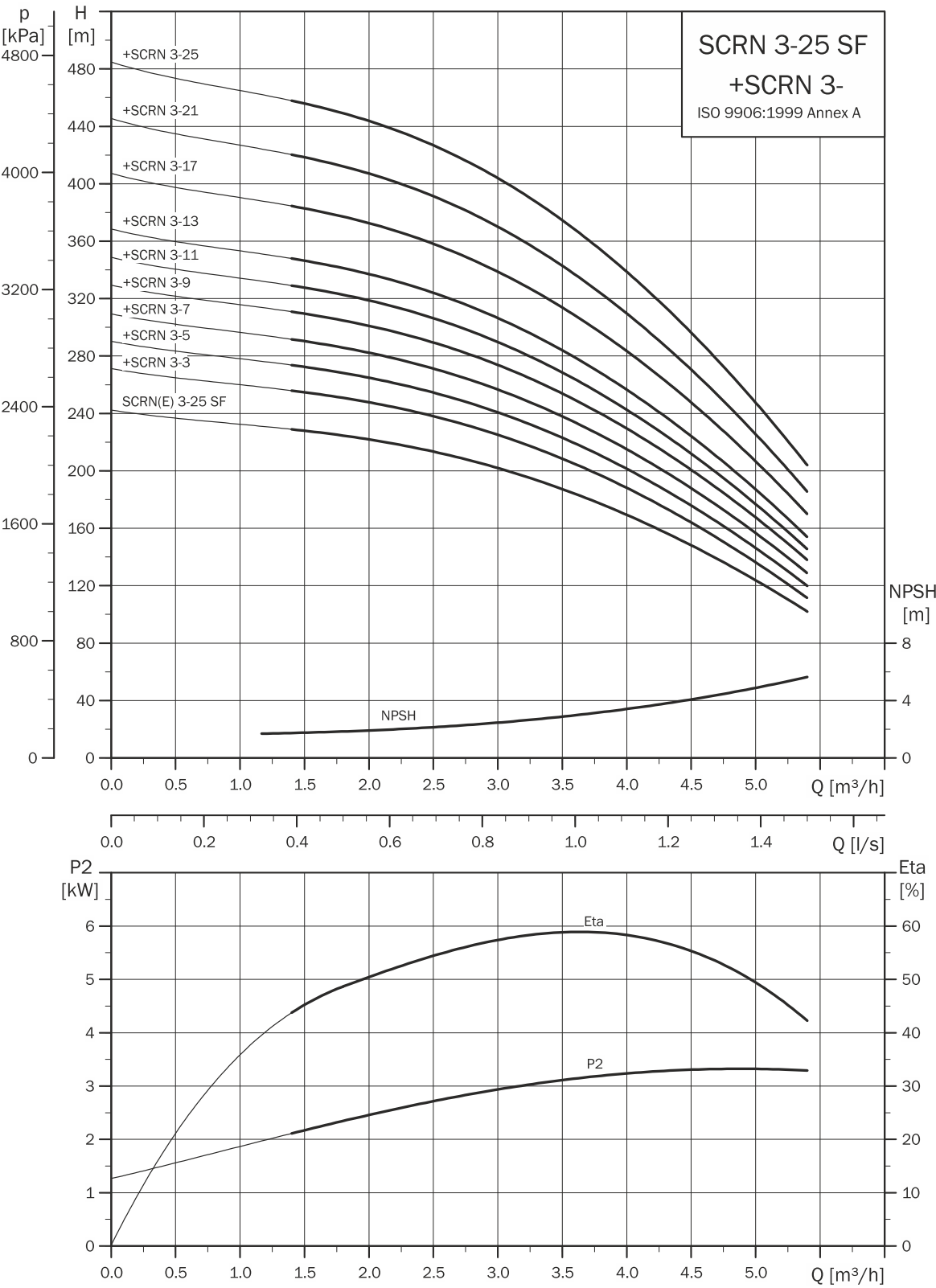
Dimensions and weights

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

* High-pressure pump

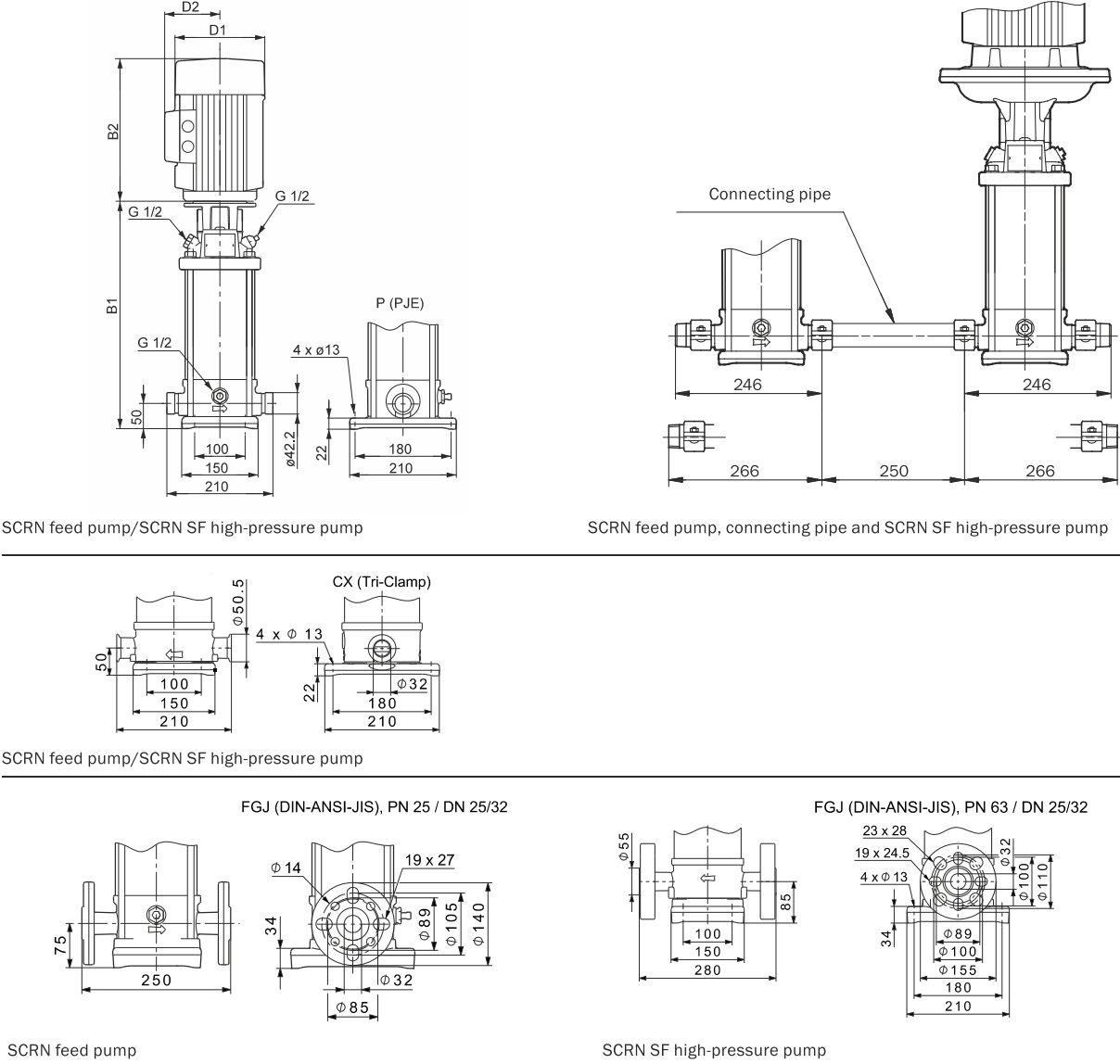
Performance curves

SCRN 3 SF, 60 Hz



Technical data

Dimensional sketches



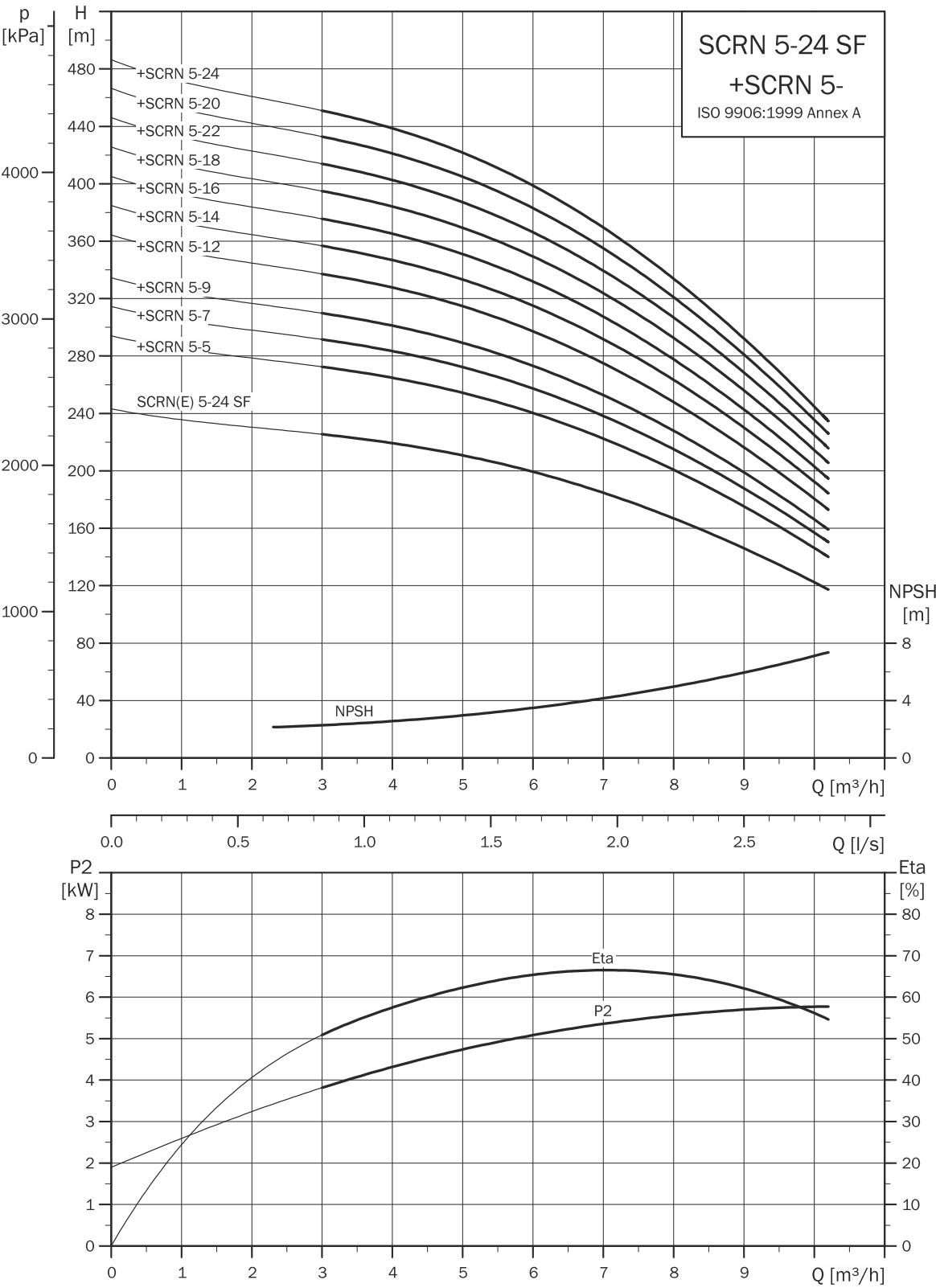
Dimensions and weights

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

* High-pressure pump

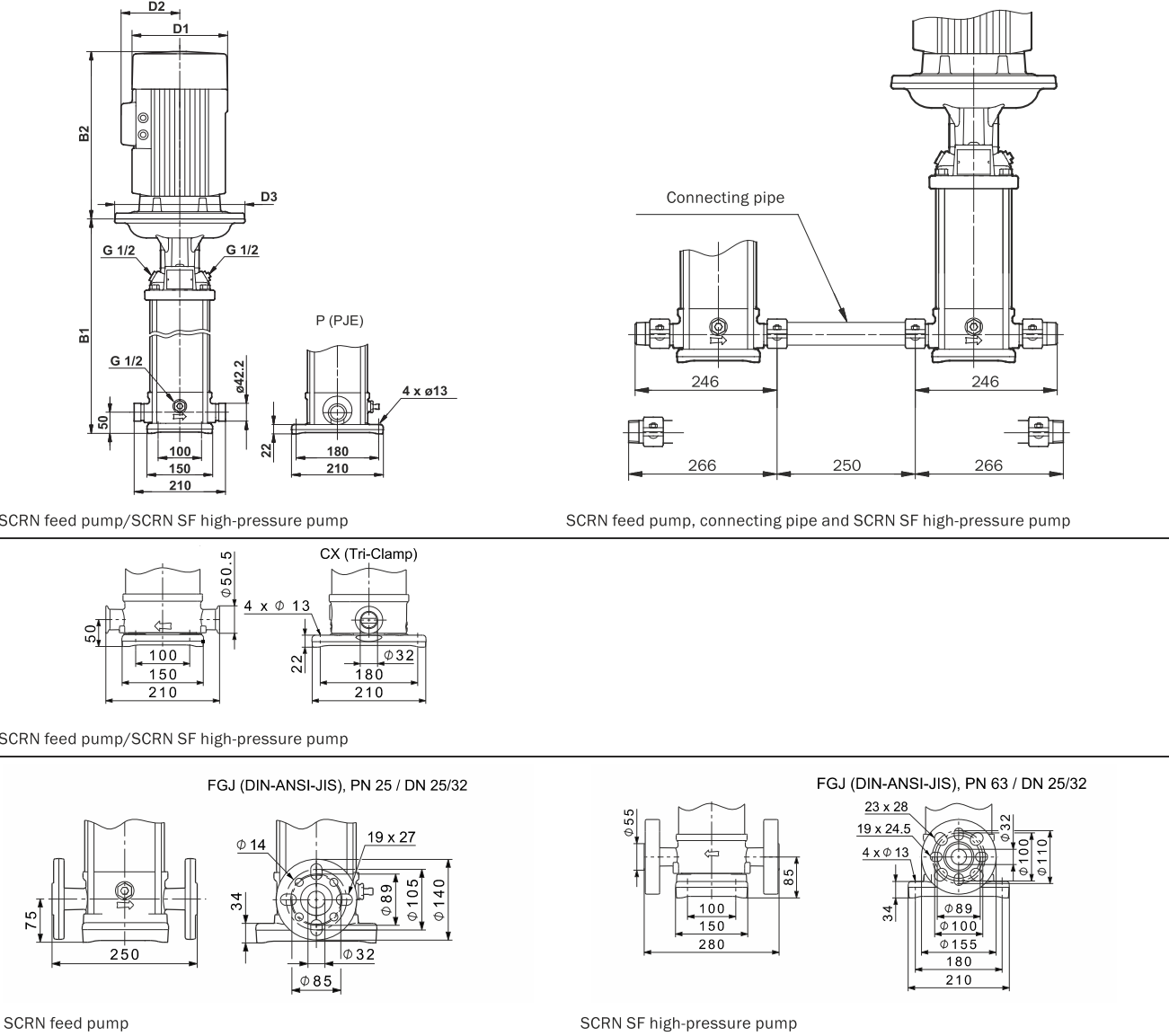
Performance curves

SCRN 5 SF, 60 Hz



Technical data

Dimensional sketches



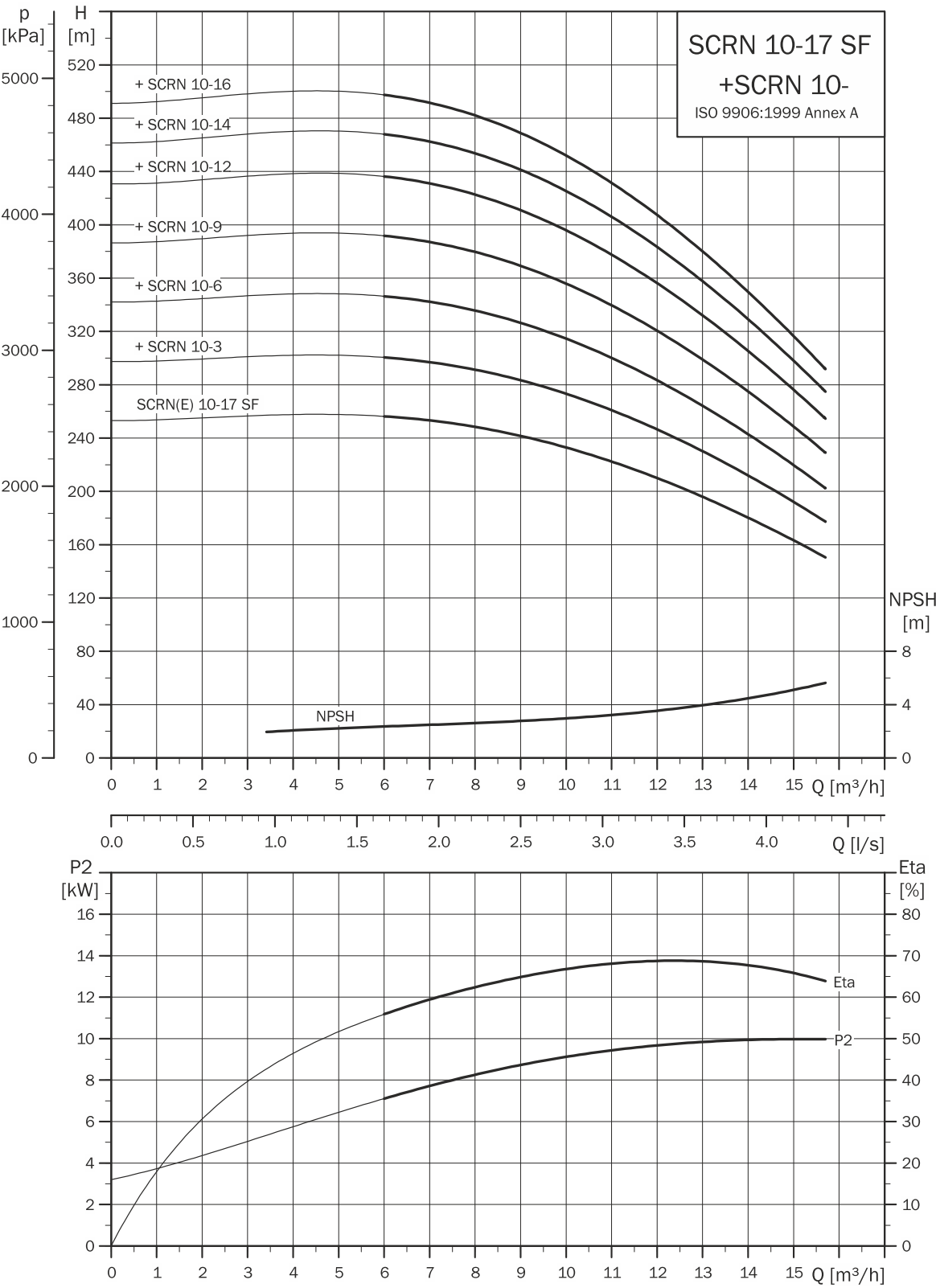
Dimensions and weights

Pump type	Motor P ₂ [kW]	SCRN										SCRNE									
		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						
SCRN 5-5	1.5	360	641	385	666	178	110	-	30	34	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-7	2.2	414	735	439	760	178	110	-	31	35	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-9	2.2	468	789	493	814	178	110	-	32	37	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-12	3	554	889	579	914	198	120	-	41	45	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-14	1.5	608	980	633	1005	220	134	-	51	55	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-16	4	662	1034	687	1059	220	134	-	52	56	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-18	5.5	745	1136	770	1161	220	134	300	67	71	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-20	5.5	799	1190	824	1215	220	134	300	68	72	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-22	5.5	853	1244	878	1269	220	134	300	69	73	-	-	-	-	-	-	-	-	-	-	-
SCRN 5-24	7.5	907	1286	932	1311	260	159	300	81	85	-	-	-	-	-	-	-	-	-	-	-
SCRN 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

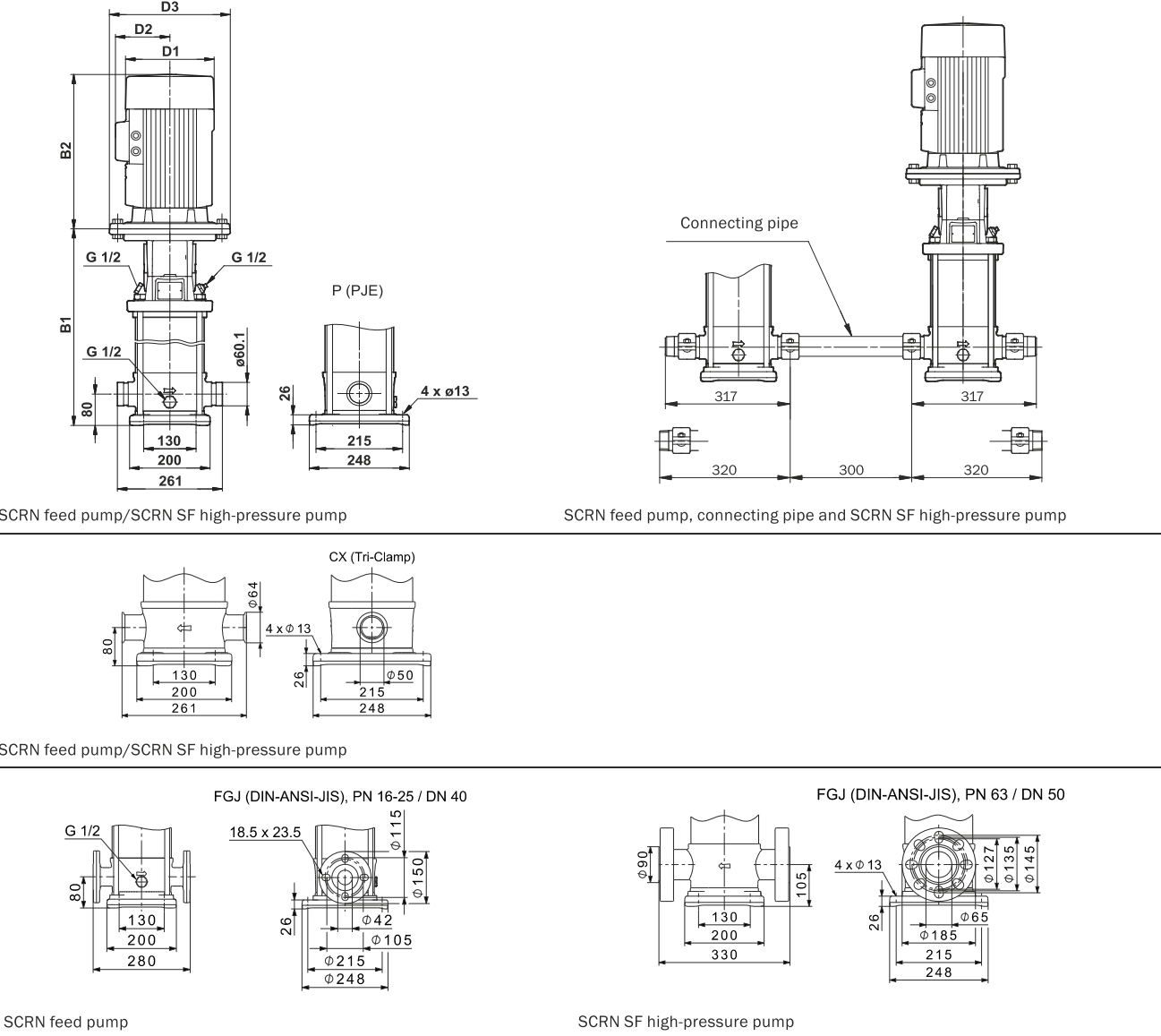
Performance curves

SCRN 10 SF, 60 Hz



Technical data

Dimensional sketches



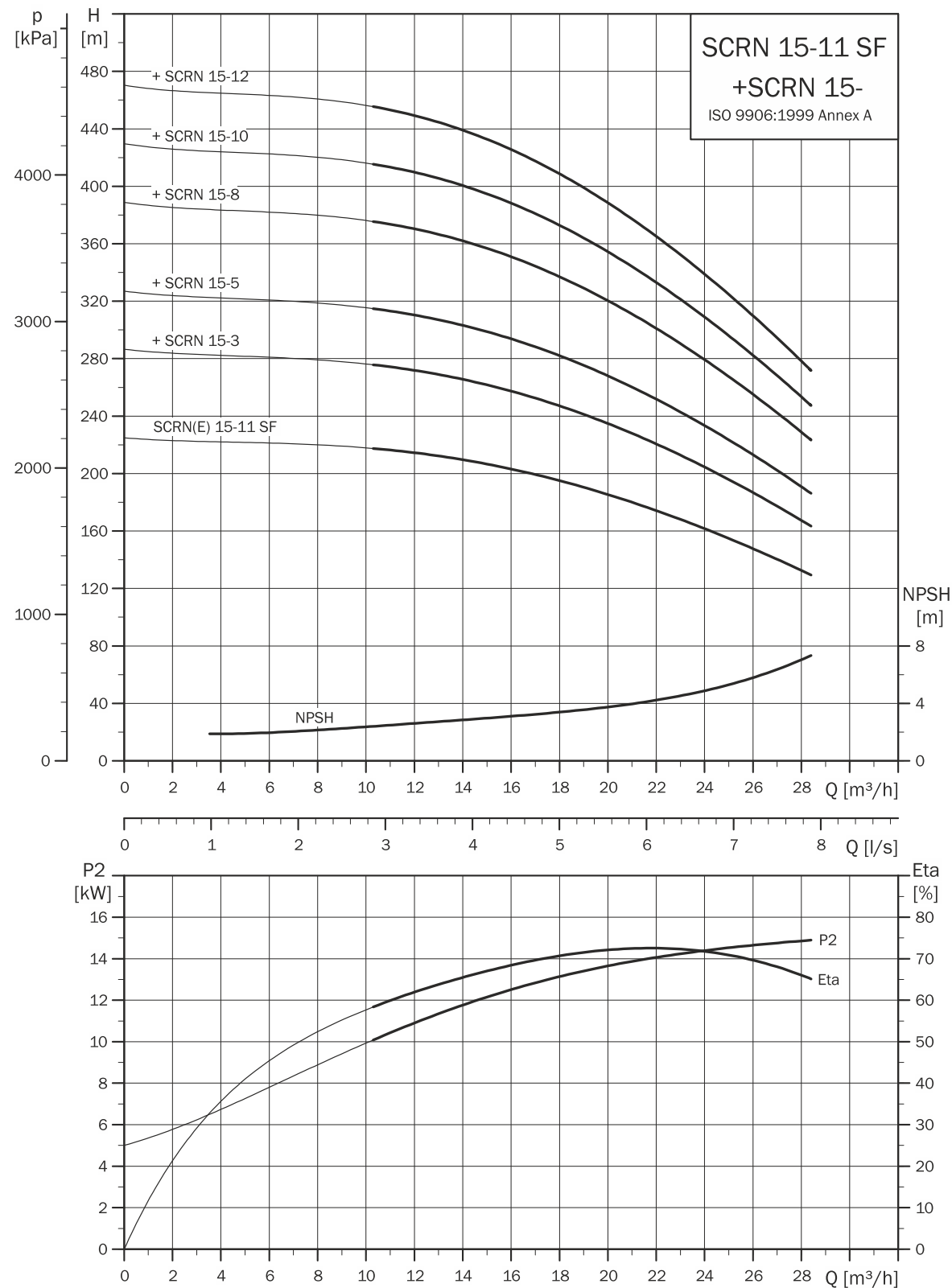
Dimensions and weights

Pump type	Motor P ₂ [kW]	SCRN										SCRNE									
		Dimension [mm]										Dimension [mm]									
		PJE/CX		FGJ		D1	D2	D3	Net weight [kg]			PJE/CX		FGJ		D1	D2	D3	Net weight [kg]		
		B1	B1+B2	B1	B1+B2				PJE/CX	FGJ		B1	B1+B2	B1	B1+B2				PJE/CX	FGJ	
SCRN 10-3	2.2	403	724	403	724	178	110	-	42	45	-	-	-	-	-	-	-	-	-	-	-
SCRN 10-6	4	498	870	498	870	220	134	-	60	64	-	-	-	-	-	-	-	-	-	-	-
SCRN 10-9	5.5	620	1011	620	1011	220	134	300	84	87	-	-	-	-	-	-	-	-	-	-	-
SCRN 10-12	7.5	710	1089	710	1089	260	159	300	98	101	-	-	-	-	-	-	-	-	-	-	-
SCRN 10-14	11	847	1318	847	1318	314	204	350	140	144	-	-	-	-	-	-	-	-	-	-	-
SCRN 10-16	11	907	1378	907	1378	314	204	350	143	146	-	-	-	-	-	-	-	-	-	-	-
SCRN(E)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

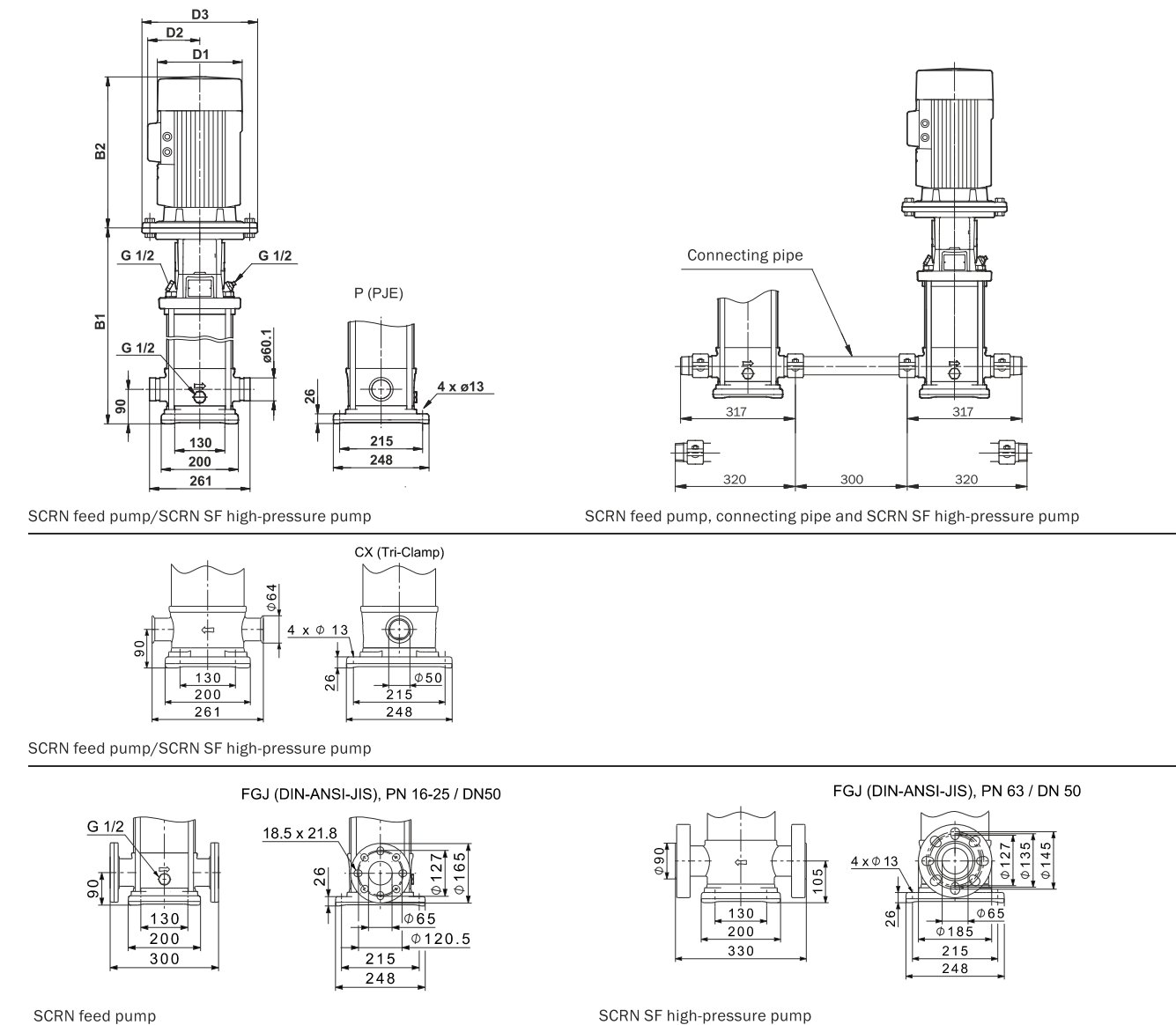
Performance curves

SCRN 15 SF, 60 Hz



Technical data

Dimensional sketches



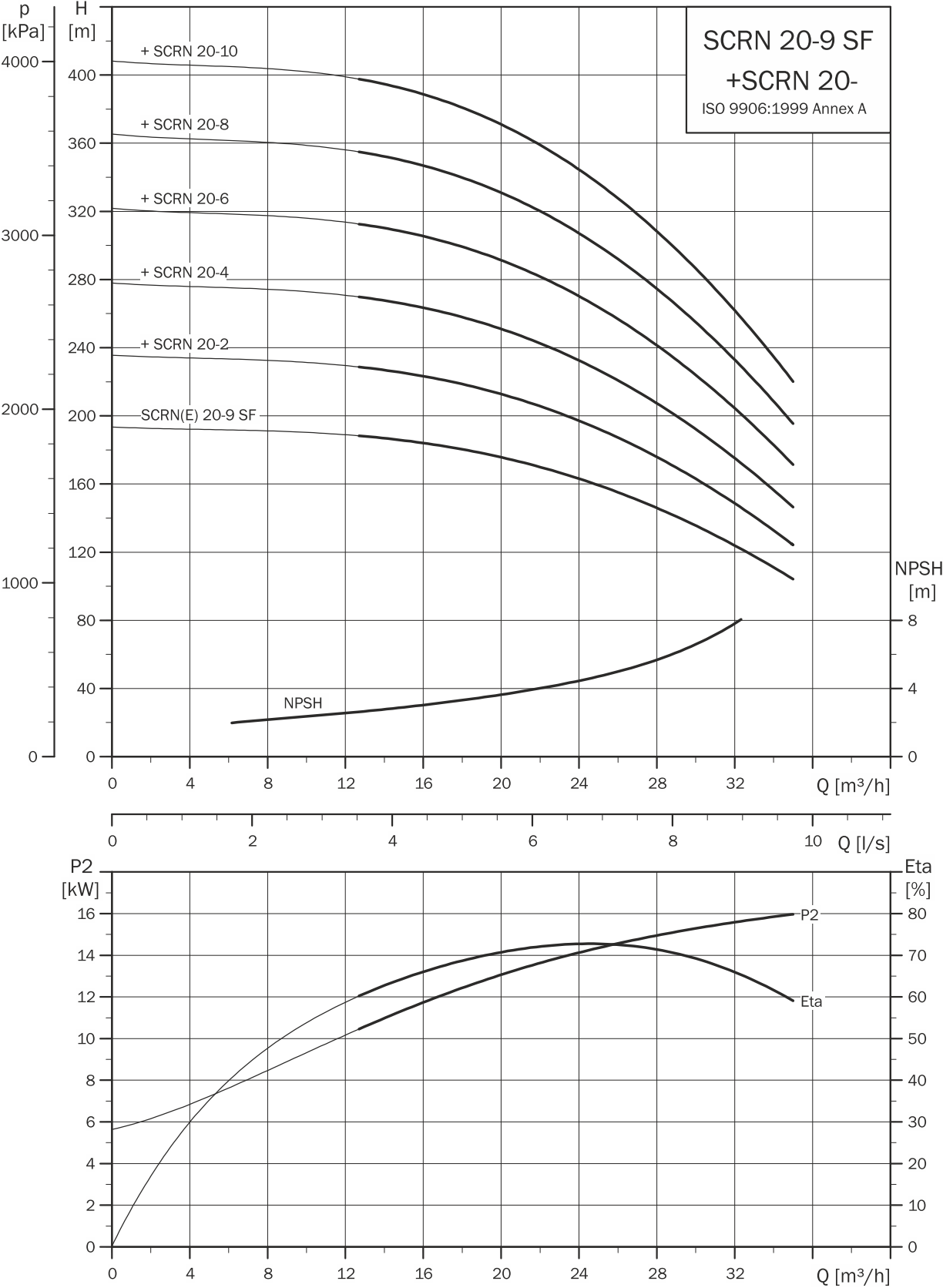
Dimensions and weights

Pump type	Motor P ₂ [kW]	SCRN										SCRNE											
		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									
SCRN 15-3	4	463	835	463	835	220	134	-	59	64	-	-	-	-	-	-	-	-	-				
SCRN 15-5	7.5	585	964	585	964	260	159	300	93	98	-	-	-	-	-	-	-	-	-				
SCRN 15-8	11	797	1268	797	1268	314	204	350	138	143	-	-	-	-	-	-	-	-	-				
SCRN 15-10	15	887	1358	887	1358	314	204	350	155	160	-	-	-	-	-	-	-	-	-				
SCRN 15-12	18.5	977	1492	977	1492	314	204	350	171	176	-	-	-	-	-	-	-	-	-				
SCRN(E) 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

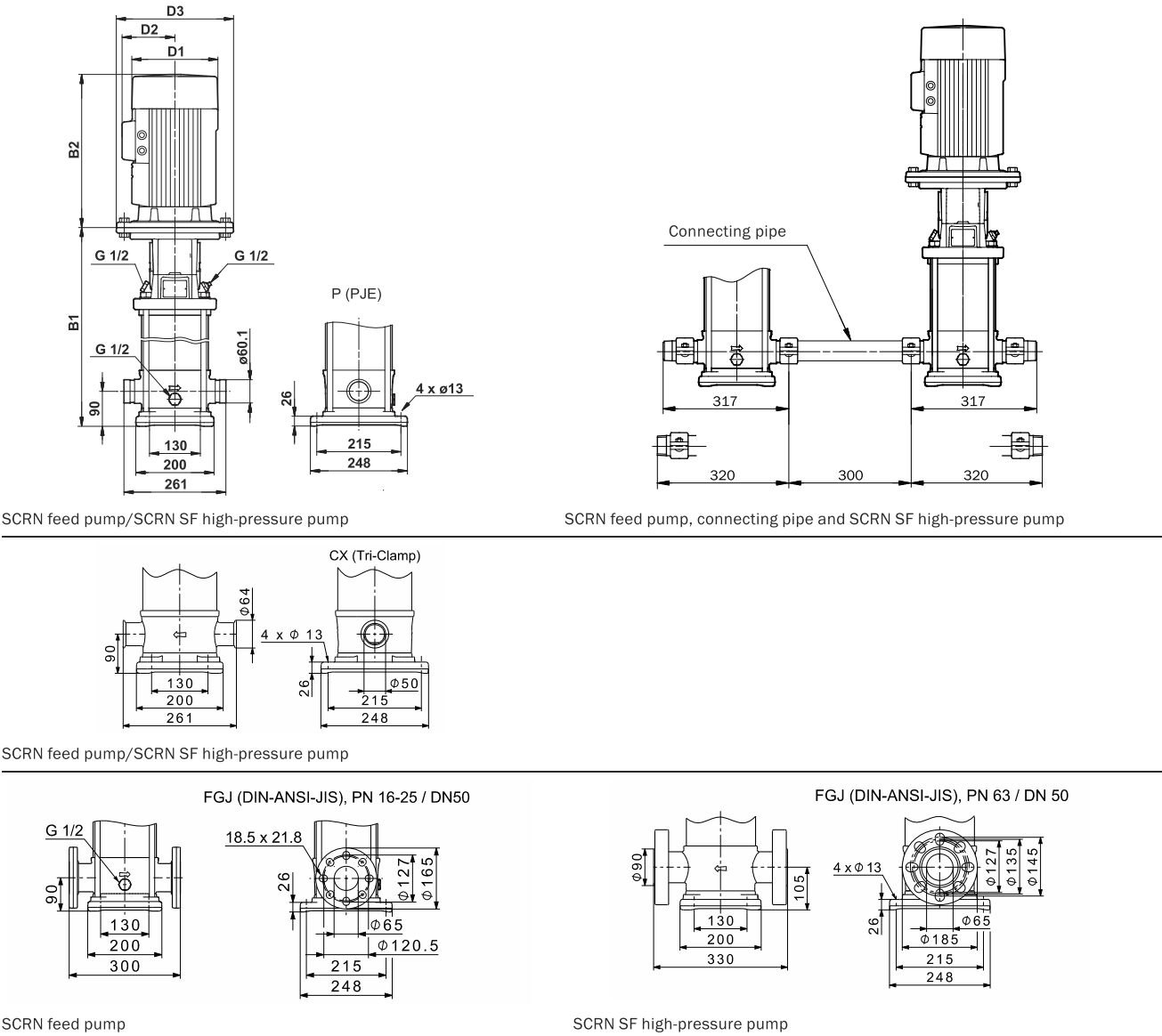
Performance curves

SCRN 20 SF, 60 Hz



Technical data

Dimensional sketches



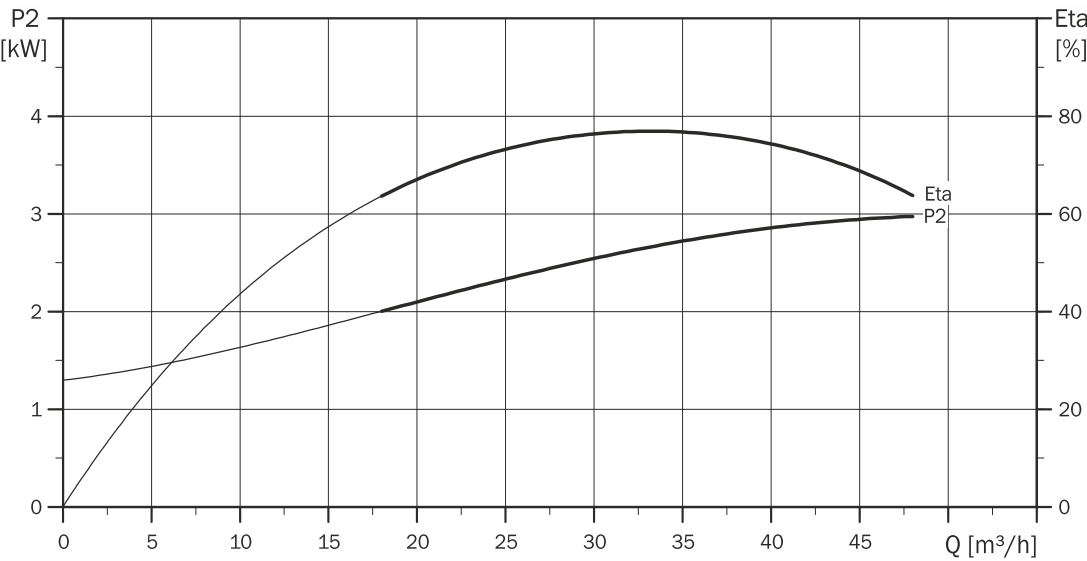
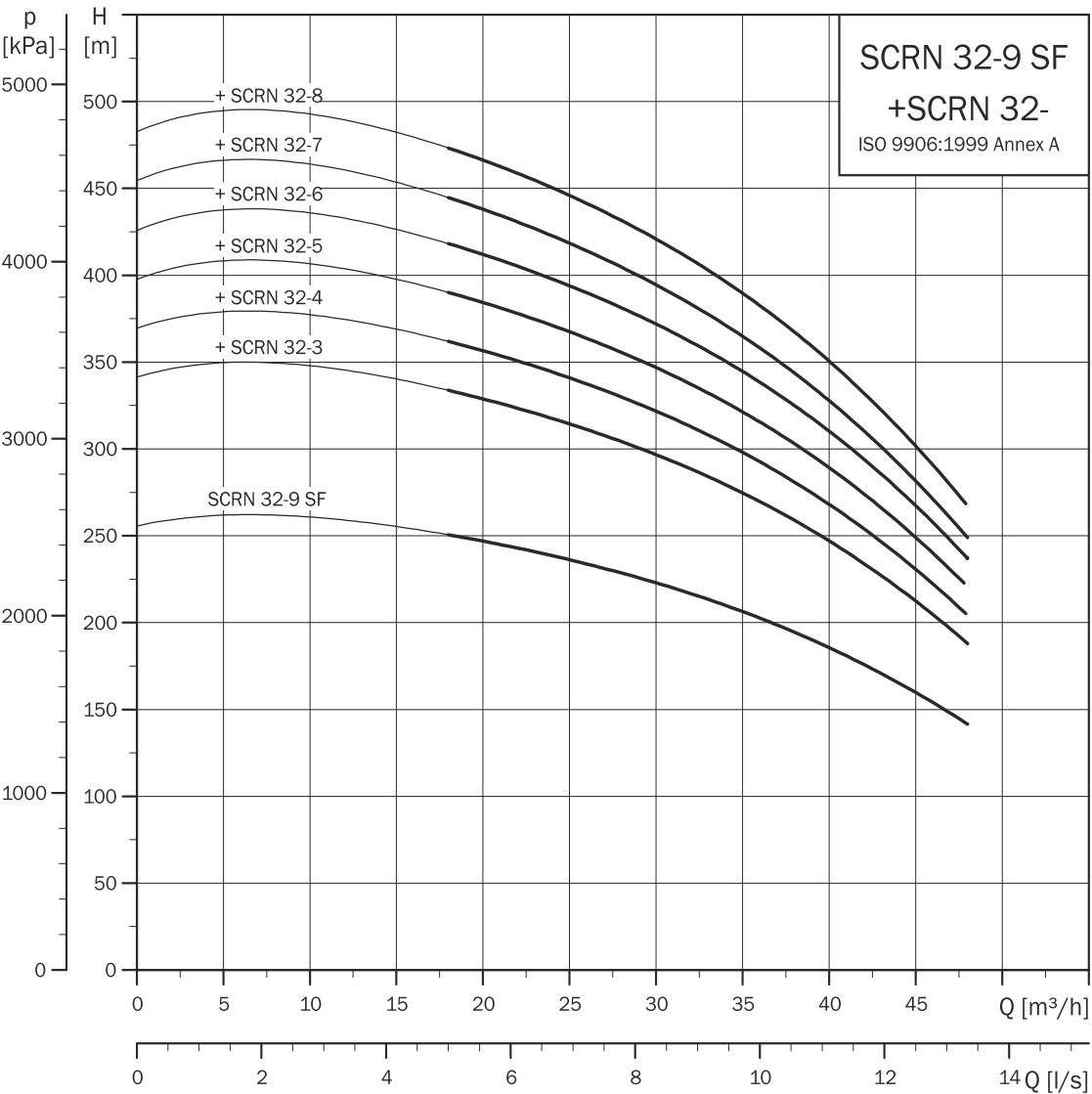
Dimensions and weights

Pump type	Motor P2 [kW]	SCRN										SCRNE									
		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							
SCRN 20-02	4	418	790	418	790	220	134	-	58	62	-	-	-	-	-	-	-	-	-		
SCRN 20-04	7.5	540	919	540	919	260	159	300	83	88	-	-	-	-	-	-	-	-	-		
SCRN 20-06	11	707	1178	707	1178	314	204	350	136	141	-	-	-	-	-	-	-	-	-		
SCRN 20-08	15	797	1268	797	1268	314	204	350	151	156	-	-	-	-	-	-	-	-	-		
SCRN 20-10	18.5	887	1402	887	1402	314	204	350	168	173	-	-	-	-	-	-	-	-	-		
SCRN(E) 20-9 SF 1)	18.5	887	1402	902	1417	314	204	350	166	176	902	1417	917	1432	314	308	350	213	223		

1) High-pressure pump

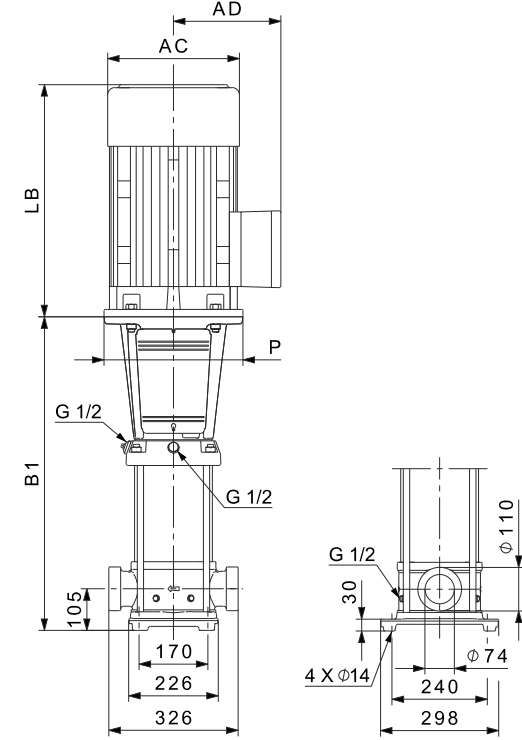
Performance curves

SCRN 32, 60 Hz

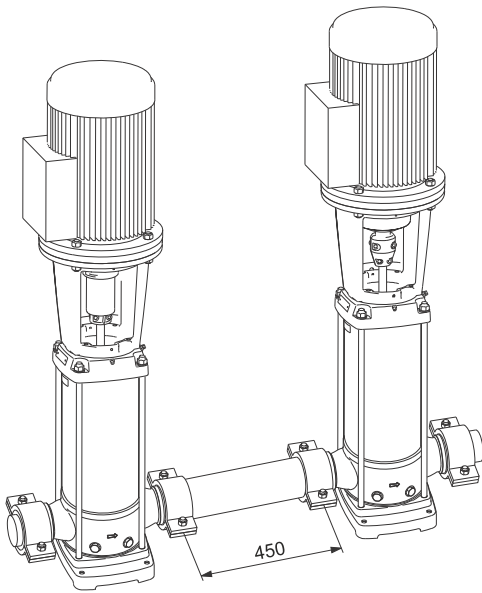


Technical data

Dimensional sketches



SCR feed pump/SCR high-pressure pump



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

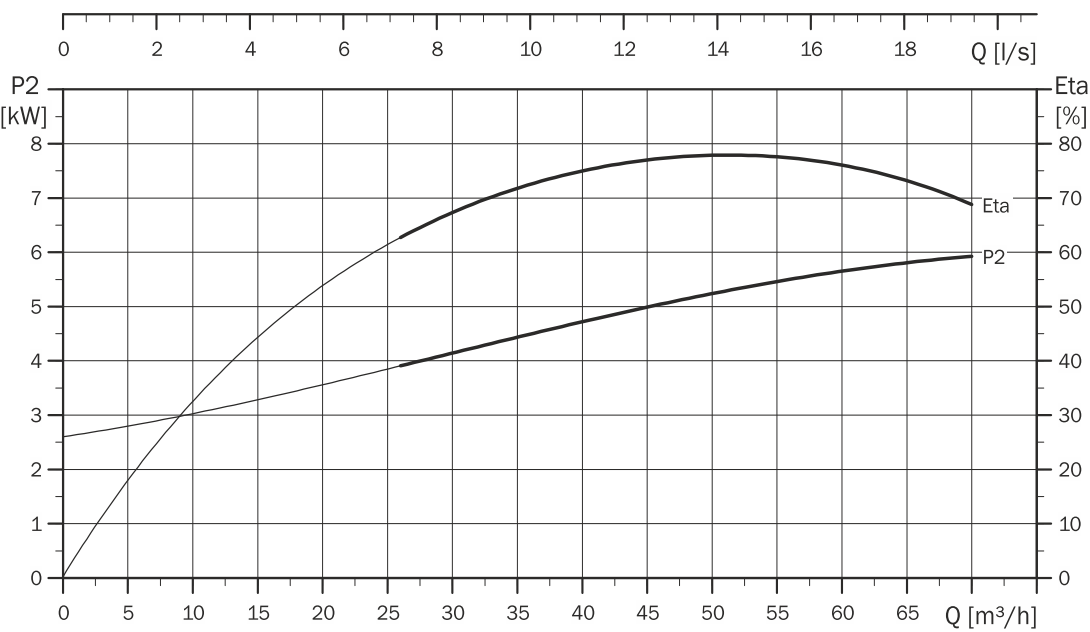
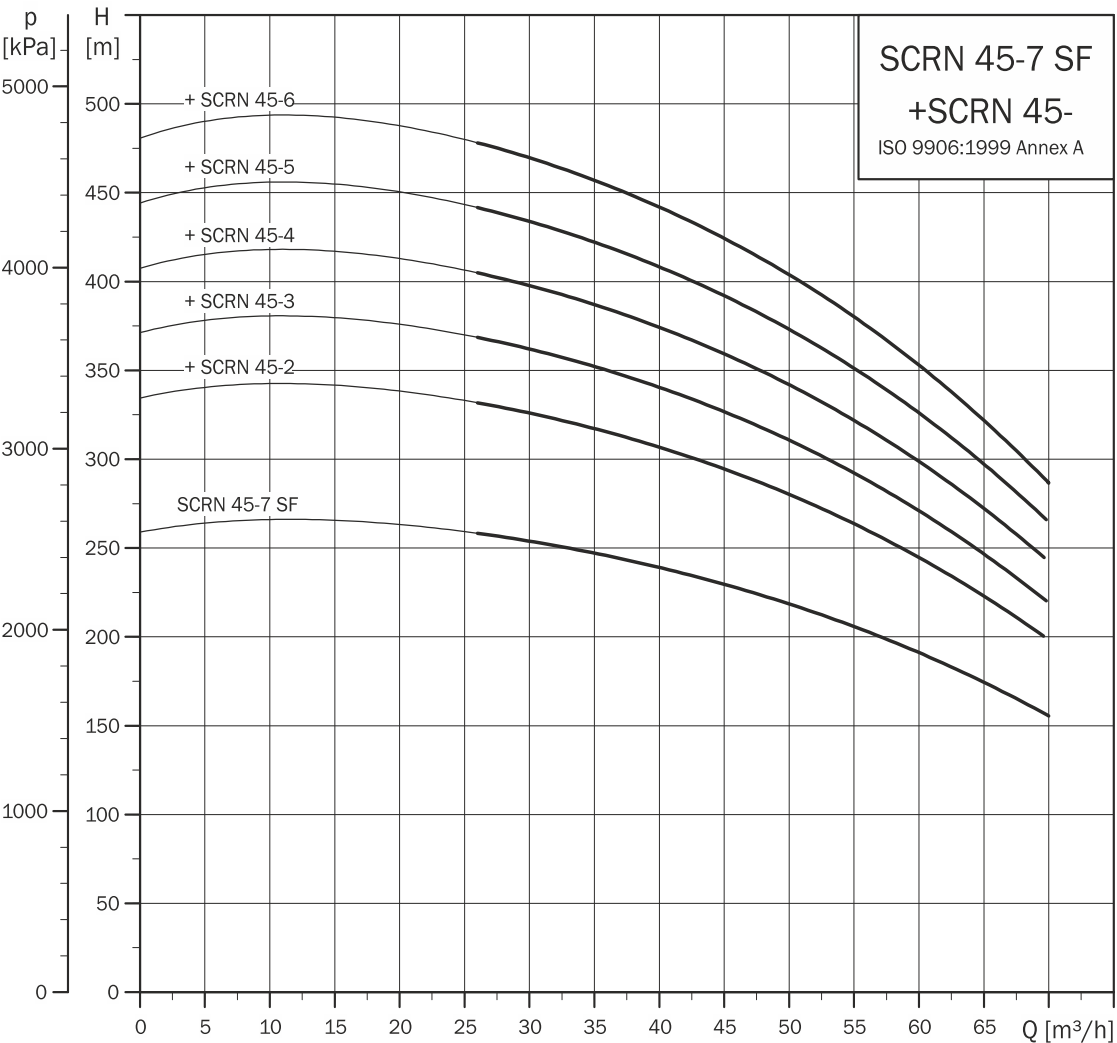
Dimensions and weights

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

* High-pressure pump

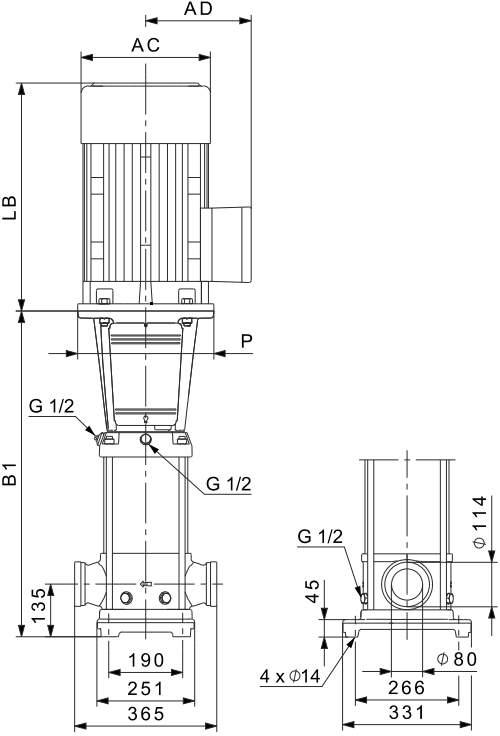
Performance curves

SCRN 45, 60 Hz

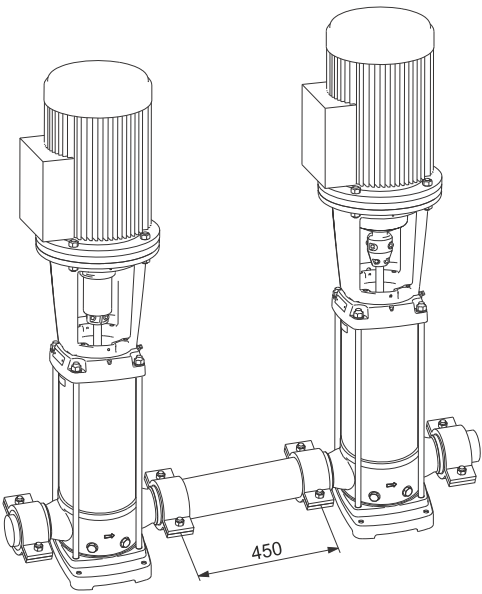


Technical data

Dimensional sketches



SCRN feed pump/SCRN high-pressure pump



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

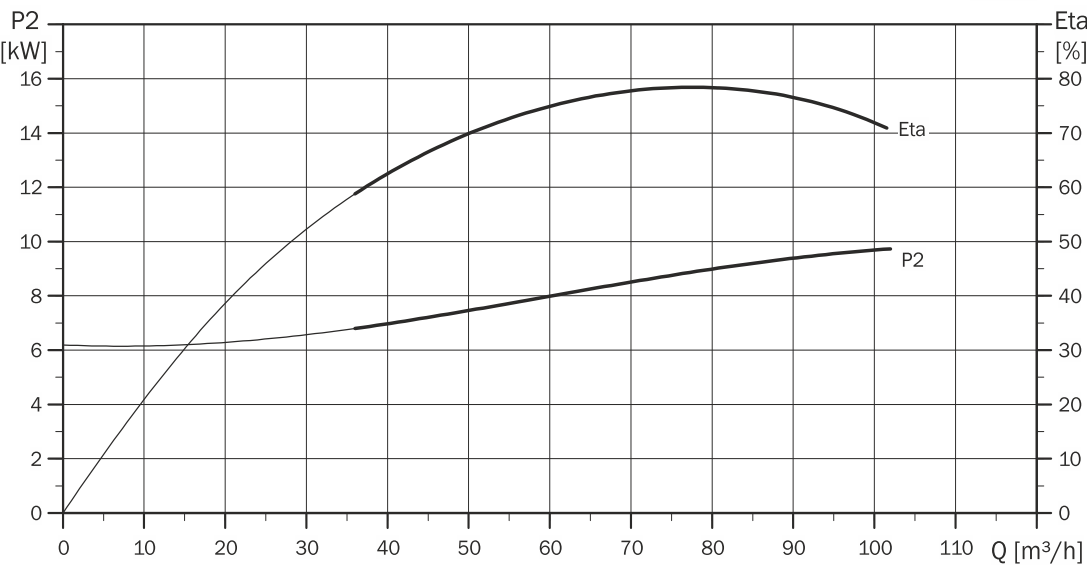
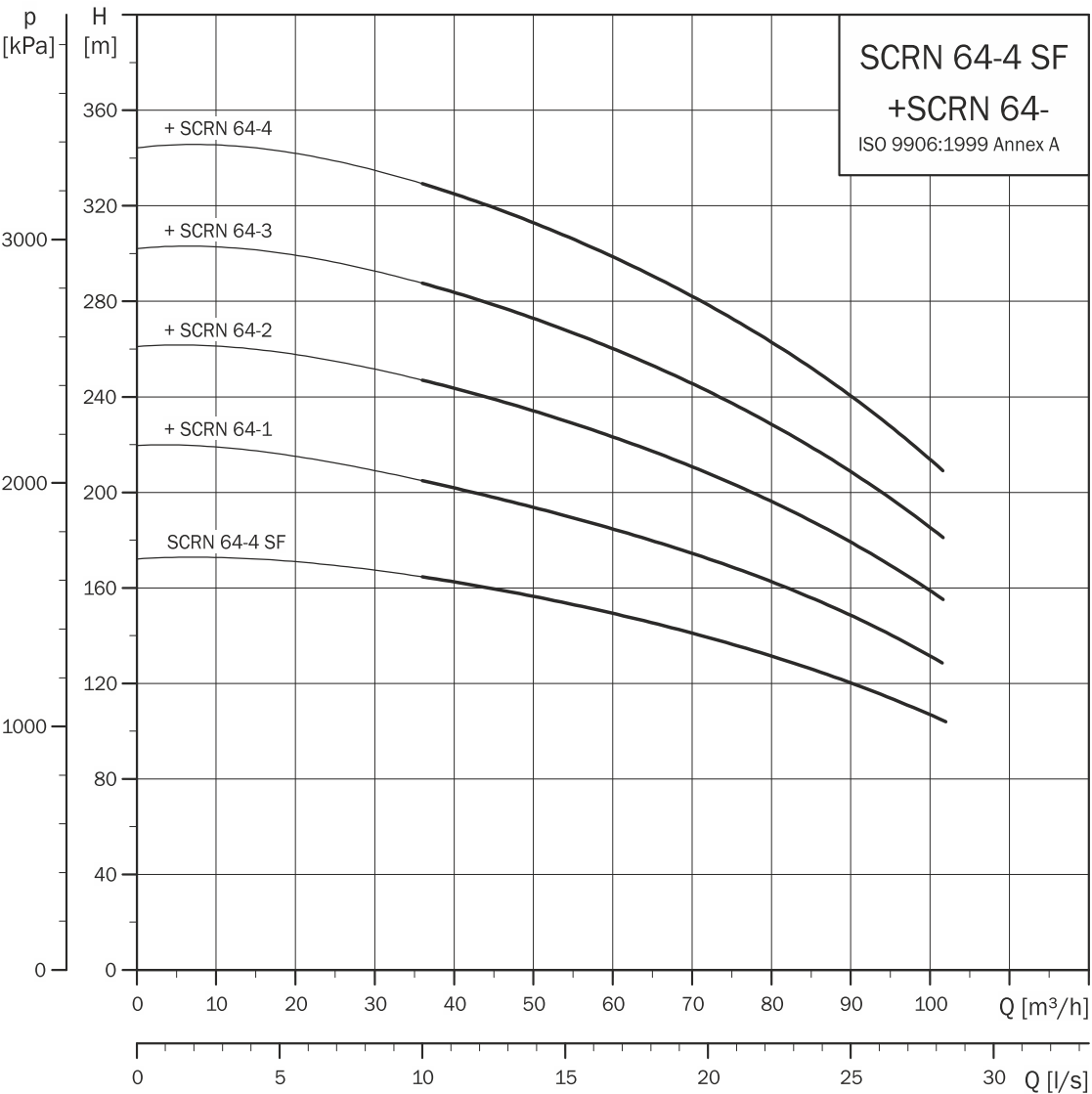
Dimensions and weights

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

* High-pressure pump

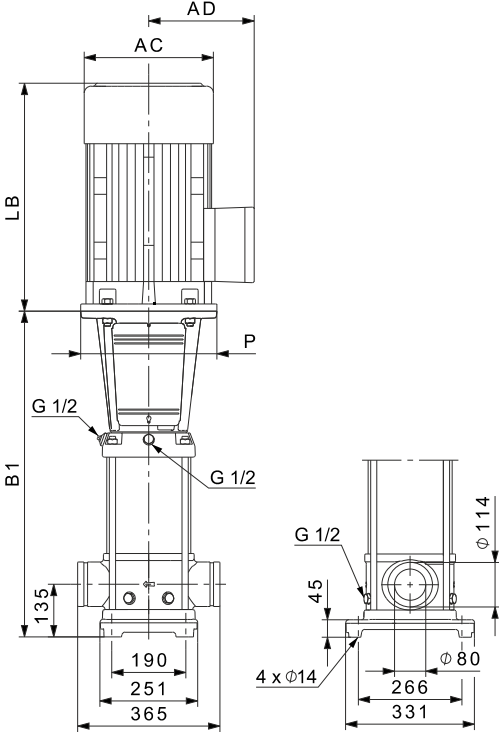
Performance curves

SCRN 64, 60 Hz

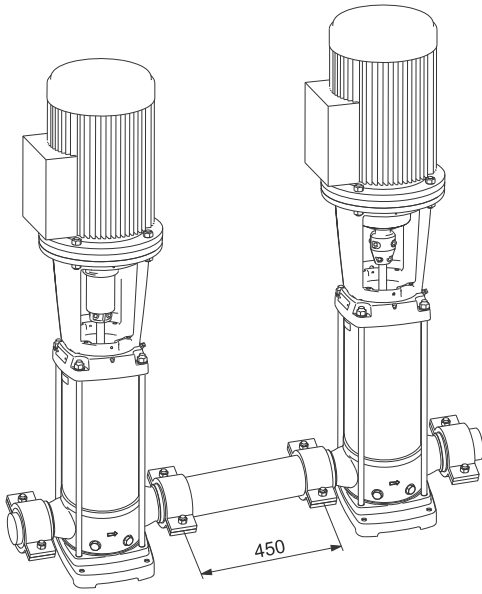


Technical data

Dimensional sketches



SCR feed pump/SCR high-pressure pump



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

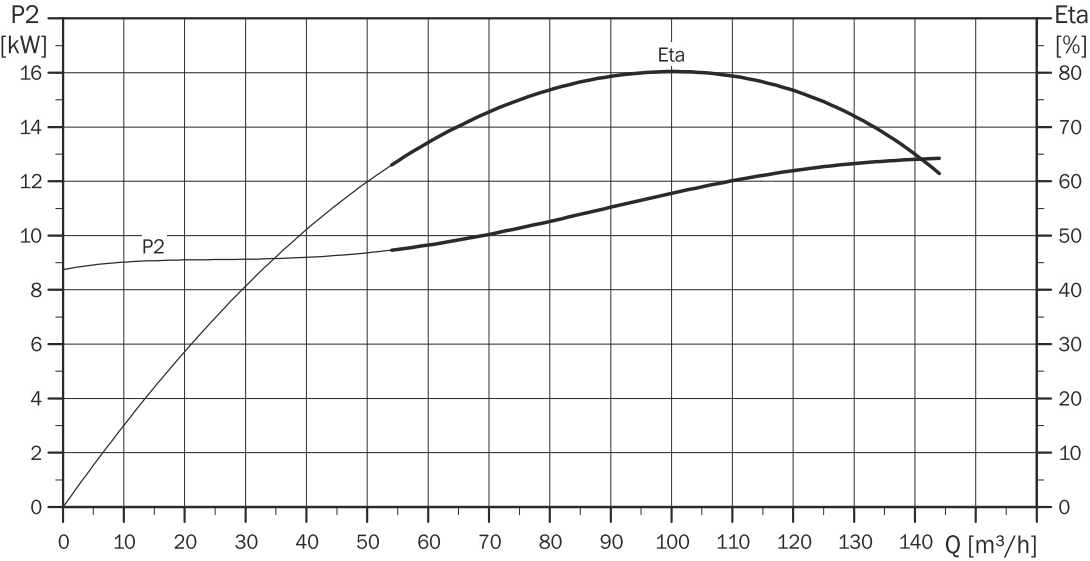
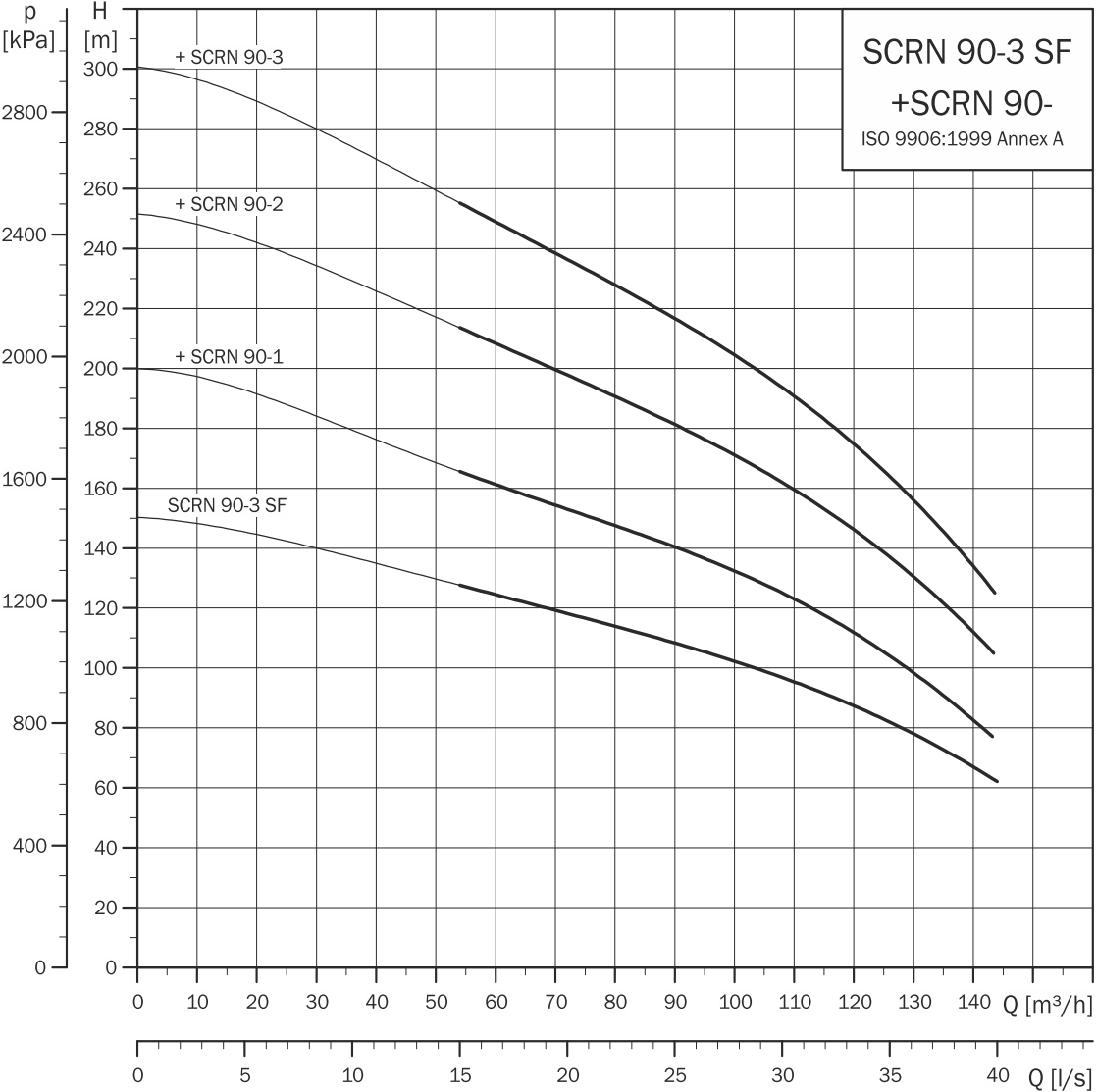
Dimensions and weights

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

* High-pressure pump

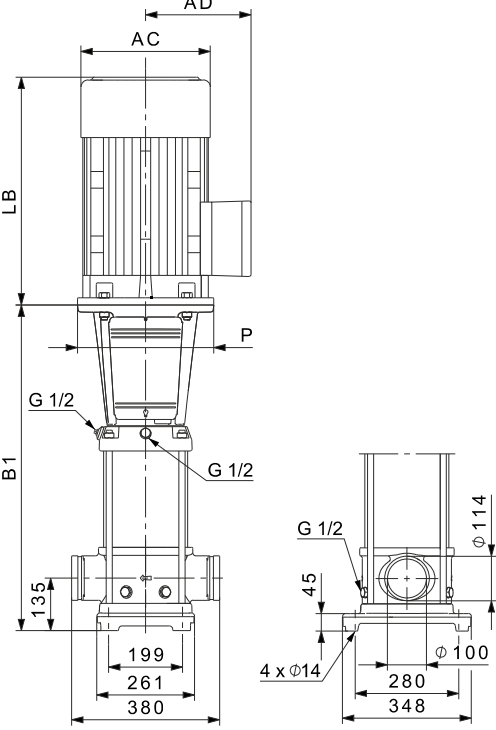
Performance curves

SCRN 90, 60 Hz

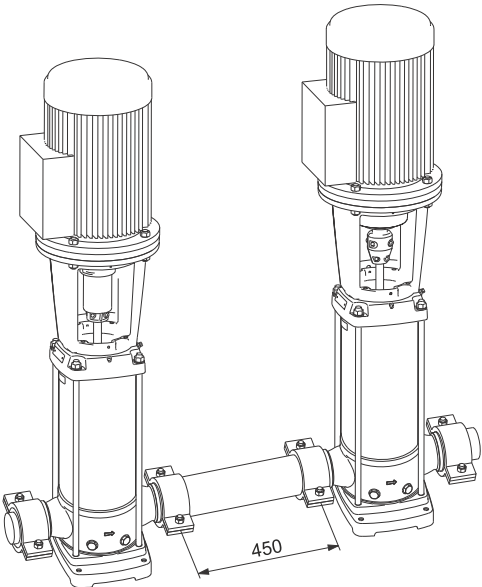


Technical data

Dimensional sketches



SCRN feed pump/SCRN high-pressure pump



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

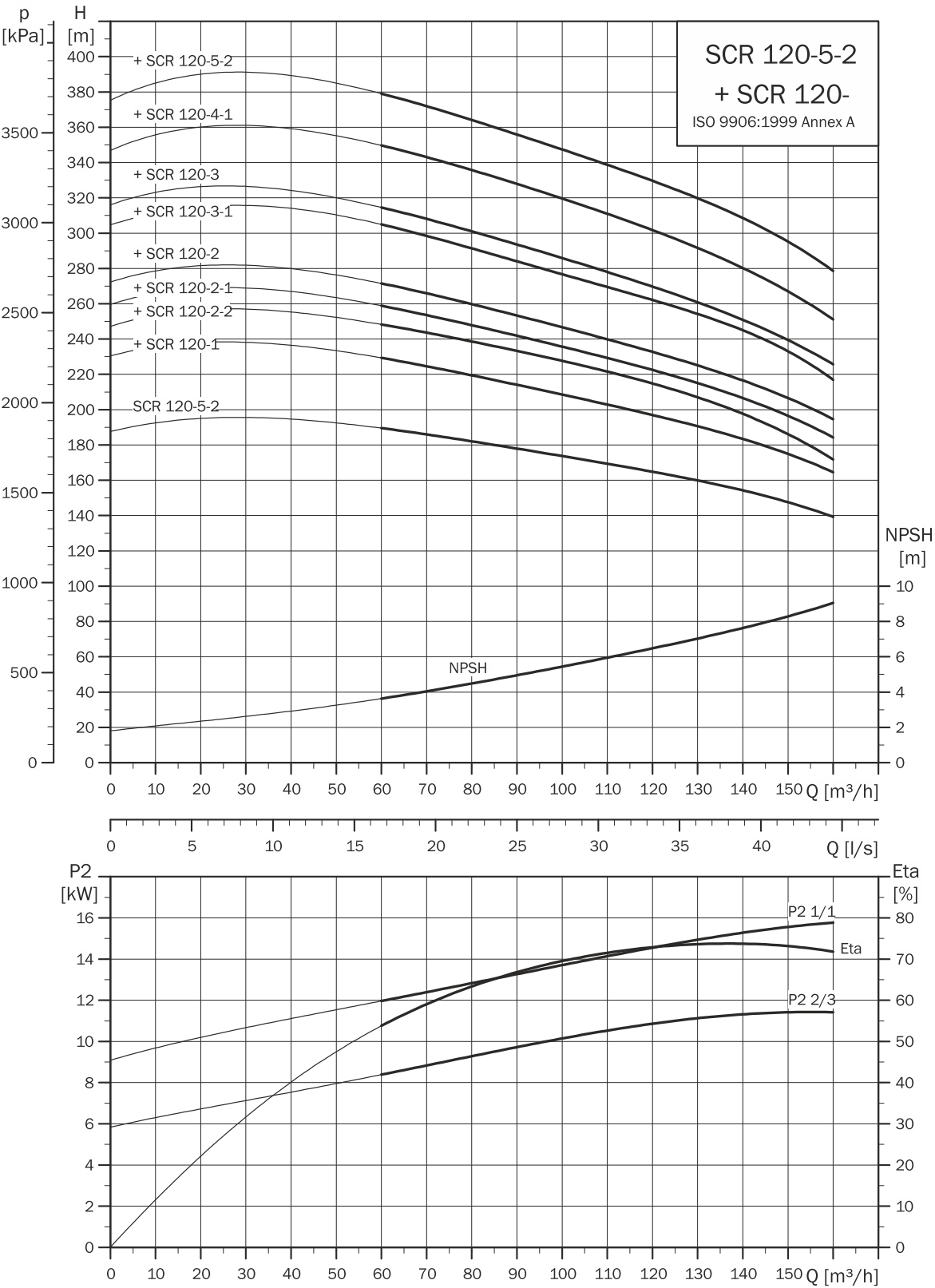
Dimensions and weights

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

* High-pressure pump

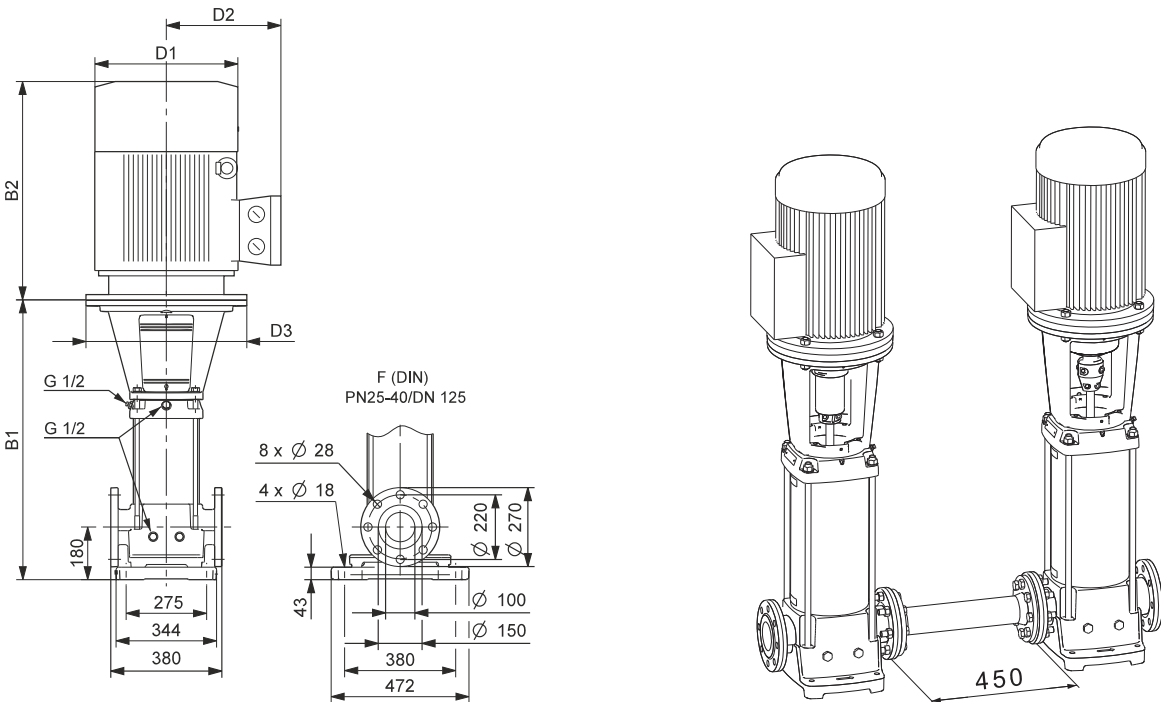
Performance curves

SCR 120, 60 Hz



Technical data

Dimensional sketches



SCR feed pump/SCR high-pressure pump

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

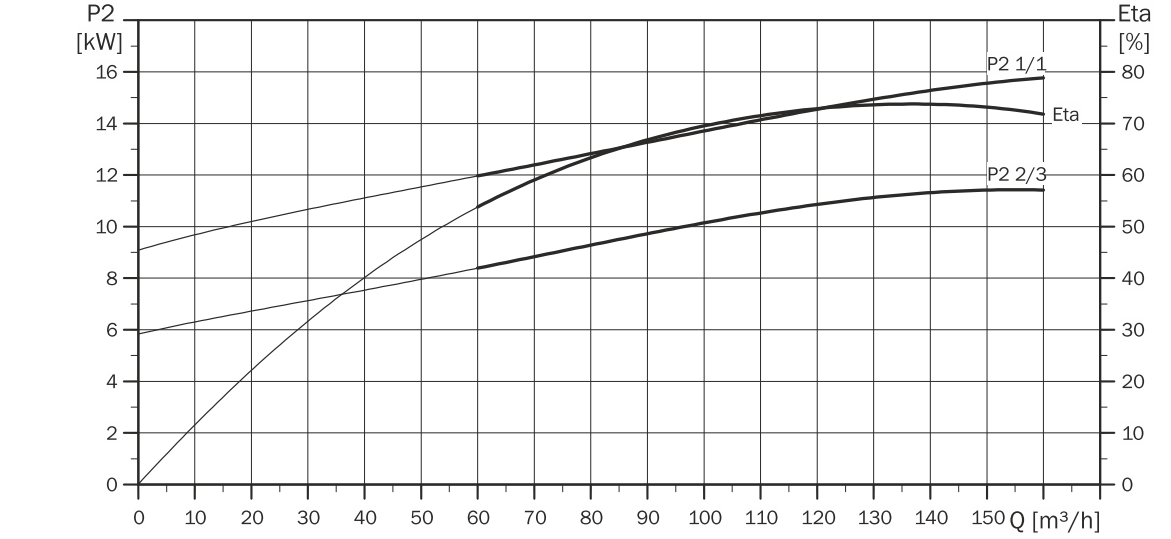
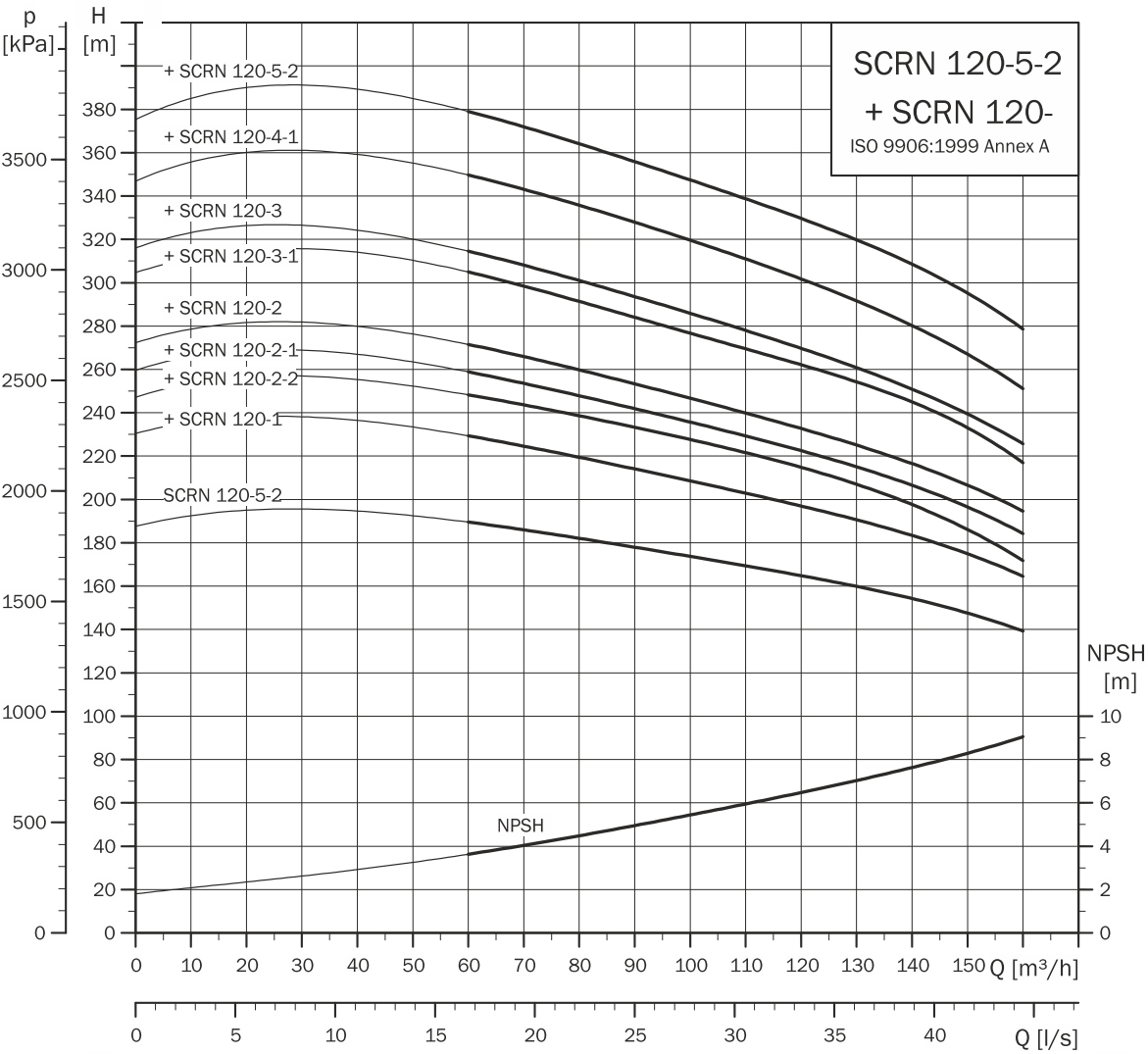
Dimensions and weights

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

* High-pressure pump

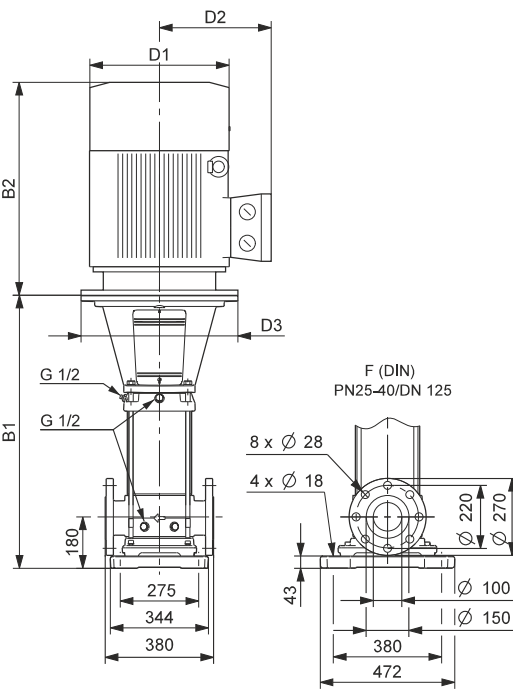
Performance curves

SCRN 120, 60 Hz

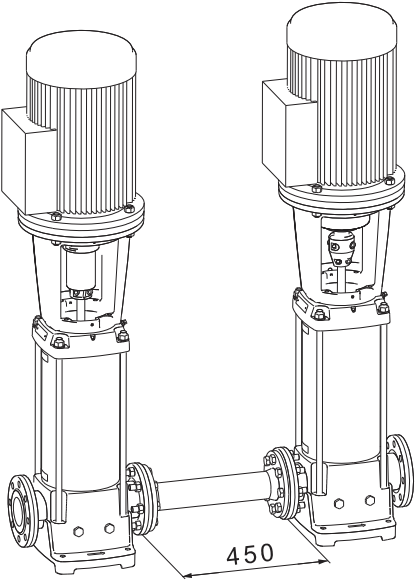


Technical data

Dimensional sketches



SCRN feed pump/SCRN high-pressure pump



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

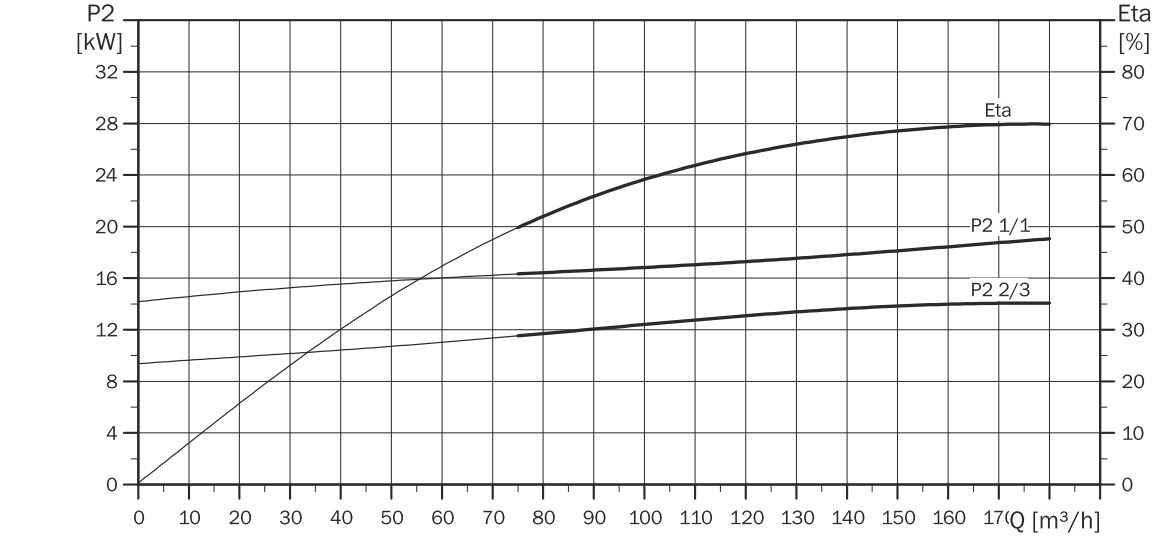
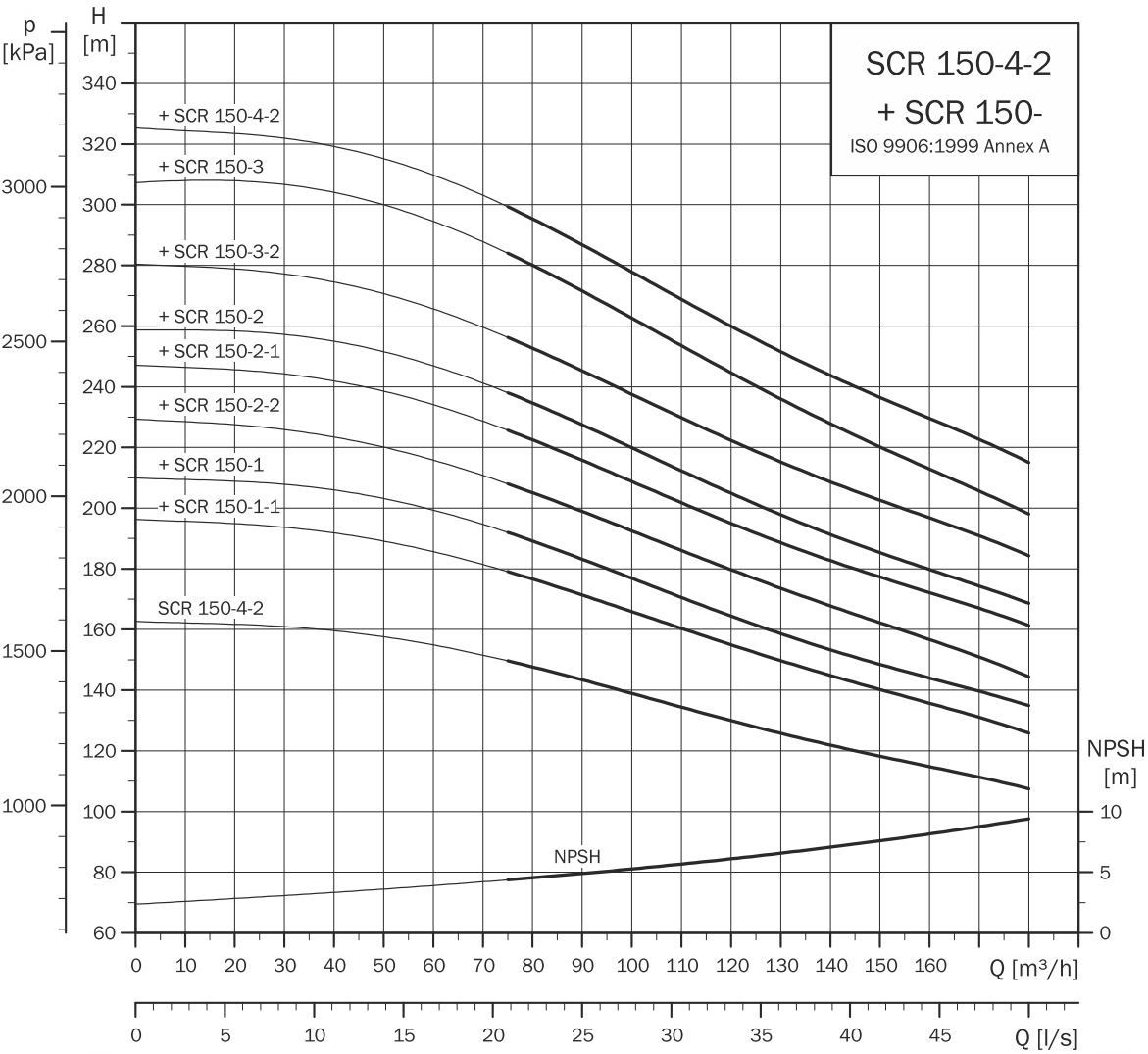
Dimensions and weights

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

* High-pressure pump

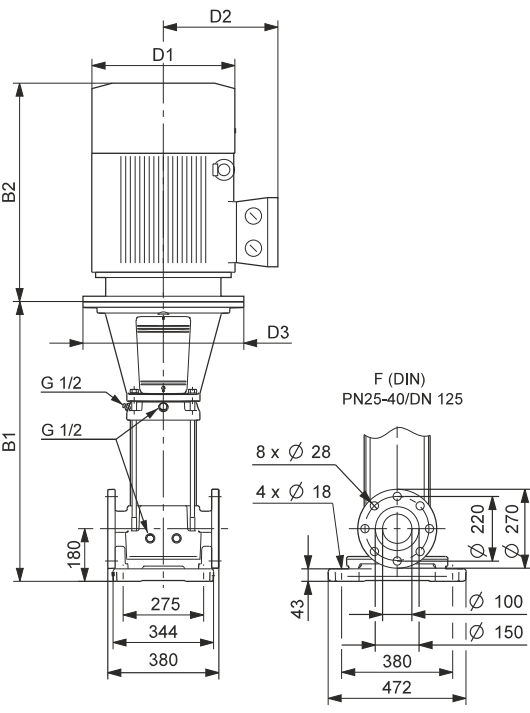
Performance curves

SCR 150, 60 Hz

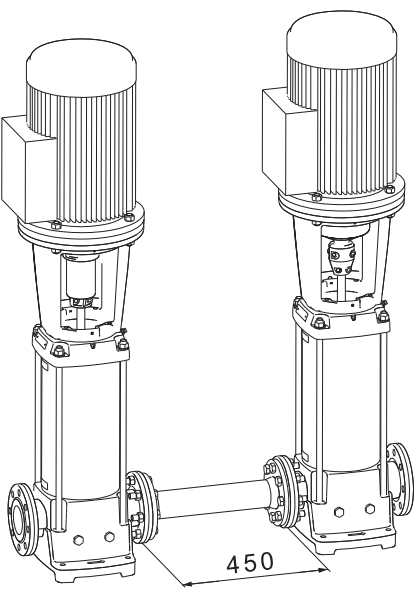


Technical data

Dimensional sketches



SCR feed pump/SCR high-pressure pump



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

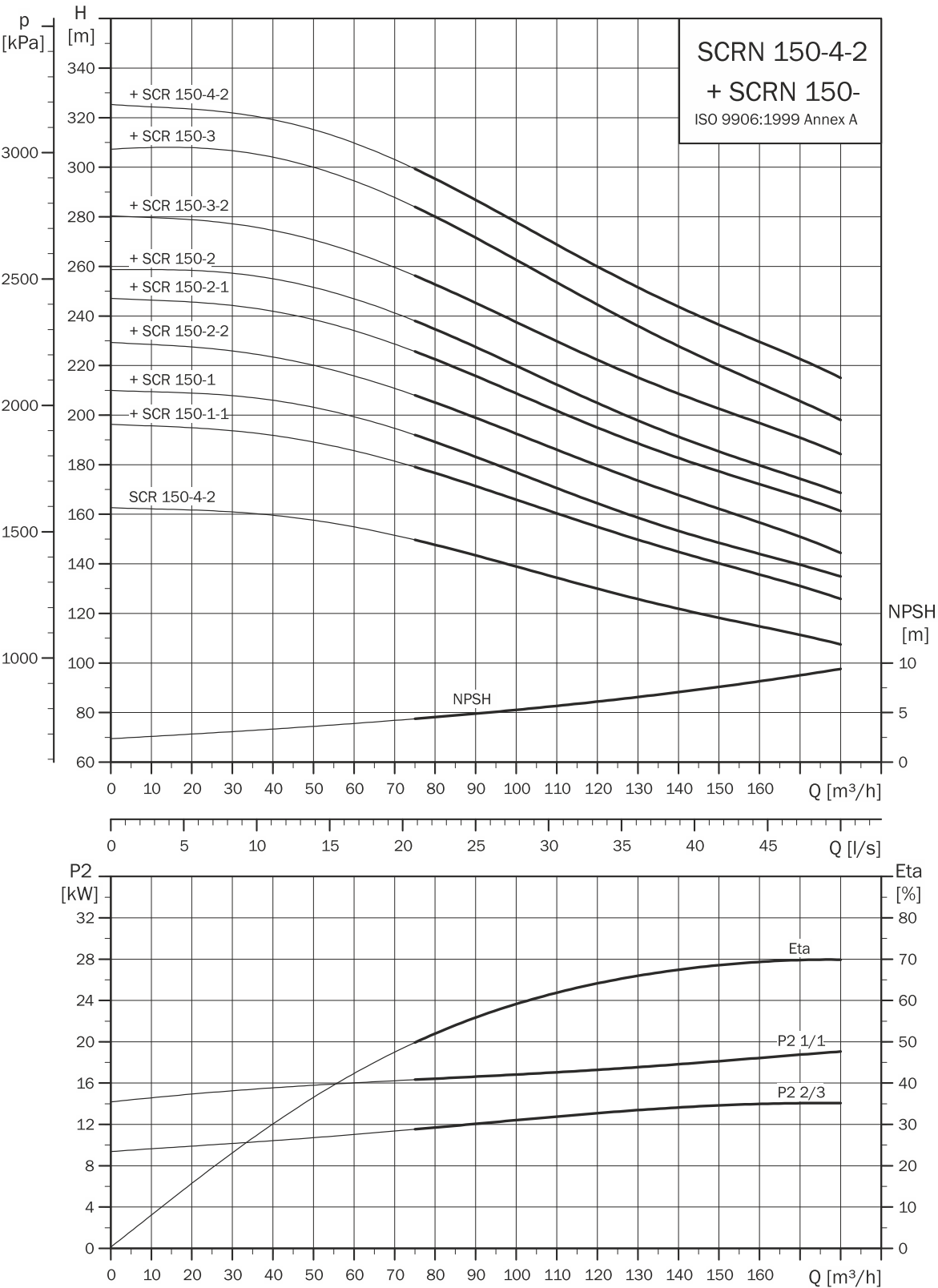
Dimensions and weights

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

* High-pressure pump

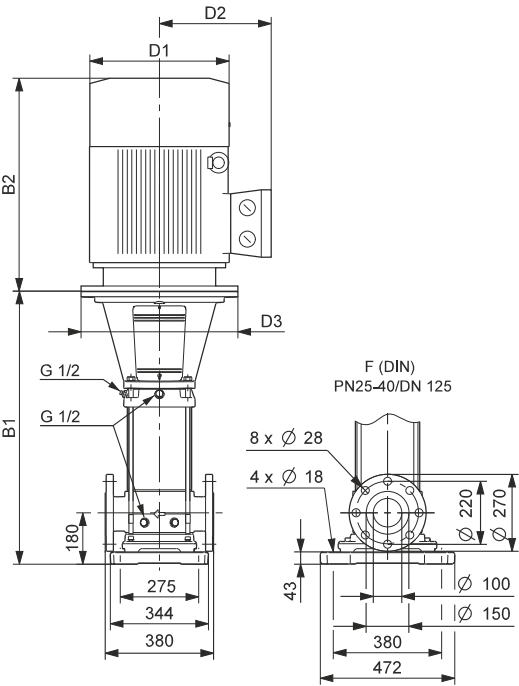
Performance curves

SCRN 150, 60 Hz

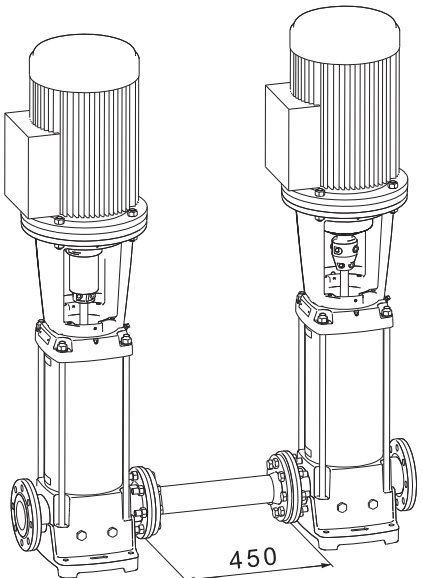


Technical data

Dimensional sketches



SCRN feed pump/SCRN high-pressure pump



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

Dimensions and weights

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

* High-pressure pump

Accessories

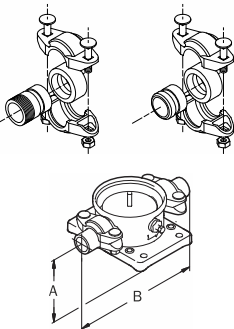
PJE couplings

Sets with and without pipe stubs as well as connection 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 stud (for welding or threaded), bolts and nuts.

Coupling	Pump type	Pipe stub	PN	A	B	Pipe connection	Rubber parts	Number of coupling sets needed
	SCRNE-HS 1, SCRNE-HS 3, SCRN 3-SF SCRN 5-SF	Threaded	80 bar	50	320	R 1¼	EPDM	2
							FKM	2
		For welding	80 bar	50	280	DN 32	EPDM	2
							FKM	2
	SCRN 10-SF SCRN 15-SF SCRN 20-SF	Threaded	70 bar	80	377	R 2	EPDM	2
							FKM	2
		For welding	70 bar	80	371	DN 50	EPDM	2
							FKM	2

PJE coupling without pipe stub

A set includes one coupling, one gasket and bolts and nuts.

Pump type	Pipe connection
SCRN 3-SF SCRN 5-SF	DN 32
SCRN 10-SF, SCRN 15-SF, SCRN 20-SF	DN 50

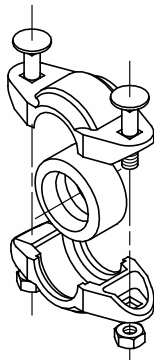


Fig. 15 PJE coupling

Connecting pipe

Pump type	Pipe connection
SCRN 3-SF SCRN 5-SF	DN 32
SCRN 10-SF, SCRN 15-SF, SCRN 20-SF	DN 50
SCR/SCRN 32, SCR/SCRN 32	DN 80
SCR/SCRN 64, SCR/SCRN 90	DN 100

¹⁾ SCR, SCRN 32 is with DN 65 Flanges as standard.
This pump must be ordered with oversize DN 80 flanges.

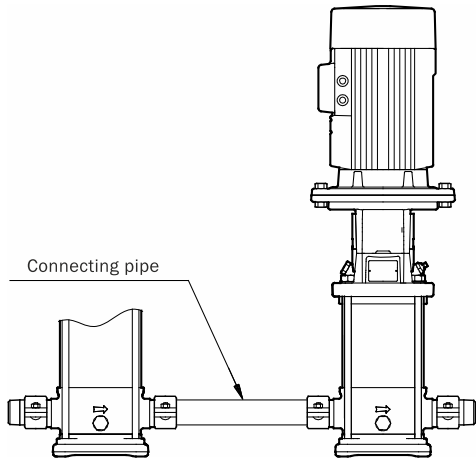


Fig. 16 Connecting pipe

Accessories

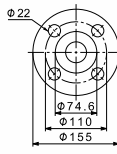
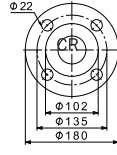
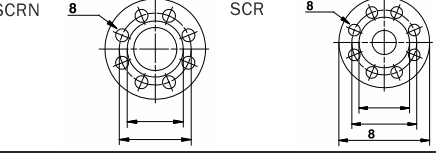
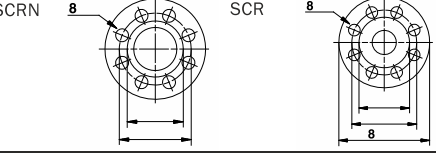
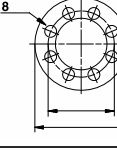
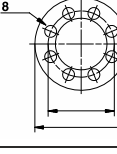
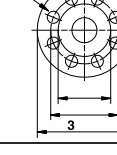
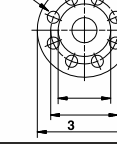
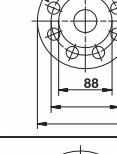
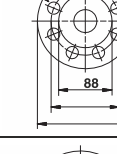
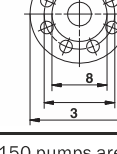
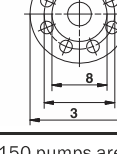
Flange Connections

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 SCRN pumps are made of Cast Iron.


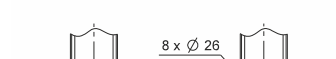
Counter-flange	Pump type	Description	Rated pressure	Pipe connection
	SCRN 3 SF SCRN 5 SF	For welding	63 bar, EN1092-1	32 mm, nominal
	SCRN 10 SF SCRN 15 SF SCRN 20 SF	For welding	63 bar, EN1092-1	50 mm, nominal
	SCR 32	For welding	40 bar, DIN 2635	65 mm, nominal
	SCR 32	For welding	40 bar	65 mm, nominal
	SCR 45	For welding	40 bar	80 mm, nominal
	SCR 45	For welding	40 bar	80 mm, nominal
	SCR 64 SCR 90	For welding	40 bar, DIN 2633	100 mm, nominal
	SCR 64 SCR 90	For welding	40 bar	100 mm, nominal
	SCR 120 SCR 150	For welding	40 bar, EN 1092-2	125 mm, nominal
	SCR 120 SCR 150	For welding	40 bar, EN 1092-2	125 mm, nominal
	SCR 120 ¹⁾ SCR 150 ¹⁾	For welding	40 bar, EN 1092-2	150 mm, nominal
	SCR 120 ¹⁾ SCR 150 ¹⁾	For welding	40 bar, EN 1092-2	150 mm, nominal

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

Accessories

Adapter kit

DN 150 flanges are available for SCR, SCRN 120 and 150 pumps. To use DN 150 flanges, two adapter kit must be ordered per pump.

Adapter kit		Pump type	Pipe connection	Number of flange kits needed
		SCR 120 SCR 150	150 mm, nominal	2
		SCRN 120 SCRN 150	150 mm, nominal	2

Support blocks

The vertical height from the bottom of the base to the center of the connection port is higher on SCRNE HS and SCRNE(SF) pumps with flange connections than on standard SCRNE pumps.

When a SCRN SF pump (high-pressure pump) is connected to a standard SCRN pump (feed pump), the difference in height will cause a misalignment. To avoid this following support blocks for the standard pump are available as accessories.

Pump type	Height on the support blocks [mm]
SCRN 3 SF SCRN 5 SF	10
SCRN 10 SF	25
SCRN 15 SF SCRN 20 SF	15

Tri-Clamp connections

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

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