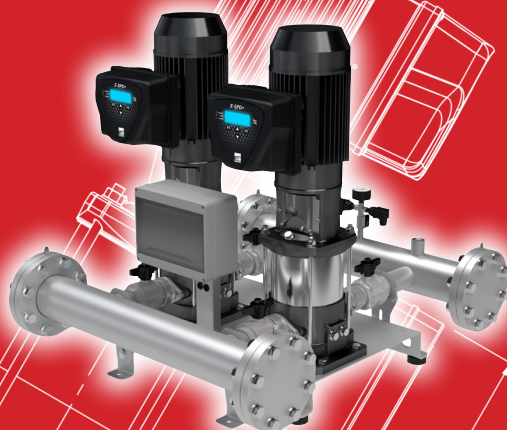


Looking ahead,
going beyond expectations
Ahead > Beyond



GP - GPE EVMSG

Data Book 50Hz



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DEFINITION AND USE OF PRESSURISATION UNITS

In situations in which a municipal water mains is lacking or insufficient for the proper operation of the services, one must install a pressurization unit to provide acceptable pressure and flow rates to even in the most unfavourable services. Pressurisation units are used wherever there is a need to increase the pressure, or to pressurise a water circuit. **EBARA GP pressurisation units** are automatic systems with 2 or more pumps operating in parallel, designed to provide a simple and reliable solution to the most common requirements for maintenance of water supply pressure for apartment buildings, hotels, centres, offices and schools as well as providing auxiliary service in industrial and agricultural applications. They stand out for their robust construction, compact size, excellent efficiency and silent operation. GP units are equipped for connection to membrane and air cushion autoclaves. They are controlled by pressure transmitter for EP-E and by pressure switches for EP. GPE units (with INVERTER) are controlled by pressure transmitter.

TYPICAL APPLICATIONS

INDUSTRY	BUILDING SERVICE	WATER SUPPLY
		

OPERATING CONDITIONS

EBARA GP-GPE pressurisation units can be used, in their standard versions, for civil, industrial and agricultural applications, as follows:

- building service
- water lifting and handling
- A/C
- heating
- irrigation
- washing systems

The conveyed fluid must be: clean, potable, ground or mixed water, free of solid or fibrous suspensions and aggressive chemical substances.

The units must be installed under cover, protected from the weather and freezing.

- Conveyed water temperature (depending on pumps).
- Ambient operating temperature 0 - 40°C, no higher than 1000 m above sea level.
- Max relative humidity 50% at +40°C.

NB: The system available NPSH must be greater than the NPSH demanded from the pump. For applications with different technical specifications, uses and climatic conditions (type of vector fluid, marine and aggressive industrial conditions), please contact our sales network.

TESTS AND TRIALS

Before shipping, all EBARA pressurisation units are subject to hydraulic, mechanical and electrical testing.

MECHANICAL AND HYDRAULIC TESTS

- Pressure switch calibration (only if present)
- Pump direction of rotation
- Mechanical testing of moving parts and running noise (on each pump)
- Tightness test with delivery port closed and nameplate rating tests
- MANUAL trials (using button on control panel) for each pump
- AUTOMATIC trials (using switch on control panel) for unit

ELECTRICAL TESTS

- Earthing system continuity
- Applied voltage (dielectric rigidity)
- Insulation resistance

PRINCIPLE OF OPERATION OF GP PRESSURISATION UNITS

When water is demanded, it is first drawn from the autoclave tank (if present). This demand for water, with the pumps stopped, lowers the pressure until the pressure transmitter starts the first electropump. If the output flow is greater than the delivery capacity of a single pump, the pressure continues falling until the pressure transmitter thus starting the second pump. This happens for all pumps in the unit. When the water demand stops or reduces, the system pressure rises, the pressure transmitter shutting off the pumps one by one. This is done in inverse order to that in which the motors were started up, the number of hourly starts per pump is reduced and they are all used to the same extent.

NB: By connecting a float switch or minimum pressure switch to the control panel (both for demand from the first accumulation tank and from the water circuit itself) one can prevent the most frequent cause of pump failure: dry running

Principle of Operation of GPE Pressurisation UNITS with E-SPD+

GPE units with E-SPD+ are designed to operate with each pumps controlled by an INVERTER installed on board its motor. The system is controlled by an MASTER INVERTER in relation to the reference signal supply by a pressure transmitters (4 - 20 mA passive). As the system pressure varies, the MASTER pump varies its rotary speed to restore it to the setpoint. If the water demand exceeds the capacity of the pump, the second variable speed pump cuts in and, pump goes into regulation mode to maintain the pressure setpoint; this happens for all the pumps in the unit. If the water demand drops off, the pressure tends to increase and the latest pump gradually reduces its speed to restore the correct operating pressure. This results in the regulation of the speed of the other pumps, until they gradually turn off. Once the system pressure has been restored and the water demand is 0, the MASTER pump switches off automatically.

Principle of Operation of GPE Pressurisation UNITS with an EFC control panel

EFC multiple pump control units power pump n. 1 with the INVERTER to modulate system performance in relation to the reference signal while the other pumps are run at maximum nominal speed (around 2900 rpm) and started and stopped in relation to demand.

These means there are two distinct primary electrical circuits:

- n. 1 - INVERTER startup/control of a single pump,
- n. 2 - contactor startup (direct or star/delta) of the other pumps.

The system is controlled by an electronic controller in relation to the reference signal supply by a pressure transmitter, flow meter or other unified control signal (4 - 20 mA passive).

If the electronic controller or pressure transmitter fails, a system of pressure switches controls the pumps directly (if present).

- In case of water distribution at constant pressure (Fig.1), the electronic controller is connected to the pressure transmitter on the units' delivery manifold, which outputs a signal proportional to the circuit pressure. When the pressure drops due to water demand, the pressure transmitter signal also drops and the controller starts and controls the speed of the first pump with the INVERTER to restore the reference/ operating pressure. If the pump's flow rate is lower than demand, the circuit pressure will continue to drop and the system responds by increasing the pump's speed. Once pump n. 1 reaches its maximum speed and demand is still in excess of its delivery, the controller will start pump n. 2 at maximum speed. The speed of pump n. 1 is immediately modulated so as to establish the operating pressure. If the pressure drops even further and pump n. 1 is once again running at maximum speed, the controller starts up pump n. 3, and so on for all pumps in the unit. If the water demand drops off, the pressure tends to increase and the controller reduces the speed of pump n. 1 to restore the correct operating pressure. At this point, the controller will stop one of the pumps running at maximum speed, while the speed of pump n. 1 is modulated to maintain the reference pressure. As the pressure continues to increase due to reduced demand, once the minimum speed of pump n. 1 is reached

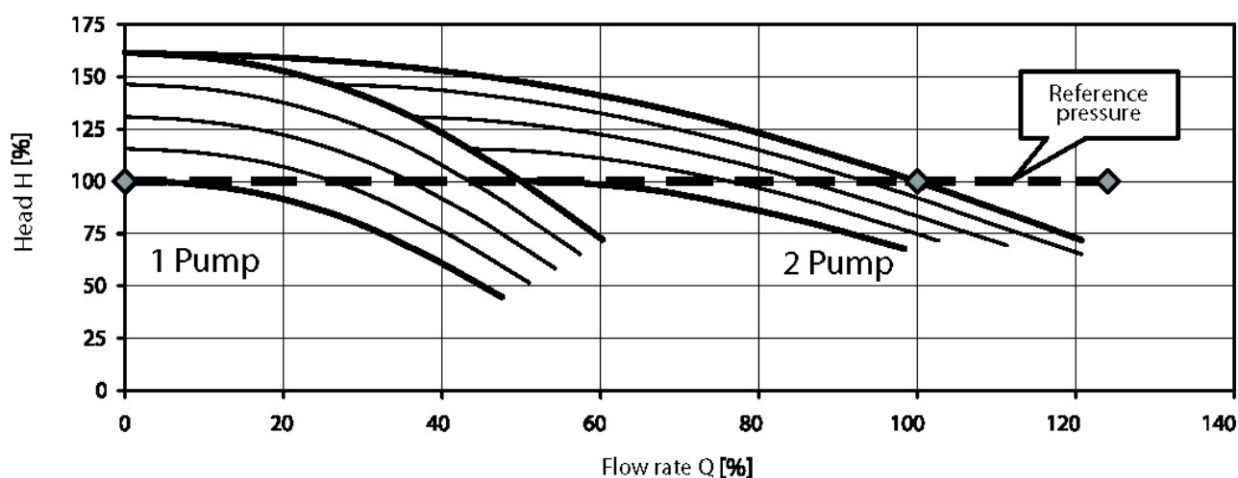
once more the controller will stop pump n. 3 and then pump n. 2. Once the demand for water has completely ceased, the controller reduces the speed of pump n. 1 to its minimum and after a set delay (around 1 minute) stops this pump too. The next time the system is started up, the INVERTER controlled pump will no longer be pump n. 1, but n. 2. The INVERTER controlled pump thus rotates through all pumps in sequence.

Principle of Operation of GPE Pressurisation UNITS with an MFC control panel

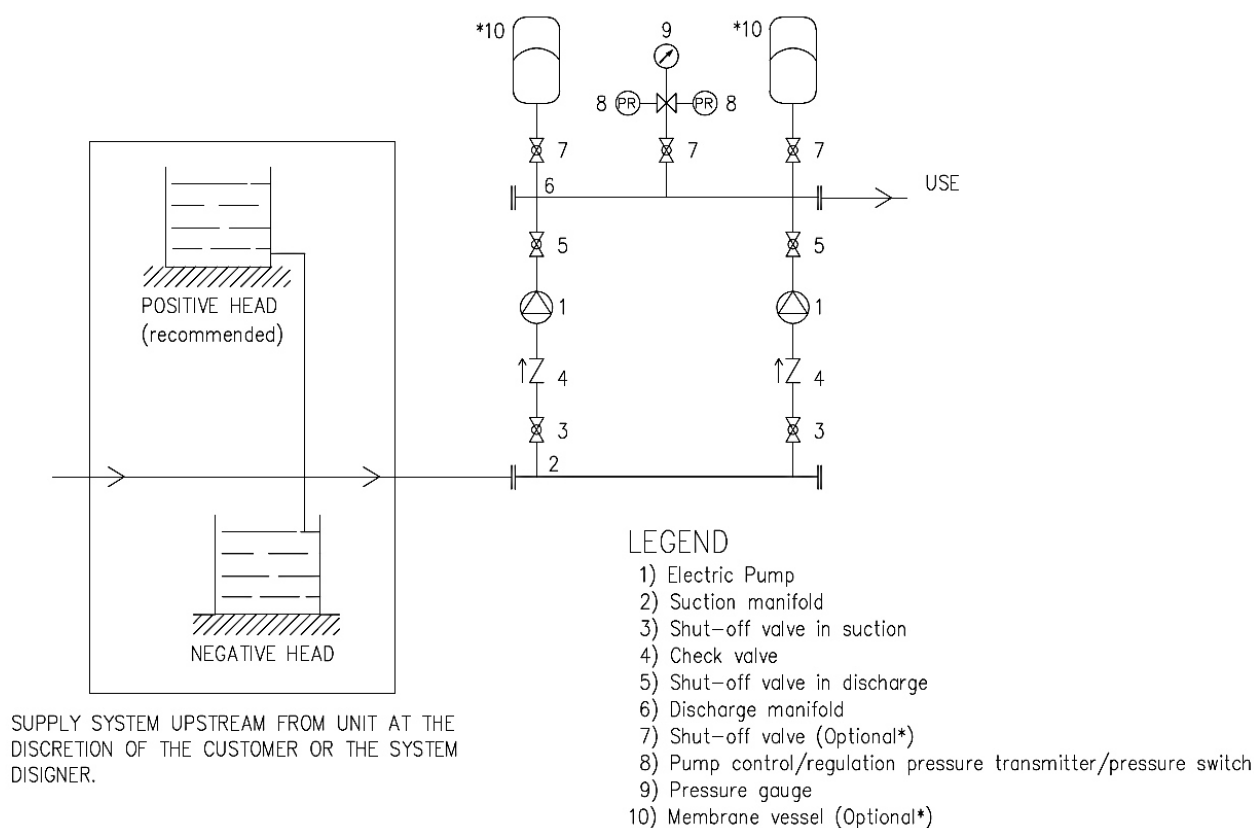
MFC multiple pump control panels power each pump with an INVERTER to modulate system performance in relation to the reference signal. MFC controllers differ from EFC controller from the point of view of their construction, since instead of having a single INVERTER to control all the pumps, each pump has its own INVERTER. The two types of control panel differ in construction, but they have the same type of operation by the controller, which responds to the reference signal output by a pressure transmitter or other unified control (4 - 20 mA passive). If the electronic controller or pressure transmitter fails, a system of pressure switches controls the INVERTERS directly.

- In case of water distribution at constant starting pressure (Fig.1), the electronic controller is connected to the pressure transmitter on the units' delivery manifold, which outputs a signal proportional to the circuit pressure. When the pressure drops due to water demand, the pressure transmitter signal also drops and the controller starts and controls the speed of the first pump with the INVERTER to restore the reference/ operating pressure. If the pump's flow rate is lower than demand, the circuit pressure will continue to drop and the system responds by increasing the pump's speed. Once pump n. 1 reaches its maximum speed and demand is still in excess of its delivery, the controller will start pump n. 2, also at variable synchronous speed. The controller will modulate the speed of the two pumps to restore the operating pressure; the modulating frequency is the same for both pumps. If the pressure drops even further and pumps n. 1 and 2 are once again running at maximum speed, the controller starts up pump n. 3, and then pump n. 4, if present. When the water demand is reduced the pressure will end to increase, as does the pressure transmitter output value. The controller thus reduces the speed of pumps n. 1, 2, 3 and 4 (they are all controlled at the same speed) to restore the reference/ operating pressure. If the pumps' flow rate is greater than demand, the circuit pressure will continue to increase and the system responds by decreasing the speed of the pumps until it reaches the minimum speed setting. At this point, the controller will stop pump n. 4, while the speed of pumps n. 1, 2 and 3 is modulated to maintain the reference pressure. As the pressure continues to increase due to reduced demand, once the minimum speed setting is reached again, the controller will stop pump n. 3 and modulate the speed of pumps n. 1 and 2. This continues in sequence as the demand continues to fall, until the unit is completely stopped.

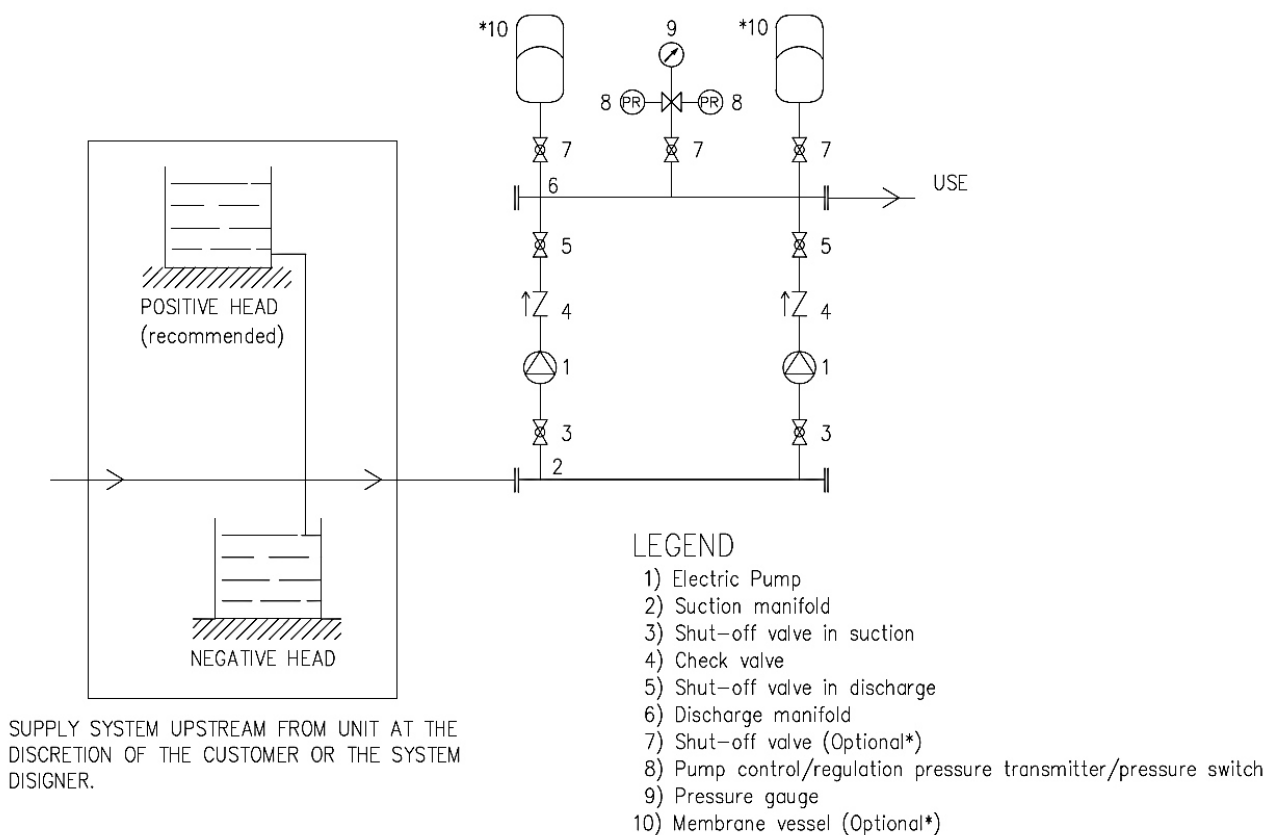
Fig. 1 - TWO PUMP UNIT WITH CONSTANT PRESSURE REGULATION



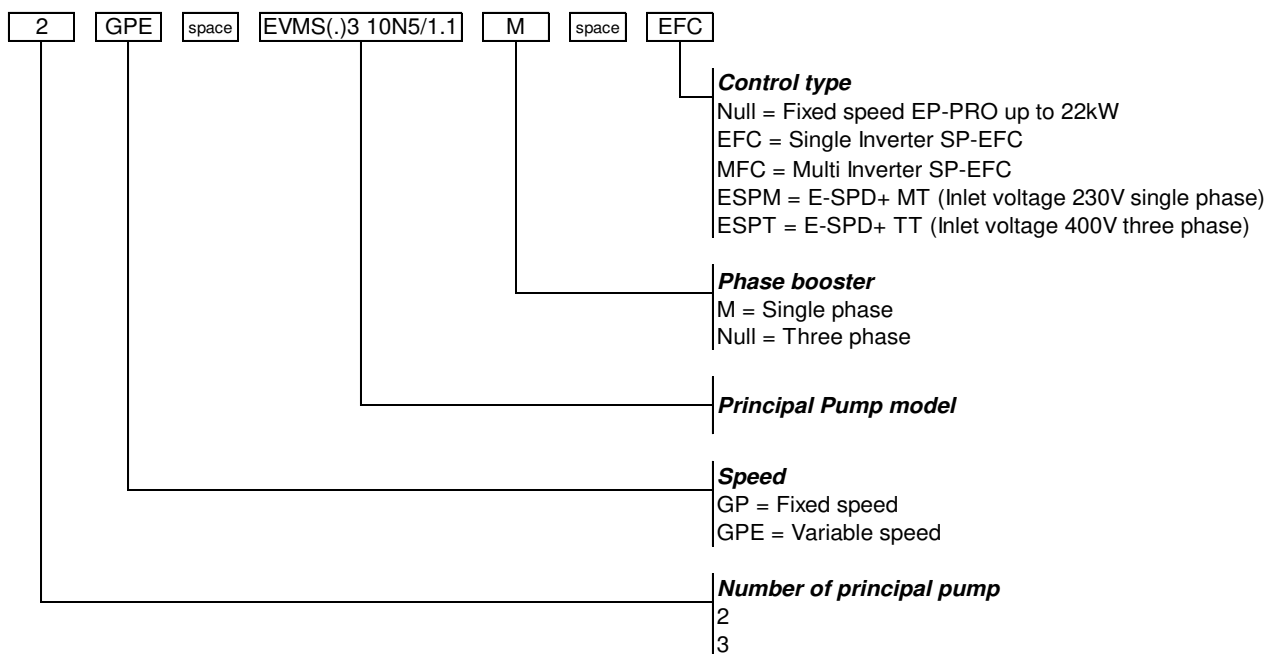
GP PRESSURISATION UNIT WATER CIRCUIT DIAGRAM



GPE PRESSURISATION UNIT WATER CIRCUIT DIAGRAM



TYPE KEY 2-3GP(.) EVMS



NAME PLATE

 EBARA Pumps Europe S.p.A. Via Campo Sportivo, 30 38023 Cles (TN), ITALY Phone +39 0444 706811 V.A.T.: 01234660221		   MADE IN ITALY
GRUPPO DI PRESSURIZZAZIONE IDRICA		
TYPE	①	
P/N	②	
S/N	③	

- 1) "TYPE" booster model
- 2) "P/N" booster item number
- 3) "S/N" booster serial number

PRODUCT SPECIFICATIONS
HYDRAULIC COMPONENTS AND CONTROL

BOOSTER SET							
Version			EVMS				
Operating range	Nominal flow rate (m ³ /h)	Single pump	3	5	10	15	20
		2GP(E)	6	10	20	30	40
		3GP(E)	9	15	30	45	60
	Maximum working pressure		16 bar				
	Liquid temperature range		0 ÷ +80°C [1]				
	Ambient operating temperature (no higher than 1000 m above sea level)		0 ÷ +40°C				
Hydraulic components	Frame		omega sheet (up to 5.5 kW) UPN channel (from 11kW)				
			Galvanized steel				
	Manifold suction / discharge		Threaded / Flanged manifold (AISI 304)				
	Closing manifold	2GP(E)	Female cap for EVMS 3-5-10-15 Counterflange kit for EVMS 20				
		3GP(E)	Female cap for EVMS 3-5-10 Counterflange kit for EVMS 15-20				
		material	AISI 304				
	Check valve		Threaded check valve (Brass / NBR)				
	Union Ball valve		Threaded union ball valve (Brass / PTFE)				
Control	Socket for air feeders (only for "GP" version)		Threaded socket (Brass)				
	Pressure gauge		M3A-ABS 50/FR / plastic-copper alloy				
	Pressure switches		2-3GP version with EP panel fixed speed from 11 kW and above 4GP version with EP panel fixed speed GPE version with SP EFC / MFC panel with inverter XMP				
	Pressure transmitter		2-3GP version up to 7.5 kW GPE version with SP EFC / MFC panel GPE version with E-SPD+ EN 10088-1.4301 (AISI 304) / 1.4404 (AISI 316L)				

[1] For optional version ask the temperature range to the sales department.

ELECTRIC PANEL

BOOSTER SET							
Version			EVMS				
Operating range	Nominal flow rate (m ³ /h)	Single pump	3	5	10	15	20
		2GP(E)	6	10	20	30	40
		3GP(E)	9	15	30	45	60
	Maximum working pressure		16 bar				
	Liquid temperature range		0 ÷ +80°C ^[1]				
	Ambient operating temperature (no higher than 1000 m above sea level)		0 ÷ +40°C				
Control panel	Principal Electric panel	EP-PRO up to 22 Kw fixed speed (only for GP)	•	•	•	•	•
		SP EFC/MFC variable speed from 4 kW to 22 kW (only for GPE)	○	○	○	○	○
	E-SPD+ ^[2]	single-phase supply inverter (only GPE up to 2.2 kW)	•	•	•	•	○
		three-phase supply inverter (only GPE up to 11 kW)	•	•	•	•	•

• : Standard ○ : Optional

[1] For optional version ask the temperature range to the sales department.

[2] To be assemble with protection panel (to see "PROTECTION PANEL" section)

TECHNICAL PUMP DATA

EVMS(.) 3-5-10-15-20

PUMP																	
Version		EVMSG					EVMS					EVMSL					
Operating range	Nominal flow rate (m3/h)	3	5	10	15	20	3	5	10	15	20	3	5	10	15	20	
	Maximum working pressure	16 bar / 25 bar															
	Liquid temperature range	-30°C to +140°C															
Key components material	Impeller	EN 1.4301 (AISI 304)										EN 1.4401 (AISI 316L)					
	Intermediate casin	EN 1.4301 (AISI 304)										EN 1.4401 (AISI 316L)					
	Liner ring	EN 1.4301 (AISI 304) + PPS										EN 1.4401 (AISI 316L) + PPS					
	Bottom casing	Cast Iron					EN 1.4301 (AISI 304)					EN 1.4401 (AISI 316L)					
	Casing cover	EN 1.4301 (AISI 304)										EN 1.4401 (AISI 316L)					
	Shaft	EN 1.4301 (AISI 304) EVMSG / EVMS -3-10 , EVMSG / EVMS 5-15-20 (depend on models)															
		EN 1.4404 (AISI 316L) EVMSL -3-10 , EVMSL 5-15-20 (depend on models)															
		EN 1.4462 (AISI 329A) EVMSG / EVMS / EVMSL 5-15-20 (depend on models)															
	Shaft seal	See the shaft seal options															
	O-ring	EPDM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		FPM	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Outer casing	EN 1.4301 (AISI 304)										EN 1.4404 (AISI 316L)					
Motor bracket	Cast iron																
Base	Cast iron					Die cast aluminium											
Pipe connection	Oval flange	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		up to 16 bar															
	Round flange (DIN)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
		up to 16 bar															
		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
From 16 bar a 25 bar																	

● : Standard ○ : Optional

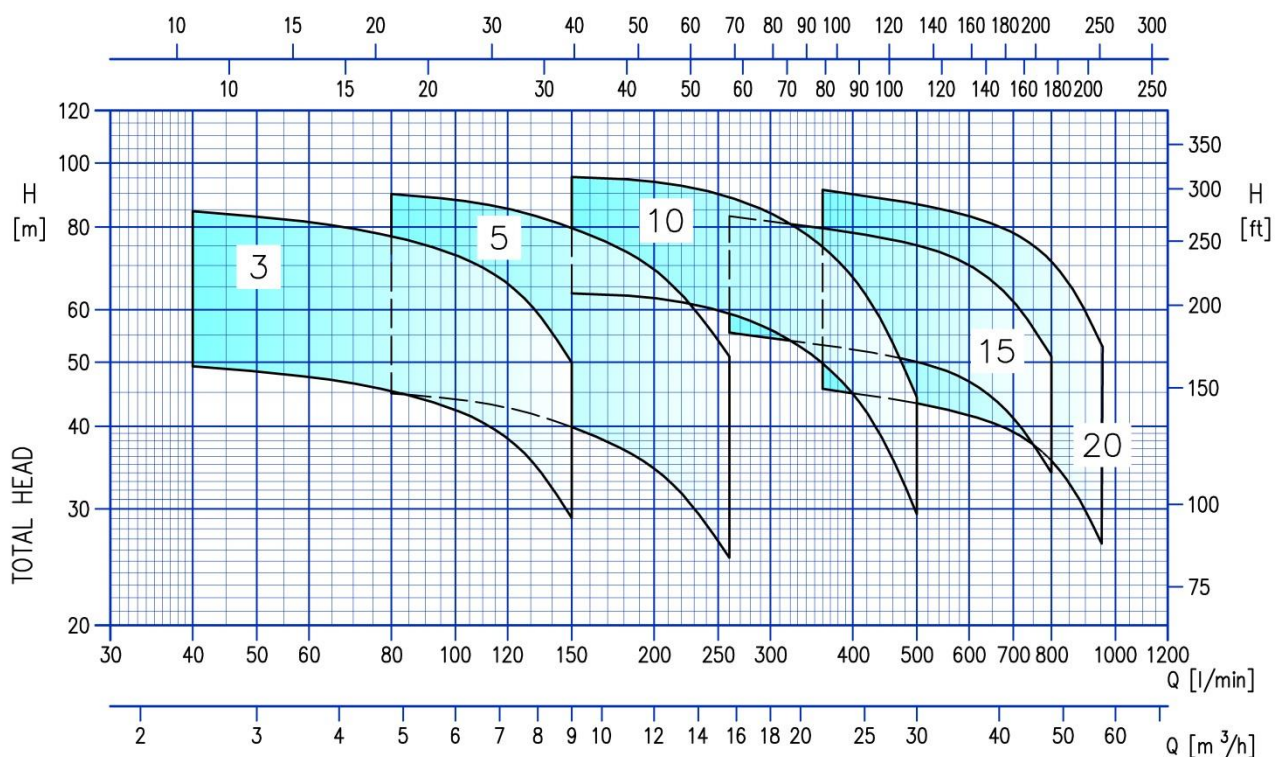
TECHNICAL MOTOR DATA ETM MOTOR

ETM MOTOR		
Version		EVMS
Power source	Frequency	50 Hz
	Phase	Three-phase
	Rotation speed	2900 min ⁻¹
	Power rating	0.75 ÷ 11 kW
		1.0 ÷ 15 HP
	Voltage	230/400 ± 10% V (up to 4 kW)
		400/690 ± 10% V (from 5.5 kW)
Type	Type	Electric - TEFC
	Efficiency level	IE3
	N°of poles	2
	Protection degree	IP 55
	Insulation class	F (temperature rise class B)
Others	Thermal Protection	PTC is available for the above 1.5 kW
	Casing Material	Aluminium
	Flange mount (IEC motor)	IM B14 (up to 4 kW)
		IM B5 (from 5.5 kW)

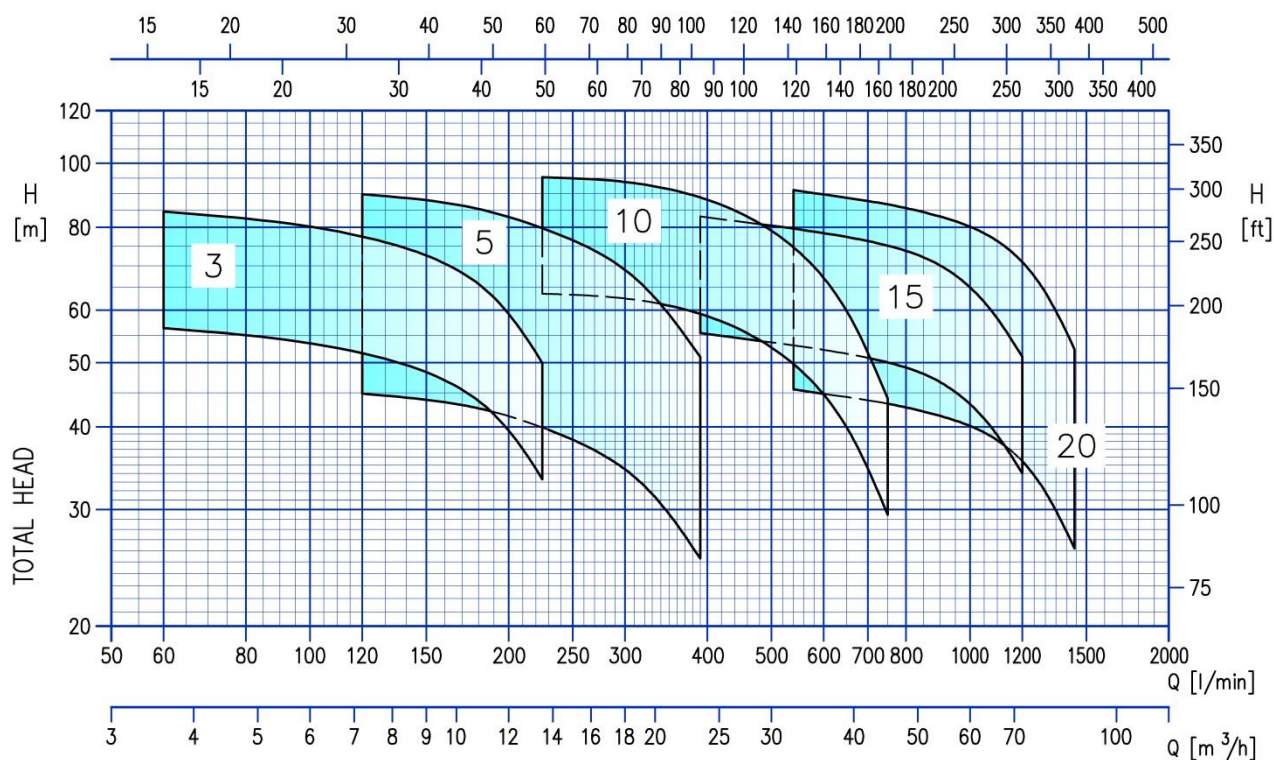
OTHER MOTOR

OTHER MOTOR			
Version		EVMS	
Power source	Frequency	50 Hz	
	Phase	Single-phase	Three-phase
	Rotation speed	2900 min ⁻¹	
	Power rating	0.75 ÷ 2.2 kW	15 ÷ 45 kW
		1.0 ÷ 3.0 HP	20 ÷ 60 HP
	Voltage	230 ± 10% V	400/690 ± 10% V
Type	Type	Electric - TEFC	
	Efficiency level	IE2	IE3
	N°of poles	2	
	Protection degree	IP 55	IP 56
	Insulation class	F (temperature rise class B)	
Others	Thermal Protection	PTC is available for the above 1.5 kW	
	Casing Material	Aluminium	Aluminium (up to 30 kW) Cast Iron (from 37 kW)
	Flange mount (IEC motor)	IM B14	IM B5

PERFORMANCE RANGE RESEAU BOOSTER SET 2GP(.) EVMS(.) 3-5-10-15-20



RESEAU BOOSTER SET 3GP(.) EVMS(.) 3-5-10-15-20



CURVE SPECIFICATION

MINIMUM EFFICIENCY INDEX (MEI)

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9906 Annex A

The curves refer to effective speed of asynchronous motors at 50 Hz

Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

The NPSH curve is an average curve obtained in the same conditions of performance curves.

The continuous curves indicate the recommended working range. The dotted curve is only a guide.

In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point. The performance curves refer to 2 and 3 pumps booster sets.

Symbols explanation:

Q = volume flow rate

H = total head

P2 = pump power input (shaft power)

η = pump efficiency

NPSH = net positive suction head required by the pump

1 = one pump on work performance curve

2 = two pumps on work performance curve

3 = three pumps on work performance curve

MEI = minimum efficiency index

Pressure drops of the booster's fittings are not considered

The minimum efficiency index (MEI) is a measure of the quality of a pump size respect to its mean efficiency.

The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

Minimum efficiency index (MEI)

Pump Type	MEI *
EVMS(.3)	> 0.70
EVMS(.5)	> 0.70
EVMS(.10)	> 0.70
EVMS(.15)	> 0.70
EVMS(.20)	> 0.70

****The values refer to the individual pumps***

SELECTION CHART 2GP(.) EVMS(.) 3-5

Model	Motor		Maximum working pressure (MPa)	Q=Capacity									
	kW	HP		l/min	0	40	60	80	120	150	200	260	
				m³/h	0	2,4	3,6	4,8	7,2	9,0	12,0	15,6	
H=Total manometric head in meters													
2GP(.) EVMS(.)3 7/0.75	0.75 + 0.75	1 + 1	1.6	51,5	49,5	47,5	45	38,3	29,2	-	-		
2GP(.) EVMS(.)3 8/0.75	0.75 + 0.75	1 + 1		59	56,5	54,5	51,5	44	33,4	-	-		
2GP(.) EVMS(.)3 9/1.1	1.1 + 1.1	1.5 + 1.5		66,5	63,5	61	58	49	37,6	-	-		
2GP(.) EVMS(.)3 10/1.1	1.1 + 1.1	1.5 + 1.5		73,5	70,5	68	64,5	54,5	41,5	-	-		
2GP(.) EVMS(.)3 12/1.1	1.1 + 1.1	1.5 + 1.5		89	84,5	81,5	77,5	65,5	50,0	-	-		
2GP(.) EVMS(.)5 5/1.1	1.1 + 1.1	1.5 + 1.5		47,5	-	-	45	42,5	39,9	34,5	25,5		
2GP(.) EVMS(.)5 7/1.5	1.5 + 1.5	2 + 2		66,5	-	-	63	59,5	56	48,5	35,7		
2GP(.) EVMS(.)5 8/2.2	2.2 + 2.2	3 + 3		76	-	-	72	68	64	55	41		
2GP(.) EVMS(.)5 9/2.2	2.2 + 2.2	3 + 3		85,5	-	-	81	77	72	62	46		
2GP(.) EVMS(.)5 10/2.2	2.2 + 2.2	3 + 3		95,0	-	-	90	88,5	80	69	51		

SELECTION CHART 2GP(.) EVMS(.) 10-15-20

Model	Motor		Maximum working pressure (MPa)	Q=Capacity													
	kW	HP		l/min	0	150	200	260	300	360	400	500	600	700	800	900	960
				m³/h	0	9,0	12,0	15,6	18,0	21,6	24,0	30,0	36,0	42,0	48,0	54,0	57,6
H=Total manometric head in meters																	
2GP(.) EVMS(.)10 6/2.2	2.2 + 2.2	3 + 3	1,6	65,5	63,5	62,5	59	56	50	45	29,5	-	-	-	-	-	-
2GP(.) EVMS(.)10 7/3.0	3.0 + 3.0	4 + 4		76,5	74	73	69	65,5	58	52	34,4	-	-	-	-	-	-
2GP(.) EVMS(.)10 8/3.0	3.0 + 3.0	4 + 4		87,0	84,5	83,5	79	74,5	66,5	59,5	39,3	-	-	-	-	-	-
2GP(.) EVMS(.)10 9/4.0	4.0 + 4.0	5.5 + 5.5		98	95,5	93,5	89,0	84,0	74,5	67,0	44,0	-	-	-	-	-	-
2GP(.) EVMS(.)15 4/4.0	4.0 + 4.0	5.5 + 5.5		59	-	-	55	54,5	53	52	50	46,5	41	33,6	-	-	-
2GP(.) EVMS(.)15 6/5.5	5.5 + 5.5	7.5 + 7.5		88,5	-	-	82,5	81,5	79,5	78	74,5	69,5	61	50,5	-	-	-
2GP(.) EVMS(.)20 3/4.0	4.0 + 4.0	5.5 + 5.5		50,5	-	-	-	-	46	45	43,4	41,6	39,2	35,5	29,9	26,2	-
2GP(.) EVMS(.)20 4/5.5	5.5 + 5.5	7.5 + 7.5		67	-	-	-	-	60,8	59,8	57,8	55,4	52,3	47	39,8	34,9	-
2GP(.) EVMS(.)20 6/7.5	7.5 + 7.5	10 + 10		101	-	-	-	-	91	89,5	86,5	83	79	71	60	52	-

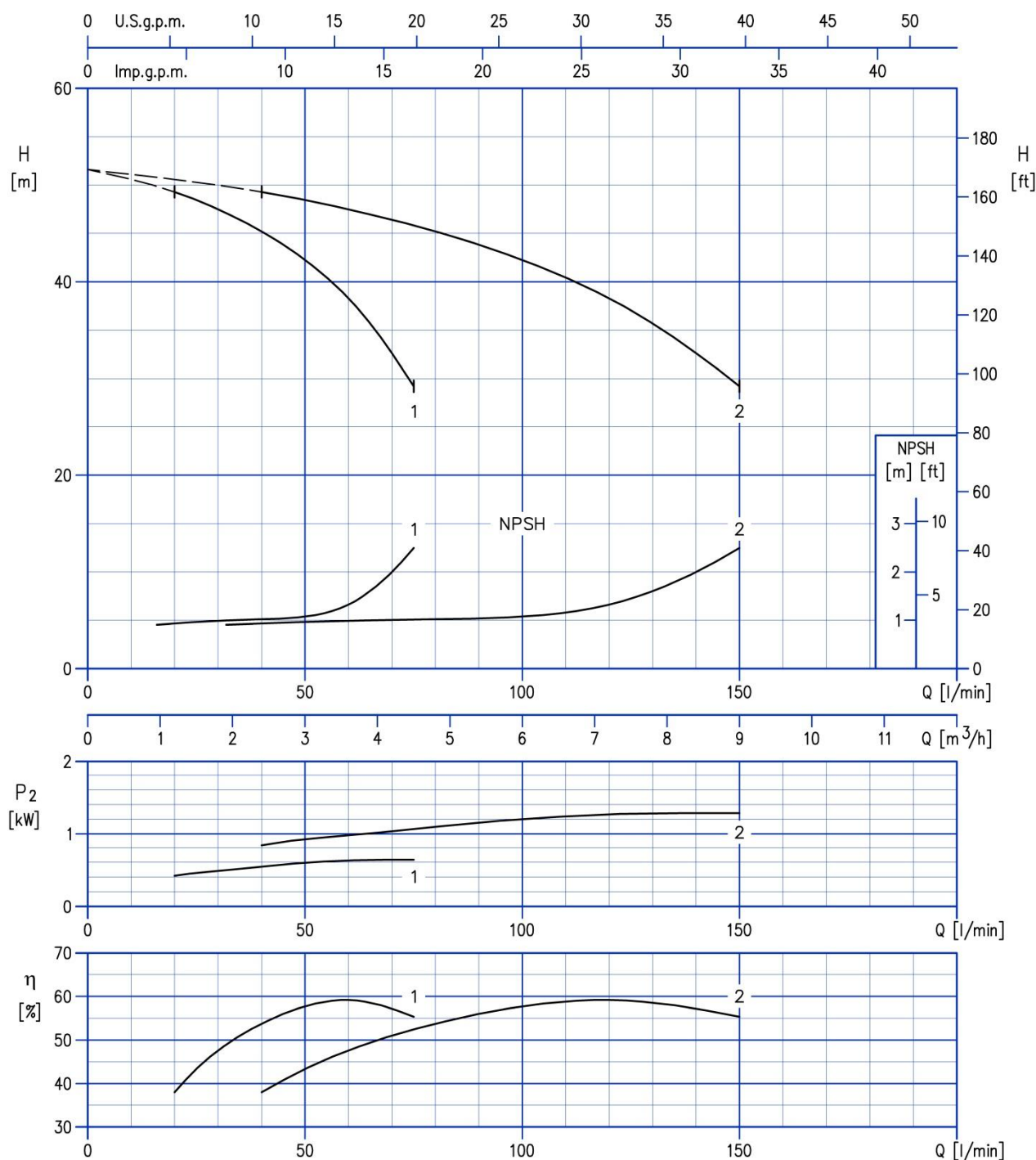
SELECTION CHART 3GP(.) EVMS(.) 3-5

Model	Motor		Maximum working pressure (MPa)	Q=Capacity								
	kW	HP		l/min	0	60	90	120	180	225	300	390
				m³/h	0	3,6	5,4	7,2	10,8	13,5	18,0	23,4
				H=Total manometric head in meters								
3GP(.) EVMS(.)3 8/0.75	0.75 + 0.75 + 0.75	1 + 1 + 1	1.6	59,0	56,5	54,5	52	44,0	33,4	-	-	
3GP(.) EVMS(.)3 12/1.1	1.1 + 1.1 + 1.1	1.5 + 1.5 + 1.5		89	84,5	81,5	77,5	65,5	50,0	-	-	
3GP(.) EVMS(.)5 5/1.1	1.1 + 1.1 + 1.1	1.5 + 1.5 + 1.5		47,5	-	-	45	42,5	39,9	34,5	25,5	
3GP(.) EVMS(.)5 7/1.5	1.5 + 1.5 + 1.5	2 + 2 + 2		66,5	-	-	63	59,5	56	48,5	35,7	
3GP(.) EVMS(.)5 8/2.2	2.2 + 2.2 + 2.2	3 + 3 + 3		76	-	-	72	68	64	55	41	
3GP(.) EVMS(.)5 10/2.2	2.2 + 2.2 + 2.2	3 + 3 + 3		95,0	-	-	90	88,5	80	69	51	

SELECTION CHART 3GP(.) EVMS(.) 10-15-20

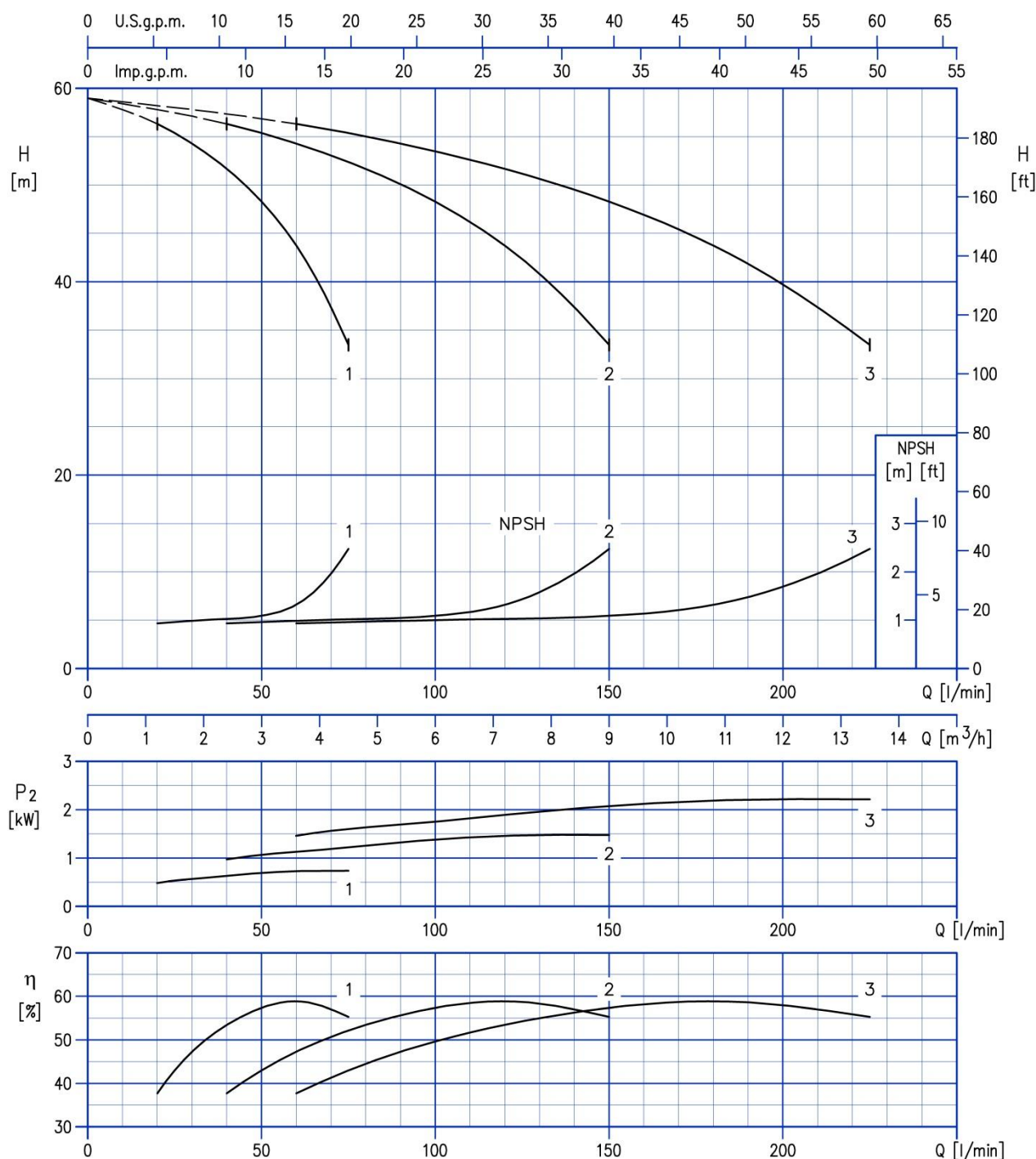
Model	Motor		Maximum working pressure (MPa)	Q=Capacity													
	kW	HP		l/min	0	225	300	390	450	540	600	750	900	1050	1200	1350	1440
				m³/h	0	13,5	18,0	23,4	27,0	32,4	36,0	45,0	54,0	63,0	72,0	81,0	86,4
H=Total manometric head in meters																	
3GP(.) EVMS(.)10 6/2.2	2.2 + 2.2 + 2.2	3 + 3 + 3	1,6	65,5	63,5	62,5	59	56	50	45	29,5	-	-	-	-	-	
3GP(.) EVMS(.)10 7/3.0	3.0 + 3.0 + 3.0	4 + 4 + 4		76,5	74	73	69	65,5	58	52	34,4	-	-	-	-	-	
3GP(.) EVMS(.)10 8/3.0	3.0 + 3.0 + 3.0	4 + 4 + 4		87,0	84,5	83,5	79	74,5	66,5	59,5	39,3	-	-	-	-	-	
3GP(.) EVMS(.)10 9/4.0	4.0 + 4.0 + 4.0	5,5 + 5,5 + 5,5		98	95,5	93,5	89,0	84,0	74,5	67,0	44,0	-	-	-	-	-	
3GP(.) EVMS(.)15 4/4.0	4.0 + 4.0 + 4.0	5,5 + 5,5 + 5,5		59	-	-	55	54,5	53	52	50	46,5	41	33,6	-	-	
3GP(.) EVMS(.)15 5/5,5	5,5 + 5,5 + 5,5	7,5 + 7,5 + 7,5		73,5	-	-	69	68	66	65	62	58	51	42	-	-	
3GP(.) EVMS(.)15 6/5,5	5,5 + 5,5 + 5,5	7,5 + 7,5 + 7,5		88,5	-	-	82,5	81,5	79,5	78	74,5	69,5	61	50,5	-	-	
3GP(.) EVMS(.)20 3/5,5	4.0 + 4.0 + 4.0	5,5 + 5,5 + 5,5		50,5	-	-	-	-	46	45	43,4	41,6	39,2	35,5	29,9	26,2	
3GP(.) EVMS(.)20 4/5,5	5,5 + 5,5 + 5,5	7,5 + 7,5 + 7,5		67	-	-	-	-	60,8	59,8	57,8	55,4	52,3	47	39,8	34,9	
3GP(.) EVMS(.)20 6/7,5	7,5 + 7,5 + 7,5	10 + 10 + 10		101	-	-	-	-	91	89,5	86,5	83	79	71	60	52	

PERFORMANCE CURVE 2GP(.) 2GP(.) EVMS 3-7/0.75



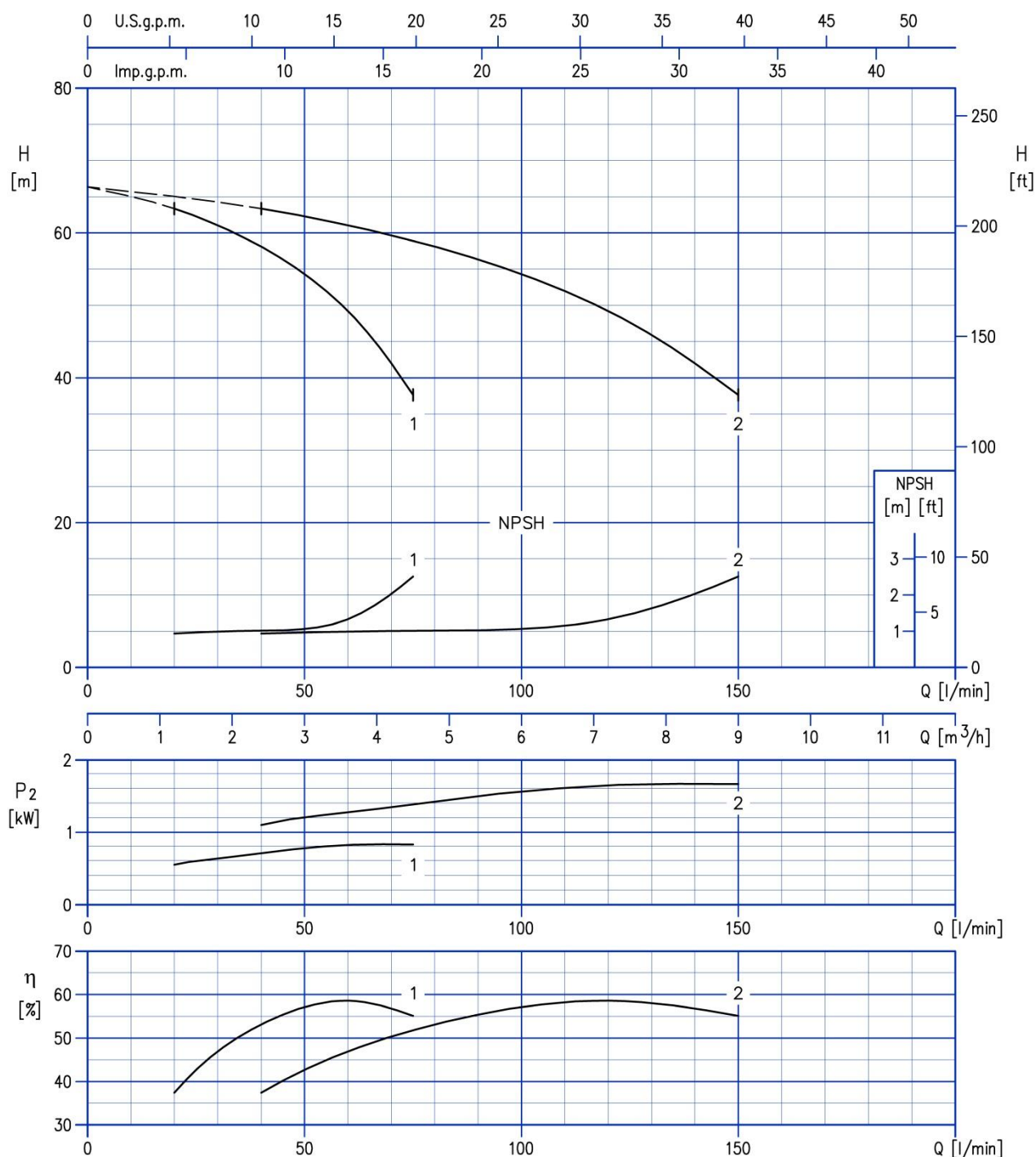
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 3-8/0.75



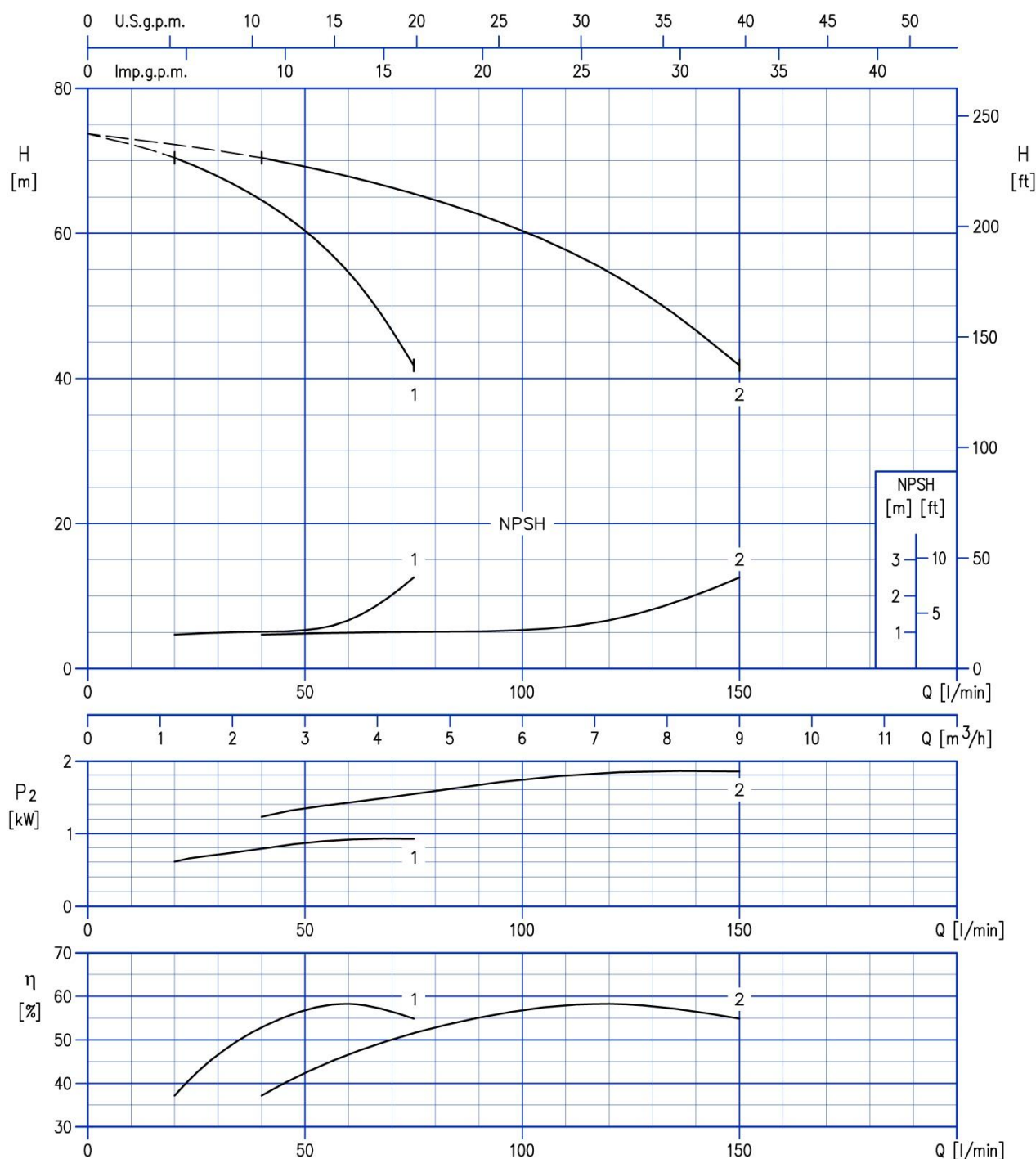
Test standard: ISO 9906: 2012 - Grade 3B

2GP(.) EVMS 3-9/1.1



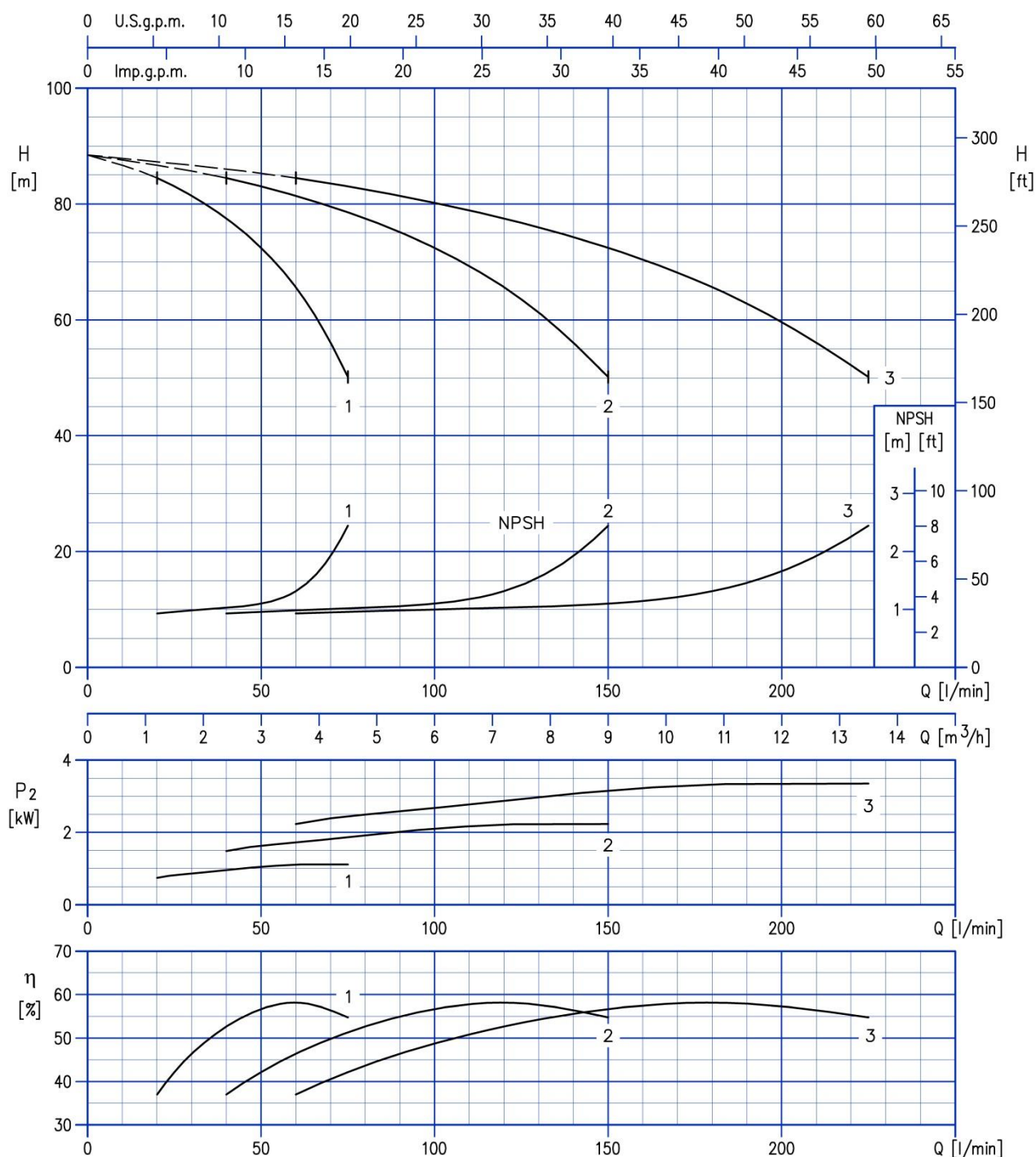
Test standard: ISO 9906: 2012 - Grade 3B

2GP(.) EVMS 3-10/1.1



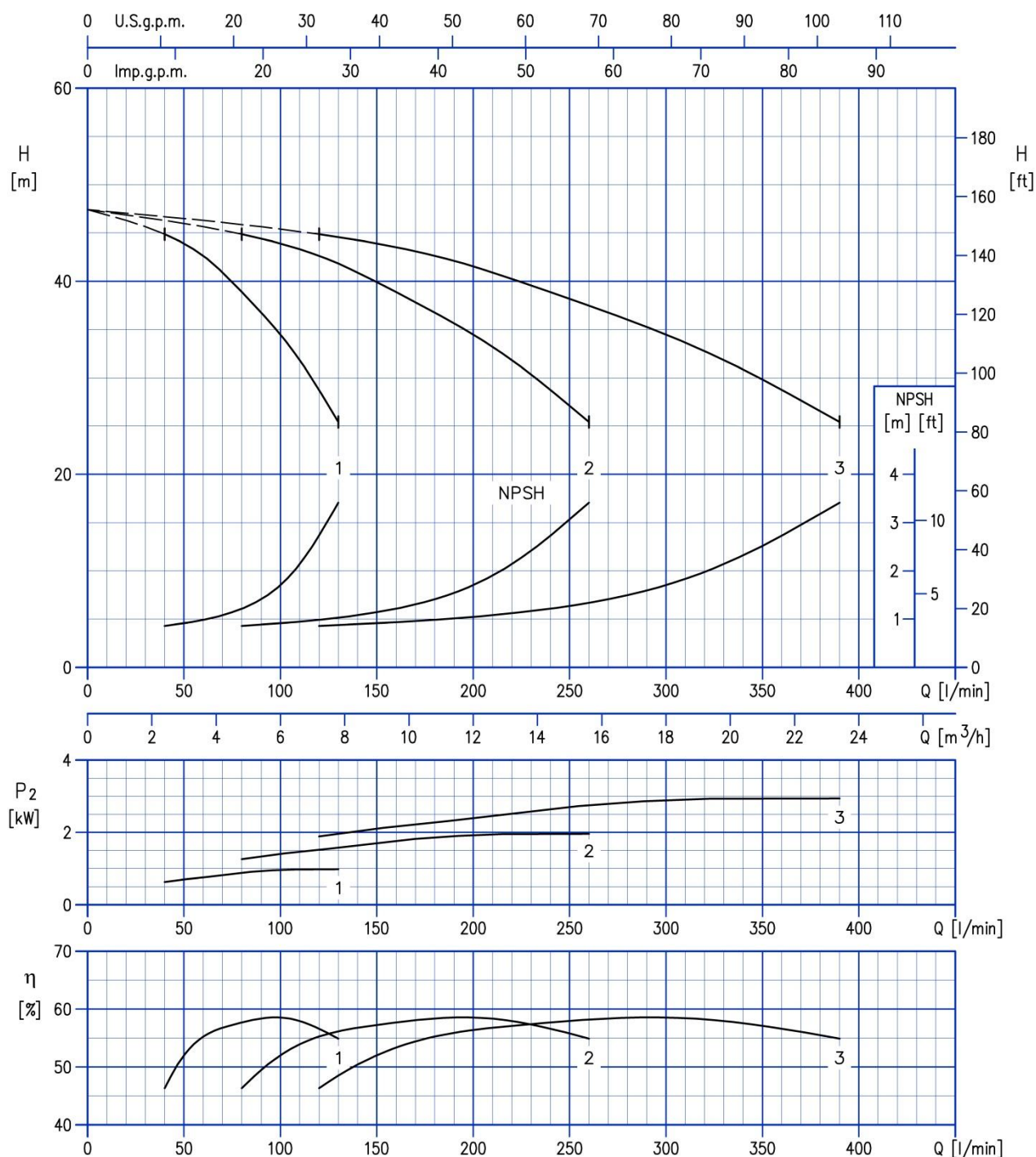
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 3-12/1.1



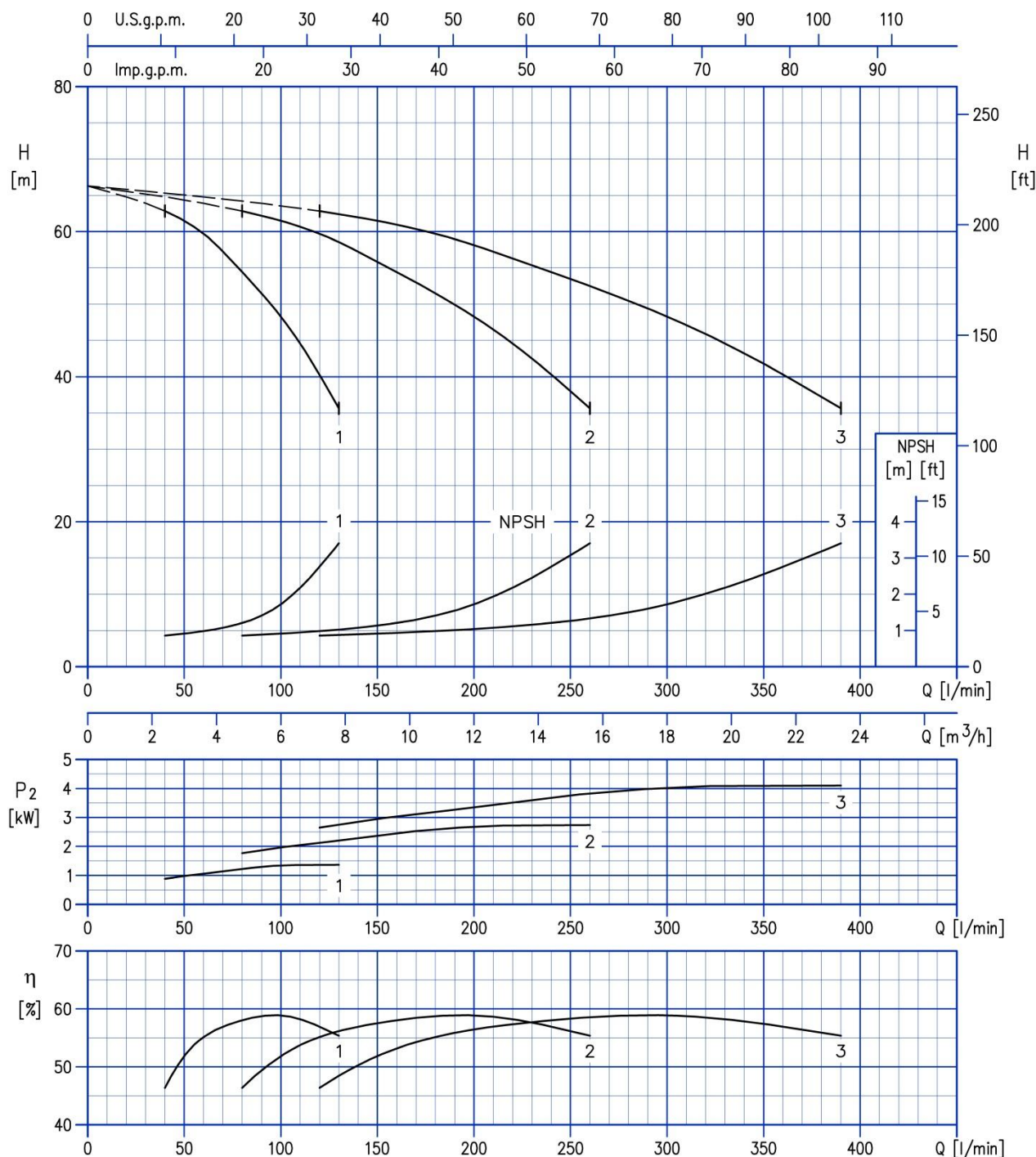
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 5-5/1.1



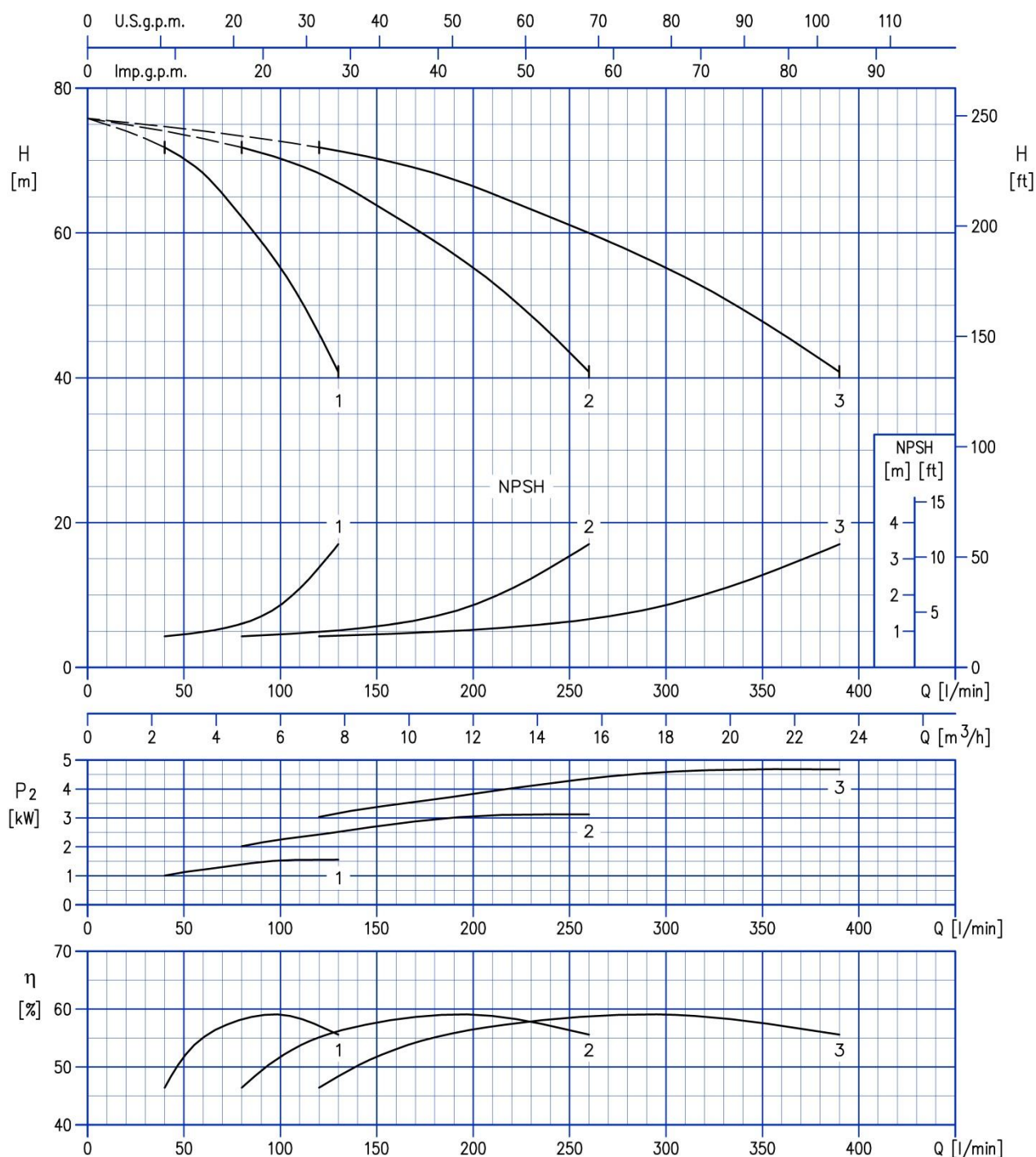
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2-3 GP(.) EVMS 5-7/1.5



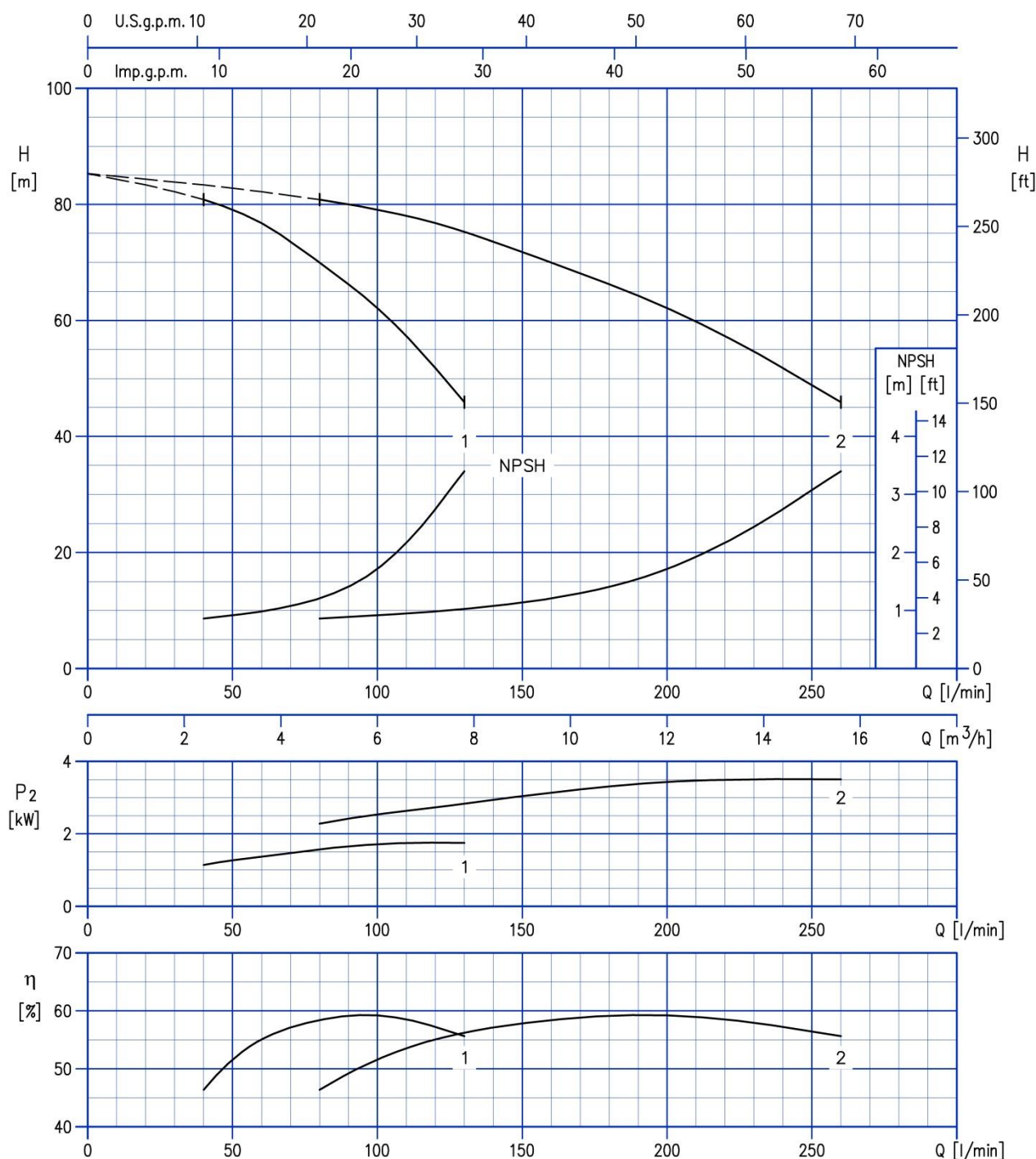
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 5-8/2.2



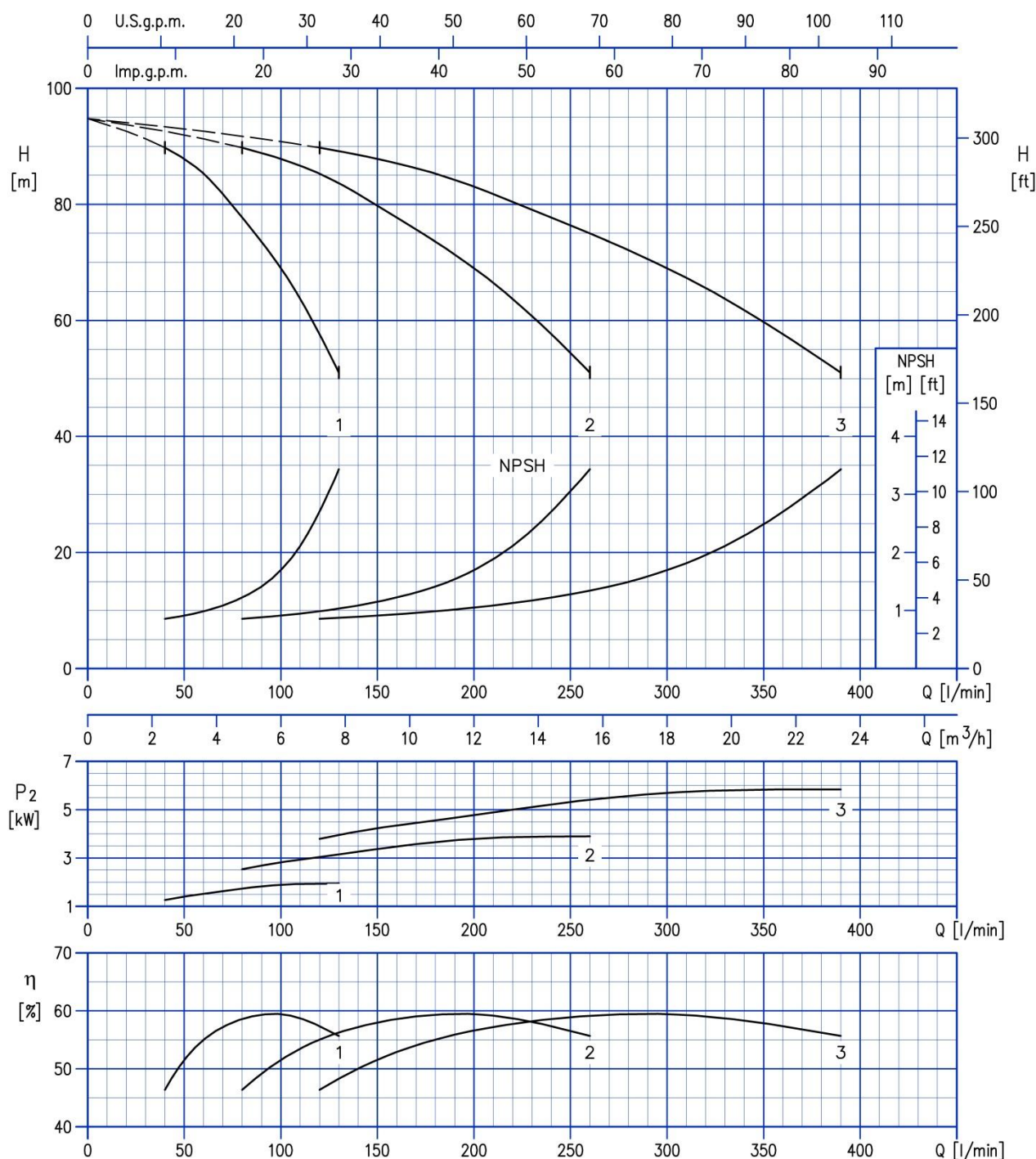
Test standard: ISO 9906: 2012 - Grade 3B

2GP(.) EVMS 5-9/2.2



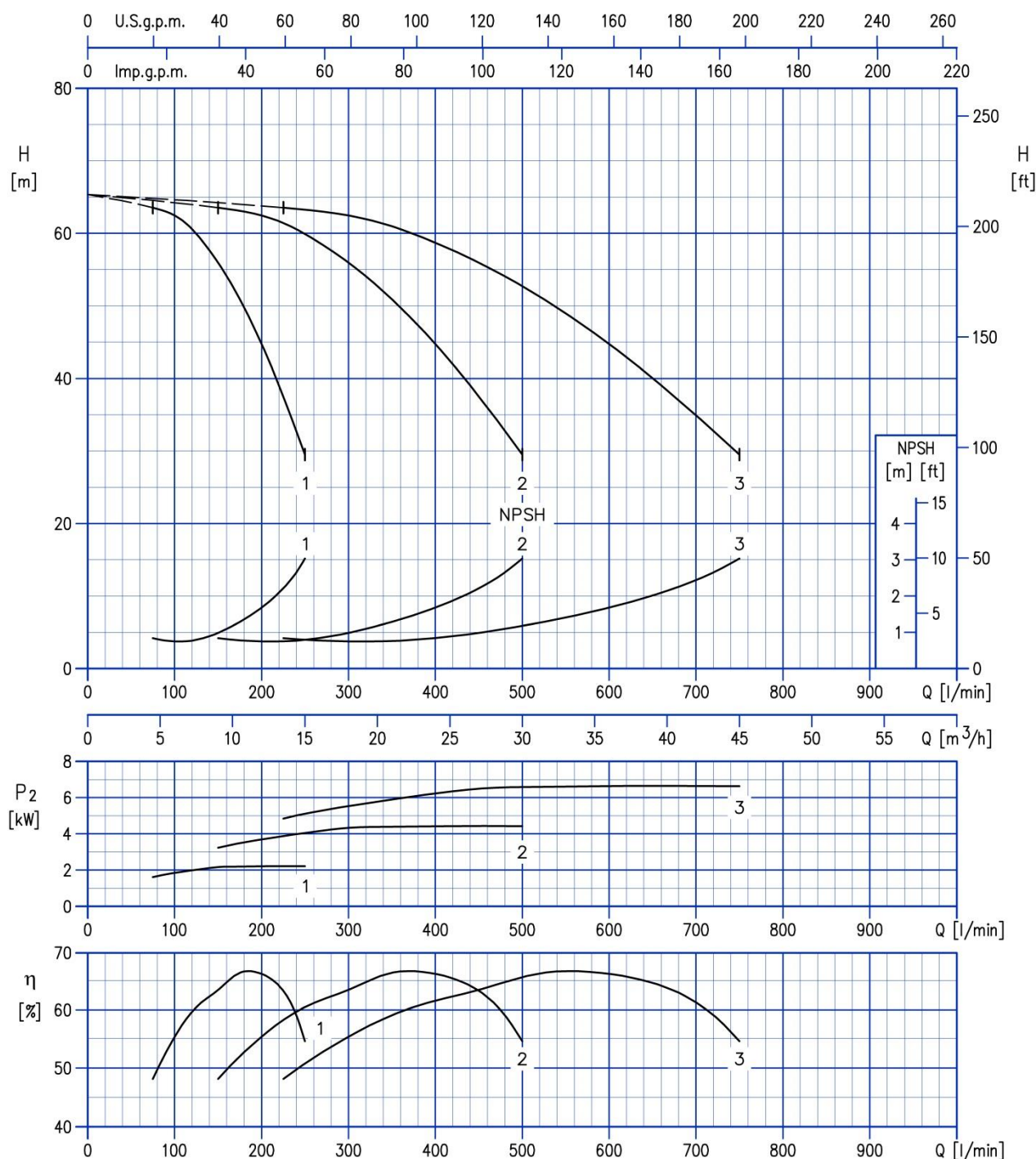
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2-3 GP(.) EVMS 5-10/2.2



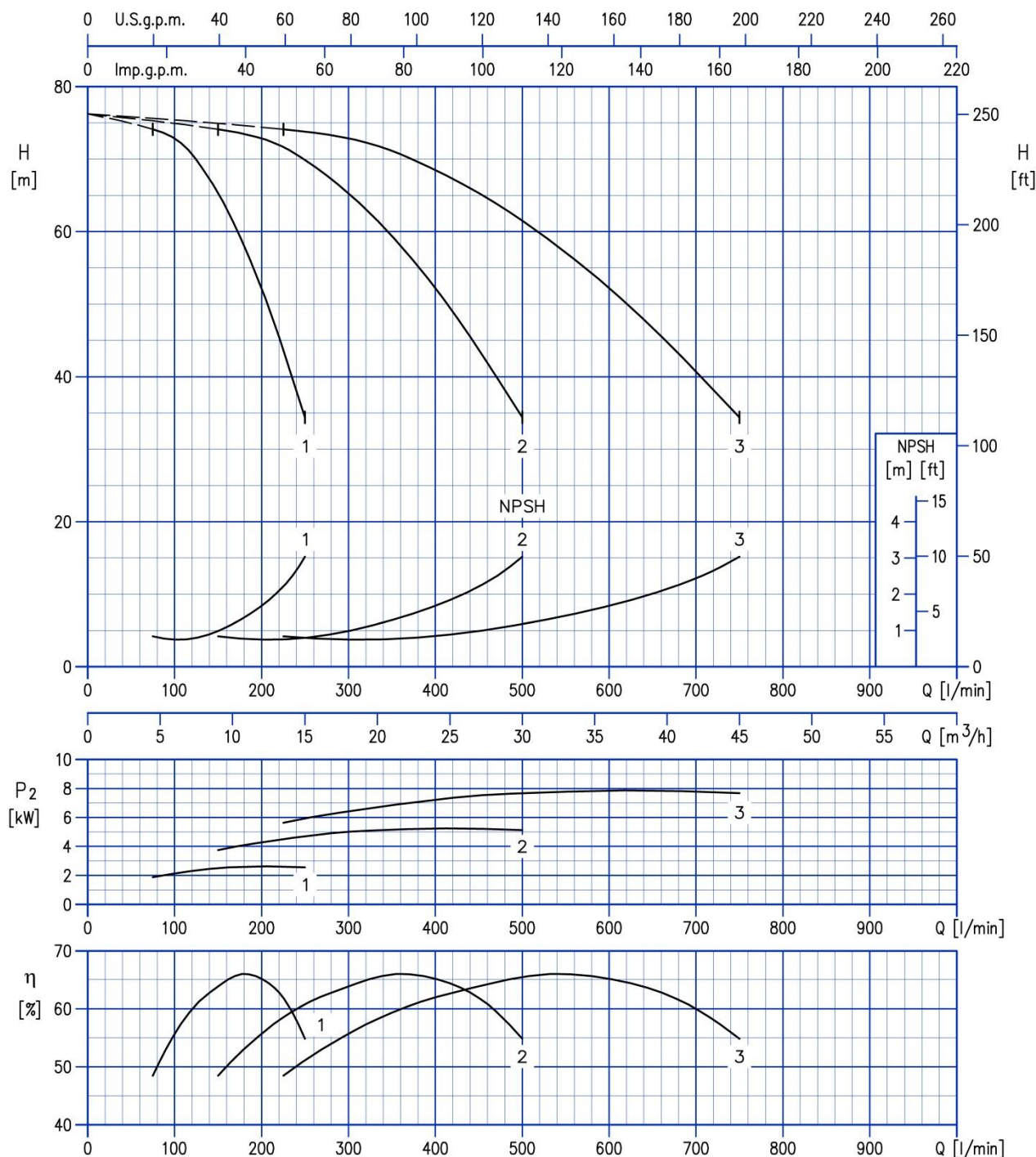
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 10-6/2.2



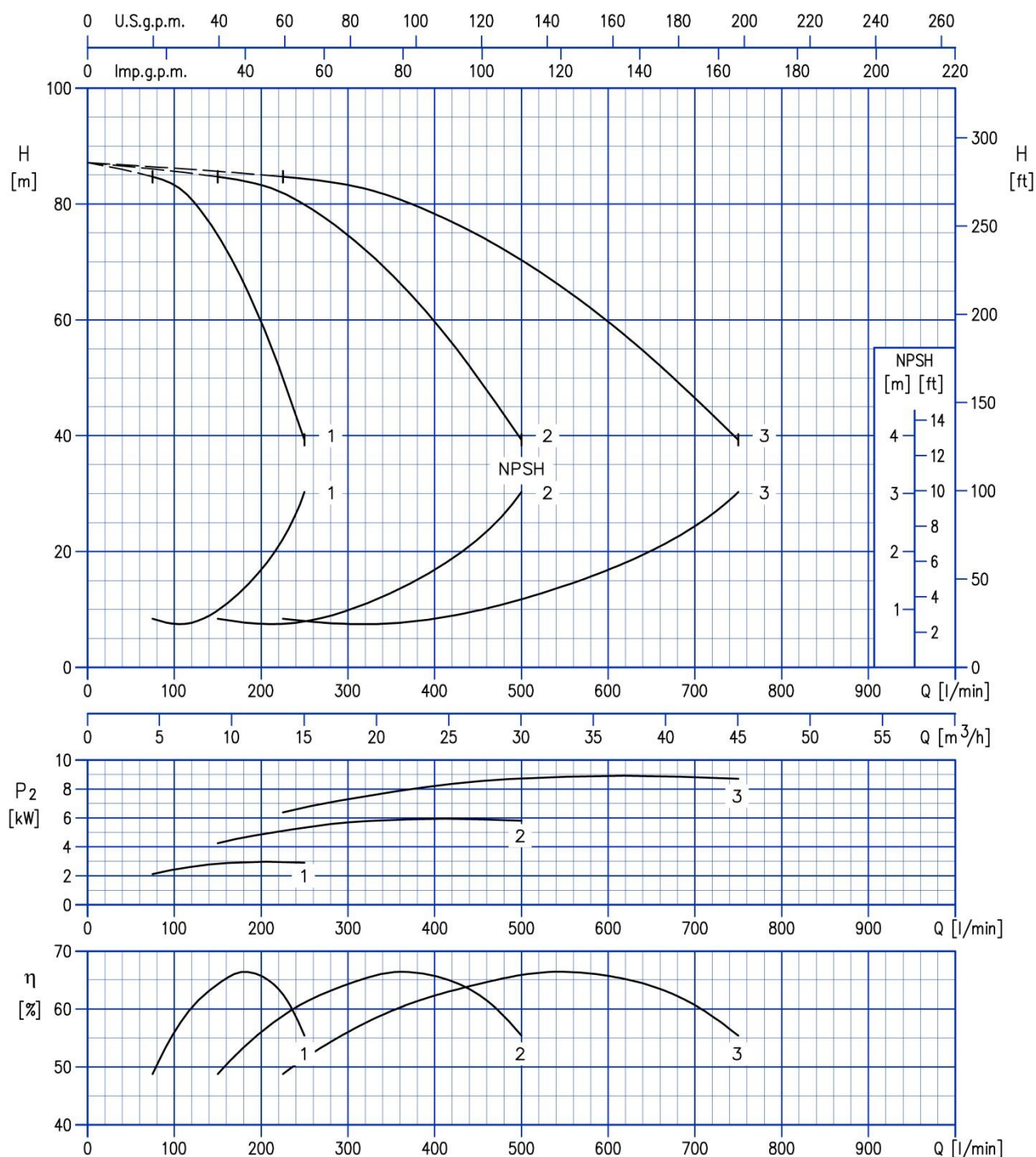
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2-3 GP(.) EVMS 10-7/3.0



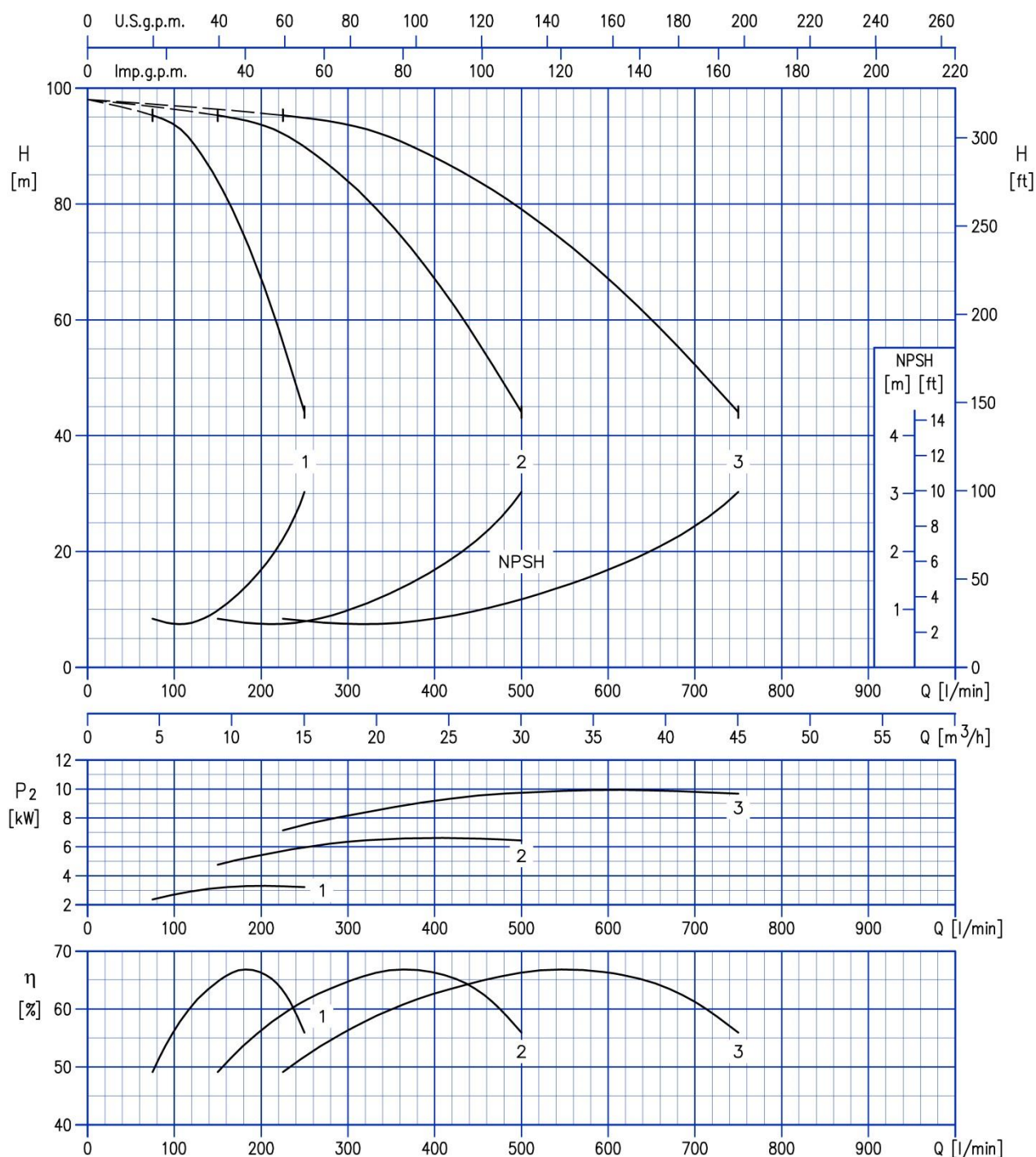
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2-3 GP(.) EVMS 10-8/3.0



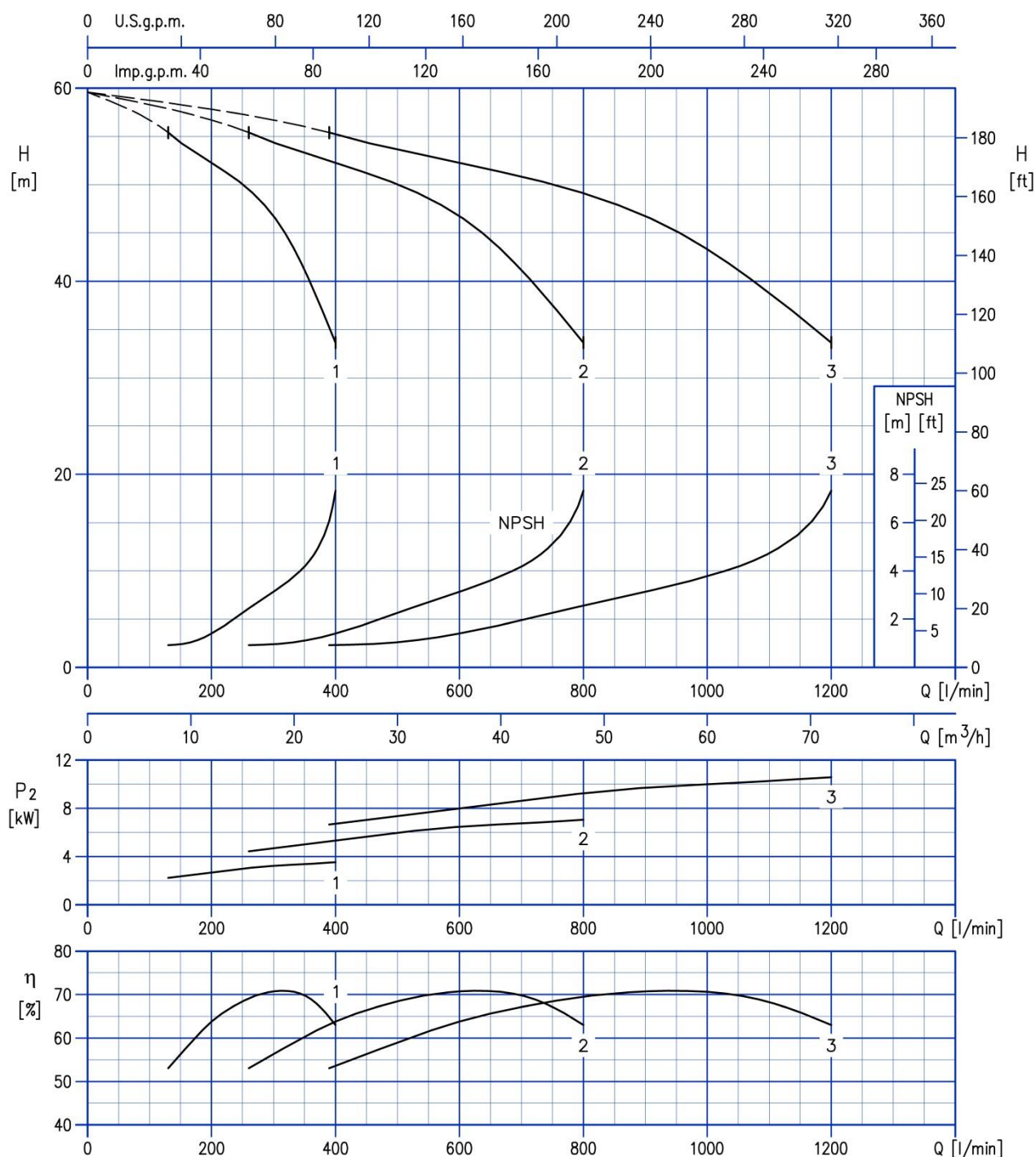
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2-3 GP(.) EVMS 10-9/4.0



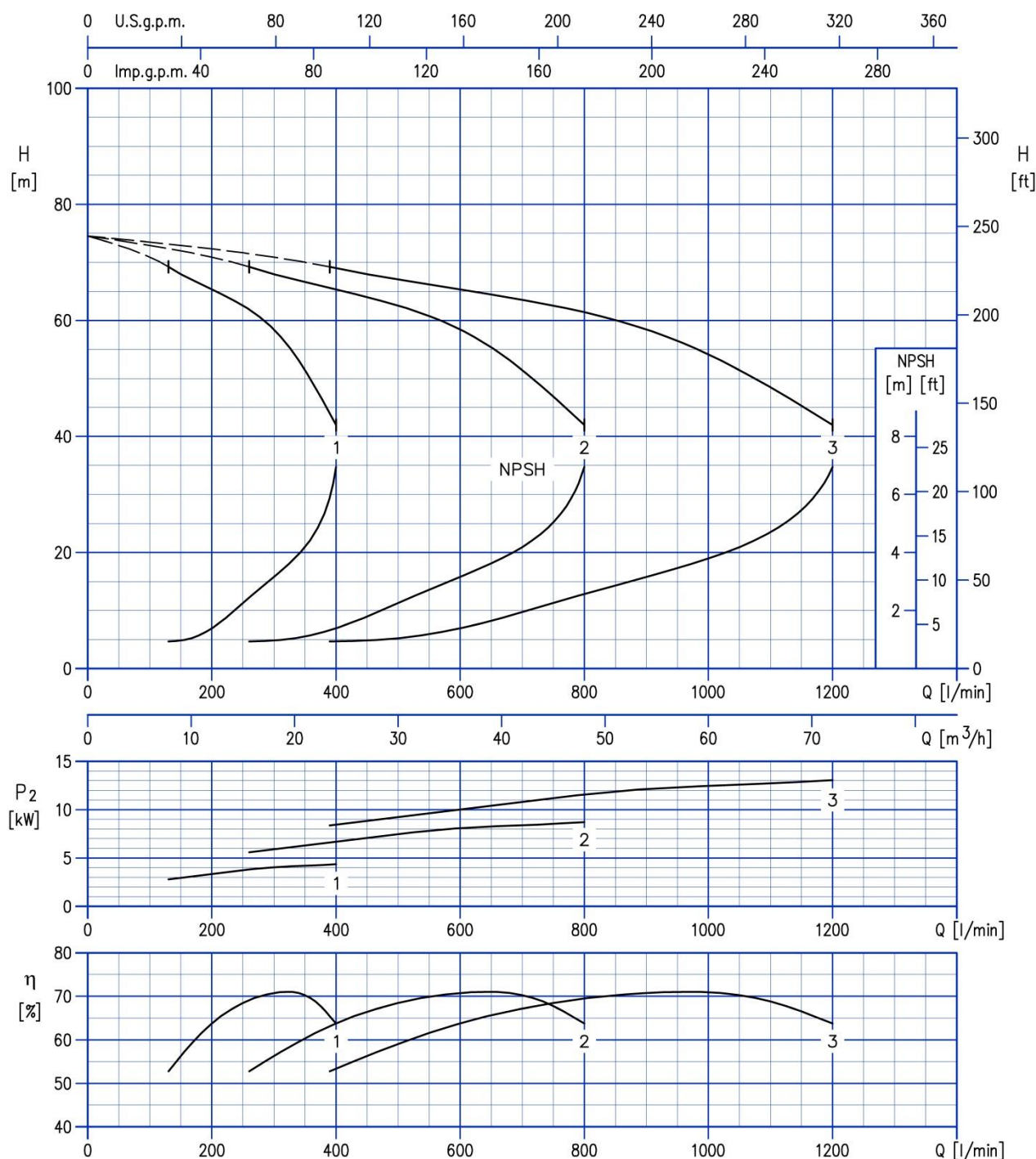
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 15-4/4.0



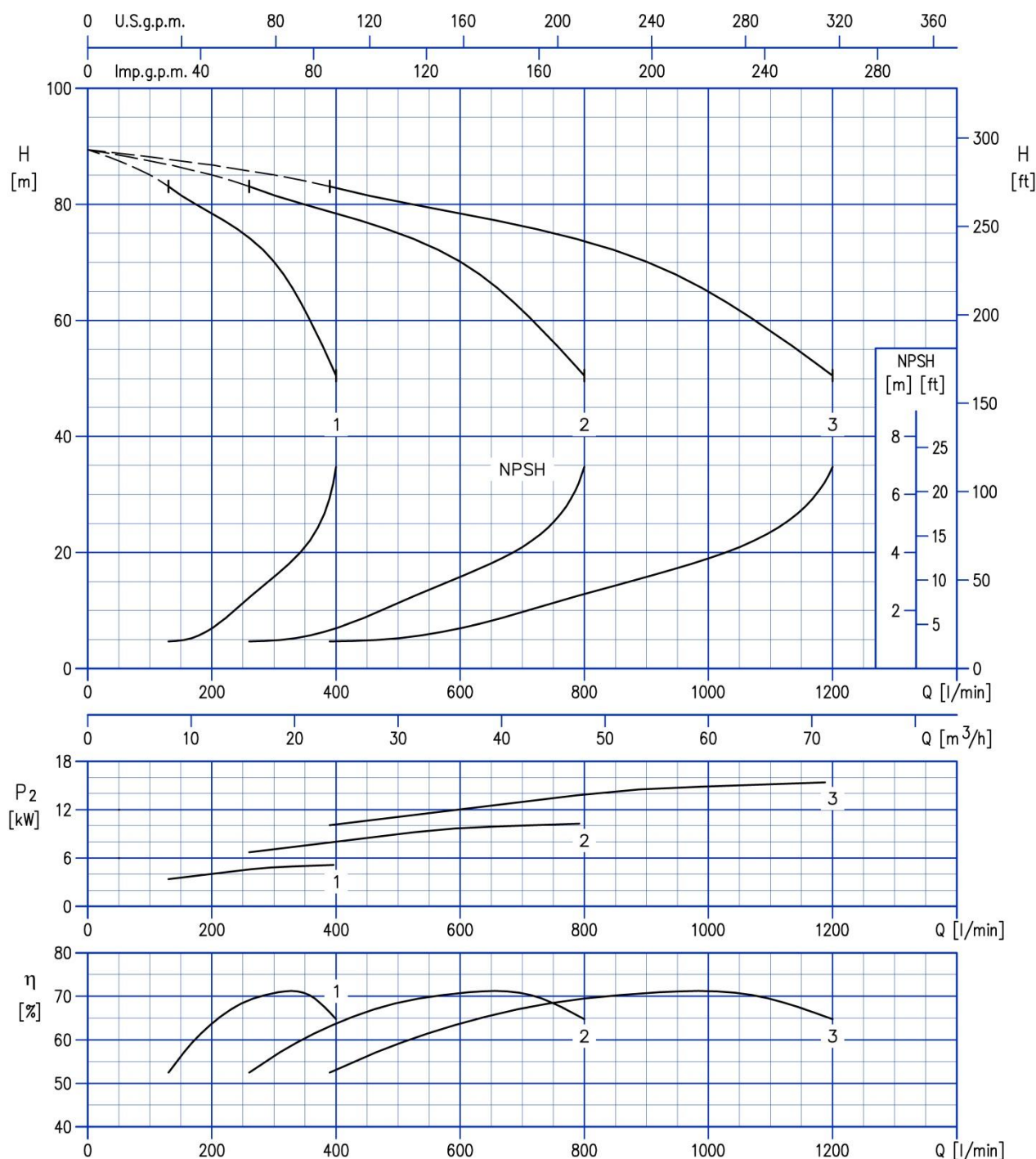
Test standard: ISO 9906: 2012 - Grade 3B

3GP(.) EVMS 15-5/5.5



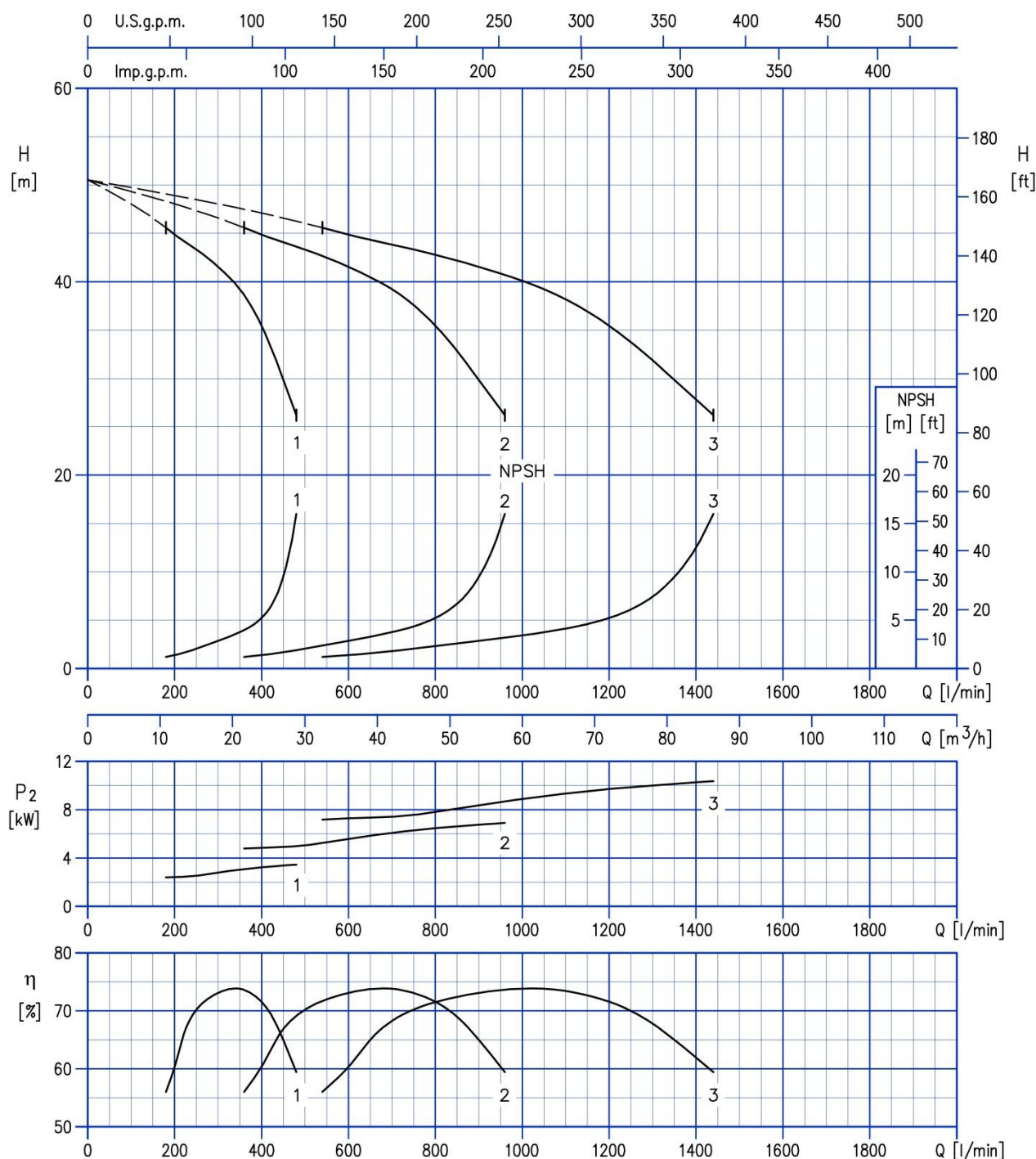
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 15-6/5.5



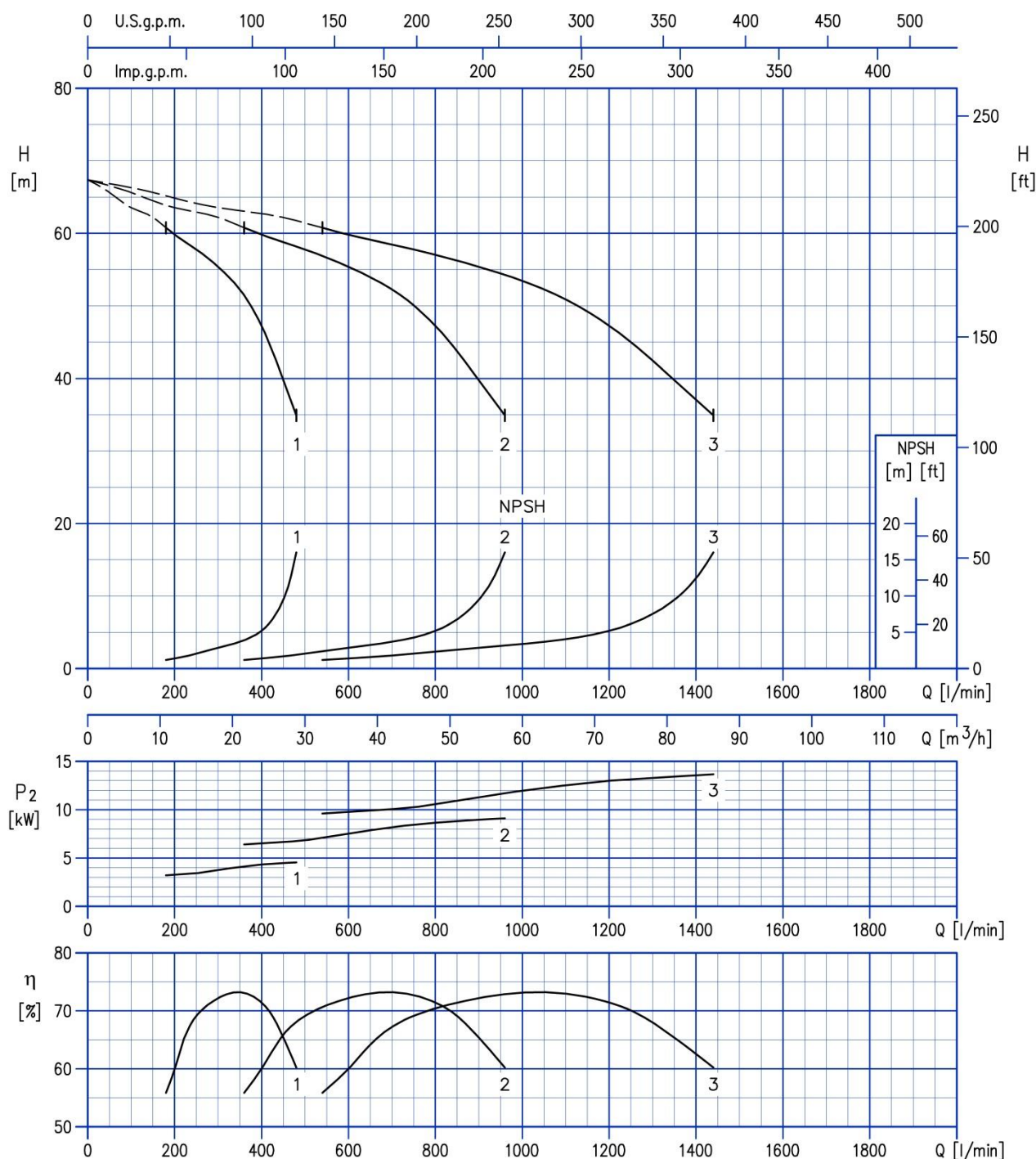
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 20-3/4.0



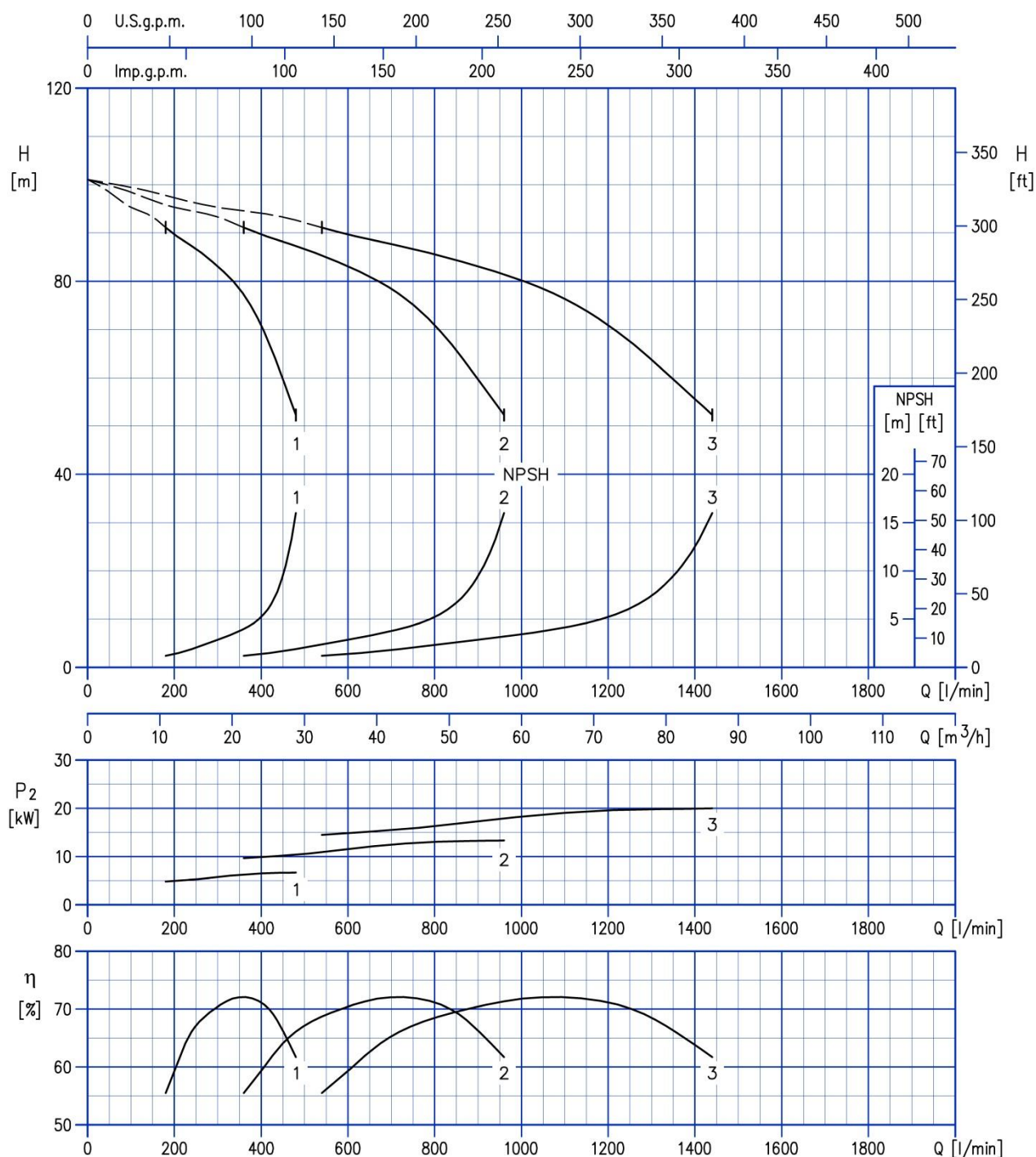
Test standard: ISO 9906: 2012 - Grade 3B

2-3 GP(.) EVMS 20-4/5.5



Test standard: ISO 9906: 2012 - Grade 3B

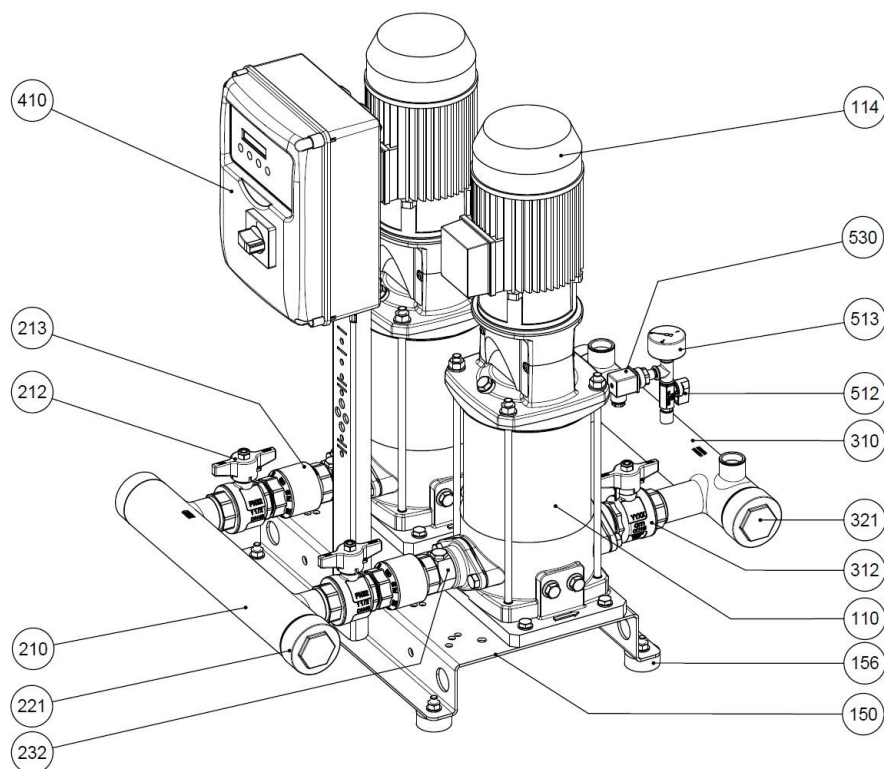
2-3 GP(.) EVMS 20-6/7.5



Test standard: ISO 9906: 2012 - Grade 3B

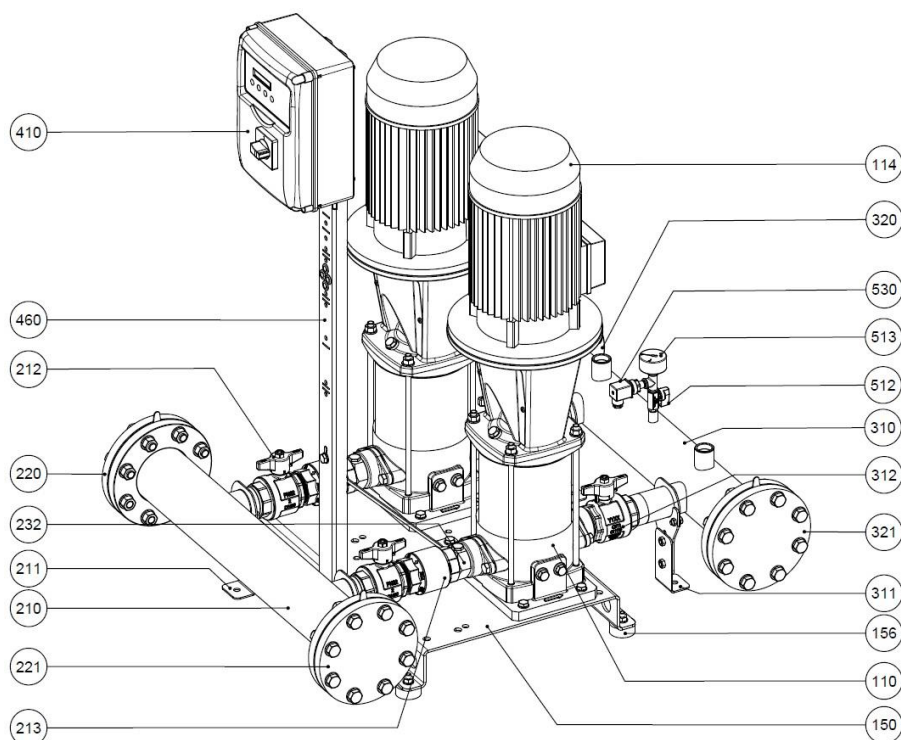
2GP CONSTRUCTION

EXTERNAL VIEW 2GP EVMS(.) 3-5-10-15



N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	2
114	Electric motor	-	2
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	4
210	Suction manifold	AISI 304	1
212	Ball valve	Brass / P.T.F.E.	2
213	Check valve	Brass / NBR	2
221	Threaded female cap	AISI 304	1
232	Nipple for air feeders	Yellow brass	2
310	Discharge manifold	AISI 304	1
312	Ball valve	Brass / P.T.F.E.	2
321	Threaded female cap	AISI 304	1
410	Control panel	-	1
460	Control panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	1

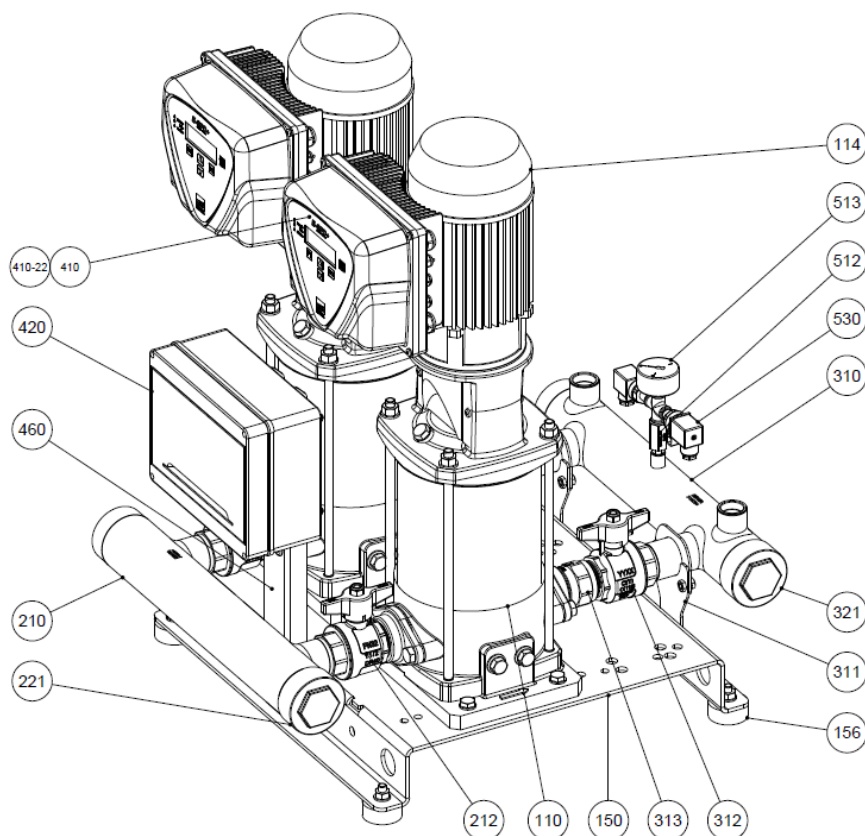
EXTERNAL VIEW 2GP EVMS(.) 20



N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	2
114	Electric motor	-	2
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	4
210	Suction manifold	AISI 304	1
211	Manifold bracket	Galvanized steel	2
212	Ball valve	Brass / P.T.F.E.	2
213	Check valve	Brass / NBR	2
220	Counterflange	AISI 304	1
221	Blind counterflange	AISI 304	1
232	Nipple for air feeders	Yellow brass	2
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	2
320	Counterflange	AISI 304	1
321	Blind counterflange	AISI 304	1
410	Control panel	-	1
460	Control panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	1

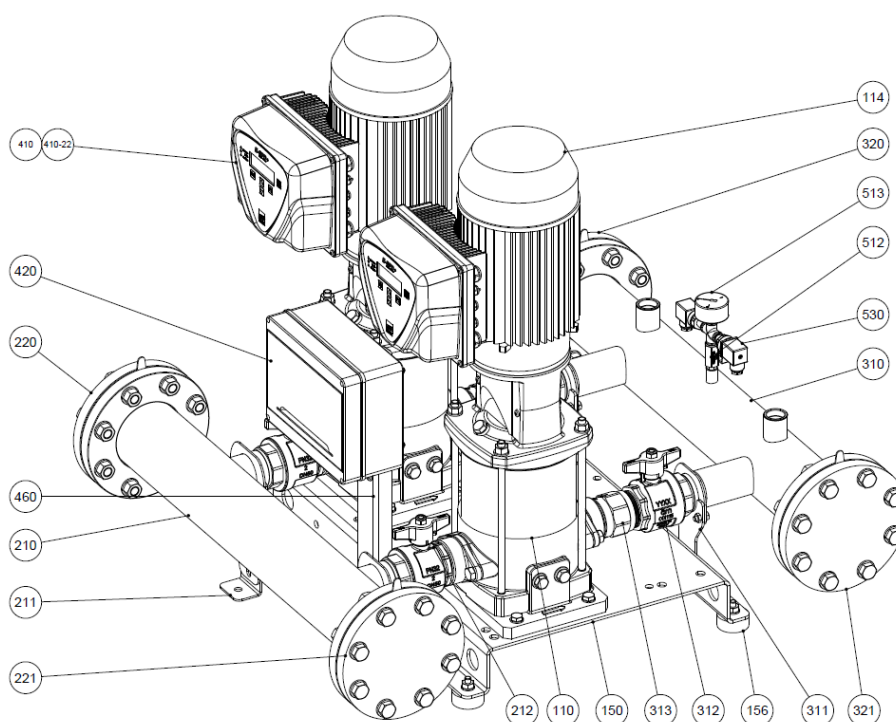
2GPE CONSTRUCTION

EXTERNAL VIEW 2GPE EVMS(.) 3-5-10-15 E-SPD+



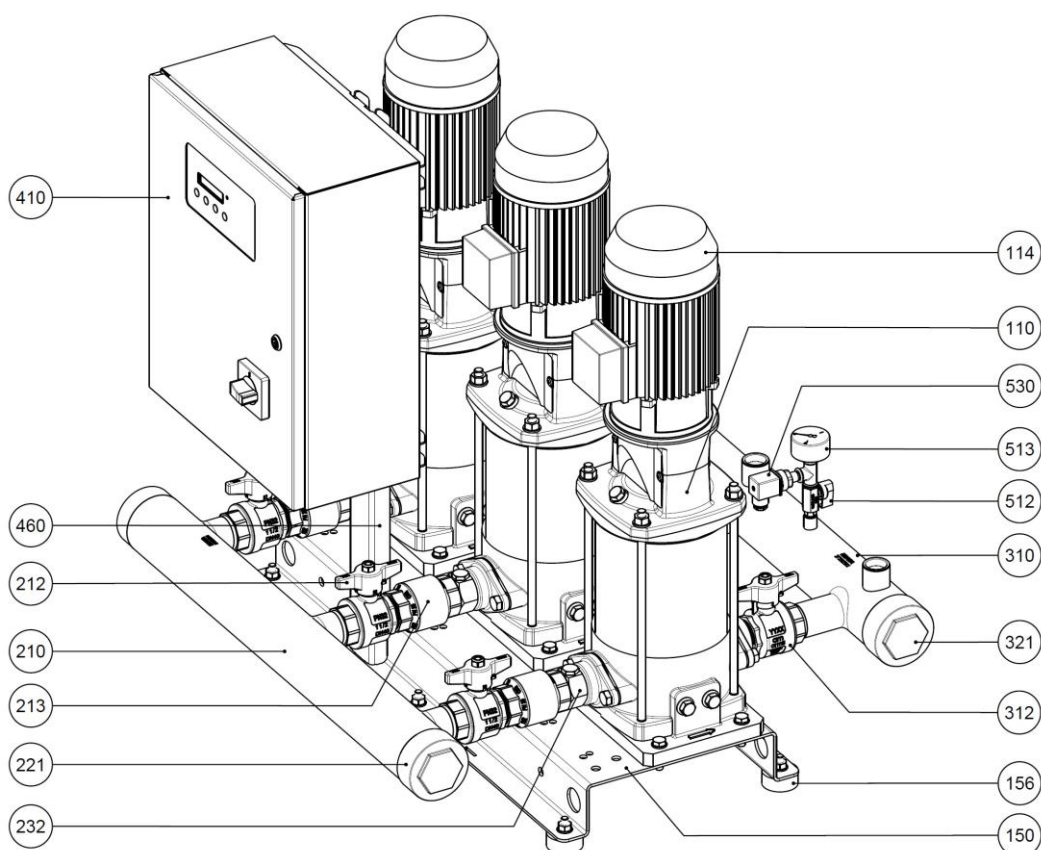
N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	2
114	Electric motor	-	2
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	4
210	Suction manifold	AISI 304	1
212	Ball valve	Brass / P.T.F.E.	2
221	Threaded female cap	AISI 304	1
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	2
313	Check valve	Brass / NBR	2
321	Threaded female cap	AISI 304	1
410	E-SPD+	-	2
410-22	E-SPD+ adaptor		2
420	Protection panel	-	1
460	Protection panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	2

EXTERNAL VIEW 2GPE EVMS(.) 20 E-SPD+



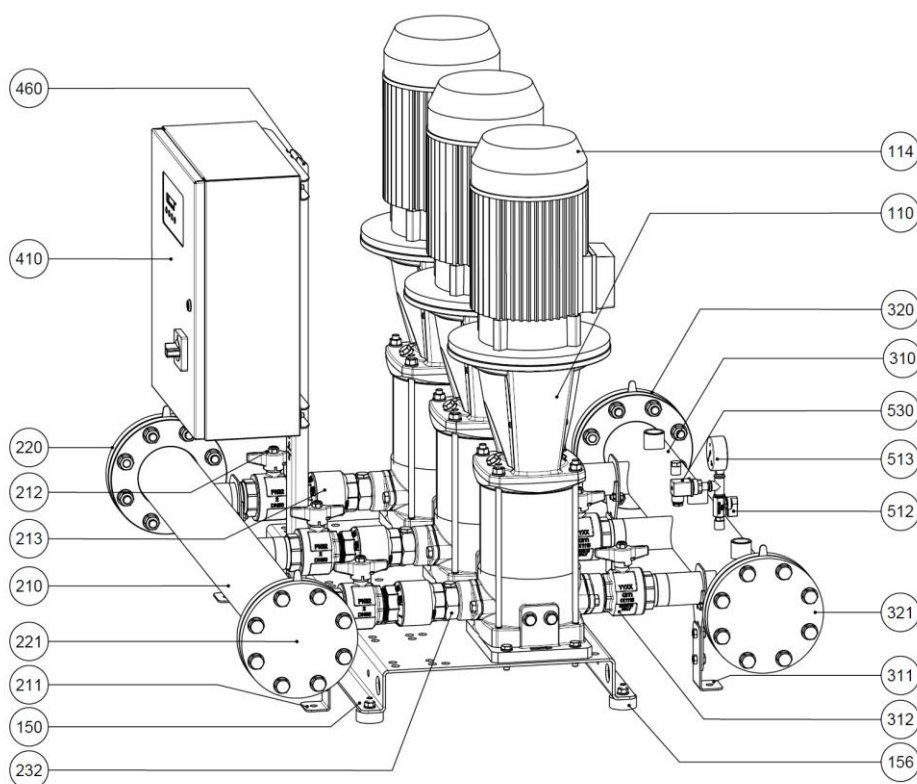
N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	2
114	Electric motor	-	2
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	4
210	Suction manifold	AISI 304	1
211	Manifold bracket	Galvanized steel	2
212	Ball valve	Brass / P.T.F.E.	2
220	Counterflange	AISI 304	1
221	Blind counterflange	AISI 304	1
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	2
313	Check valve	Brass / NBR	2
320	Counterflange	AISI 304	1
321	Blind counterflange	AISI 304	1
410	E-SPD+	-	2
410-22	E-SPD+ adaptor		2
420	Protection panel	-	1
460	Protection panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	2

3GP CONSTRUCTION EXTERNAL VIEW 3GP EVMS(.) 3-5-10



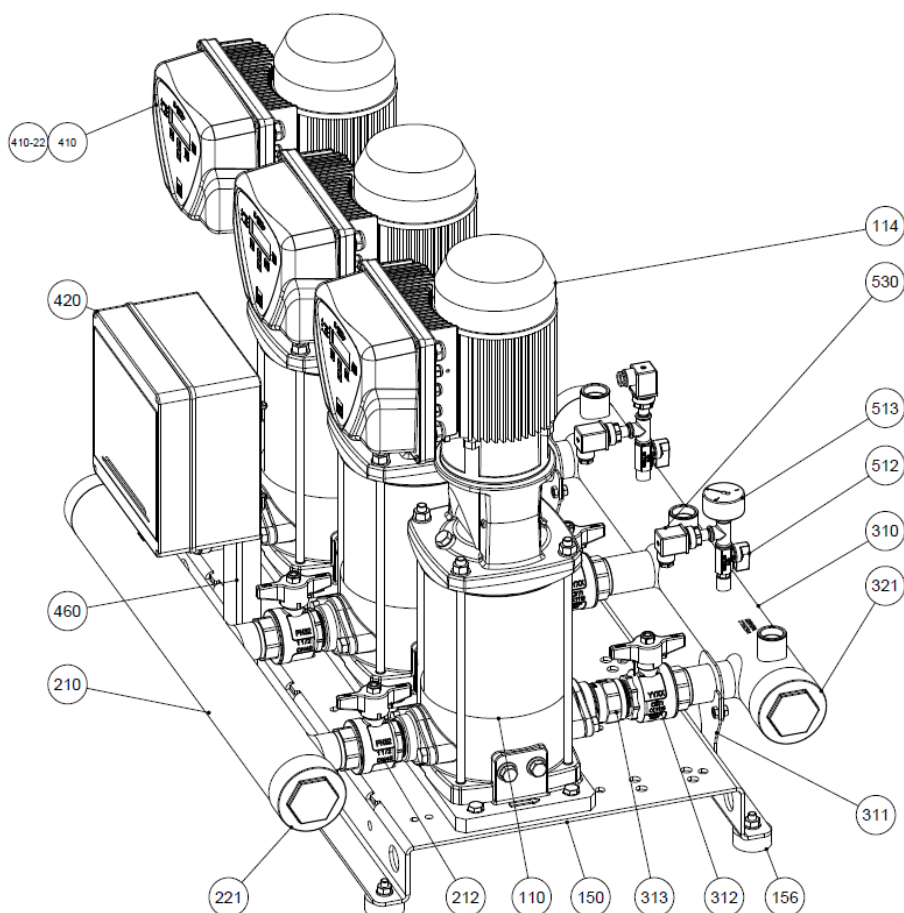
N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	3
114	Electric motor	-	3
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	6
210	Suction manifold	AISI 304	1
212	Ball valve	Brass / P.T.F.E.	3
213	Check valve	Brass / NBR	3
221	Threaded female cap	AISI 304	1
232	Nipple for air feeders	Yellow brass	3
310	Discharge manifold	AISI 304	1
312	Ball valve	Brass / P.T.F.E.	3
321	Threaded female cap	AISI 304	1
410	Control panel	-	1
460	Control panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	1

EXTERNAL VIEW 3GP EVMS(.) 15-20



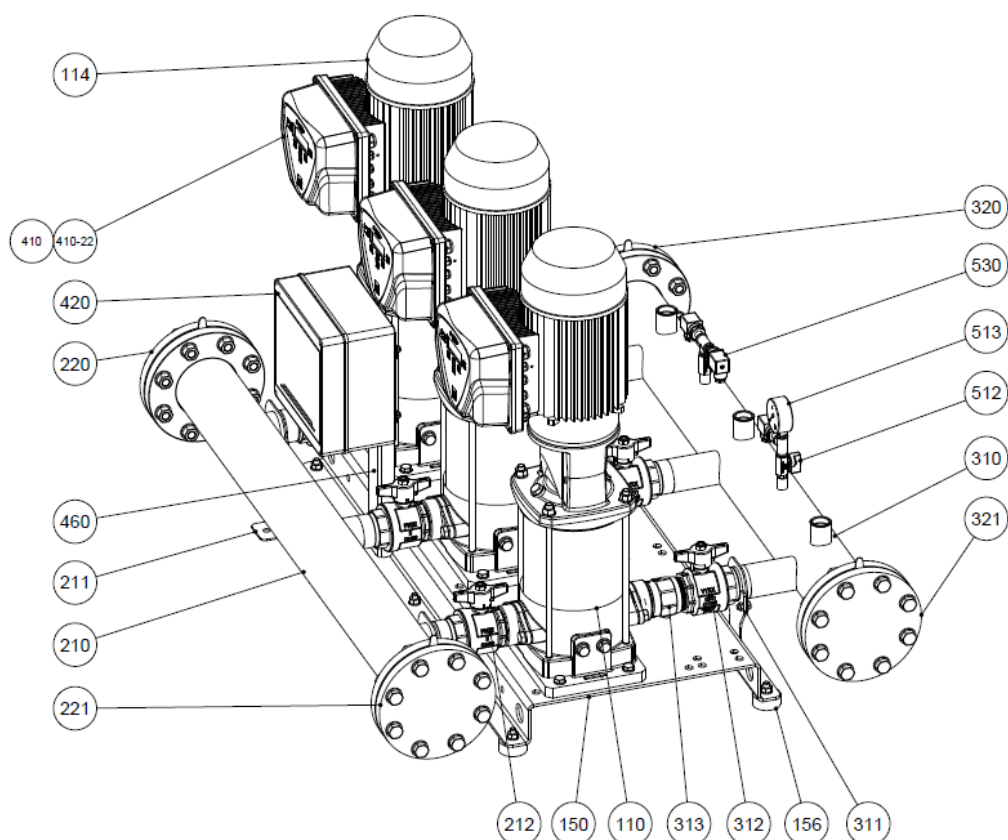
N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	3
114	Electric motor	-	3
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	6
210	Suction manifold	AISI 304	1
211	Manifold bracket	Galvanized steel	2
212	Ball valve	Brass / P.T.F.E.	3
213	Check valve	Brass / NBR	3
220	Counterflange	AISI 304	1
221	Blind counterflange	AISI 304	1
232	Nipple for air feeders	Yellow brass	3
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	3
320	Counterflange	AISI 304	1
321	Blind counterflange	AISI 304	1
410	Control panel	-	1
460	Control panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	1
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	1

EXTERNAL VIEW 3GPE EVMS(.) 3-5-10 E-SPD+



N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	3
114	Electric motor	-	3
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	6
210	Suction manifold	AISI 304	1
211	Manifold bracket	Galvanized steel	2
212	Ball valve	Brass / P.T.F.E.	3
221	Threaded female cap	AISI 304	1
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	3
313	Check valve	Brass / NBR	3
321	Threaded female cap	AISI 304	1
410	E-SPD+	-	3
410-22	E-SPD+ adaptor	-	3
420	Protection panel	-	1
460	Protection panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	2
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	3

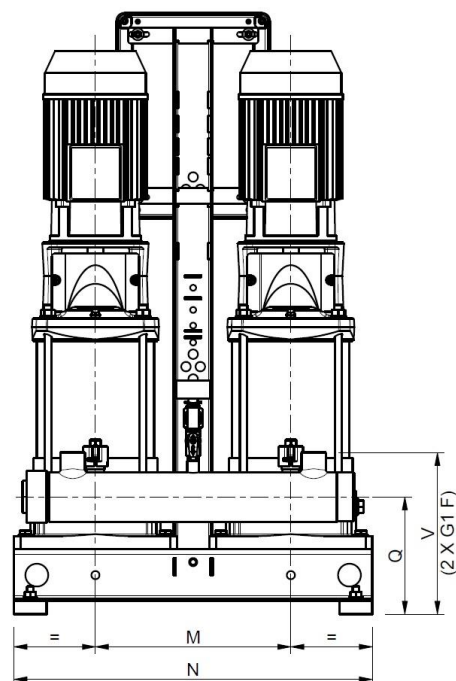
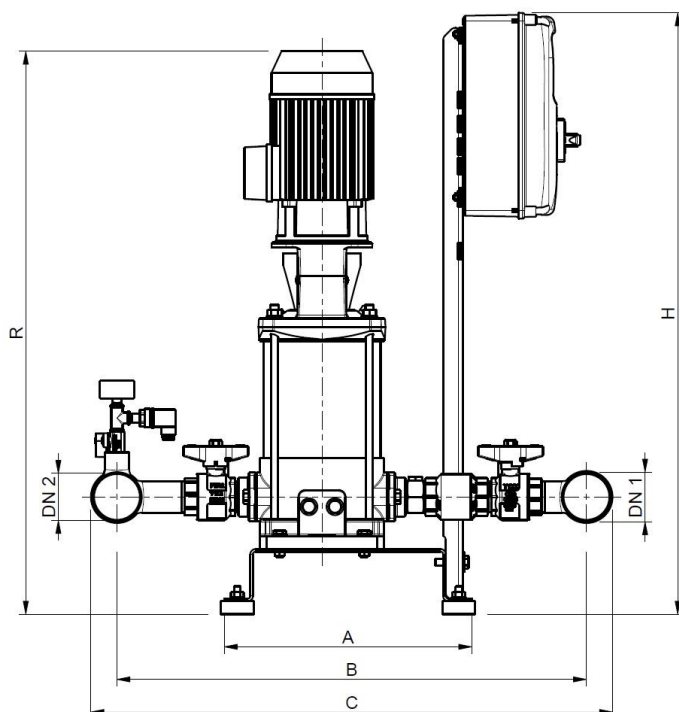
EXTERNAL VIEW 3GPE EVM(.) 15-20 E-SPD+



N°	PART NAME	MATERIAL	Quantity
110	Principal pump	-	3
114	Electric motor	-	3
150	Baseplate	Galvanized steel	1
156	Baseplate foot	SBR	6
210	Suction manifold	AISI 304	1
211	Manifold bracket	Galvanized steel	2
212	Ball valve	Brass / P.T.F.E.	3
220	Counterflange	AISI 304	1
221	Blind counterflange	AISI 304	1
310	Discharge manifold	AISI 304	1
311	Manifold bracket	Galvanized steel	2
312	Ball valve	Brass / P.T.F.E.	3
313	Check valve	Brass / NBR	3
320	Counterflange	AISI 304	1
321	Blind counterflange	AISI 304	1
410	E-SPD+	-	3
410-22	E-SPD+ adaptor		3
420	Protection panel	-	1
460	Protection panel frame	Galvanized steel	1
512	Ball valve	Brass / P.T.F.E.	2
513	Pressure gauge	Copper alloy / plastic	1
530	Pressure transmitter	-	3

OVERALL DIMENSIONS 2GP BOOSTER SET

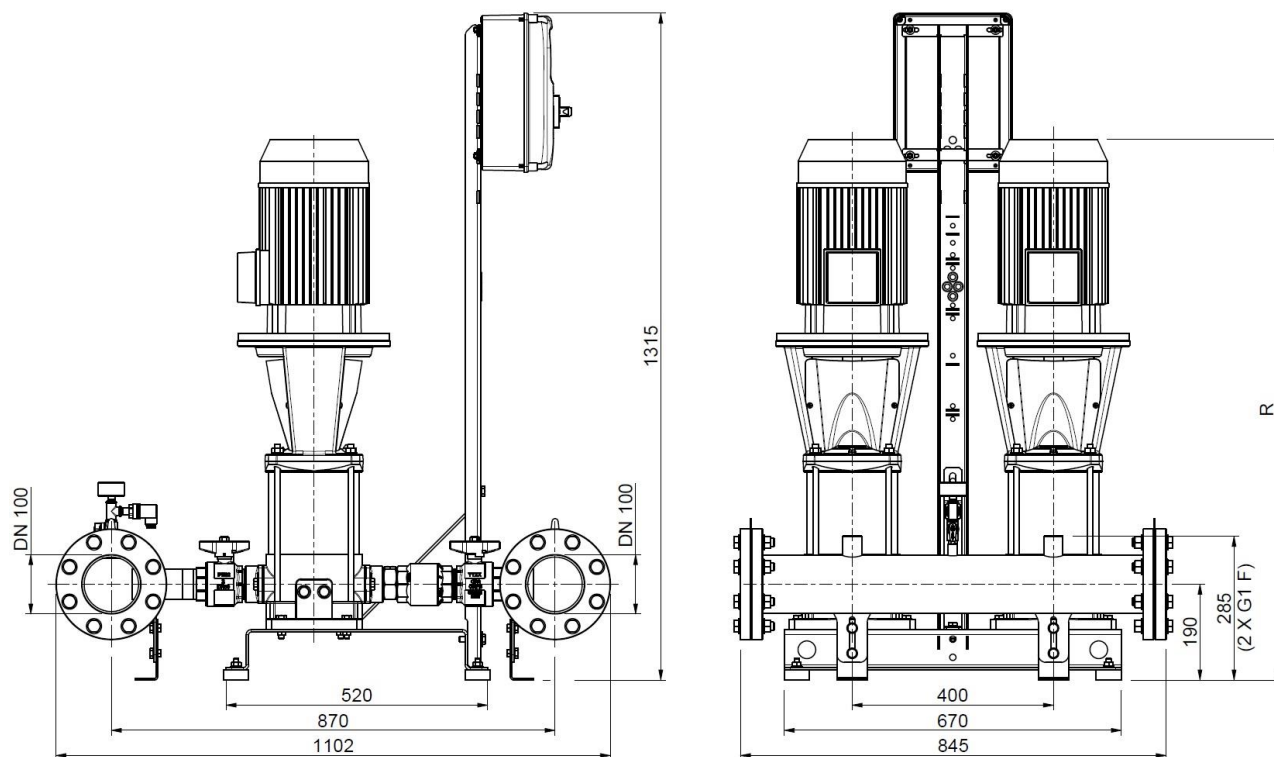
2GP EVMS(.) 3-5-10-15



Booster Type	Dimensions [mm]												Weight [kg]	
	DN1	DN2	A	B	C	H	M	N	Q	1~	3~	V	1~	3~
										R				
2GP EVMSG 3 7N5/0,75 (M)	G1 ½	G1 ½	380	600	650	915	300	550	150	700	700	205	77	72
2GP EVMSG 3 8N5/0,75 (M)	G1 ½	G1 ½	380	600	650	915	300	550	150	720	720	205	78	73
2GP EVMSG 3 9N5/1,1 (M)	G1 ½	G1 ½	380	600	650	915	300	550	150	740	750	205	80	76
2GP EVMSG 3 12N5/1,1 (M)	G1 ½	G1 ½	380	600	650	915	300	550	150	800	800	205	83	79
2GP EVMSG 5 5N5/1,1 (M)	G 2	G 2	380	640	705	915	300	550	150	685	700	210	81	77
2GP EVMSG 5 7N5/1,5 (M)	G 2	G 2	380	640	705	915	300	550	150	790	815	210	94	86
2GP EVMSG 5 10N5/2,2 (M)	G 2	G 2	380	640	705	915	300	550	150	885	900	210	101	92
2GP EVMSG 10 6N5/2,2 (M)	G2 ½	G2 ½	380	720	800	915	300	550	180	840	865	250	119	110
2GP EVMSG 10 8N5/3	G2 ½	G2 ½	380	720	800	915	300	550	180	-	985	250	-	127
2GP EVMSG 10 9N5/4	G2 ½	G2 ½	380	720	800	915	300	550	180	-	1035	250	-	142
2GP EVMSG 15 4N5/4	G 3	G 3	520	845	940	1320	400	670	190	-	940	265	-	194
2GP EVMSG 15 6N5/5,5	G 3	G 3	520	845	940	1320	400	670	190	-	1155	265	-	237

Approximate dimensions ± 20mm.
The dimensions may change without notice.

2GP EVMS(.) 20

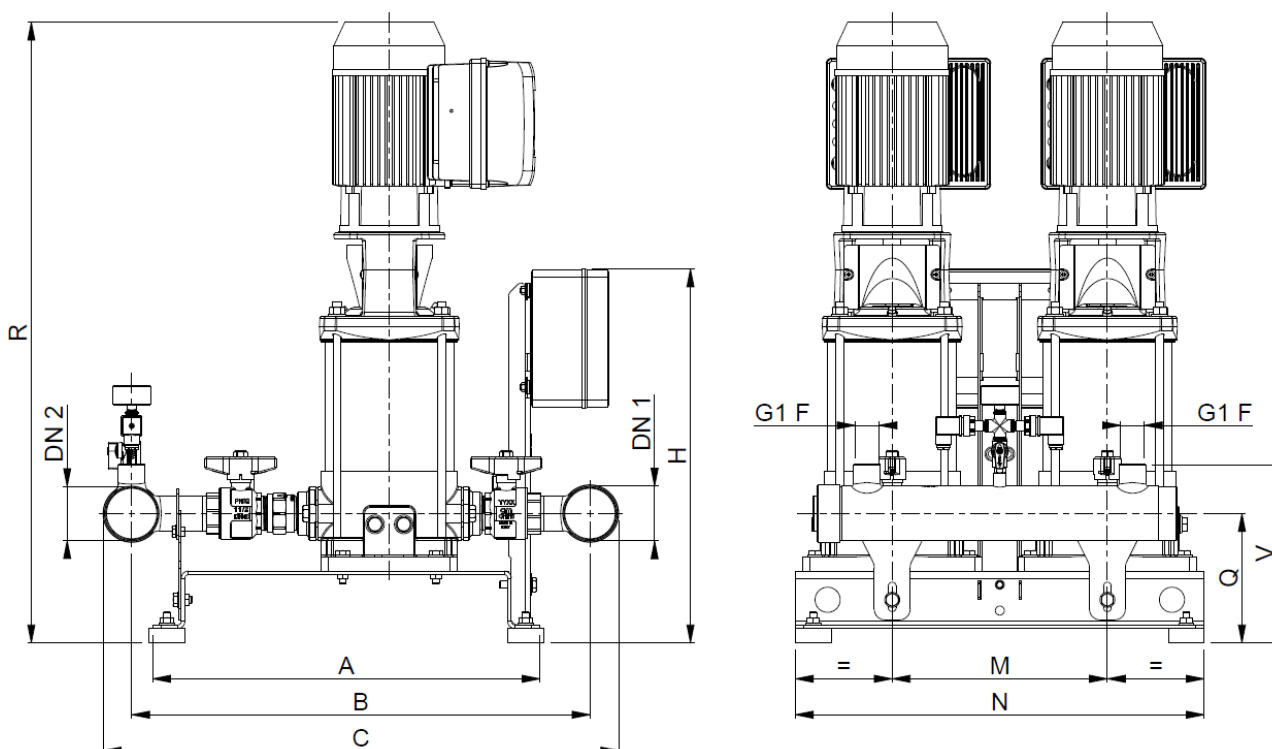


Booster Type	Dimensions [mm]	Weight
	R	[kg]
2GP EVMSG 20 3N5/4,0	900	213
2GP EVMSG 20 4N5/5,5	1075	224
2GP EVMSG 20 6N5/7,5	1175	243

Approximate dimensions ± 20 mm.
The dimensions may change without notice.

OVERALL DIMENSIONS 2GPE BOOSTER SET

2GPE EVMS(.) 3-5-10-15 E-SPD+

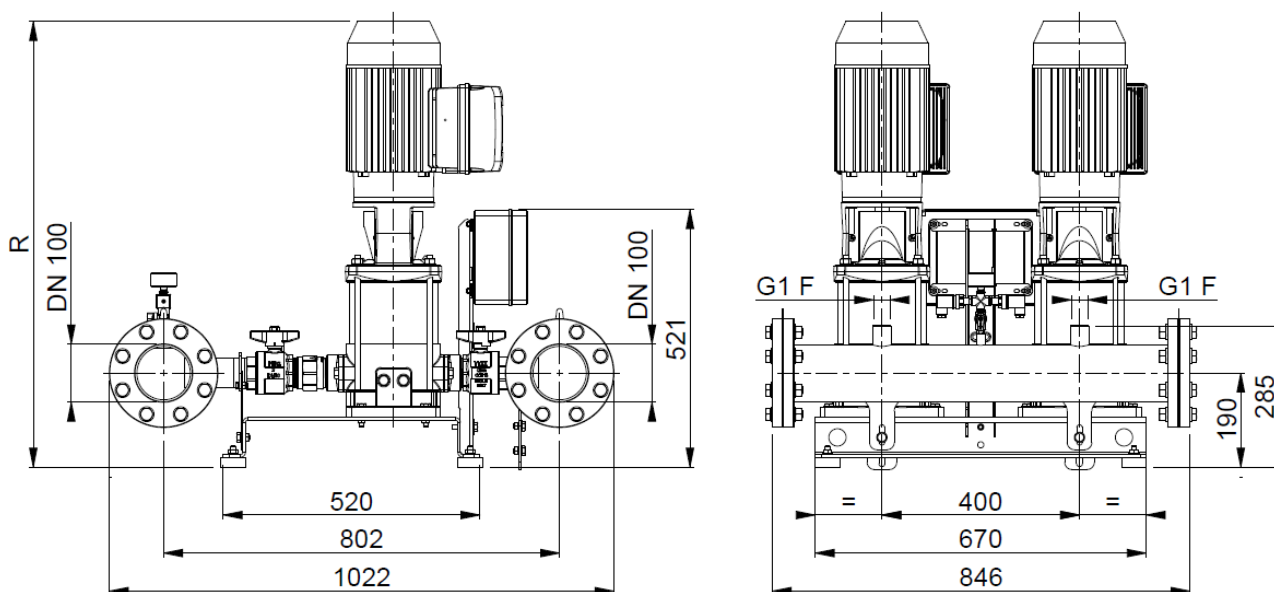


Booster Type	Dimensions [mm]												Weight [kg]
	DN1	DN2	A	B	C	ESPM	ESPT	M	N	Q	R	V	
2GPE EVMSG 3 8N5/0.75 ESPT(ESPM)	G 1 1/2	G 1 1/2	380	530	580	520	520	300	550	150	720	205	74
2GPE EVMSG 3 9N5/1.1 ESPM	G 1 1/2	G 1 1/2	380	530	580	520	-	300	550	150	750	205	78
2GPE EVMSG 3 10N5/1.1 ESPT(ESPM)	G 1 1/2	G 1 1/2	380	530	580	520	520	300	550	150	770	205	79
2GPE EVMSG 3 12N5/1.1 ESPT(ESPM)	G 1 1/2	G 1 1/2	380	530	580	520	520	300	550	150	815	205	80
2GPE EVMSG 5 5N5/1.1 ESPT(ESPM)	G 2	G 2	380	565	625	520	520	300	550	150	700	210	76
2GPE EVMSG 5 7N5/1.5 ESPT(ESPM)	G 2	G 2	380	565	625	520	520	300	550	150	815	210	87
2GPE EVMSG 5 8N5/2.2 ESPT	G 2	G 2	380	565	625	-	520	300	550	150	845	210	91
2GPE EVMSG 5 9N5/2.2 ESPT	G 2	G 2	380	565	625	-	520	300	550	150	870	210	92
2GPE EVMSG 5 10N5/2.2 ESPT(ESPM)	G 2	G 2	380	565	625	520	520	300	550	150	900	210	93
2GPE EVMSG 10 6N5/2.2 ESPT(ESPM)	G 2 1/2	G 2 1/2	540	640	720	520	520	300	570	180	865	250	117
2GPE EVMSG 10 7N5/3 ESPT	G 2 1/2	G 2 1/2	540	640	720	-	520	300	570	180	955	250	133
2GPE EVMSG 10 8N5/3 ESPT	G 2 1/2	G 2 1/2	540	640	720	-	520	300	570	180	985	250	135
2GPE EVMSG 10 9N5/4 ESPT	G 2 1/2	G 2 1/2	540	640	720	-	520	300	570	180	1035	250	149
2GPE EVMSG 15 4N5/4 ESPT	G 3	G 3	520	760	855	-	520	400	670	190	940	265	154
2GPE EVMSG 15 6N5/5.5 ESPT	G 3	G 3	520	760	855	-	520	400	670	190	1115	265	199

Approximate dimensions ± 20 mm.

The dimensions may change without notice.

2GPE EVMS(.)20 E-SPD+

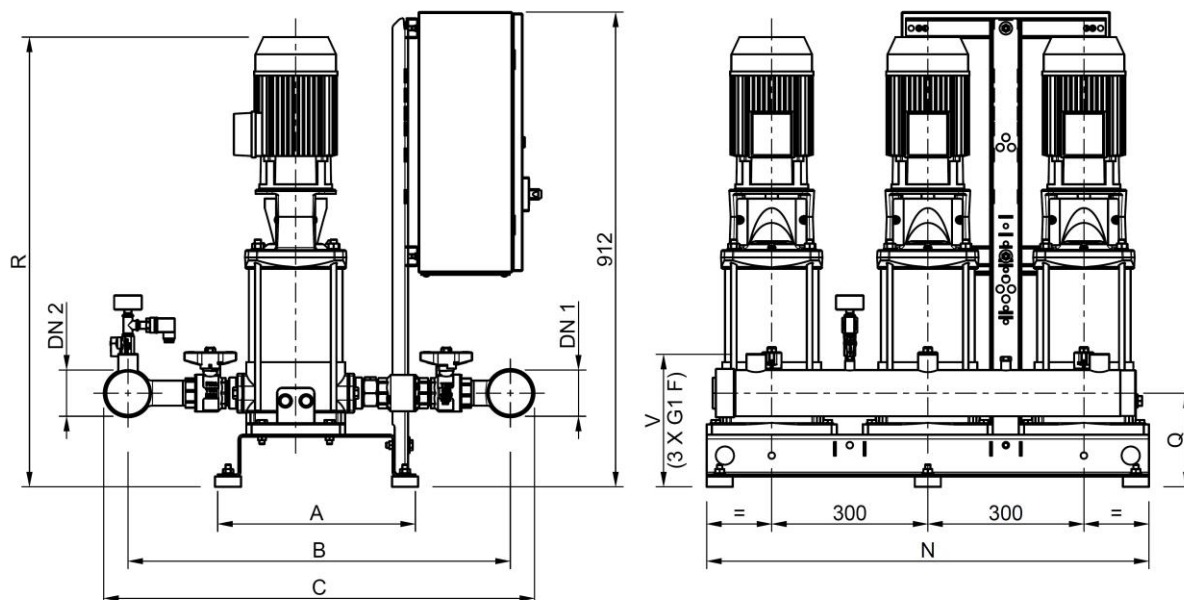


Booster Type	Dimensions [mm]	Weight [kg]
	R	
2GPE EVMSG 20 3N5/4,0 ESPT	900	218
2GPE EVMSG 20 4N5/5,5 ESPT	1075	229
2GPE EVMSG 20 6N5/7,5 ESPT	1175	248

Approximate dimensions ± 20 mm.
The dimensions may change without notice.

OVERALL DIMENSIONS 3GP BOOSTER SET

3GP EVMS(.) 3-5-10

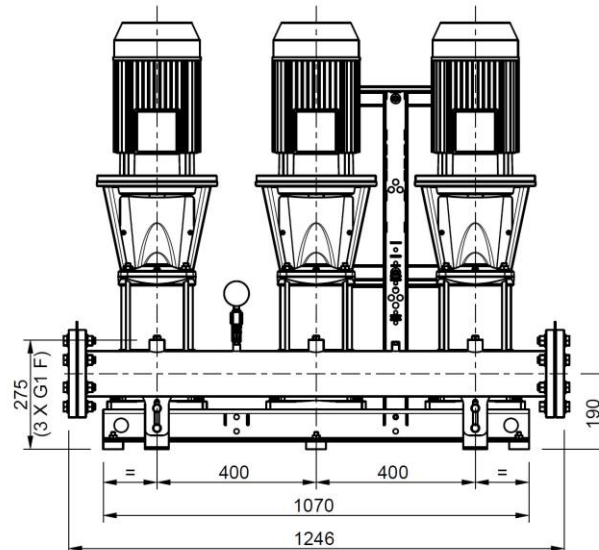
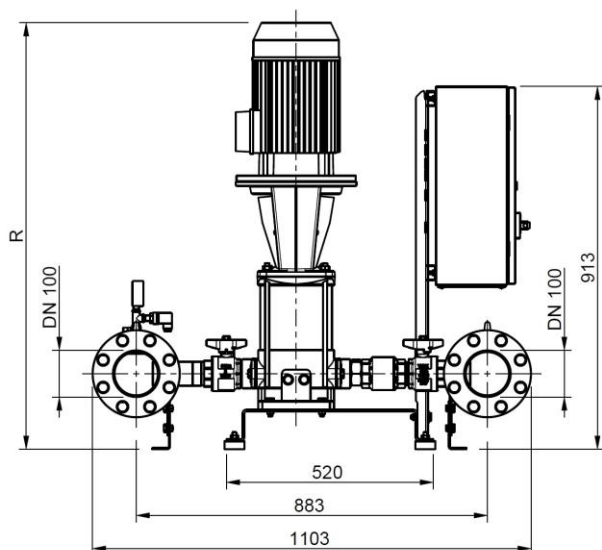


Booster Type	Dimensions [mm]									Weight [kg]
	DN1	DN2	A	B	C	N	Q	R	V	
3GP EVMSG 3 8N5/0,75	G 2	G 2	380	610	675	850	150	720	210	115
3GP EVMSG 3 12N5/1,1	G 2	G 2	380	610	675	850	150	815	210	123
3GP EVMSG 5 5N5/1,1	G 2 ½	G 2 ½	380	655	735	850	150	700	220	121
3GP EVMSG 5 7N5/1,5	G 2 ½	G 2 ½	380	655	735	850	150	815	220	135
3GP EVMSG 5 8N5/2,2	G 2 ½	G 2 ½	380	655	735	850	150	845	220	141
3GP EVMSG 5 10N5/2,2	G 2 ½	G 2 ½	380	655	735	850	150	900	220	144
3GP EVMSG 10 6N5/2,2	G 3	G 3	380	735	830	850	180	865	255	171
3GP EVMSG 10 7N5/3,0	G 3	G 3	380	735	830	850	180	955	255	196
3GP EVMSG 10 8N5/3,0	G 3	G 3	380	735	830	850	180	985	255	198
3GP EVMSG 10 9N5/4,0	G 3	G 3	380	735	830	850	180	1035	255	220

Approximate dimensions ± 20 mm.

The dimensions may change without notice.

3GP EVMS(.) 15-20



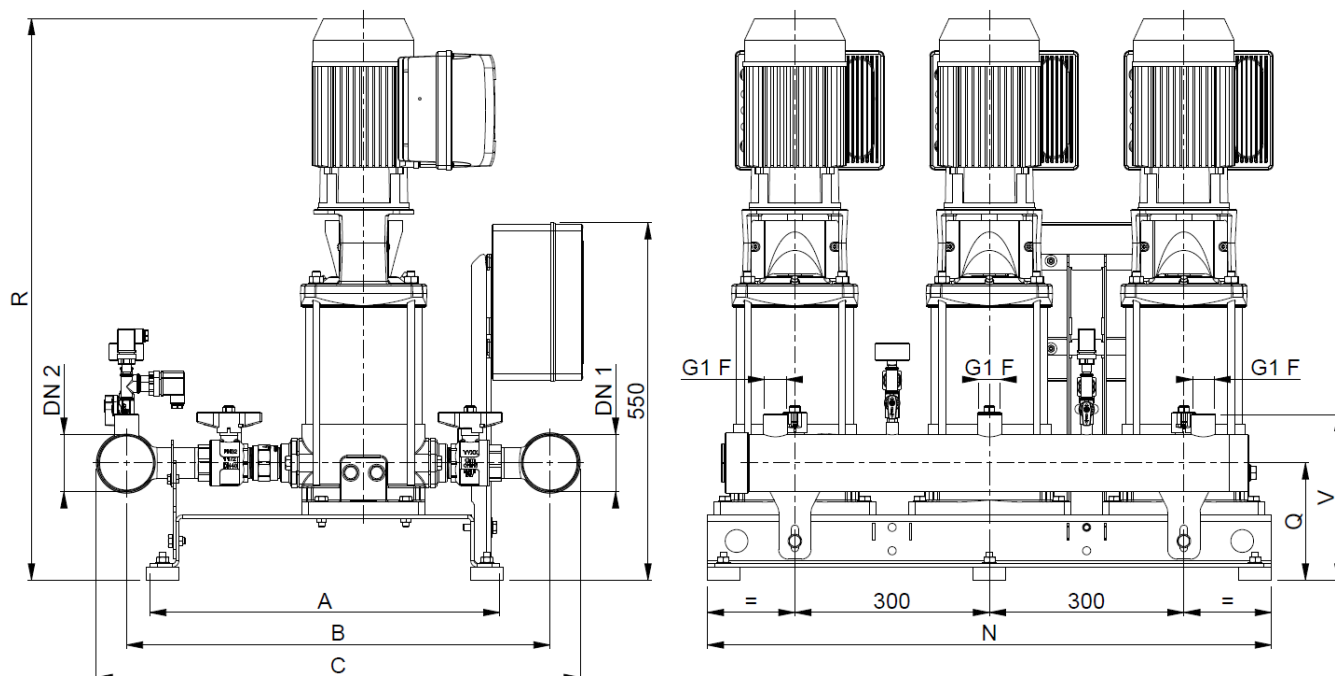
Booster Type	Dimensions [mm] R	Weight [kg]
3GP EVMSG 15 4N5/4,0	960	280
3GP EVMSG 15 5N5/5,5	1115	341
3GP EVMSG 15 6N5/5,5	1155	344
3GP EVMSG 20 3N5/4,0	900	278
3GP EVMSG 20 4N5/5,5	1075	326
3GP EVMSG 20 6N5/7,5	1175	355

Approximate dimensions $\pm 20\text{mm}$.

The dimensions may change without notice.

OVERALL DIMENSIONS 3GP BOOSTER SET

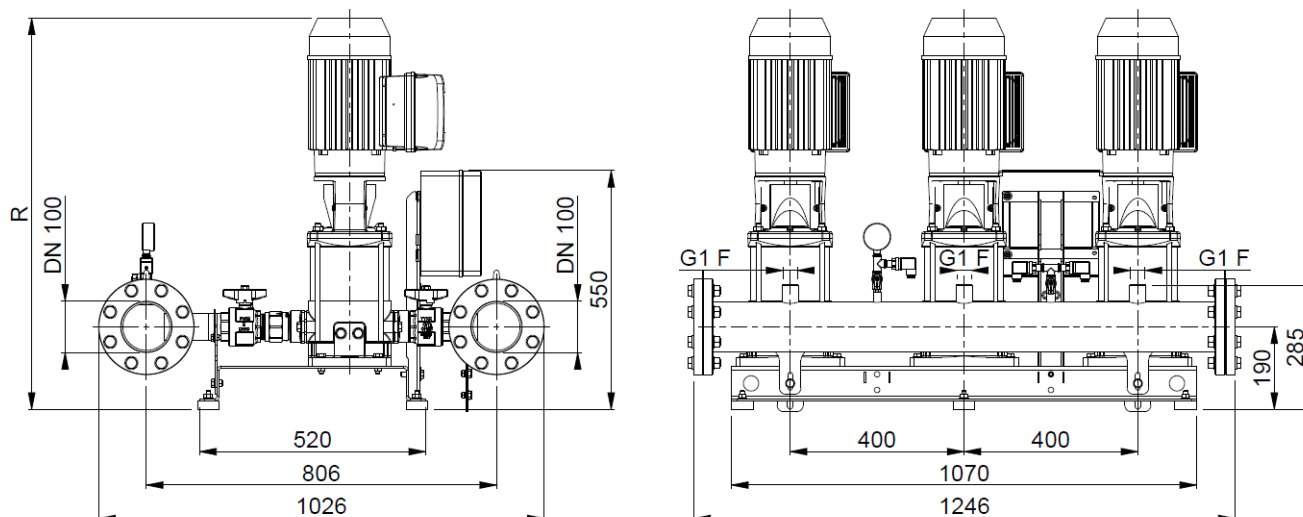
3GPE EVMS(.) 3-5-10 E-SPD+



Booster Type	Dimensions [mm]									Weight [kg]
	DN1	DN2	A	B	C	N	Q	R	V	
3GPE EVMSG 3 8N5/0,75 ESPT	G 2	G 2	380	540	605	850	150	720	210	111
3GPE EVMSG 3 12N5/1,1 ESPT	G 2	G 2	380	540	605	850	150	815	210	120
3GPE EVMSG5 5N5/1.1 ESPT	G 2 ½	G 2 ½	380	580	630	850	150	700	220	118
3GPE EVMSG5 7N5/1.5 ESPT	G 2 ½	G 2 ½	380	580	630	850	150	815	220	131
3GPE EVMSG5 8N5/2.2 ESPT	G 2 ½	G 2 ½	380	580	630	850	150	845	220	137
3GPE EVMSG5 10N5/2.2 ESPT	G 2 ½	G 2 ½	380	580	630	850	150	900	220	140
3GPE EVMSG10 6N5/2,2 ESPT	G 3	G 3	540	655	745	870	180	865	255	177
3GPE EVMSG10 7N5/3,0 ESPT	G 3	G 3	540	655	745	870	180	955	255	201
3GPE EVMSG10 8N5/3,0 ESPT	G 3	G 3	540	655	745	870	180	985	255	204
3GPE EVMSG10 9N5/4,0 ESPT	G 3	G 3	540	655	745	870	180	1035	255	225

Approximate dimensions ± 20mm.
The dimensions may change without notice.

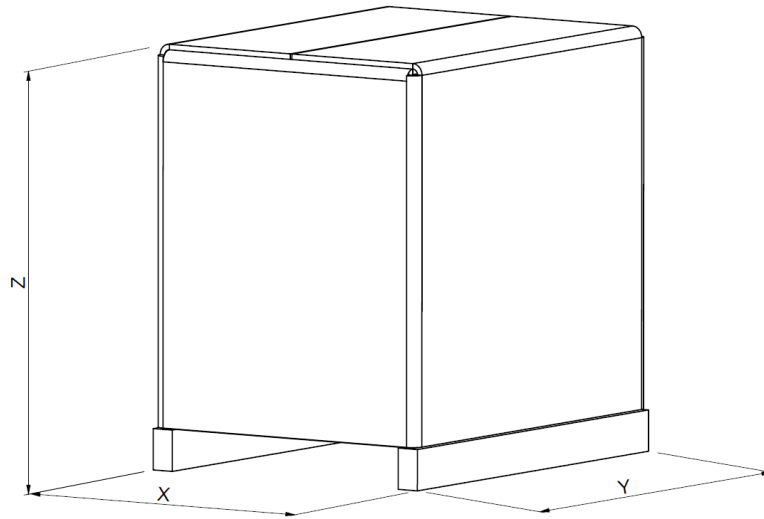
3GPE EVMS(.) 15-20 E-SPD+



Booster Type	Dimensions [mm] R	Weight [kg]
3GPE EVMSG 15 4N5/4,0 ESPT	960	278
3GPE EVMSG 15 6N5/5,5 ESPT	1155	342
3GPE EVMSG 20 3N5/4,0 ESPT	900	276
3GPE EVMSG 20 4N5/5,5 ESPT	1075	324
3GPE EVMSG 20 6N5/7,5 ESPT	1175	353

Approximate dimensions ± 20 mm.
The dimensions may change without notice.

PACKING



2GP(.) EVMS(.)

	Booster type	Overall dimensions packing			Booster+packing Weight [kg]
		X	Y	Z	
2GP	2GP EVMSG3 7N5/0,75 (M)	1230	830	1365	100
	2GP EVMSG3 8N5/0,75 (M)				101
	2GP EVMSG3 9N5/1,1 (M)				103
	2GP EVMSG3 12N5/1,1 (M)				106
	2GP EVMSG5 5N5/1,1 (M)				100
	2GP EVMSG5 7N5/1,5 (M)				117
	2GP EVMSG5 10N5/2,2 (M)				124
	2GP EVMSG10 6N5/2,2 (M)				142
	2GP EVMSG10 8N5/3				150
	2GP EVMSG10 9N5/4				165
	2GP EVMSG15 4N5/4				217
	2GP EVMSG15 6N5/5,5				260
	2GP EVMSG20 3N5/4				236
	2GP EVMSG20 4N5/5,5				247
	2GP EVMSG20 6N5/7,5				266
2GPE E-SPD+	2GPE EVMSG3 8N5/0.75 ESPT(ESPM)	1230	830	1365	97
	2GPE EVMSG3 9N5/1.1 ESPM				101
	2GPE EVMSG3 10N5/1.1 ESPT(ESPM)				102
	2GPE EVMSG3 12N5/1.1 ESPT(ESPM)				103
	2GPE EVMSG5 5N5/1.1 ESPT(ESPM)				99
	2GPE EVMSG5 7N5/1.5 ESPT(ESPM)				110
	2GPE EVMSG5 8N5/2.2 ESPT				114
	2GPE EVMSG5 9N5/2.2 ESPT				115
	2GPE EVMSG5 10N5/2.2 ESPT(ESPM)				116
	2GPE EVMSG10 6N5/2.2 ESPT(ESPM)				140
	2GPE EVMSG10 7N5/3 ESPT				156
	2GPE EVMSG10 8N5/3 ESPT				158
	2GPE EVMSG10 9N5/4 ESPT				172
	2GPE EVMSG15 4N5/4 ESPT	1235	1135	1790	191
	2GPE EVMSG15 6N5/5.5 ESPT				236
	2GPE EVMSG20 3N5/4 ESPT				255
	2GPE EVMSG20 4N5/5,5 ESPT				266
	2GPE EVMSG20 6N5/7,5 ESPT				285

The dimensions may change without notice.

3GP(.) EVMSG(.)

	Booster	Overall dimensions packing			Booster+packing Weight [kg]
		X	Y	Z	
3GP	3GP EVMSG3 8N5/0,75	1230	830	1365	138
	3GP EVMSG3 12N5/1,1				146
	3GP EVMSG5 5N5/1,1				144
	3GP EVMSG5 7N5/1,5				158
	3GP EVMSG5 8N5/2,2				164
	3GP EVMSG5 10N5/2,2				167
	3GP EVMSG10 6N5/2,2	1230	830	1365	194
	3GP EVMSG10 7N5/3,0				219
	3GP EVMSG10 8N5/3,0				221
	3GP EVMSG10 9N5/4,0				243
	3GP EVMSG15 4N5/4,0	1585	1350	1790	332
	3GP EVMSG15 5N5/5,5				393
	3GP EVMSG15 6N5/5,5				396
	3GP EVMSG20 3N5/4,0				330
	3GP EVMSG20 4N5/5,5				378
	3GP EVMSG20 6N5/7,5				407
3GPE E-SPD+	3GPE EVMSG3 8N5/0,75 ESPT	1230	830	1365	134
	3GPE EVMSG3 12N5/1,1 ESPT				143
	3GPE EVMSG5 5N5/1.1 ESPT				141
	3GPE EVMSG5 7N5/1.5 ESPT				154
	3GPE EVMSG5 8N5/2.2 ESPT				160
	3GPE EVMSG5 10N5/2.2 ESPT				163
	3GPE EVMSG10 6N5/2.2 ESPT	1585	1350	1790	200
	3GPE EVMSG10 7N5/3 ESPT				224
	3GPE EVMSG10 8N5/3 ESPT				227
	3GPE EVMSG10 9N5/4 ESPT				248
	3GPE EVMSG15 4N5/4 ESPT				330
	3GPE EVMSG15 6N5/5.5 ESPT				394
	3GPE EVMSG20 3N5/4 ESPT				328
	3GPE EVMSG20 4N5/5,5 ESPT				376
	3GPE EVMSG20 6N5/7,5 ESPT				405

The dimensions may change without notice.

CONTROL PANEL FIXED SPEED

EP-PRO SPECIFICATION

- **SERIES EP-PRO M (single-phase power output)**
- **SERIES EP-PRO T (three-phase power output)**

Electrical panel (protection and control) for two or three electropumps. Manual or automatic operation through pressure transmitter. The panel is configured to start the two pumps alternately in stand-by to pressure transmitter. The electrical panel protects the motors against overload and phase failure. Any protection devices that intervene are signaled on the panel itself and remotely through free voltage contacts.

TECHNICAL FEATURES

- MIN. CURRENT= Operation against dry running by minimum current consumption. Up to 4 auto resets, time and cycles are settable;
- MIN. COSPHI= Operation against dry running by power factor detection. Up to 4 auto resets, time and cycles are settable (*The min. cosphi protection delay and change the min current protection and opposite*);
- 4-20mA= control by pressure transmitter;
- T1= Pump 1 Klixon or thermal protection;
- T2= Pump 2 Klixon or thermal protection;
- T3= Pump 3 Klixon or thermal protection;
- Automatic start sequence alternation;
- Motor protection against overload or missing phases;
- Motor line protection against short-circuits;
- Overvoltage protection;
- Low voltage protection;
- Remote signalling, through NC-NO free voltage contact.

Version		EP-PRO M	EP-PRO T
Power source	Frequency	50/60 Hz	
	Phase	1 ~	3 ~
	Voltage	100 - 240 Vac	310 - 450 Vac
	Power	0,25 ÷ 2.2 kW	0,25 ÷ 15 kW
Others	Protection degree	IP 55	
	Ambient Temperature	-5°C + 50°C	
	Pressurisation units	2-3 pumps	
	Relative humidity	50% a 40°C (condensate free)	
	Max altitude	2000 m (a.s.l.)	
Directives	2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS II)		

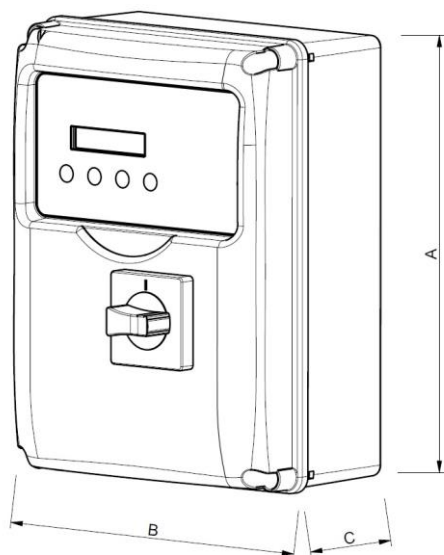


Figure 1 Plastic box (type 1)



Figure 2 Metallic box (type 2)

EP-PRO M MODELS TABLE

Model	Single pump power [kW]	In range [A]	Dimensions AxBxC [mm]	Weight [kg]	Type
EP-PRO 2 M (0-18A)	0,25 - 2,2	0 - 18	320x240x185	1,5	1
EP-PRO 3 M (0-18A)	0,25 - 2,2	0 - 18	385x305x185	5	1

The dimensions may change without notice.

EP-PRO T MODELS TABLE

Model	Single pump power [kW]	In range [A]	Dimensions AxBxC [mm]	Weight [kg]	Type
EP-PRO 2 T/7,5 (0-18A)	0,25 - 7,5	0 - 18	310x230x185	2,5	1
EP-PRO 3 T/7,5 (0-18A)	0,25 - 7,5	0 - 18	500x400x200	7	2

The dimensions may change without notice.

Notes: Standard Control panels EP-PRO are available for 1, 2, 3 pumps; 4 pumps version are available on request;

EP-PRO T SD SPECIFICATION

- SERIES EP-PRO T SD (star/delta starting)**

Electrical panel (protection and control) for two or three electropumps. Manual or automatic operation through pressure transmitter. The panel is configured to start the two pumps alternately in stand-by to pressure transmitter. The electrical panel protects the motors against overload and phase failure. Any protection devices that intervene are signaled on the panel itself and remotely through free voltage contacts.

TECHNICAL FEATURES

- MIN. CURRENT= Operation against dry running by minimum current consumption. Up to 4 auto resets, time and cycles are settable;
- MIN. COSPHI= Operation against dry running by power factor detection. Up to 4 auto resets, time and cycles are settable (The min. cosphi protection delay and change the min current protection and opposite);
- 4-20mA= control by pressure transmitter;
- T1= Pump 1 Klixon or thermal protection;
- T2= Pump 2 Klixon or thermal protection;
- T3= Pump 3 Klixon or thermal protection;
- Automatic start sequence alternation;
- Motor protection against overload or missing phases;
- Motor line protection against short-circuits;
- Overvoltage protection;
- Low voltage protection;
- Remote signalling, through NC-NO free voltage contact.

Version		EP PRO T SD
Power source	Frequency	50/60 Hz
	Phase	3 ~
	Voltage	310 - 450 Vac
	Power	11 ÷ 22 kW
Others	Protection degree	IP 55
	Ambient Temperature	-5°C + 40°C
	Pressurisation units	2-3 pumps
	Relative humidity	50% a 40°C (condensate free)
	Max altitude	2000 m (a.s.l.)
Directives	2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS II)	



EP-PRO T SD MODELS TABLE

Model	Single pump Power [kW]	In range [A]	Dimensions AxBxC [mm]	Weight [kg]
EP-PRO 2 T SD/11 (16-25A)	11	16-25	600x235x400	20
EP-PRO 2 T SD/15 (16-32A)	15	16-32	600x235x400	20
EP-PRO 2 T SD/18,5 (30-38A)	18,5	30-38	700x500x400	25
EP-PRO 2 T SD/22 (30-35A)	22	30-35	700x500x400	25
EP-PRO 3 T SD/11 (16-25A)	11	16-25	800x600x300	30
EP-PRO 3 T SD/15 (16-32A)	15	16-32	800x600x300	30
EP-PRO 3 T SD/18,5 (30-38A)	18,5	30-38	800x600x300	30
EP-PRO 3 T SD/22 (30-35A)	22	30-35	800x600x300	30

The dimensions may change without notice.

Notes: Standard Control panels EP-PRO 2 T SD three-phase are available for 1, 2, 3 pumps from 11kW up to 22kW power; 4 pumps version or power from 30kW and above are available on request.

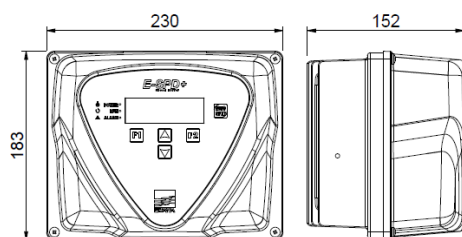
CONTROL PANEL VARIABLE SPEED

E-SPD+ SPECIFICATION

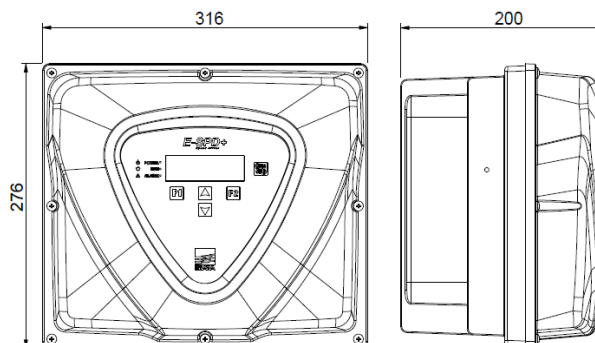
On board electronic device for controlling electropumps, employing inverter technology. Starts and stops the pump and modulates the speed of the motor in relation to the water demand on the system, to maintain the operating pressure setting. Provides excellent comfort for the end user, significant energy savings and increased service life, the typical advantages of inverter controlled autoclave systems. E-SPD+ is an inverter that could be installed on the terminal box. It can be adapted on horizontal and vertical pumps. E-SPD+ can protect the system against overpressure, overcurrent, voltage fluctuation, dry run and water leak. The connection for this mode is made by communication line ON/OFF.

E-SPD+				
Power	Version	MT 2200	TT 4000	TT 11000
	Power Voltage	Single-phase 230 V	Three-phase 400 V	
	Output Voltage (pump)	Three-phase 230 V	Three-phase 400 V	
	Output frequency	50 ÷ 60Hz		
	Maximum pump power	2.2 kW	4 kW	11 Kw
	Max I in	20 A	12 A	31 A
	Max I out	11 A	11 A	30 A
Others	Pressure setpoint	0.5 ÷ 40 bar		
	Protection degree	IP 55		
	Ambient Temperature	-10 ÷ 40°C		
	Pressurisation units	2-3 pumps		
	Weight	2,7 Kg		5
	Protection	Dry-running		
		Over/under voltage		
		Short-circuit		
		Overload		
		Overtemperature		
		Pressure sensor fault		
Directives	2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS II)			

MT 2200 / TT 4000



TT 11000



The dimensions may change without notice.

SP (EFC and MFC) SPECIFICATION

The control panels SP EFC/MFC series inverters modulate the operation of electropumps in response to control by the pressure transmitter (transducer measuring flow or other external signal 4-20 mA), regulating the speed of the electropumps to keep system demand constant. If the electronic controller or pressure transmitter fails, a system of pressure switches controls the pumps directly (if present).

VERSION

- “EFC”: Control panel for two or more electric pumps, with a single inverter with pump exchange
- “MFC”: Control panel for two or more electric pumps, with an inverter for each individual electropump

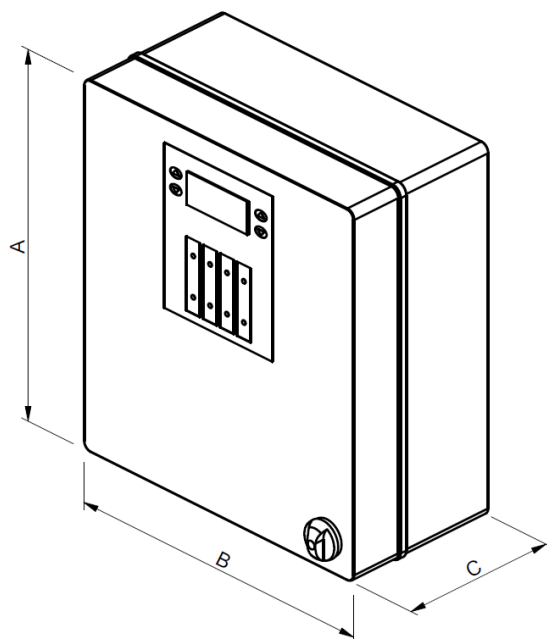
EFC / MFC		
Power	Power Voltage	Three-phase 400 V
	N° phases	Three phase without the use of neutral
	Frequency	50/60Hz
	Pump power	From 1.5kW up to 45kW
	Protection degree	IP54
	Ambient Temperature	-10°C + 40°C
	Pressurisation units	2,3,4 pumps
Directives	2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS)	

Single inverter with exchange pump (SP EFC)

Panel type	Pump motor power (Three-phase)	Starting (Emergency / fixed speed pumps)	Option
2/3/4 pumps	1.5÷7.5 kW	Direct	Inverter pump Exchange
	11÷45kW	Star-Delta	

Multi-inverter: one inverter for each pump (SP MFC)

Panel type	Pump motor power (Three-phase)	Starting (Emergency / fixed speed pumps)
2/3/4 pumps	1.5 - 7,5 kW	Inverter ramp
	11 - 45 KW	Inverter ramp



2SP EFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
2SP EFC 1,5T-3	2x1.5	2x3,7	500x500x250	29
2SP EFC 2,2T-3	2x2.2	2x5,3	500x500x250	29
2SP EFC 3T-3	2x3	2x7,2	500x500x250	30
2SP EFC 4T-3	2x4	2x9	500x500x250	30
2SP EFC 5,5T-3	2x5.5	2x12	500x500x250	31
2SP EFC 7,5T-3	2x7.5	2x15,5	500x500x250	31
2SP EFC 11 T SD-3	2x11	2x23	800x800x300	62
2SP EFC 15 T SD-3	2x15	2x31	800x800x300	62
2SP EFC 18,5 T SD-3	2x18.5	2x37	1000x800x300	62
2SP EFC 22 T SD -3	2x22	2x43	1000x800x300	62
2SP EFC 30 T SD-3	2x30	2x61	1600*x1000x400	125
2SP EFC 37 T SD-3	2x37	2x70	1600*x1000x400	125
2SP EFC 45 T SD-3	2x45	2x85	1600*x1000x400	135

* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

3SP EFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
3SP EFC 1,5T-3	3x1.5	3x3,7	500x500x250	30
3SP EFC 2,2T-3	3x2.2	3x5,3	500x500x250	30
3SP EFC 3T-3	3x3	3x7,2	500x500x250	32
3SP EFC 4T-3	3x4	3x9	500x500x250	32
3SP EFC 5,5T-3	3x5.5	3x12	500x500x250	34
3SP EFC 7,5T-3	3x7.5	3x15,5	500x500x250	34
3SP EFC 11SD-3	3x11	3x23	800x800x300	71
3SP EFC 15SD-3	3x15	3x31	800x800x300	71
3SP EFC 18,5SD-3	3x18.5	3x37	1000x800x300	90
3SP EFC 22SD-3	3x22	3x43	1000x800x300	90
3SP EFC 30SD-3	3x30	3x61	1600*x1000x400	135
3SP EFC 37SD-3	3x37	3x70	1600*x1000x400	135
3SP EFC 45SD-3	3x45	3x85	1600*x1000x400	170

* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

4SP EFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
4SP EFC 1,5T-3	4x1.5	4x3,7	800x600x250	49
4SP EFC 2,2T-3	4x2.2	4x5,3	800x600x250	49
4SP EFC 3T-3	4x3	4x7,2	800x600x250	50
4SP EFC 4T-3	4x4	4x9	800x600x250	50
4SP EFC 5,5T-3	4x5.5	4x12	800x600x250	51
4SP EFC 7,5T-3	4x7.5	4x15,5	800x600x250	51
4SP EFC 11SD-3	4x11	4x23	1200x800x300	73
4SP EFC 15SD-3	4x15	4x31	1200x800x300	73
4SP EFC 18,5SD-3	4x18.5	4x37	1400*x1000x400	82
4SP EFC 22SD-3	4x22	4x43	1400*x1000x400	86

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
4SP EFC 30SD-3	4x30	4x61	1800*x1200x400	170
4SP EFC 37SD-3	4x37	4x70	1800*x1200x400	170
4SP EFC 45SD-3	4x45	4x85	1800*x1200x400	180

* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

2SP MFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
2SP MFC 1,5T-3	2x1.5	2x3.7	600x400x250	34
2SP MFC 2,2T-3	2x2.2	2x5.3	600x500x250	36
2SP MFC 3T-3	2x3	2x7.2	600x500x250	39
2SP MFC 4T-3	2x4	2x9	600x500x250	39
2SP MFC 5,5T-3	2x5.5	2x12	600x500x250	44
2SP MFC 7,5T-3	2x7.5	2x15,5	600x500x250	44
2SP MFC 11T-3	2x11	2x23	1000x600x300	53
2SP MFC 15T-3	2x15	2x31	1000x600x300	53
2SP MFC 18,5T-3	2x18.5	2x37	1000x800x300	58
2SP MFC 22T-3	2x22	2x43	1000x800x300	58
2SP MFC 30T-3	2x30	2x61	1400*x1000x400	145
2SP MFC 37T-3	2x37	2x70	1600*x1000x400	170
2SP MFC 45T-3	2x45	2x85	1600*x1000x400	180

* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

3SP MFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
3SP MFC 1,5T-3	3x1.5	3x3.7	600x600x250	49
3SP MFC 2,2T-3	3x2.2	3x5.3	600x600x250	49
3SP MFC 3T-3	3x3	3x7.2	800x600x250	58

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
3SP MFC 4T-3	3x4	3x9	800x600x250	58
3SP MFC 5,5T-3	3x5.5	3x12	800x600x250	63
3SP MFC 7,5T-3	3x7.5	3x15,5	800x600x250	63
3SP MFC 11T-3	3x11	3x23	1000x800x300	85
3SP MFC 15T-3	3x15	3x31	1000x800x300	85
3SP MFC 18,5T-3	3x18.5	3x37	1200x800x300	115
3SP MFC 22T-3	3x22	3x43	1200x800x400	115
3SP MFC 30T-3	3x30	3x61	1600*x1200x400	220
3SP MFC 37T-3	3x37	3x70	1600*x1200x400	220
3SP MFC 45T-3	3x45	3x85	1800*x1400x500	300

* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

4SP MFC MODELS TABLE

Model	Motor power [kW]	Current [A]	Dimensions A-B-C [mm]	Weight [Kg]
4SP MFC 1,5T-3	4x1.5	4x3.7	800x800x300	77
4SP MFC 2,2T-3	4x2.2	4x5.3	800x800x300	77
4SP MFC 3T-3	4x3	4x7.2	800x800x300	85
4SP MFC 4T-3	4x4	4x9	800x800x300	85
4SP MFC 5,5T-3	4x5.5	4x12	1000x800x300	95
4SP MFC 7,5T-3	4x7.5	4x15,5	1000x800x300	95
4SP MFC 11T-3	4x11	4x23	1200x800x300	120
4SP MFC 15T-3	4x15	4x31	1200x800x300	120
4SP MFC 18,5T-3	4x18.5	4x37	1400*x1000x400	145
4SP MFC 22T-3	4x22	4x43	1400*x1000x400	145
4SP MFC 30T-3	4x30	4x61	1600*x1200x400	240
4SP MFC 37T-3	4x37	4x70	1600*x1200x400	240
4SP MFC 45T-3	4x45	4x85	1800*x1400x500	440

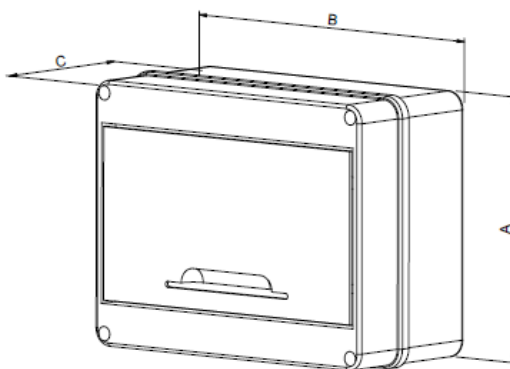
* Cabinet type control panel (Total height increase of 100 mm for base thickness).
The dimensions may change without notice.

PROTECTION PANEL SPECIFICATION

Connection box for inverter :

- Connects the inverters with the power supply point.
- Equipped with circuit breakers on individual lines

Power source	Frequency	50/60 Hz	
	Phase	Single-phase	Three-phase
	Voltage	230 V ± 10%	400 V ± 10%
	Power	0.37 ÷ 3 kW	0.37 ÷ 15 kW
Others	Protection degree	IP 55	
	Ambient Temperature	-5°C + 40°C	
	Pressurisation units	2 pumps	
	Relative humidity	50% a 40°C MAX (90% a 20°C)	
	Max altitude	1000 m (a.s.l.)	
Directives	2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS II)		



Model	N° Pumps	Power [kW]	Dimensions A-B-C [mm]	Max Current [A]
PROT.IP65 2P. 3M 20A NJ	2	2x3	160x200x90	2x20
PROT.IP65 2P. 4T 16A J		2x4	200x250x110	2x16
PROT.IP65 2P. 7,5T 20A J		2x7.5	200x250x110	2x20
PROT.IP65 2P. 11T 25A J		2x11	200x250x110	2x25
PROT.IP65 2P. 15T 32A J		2x15	200x250x110	2x32
PROT.IP65 3P. 3M 20A NJ	3	3x3	160x200x90	3x20
PROT.IP65 3P. 4T 16A J		3x4	250x250x140	3x16
PROT.IP65 3P. 7,5T 20A TJ		3x7.5	250x250x140	3x20
PROT.IP65 3P. 11T 25A J		3x11	250x250x140	3x25
PROT.IP65 3P. 15T 32A J		3x15	250x250x140	3x32

The dimensions may change without notice.



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