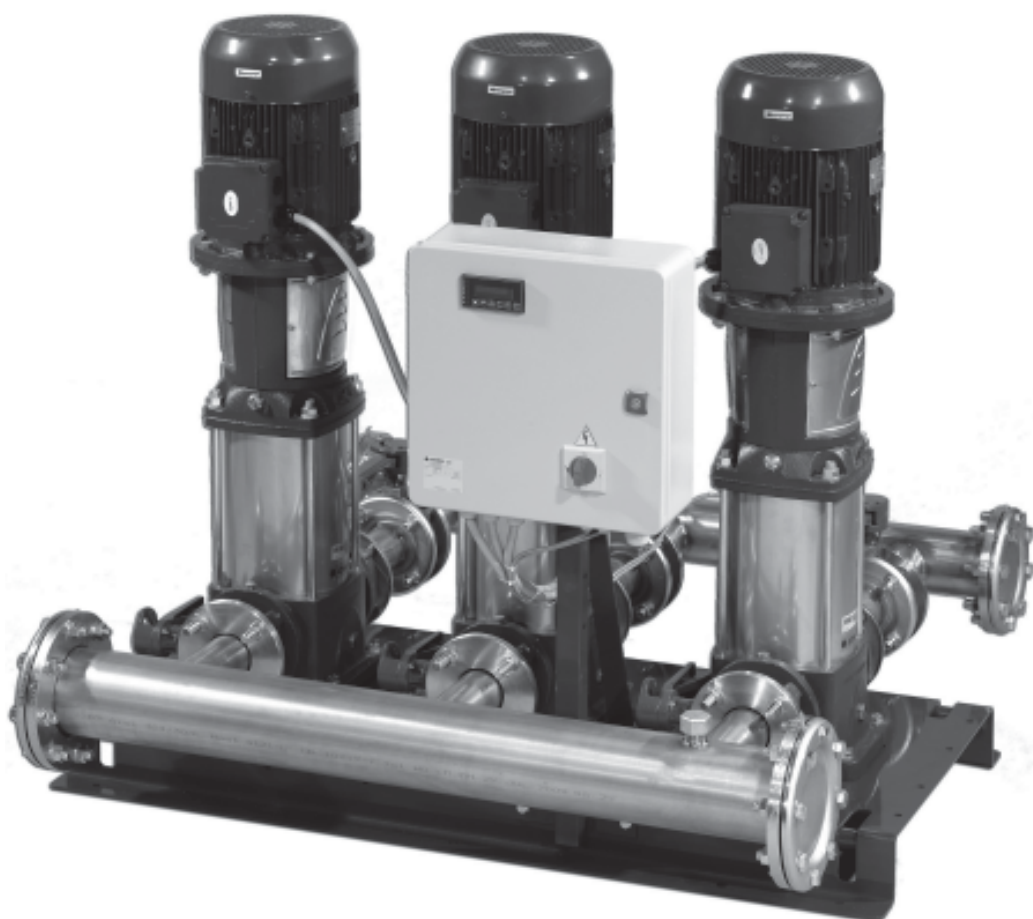


50 Hz



GS20-GS21-GS30 Series

FIXED-SPEED PRESSURE BOOSTER SETS WITH
VERTICAL MULTISTAGE ELECTRIC PUMPS e-SV™ SERIES

Cod. 191000501 Rev.B Ed.06/2012

 **LOWARA**
a xylem brand

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BOOSTER SETS GS SERIES GENERAL INTRODUCTION - PRODUCT DESCRIPTION

The GS series pressure booster units mainly comprise pumping stations assembled with two or three SV series vertical multistage pumps, or with FH or SH series enbloc horizontal pumps. A smaller pump can also be added to the main ones. Generally known as a jockey pump, it provides for minor usages in order to maintain system pressure without starting the service pump.

The GS series pressure booster units are constant speed sets and are used to distribute water in heating or filling systems.

The pumps are mounted on a single base together with the other hydraulic components, such as on-off valves, check valves and the delivery and return manifolds.

The electrical panel, supplied with a mounting bracket, is attached to the pressure booster unit base.

The pumps start and stop according to the signals sent by the pressure transducer to the electrical control panel.

The latter is fitted with an integrated electronic board. The pumps start and stop automatically depending on the water demand of the system.

These pressure booster systems are combined with suitable expansion tanks in order to guarantee stable operation and reduce the starting frequency of the pumps.

For the correct choice in capacity of the expansion vessel, see the relative chapter on page 116 of the catalogue.

DESCRIPTION OF OPERATION

The pumps start and stop according to the set pressures detected by the pressure transducer, thus ensuring the required amount of water is delivered. The pressure values can be directly set on the electronic board.

For units with jockey pump, the latter will start first and stop last, depending on the set pressure values.

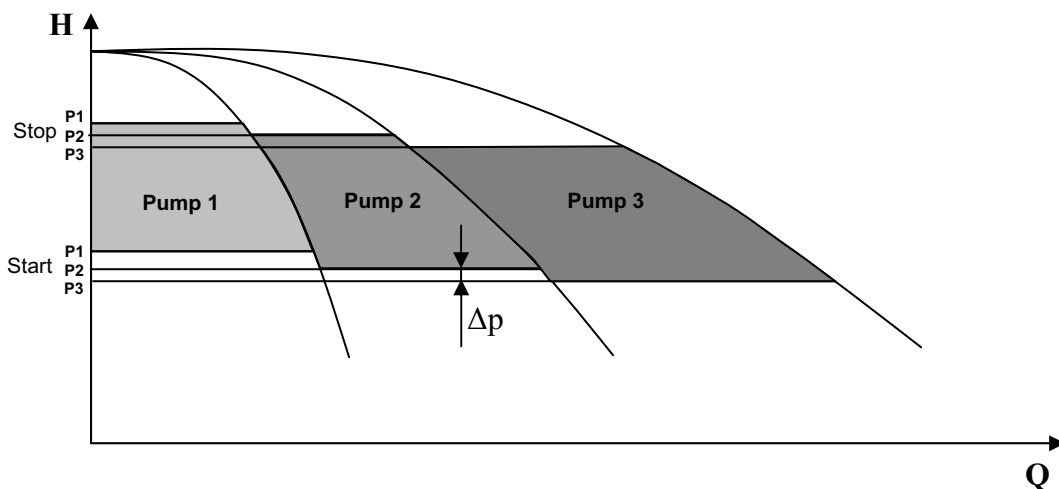
When a tap is opened, water is drawn off from the tank, the pressure starts to fall until it reaches the starting value of the first pump. The delivery of water increases, the pressure falls even further and the other pumps start in sequence according to the demand for water.

When consumption falls, the pressure in the system increases and the pumps stop when the set threshold pressure values are reached.

If consumption falls to zero user demand, the last pump also stops.

If the "timer" function is used, the last pump to work will remain operating for a set time after it is switched off, in order to reach maximum pressure. Make sure the maximum pressure is compatible with the system in which the pump is installed.

Example: GS series pressure booster units, operation.



Δp pressure differential between pumps, can be reduced to 0,5 bar.

BOOSTER SETS GS SERIES CHOICE AND SELECTION

The demand of a water distribution system is generally determined by the designer according to the type of user structure being served.

Users can be schools, hospitals, homes, offices, industries, hotels, shopping centres and for each the water demand changes due to the different requirements of the people living and working in these structures. To find the correct flow rate for the system in question, it is possible to consult pre-calculated tables that give an idea of the flow rate for the typology of user to serve (see pages 108-109 in this catalogue).

Integral system calculation, instead, prevents excessive oversizing and therefore reduces running and installation costs.

The theoretical water demand is calculated by summing the demand of each user. As, however, it is improbable that all users will want to use water at the same time, real demand is lower than theoretical demand.

After defining the flow rate of the system, the head must be calculated. This must consider the following:

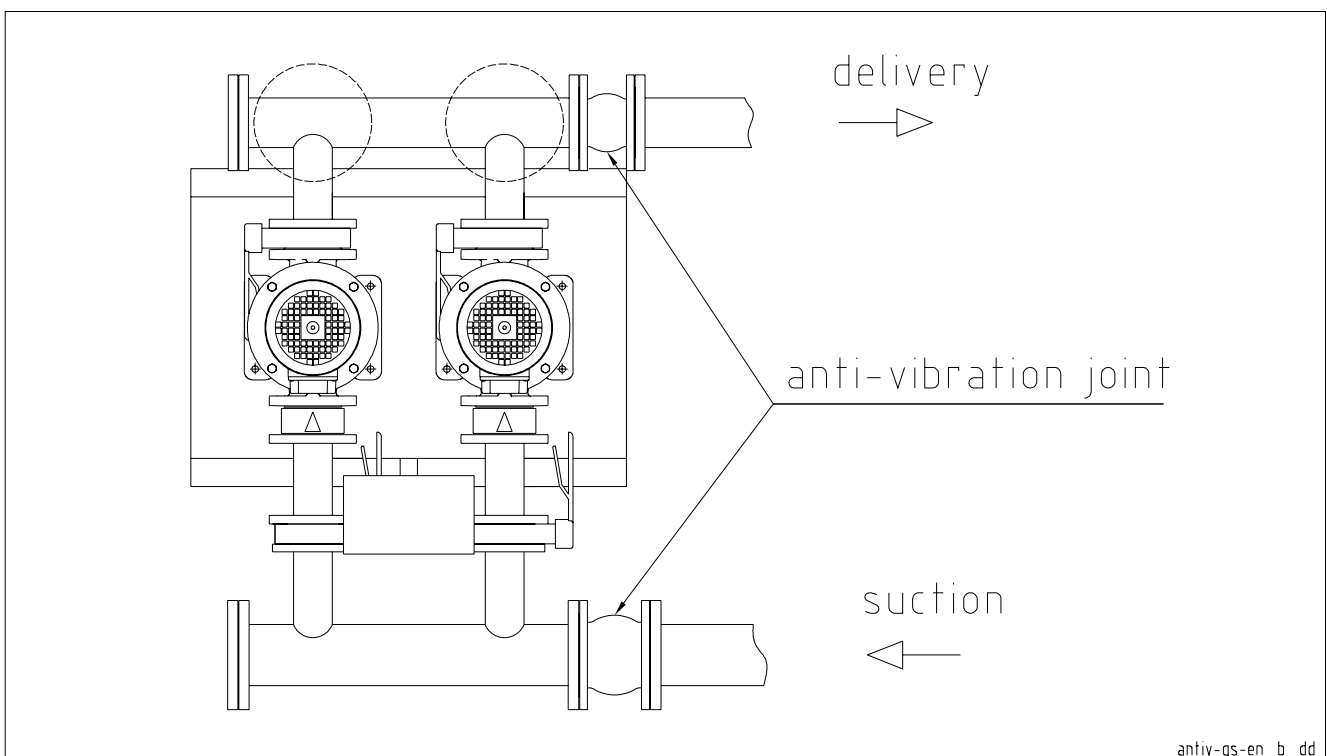
- geodesic head: difference in level between the pumping station and the highest user
- residual head: pressure demand from the most unfavourable user to serve
- pressure drops: value in metres of pressure drops due to friction in the delivery pipes
- inlet height: difference in level between the pump inlet and the surface of the water in the tank (positive or negative depending on the installation type)
- inlet pressure drops: value in metres of pressure drops due to friction in the inlet piping and in any curves and valves.

After analysing the above, the head required for the system is calculated.

Now that the flow rate and head values are known, the most suitable pressure booster unit for the system can be chosen. The designer must decide whether to choose a pressure booster unit with two or three pumps, the third being a reserve pump satisfying demand during pump maintenance periods.

INSTALLATION

The GS series of pressure booster units must be installed in areas protected from frost and adequately ventilated in order to allow the motors to cool. The delivery and intake pipes should be connected using anti-vibration joints in order to limit vibrations and resonance in the system.



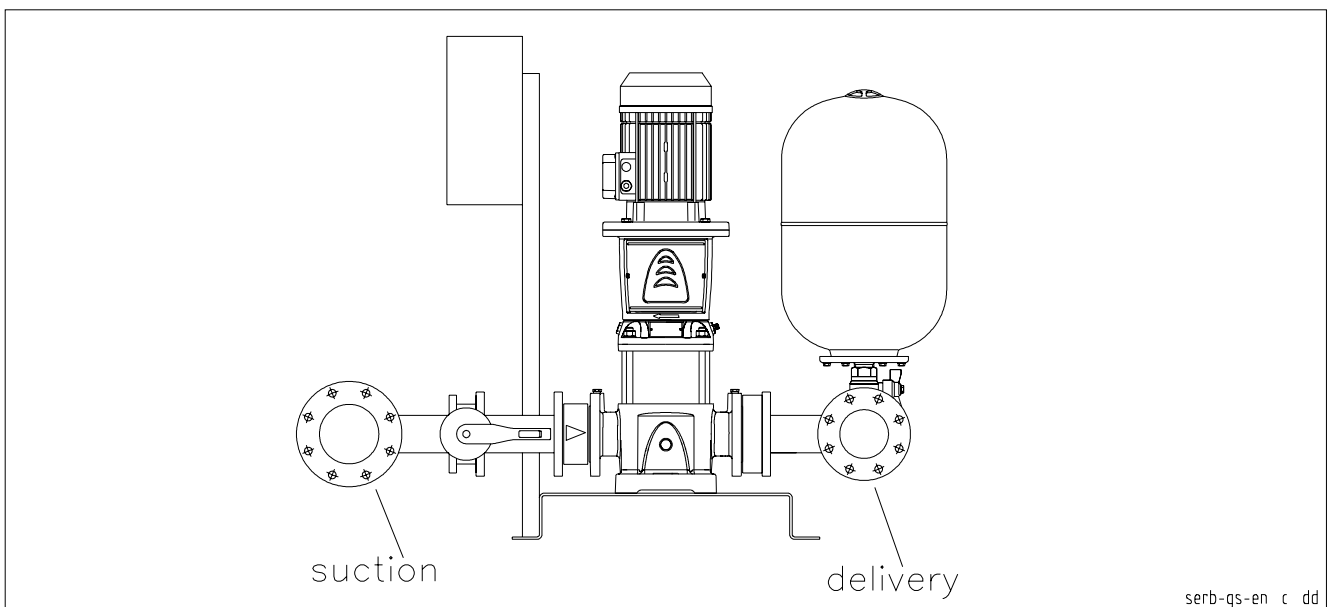
BOOSTER SETS GS SERIES INSTALLATION

The GS series of pressure booster units are generally connected to pressurised tanks with a suitable capacity for the system. These tanks are normally expansion vessels for capacities up to 500 L. Tanks with higher capacities can also be supplied if necessary. In these cases, they are air-cushion tanks and a compressor is required to maintain the pressure inside the tank.

In both cases, the tanks must be connected on the pressure booster unit delivery line. The system, commonly known as an "autoclave", provides the system with a reserve of pressurised water and prevents frequent pump start-ups.

For these systems, sufficient space must always be allowed in the area where the pressure booster set is installed.

Always check maximum pump pressure in order to choose the right tanks for the pressure in question.



SUCTION CONDITIONS

Installation of the pressure booster set must be assessed especially as regards intake conditions. Intake conditions can negatively or positively affect the performance of the pressure booster unit and consequently system performance. A positive suction head is ideal for a pressure booster unit as it keeps the pumps constantly primed and the positive difference in level adds pressure to the system.

A negative suction head is different. In this case, the risks for the pumps are priming which is connected with the intake piping, the NPSH of the pump and the difference in level between the pump and the water in the tank.

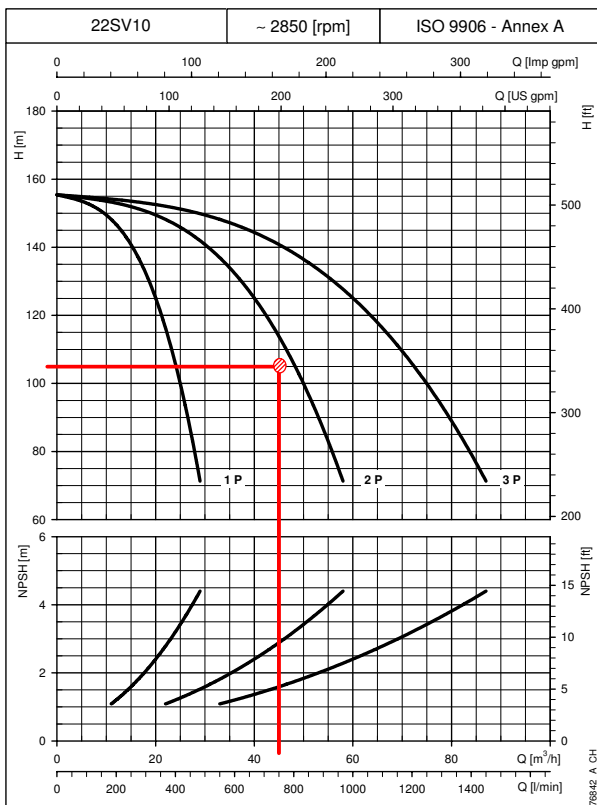
In this type of installation, after checking the intake capacity of the pump, the overall pressure drop in the intake line must be calculated as this will reduce pump performance and consequently that of the pressure booster unit.

In order to select the right pressure booster unit, the performance levels of the pumps installed on them are indicated in this catalogue. To simplify the calculation of net pressure, pressure drop curves, both for the delivery and intake lines of the pumps have been included (see the relative chapter).

BOOSTER SETS GS SERIES CALCULATING NET PRESSURE

When selecting the GS series of pressure booster units, reference must be made to pump performance. Performance is calculated from the characteristic curves of the pumps and does not consider any pressure drops generated by pipes and valves as in the pressure booster units. To help choose the right pressure booster unit and calculate the correct pressure at the delivery manifold, the following example is shown:

Given the duty point $Q = 42 \text{ m}^3/\text{h}$ $H = 105 \text{ mca}$ and with two pumps working, the pump with the most suitable characteristic curve is chosen, that is, the one with a curve that guarantees the required flow and head values.



From the example, we have chosen the 22SV10 series pump which guarantees system performance. The pump curve is slightly oversized, but this provides a safety margin to counter the pressure drops in the pressure booster unit pipes. To know the effective pressure at the delivery manifold outlet, the pressure drops in the suction and delivery lines of each pump are calculated.

To simplify calculations, the pressure drop curves for each pump, on page 98 of this catalogue, are used.

Assuming a pressure booster unit with check valves on the suction line (curve B of Hc pressure drops) has been selected, one proceeds as follows:

The Hc pressure drops on the pump suction line are to be evaluated on the "B" curve. At a flow rate of $21 \text{ m}^3/\text{h}$ the value of $H_c = 2,8 \text{ m}$.

Similarly, the Hc pressure drops on the delivery line of the pump, as evaluated on the "B" curve, are analysed. At a flow rate of $21 \text{ m}^3/\text{h}$, the value of Hc is $0,035 \text{ m}$.

The total pressure drop on the delivery and suction lines is therefore $2,84 \text{ m}$.

As regards the pressure drop in the suction and delivery manifolds, 5% with respect to the pressure drops in the pump suction and delivery can be considered.

In this case, therefore, the value is $0,142 \text{ m}$.

The total pressure drop is approximately: 3 m .

Analysing the performance of the unit at a flow rate of $42 \text{ m}^3/\text{h}$, the head H is 115 m .

The net pressure at the delivery manifold is $115 - 3 = 112 \text{ m}$.

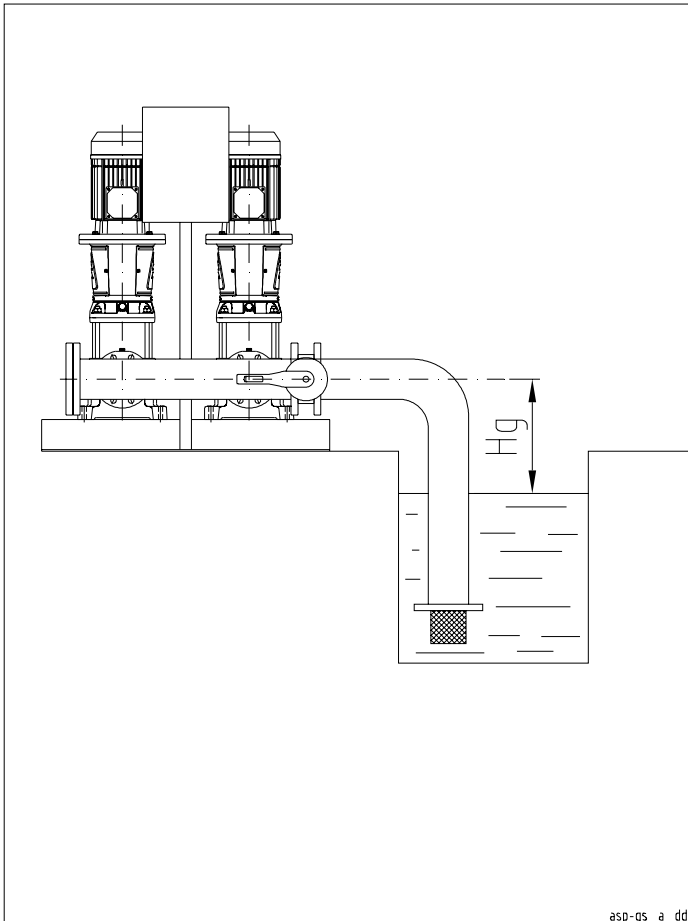
Comparing this value with the rated value, $112 \text{ m} > 105 \text{ m}$.

The unit can therefore satisfy the demand of the system.

BOOSTER SETS GS SERIES SUCTION CONDITIONS

The above example does not consider the suction conditions of the pressure booster unit which, similarly, affect final performance. It is therefore always best to check the suction line for leaks, especially as regards positive head installations.

An example of positive head installation relative to the above case is shown below:



In the positive head installation, the designer must calculate the minimum installation height H_g of the pump in safety conditions in order to avoid cavitation and, therefore, de-priming of the pump.

The relationship that must be checked and which connects this measurement is the following:

$NPSH_{available} \geq NPSH_{requested}$ where equality is the limit condition.

$NPSH_{available} = P_{atm} + H_g - \sum \text{pressure drops}$.

Where:

P_{atm} is the atmospheric pressure, equal to 10,33 m

H_g is the geodetic difference in level

The pressure drops are connected with to the suction piping and relative valves (foot and cut-off valves)

$NPSH_{requested}$ is a pump parameter taken from the performance curve of the pump which in our case, at a flow rate of 21 m³/h corresponds to 2,5 m. Before calculating the $NPSH_{available}$, the suction pressure drops are calculated using the tables on pages 117-118 in this catalogue, considering a material such as steel.

The chosen diameter of the suction piping is DN80.

90° curve DN80 = 2,11 m

Damper DN80 = 0,28 m

Drain valve DN80 = 0,3 m (calculated from supplier data)

Piping DN80 = 0,61 m (assuming a length of 2,5 m)

Piping DN80, intake manifold = 0,04 m (length of manifold 0,61 m)

Pressure drops on pump suction side (curve B) = 2,8 m

\sum pressure drops = 6,1 m

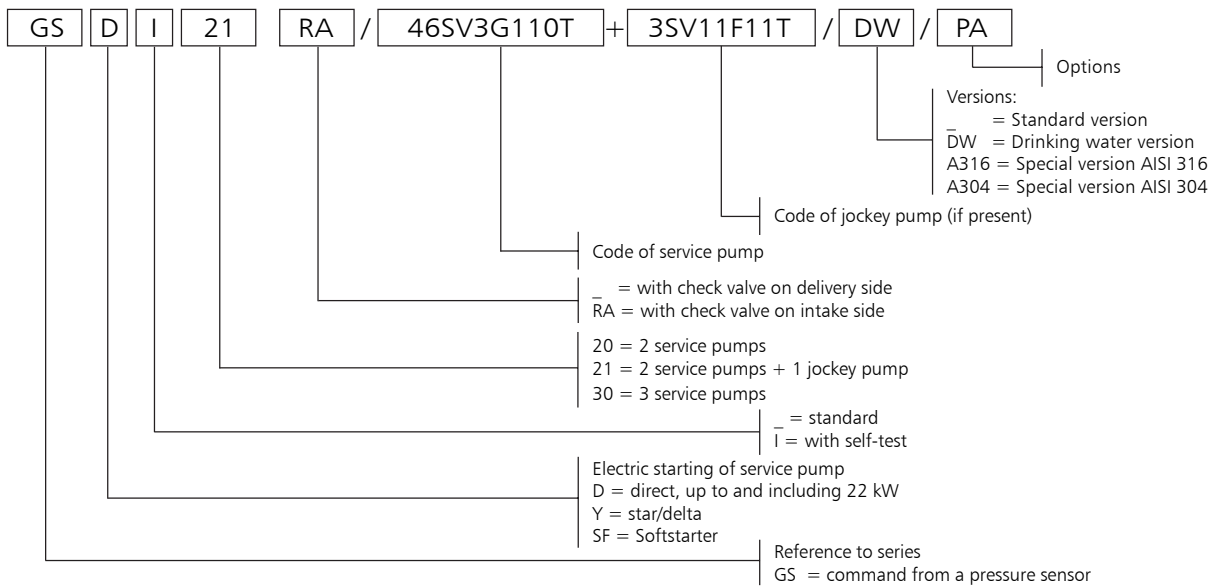
Remembering that: $NPSH_{available} = 10,33 + H_g - 6,1$

Replacing: $10,33 + H_g - 6,1 \geq 2,5$

$H_g = 2,5 + 6,1 - 10,33 = -1,73$ m representing the limit, for which reason: $NPSH_{available} = NPSH_{requested}$

Generally speaking, therefore, in order to assure correct operating conditions as regards the risk of cavitation, the pump must be positioned above the level of the tank so that the suction height is lower than the limit value of 1,73 m.

SET IDENTIFICATION CODE



OPTIONS (ON DEMAND)

230	Power supply of control panel 3 x 230V. For different voltage supply, see control panel section.
3A	Booster set with electric pump certified 1A (Factory test reports issued by the end of assembly line; it includes QH curve).
3B	Booster set with electric pump certified 1B (Test report issued by Audit Test Lab; it includes QH curve, efficiency and power).
60	Booster set with 60Hz supply voltage.
BAP	High pressure switch installed on the delivery manifold.
C9	Delivery manifold at 90° with bend. The tanks can not be installed directly on the manifold.
CM	Suction or delivery manifold larger than standard size.
CP	Dry contact version: power line, Automatic/Manual mode, Run/Stop for each pump, thermal block.
IP65	IP65 version control panel.
KV	Kit voltmeter.
MA	Pressure gauge installed on suction manifold.
NL	Dutch market version.
PA	Minimum pressure gauge installed on the suction manifold for dry-running protection.
PP	Pressure-switch control.
PQ	Booster set with high suction pressure (pressure gauge/pressure switches/pressure transmitter increased of one range).
RA	Non return valves mounted on suction side (I.e GMD20RA/SV...).
RE	Heaters inside the control panel, with thermostat.
RV	Electric panel with phase sequence, phase loss, over- and undervoltage and phase unbalance.
SA	No intake: no suction valves and suction manifold.
SC	Group with no control devices, such as pressure switches and transmitters; the pressure gauge is present.
SCA	No suction manifold (suction valves present).
SCM	Without delivery manifold (no pressure transmitters and pressure gauge, with delivery valves).
SM	Without delivery: without valves on delivery and without delivery manifold.
TS	Booster set with pumps equipped with special mechanical seals.
UK	UK market version.
VA	Electric control panel fitted with analogue voltmeter and ammeter.
WM	Wall-mounted electrical panel with fixing tabs. Cables L= 5m

AVAILABLE VERSIONS

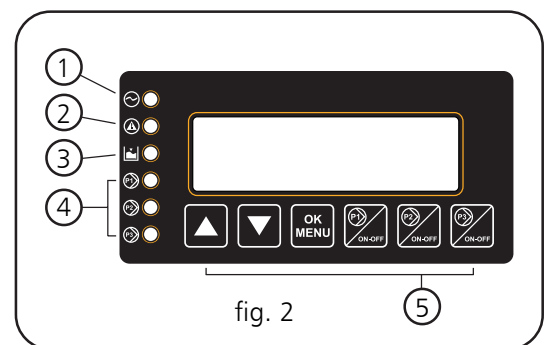
A304	Main component in contact with liquid in stainless steel Aisi 304 or superior; gasket, sealing tape and thread sealing are suitable for drinking water. Bolts and screws galvanized. Flanges not in contact with the liquid in galvanized steel.
B304	Main component in contact with liquid in stainless steel Aisi 304 or superior; gasket, sealing tape and thread sealing are suitable for drinking water. Bolts and screws in Aisi 304 or superior. Flanges not in contact with the liquid in Aisi 304 or superior.
C304	Main component in contact with liquid in stainless steel Aisi 304 or superior; gasket, sealing tape and thread sealing are suitable for drinking water. Baseplate, frame, supports, bolts and screws in Aisi 304 or superior. Flanges not in contact with the liquid in Aisi 304 or superior. Valves and their components completely in Aisi 304 or superior (body, disc, plate).
A316	Main component in contact with liquid in stainless steel Aisi 316; gasket, sealing tape and thread sealing are suitable for drinking water. Pumps in Aisi 316 material. Bolts and screws galvanized. Flanges not in contact with the liquid in galvanized steel.
B316	Main component in contact with liquid in stainless steel Aisi 316; gasket, sealing tape and thread sealing are suitable for drinkingwater. Pumps in Aisi 316 material. Bolts and screws in Aisi 316. Flanges not in contact with the liquid in Aisi 316.
C316	Main component in contact with liquid in stainless steel Aisi 316; gasket, sealing tape and thread sealing are suitable for drinking water. Pumps in Aisi 316 material. Baseplate, frame, supports, bolts and screws in Aisi 316. Flanges not in contact with the liquid in Aisi 316. Valves and their components completely in Aisi 316 (body, disc, plate).
DW	Main component in contact with fluid suitable for drinking water or in stainless steel AISI 304 or superior quality.

CONTROL PANEL FOR GS20, GS21, GS30

Electric panel for powering, controlling and protecting a maximum of three three-phase pumps, with sheet steel casing (fig. 1) and protected to IP55.

Main characteristics:

- General doorlock switch, fuse holders and fuses, starting contactors and circuit breakers.
- Standard input voltage: 3x400Vca +/-10%, 50/60Hz.
Non-standard voltages available on request, 1x230Vac +/-10%, 3x230ca +/-10%, 50/60Hz.
- Transformer for auxiliary low voltage circuit; auxiliary voltage 24Vac.
- Lowara SM30 digital microprocessor-controlled control unit with LCD display and programming keyboard (see fig. 2), featuring the following functions:
 - Indicator lamps: power on (ref.1), general fault (ref.2), no water alarm (ref.3), pump running (ref.4);
 - Programming keyboard (ref.5);
 - Manual pump stop/start (one button for each pump) (ref.5);
 - Automatic cascade pump control with two electronic pressure transmitters. If a sensor develops a fault, the board automatically switches to the second sensor. Pressure switch control available on request.
 - Jockey pump management.
 - Cycle reversal function (can be disabled). Automatically switches pumps after every start/stop cycle.
 - Automatic, manual or disabled mode switches for each pump (inside the board).
 - Periodic system self-test with an electrovalve command which opens the hydraulic circuit, simulates a pressure drop and consequently activates the control devices (pressure switches and pressure transmitters). Pump diagnostics.



- No-water protection system alternatives: float, minimum pressure switch, external contact or electrode probes with sensitivity adjustment.
- Adjustable timer delaying tripping the no-water protection system.
- Adjustable timer delaying starting of each pump.
- Adjustable timer extending the operation of each pump.
- System pressure drop offset function, only available with pressure sensor. This function improves system stability.
- Adjustable analogue output, 4-20mA or 0-10Vdc, for visualising the analogue input signal.
- Configurable relay with volt-free contact, delayed activation, signalling the following conditions:
 - Motor overload protection alarm.
 - No-water circuit alarm.
 - Pressure sensor fault.
 - Out-of-curve operation alarms (only if self-test is disabled).
 - Maximum intake pressure alarm.
 - Electrovalve opening permission for self-test circuit.
- Configurable digital inputs.
 - AUX1 input configuration, maximum pressure switch or external self-test.
 - AUX2 input configuration, permission from external device (NO) or external alarm (NC).
 - AUX3 input configuration, change set (NO) or pressure switch operating out-of-curve.
- 12Vdc output for powering the acoustic alarm.

CONTROL PANEL FOR GS20, GS21, GS30

- Alarms log and hour counters for each installed pump. Alarms visualised on display:
 - Maximum, minimum pressure;
 - Circuit breaker for each motor;
 - Pressure transmitter fault.
 - Out-of-curve operation;
 - No water;
 - Block for tripped external device (PTC, temperature probe, etc.)
 - Auto-test failed

All the alarms light the Fault lamp (ref.2 – fig.2)

The no-water alarm lights the Level alarm lamp (ref.3 – fig.2)

- Standard, RS485 serial communication, slave, and ModBus RTU protocol.
- The GSM/GPRS module can be connected to send pump alarms and/or operating states via sms or e-mail. Connection via RS485 serial connection. SIM card not included.
- A relay board (optional) can be connected to boost the following signals: pump running, aut-man mode for each pump, overload alarm, no-water alarm, maximum/minimum pressure alarm, power on, self-test failed. The optional signal booster board has six relays, each of which can be configured using the Lowara SM30 control unit.

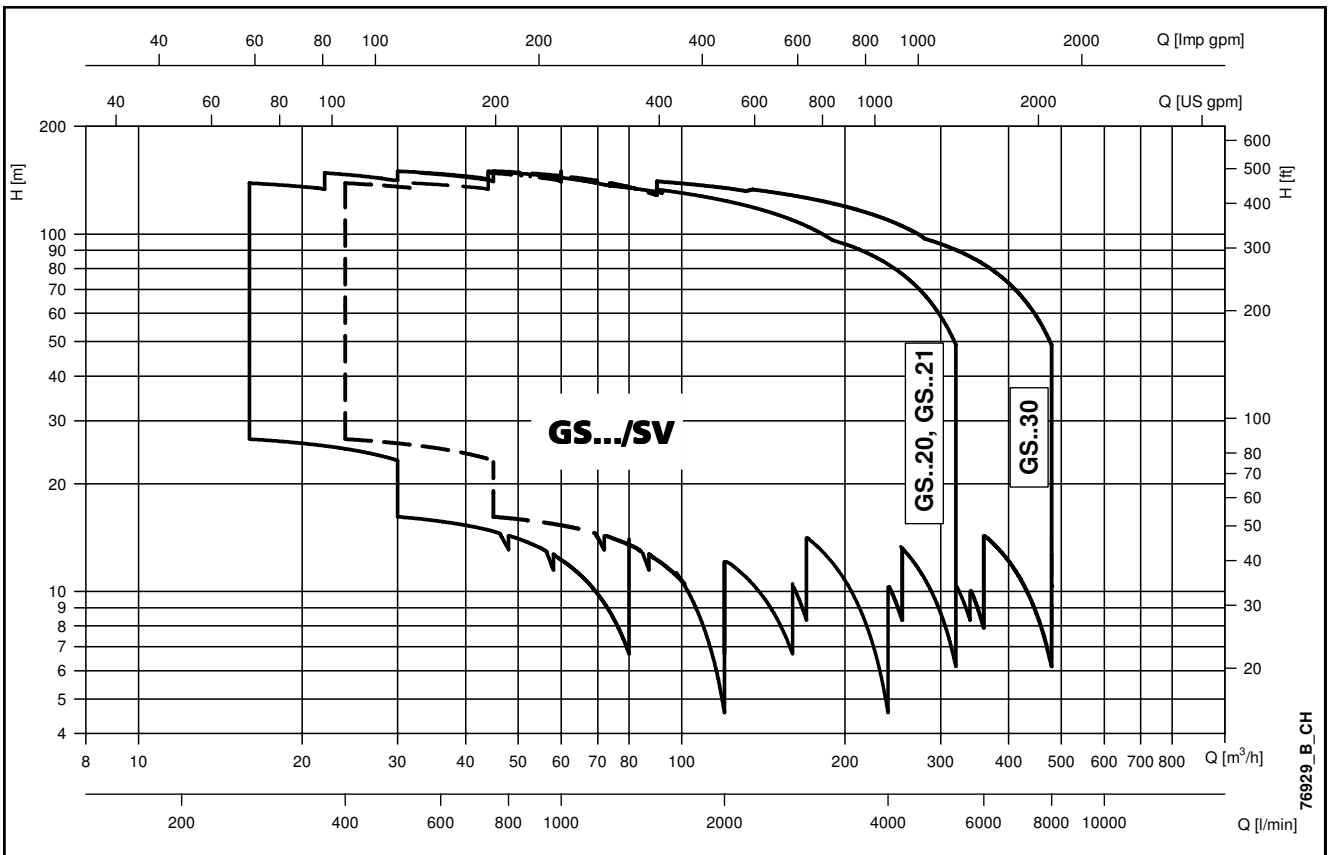
GS.../SV Series

Fixed-speed pressure booster sets
Vertical Multistage electric pumps e-SV™ series
equipped with high efficiency motors
flow rate up to 480 m³/h

50 Hz

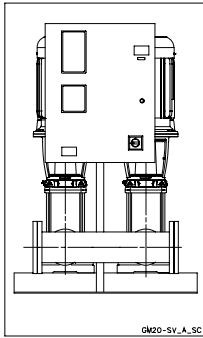
GS.../SV SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz

GS.../SV



RANGE

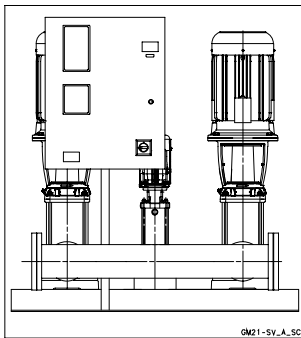
The GS series of fixed-speed pressure boosters comprises models with 2 or 3 electric service pumps and an optional jockey pump in order to satisfy the specific needs of every application.



GS20 SETS

- Fixed-speed sets with two multistage vertical service pumps, SV series, with power ratings up to 37 kW.

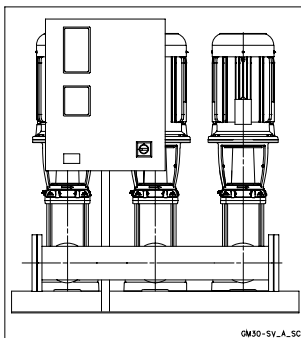
Head up to 160m.
Flow rate up to 320 m³/h.



GS21 SETS

- Fixed-speed sets with two service pumps and a jockey pump. Multistage vertical electric pumps, SV series, with power ratings up to 37 kW.

Head up to 160m.
Flow rate up to 320 m³/h.



GS30 SETS

- Fixed-speed sets with three multistage vertical service pumps, SV series, with power ratings up to 37 kW.

Head up to 160m.
Flow rate up to 480 m³/h.

REFERENCE STANDARDS

- The Lowara booster sets are CE-marked for conformity with the following directives:
 - Machinery Directive: 2006/42/EC.
 - Low Voltage Directive 2006/95/EC.
 - Electromagnetic Compatibility Directive 2004/108/EC
- Electric pump performance complies with the following standard: ISO 9906-A Rotodynamic pumps – hydraulic performance acceptance tests.

CHARACTERISTICS OF THE ELECTRIC PUMPS

GS.../SV

The SV pump is a multistage vertical pump, not self-priming, combined with a normalised standard motor. The hydraulic part is kept in place between the upper cover and the pump body with tie-rods. The pump body is available in different configurations and connection typologies.



Technical Information:

Flow rates: up to 160 m³/h.
Heads: up to 160 m.

Temperature of pumped liquid:
- from -30°C to +120°C for:
3, 5, 10, 15, 22, 33, 46, 66, 92, 125SV standard version.

Tested to ISO 9906 annex A.
Clockwise direction of rotation looking
at the pump from above (indicated
with an arrow on the bracket and joint).

Motor

Short circuit squirrel cage motor, totally enclosed, fan-cooled. Standard supplied IE2/IE3 motors are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30.

IP55 protection.

Class 155 (F) insulation.

Performance levels according to EN 60034-1.

Standard voltage:

Single-phase version: 220-240 V, 50 Hz.

Three-phase version: 220-240/380-415 V, 50 Hz for power up to 3 kW,

380-415/660-690 V, 50 Hz for power above 3 kW.

For electrical data of the motors used see Technical Appendix.

Materials

Suitable for pumping drinking water (WRAS certified).

CHARACTERISTICS OF THE ELECTRIC PUMPS USED IN GS SERIES BOOSTER SETS

CHARACTERISTICS OF 3, 5, 10, 15, 22SV SERIES

- Vertical multistage centrifugal pump. All metal parts in contact with the pumped liquid are made of stainless steel.
- The following versions are available:
 - **F**: round flanges, in-line delivery and suction ports, AISI 304.
 - **T**: oval flanges, in-line delivery and suction ports, AISI 304.
 - **R**: round flanges, delivery port above the suction port, with four adjustable positions, AISI 304.
 - **N**: round flanges, in-line delivery and suction ports, AISI 316.
 - **V, P**: Victaulic® couplings, in-line delivery and suction ports, AISI 316.
 - **C**: Clamp couplings (DIN 32676), in-line delivery and suction ports, AISI 316.
 - **K**: threaded couplings, (DIN 11851), in-line delivery and suction ports, AISI 316.
- Reduced axial thrusts enable the use of **standard motors** that are easily found in the market. **Standard supplied IE2/IE3 three-phase surface motors $\geq 0,75$ kW are compliant with Regulation (EC) no. 640/2009.**
- Mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069 for 1, 3, 5SV and 10, 15, 22SV (\leq of 4 kW) series.
- **Balanced mechanical seal** according to EN 12756 (ex DIN 24960) and ISO 3069, which **can be replaced without removing the motor from the pump** for 10, 15 and 22SV (\geq of 5,5 kW) series.
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal.
- A second plug is available for 10, 15, 22SV series.
- Versions with round flanges that can be coupled to counter-flanges, according to EN 1092.
- Threaded, oval counter-flanges made of stainless steel are standard supply for the T versions.
- Round counter-flanges made of stainless steel are available on request for the F, R and N versions.
- Easy maintenance. No special tools required for assembly or disassembly.
- **The pumps for F, T, R, N versions are certified for drinking water use (WRAS and ACS certified).**
- Standard version for temperatures ranging from -30°C to $+120^{\circ}\text{C}$.

CHARACTERISTICS OF SV33, 46, 66, 92 SERIES

- The following versions are available:
 - **G**: vertical multistage centrifugal pump with impellers, diffusers and outer sleeve made entirely of stainless steel, and with pump casing and motor adaptor made of cast iron.
 - **N, P**: version made entirely of AISI 316 stainless steel.
- Innovative axial load compensation system on pumps with higher head. This ensures reduced axial thrusts and enables the use of **standard motors** that are easily found in the market. **Standard supplied IE2/IE3 three-phase surface motors are compliant with Regulation (EC) no. 640/2009.**
- **Balanced mechanical seal** according to EN 12756 (ex DIN 24960) and ISO 3069, which **can be replaced without removing the motor from the pump.**
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal.
- **The pumps for G, N versions are certified for drinking water use (WRAS and ACS certified).**
- Standard version for temperatures ranging from -30°C to $+120^{\circ}\text{C}$.
- Pump body fitted with couplings for installing pressure gauges on both suction and delivery flanges.
- In-line ports with round flanges that can be coupled to counter-flanges, in compliance with EN 1092.
- Mechanical sturdiness and easy maintenance. No special tools required for assembly or disassembly.

OPERATING CHARACTERISTICS AND LIMITS

Liquids handled	Water containing no gas or corrosive and/or aggressive substances.
Fluid temperature	Above -10°C a + 80 °C
Ambient temperature	Above 0°C a + 40 °C
Maximum operating pressure	Max 8 bar, 10 bar, 16 bar in function of pump type
Minimum inlet pressure	According to NPSH curve and losses, with a minimum margin of 0.5 m
Maximum inlet pressure	The inlet pressure added to the pressure of the pump at zero flow must be lower than the maximum operating pressure of the set.
Installation	Indoors, protected from the weather. Away from heat sources. Max elevation 1000 m ASL. Max humidity 50% without condensation.
Hourly starts (single pump)	0,37 kW ≤ Pn ≤ 3 kW max 60 starts per hour. Direct motor start; 4 kW ≤ Pn ≤ kW max 40 starts per hour. Direct motor start; 11 kW ≤ Pn ≤ kW max 30 starts per hour. Direct motor start; 18,5 kW ≤ Pn ≤ 22 kW max 24 starts per hour. Direct motor start; 30 kW ≤ Pn ≤ 37 kW max 16 starts per hour. Start/delta start; Pn = 45 kW max 8 starts per hour. Start/delta start;
Sound emission	See table

* On request, PN above in function of the pump

gfix_2p-en_c_ti

SOUND EMISSION LEVELS

50 Hz 2900 rpm		LpA (dB ±2)**	
P2 (kW)	IEC*	G..20	G..30
0,37	71R	-	-
0,55	71	-	-
0,75	80R	-	-
1,1	80	<70	<70
1,5	90R	<70	<70
2,2	90	< 70	< 70
3	100R	< 70	< 70
4	112R	< 70	< 70
5,5	132R	< 70	< 70
7,5	132	74	76
11	160R	76	78
15	160	74	76
18,5	160	76	78
22	180R	73	75
30	200	75	77
37	200	75	77

* R=Reduced motor casing size with respect to shaft extension and related flange.

gsfix_2p-en_c_tr

** Noise value of the electric motor only.

MAIN COMPONENTS

- **Main On-off valves** on suction and discharge side of each pump, ball type with threaded coupling up to 2" size included. Butterfly type for installation between the flanges are used for larger diameters.
- **Check valve** on discharge side of each pump, spring-loaded type, with threaded coupling up to 1 1/2" size, as well as the double-swing type to fit between the flanges.
For applications with air-cushion surge tanks, they are mounted on the suction side and the set is equipped with a connector for G 1/2" threaded flexible air feeder pipe (GS..RA series).
- **Suction manifold** made of galvanized or AISI 304 stainless steel depending on the version, with threaded or flanged ends depending on the type of pump (see drawings). Threaded coupling for water charging.
- **Delivery manifold** made of galvanized or AISI 304 stainless steel depending on the version, with threaded or flanged ends depending on the type of pump (see drawings). Fitted with two R1" threaded couplings with caps to allow connection diaphragm pressure vessels.
- **Pressure gauge and 2 control transmitters** located on the delivery side of the unit.
- **Various couplings** in nickel-plated brass, galvanized steel or stainless steel depending on the version.
- **Mounting base**, for pumpset and panel mounting brackets:
 - in painted steel for sets with electric pumps series 15-22-33-46-66-92-125SV;
- **Electric control panel**, IP55 protection class.

STANDARD VERSIONS AVAILABLE

See table of materials.

STANDARD VERSION

For general applications

Sets with 10SV pumps:

Nickel-plated brass valves, brass non-return valves.

Sets with 15-22SV pumps:

Nickel-plated brass valves, non-return valves with stainless steel flaps.

Sets with 33-46-66-92-125SV pumps:

Valves with polyamide butterfly, non-return valves with stainless steel flaps.

DW VERSION (GS../DW)

For drinking water applications.

The main components in contact with the liquid are certified suitable for drinking water or are made of AISI 304 or higher grade of stainless steel.

Sets with 10SV pumps:

Nickel-plated brass valves, brass non-return valves.

Sets with 15-22SV pumps:

Nickel-plated brass valves, non-return valves with stainless steel flaps.

Sets with 33-46-66-92-125SV pumps:

Valves with epoxy butterfly, non-return valves with stainless steel flaps.

AISI304 Version (GS../A304),

AISI 316 (GS../A316)

For special applications

Manifolds, valves, non-return valves and main components with parts directly in contact with the pumped liquid are made of AISI 304 or AISI 316 stainless steel.

Accessories available on request:

- Devices **against dry running** in one of the following versions:
 - float switch, for positive suction head;
 - probe electrodes kit, for positive suction head;
 - minimum pressure switch, for positive suction head.
- **Surge tank** in the following versions:
 - Air-cushion surge tank with compressor and accessories for surge tank and compressor.
 - Diaphragm vessel as an alternative to the air-cushion tank.
- **Kit featuring diaphragm expansion vessel** with ball valve (one for each pump), in the following versions, depending on the maximum head of the pumps:
 - 24-litre 8 bar cylinder water vessel kit
 - 24-litre 10 bar cylinder water vessel kit
 - 24-litre 16 bar cylinder water vessel kit
 - 20-litre 25 bar cylinder water vessel kit
- **Alarm kit;**
- **Air feeder** for RA version;
- **Air compressor** for RA version.

SPECIAL VERSIONS AVAILABLE ON REQUEST

(Contact the Sales and technical Assistance Service)

- Units with non-standard input voltages, such as three-phase 3x230V, 3x440V.
- Units with single-phase input voltages 1x230V.
- Jockey pump other than the standard ones illustrated in the catalogue.
- Support base in AISI 304, AISI 316 stainless steel.
- Units with stainless steel expansion vessels.
- Units with special valves.
- Units with 4 electric pumps (GS31...GS40...).
- Units with 5 electric pumps (GS41... GS50...).

TABLE OF MATERIALS FOR SETS WITH 3-5-10SV PUMPS UP TO 4kW

NAME	MATERIAL			
	(STANDARD)	DW	A304	A316
Manifolds	AISI 304	AISI 304	AISI 304	AISI 316
On-off valves	Nickel-plated brass	Nickel-plated brass	AISI 316	AISI 316
Non-return valves	Brass	Brass	AISI 304	AISI 316
Pressure switches	Chrome plated zinc alloy	AISI 304	AISI 304	AISI 304
Pressure transmitters	AISI 316	AISI 316	AISI 316	AISI 316
Caps/plugs/flanges	Galvanized steel	AISI 304	AISI 304	AISI 316
Bracket	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
Base	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
Pump body	AISI 304	AISI 304	AISI 304	AISI 316
Outer sleeve	AISI 304	AISI 304	AISI 304	AISI 316

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TABLE OF MATERIALS FOR SETS WITH 10SV PUMPS ABOVE 4kW

NAME	MATERIAL			
	(STANDARD)	DW	A304	A316
Manifolds	AISI 304	AISI 304	AISI 304	AISI 316
On-off valves	Nickel-plated brass	Nickel-plated brass	AISI 316	AISI 316
Non-return valves	Brass	Brass	AISI 304	AISI 316
Pressure switches	Chrome plated zinc alloy	AISI 304	AISI 304	AISI 304
Pressure transmitters	AISI 316	AISI 316	AISI 316	AISI 316
Caps/plugs/flanges	Galvanized steel	AISI 304	AISI 304	AISI 316
Bracket	Painted steel	Painted steel	Painted steel	Painted steel
Base	Painted steel	Painted steel	Painted steel	Painted steel
Pump body	AISI 304	AISI 304	AISI 304	AISI 316
Outer sleeve	AISI 304	AISI 304	AISI 304	AISI 316

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TABLE OF MATERIALS FOR SETS 15-22SV PUMPS

DENOMINATION	MATERIAL			
	(STANDARD)	DW	A304	A316
Manifolds	AISI304	AISI 304	AISI 304	AISI 316
On-off valves	Nickel-plated brass	Nickel-plated brass	AISI 316	AISI 316
Non-return valves	Painted cast iron with stainless steel flaps	Painted cast iron with stainless steel flaps	AISI 304	AISI 316
Pressure switches	Chrome plated zinc alloy	AISI 304	AISI 304	AISI 304
Pressure transmitters	AISI 316	AISI 316	AISI 316	AISI 316
Caps/plugs/flanges	Galvanized steel	AISI 304	AISI 304	AISI 316
Bracket	Painted steel (*)	Painted steel (*)	Painted steel (*)	Painted steel (*)
Base	Painted steel	Painted steel	Painted steel	Painted steel
Pump body	AISI 304	AISI 304	AISI 304	AISI 316
Outer sleeve	AISI 304	AISI 304	AISI 304	AISI 316

(*) of galvanized steel for two-pump sets up to 4kW

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TABLE OF MATERIALS FOR SETS 33-46-66-92-125SV PUMPS

DENOMINATION	MATERIAL			
	(STANDARD)	DW	A304	A316
Manifolds	AISI 304	AISI 304	AISI 304	AISI 316
On-off valves	Poliamide	Epoxy	AISI 316	AISI 316
Non-return valves	Painted cast iron with stainless steel flaps	Painted cast iron with stainless steel flaps	AISI 304	AISI 316
Pressure switches	Chrome plated zinc alloy	AISI 304	AISI 304	AISI 304
Pressure transmitters	AISI 316	AISI 316	AISI 316	AISI 316
Caps/plugs/flanges	Galvanized steel	AISI 316	AISI 316	AISI 316
Bracket	Painted steel	Painted steel	Painted steel	Painted steel
Base	Painted steel	Painted steel	Painted steel	Painted steel
Pump body	Cast iron	Cast iron	Cast iron	AISI 316
Outer sleeve	AISI 304	AISI 304	AISI 304	AISI 316

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GS.../SV

GS.../SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (JOCKEY PUMP)

PUMP TYPE	NOMINAL POWER		Q = DELIVERY										
			l/min 0	12	20	25	30	35	40	45	50	60	73
			m ³ /h 0	0,7	1,2	1,5	1,8	2,1	2,4	2,7	3,0	3,6	4,4
kW		HP	H = TOTAL HEAD METRES COLUMN OF WATER										
3SV02	0,37	0,5	15		14,5	14,3	14,0	13,5	13,0	12,4	11,7	9,8	6,5
3SV03	0,37	0,5	22		21,2	20,8	20,3	19,6	18,7	17,7	16,6	13,7	8,6
3SV04	0,37	0,5	29		27,7	27,1	26,2	25,2	23,9	22,5	20,8	16,8	10,1
3SV05	0,55	0,75	37		36,4	35,8	35,0	33,9	32,6	31,1	29,2	24,5	16,2
3SV06	0,55	0,75	44		43,4	42,6	41,6	40,2	38,6	36,6	34,3	28,5	18,5
3SV07	0,75	1	53		51,8	51,0	50,0	48,7	47,0	45,0	42,5	36,1	24,6
3SV08	0,75	1	60		59,1	58,2	57,0	55,4	53,4	51,0	48,1	40,7	27,5
3SV09	1,1	1,5	68		66,8	65,8	64,5	62,8	60,6	57,9	54,6	46,4	31,6
3SV10	1,1	1,5	75		73,8	72,7	71,3	69,3	66,9	63,8	60,2	51,0	34,5
3SV11	1,1	1,5	82		81,0	79,7	78,0	75,8	73,1	69,7	65,7	55,5	37,4
3SV12	1,1	1,5	90		87,8	86,4	84,5	82,1	79,1	75,5	71,1	59,9	40,1
3SV13	1,5	2	98		96,7	95,4	93,5	91,0	87,8	83,9	79,2	67,2	45,6
3SV14	1,5	2	106		104,1	102,5	100,4	97,7	94,2	89,9	84,8	71,8	48,5
3SV16	1,5	2	120		117,8	116,1	113,6	110,5	106,5	101,6	95,8	80,9	54,2
3SV19	2,2	3	144		142,3	140,3	137,5	133,9	129,2	123,5	116,7	99,1	67,6
3SV21	2,2	3	159		157	155	151	147	142	136	128	108	74

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GS20/10-15SV, GS21/10-15SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER		Q = DELIVERY													
			l/min 0	167	200	267	340	367	467	540	660	700	800	600	700	800
			m ³ /h 0	10	12	16	20,4	22	28	32	39,6	42	48	36	42	48
kW		H = TOTAL HEAD METRES COLUMN OF WATER														
10SV01F007T	2 x 0,75	12	11,2	10,9	9,9	8,3	7,6	4,3								
10SV02F007T	2 x 0,75	24	21,9	21,3	19,6	17,0	15,8	10,0								
10SV03F011T	2 x 1,1	36	33,0	32,1	29,6	25,8	24,1	16,0								
10SV04F015T	2 x 1,5	48	44,2	43,0	39,9	34,8	32,6	21,7								
10SV05F022T	2 x 2,2	60	56,1	54,7	50,9	44,9	42,2	29,0								
10SV06F022T	2 x 2,2	72	66,8	65,0	60,4	53,1	49,8	33,9								
10SV07F030T	2 x 3	84	78,3	76,2	70,8	62,1	58,3	39,8								
10SV08F030T	2 x 3	95	88,9	86,5	80,1	70,2	65,7	44,5								
10SV09F040T	2 x 4	106	100,1	97,5	90,8	80,0	75,1	52,1								
10SV10F040T	2 x 4	118	110,8	107,9	100,3	88,2	82,8	57,2								
10SV11F040T	2 x 4	130	121,3	118,1	109,6	96,3	90,3	62,1								
10SV13F055T	2 x 5,5	156	146,5	142,7	132,6	116,4	109,2	74,3								
15SV01F011T	2 x 1,1	14			12,9	12,4	12,2	11,3	10,4	8,4	7,6	5,1				
15SV02F022T	2 x 2,2	29			26,7	25,9	25,5	23,9	22,4	18,9	17,4	13,1				
15SV03F030T	2 x 3	43			40,4	39,1	38,6	36,2	33,8	28,7	26,5	20,1				
15SV04F040T	2 x 4	58			54,7	53,1	52,5	49,4	46,3	39,7	36,9	28,7				
15SV05F040T	2 x 4	73			67,8	65,8	65,0	61,0	57,1	48,7	45,2	34,9				
15SV06F055T	2 x 5,5	88			81,5	79,4	78,4	74,1	69,9	60,3	56,3	44,2				
15SV07F055T	2 x 5,5	102			94,5	91,9	90,8	85,7	80,6	69,4	64,7	50,5				
15SV08F075T	2 x 7,5	117			110,9	108,0	106,8	100,8	94,9	82,0	76,7	60,6				
15SV09F075T	2 x 7,5	132			124,4	121,0	119,6	112,8	106,1	91,5	85,5	67,4				
15SV10F110T	2 x 11	148			138,8	135,3	133,8	126,7	119,6	103,9	97,4	77,5				

The tabel referers to performance with 2 pumps running

gms_2p10-15sv_2p50-en_b_th

GS20/22SV, GS21/22SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

GS.../SV

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY													
		l/min 0	167	200	267	340	367	467	540	660	700	800	860	920	967
		m ³ /h 0	10	12	16	20,4	22	28	32	39,6	42	48	52	55	58
H = TOTAL HEAD METRES COLUMN OF WATER															
22SV01F011T	2 x 1,1	15					13,5	12,7	12,0	10,4	9,7	7,7	6,3	4,7	3,4
22SV02F022T	2 x 2,2	30					28,4	27,2	26,0	23,3	22,2	18,9	16,6	13,8	11,5
22SV03F030T	2 x 3	45					42,2	40,4	38,5	34,5	32,8	27,8	24,2	20,2	16,6
22SV04F040T	2 x 4	61					56,8	54,4	51,9	46,6	44,4	37,9	33,1	27,7	23,0
22SV05F055T	2 x 5,5	76					70,9	67,9	64,9	58,3	55,6	47,4	41,4	34,7	28,8
22SV06F075T	2 x 7,5	93					88,8	85,7	82,5	75,4	72,4	63,3	56,7	49,1	42,6
22SV07F075T	2 x 7,5	109					103,1	99,4	95,7	87,2	83,7	73,1	65,3	56,5	48,8
22SV08F110T	2 x 11	125					119,2	115,2	111,0	101,6	97,7	85,7	77,0	66,9	58,2
22SV09F110T	2 x 11	140					133,7	129,2	124,4	113,8	109,3	95,8	86,0	74,6	64,8
22SV10F110T	2 x 11	155					148,2	143,1	137,8	125,9	120,9	105,8	94,8	82,3	71,3

The table refers to performance with 2 pumps running

gms_2p22sv_2p50-en_b_th

GS20/33-46SV, GS21/33-46SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY												
		l/min 0	500	600	733	833	1000	1167	1333	1500	1800	2000		
		m ³ /h 0	30	36	44	50	60	70	80	90	108	120		
H = TOTAL HEAD METRES COLUMN OF WATER														
33SV1/1AG022T	2 x 2,2	17,4	16,2	15,7	15,0	14,0	12,2	9,8	6,7					
33SV1G030T	2 x 3	23,8	21,7	21,2	20,3	20,0	17,8	15,5	12,7					
33SV2/2AG40T	2 x 4	35,1	34,1	33,3	32,0	30,0	27,0	22,4	16,6					
33SV2/1AG40T	2 x 4	40,8	38,8	37,9	36,0	35,0	32,0	27,5	22,3					
33SV2G055T	2 x 5,5	47,8	45,0	44,1	43,0	41,0	39,0	35,0	29,9					
33SV3/2AG055T	2 x 5,5	57,7	55,2	53,8	51,0	49,0	44,0	38,0	29,6					
33SV3/1AG075T	2 x 7,5	64,5	61,3	60,0	58,0	56,0	51,0	45,0	37,0					
33SV3G075T	2 x 7,5	71,5	67,4	66,0	64,0	62,0	58,0	52,0	44,6					
33SV4/2AG075T	2 x 7,5	82,0	78,8	77,0	74,0	72,0	66,0	58,0	47,2					
33SV4/1AG110T	2 x 11	88,9	85,0	83,0	81,0	78,0	73,0	65,0	55,1					
33SV4G110T	2 x 11	95,9	91,1	90,0	87,0	85,0	80,0	73,0	63,1					
33SV5/2AG110T	2 x 11	106,0	101,6	100,0	96,0	93,0	85,0	76,0	63,0					
33SV5/1AG110T	2 x 11	112,7	107,2	105,0	102,0	99,0	92,0	82,0	70,0					
33SV5G150T	2 x 15	120,4	114,9	113,0	110,0	107,0	101,0	92,0	80,5					
33SV6/2AG150T	2 x 15	131,2	126,9	125,0	120,0	116,0	108,0	96,0	81,2					
33SV6/1AG150T	2 x 15	139,1	133,5	131,0	128,0	124,0	116,0	105,0	90,4					
33SV6G150T	2 x 15	145,6	139,0	137,0	133,0	129,0	121,0	110,0	96,1					
33SV7/2AG150T	2 x 15	156,0	149,9	147,0	143,0	138,0	128,0	115,0	98,2					
46SV1/1AG030T	2 x 3	19,5			19,2	18,8	17,9	16,7	15,1	13,1	8,5	4,6		
46SV1G040T	2 x 4	27,2			24,0	23,5	22,5	21,4	19,9	18,2	14,3	10,8		
46SV2/2AG055T	2 x 5,5	38,8			39,8	39,2	37,8	35,7	32,9	29,4	21,1	13,9		
46SV2G075T	2 x 7,5	52,6			48,5	47,7	46,1	44,2	41,7	38,7	31,4	25,1		
46SV3/2AG110T	2 x 11	64,7			65,1	64,0	62,0	60,0	56,0	52,0	40,4	30,8		
46SV3G110T	2 x 11	80,8			74,3	73,0	71,0	68,0	65,0	60,0	50,0	40,7		
46SV4/2AG150T	2 x 15	92,4			90,7	90,0	87,0	83,0	79,0	73,0	58,0	45,6		
46SV4G150T	2 x 15	107,3			99,8	98,0	96,0	92,0	87,0	82,0	68,0	55,9		
46SV5/2AG185T	2 x 18,5	117,2			114,8	113,0	110,0	106,0	100,0	93,0	75,0	60,2		
46SV5G185T	2 x 18,5	134,5			125,1	123,0	120,0	116,0	110,0	103,0	86,0	71,5		
46SV6/2AG220T	2 x 22	143,7			139,3	138,0	134,0	129,0	122,0	113,0	92,0	73,4		
46SV6G220T	2 x 22	161,0			149,9	148,0	144,0	139,0	132,0	124,0	104,0	86,0		

The table refers to performance with 2 pumps running.

gms_2p33-46_2p50-en_b_th

GS20/SV66-92, GS21/SV66-92 SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY												
		l/min 0	1000	1200	1400	1500	1800	2000	2400	2600	2833,3	3200	3600	4000
		m ³ /h 0	60	72	84	90	108	120	144	156	170	192	216	240
H = TOTAL HEAD METRES COLUMN OF WATER														
66SV1/1AG040T	2 x 4	23,8	21,4	20,7	19,9	19,4	17,8	16,6	13,3	11,2	8,3			
66SV1G055T	2 x 5,5	29,2	25,8	24,8	23,8	23,3	21,8	20,7	17,9	16,1	13,5			
66SV2/2AG075T	2 x 7,5	47,5	42,6	41,2	39,5	38,6	35,5	32,9	26,4	22,2	16,4			
66SV2/1AG110T	2 x 11	54,2	49,6	48,2	46,7	45,8	42,9	40,6	34,8	31,2	26,2			
66SV2G110T	2 x 11	60,4	55,7	54,4	52,8	52,0	49,3	47,1	42,0	38,9	34,7			
66SV3/2AG150T	2 x 15	78,4	71,6	69,6	67,2	65,9	61,5	57,9	49,0	43,3	35,3			
66SV3/1AG150T	2 x 15	84,7	77,8	75,8	73,5	72,2	68,0	64,6	56,3	51,1	44,0			
66SV3G185T	2 x 18,5	91,4	84,7	82,7	80,5	79,3	75,2	72,0	64,4	59,8	53,5			
66SV4/2AG185T	2 x 18,5	108,9	99,6	96,9	93,8	92,1	86,3	81,6	70,1	62,8	52,8			
66SV4/1AG220T	2 x 22	115,2	105,9	103,1	100,1	98,5	92,9	88,6	77,8	71,1	61,8			
66SV4G220T	2 x 22	121,6	112,5	109,8	106,9	105,3	99,8	95,7	85,5	79,2	70,8			
66SV5/2AG300T	2 x 30	139,1	127,5	124,1	120,2	118,2	111,1	105,5	91,5	82,7	70,4			
66SV5/1AG300T	2 x 30	145,6	134,0	130,5	126,8	124,7	117,8	112,4	99,2	90,9	79,5			
66SV5G300T	2 x 30	152,0	140,4	137,0	133,3	131,3	124,6	119,4	106,8	99,1	88,5			
92SV1/1AG055T	2 x 5,5	24,5				22,2	21,5	20,9	19,4	18,5	17,3	15,0	11,8	7,9
92SV1G075T	2 x 7,5	33,5				28,7	27,2	26,2	24,3	23,3	22,2	20,2	17,6	14,3
92SV2/2AG110T	2 x 11	49,4				45,1	43,7	42,5	39,6	37,9	35,5	30,9	24,6	16,8
92SV2G150T	2 x 15	67,8				58,2	55,3	53,4	49,5	47,6	45,2	41,4	36,3	29,6
92SV3/2AG185T	2 x 18,5	82,4				74,4	71,6	69,6	64,8	62,1	58,6	52,2	43,6	32,9
92SV3G220T	2 x 22	102,2				88,2	84,0	81,2	75,5	72,6	69,2	63,4	55,9	46,3
92SV4/2AG300T	2 x 30	115,7				104,0	99,9	97,0	90,4	86,8	82,1	73,8	62,8	49,0
92SV4G300T	2 x 30	133,1				117,0	111,7	108,0	100,6	96,8	92,3	84,6	74,8	62,5
92SV5/2AG370T	2 x 37	149,0				133,2	127,8	124,0	115,6	111,0	105,2	94,9	81,4	64,6

The table refers to performance with 2 pumps running.

gms_2psv66-92_2p50-en_b_th

GS20/125SV, GS21/125SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY									
		l/min 0	2000	2400	2833	3400	3800	4000	4300	4600	5333
		m ³ /h 0	120	144	170	204	228	240	258	276	320
H = TOTAL HEAD METRES COLUMN OF WATER											
125SV1G075T	2 x 7,5	27,6	20,8	19,8	18,6	16,8	15,3	14,4	12,9	11,3	6,2
125SV2G150T	2 x 15	53,8	44,4	42,5	40,4	37,1	34,4	32,9	30,4	27,7	19,6
125SV3G220T	2 x 22	80,7	66,5	63,8	60,6	55,7	51,6	49,4	45,7	41,5	29,4
125SV4G300T	2 x 30	107,6	88,7	85,0	80,7	74,2	68,8	65,8	60,9	55,4	39,2
125SV5G370T	2 x 37	134,5	110,9	106,3	100,9	92,8	86,0	82,3	76,1	69,2	49,0

The table refers to performance with 2 pumps running.

gv_2p125sv_2p50-en_b_th

GS30/10-15SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

GS.../SV

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY														
		l/min 0	167	200	267	340	367	467	540	660	700	800	600	700	800	
		m ³ /h 0	10	12	16	20,4	22	28	32	39,6	42	48	36	42	48	
H = TOTAL HEAD METRES COLUMN OF WATER																
10SV01F007T	3 x 0,75	12	11,2	10,9	9,9	8,3	7,6	4,3								
10SV02F007T	3 x 0,75	24	21,9	21,3	19,6	17,0	15,8	10,0								
10SV03F011T	3 x 1,1	36	33,0	32,1	29,6	25,8	24,1	16,0								
10SV04F015T	3 x 1,5	48	44,2	43,0	39,9	34,8	32,6	21,7								
10SV05F022T	3 x 2,2	60	56,1	54,7	50,9	44,9	42,2	29,0								
10SV06F022T	3 x 2,2	72	66,8	65,0	60,4	53,1	49,8	33,9								
10SV07F030T	3 x 3	84	78,3	76,2	70,8	62,1	58,3	39,8								
10SV08F030T	3 x 3	95	88,9	86,5	80,1	70,2	65,7	44,5								
10SV09F040T	3 x 4	106	100,1	97,5	90,8	80,0	75,1	52,1								
10SV10F040T	3 x 4	118	110,8	107,9	100,3	88,2	82,8	57,2								
10SV11F040T	3 x 4	130	121,3	118,1	109,6	96,3	90,3	62,1								
10SV13F055T	3 x 5,5	156	146,5	142,7	132,6	116,4	109,2	74,3								
15SV01F011T	3 x 1,1	14			12,9	12,4	12,2	11,3	10,4	8,4	7,6	5,1				
15SV02F022T	3 x 2,2	29			26,7	25,9	25,5	23,9	22,4	18,9	17,4	13,1				
15SV03F030T	3 x 3	43			40,4	39,1	38,6	36,2	33,8	28,7	26,5	20,1				
15SV04F040T	3 x 4	58			54,7	53,1	52,5	49,4	46,3	39,7	36,9	28,7				
15SV05F040T	3 x 4	73			67,8	65,8	65,0	61,0	57,1	48,7	45,2	34,9				
15SV06F055T	3 x 5,5	88			81,5	79,4	78,4	74,1	69,9	60,3	56,3	44,2				
15SV07F055T	3 x 5,5	102			94,5	91,9	90,8	85,7	80,6	69,4	64,7	50,5				
15SV08F075T	3 x 7,5	117			110,9	108,0	106,8	100,8	94,9	82,0	76,7	60,6				
15SV09F075T	3 x 7,5	132			124,4	121,0	119,6	112,8	106,1	91,5	85,5	67,4				
15SV10F110T	3 x 11	148			138,8	135,3	133,8	126,7	119,6	103,9	97,4	77,5				

The table refers to performance with 3 pumps running.

gms_3p10-15sv_2p50-en_b_th

GS30/22SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY														
		l/min 0	250	300	400	510	550	700	810	990	1050	1200	1290	1380	1450	
		m ³ /h 0	15	18	24	30,6	33	42	49	59,4	63	72	77	83	87	
H = TOTAL HEAD METRES COLUMN OF WATER																
22SV01F011T	3 x 1,1	15					13,5	12,7	12,0	10,4	9,7	7,7	6,3	4,7	3,4	
22SV02F022T	3 x 2,2	30					28,4	27,2	26,0	23,3	22,2	18,9	16,6	13,8	11,5	
22SV03F030T	3 x 3	45					42,2	40,4	38,5	34,5	32,8	27,8	24,2	20,2	16,6	
22SV04F040T	3 x 4	61					56,8	54,4	51,9	46,6	44,4	37,9	33,1	27,7	23,0	
22SV05F055T	3 x 5,5	76					70,9	67,9	64,9	58,3	55,6	47,4	41,4	34,7	28,8	
22SV06F075T	3 x 7,5	93					88,8	85,7	82,5	75,4	72,4	63,3	56,7	49,1	42,6	
22SV07F075T	3 x 7,5	109					103,1	99,4	95,7	87,2	83,7	73,1	65,3	56,5	48,8	
22SV08F110T	3 x 11	125					119,2	115,2	111,0	101,6	97,7	85,7	77,0	66,9	58,2	
22SV09F110T	3 x 11	140					133,7	129,2	124,4	113,8	109,3	95,8	86,0	74,6	64,8	
22SV10F110T	3 x 11	155					148,2	143,1	137,8	125,9	120,9	105,8	94,8	82,3	71,3	

The table refers to performance with 3 pumps running.

gms_3p22sv_2p50-en_b_th

GS30/33-46SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER	Q = DELIVERY										
		l/min 0	750	900	1100	1250	1500	1750	2000	2250	2700	3000
	kw	m ³ /h 0	45	54	66	75	90	105	120	135	162	180
H = TOTAL HEAD METRES COLUMN OF WATER												
33SV1/1AG022T	3 x 2,2	17,4	16,2	15,7	15	14	12,2	9,8	6,7			
33SV1G030T	3 x 3	23,8	21,7	21,2	20	20	17,8	15,5	12,7			
33SV2/2AG40T	3 x 4	35,1	34,1	33,3	32	30	27	22,4	16,6			
33SV2/1AG40T	3 x 4	40,8	38,8	37,9	36	35	32	27,5	22,3			
33SV2G055T	3 x 5,5	47,8	45	44,1	43	41	39	35	29,9			
33SV3/2AG055T	3 x 5,5	57,7	55,2	53,8	51	49	44	38	29,6			
33SV3/1AG075T	3 x 7,5	64,5	61,3	60	58	56	51	45	37			
33SV3G075T	3 x 7,5	71,5	67,4	66,0	64	62	58	52,0	44,6			
33SV4/2AG075T	3 x 7,5	82	78,8	77	74	72	66	58	47,2			
33SV4/1AG110T	3 x 11	88,9	85	83	81	78	73	65	55,1			
33SV4G110T	3 x 11	95,9	91,1	90	87	85	80	73	63,1			
33SV5/2AG110T	3 x 11	106	101,6	100	96	93	85	76	63			
33SV5/1AG110T	3 x 11	112,7	107,2	105	102	99	92	82	70			
33SV5G150T	3 x 15	120,4	114,9	113	110	107	101	92	80,5			
33SV6/2AG150T	3 x 15	131,2	126,9	125	120	116	108	96	81,2			
33SV6/1AG150T	3 x 15	139,1	133,5	131	128	124	116	105	90,4			
33SV6G150T	3 x 15	145,6	139	137	133	129	121	110	96,1			
33SV7/2AG150T	3 x 15	156	149,9	147	143	138	128	115	98,2			
46SV1/1AG030T	3 x 3	19,5			19,2	18,8	17,9	16,7	15,1	13,1	8,5	4,6
46SV1G040T	3 x 4	27,2			24	23,5	22,5	21,4	19,9	18,2	14,3	10,8
46SV2/2AG055T	3 x 5,5	38,8			39,8	39,2	37,8	35,7	32,9	29,4	21,1	13,9
46SV2G075T	3 x 7,5	52,6			48,5	47,7	46,1	44,2	41,7	38,7	31,4	25,1
46SV3/2AG110T	3 x 11	64,7			65,1	64	62	60	56	52	40,4	30,8
46SV3G110T	3 x 11	80,8			74,3	73	71	68	65	60	50	40,7
46SV4/2AG150T	3 x 15	92,4			90,7	90	87	83	79	73	58	45,6
46SV4G150T	3 x 15	107,3			99,8	98	96	92	87	82	68	55,9
46SV5/2AG185T	3 x 18,5	117,2			114,8	113	110	106	100	93	75	60,2
46SV5G185T	3 x 18,5	134,5			125,1	123	120	116	110	103	86	71,5
46SV6/2AG220T	3 x 22	143,7			139,3	138	134	129	122	113	92	73,4
46SV6G220T	3 x 22	161			149,9	148	144	139	132	124	104	86

The table refers to performance with 3 pumps running.

gms_3psv33-46_2p50-en_b_th

GS30/66-92SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

GS.../SV

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY												
		l/min 0	1500	1800	2100	2250	2700	3000	3600	3900	4250	4800	5400	6000
		m ³ /h 0	90	108	126	135	162	180	216	234	255	288	324	360
H = TOTAL HEAD METRES COLUMN OF WATER														
66SV1/1AG040T	3 x 4	23,8	21,4	20,7	19,9	19,4	17,8	16,6	13,3	11,2	8,3			
66SV1G055T	3 x 5,5	29,2	25,8	24,8	23,8	23,3	21,8	20,7	17,9	16,1	13,5			
66SV2/2AG075T	3 x 7,5	47,5	42,6	41,2	39,5	38,6	36	32,9	26,4	22,2	16,4			
66SV2/1AG110T	3 x 11	54,2	49,6	48,2	46,7	45,8	42,9	40,6	34,8	31,2	26,2			
66SV2G110T	3 x 11	60,4	55,7	54,4	52,8	52	49,3	47,1	42	38,9	34,7			
66SV3/2AG150T	3 x 15	78,4	71,6	70	67	66	62	58	49	43,3	35,3			
66SV3/1AG150T	3 x 15	84,7	77,8	76	74	72	68	65	56	51	44,0			
66SV3G185T	3 x 18,5	91,4	84,7	83	81	79	75	72	64	60	53,5			
66SV4/2AG185T	3 x 18,5	108,9	99,6	97	94	92	86	82	70	63	52,8			
66SV4/1AG220T	3 x 22	115,2	105,9	103	100	99	93	89	78	71	61,8			
66SV4G220T	3 x 22	121,6	112,5	110	107	105	100	96	86	79	70,8			
66SV5/2AG300T	3 x 30	139,1	127,5	124	120	118	111	106	92	83	70,4			
66SV5/1AG300T	3 x 30	145,6	134	131	127	125	118	112	99	91	79,5			
66SV5G300T	3 x 30	152	140,4	137	133	131	125	119	107	99	88,5			
92SV1/1AG055T	3 x 5,5	24,5				22,2	21,5	20,9	19,4	18,5	17,3	15	11,8	7,9
92SV1G075T	3 x 7,5	33,5				28,7	27,2	26,2	24,3	23,3	22,2	20,2	17,6	14,3
92SV2/2AG110T	3 x 11	49,4				45,1	43,7	42,5	39,6	37,9	35,5	30,9	24,6	16,8
92SV2G150T	3 x 15	67,8				58,2	55	53	49,5	47,6	45,2	41,4	36,3	29,6
92SV3/2AG185T	3 x 18,5	82,4				74,4	72	70	65	62	59	52	43,6	32,9
92SV3G220T	3 x 22	102,2				88,2	84	81	76	73	69	63	56	46,3
92SV4/2AG300T	3 x 30	115,7				104	100	97	90	87	82	74	63	49
92SV4G300T	3 x 30	133,1				117	112	108	101	97	92	85	75	62,5
92SV5/2AG370T	3 x 37	149				133,2	128	124	116	111	105	95	81	64,6

The table refers to performance with 3 pumps running.

gms_3psv66-92_2p50-en_b_th

GS30/125SV SERIES BOOSTER SETS HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SERVICE PUMP)

PUMP TYPE	NOMINAL POWER kW	Q = DELIVERY									
		l/min 0	3000	3600	4250	5100	5700	6000	6450	6900	8000
		m ³ /h 0	180	216	255	306	342	360	387	414	480
H = TOTAL HEAD METRES COLUMN OF WATER											
125SV1G075T	3 x 7,5	27,6	20,8	19,8	18,6	16,8	15,3	14,4	12,9	11,3	6,2
125SV2G150T	3 x 15	53,8	44,4	42,5	40,4	37,1	34,4	32,9	30,4	27,7	19,6
125SV3G220T	3 x 22	80,7	66,5	63,8	60,6	55,7	51,6	49,4	45,7	41,5	29,4
125SV4G300T	3 x 30	107,6	88,7	85,0	80,7	74,2	68,8	65,8	60,9	55,4	39,2
125SV5G370T	3 x 37	134,5	110,9	106,3	100,9	92,8	86,0	82,3	76,1	69,2	49,0

The table refers to performance with 3 pumps running.

gv_3p125sv_2p50-en_b_th

GS20, GS21, GS30/10SV-33SV SERIES BOOSTER SETS ELECTRICAL DATA TABLE AT 50 Hz

SERVICE PUMP 3 X 400 V			JOCKEY PUMP 3 X 400 V			CURRENT ABSORBED BY SET 3 X 400V		
TYPE	Pn kW	In A	TYPE	Pn kW	In A	GS20 A	GS21 A	GS30 A
10SV01	0,75	1,70	3SV02	0,37	1,35	-	4,8	5,1
10SV02	0,75	1,70	3SV04	0,37	1,35	-	4,8	5,1
10SV03	1,1	2,39	3SV05	0,55	1,48	-	6,3	7,2
10SV04	1,5	3,17	3SV07	0,75	1,70	-	8,0	9,5
10SV05	2,2	4,64	3SV09	1,1	2,39	-	11,7	13,9
10SV06	2,2	4,64	3SV10	1,1	2,39	-	11,7	13,9
10SV07	3	6,14	3SV12	1,1	2,39	-	14,7	18,4
10SV08	3	6,14	3SV13	1,5	3,17	-	15,5	18,4
10SV09	4	7,63	3SV14	1,5	3,17	15,3	18,4	22,9
10SV10	4	7,63	3SV19	2,2	4,64	15,3	19,9	22,9
10SV11	4	7,63	3SV19	2,2	4,64	15,3	19,9	22,9
10SV13	5,5	10,40	3SV21	2,2	4,64	20,8	25,4	31,2
15SV01	1,1	2,39	3SV03	0,37	1,35	4,8	6,1	7,2
15SV02	2,2	4,64	3SV05	0,55	1,48	9,3	10,8	13,9
15SV03	3	6,14	3SV06	0,55	1,48	12,3	13,8	18,4
15SV04	4	7,63	3SV08	0,75	1,70	15,3	17,0	22,9
15SV05	4	7,63	3SV10	1,1	2,39	15,3	17,7	22,9
15SV06	5,5	10,40	3SV12	1,1	2,39	20,8	23,2	31,2
15SV07	5,5	10,40	3SV13	1,5	3,17	20,8	24,0	31,2
15SV08	7,5	14,00	3SV16	1,5	3,17	28,0	31,2	42,0
15SV09	7,5	14,00	3SV19	2,2	4,64	28,0	32,6	42,0
15SV10	11	20,30	3SV21	2,2	4,64	40,6	45,2	60,9
22SV01	1,1	2,39	3SV03	0,37	1,35	4,8	6,1	7,2
22SV02	2,2	4,64	3SV05	0,55	1,48	9,3	10,8	13,9
22SV03	3	6,14	3SV07	0,75	1,70	12,3	14,0	18,4
22SV04	4	7,63	3SV09	1,1	2,39	15,3	17,7	22,9
22SV05	5,5	10,40	3SV11	1,1	2,39	20,8	23,2	31,2
22SV06	7,5	14,00	3SV13	1,5	3,17	28,0	31,2	42,0
22SV07	7,5	14,00	3SV14	1,5	3,17	28,0	31,2	42,0
22SV08	11	20,30	3SV19	2,2	4,64	40,6	45,2	60,9
22SV09	11	20,30	3SV19	2,2	4,64	40,6	45,2	60,9
22SV10	11	20,30	3SV21	2,2	4,64	40,6	45,2	60,9
33SV1/1A	2,2	4,64	3SV03	0,37	1,35	9,3	10,6	13,9
33SV1	3	6,14	3SV04	0,37	1,35	12,3	13,6	18,4
33SV2/2A	4	7,63	3SV05	0,55	1,48	15,3	16,7	22,9
33SV2/1A	4	7,63	3SV06	0,55	1,48	15,3	16,7	22,9
33SV2	5,5	10,40	3SV07	0,75	1,70	20,8	22,5	31,2
33SV3/2A	5,5	10,40	3SV08	0,75	1,70	20,8	22,5	31,2
33SV3/1A	7,5	14,00	3SV09	1,1	2,39	28,0	30,4	42,0
33SV3	7,5	14,00	3SV10	1,1	2,39	28,0	30,4	42,0
33SV4/2A	7,5	14,00	3SV11	1,1	2,39	28,0	30,4	42,0
33SV4/1A	11	20,30	3SV12	1,1	2,39	40,6	43,0	60,9
33SV4	11	20,30	3SV13	1,5	3,17	40,6	43,8	60,9
33SV5/2A	11	20,30	3SV14	1,5	3,17	40,6	43,8	60,9
33SV5/1A	11	20,30	3SV16	1,5	3,17	40,6	43,8	60,9
33SV5	15	26,00	3SV19	2,2	4,64	52,0	56,6	78,0
33SV6/2A	15	26,00	3SV19	2,2	4,64	52,0	56,6	78,0
33SV6/1A	15	26,00	3SV19	2,2	4,64	52,0	56,6	78,0
33SV6	15	26,00	3SV21	2,2	4,64	52,0	56,6	78,0
33SV7/2A	15	26,00	3SV21	2,2	4,64	52,0	56,6	78,0

The current shown is the nominal current of the set.

gms_10-33sv_2p50-en_d_te

GS20, GS21, GS30/46-125SV SERIES BOOSTER SETS ELECTRICAL DATA TABLE AT 50 Hz

GS.../SV

SERVICE PUMP 3 X 400 V			JOCKEY PUMP 3 X 400 V			CURRENT ABSORBED BY SET 3 X 400V		
TYPE	Pn kW	In A	TYPE	Pn kW	In A	GS20 A	GS21 A	GS30 A
46SV1/1A	3	6,14	3SV03	0,37	1,35	12,3	13,6	18,4
46SV1	4	7,63	3SV04	0,37	1,35	15,3	16,6	22,9
46SV2/2A	5,5	10,40	3SV06	0,55	1,48	20,8	22,3	31,2
46SV2G	7,5	14,00	3SV08	0,75	1,70	28,0	29,7	42,0
46SV3/2A	11	20,30	3SV09	1,1	2,39	40,6	43,0	60,9
46SV3	11	20,30	3SV11	1,1	2,39	40,6	43,0	60,9
46SV4/2A	15	26,00	3SV13	1,5	3,17	52,0	55,2	78,0
46SV4	15	26,00	3SV14	1,5	3,17	52,0	55,2	78,0
46SV5/2A	18,5	33,20	3SV16	1,5	3,17	66,4	69,6	99,6
46SV5	18,5	33,20	3SV19	2,2	4,64	66,4	71,0	99,6
46SV6/2A	22	38,60	3SV21	2,2	4,64	77,2	81,8	115,8
46SV6	22	38,60	3SV23	2,2	4,64	77,2	81,8	115,8
66SV1/1A	4	7,63	3SV04	0,37	1,35	15,3	16,6	22,9
66SV1	5,5	10,40	3SV05	0,55	1,48	20,8	22,3	31,2
66SV2/2A	7,5	14,00	3SV07	0,75	1,70	28,0	29,7	42,0
66SV2/1A	11	20,30	3SV08	0,75	1,70	40,6	42,3	60,9
66SV2	11	20,30	3SV09	1,1	2,39	40,6	43,0	60,9
66SV3/2A	15	26,00	3SV11	1,1	2,39	52,0	54,4	78,0
66SV3/1A	15	26,00	3SV12	1,1	2,39	52,0	54,4	78,0
66SV3	18,5	33,20	3SV13	1,5	3,17	66,4	69,6	99,6
66SV4/2A	18,5	33,20	3SV14	1,5	3,17	66,4	69,6	99,6
66SV4/1A	22	38,60	3SV16	1,5	3,17	77,2	80,4	115,8
66SV4	22	38,60	3SV19	2,2	4,64	77,2	81,8	115,8
66SV5/2A	30	53,60	3SV19	2,2	4,64	107,2	111,8	160,8
66SV5/1A	30	53,60	3SV21	2,2	4,64	107,2	111,8	160,8
66SV5	30	53,60	3SV21	2,2	4,64	107,2	111,8	160,8
92SV1/1A	5,5	10,40	3SV04	0,37	1,35	20,8	22,2	31,2
92SV1	7,5	14,00	3SV05	0,55	1,48	28,0	29,5	42,0
92SV2/2A	11	20,30	3SV07	0,75	1,70	40,6	42,3	60,9
92SV2	15	26,00	3SV10	1,1	2,39	52,0	54,4	78,0
92SV3/2A	18,5	33,20	3SV12	1,1	2,39	66,4	68,8	99,6
92SV3	22	38,60	3SV13	1,5	3,17	77,2	80,4	115,8
92SV4/2A	30	53,60	3SV16	1,5	3,17	107,2	110,4	160,8
92SV4	30	53,60	3SV19	2,2	4,64	107,2	111,8	160,8
92SV5/2A	37	65,80	3SV21	2,2	4,64	131,6	136,2	197,4
125SV1	7,5	14,00	3SV04	0,37	1,35	28,0	29,4	42,0
125SV2	15	26,00	3SV08	0,75	1,70	52,0	53,7	78,0
125SV3	22	38,60	3SV11	1,1	2,39	77,2	79,6	115,8
125SV4	30	53,60	3SV16	1,5	3,17	107,2	110,4	160,8
125SV5	37	65,80	3SV19	2,2	4,64	131,6	136,2	197,4

The current shown is the nominal current of the set.

gms_46-92sv_2p50-en_c_te

Booster sets

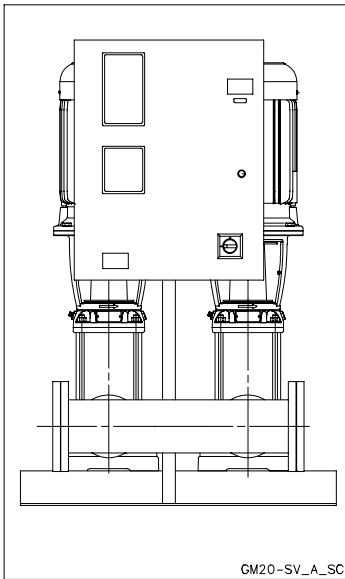
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Water network supply in condominiums, offices, hotels, shopping centres, factories.
- Water supply to agricultural water networks (e.g. irrigation).

GSD20 - GSY20 Series



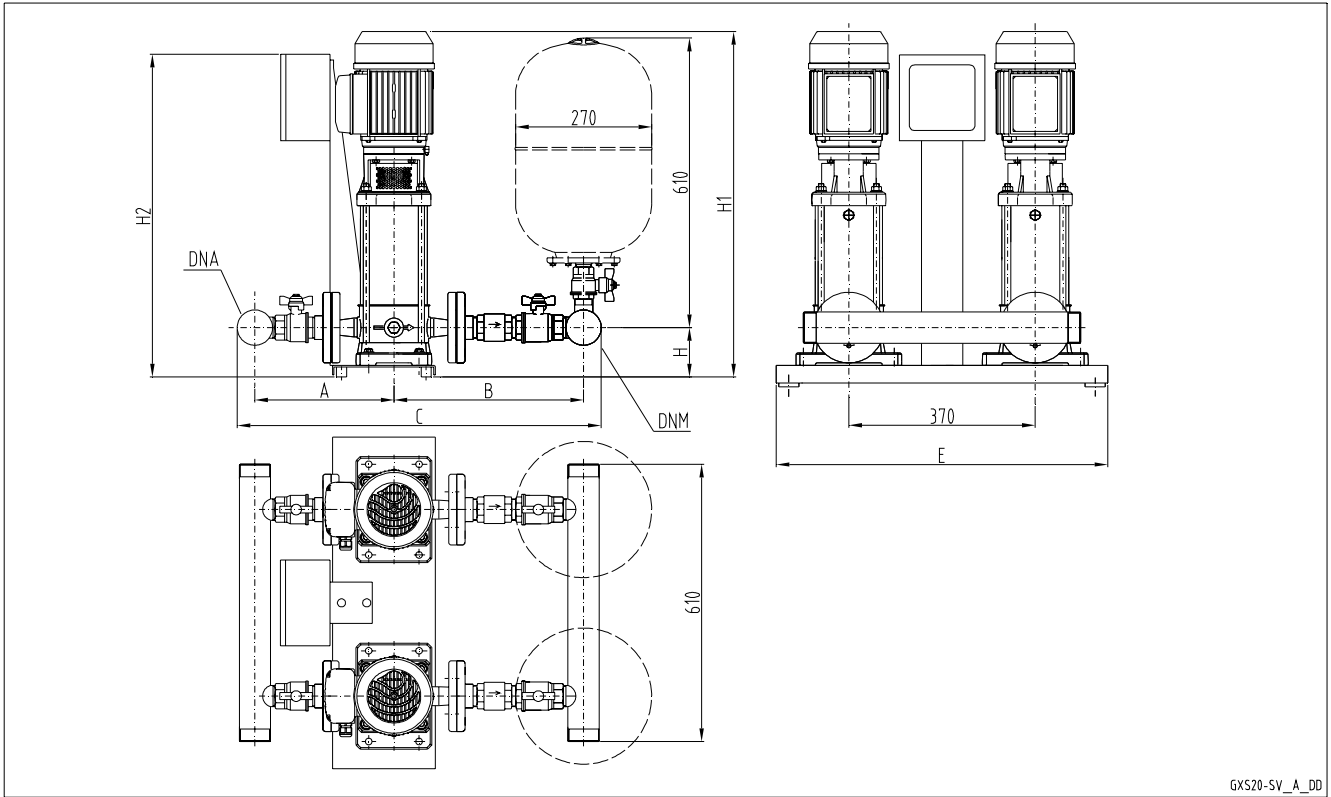
**GSD20
GSY20**

SPECIFICATIONS

- **Flow rate** up to 320 m³/h.
- **Head** up to 160 m.
- Electrical panel supply voltage: 3 x 400V ± 10%.
- Frequency 50 Hz.
- Voltage for controls outside panel: 24 Vac.
- Electrical panel protection class IP 55.
- Maximum service pump power: 2 x 37 kW.
- **Motor start-up:**
 - Direct for powers up to 22 kW inclusive for pump (GSD/).
 - Star/Delta for higher powers (GSY/ set).
 - Softstarter, available on request (GSSF/ set).
- **Electric pumps with vertical axis:**
 - SV series (motor protection class IP55).
- Maximum operating pressure: 16 bar.
- Maximum temperature of pumped liquid : +80°C.

**TWO-PUMP BOOSTER SETS, GSD20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



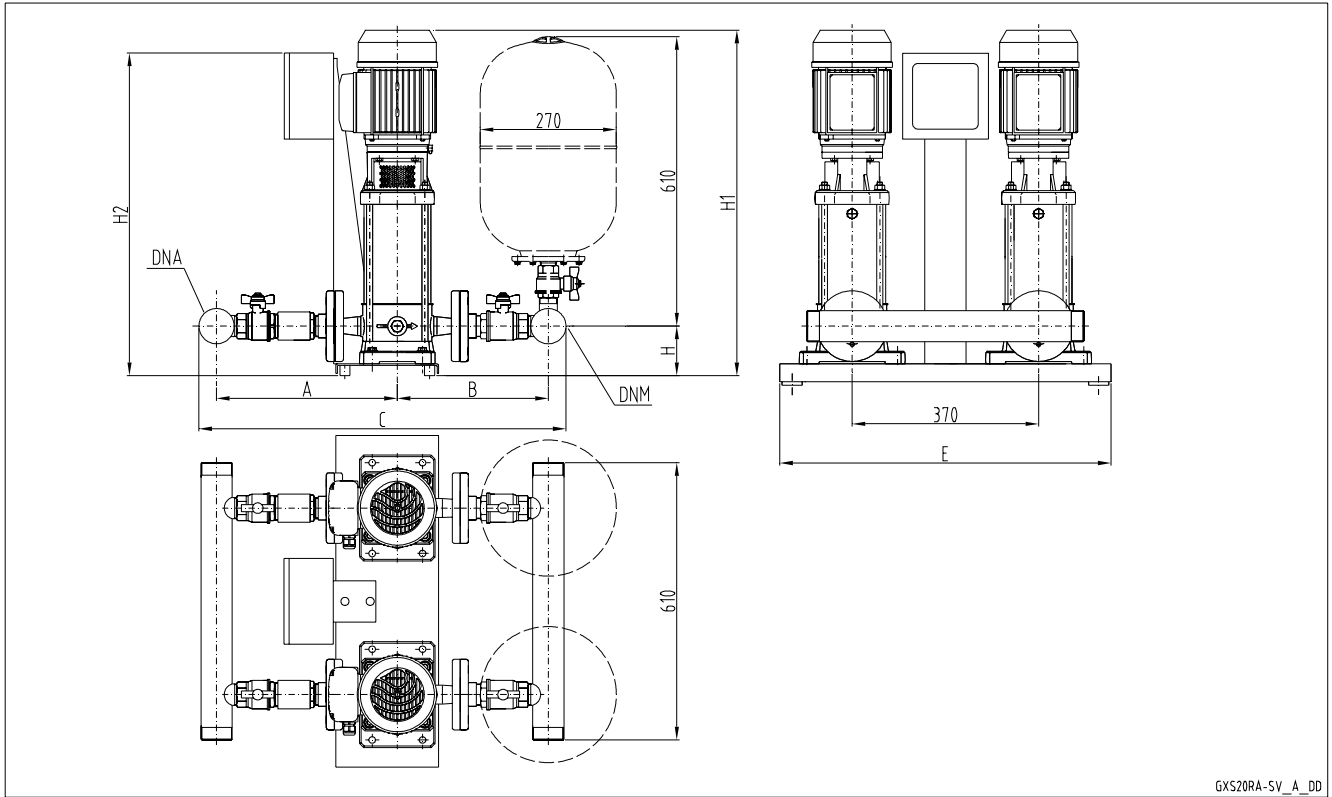
GXS20-SV_A_DD

GSD 20	DNA	DNM	A		B		C		E	H	H1	H2
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI				
10SV09F040T	R 2"1/2	R 2"1/2	297	356	362	497	735	929	682	114	954	640
10SV10F040T	R 2"1/2	R 2"1/2	297	356	362	497	735	929	682	114	986	640
10SV11F040T	R 2"1/2	R 2"1/2	297	356	362	497	735	929	682	114	1018	640

Dimensions in mm. Tolerance ± 10 mm.

gs20_10sv-new-small-en_b_td

**TWO-PUMP BOOSTER SETS, GSD20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GXS20RA-SV_A_DD

**GSD20
GSY20**

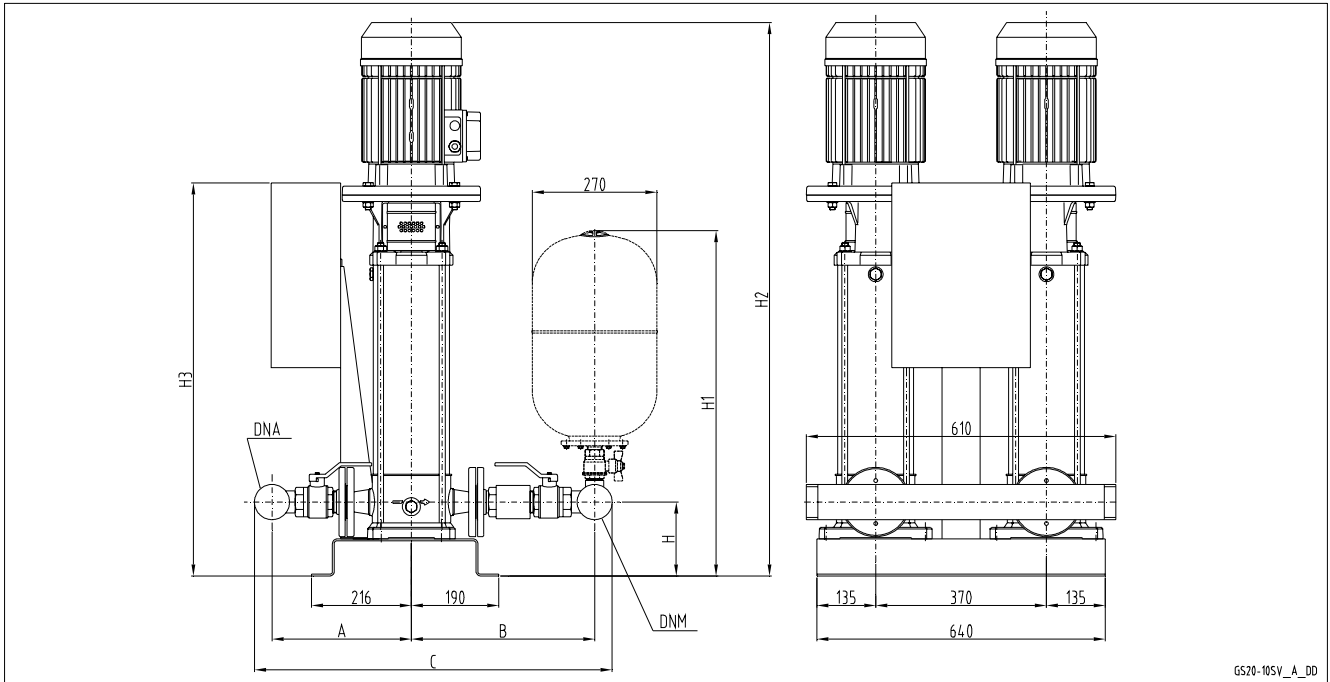
GSD 20RA	DNA	DNM	A		B		C		E	H	H1	H2
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI				
10SV09F040T	R 2"1/2	R 2"1/2	367	497	297	356	740	929	682	114	954	640
10SV10F040T	R 2"1/2	R 2"1/2	367	497	297	356	740	929	682	114	986	640
10SV11F040T	R 2"1/2	R 2"1/2	367	497	297	356	740	929	682	114	1018	640

Dimensions in mm. Tolerance ± 10 mm.

gs20ra_10sv-new-small-en_b_td

**TWO-PUMP BOOSTER SETS, GSD20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



GS20-10SV_A_DD

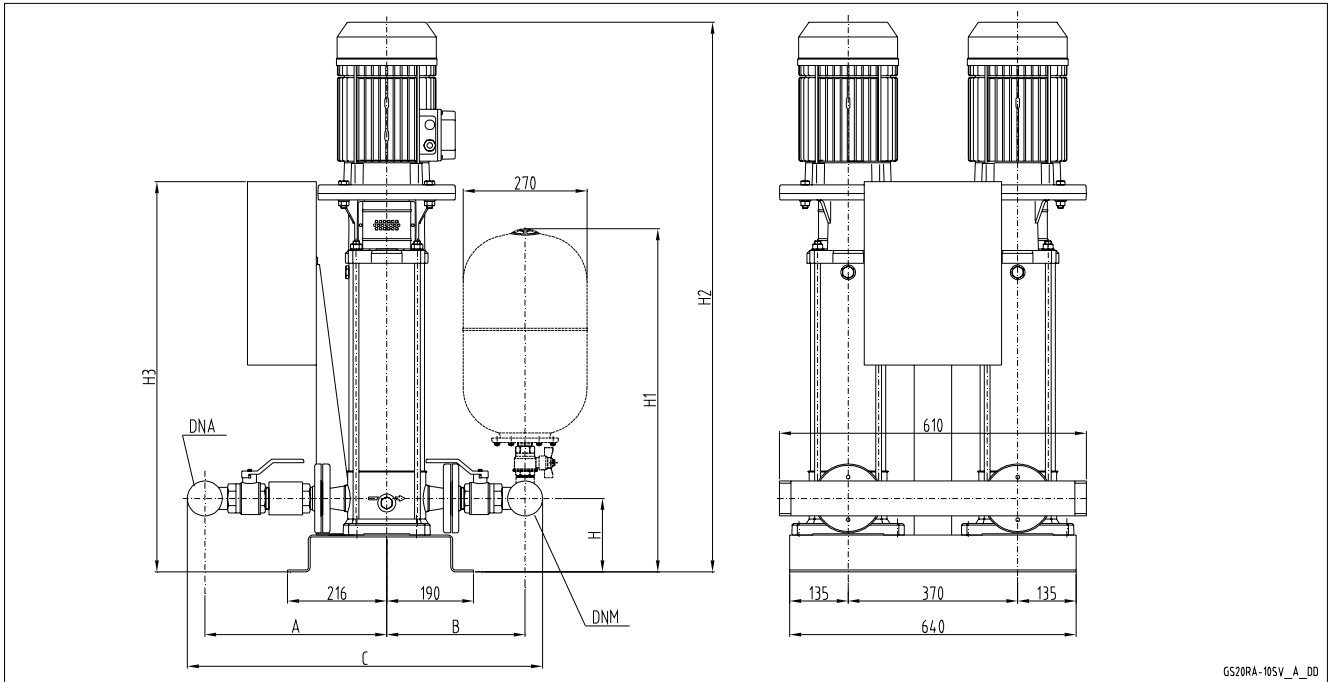
GSD 20	DNA	DNM	A		B		C		H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI				
10SV13F055T	R 2"1/2	R 2"1/2	297	356	362	497	735	929	160	748	1251	846

Dimensions in mm. Tolerance ± 10 mm.

gs20_10sv-new-en_b_td

Note: for versions with vibration damping feet increase height by 30 mm.

**TWO-PUMP BOOSTER SETS, GSD20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GSD20RA-10SV_A_DD

**GSD20
GSY20**

GSD 20 RA	DNA	DNM	A		B		C		H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI				
10SV13F055T	R 2"1/2	R 2"1/2	367	497	297	356	740	929	160	748	1251	846

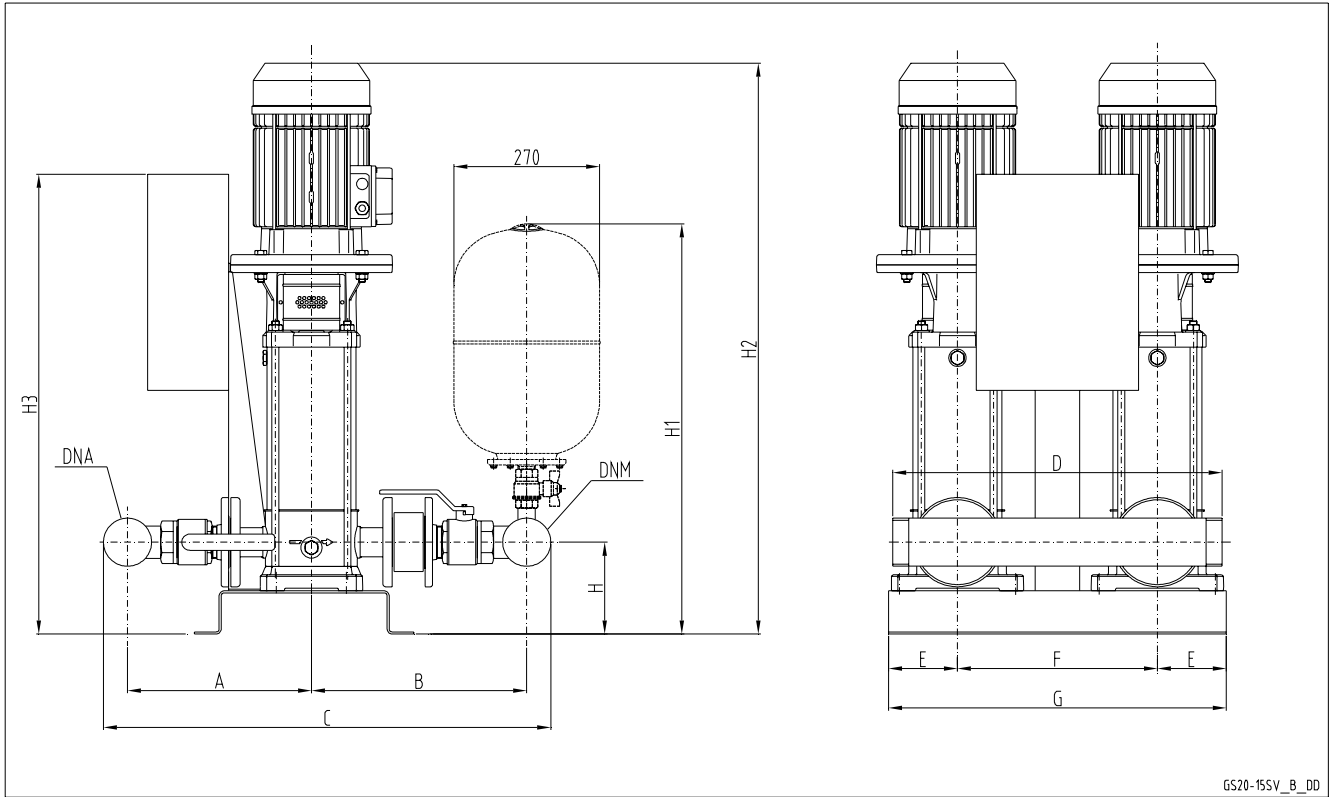
Dimensions in mm. Tolerance ± 10 mm.

gs20ra_10sv-new-en_b_td

Note: for versions with vibration damping feet increase height by 30 mm.

TWO-PUMP BOOSTER SETS, GSD20 SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON DISCHARGE SIDE

**GSD20
GSY20**



GS20-15SV_B_DD

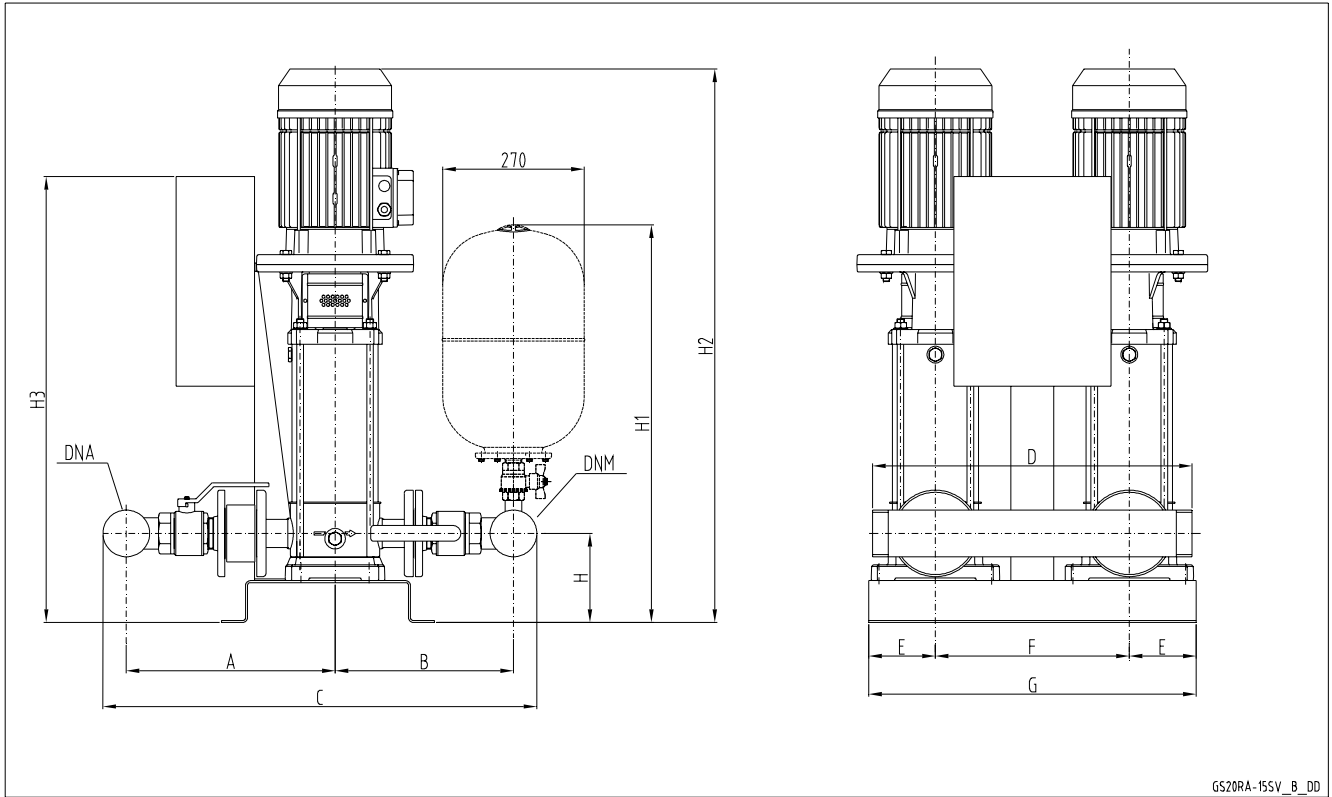
GSD 20	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	742	689
15SV02F022T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	787	689
15SV03F030T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	845	689
15SV04F040T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	914	689
15SV05F040T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	962	689
15SV06F055T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1133	846
15SV07F055T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1181	846
15SV08F075T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1221	846
15SV09F075T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1269	846
15SV10F110T	R 3"	R 3"	342	382	399	437	829	907	680	260	440	960	200	795	1438	876
22SV01F011T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	742	689
22SV02F022T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	787	689
22SV03F030T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	845	689
22SV04F040T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	914	689
22SV05F055T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1085	846
22SV06F075T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1125	846
22SV07F075T	R 3"	R 3"	342	382	399	437	829	907	610	135	370	640	170	765	1173	846
22SV08F110T	R 3"	R 3"	342	382	399	437	829	907	680	260	440	960	200	795	1342	876
22SV09F110T	R 3"	R 3"	342	382	399	437	829	907	680	260	440	960	200	795	1390	876
22SV10F110T	R 3"	R 3"	342	382	399	437	829	907	680	260	440	960	200	795	1438	876

Dimensions in mm. Tolerance ± 10 mm.

gs20_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

TWO-PUMP BOOSTER SETS, GSD20 RA SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON SUCTION SIDE



**GSD20
GSY20**

GS20RA-15SV_B_DD

GSD 20 RA	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	742	689
15SV02F022T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	787	689
15SV03F030T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	845	689
15SV04F040T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	914	689
15SV05F040T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	962	689
15SV06F055T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1133	846
15SV07F055T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1181	846
15SV08F075T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1221	846
15SV09F075T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1269	846
15SV10F110T	R 3"	R 3"	399	437	342	380	829	905	680	260	440	960	200	795	1438	876
22SV01F011T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	742	689
22SV02F022T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	787	689
22SV03F030T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	845	689
22SV04F040T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	914	689
22SV05F055T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1085	846
22SV06F075T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1125	846
22SV07F075T	R 3"	R 3"	399	437	342	380	829	905	610	135	370	640	170	765	1173	846
22SV08F110T	R 3"	R 3"	399	437	342	380	829	905	680	260	440	960	200	795	1342	876
22SV09F110T	R 3"	R 3"	399	437	342	380	829	905	680	260	440	960	200	795	1390	876
22SV10F110T	R 3"	R 3"	399	437	342	380	829	905	680	260	440	960	200	795	1438	876

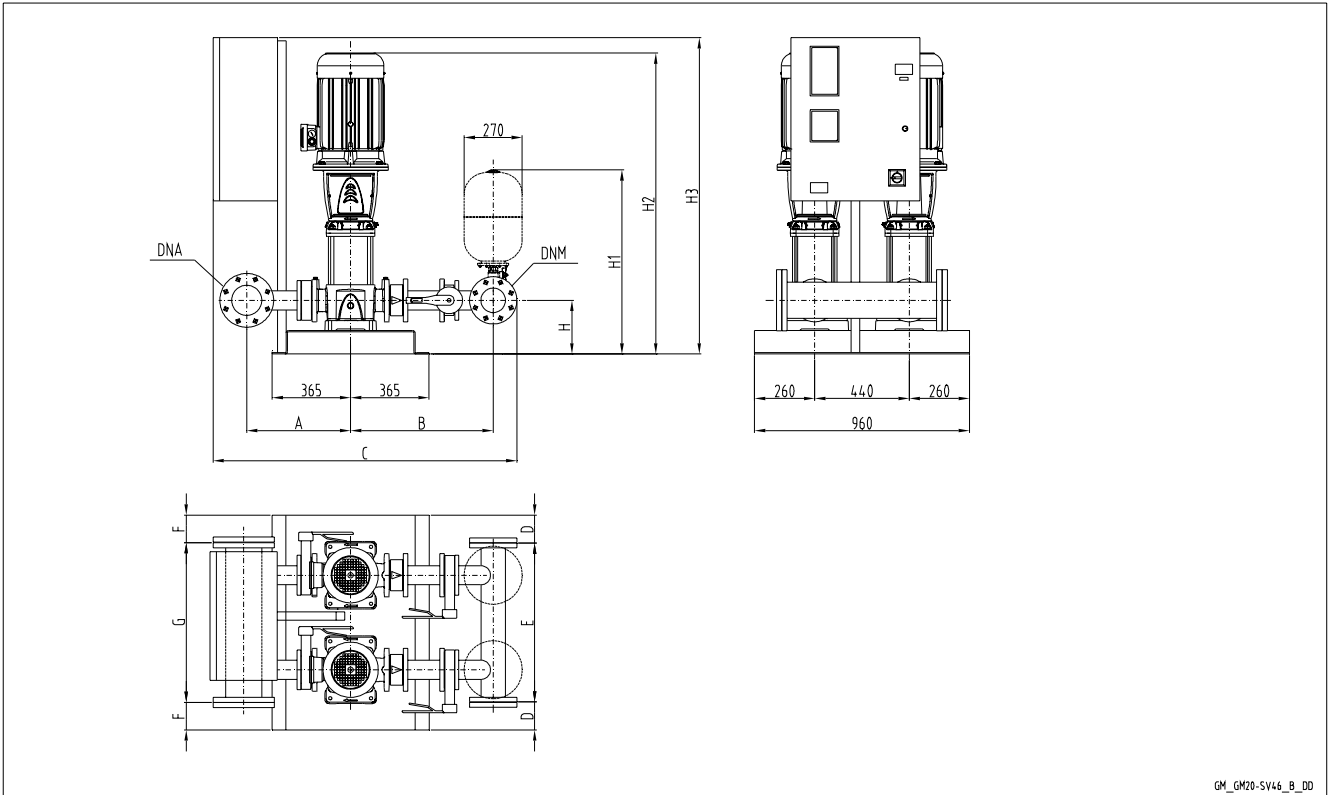
Dimensions in mm. Tolerance ± 10 mm.

gs20ra_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

**TWO-PUMP BOOSTER SETS, GSD20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



GM_GM20-SV46_B_DD

**TWO-PUMP BOOSTER SETS, GSD20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

GSD20	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	100	80	448	701	1359	90	780	90	780	215	810	897	1017
33SV1G030T	100	80	448	701	1359	90	780	90	780	215	810	897	1017
33SV2/2AG040T	100	80	448	701	1359	90	780	90	780	215	810	993	1017
33SV2/1AG040T	100	80	448	701	1359	90	780	90	780	215	810	993	1017
33SV2G055T	100	80	448	701	1359	90	780	90	780	215	810	1069	1097
33SV3/2AG055T	100	80	448	701	1359	90	780	90	780	215	810	1144	1097
33SV3/1AG075T	100	80	448	701	1359	90	780	90	780	215	810	1136	1097
33SV3G075T	100	80	448	701	1359	90	780	90	780	215	810	1136	1097
33SV4/2AG075T	100	80	448	701	1359	90	780	90	780	215	810	1211	1097
33SV4/1AG110T	100	80	448	701	1401	90	780	90	780	215	810	1307	1571
33SV4G110T	100	80	448	701	1401	90	780	90	780	215	810	1307	1571
33SV5/2AG110T	100	80	448	701	1401	90	780	90	780	215	810	1382	1571
33SV5/1AG110T	100	80	448	701	1401	90	780	90	780	215	810	1382	1571
33SV5G150T	100	80	448	701	1401	90	780	90	780	215	810	1448	1571
33SV6/2AG150T	100	80	448	701	1401	90	780	90	780	215	810	1523	1571
33SV6/1AG150T	100	80	448	701	1401	90	780	90	780	215	810	1523	1571
33SV6G150T	100	80	448	701	1401	90	780	90	780	215	810	1523	1571
33SV7/2AG150T	100	80	448	701	1401	90	780	90	780	215	810	1598	1571
46SV1/1AG030T	125	100	484	739	1457	90	780	90	780	250	857	937	1017
46SV1G040T	125	100	484	739	1457	90	780	90	780	250	857	958	1017
46SV2/2AG055T	125	100	484	739	1457	90	780	90	780	250	857	1109	1097
46SV2G075T	125	100	484	739	1457	90	780	90	780	250	857	1101	1097
46SV3/2AG110T	125	100	484	739	1457	90	780	90	780	250	857	1272	1571
46SV3G110T	125	100	484	739	1457	90	780	90	780	250	857	1272	1571
46SV4/2AG150T	125	100	484	739	1457	90	780	90	780	250	857	1413	1571
46SV4G150T	125	100	484	739	1457	90	780	90	780	250	857	1413	1571
46SV5/2AG185T	125	100	484	739	1457	90	780	90	780	250	857	1488	1571
46SV5G185T	125	100	484	739	1457	90	780	90	780	250	857	1488	1571
46SV6/2AG220T	125	100	484	739	1499	90	780	90	780	250	857	1563	1571
46SV6G220T	125	100	484	739	1499	90	780	90	780	250	857	1563	1571
66SV1/1AG040T	150	125	504	780	1551	90	780	70	820	250	870	983	1017
66SV1G055T	150	125	504	780	1551	90	780	70	820	250	870	1059	1097
66SV2/2AG075T	150	125	504	780	1551	90	780	70	820	250	870	1141	1097
66SV2/1AG110T	150	125	504	780	1551	90	780	70	820	250	870	1237	1571
66SV2G110T	150	125	504	780	1551	90	780	70	820	250	870	1237	1571
66SV3/2AG150T	150	125	504	780	1551	90	780	70	820	250	870	1393	1571
66SV3/1AG150T	150	125	504	780	1551	90	780	70	820	250	870	1393	1571
66SV3G185T	150	125	504	780	1551	90	780	70	820	250	870	1393	1571
66SV4/2AG185T	150	125	504	780	1551	90	780	70	820	250	870	1483	1571
66SV4/1AG220T	150	125	504	780	1555	90	780	70	820	250	870	1483	1571
66SV4G220T	150	125	504	780	1555	90	780	70	820	250	870	1483	1571
92SV1/1AG055T	200	150	529	794	1635	70	820	70	820	250	884	1059	1097
92SV1G075T	200	150	529	794	1635	70	820	70	820	250	884	1051	1097
92SV2/2AG110T	200	150	529	794	1635	70	820	70	820	250	884	1237	1571
92SV2G150T	200	150	529	794	1635	70	820	70	820	250	884	1303	1571
92SV3/2AG185T	200	150	529	794	1635	70	820	70	820	250	884	1393	1571
92SV3G220T	200	150	529	794	1635	70	820	70	820	250	884	1393	1571

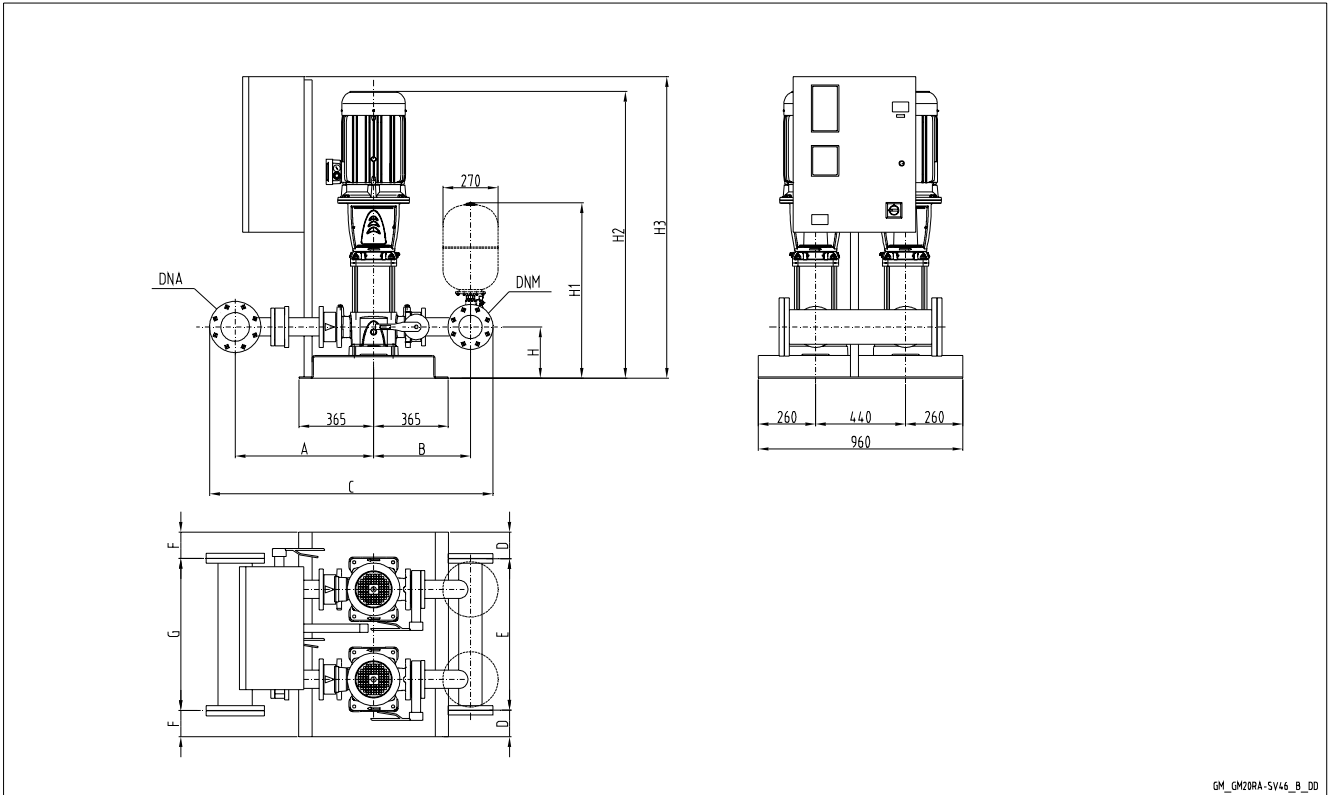
Note: for versions with vibration damping feet increase height by 50 mm.

gs20_sv46-en_c_td16

**GSD20
GSY20**

**TWO-PUMP BOOSTER SETS, GSD20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**

**GSD20
GSY20**



GM_GSD20RA-SY46_B_00

TWO-PUMP BOOSTER SETS, GSD20 RA SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON SUCTION SIDE

GSD20RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	100	80	713	436	1359	90	780	90	780	215	810	897	1017
33SV1G030T	100	80	713	436	1359	90	780	90	780	215	810	897	1017
33SV2/2AG040T	100	80	713	436	1359	90	780	90	780	215	810	993	1017
33SV2/1AG040T	100	80	713	436	1359	90	780	90	780	215	810	993	1017
33SV2G055T	100	80	713	436	1359	90	780	90	780	215	810	1069	1097
33SV3/2AG055T	100	80	713	436	1359	90	780	90	780	215	810	1144	1097
33SV3/1AG075T	100	80	713	436	1359	90	780	90	780	215	810	1136	1097
33SV3G075T	100	80	713	436	1359	90	780	90	780	215	810	1136	1097
33SV4/2AG075T	100	80	713	436	1359	90	780	90	780	215	810	1211	1097
33SV4/1AG110T	100	80	713	436	1359	90	780	90	780	215	810	1307	1571
33SV4G110T	100	80	713	436	1359	90	780	90	780	215	810	1307	1571
33SV5/2AG110T	100	80	713	436	1359	90	780	90	780	215	810	1382	1571
33SV5/1AG110T	100	80	713	436	1359	90	780	90	780	215	810	1382	1571
33SV5G150T	100	80	713	436	1359	90	780	90	780	215	810	1448	1571
33SV6/2AG150T	100	80	713	436	1359	90	780	90	780	215	810	1523	1571
33SV6/1AG150T	100	80	713	436	1359	90	780	90	780	215	810	1523	1571
33SV6G150T	100	80	713	436	1359	90	780	90	780	215	810	1523	1571
33SV7/2AG150T	100	80	713	436	1359	90	780	90	780	215	810	1598	1571
46SV1/1AG030T	125	100	752	471	1457	90	780	90	780	250	857	937	1017
46SV1G040T	125	100	752	471	1457	90	780	90	780	250	857	958	1017
46SV2/2AG055T	125	100	752	471	1457	90	780	90	780	250	857	1109	1097
46SV2G075T	125	100	752	471	1457	90	780	90	780	250	857	1101	1097
46SV3/2AG110T	125	100	752	471	1457	90	780	90	780	250	857	1272	1571
46SV3G110T	125	100	752	471	1457	90	780	90	780	250	857	1272	1571
46SV4/2AG150T	125	100	752	471	1457	90	780	90	780	250	857	1413	1571
46SV4G150T	125	100	752	471	1457	90	780	90	780	250	857	1413	1571
46SV5/2AG185T	125	100	752	471	1457	90	780	90	780	250	857	1488	1571
46SV5G185T	125	100	752	471	1457	90	780	90	780	250	857	1488	1571
46SV6/2AG220T	125	100	752	471	1457	90	780	90	780	250	857	1563	1571
46SV6G220T	125	100	752	471	1457	90	780	90	780	250	857	1563	1571
66SV1/1AG040T	150	125	794	490	1551	90	780	70	820	250	870	983	1017
66SV1G055T	150	125	794	490	1551	90	780	70	820	250	870	1059	1097
66SV2/2AG075T	150	125	794	490	1551	90	780	70	820	250	870	1141	1097
66SV2/1AG110T	150	125	794	490	1551	90	780	70	820	250	870	1237	1571
66SV2G110T	150	125	794	490	1551	90	780	70	820	250	870	1237	1571
66SV3/2AG150T	150	125	794	490	1551	90	780	70	820	250	870	1393	1571
66SV3/1AG150T	150	125	794	490	1551	90	780	70	820	250	870	1393	1571
66SV3G185T	150	125	794	490	1551	90	780	70	820	250	870	1393	1571
66SV4/2AG185T	150	125	794	490	1551	90	780	70	820	250	870	1483	1571
66SV4/1AG220T	150	125	794	490	1551	90	780	70	820	250	870	1483	1571
66SV4G220T	150	125	794	490	1551	90	780	70	820	250	870	1483	1571
92SV1/1AG055T	200	150	819	504	1635	70	820	70	820	250	884	1059	1097
92SV1G075T	200	150	819	504	1635	70	820	70	820	250	884	1051	1097
92SV2/2AG110T	200	150	819	504	1635	70	820	70	820	250	884	1237	1571
92SV2G150T	200	150	819	504	1635	70	820	70	820	250	884	1303	1571
92SV3/2AG185T	200	150	819	504	1635	70	820	70	820	250	884	1393	1571
92SV3G220T	200	150	819	504	1635	70	820	70	820	250	884	1393	1571

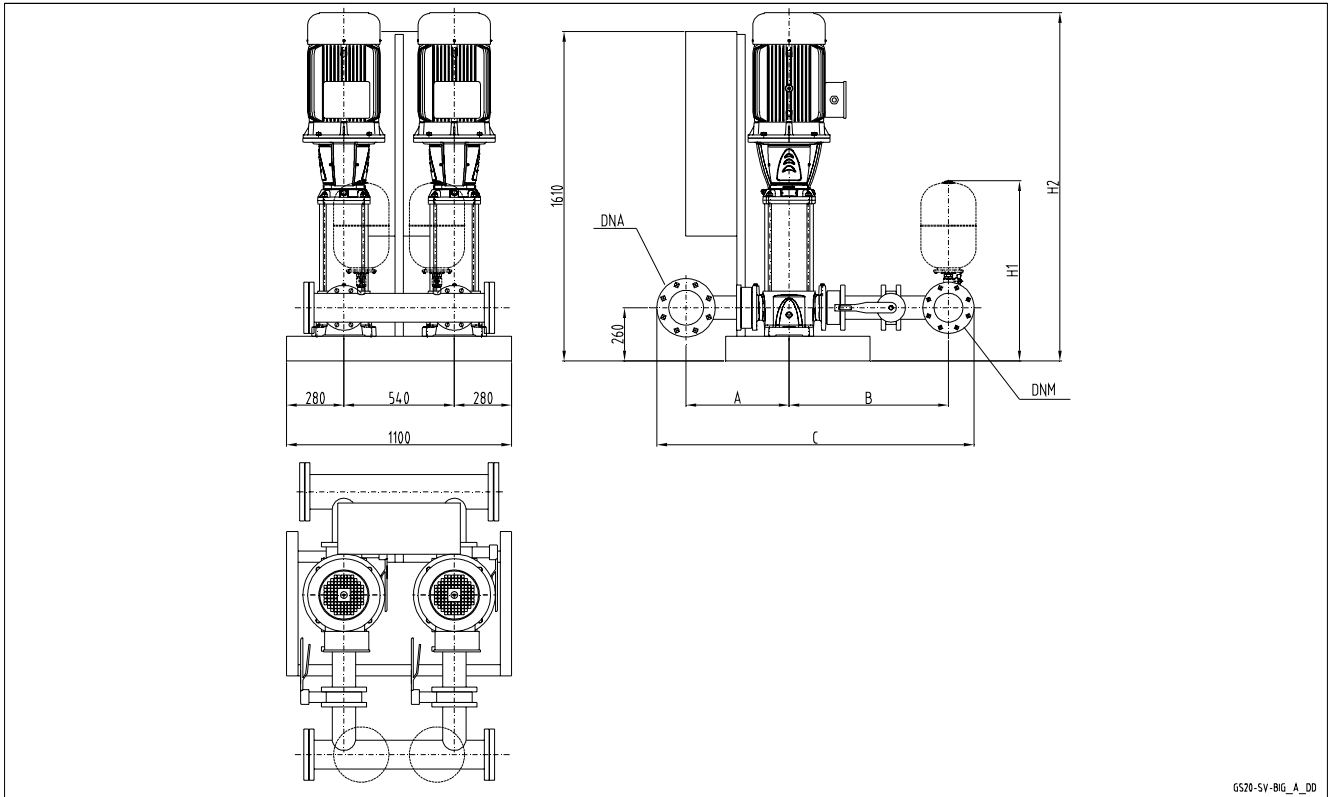
Note: for versions with vibration damping feet increase height by 50 mm.

gs20ra_sv46-en_c_td16

**GSD20
GSY20**

**TWO-PUMP BOOSTER SETS, GSY20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



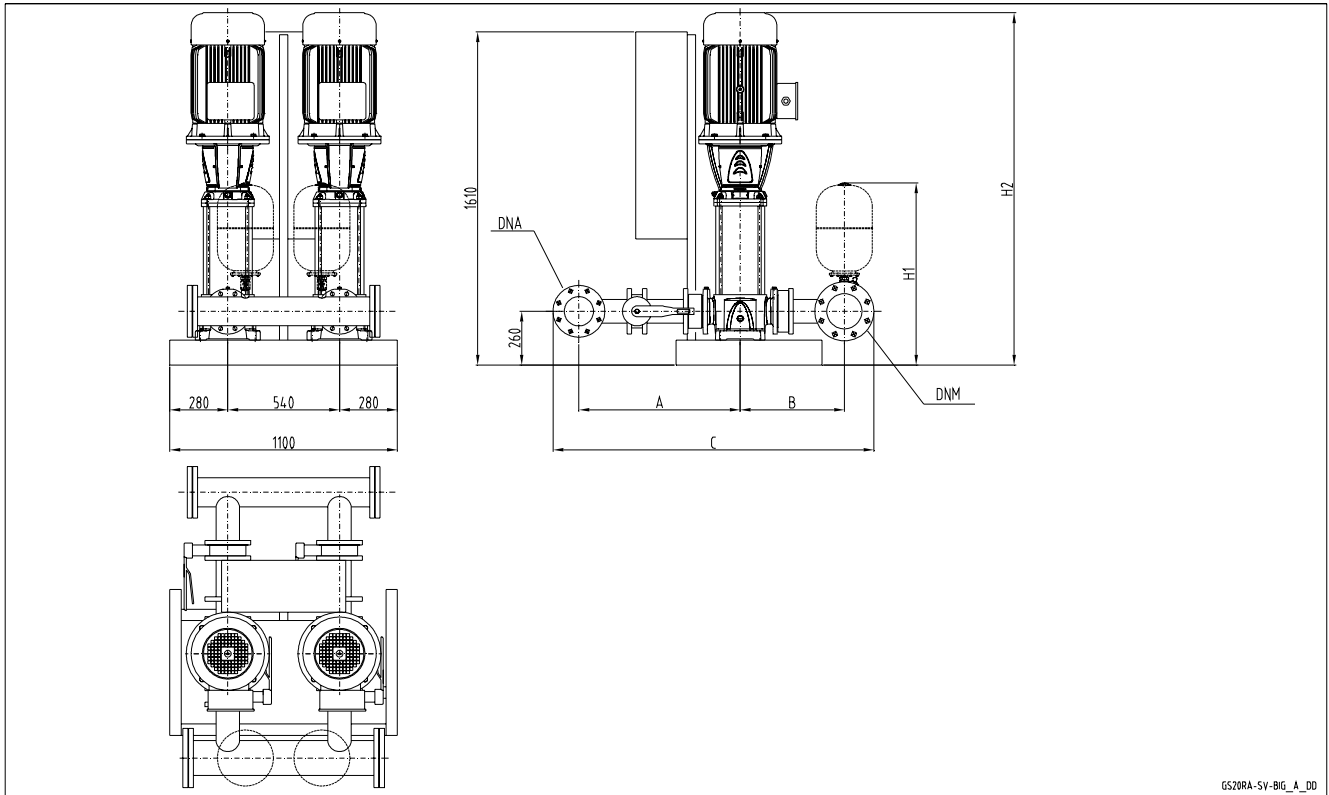
GS20-SV-BIG_A_DD

GSY20	DNA	DNM	A	B	C	H1	H2
66SV5/2AG300T	150	125	504	780	1552	880	1766
66SV5/1AG300T	150	125	504	780	1552	880	1766
66SV5G300T	150	125	504	780	1552	880	1766
92SV4/2AG300T	200	150	529	794	1635	894	1676
92SV4G300T	200	150	529	794	1635	894	1676
92SV5/2AG370T	200	150	529	794	1635	894	1766

Note: for versions with vibration damping feet increase height by 50 mm.

gs20_sv-big-en_c_td

**TWO-PUMP BOOSTER SETS, GSY20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GSY20
GSY20

GS20RA-SV-BIG_A_DD

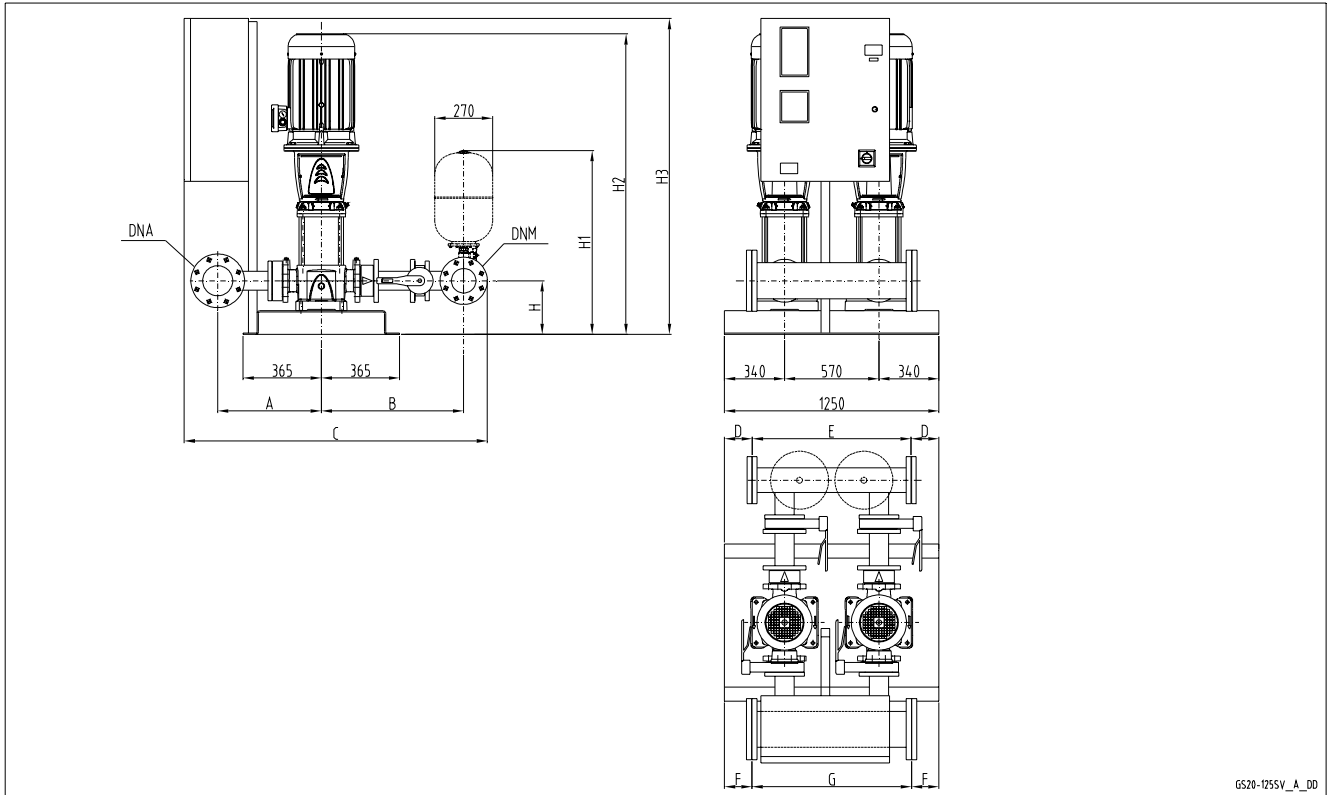
GSY20RA	DNA	DNM	A	B	C	H1	H2
66SV5/2AG300T	150	125	794	490	1552	880	1766
66SV5/1AG300T	150	125	794	490	1552	880	1766
66SV5G300T	150	125	794	490	1552	880	1766
92SV4/2AG300T	200	150	819	504	1635	894	1676
92SV4G300T	200	150	819	504	1635	894	1676
92SV5/2AG370T	200	150	819	504	1635	894	1766

Note: for versions with vibration damping feet increase height by 50 mm.

gs20ra_sv-big-en_c_td

**TWO-PUMP BOOSTER SETS, GSD20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



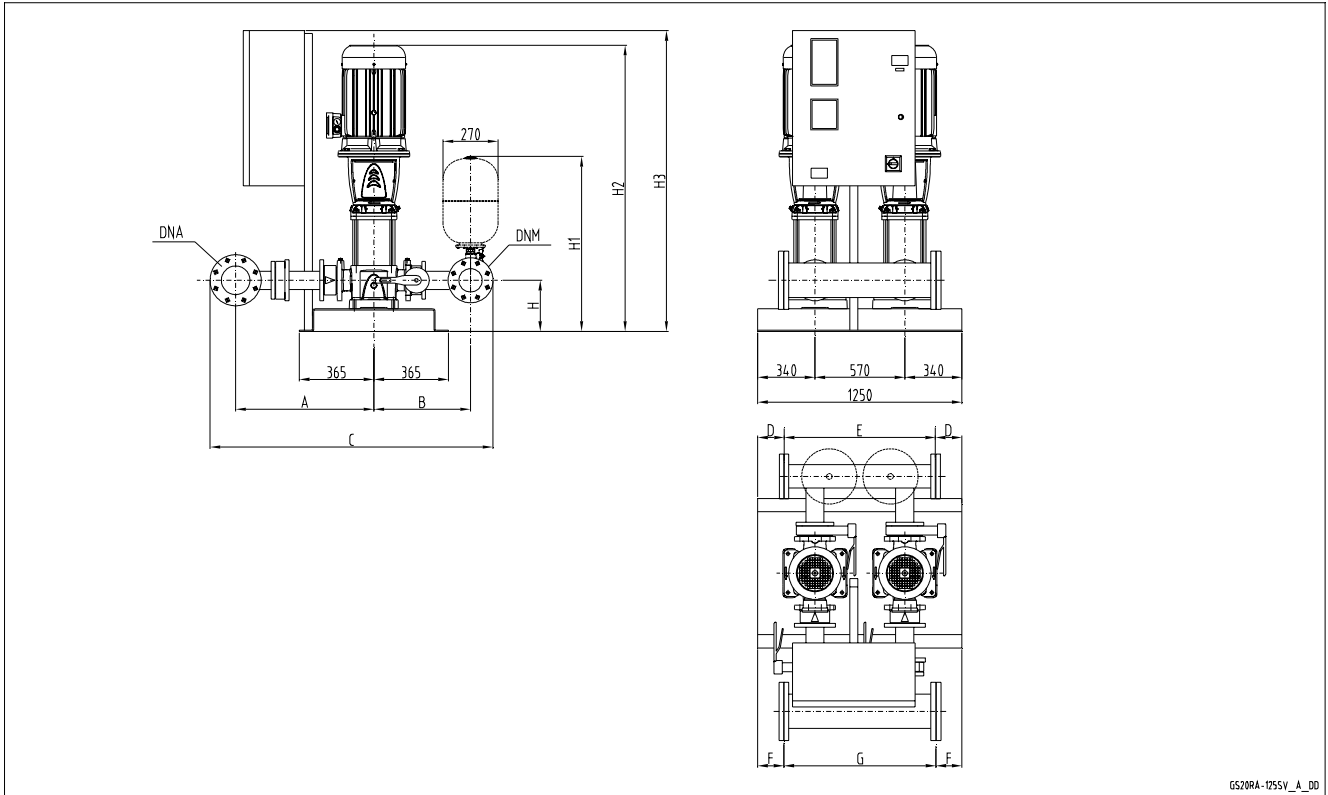
GSD20-125SV_A_DD

GSD20	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	200	200	591	927	1857	150	950	150	950	280	940	1180	1098
125SV2G150T	200	200	591	927	1857	150	950	150	950	280	940	1492	1572
125SV3G220T	200	200	591	927	1857	150	950	150	950	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs20_125sv-en_a_td

**TWO-PUMP BOOSTER SETS, GSD20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



**GSD20
GSY20**

GSD20RA-125SV_A_DD

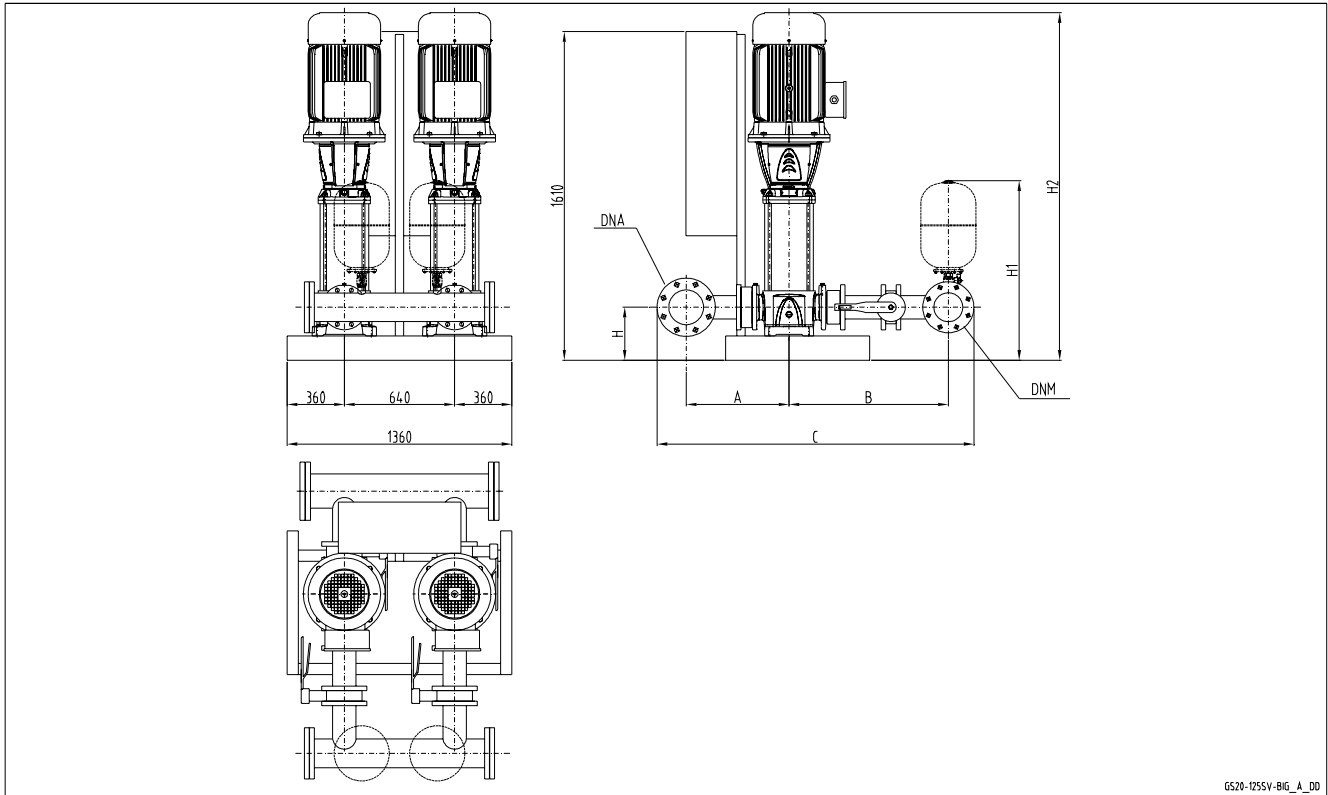
GSD20RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	200	200	927	591	1857	150	950	150	950	280	940	1180	1098
125SV2G150T	200	200	927	591	1857	150	950	150	950	280	940	1492	1572
125SV3G220T	200	200	927	591	1857	150	950	150	950	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs20ra_125sv-en_a_td

**TWO-PUMP BOOSTER SETS, GSY20 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

**GSD20
GSY20**



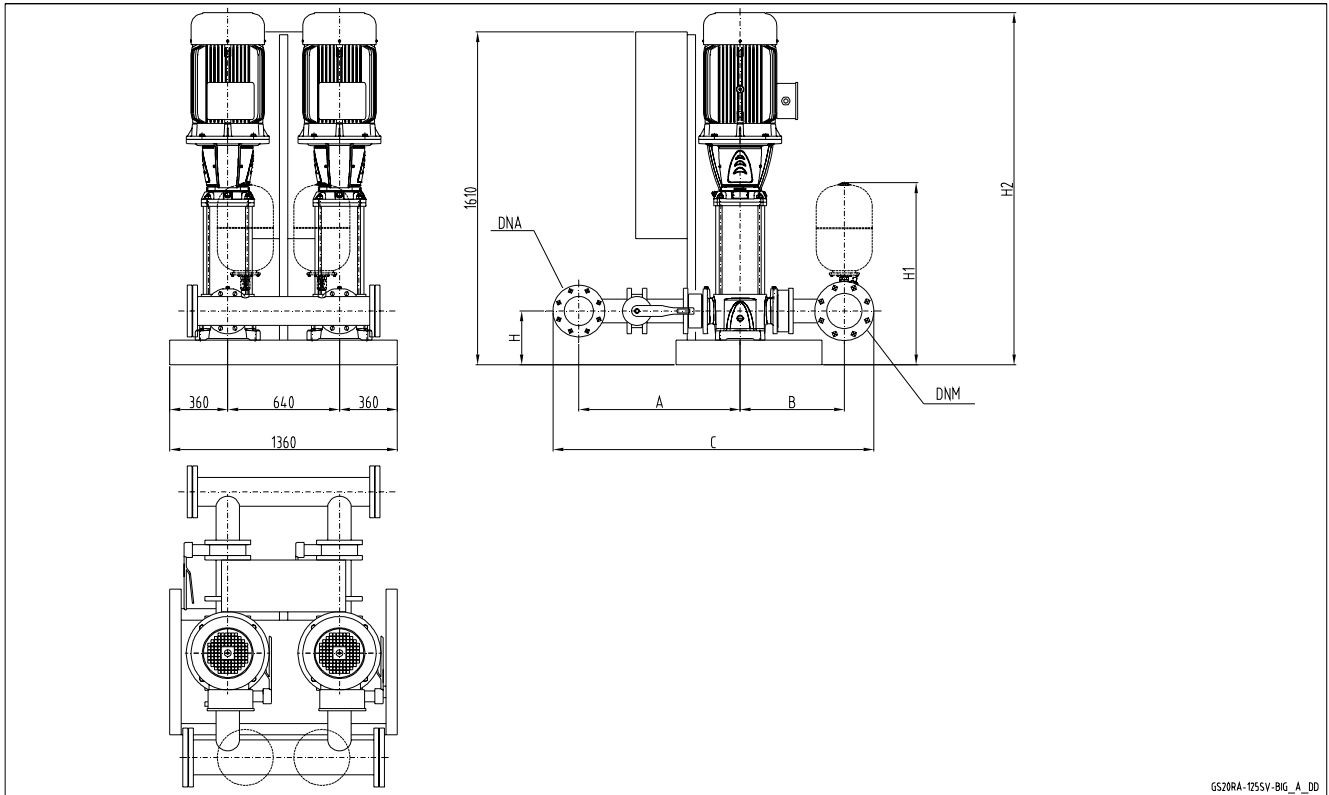
GS20-125SV-BIG_A_DD

GSY20	DNA	DNM	A	B	C	H	H1	H2
125SV4G300T	200	200	591	927	1857	300	960	1975
125SV5G370T	200	200	591	927	1857	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

gs20_125sv-big-en_a_td

**TWO-PUMP BOOSTER SETS, GSY20 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GSY20
GSY20

GSY20RA	DN10	DN20	A	B	C	H	H1	H2
125SV4G300T	200	200	927	591	1857	300	960	1975
125SV5G370T	200	200	927	591	1857	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

gs20ra_125sv-big-en_a_td

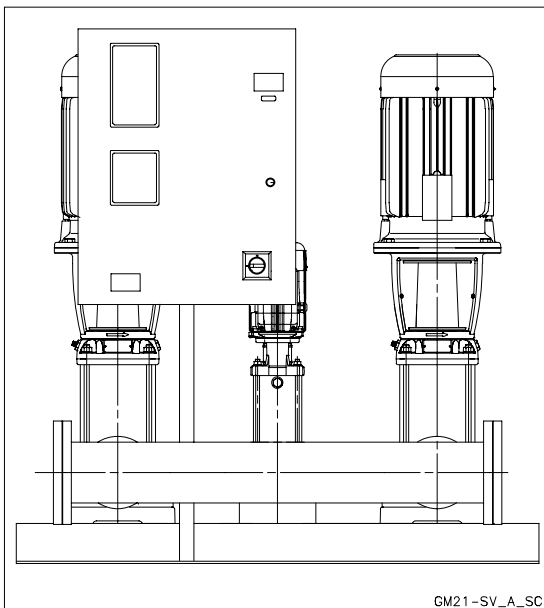
Booster sets

MARKET SECTORS CIVIL, INDUSTRIAL

APPLICATIONS

- Water network supply in condominiums, offices, hotels, shopping centres, factories.
- Water supply to agricultural water networks (e.g. irrigation).

GSD21 - GSY21 Series



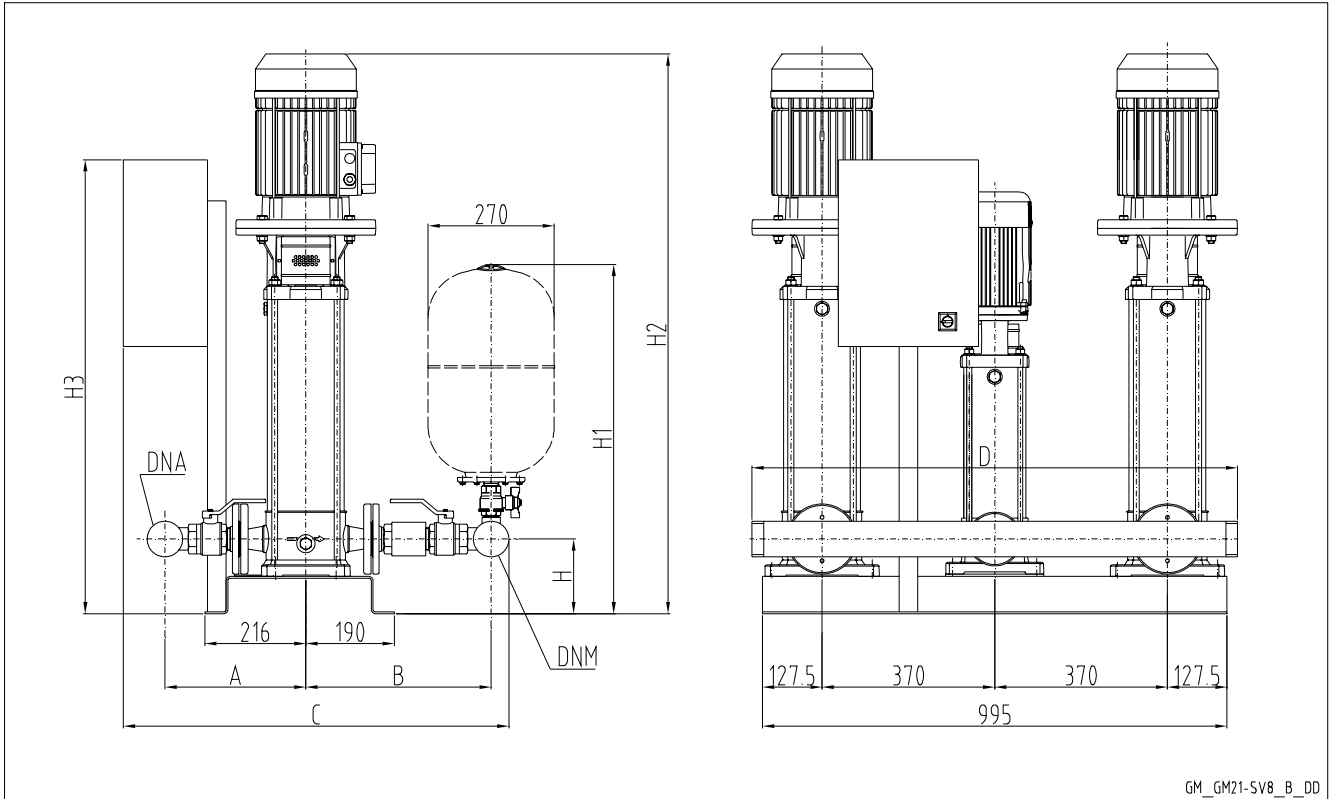
**GSD21
GSY21**

SPECIFICATIONS

- **Flow rate** up to 320 m³/h.
- **Head** up to 160 m.
- Electrical panel supply voltage:
3 x 400V ± 10%.
- Frequency 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Electrical panel protection class IP 55.
- Maximum service pump power:
2 x 37 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GSD/).
 - Star/Delta for higher powers (GSY/ set).
 - Softstarter, available on request (GSSF/ set).
- **Electric pumps with vertical axis:**
 - SV series (motor protection class IP55).
- **Electric jockey pumps with vertical axis:**
 - SV series (motor protection class IP55).
- Maximum operating pressure:
16 bar.
- Maximum temperature of pumped liquid : +80°C.

**TWO-PUMP BOOSTER SETS, GSD21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**

**GSD21
GSY21**



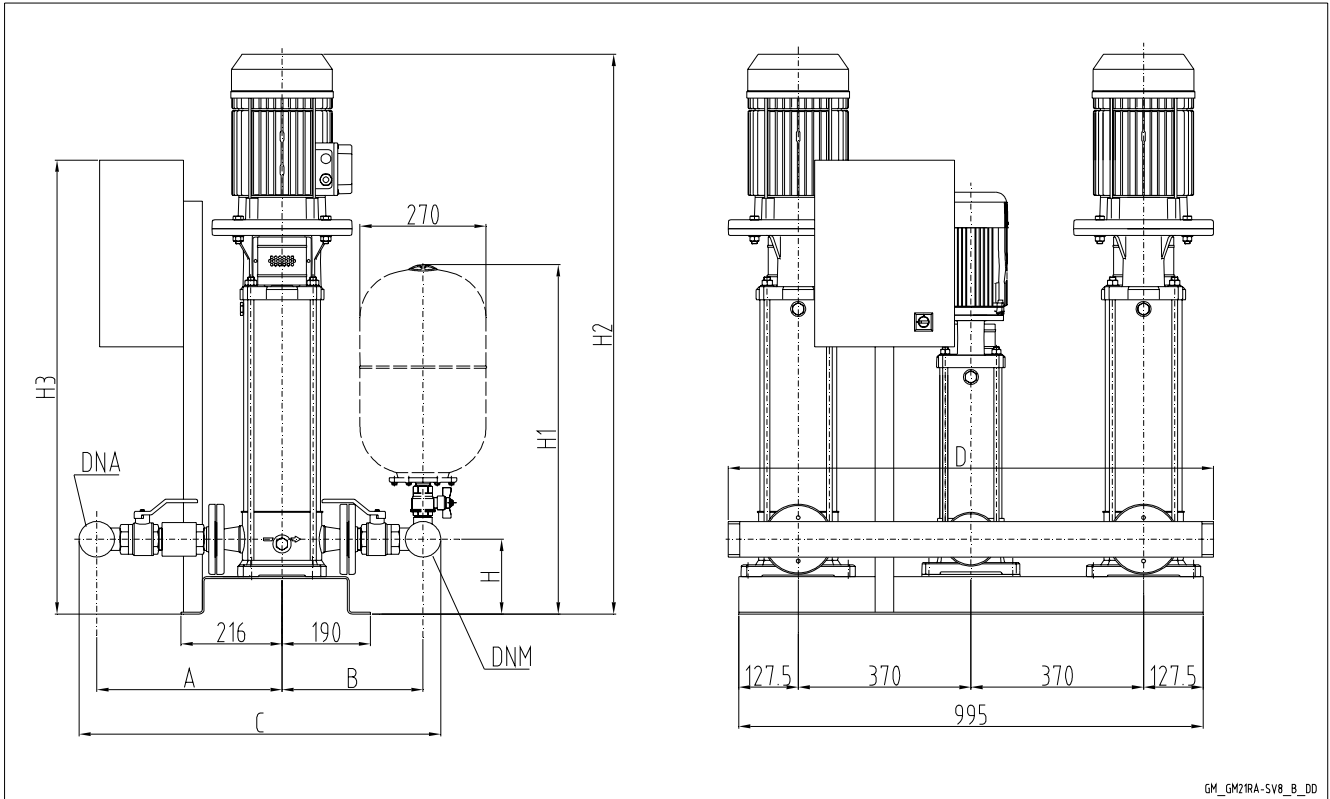
GM_GM21-SV8_B_DD

GSD 21	DNA	DNM	A		B		C		D	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI					
10SV01F007T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	700	973
10SV02F007T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	700	973
10SV03F011T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	732	973
10SV04F015T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	774	973
10SV05F022T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	841	973
10SV06F022T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	873	973
10SV07F030T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	915	973
10SV08F030T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	947	973
10SV09F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1000	973
10SV10F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1032	973
10SV11F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1064	973
10SV13F055T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1251	973

Dimensions in mm. Tolerance ± 10 mm.

gs21_10sv-new-en_c_td

**TWO-PUMP BOOSTER SETS, GSD21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**



GM_GM21RA-SV8_B_DD

**GSD21
GSY21**

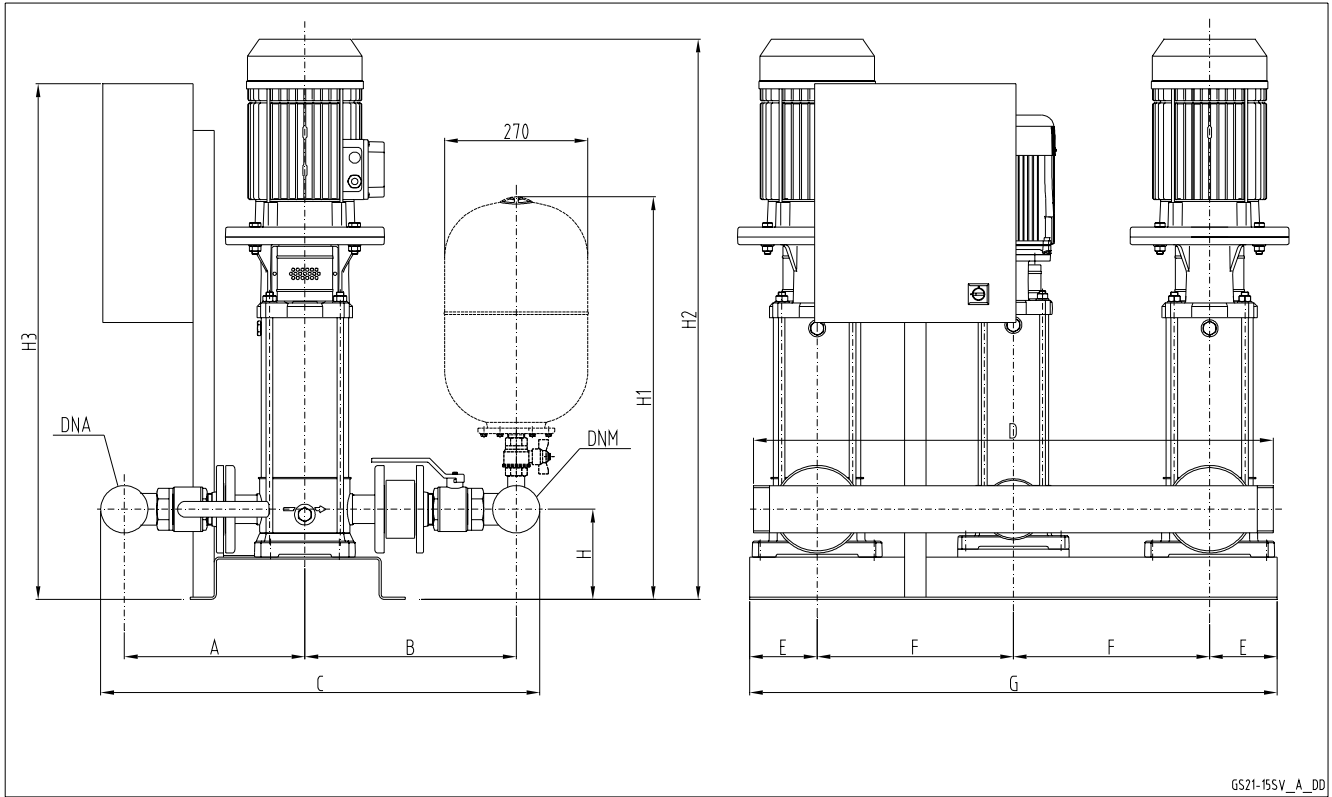
GSD 21RA	DNA	DNM	A		B		C		D	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI					
10SV01F007T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	700	973
10SV02F007T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	700	973
10SV03F011T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	732	973
10SV04F015T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	774	973
10SV05F022T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	841	973
10SV06F022T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	873	973
10SV07F030T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	915	973
10SV08F030T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	947	973
10SV09F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1000	973
10SV10F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1032	973
10SV11F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1064	973
10SV13F055T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1251	973

Dimensions in mm. Tolerance ± 10 mm.

gs21ra_10sv-new-en_c_td

Note: for versions with vibration damping feet increase height by 30 mm.

**TWO-PUMP BOOSTER SETS, GSD21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**



GS21-15SV_A_DD

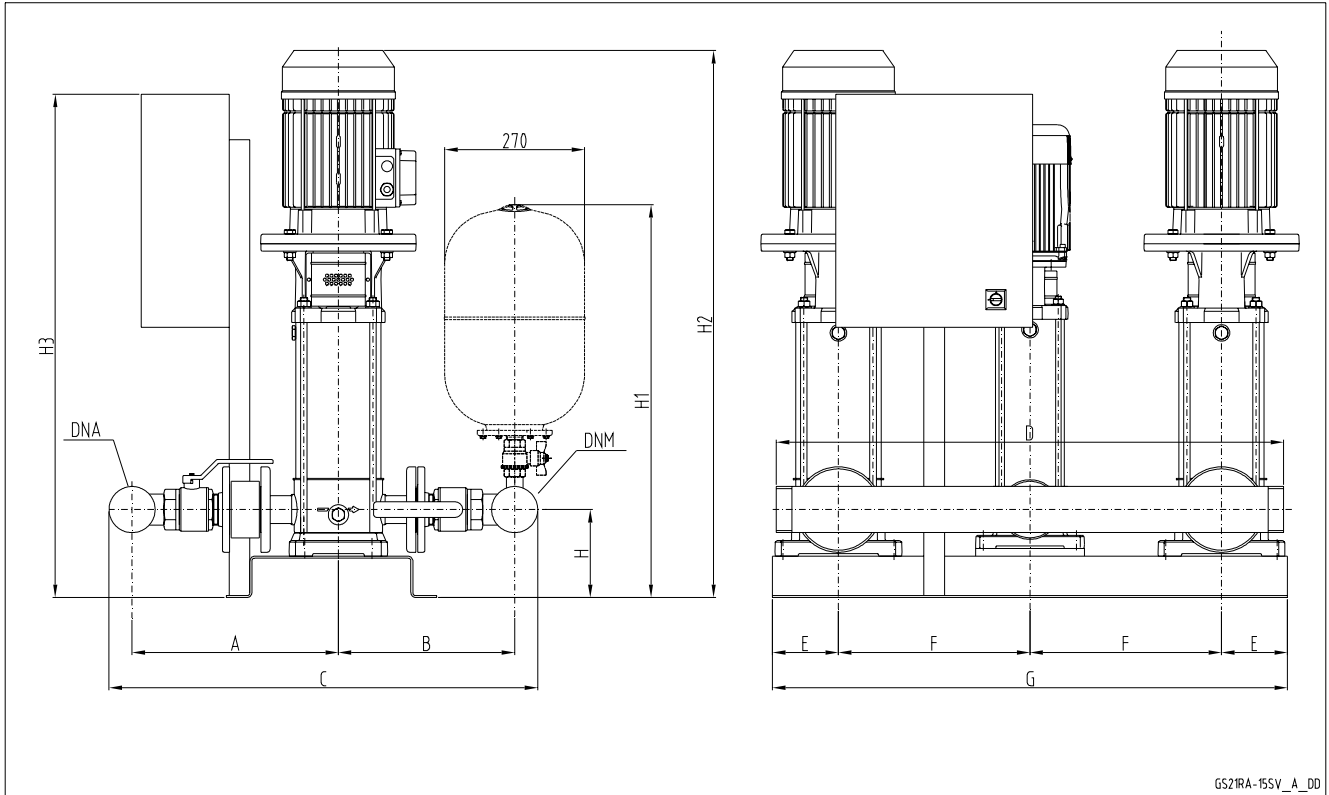
GSD 21	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	742	973
15SV02F022T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	787	973
15SV03F030T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	845	973
15SV04F040T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	914	973
15SV05F040T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	962	973
15SV06F055T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1133	973
15SV07F055T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1181	973
15SV08F075T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1221	973
15SV09F075T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1269	973
15SV10F110T	R 3"	R 3"	342	382	399	437	829	907	1224	260	440	1400	200	795	1438	1570
22SV01F011T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	742	973
22SV02F022T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	787	973
22SV03F030T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	845	973
22SV04F040T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	914	973
22SV05F055T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1085	973
22SV06F075T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1125	973
22SV07F075T	R 3"	R 3"	342	382	399	437	829	907	1040	128	370	995	170	765	1173	973
22SV08F110T	R 3"	R 3"	342	382	399	437	829	907	1180	260	440	1400	200	795	1342	1570
22SV09F110T	R 3"	R 3"	342	382	399	437	829	907	1180	260	440	1400	200	795	1390	1570
22SV10F110T	R 3"	R 3"	342	382	399	437	829	907	1180	260	440	1400	200	795	1438	1570

Dimensions in mm. Tolerance ± 10 mm.

gs21_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

**TWO-PUMP BOOSTER SETS, GSD21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**



**GSD21
GSY21**

GS21RA-15SV_A_DD

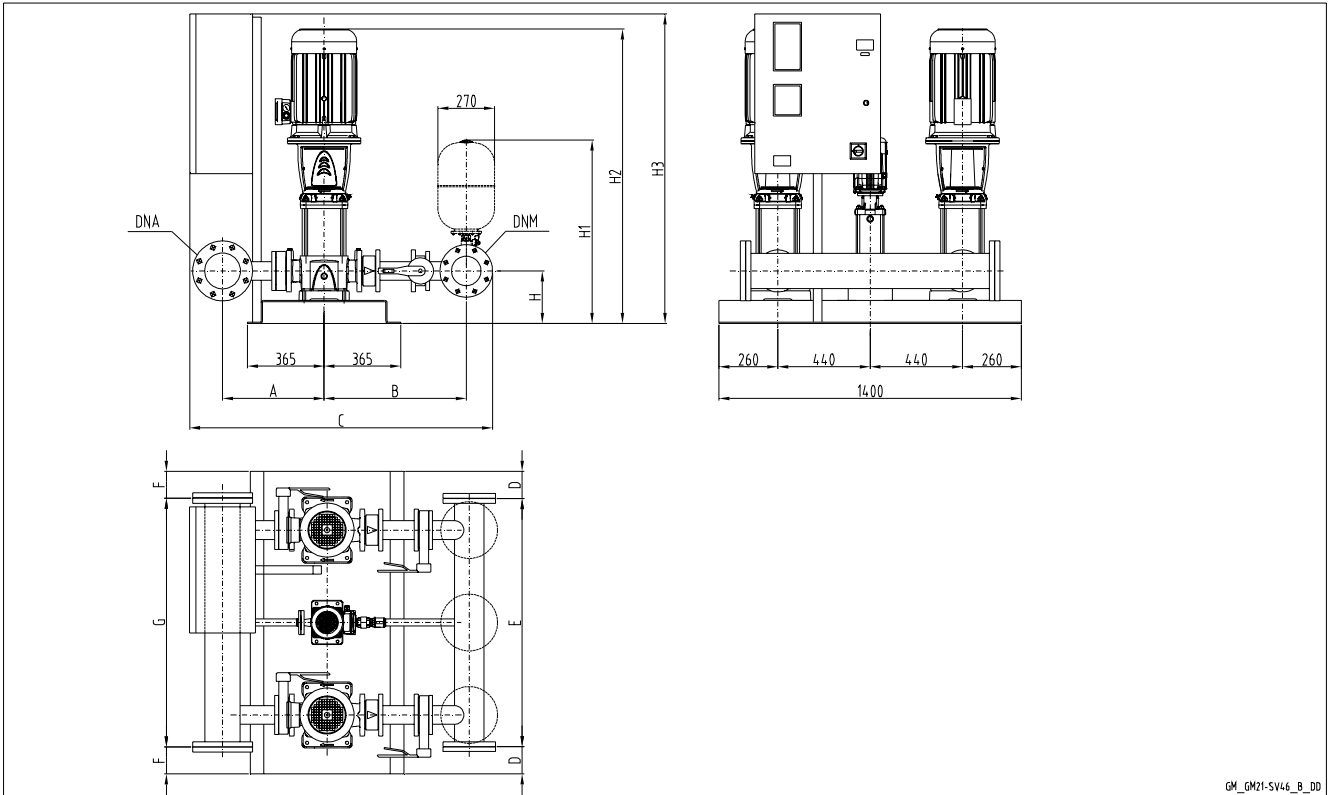
GSD 21 RA	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	742	973
15SV02F022T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	787	973
15SV03F030T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	845	973
15SV04F040T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	914	973
15SV05F040T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	962	973
15SV06F055T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1133	973
15SV07F055T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1181	973
15SV08F075T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1221	973
15SV09F075T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1269	973
15SV10F110T	R 3"	R 3"	399	437	342	380	829	905	1224	260	440	1400	200	795	1438	1570
22SV01F011T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	742	973
22SV02F022T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	787	973
22SV03F030T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	845	973
22SV04F040T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	914	973
22SV05F055T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1085	973
22SV06F075T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1125	973
22SV07F075T	R 3"	R 3"	399	437	342	380	829	905	1040	128	370	995	170	765	1173	973
22SV08F110T	R 3"	R 3"	399	437	342	380	829	905	1180	260	440	1400	200	795	1342	1570
22SV09F110T	R 3"	R 3"	399	437	342	380	829	905	1180	260	440	1400	200	795	1390	1570
22SV10F110T	R 3"	R 3"	399	437	342	380	829	905	1180	260	440	1400	200	795	1438	1570

Dimensions in mm. Tolerance ± 10 mm.

gs21ra_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

**TWO-PUMP BOOSTER SETS, GSD..Y21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**



**GSD21
GSY21**

GM_GM21-SV46_B_DD

**TWO-PUMP BOOSTER SETS, GSD..Y21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**

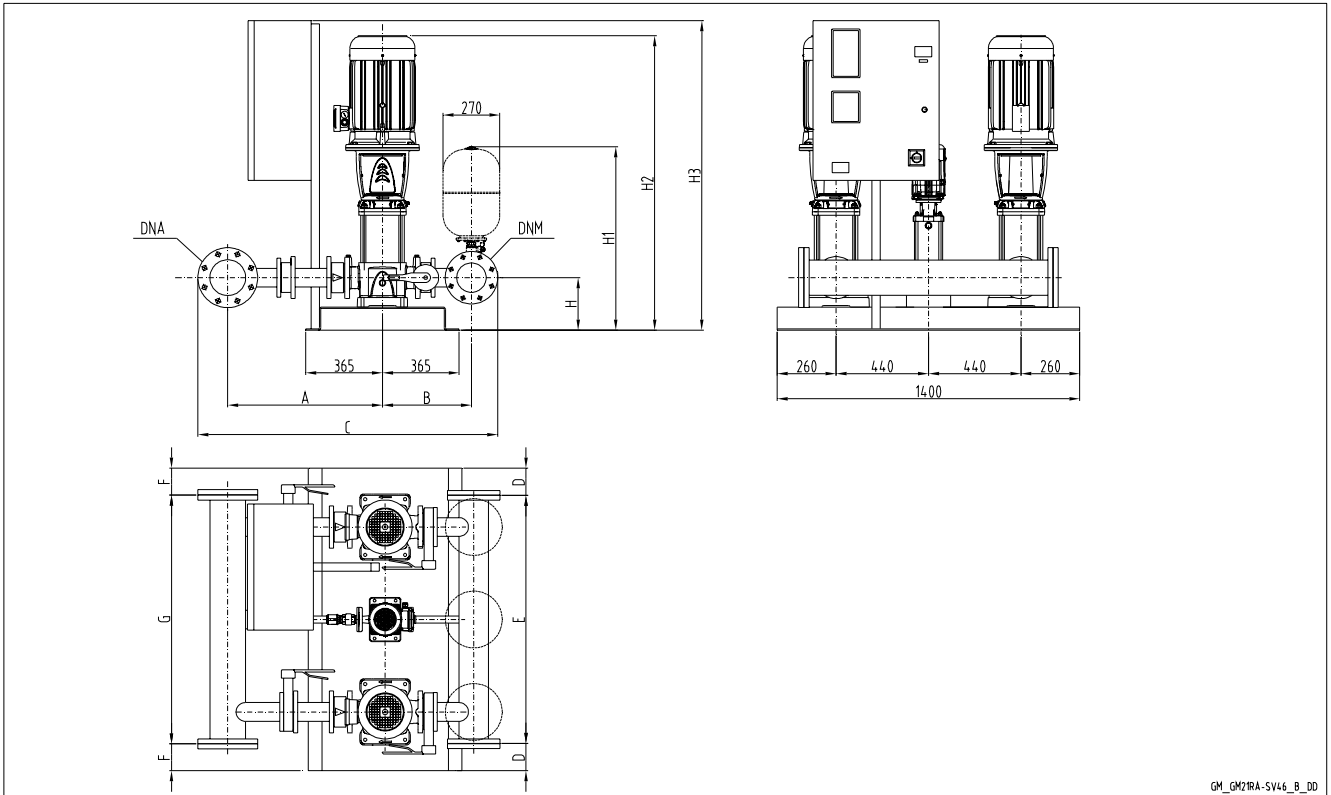
GSD21 / GSY21	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	100	80	448	701	1401	90	1220	90	1220	215	810	897	974
33SV1G030T	100	80	448	701	1401	90	1220	90	1220	215	810	897	974
33SV2/2AG040T	100	80	448	701	1401	90	1220	90	1220	215	810	993	974
33SV2/1AG040T	100	80	448	701	1401	90	1220	90	1220	215	810	993	974
33SV2G055T	100	80	448	701	1401	90	1220	90	1220	215	810	1069	974
33SV3/2AG055T	100	80	448	701	1401	90	1220	90	1220	215	810	1144	974
33SV3/1AG075T	100	80	448	701	1401	90	1220	90	1220	215	810	1136	974
33SV3G075T	100	80	448	701	1401	90	1220	90	1220	215	810	1136	974
33SV4/2AG075T	100	80	448	701	1401	90	1220	90	1220	215	810	1211	974
33SV4/1AG110T	100	80	448	701	1451	90	1220	90	1220	215	810	1307	1571
33SV4G110T	100	80	448	701	1451	90	1220	90	1220	215	810	1307	1571
33SV5/2AG110T	100	80	448	701	1451	90	1220	90	1220	215	810	1382	1571
33SV5/1AG110T	100	80	448	701	1451	90	1220	90	1220	215	810	1382	1571
33SV5G150T	100	80	448	701	1451	90	1220	90	1220	215	810	1448	1571
33SV6/2AG150T	100	80	448	701	1451	90	1220	90	1220	215	810	1523	1571
33SV6/1AG150T	100	80	448	701	1451	90	1220	90	1220	215	810	1523	1571
33SV6G150T	100	80	448	701	1451	90	1220	90	1220	215	810	1523	1571
33SV7/2AG150T	100	80	448	701	1451	90	1220	90	1220	215	810	1598	1571
46SV1/1AG030T	125	100	484	739	1457	90	1220	90	1220	250	857	937	974
46SV1G040T	125	100	484	739	1457	90	1220	90	1220	250	857	958	974
46SV2/2AG055T	125	100	484	739	1457	90	1220	90	1220	250	857	1109	974
46SV2G075T	125	100	484	739	1457	90	1220	90	1220	250	857	1101	974
46SV3/2AG110T	125	100	484	739	1499	90	1220	90	1220	250	857	1272	1571
46SV3G110T	125	100	484	739	1499	90	1220	90	1220	250	857	1272	1571
46SV4/2AG150T	125	100	484	739	1499	90	1220	90	1220	250	857	1413	1571
46SV4G150T	125	100	484	739	1499	90	1220	90	1220	250	857	1413	1571
46SV5/2AG185T	125	100	484	739	1499	90	1220	90	1220	250	857	1488	1571
46SV5G185T	125	100	484	739	1499	90	1220	90	1220	250	857	1488	1571
46SV6/2AG220T	125	100	484	739	1499	90	1220	90	1220	250	857	1563	1571
46SV6G220T	125	100	484	739	1499	90	1220	90	1220	250	857	1563	1571
66SV1/1AG040T	150	125	504	780	1551	90	1220	70	1260	250	870	983	1194
66SV1G055T	150	125	504	780	1551	90	1220	70	1260	250	870	1059	1194
66SV2/2AG075T	150	125	504	780	1551	90	1220	70	1260	250	870	1141	1194
66SV2/1AG110T	150	125	504	780	1555	90	1220	70	1260	250	870	1237	1571
66SV2G110T	150	125	504	780	1555	90	1220	70	1260	250	870	1237	1571
66SV3/2AG150T	150	125	504	780	1555	90	1220	70	1260	250	870	1393	1571
66SV3/1AG150T	150	125	504	780	1555	90	1220	70	1260	250	870	1393	1571
66SV3G185T	150	125	504	780	1555	90	1220	70	1260	250	870	1393	1571
66SV4/2AG185T	150	125	504	780	1555	90	1220	70	1260	250	870	1483	1571
66SV4/1AG220T	150	125	504	780	1555	90	1220	70	1260	250	870	1483	1571
66SV4G220T	150	125	504	780	1555	90	1220	70	1260	250	870	1483	1571
66SV5/2AG300T	150	125	504	780	1555	90	1220	70	1260	250	870	1736	1571
66SV5/1AG300T	150	125	504	780	1555	90	1220	70	1260	250	870	1736	1571
66SV5G300T	150	125	504	780	1555	90	1220	70	1260	250	870	1736	1571
92SV1/1AG055T	200	150	529	794	1635	70	1260	70	1260	250	884	1059	1194
92SV1G075T	200	150	529	794	1635	70	1260	70	1260	250	884	1051	1194
92SV2/2AG110T	200	150	529	794	1635	70	1260	70	1260	250	884	1237	1571
92SV2G150T	200	150	529	794	1635	70	1260	70	1260	250	884	1303	1571
92SV3/2AG185T	200	150	529	794	1635	70	1260	70	1260	250	884	1393	1571
92SV3G220T	200	150	529	794	1635	70	1260	70	1260	250	884	1393	1571
92SV4/2AG300T	200	150	529	794	1635	70	1260	70	1260	250	884	1646	1821
92SV4G300T	200	150	529	794	1635	70	1260	70	1260	250	884	1646	1821
92SV5/2AG370T	DIMENSIONI SU RICHIESTA												

Note: for versions with vibration damping feet increase height by 50 mm.

gs21_sv46-en_d_td16

**GSD21
GSY21**

**TWO-PUMP BOOSTER SETS, GSD..Y21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**



GM_GM2RA-SV46_B_DD

**GSD21
GSY21**

**TWO-PUMP BOOSTER SETS, GSD..Y21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**

GSD21RA / GSY21RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	100	80	713	436	1359	90	1220	90	1220	215	810	897	974
33SV1G030T	100	80	713	436	1359	90	1220	90	1220	215	810	897	974
33SV2/2AG040T	100	80	713	436	1359	90	1220	90	1220	215	810	993	974
33SV2/1AG040T	100	80	713	436	1359	90	1220	90	1220	215	810	993	974
33SV2G055T	100	80	713	436	1359	90	1220	90	1220	215	810	1069	974
33SV3/2AG055T	100	80	713	436	1359	90	1220	90	1220	215	810	1144	974
33SV3/1AG075T	100	80	713	436	1359	90	1220	90	1220	215	810	1136	974
33SV3G075T	100	80	713	436	1359	90	1220	90	1220	215	810	1136	974
33SV4/2AG075T	100	80	713	436	1359	90	1220	90	1220	215	810	1211	974
33SV4/1AG110T	100	80	713	436	1359	90	1220	90	1220	215	810	1307	1571
33SV4G110T	100	80	713	436	1359	90	1220	90	1220	215	810	1307	1571
33SV5/2AG110T	100	80	713	436	1359	90	1220	90	1220	215	810	1382	1571
33SV5/1AG110T	100	80	713	436	1359	90	1220	90	1220	215	810	1382	1571
33SV5G150T	100	80	713	436	1359	90	1220	90	1220	215	810	1448	1571
33SV6/2AG150T	100	80	713	436	1359	90	1220	90	1220	215	810	1523	1571
33SV6/1AG150T	100	80	713	436	1359	90	1220	90	1220	215	810	1523	1571
33SV6G150T	100	80	713	436	1359	90	1220	90	1220	215	810	1523	1571
33SV7/2AG150T	100	80	713	436	1359	90	1220	90	1220	215	810	1598	1571
46SV1/1AG030T	125	100	752	471	1457	90	1220	90	1220	250	857	937	974
46SV1G040T	125	100	752	471	1457	90	1220	90	1220	250	857	958	974
46SV2/2AG055T	125	100	752	471	1457	90	1220	90	1220	250	857	1109	974
46SV2G075T	125	100	752	471	1457	90	1220	90	1220	250	857	1101	974
46SV3/2AG110T	125	100	752	471	1457	90	1220	90	1220	250	857	1272	1571
46SV3G110T	125	100	752	471	1457	90	1220	90	1220	250	857	1272	1571
46SV4/2AG150T	125	100	752	471	1457	90	1220	90	1220	250	857	1413	1571
46SV4G150T	125	100	752	471	1457	90	1220	90	1220	250	857	1413	1571
46SV5/2AG185T	125	100	752	471	1457	90	1220	90	1220	250	857	1488	1571
46SV5G185T	125	100	752	471	1457	90	1220	90	1220	250	857	1488	1571
46SV6/2AG220T	125	100	752	471	1457	90	1220	90	1220	250	857	1563	1571
46SV6G220T	125	100	752	471	1457	90	1220	90	1220	250	857	1563	1571
66SV1/1AG040T	150	125	794	490	1551	90	1220	70	1260	250	870	983	1194
66SV1G055T	150	125	794	490	1551	90	1220	70	1260	250	870	1059	1194
66SV2/2AG075T	150	125	794	490	1551	90	1220	70	1260	250	870	1141	1194
66SV2/1AG110T	150	125	794	490	1551	90	1220	70	1260	250	870	1237	1571
66SV2G110T	150	125	794	490	1551	90	1220	70	1260	250	870	1237	1571
66SV3/2AG150T	150	125	794	490	1551	90	1220	70	1260	250	870	1393	1571
66SV3/1AG150T	150	125	794	490	1551	90	1220	70	1260	250	870	1393	1571
66SV3G185T	150	125	794	490	1551	90	1220	70	1260	250	870	1393	1571
66SV4/2AG185T	150	125	794	490	1551	90	1220	70	1260	250	870	1483	1571
66SV4/1AG220T	150	125	794	490	1551	90	1220	70	1260	250	870	1483	1571
66SV4G220T	150	125	794	490	1551	90	1220	70	1260	250	870	1483	1571
66SV5/2AG300T	150	125	794	490	1551	90	1220	70	1260	250	870	1736	1571
66SV5/1AG300T	150	125	794	490	1551	90	1220	70	1260	250	870	1736	1571
66SV5G300T	150	125	794	490	1551	90	1220	70	1260	250	870	1736	1571
92SV1/1AG055T	200	150	819	504	1635	70	1260	70	1260	250	884	1059	1194
92SV1G075T	200	150	819	504	1635	70	1260	70	1260	250	884	1051	1194
92SV2/2AG110T	200	150	819	504	1635	70	1260	70	1260	250	884	1237	1571
92SV2G150T	200	150	819	504	1635	70	1260	70	1260	250	884	1303	1571
92SV3/2AG185T	200	150	819	504	1635	70	1260	70	1260	250	884	1393	1571
92SV3G220T	200	150	819	504	1635	70	1260	70	1260	250	884	1393	1571
92SV4/2AG300T	200	150	819	504	1635	70	1260	70	1260	250	884	1646	1821
92SV4G300T	200	150	819	504	1635	70	1260	70	1260	250	884	1646	1821
92SV5/2AG370T	DIMENSIONI SU RICHIESTA												

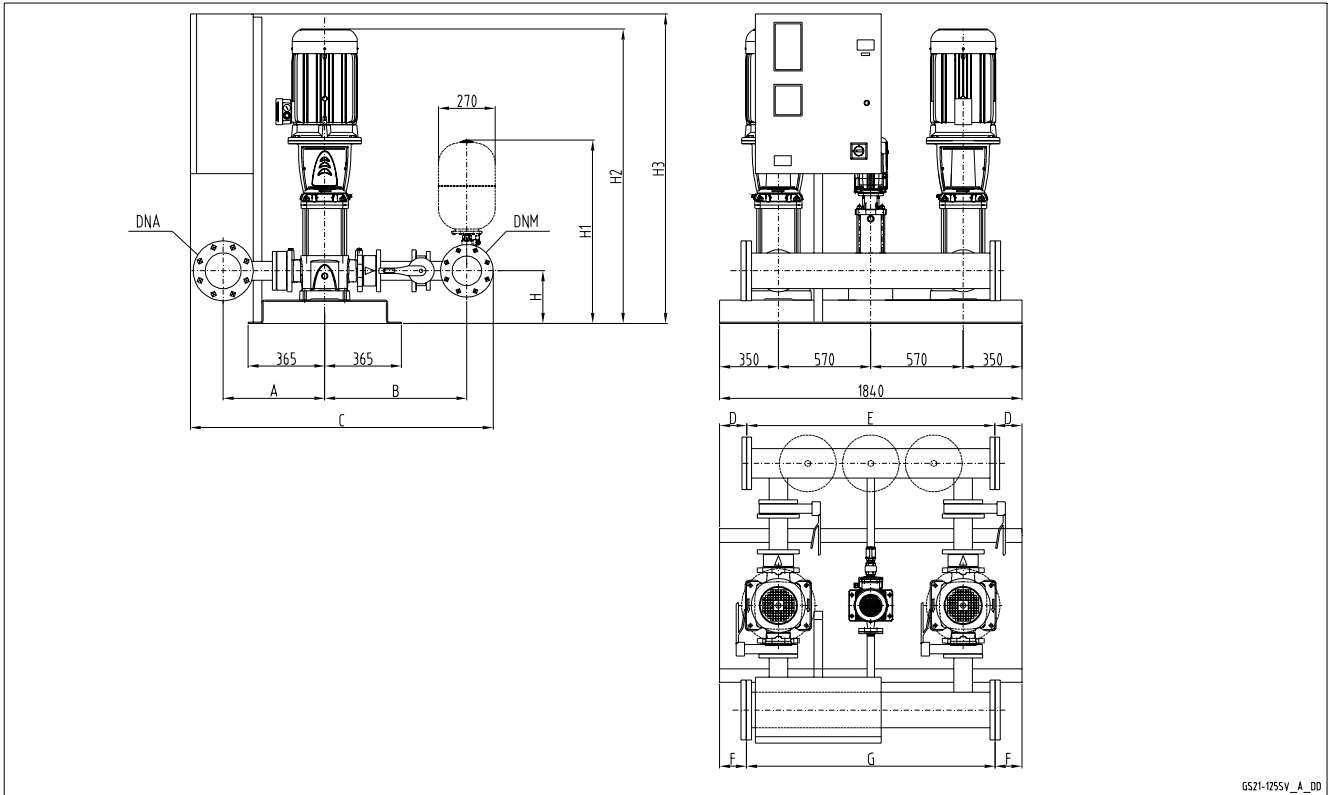
Note: for versions with vibration damping feet increase height by 50 mm.

gs21ra_sv46-en_d_td16

**GSD21
GSY21**

**TWO-PUMP BOOSTER SETS, GSD21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**

**GSD21
GSY21**



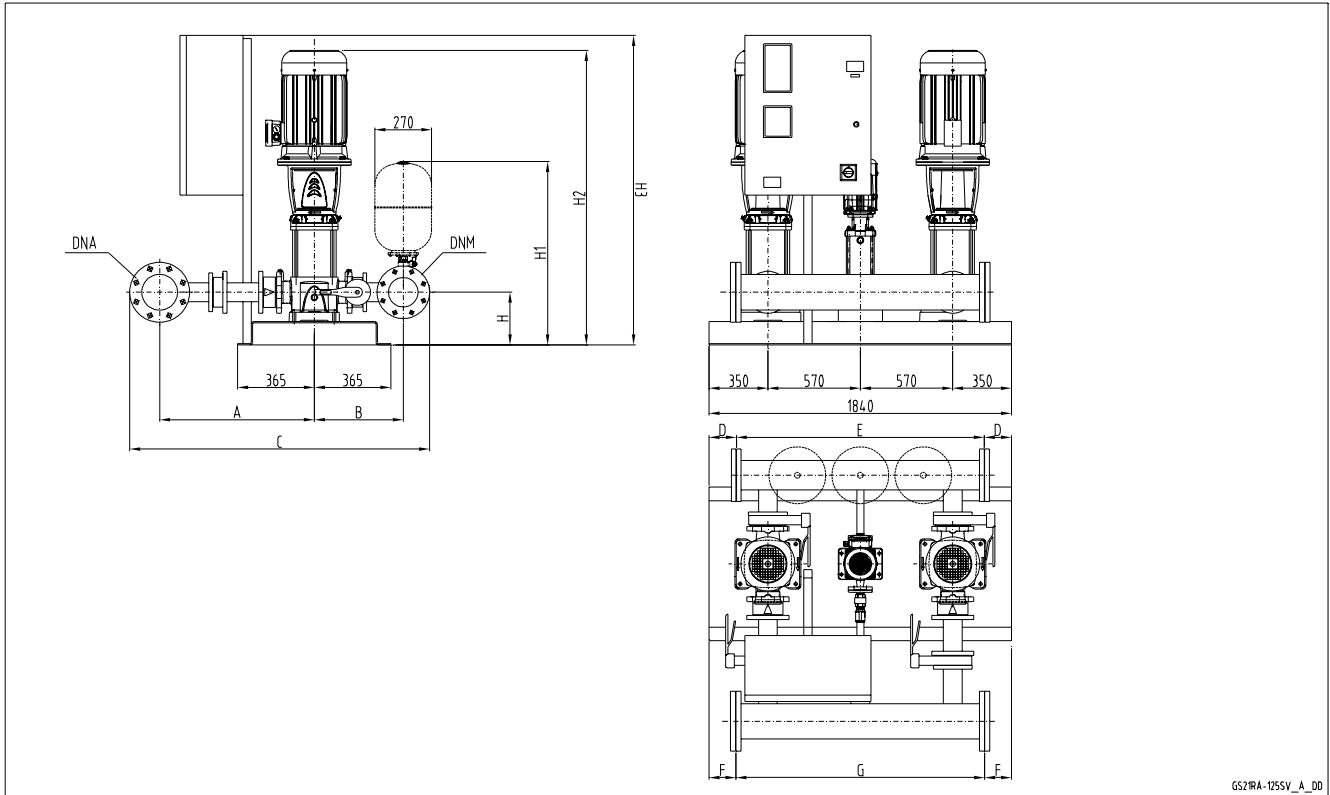
GS21-125SV_A_DD

GSD21	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	200	200	591	927	1857	150	1520	150	1520	280	940	1180	1195
125SV2G150T	200	200	591	927	1857	150	1520	150	1520	280	940	1492	1822
125SV3G220T	200	200	591	927	1857	150	1520	150	1520	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs21_125sv-en_a_td

**TWO-PUMP BOOSTER SETS, GSD21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**



GS21RA-125SV_A_DD

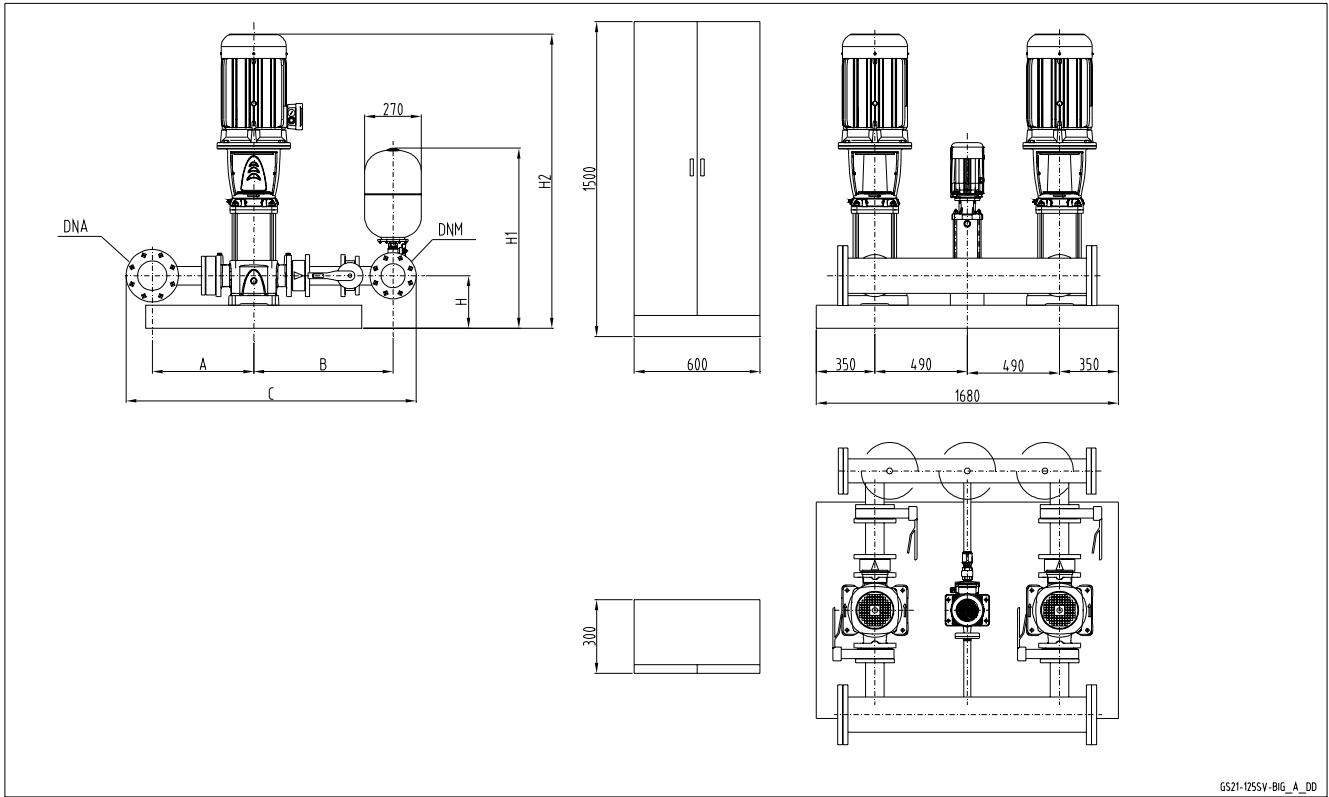
**GSD21
GSY21**

GSD21RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	200	200	927	591	1857	150	1520	150	1520	280	940	1180	1195
125SV2G150T	200	200	927	591	1857	150	1520	150	1520	280	940	1492	1822
125SV3G220T	200	200	927	591	1857	150	1520	150	1520	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs21ra_125sv-en_a_td

**TWO-PUMP BOOSTER SETS, GSD..Y21 SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON DISCHARGE SIDE**



GSD21-125SV-BIG_A_DD

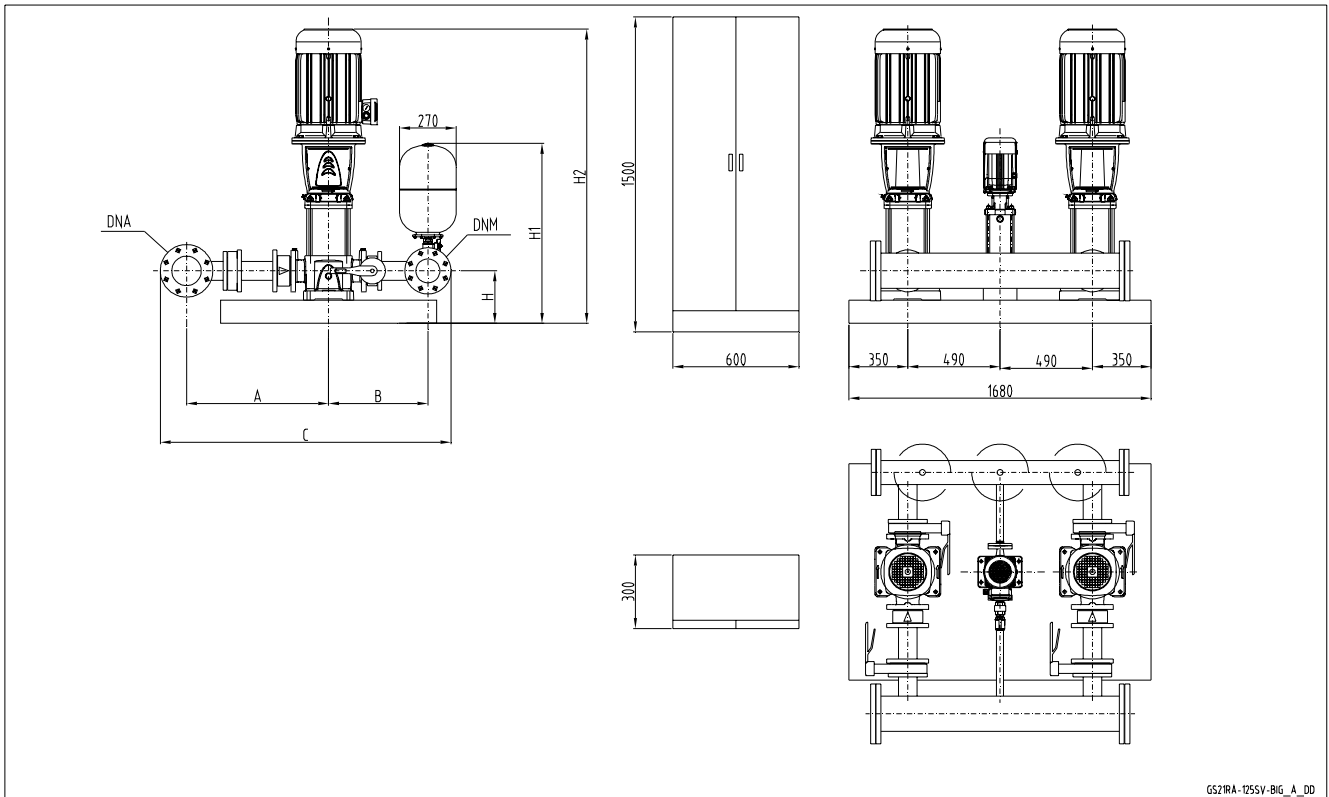
**GSD21
GSY21**

GSY21	DNA	DNM	A	B	C	H	H1	H2
125SV4G300T	200	200	591	927	1857	300	960	1975
125SV5G370T	200	200	591	927	1857	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

gs21_125sv-big-en_a_td

**TWO-PUMP BOOSTER SETS, GSD..Y21 RA SERIES
VERTICAL ELECTRIC PUMPS WITH JOCKEY PUMP
NON-RETURN VALVE ON SUCTION SIDE**



**GSD21
GSY21**

GSY21RA	DNA	DNM	A	B	C	H	H1	H2
125SV4G300T	200	200	927	591	1857	300	960	1975
125SV5G370T	200	200	927	591	1857	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

gs21ra_125sv-big-en_a_td

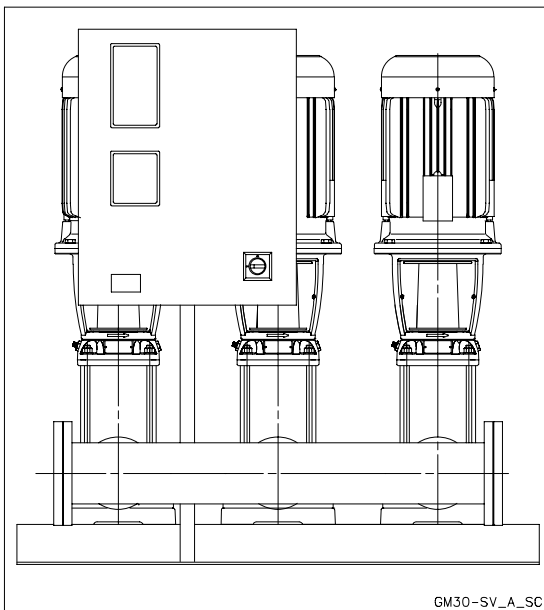
Booster sets

MARKET SECTORS CIVIL, INDUSTRIAL

APPLICATIONS

- Water network supply in condominiums, offices, hotels, shopping centres, factories.
- Water supply to agricultural water networks (e.g. irrigation).

GSD30 - GSY30 Series

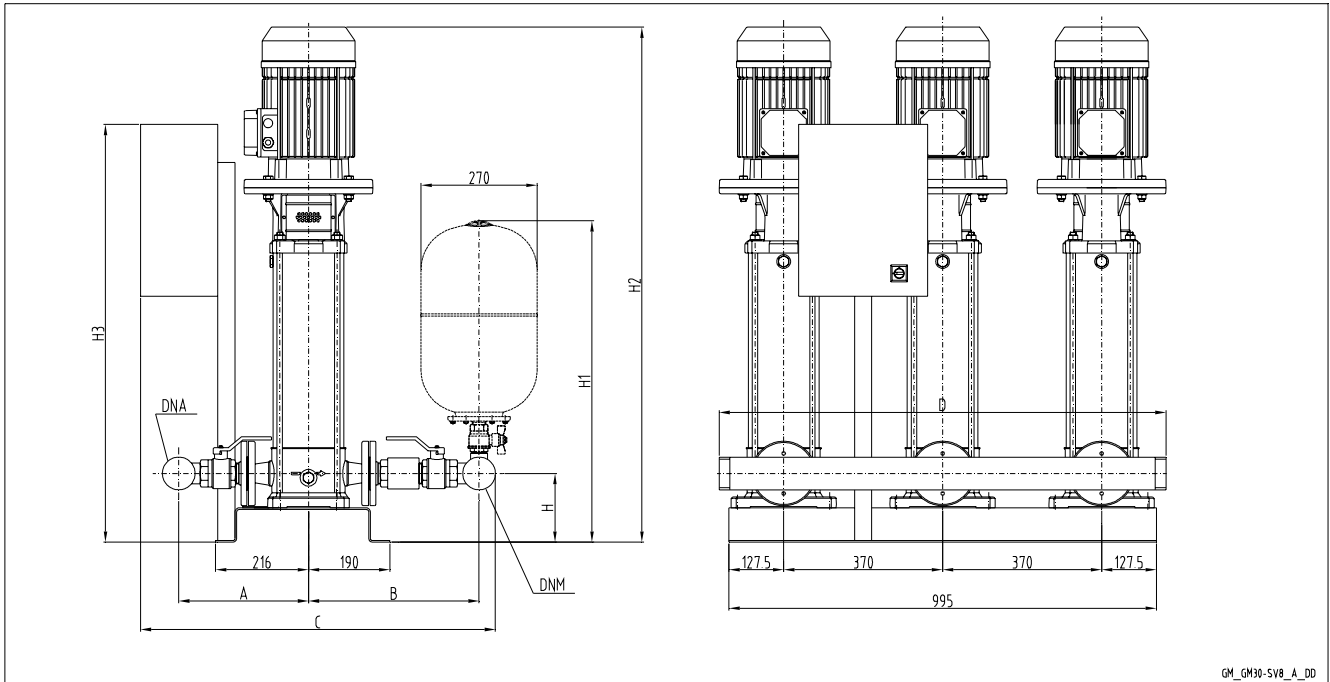


**GSD30
GSY30**

SPECIFICATIONS

- **Flow rate** up to 480 m³/h.
- **Head** up to 160 m.
- Electrical panel supply voltage :
3 x 400V ± 10%.
- Frequency 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Electrical panel protection class IP 55.
- Maximum service pump power:
3 x 37 kW.
- **Motor start-up :**
 - Direct for powers up to 22 kW inclusive for pump (GSD/).
 - Star/Delta for higher powers (GSY/ set).
 - Softstarter, available on request (GSSF/ set).
- **Electric pump with vertical axis:**
 - SV series (motor protection class IP55).
- Maximum operating pressure 16 bar.
- Maximum temperature of pumped liquid : +80°C.

**THREE-PUMP BOOSTER SETS, GSD30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**



GM_GH30-SV8_A_DD

**GSD30
GSY30**

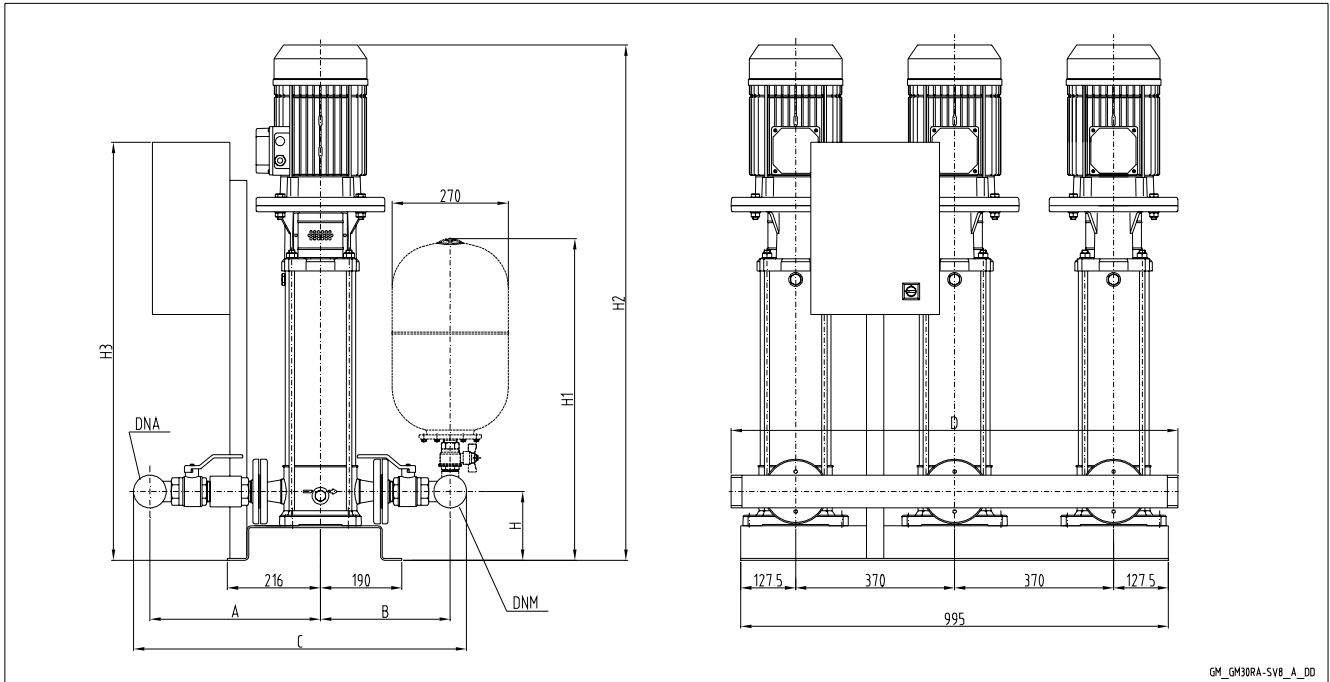
GSD 30	DNA	DNM	A		B		C		D	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI					
10SV01F007T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	700	973
10SV02F007T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	700	973
10SV03F011T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	732	973
10SV04F015T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	774	973
10SV05F022T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	841	973
10SV06F022T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	873	973
10SV07F030T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	915	973
10SV08F030T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	947	973
10SV09F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1000	973
10SV10F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1032	973
10SV11F040T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1064	973
10SV13F055T	R 2"1/2	R 2"1/2	297	356	362	497	811	946	1040	160	748	1251	973

Dimensions in mm. Tolerance ± 10 mm.

gs30_10sv-new-en_c_td

Note: for versions with vibration damping feet increase height by 30 mm.

**THREE-PUMP BOOSTER SETS, GSD30 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GM_GM30RA-SV8_A_DD

**GSD30
GSY30**

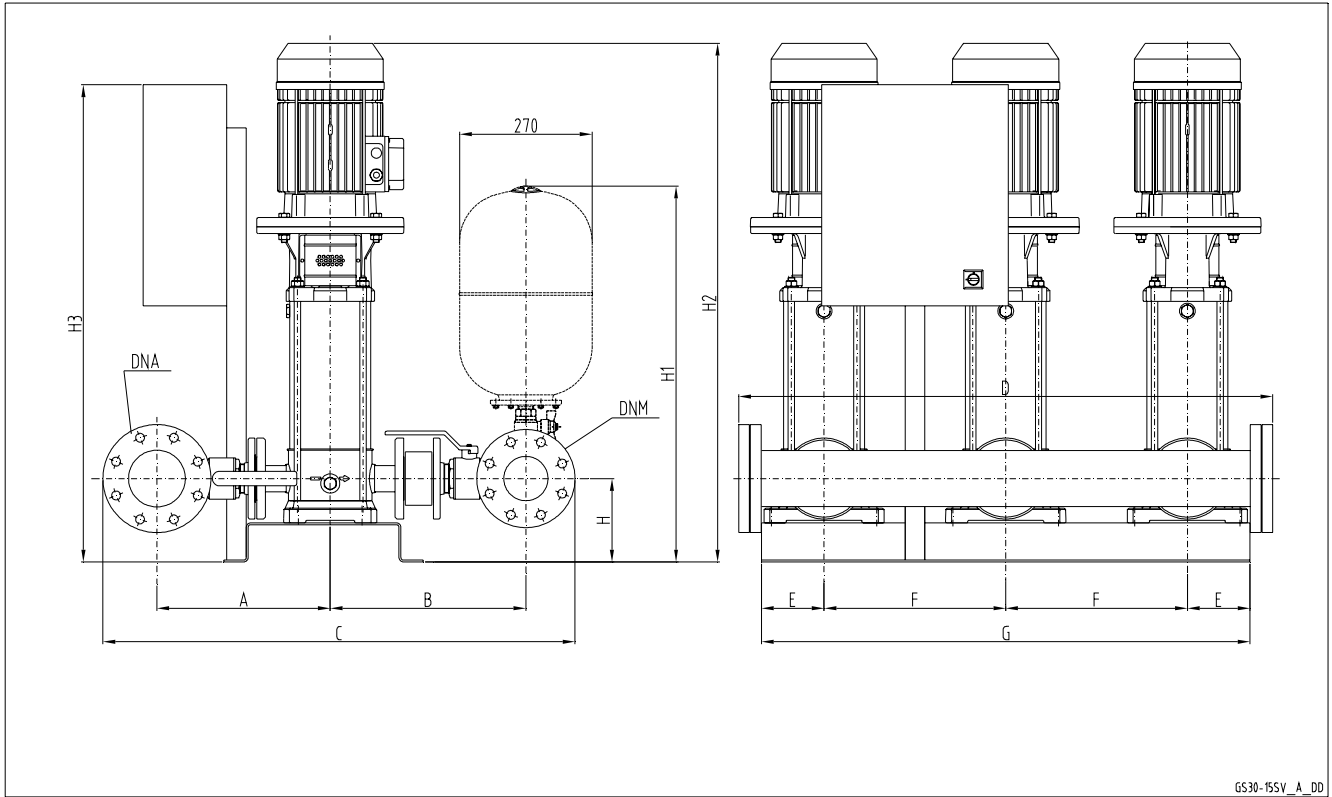
GSD 30RA	DNA	DNM	A		B		C		D	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI					
10SV01F007T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	700	973
10SV02F007T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	700	973
10SV03F011T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	732	973
10SV04F015T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	774	973
10SV05F022T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	841	973
10SV06F022T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	873	973
10SV07F030T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	915	973
10SV08F030T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	947	973
10SV09F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1000	973
10SV10F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1032	973
10SV11F040T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1064	973
10SV13F055T	R 2"1/2	R 2"1/2	367	497	345	356	794	929	1040	160	748	1251	973

Dimensions in mm. Tolerance ± 10 mm.

gs30ra_10sv-new-en_c_td

Note: for versions with vibration damping feet increase height by 30 mm.

THREE-PUMP BOOSTER SETS, GSD30 SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON DISCHARGE SIDE



GS30-15SV_A_DD

**GSD30
GSY30**

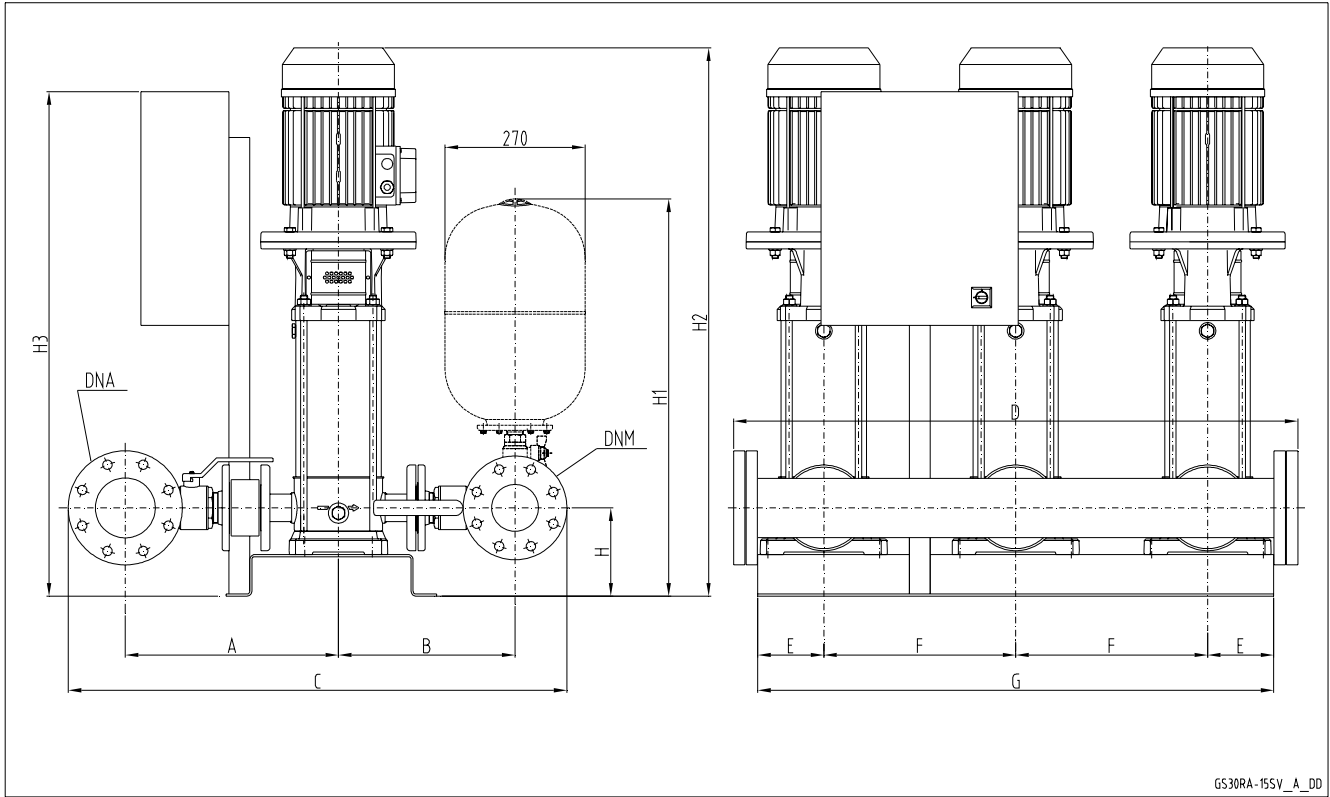
GSD 30	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	742	973
15SV02F022T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	787	973
15SV03F030T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	845	973
15SV04F040T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	914	973
15SV05F040T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	962	973
15SV06F055T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	1133	973
15SV07F055T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	1181	973
15SV08F075T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	1221	973
15SV09F075T	100	80	354	394	399	437	963	1041	1084	128	370	995	170	765	1269	973
15SV10F110T	100	80	354	394	399	437	963	1041	1224	260	440	1400	200	795	1438	1570
22SV01F011T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	742	973
22SV02F022T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	787	973
22SV03F030T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	845	973
22SV04F040T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	914	973
22SV05F055T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	1085	973
22SV06F075T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	1125	973
22SV07F075T	100	100	354	394	411	449	985	1063	1084	128	370	995	170	777	1173	973
22SV08F110T	100	100	354	394	411	449	985	1063	1224	260	440	1400	200	807	1342	1570
22SV09F110T	100	100	354	394	411	449	985	1063	1224	260	440	1400	200	807	1390	1570
22SV10F110T	100	100	354	394	411	449	985	1063	1224	260	440	1400	200	807	1438	1570

Dimensions in mm. Tolerance ± 10 mm.

gs30_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

THREE-PUMP BOOSTER SETS, GSD30 RA SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON SUCTION SIDE



GS30RA-15SV_A_DD

**GSD30
GSY30**

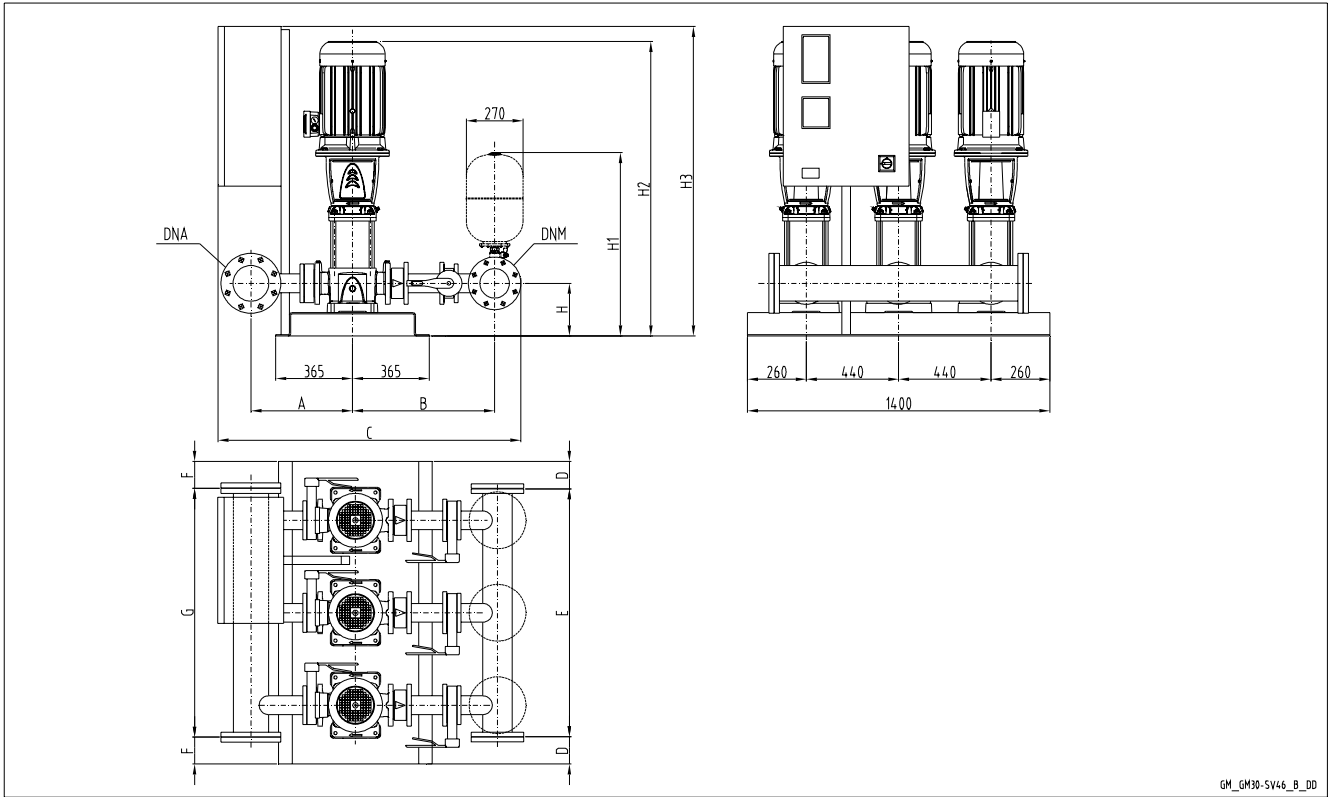
GSD 30 RA	DNA	DNM	A		B		C		D	E	F	G	H	H1	H2	H3
			STD/DW	AISI	STD/DW	AISI	STD/DW	AISI								
15SV01F011T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	742	973
15SV02F022T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	787	973
15SV03F030T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	845	973
15SV04F040T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	914	973
15SV05F040T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	962	973
15SV06F055T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	1133	973
15SV07F055T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	1181	973
15SV08F075T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	1221	973
15SV09F075T	100	80	411	449	342	380	963	1039	1084	128	370	995	170	765	1269	973
15SV10F110T	100	80	411	449	342	380	963	1039	1224	260	440	1400	200	795	1438	1570
22SV01F011T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	742	973
22SV02F022T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	787	973
22SV03F030T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	845	973
22SV04F040T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	914	973
22SV05F055T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	1085	973
22SV06F075T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	1125	973
22SV07F075T	100	100	411	449	354	392	985	1061	1084	128	370	995	170	777	1173	973
22SV08F110T	100	100	411	449	354	392	985	1061	1224	260	440	1400	200	807	1342	1570
22SV09F110T	100	100	411	449	354	392	985	1061	1224	260	440	1400	200	807	1390	1570
22SV10F110T	100	100	411	449	354	392	985	1061	1224	260	440	1400	200	807	1438	1570

Dimensions in mm. Tolerance ± 10 mm.

gs30ra_15sv-new-en_d_td

Note: for versions with vibration damping feet increase height by 30 mm.

**THREE-PUMP BOOSTER SETS, GSD30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**



GM_GH30-SV46_B_DD

**GSD30
GSY30**

**THREE-PUMP BOOSTER SETS, GSD30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**

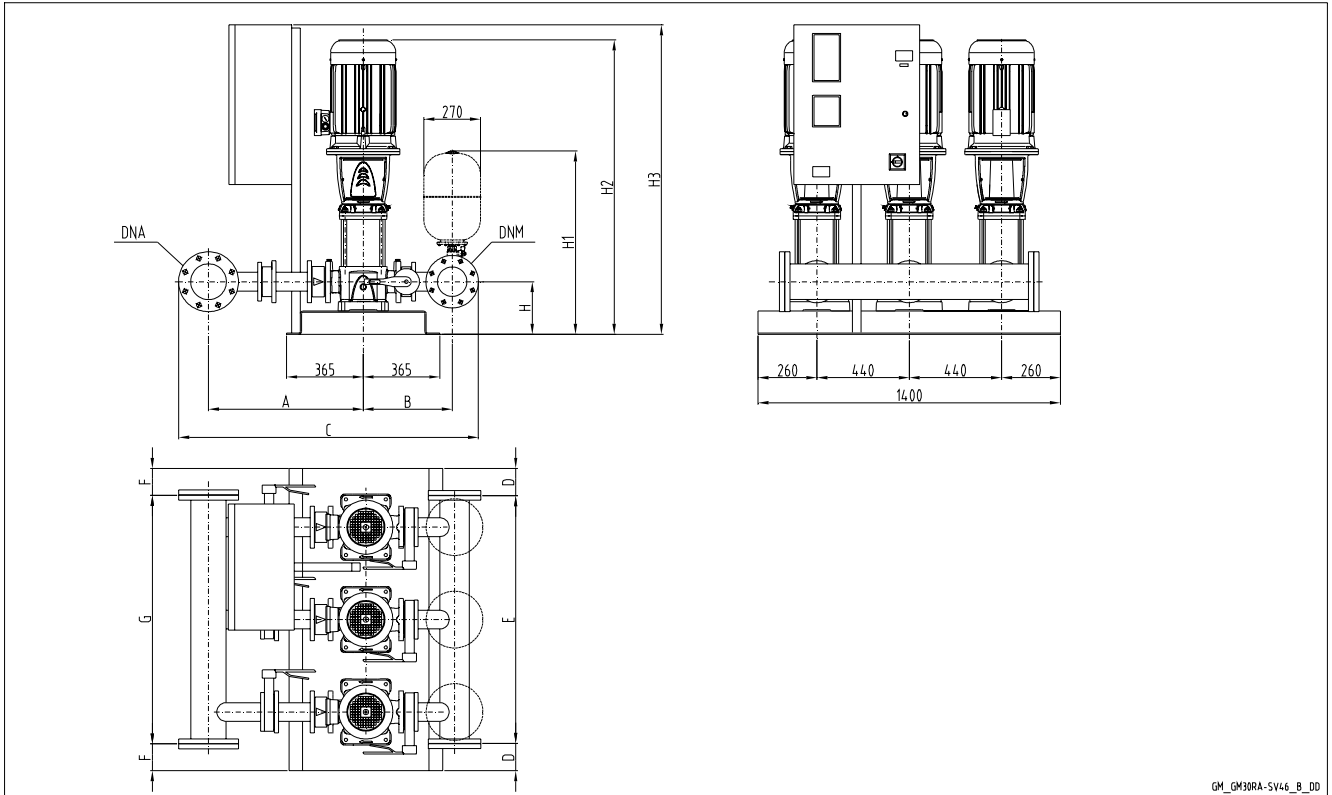
GSD30	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	125	100	461	713	1423	90	1220	90	1220	215	822	897	974
33SV1G030T	125	100	461	713	1423	90	1220	90	1220	215	822	897	974
33SV2/2AG040T	125	100	461	713	1423	90	1220	90	1220	215	822	993	974
33SV2/1AG040T	125	100	461	713	1423	90	1220	90	1220	215	822	993	974
33SV2G055T	125	100	461	713	1423	90	1220	90	1220	215	822	1069	974
33SV3/2AG055T	125	100	461	713	1423	90	1220	90	1220	215	822	1144	974
33SV3/1AG075T	125	100	461	713	1423	90	1220	90	1220	215	822	1136	974
33SV3G075T	125	100	461	713	1423	90	1220	90	1220	215	822	1136	974
33SV4/2AG075T	125	100	461	713	1423	90	1220	90	1220	215	822	1211	974
33SV4/1AG110T	125	100	461	713	1473	90	1220	90	1220	215	822	1307	1571
33SV4G110T	125	100	461	713	1473	90	1220	90	1220	215	822	1307	1571
33SV5/2AG110T	125	100	461	713	1473	90	1220	90	1220	215	822	1382	1571
33SV5/1AG110T	125	100	461	713	1473	90	1220	90	1220	215	822	1382	1571
33SV5G150T	125	100	461	713	1473	90	1220	90	1220	215	822	1448	1571
33SV6/2AG150T	125	100	461	713	1473	90	1220	90	1220	215	822	1523	1571
33SV6/1AG150T	125	100	461	713	1473	90	1220	90	1220	215	822	1523	1571
33SV6G150T	125	100	461	713	1473	90	1220	90	1220	215	822	1523	1571
33SV7/2AG150T	125	100	461	713	1473	90	1220	90	1220	215	822	1598	1571
46SV1/1AG030T	150	125	498	752	1517	90	1220	70	1260	250	870	937	974
46SV1G040T	150	125	498	752	1517	90	1220	70	1260	250	870	958	974
46SV2/2AG055T	150	125	498	752	1517	90	1220	70	1260	250	870	1109	974
46SV2G075T	150	125	498	752	1517	90	1220	70	1260	250	870	1101	974
46SV3/2AG110T	150	125	498	752	1527	90	1220	70	1260	250	870	1272	1571
46SV3G110T	150	125	498	752	1527	90	1220	70	1260	250	870	1272	1571
46SV4/2AG150T	150	125	498	752	1527	90	1220	70	1260	250	870	1413	1571
46SV4G150T	150	125	498	752	1527	90	1220	70	1260	250	870	1413	1571
46SV5/2AG185T	150	125	498	752	1527	90	1220	70	1260	250	870	1488	1821
46SV5G185T	150	125	498	752	1527	90	1220	70	1260	250	870	1488	1821
46SV6/2AG220T	150	125	498	752	1527	90	1220	70	1260	250	870	1563	1821
46SV6G220T	150	125	498	752	1527	90	1220	70	1260	250	870	1563	1821
66SV1/1AG040T	200	150	529	794	1635	70	1260	70	1260	250	884	983	1194
66SV1G055T	200	150	529	794	1635	70	1260	70	1260	250	884	1059	1194
66SV2/2AG075T	200	150	529	794	1635	70	1260	70	1260	250	884	1141	1194
66SV2/1AG110T	200	150	529	794	1635	70	1260	70	1260	250	884	1237	1571
66SV2G110T	200	150	529	794	1635	70	1260	70	1260	250	884	1237	1571
66SV3/2AG150T	200	150	529	794	1635	70	1260	70	1260	250	884	1393	1571
66SV3/1AG150T	200	150	529	794	1635	70	1260	70	1260	250	884	1393	1571
66SV3G185T	200	150	529	794	1635	70	1260	70	1260	250	884	1393	1821
66SV4/2AG185T	200	150	529	794	1635	70	1260	70	1260	250	884	1483	1821
66SV4/1AG220T	200	150	529	794	1635	70	1260	70	1260	250	884	1483	1821
66SV4G220T	200	150	529	794	1635	70	1260	70	1260	250	884	1483	1821
92SV1/1AG055T	200	200	529	819	1688	70	1260	70	1260	250	910	1059	1194
92SV1G075T	200	200	529	819	1688	70	1260	70	1260	250	910	1051	1194
92SV2/2AG110T	200	200	529	819	1688	70	1260	70	1260	250	910	1237	1821
92SV2G150T	200	200	529	819	1688	70	1260	70	1260	250	910	1303	1821
92SV3/2AG185T	200	200	529	819	1688	70	1260	70	1260	250	910	1393	1821
92SV3G220T	200	200	529	819	1688	70	1260	70	1260	250	910	1393	1821

Note: for versions with vibration damping feet increase height by 50 mm.

gs30_sv46-en_c_td16

**GSD30
GSY30**

**THREE-PUMP BOOSTER SETS, GSD30 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GM_GM30RA-SV46_B_DD

**GSD30
GSY30**

THREE-PUMP BOOSTER SETS, GSD30 RA SERIES VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE ON SUCTION SIDE

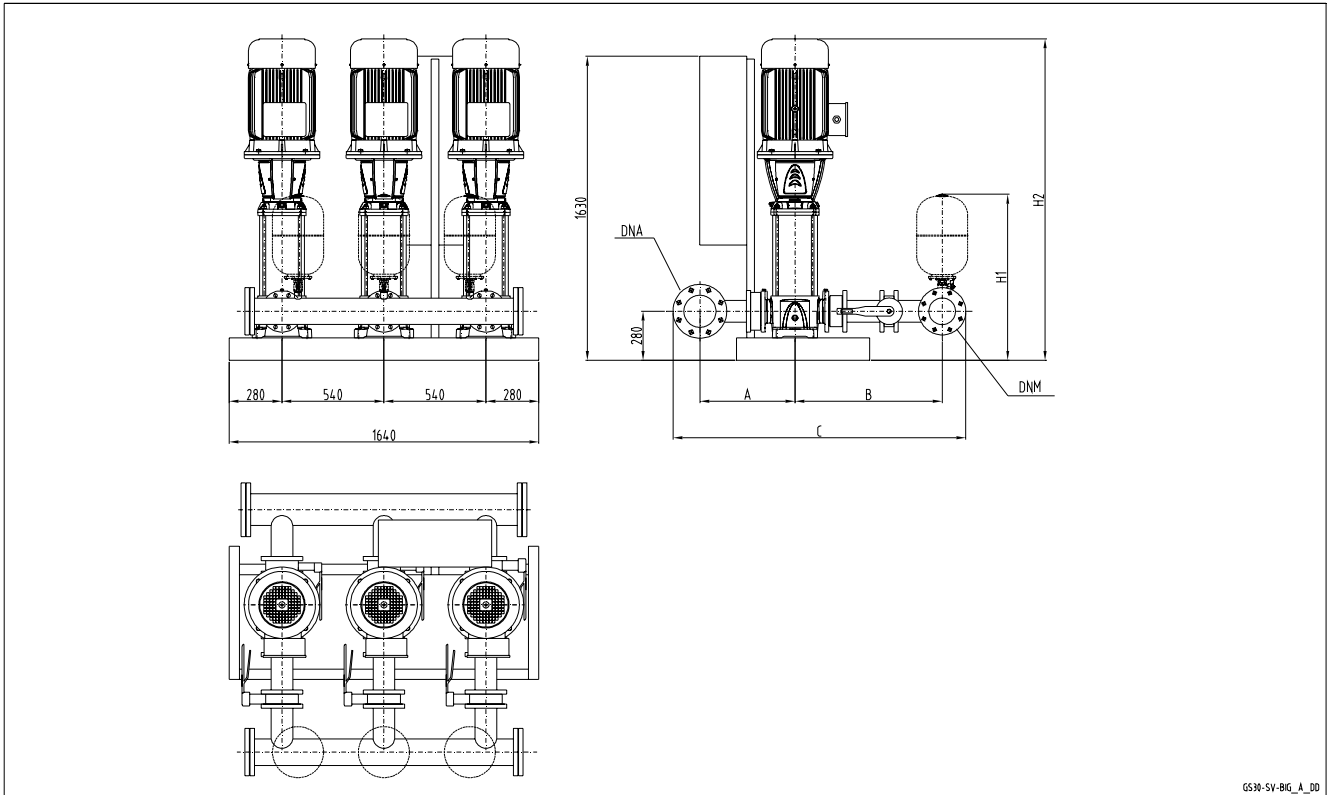
GSD30RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
33SV1/1AG022T	125	100	726	448	1409	90	1220	90	1220	215	822	897	974
33SV1G030T	125	100	726	448	1409	90	1220	90	1220	215	822	897	974
33SV2/2AG040T	125	100	726	448	1409	90	1220	90	1220	215	822	993	974
33SV2/1AG040T	125	100	726	448	1409	90	1220	90	1220	215	822	993	974
33SV2G055T	125	100	726	448	1409	90	1220	90	1220	215	822	1069	974
33SV3/2AG055T	125	100	726	448	1409	90	1220	90	1220	215	822	1144	974
33SV3/1AG075T	125	100	726	448	1409	90	1220	90	1220	215	822	1136	974
33SV3G075T	125	100	726	448	1409	90	1220	90	1220	215	822	1136	974
33SV4/2AG075T	125	100	726	448	1409	90	1220	90	1220	215	822	1211	974
33SV4/1AG110T	125	100	726	448	1409	90	1220	90	1220	215	822	1307	1571
33SV4G110T	125	100	726	448	1409	90	1220	90	1220	215	822	1307	1571
33SV5/2AG110T	125	100	726	448	1409	90	1220	90	1220	215	822	1382	1571
33SV5/1AG110T	125	100	726	448	1409	90	1220	90	1220	215	822	1382	1571
33SV5G150T	125	100	726	448	1409	90	1220	90	1220	215	822	1448	1571
33SV6/2AG150T	125	100	726	448	1409	90	1220	90	1220	215	822	1523	1571
33SV6/1AG150T	125	100	726	448	1409	90	1220	90	1220	215	822	1523	1571
33SV6G150T	125	100	726	448	1409	90	1220	90	1220	215	822	1523	1571
33SV7/2AG150T	125	100	726	448	1409	90	1220	90	1220	215	822	1598	1571
46SV1/1AG030T	150	125	766	484	1517	90	1220	70	1260	250	870	937	974
46SV1G040T	150	125	766	484	1517	90	1220	70	1260	250	870	958	974
46SV2/2AG055T	150	125	766	484	1517	90	1220	70	1260	250	870	1109	974
46SV2G075T	150	125	766	484	1517	90	1220	70	1260	250	870	1101	974
46SV3/2AG110T	150	125	766	484	1517	90	1220	70	1260	250	870	1272	1571
46SV3G110T	150	125	766	484	1517	90	1220	70	1260	250	870	1272	1571
46SV4/2AG150T	150	125	766	484	1517	90	1220	70	1260	250	870	1413	1571
46SV4G150T	150	125	766	484	1517	90	1220	70	1260	250	870	1413	1571
46SV5/2AG185T	150	125	766	484	1517	90	1220	70	1260	250	870	1488	1821
46SV5G185T	150	125	766	484	1517	90	1220	70	1260	250	870	1488	1821
46SV6/2AG220T	150	125	766	484	1517	90	1220	70	1260	250	870	1563	1821
46SV6G220T	150	125	766	484	1517	90	1220	70	1260	250	870	1563	1821
66SV1/1AG040T	200	150	819	504	1635	70	1260	70	1260	250	884	983	1194
66SV1G055T	200	150	819	504	1635	70	1260	70	1260	250	884	1059	1194
66SV2/2AG075T	200	150	819	504	1635	70	1260	70	1260	250	884	1141	1194
66SV2/1AG110T	200	150	819	504	1635	70	1260	70	1260	250	884	1237	1571
66SV2G110T	200	150	819	504	1635	70	1260	70	1260	250	884	1237	1571
66SV3/2AG150T	200	150	819	504	1635	70	1260	70	1260	250	884	1393	1571
66SV3/1AG150T	200	150	819	504	1635	70	1260	70	1260	250	884	1393	1571
66SV3G185T	200	150	819	504	1635	70	1260	70	1260	250	884	1393	1821
66SV4/2AG185T	200	150	819	504	1635	70	1260	70	1260	250	884	1483	1821
66SV4/1AG220T	200	150	819	504	1635	70	1260	70	1260	250	884	1483	1821
66SV4G220T	200	150	819	504	1635	70	1260	70	1260	250	884	1483	1821
92SV1/1AG055T	200	200	819	529	1688	70	1260	70	1260	250	910	1059	1194
92SV1G075T	200	200	819	529	1688	70	1260	70	1260	250	910	1051	1194
92SV2/2AG110T	200	200	819	529	1688	70	1260	70	1260	250	910	1237	1821
92SV2G150T	200	200	819	529	1688	70	1260	70	1260	250	910	1303	1821
92SV3/2AG185T	200	200	819	529	1688	70	1260	70	1260	250	910	1393	1821
92SV3G220T	200	200	819	529	1688	70	1260	70	1260	250	910	1393	1821

Note: for versions with vibration damping feet increase height by 50 mm.

gs30ra_sv46-en_c_td16

**GSD30
GSY30**

**THREE-PUMP BOOSTER SETS, GSY30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**



GS30-SV-BIG_A_DD

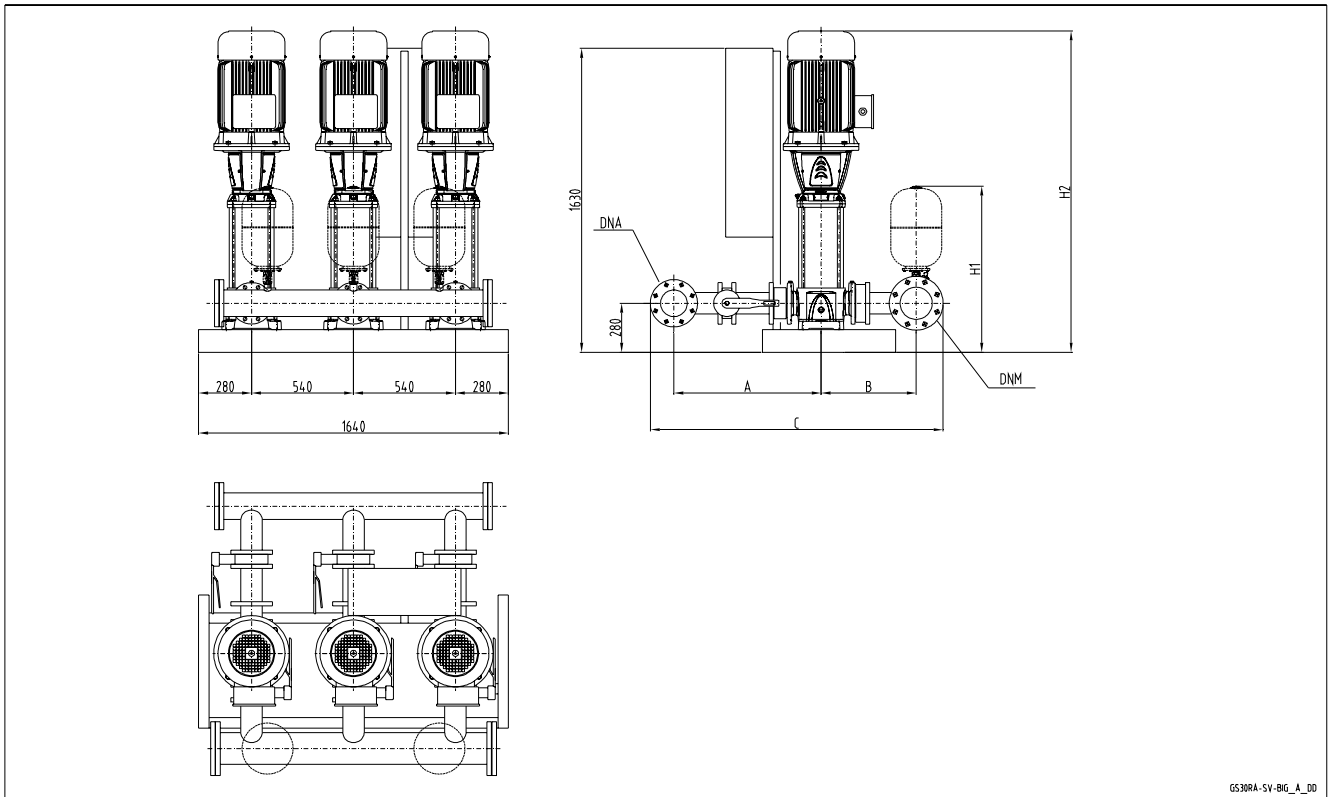
**GSD30
GSY30**

GSY30	DNA	DNM	A	B	C	H1	H2
SV6605/2F300T	200	150	529	794	1635	914	1766
SV6605/1F300T	200	150	529	794	1635	914	1766
SV6605F300T	200	150	529	794	1635	914	1766
SV9204/2F300T	200	200	529	819	1688	940	1676
SV9204F300T	200	200	529	819	1688	940	1676
SV9205/2F370T	200	200	529	819	1688	940	1766

Note: for versions with vibration damping feet increase height by 50 mm.

gs30_sv-big-en_b_td

**THREE-PUMP BOOSTER SETS, GSY30 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GSY30RA-SV-BIG_A_00

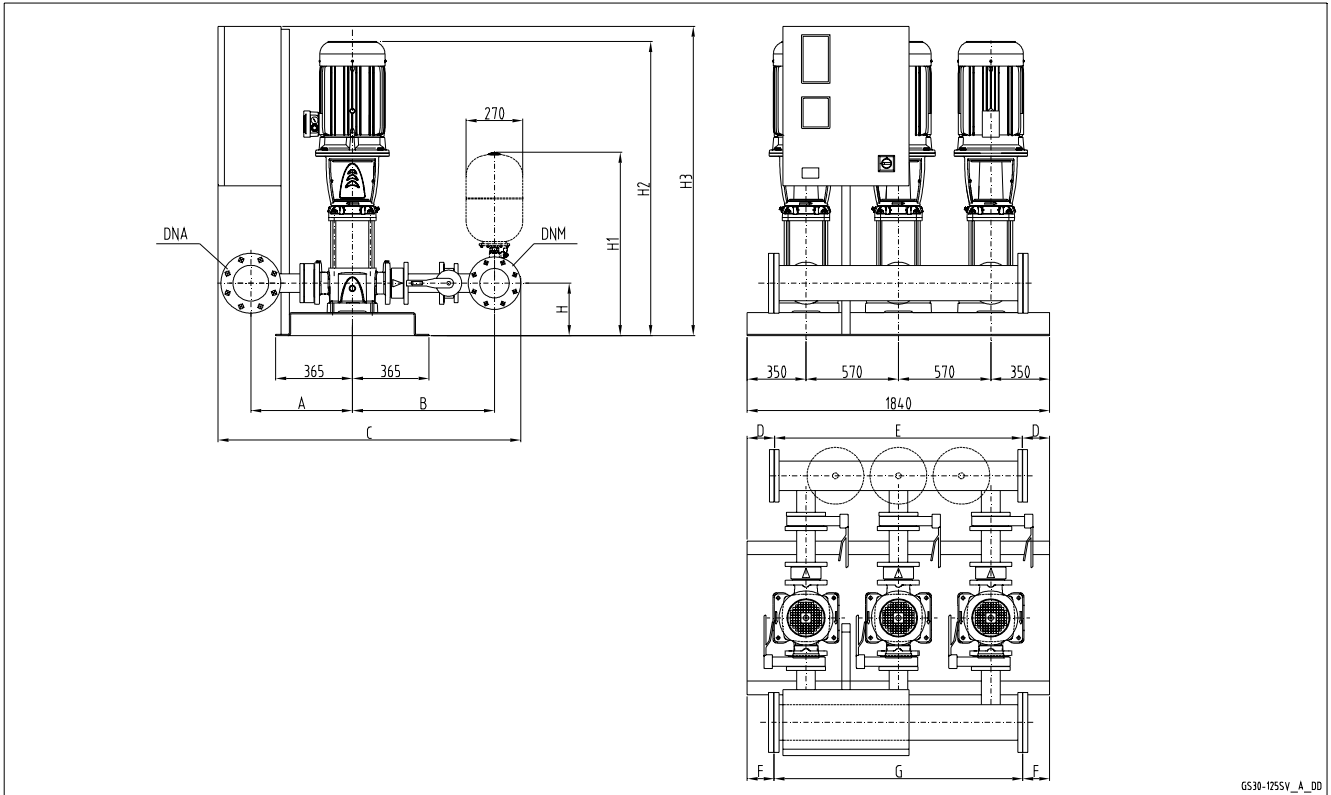
**GSD30
GSY30**

GSY30RA	DNA	DNM	A	B	C	H1	H2
SV6605/2F300T	200	150	819	504	1635	914	1766
SV6605/1F300T	200	150	819	504	1635	914	1766
SV6605F300T	200	150	819	504	1635	914	1766
SV9204/2F300T	200	200	819	529	1688	940	1676
SV9204F300T	200	200	819	529	1688	940	1676
SV9205/2F370T	200	200	819	529	1688	940	1766

Note: for versions with vibration damping feet increase height by 50 mm.

gs30ra_sv-big-en_b_td

**THREE-PUMP BOOSTER SETS, GSD30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**



GSD30-125SV_A_DD

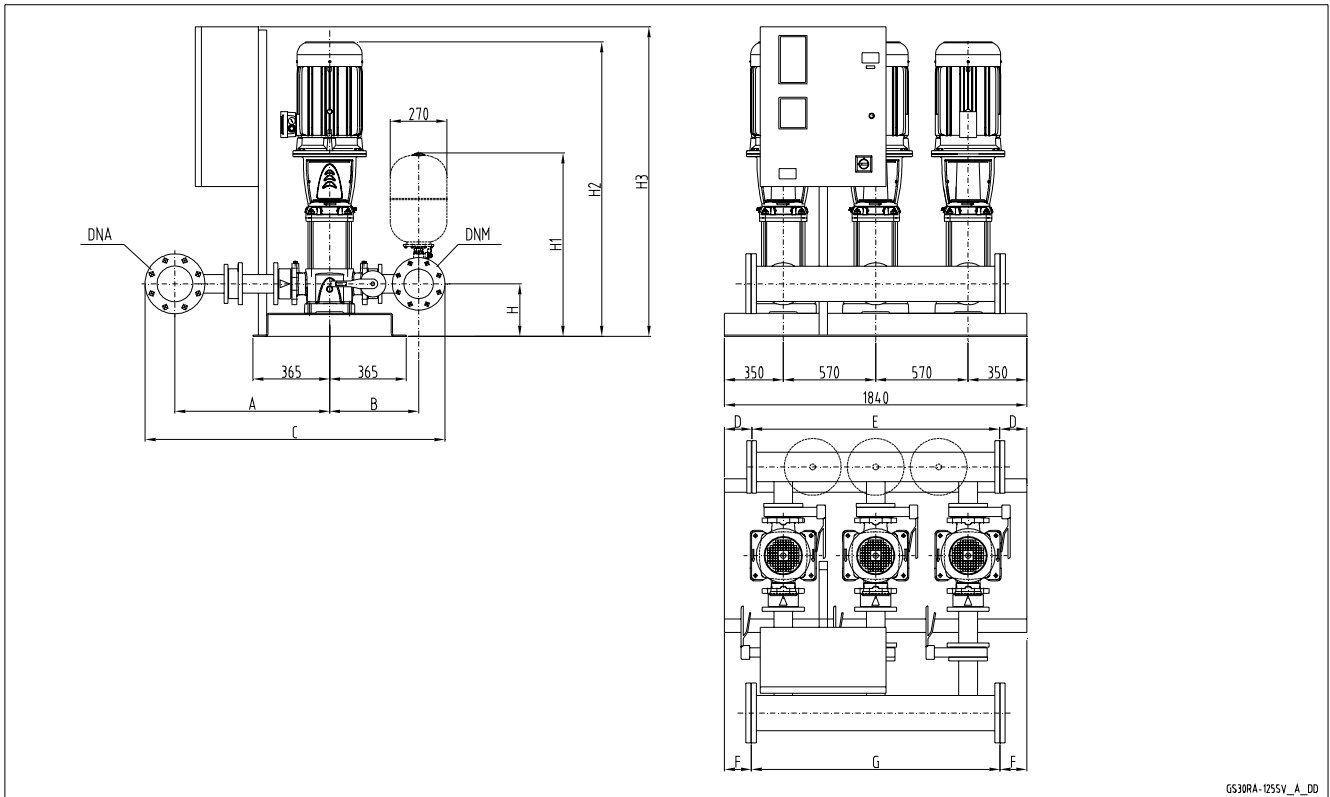
**GSD30
GSY30**

GSD30	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	250	200	618	927	1917	160	1520	130	1580	280	940	1180	1195
125SV2G150T	250	200	618	927	1917	160	1520	130	1580	280	940	1492	1822
125SV3G220T	250	200	618	927	1917	160	1520	130	1580	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs30_125sv-en_a_td

**THREE-PUMP BOOSTER SETS, GSD30 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



GSD30RA-125SV_A_DD

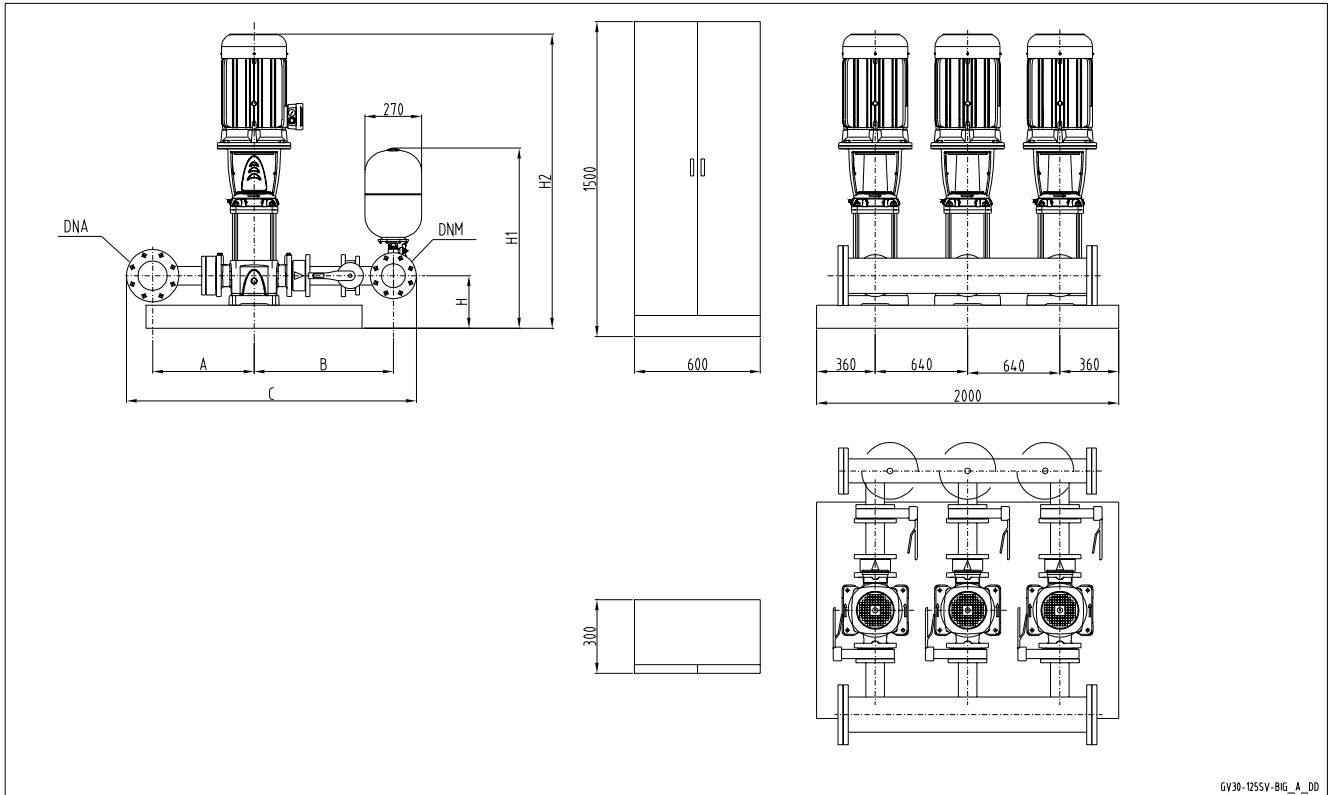
**GSD30
GSY30**

GSD30RA	DNA	DNM	A	B	C	D	E	F	G	H	H1	H2	H3
125SV1G075T	250	200	954	591	1917	160	1520	130	1580	280	940	1180	1195
125SV2G150T	250	200	954	591	1917	160	1520	130	1580	280	940	1492	1822
125SV3G220T	250	200	954	591	1917	160	1520	130	1580	280	940	1642	1822

Note: for versions with vibration damping feet increase height by 50 mm.

gs30ra_125sv-en_a_td

**THREE-PUMP BOOSTER SETS, GSY30 SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON DISCHARGE SIDE**



GSY30-125SV-BIG_A_DD

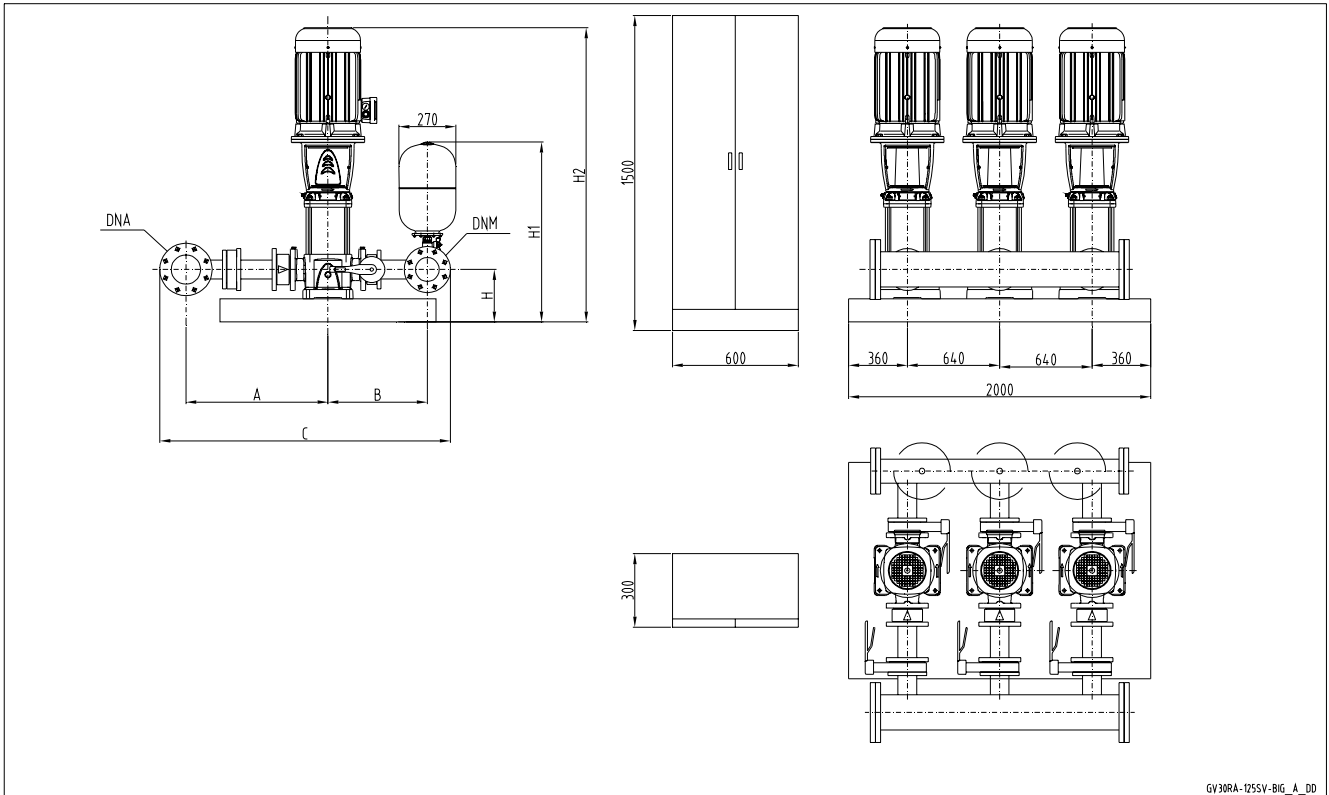
**GSD30
GSY30**

GSY30	DNA	DNM	A	B	C	H	H1	H2
125SV4G300T	250	200	618	927	1917	300	960	1975
125SV5G370T	250	200	618	927	1917	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

gs30_125sv-big-en_a_td

**THREE-PUMP BOOSTER SETS, GSY30 RA SERIES
VERTICAL ELECTRIC PUMPS WITH NON-RETURN VALVE
ON SUCTION SIDE**



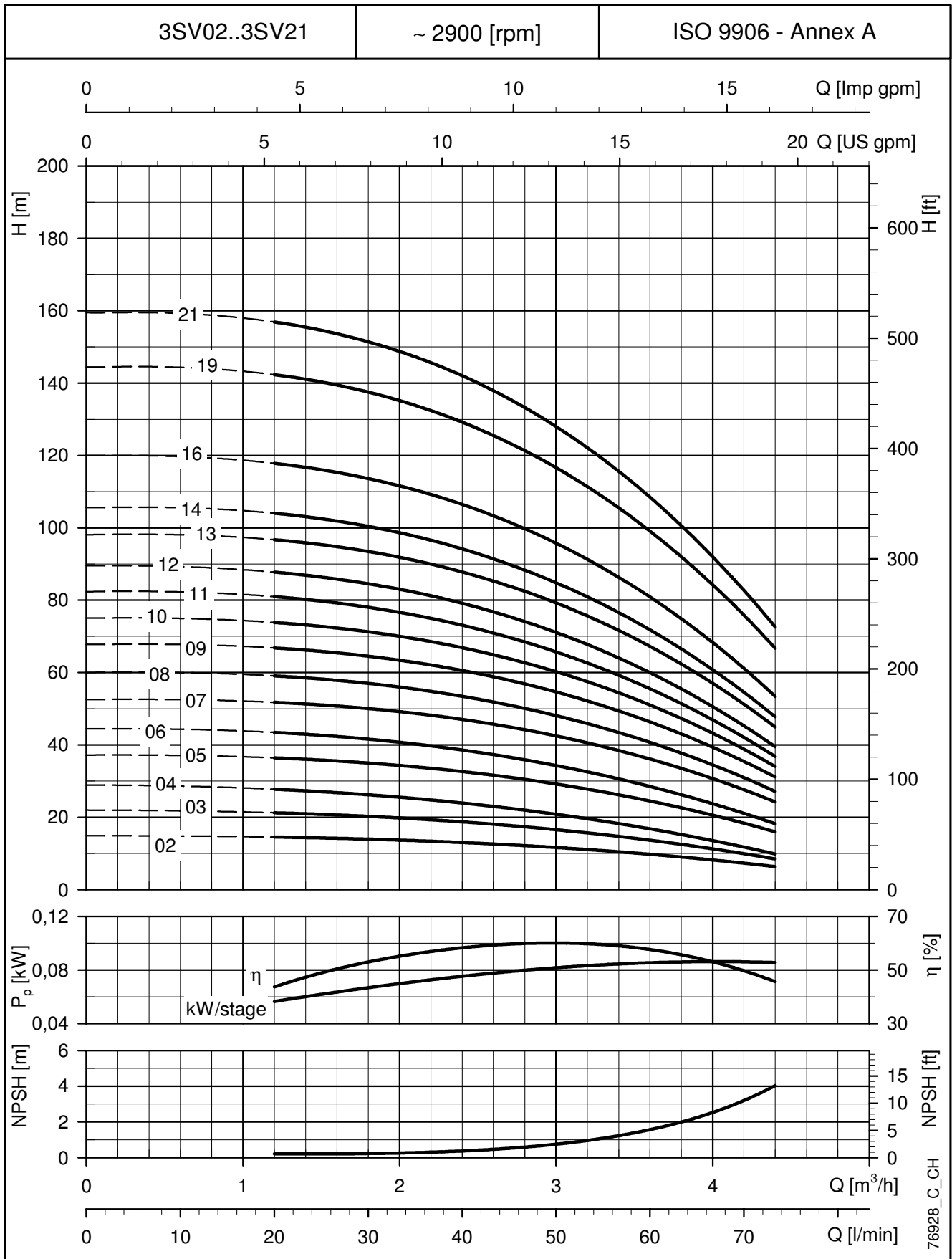
**GSD30
GSY30**

GSY30RA	DNA	DNM	A	B	C	H	H1	H2
125SV4G300T	250	200	954	591	1917	300	960	1975
125SV5G370T	250	200	954	591	1917	300	960	2125

Note: for versions with vibration damping feet increase height by 50 mm.

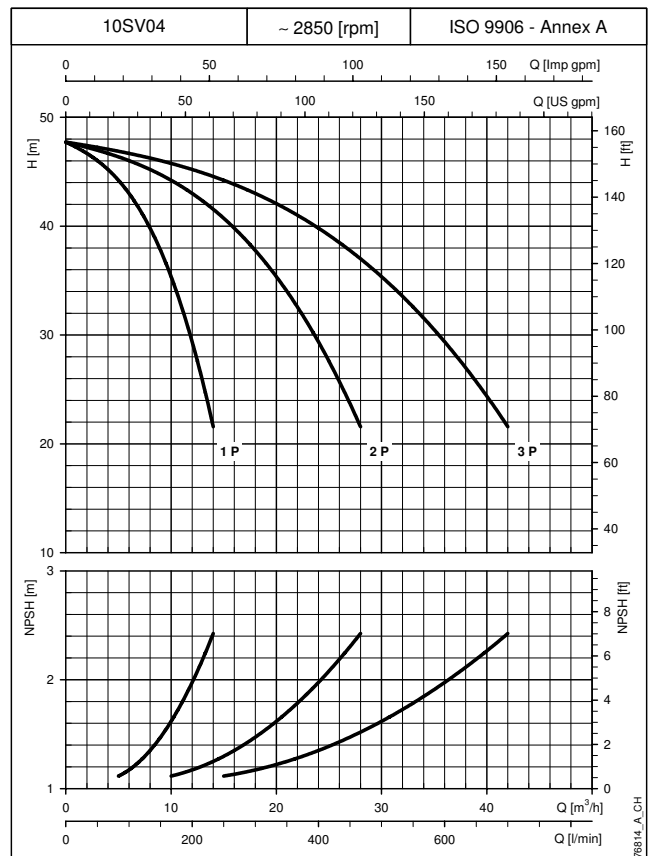
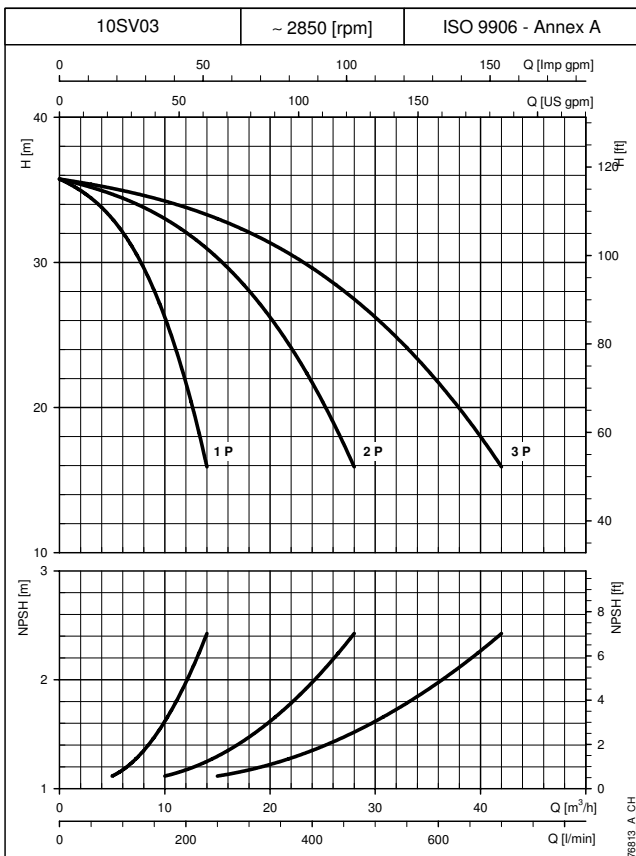
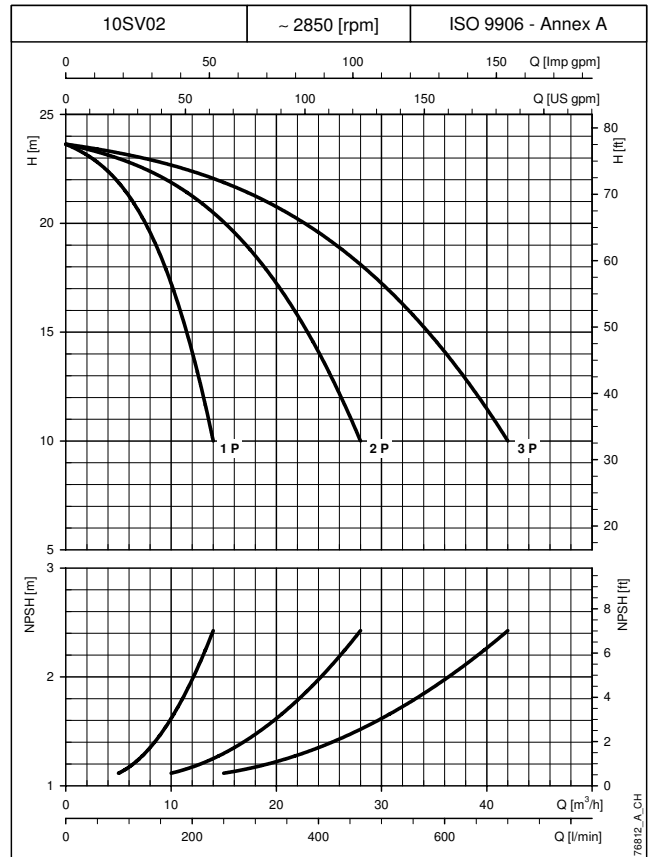
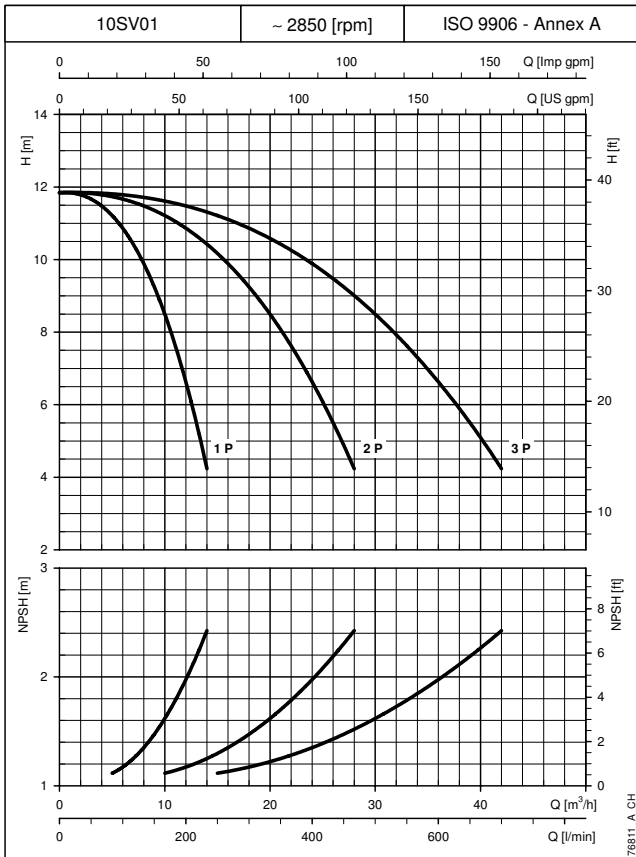
gs30ra_125sv-big-en_a_td

**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (JOCKEY PUMP)**



The performance curves do not take into account flow resistance in the valves and piping.
The curves show performance with one pump running.
These performances are valid for liquids with density $\rho = 1.0 \text{ kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.

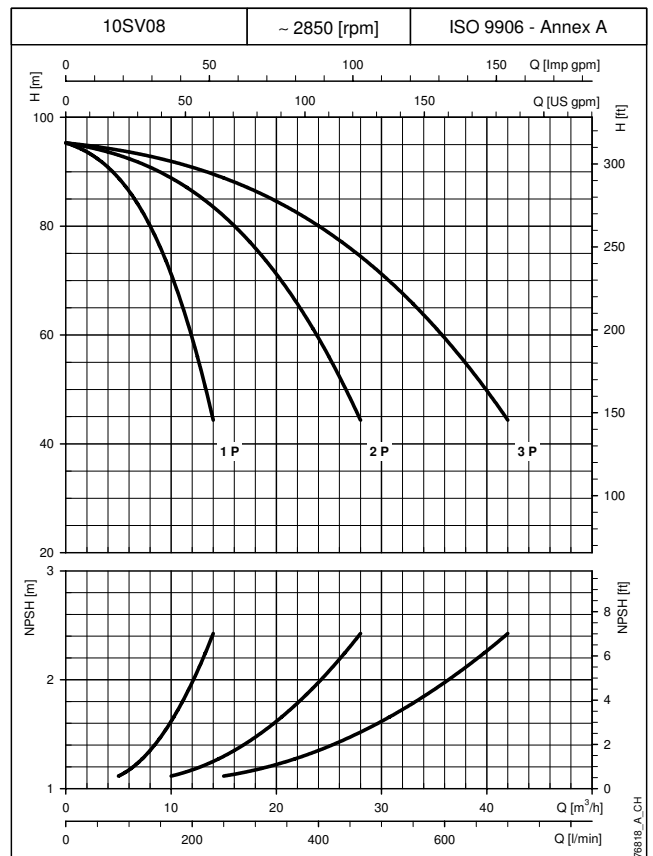
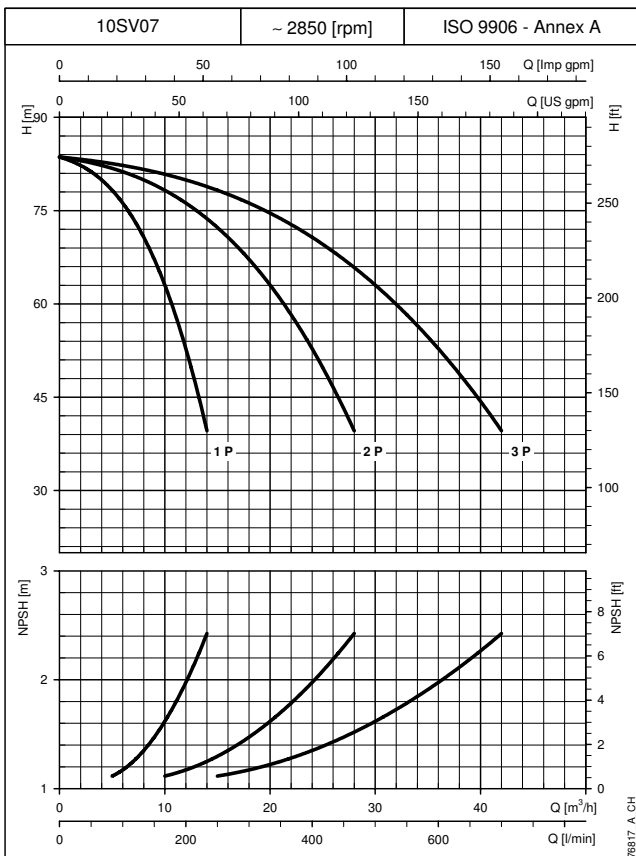
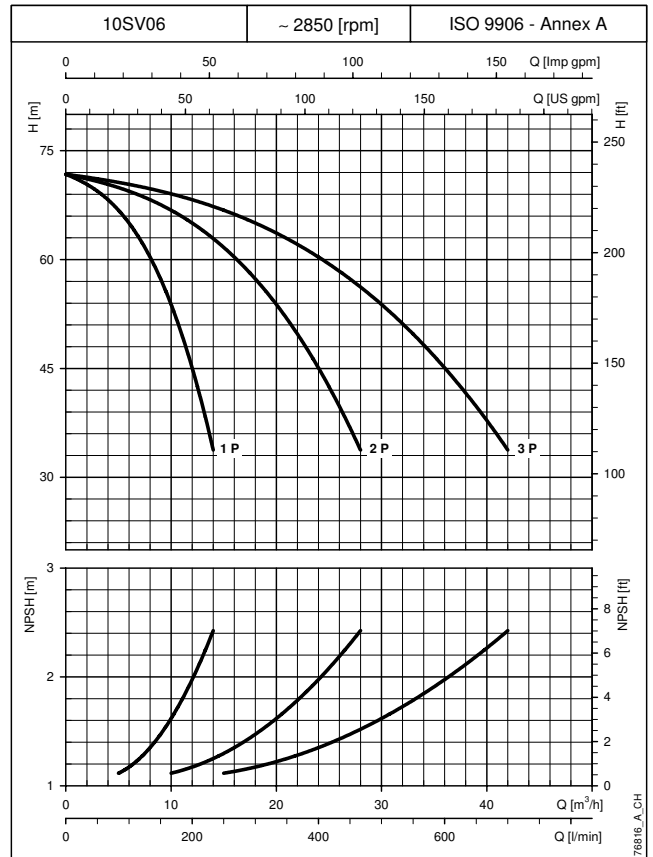
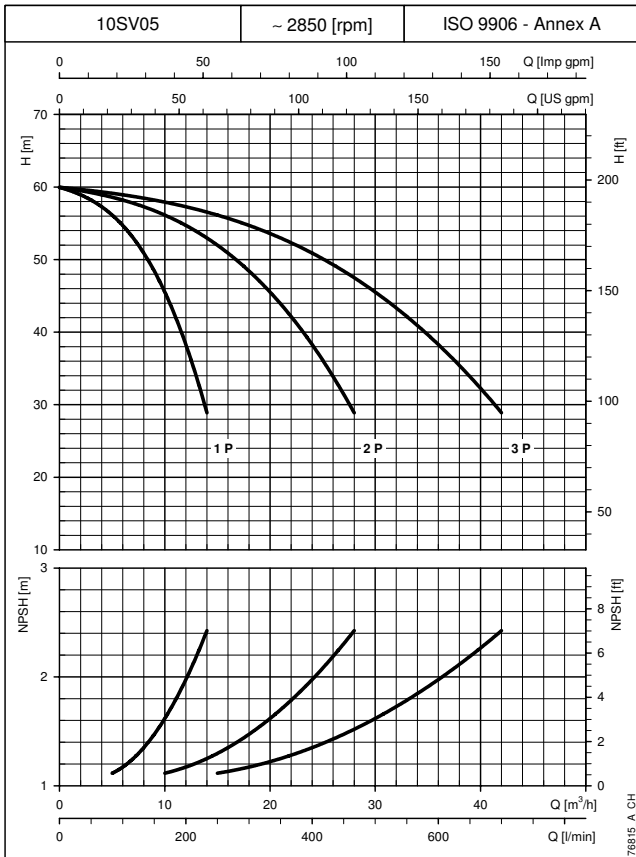
**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
The curves show the performance with one, two and three pumps running.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
The declared NPSH values are laboratory values: for practical use we recommend increasing these values by 0.5 m.

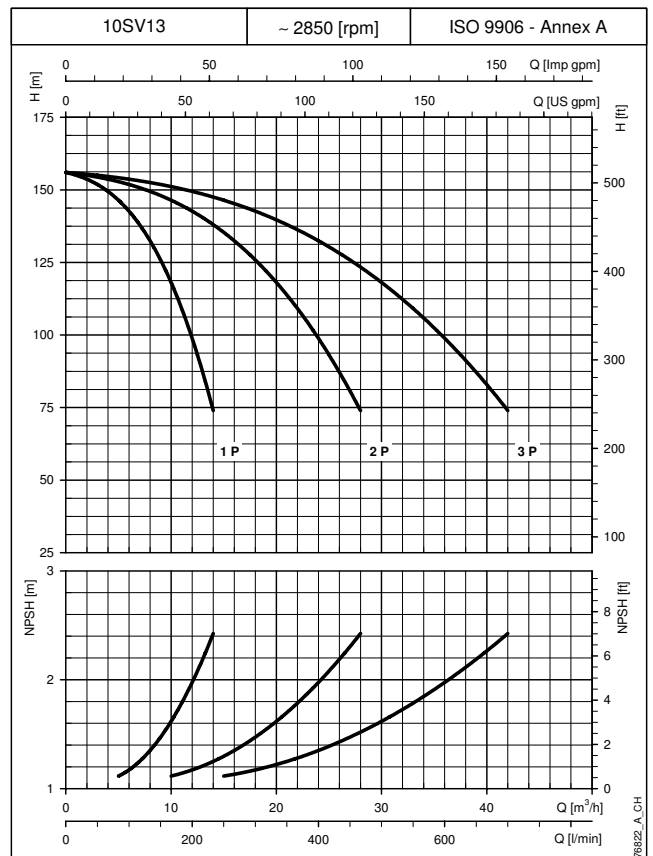
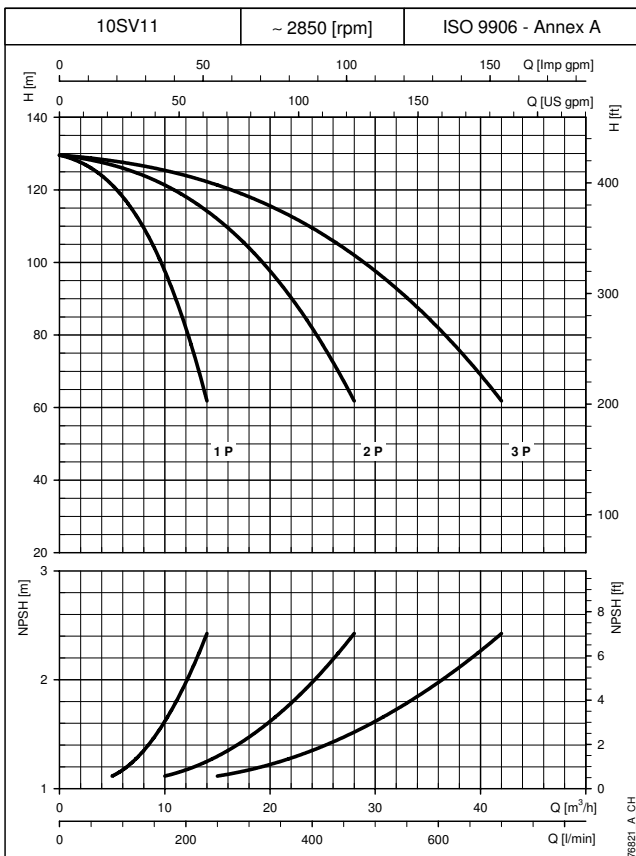
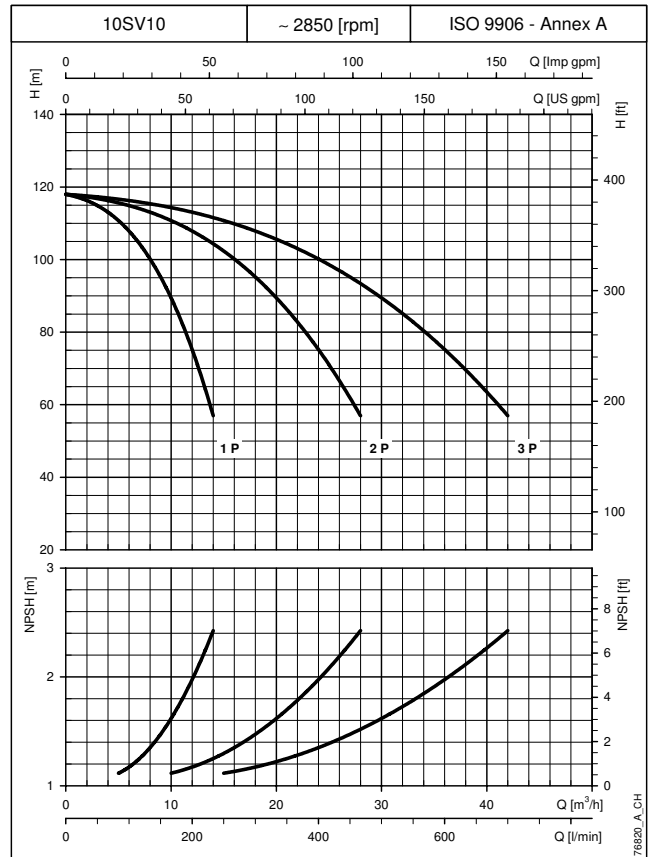
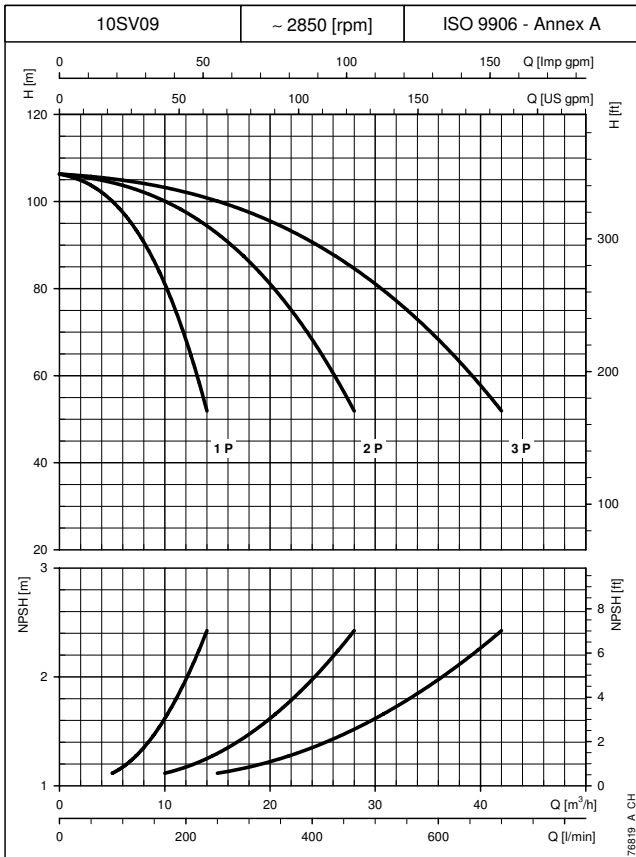
**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
The curves show the performance with one, two and three pumps running.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
The declared NPSH values are laboratory values: for practical use we recommend increasing these values by 0.5 m.

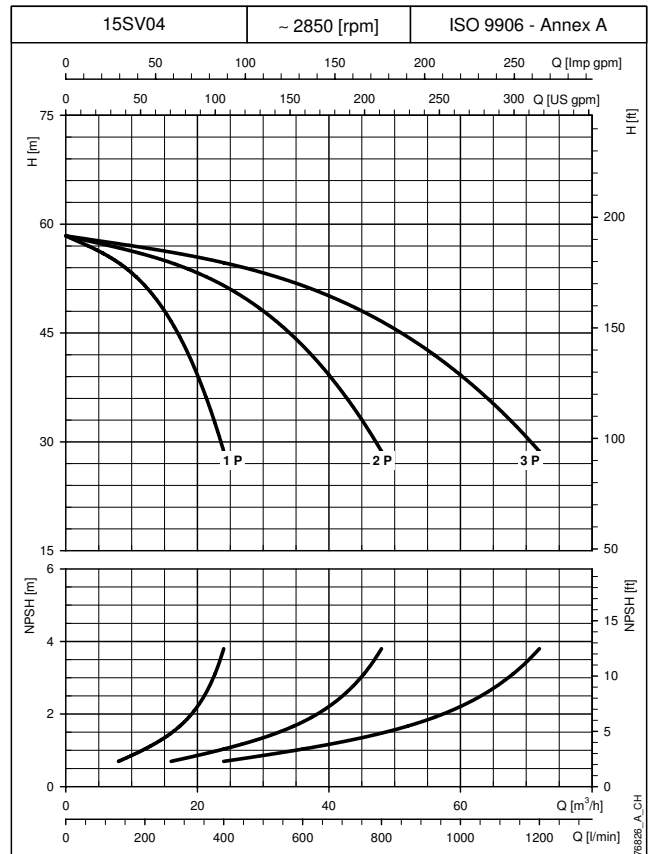
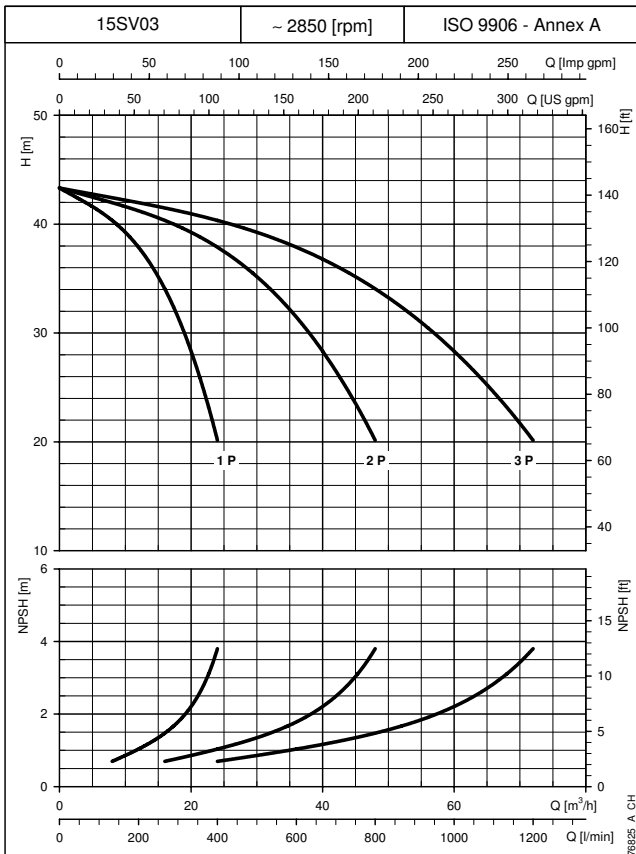
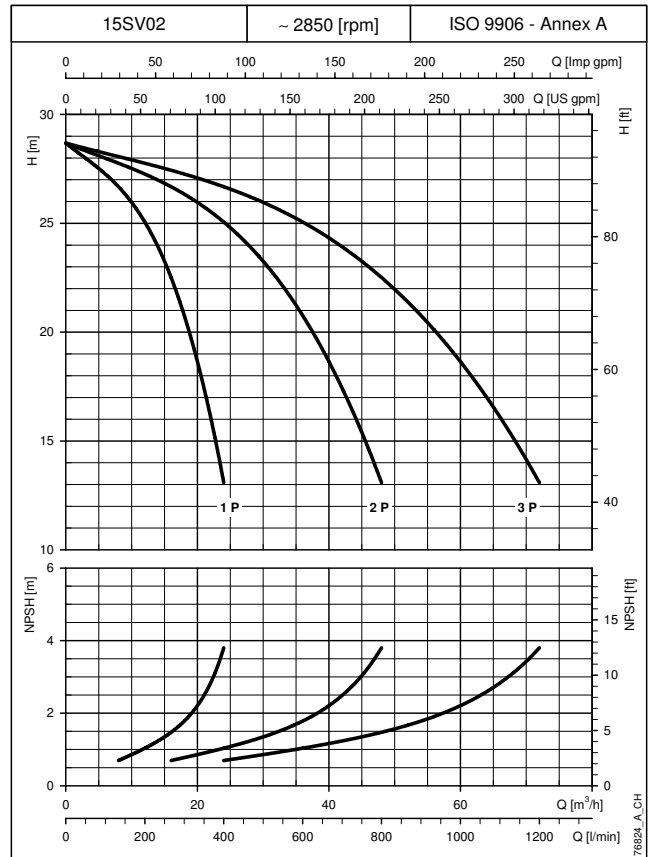
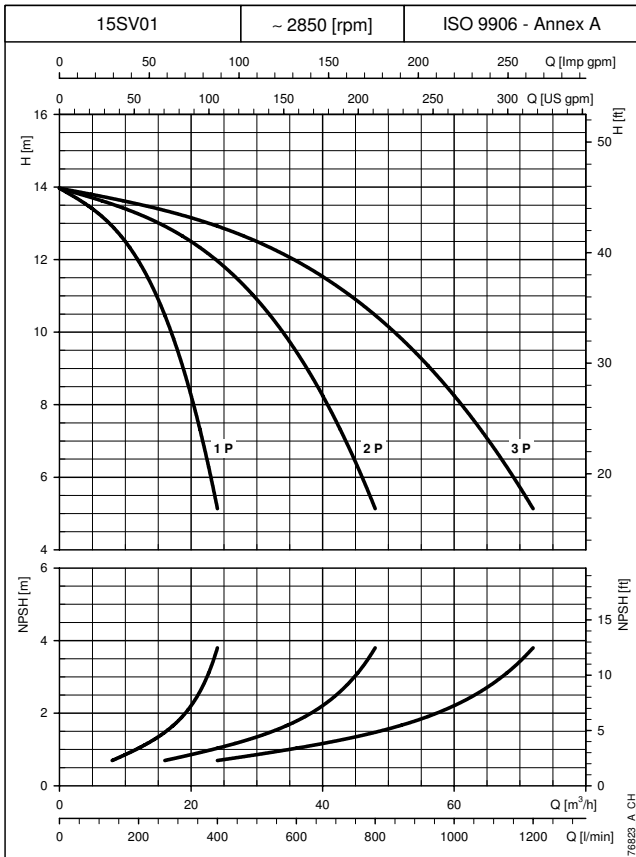
**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



The performance curves do not take into account flow resistance in the valves and piping.
The curves show the performance with one, two and three pumps running.
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
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CURVES

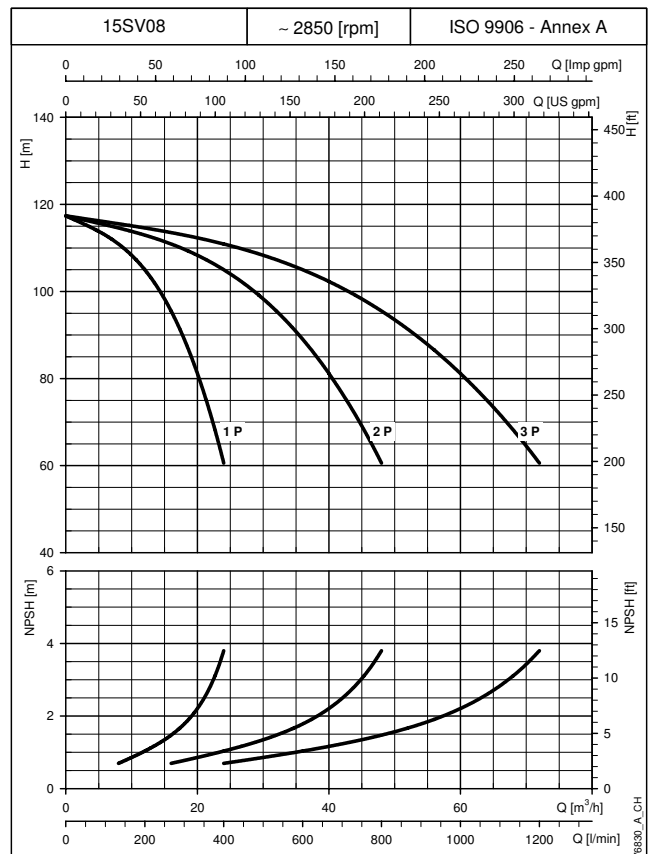
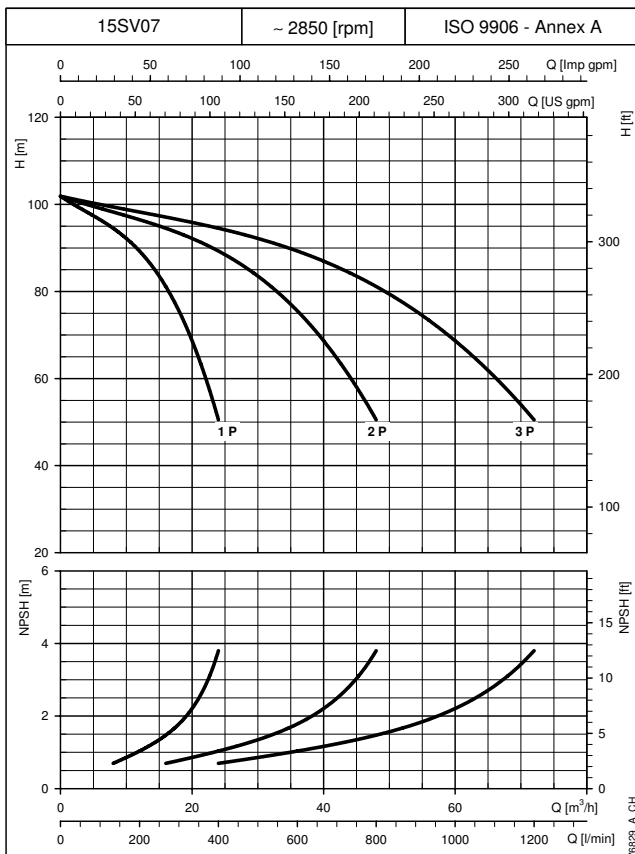
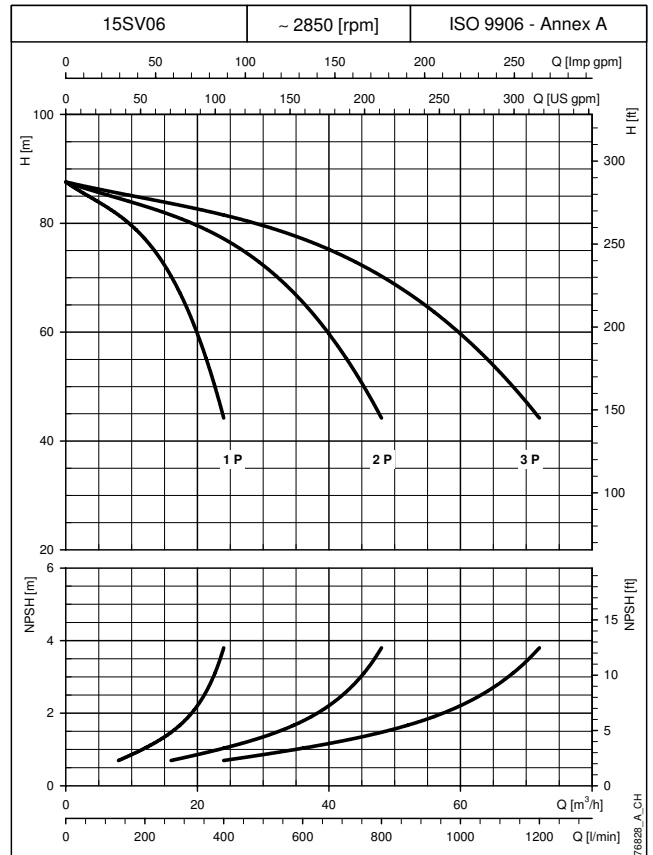
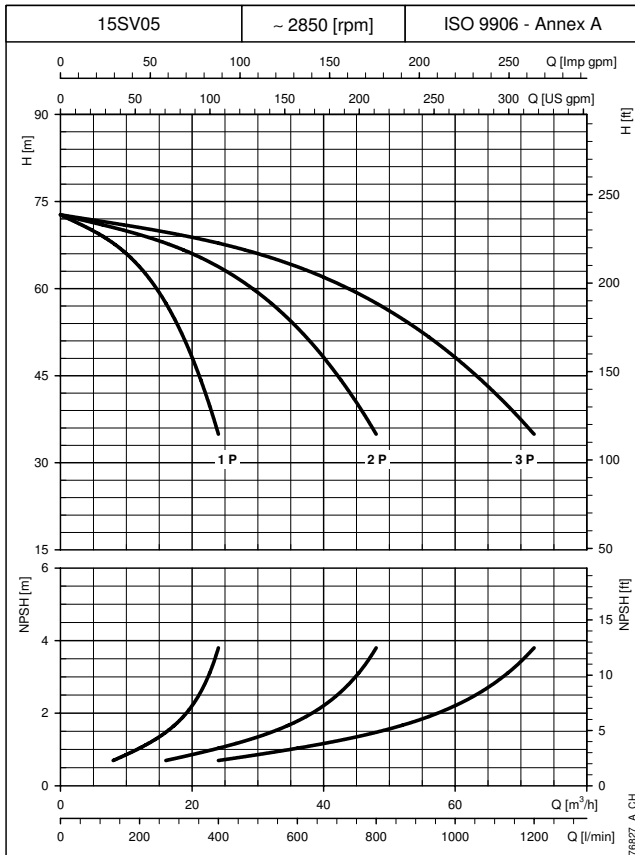
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
 The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0.5 m.

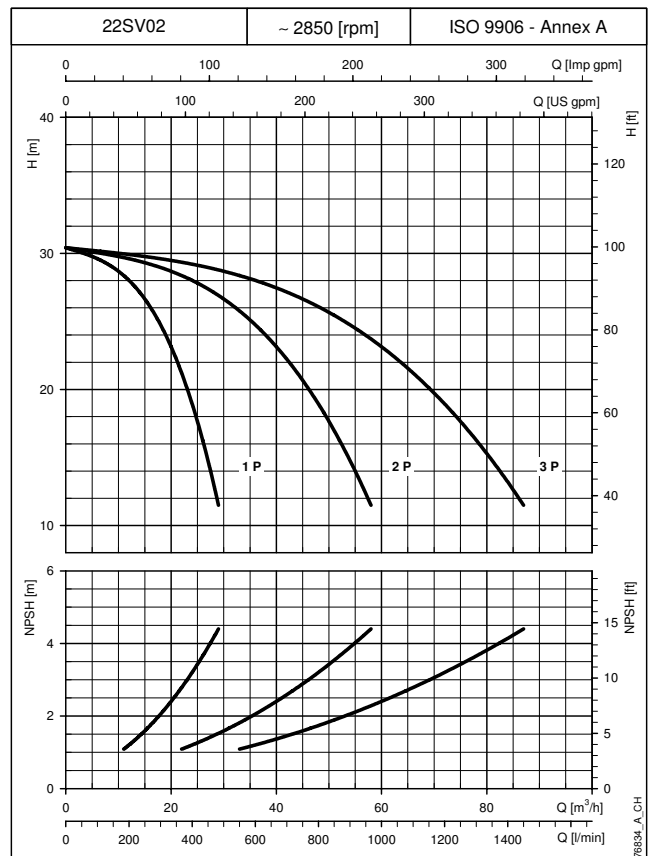
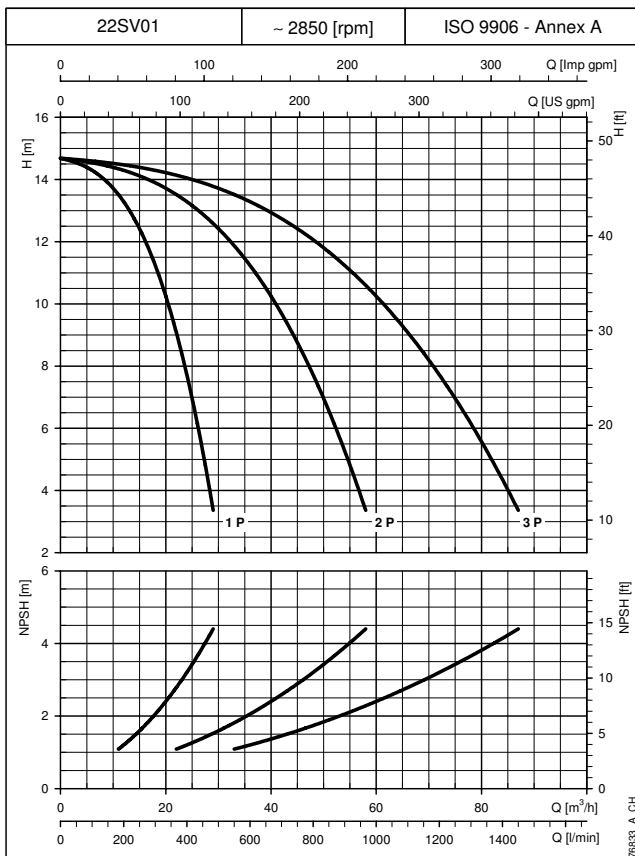
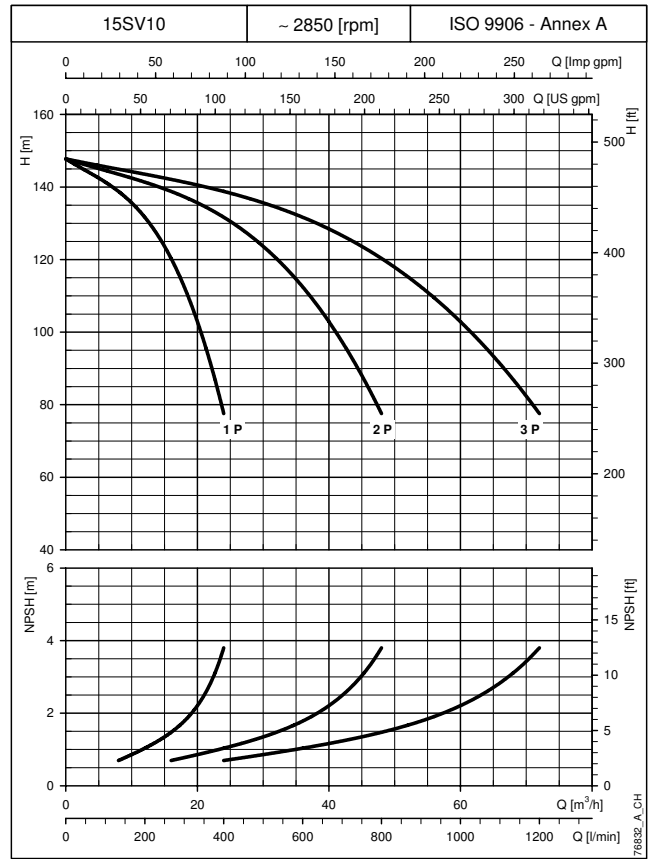
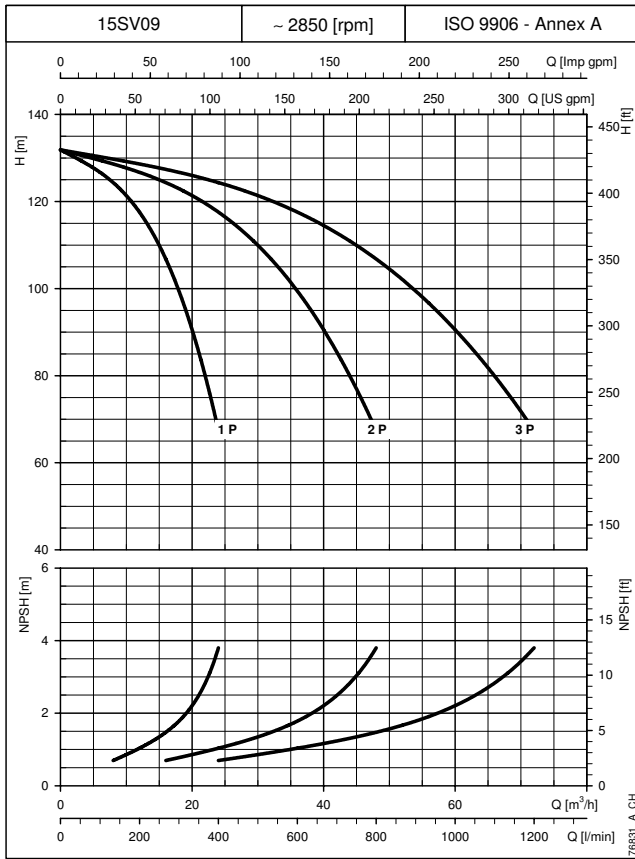
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
 The declared NPSH values are laboratory values: for practical use we recommend increasing these values by 0.5 m.

CURVES

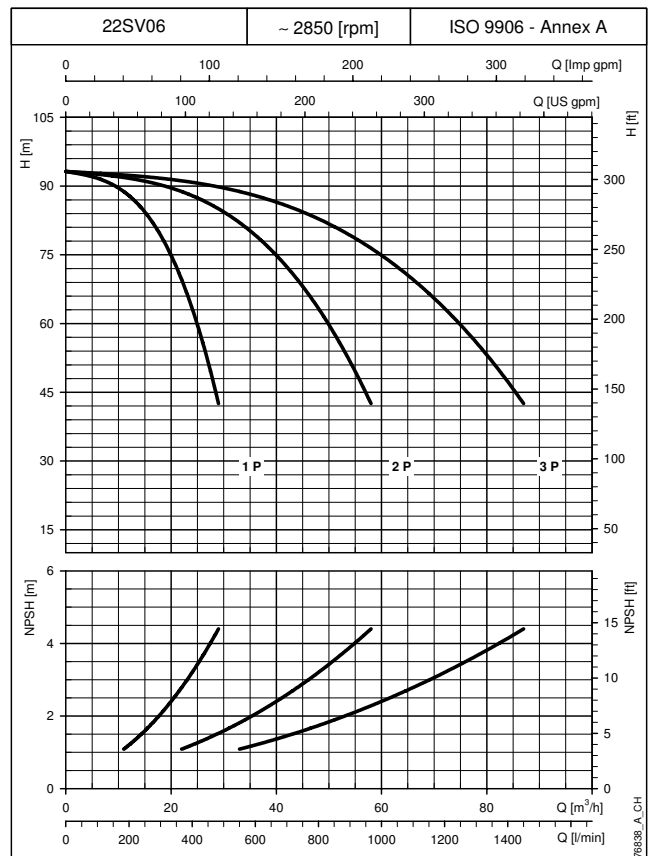
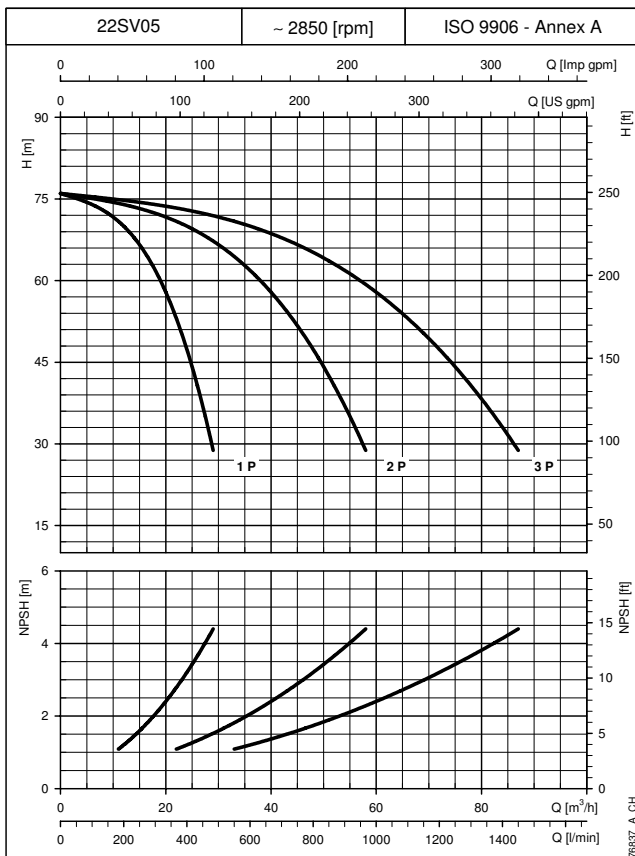
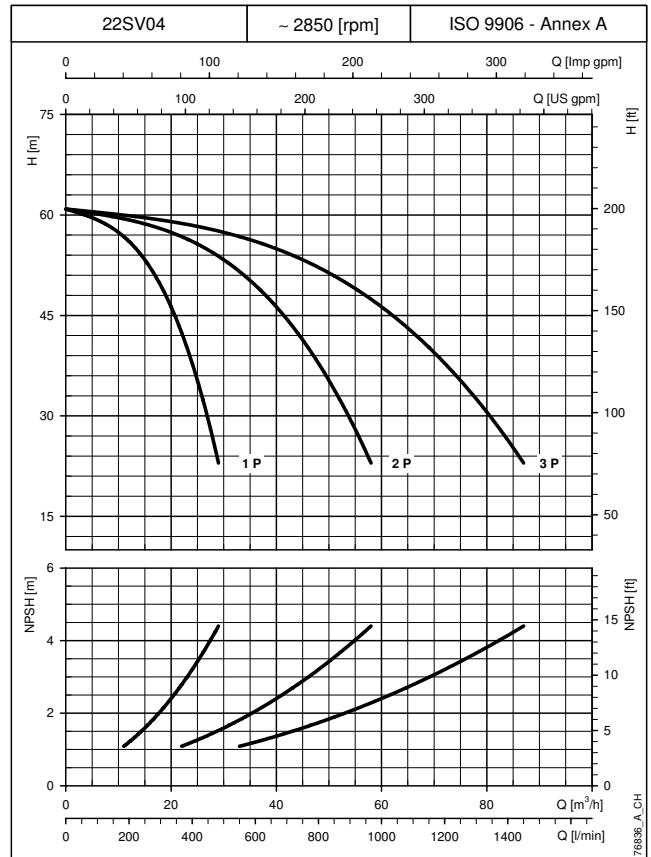
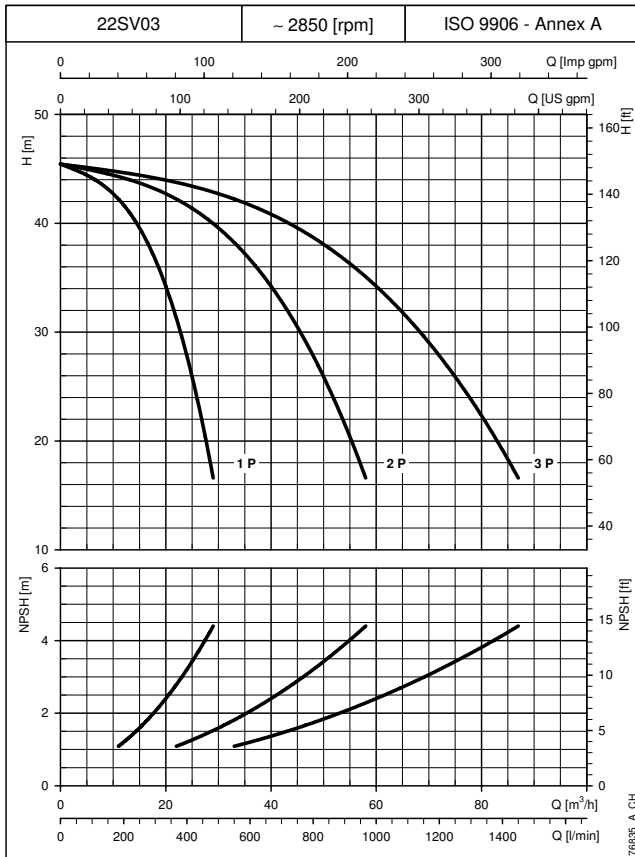
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
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 The declared NPSH values are laboratory values: for practical use we recommend increasing these values by 0.5 m.

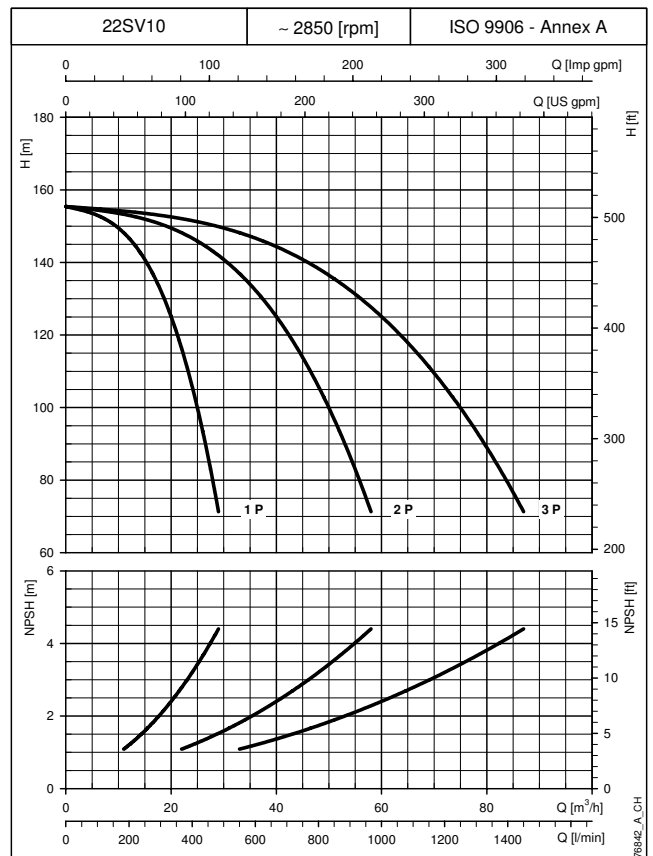
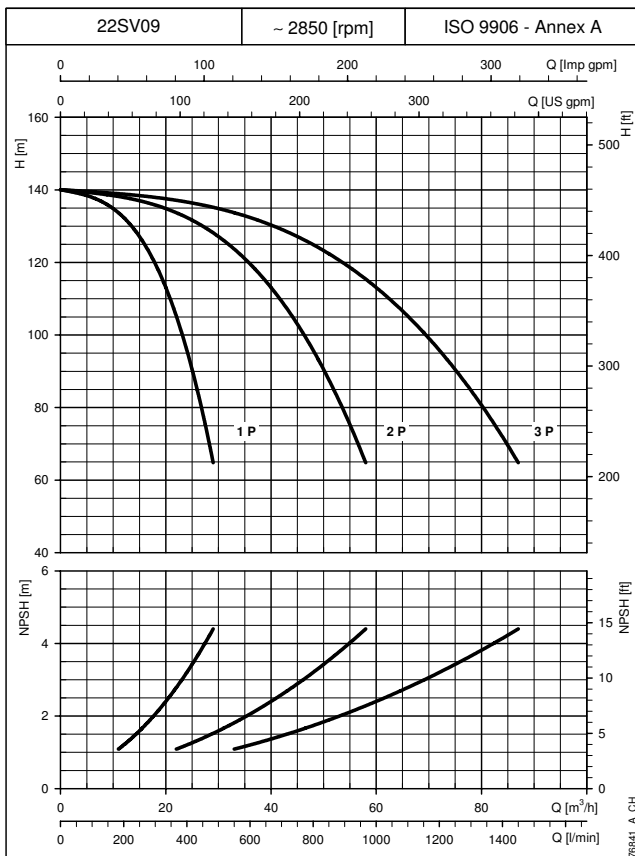
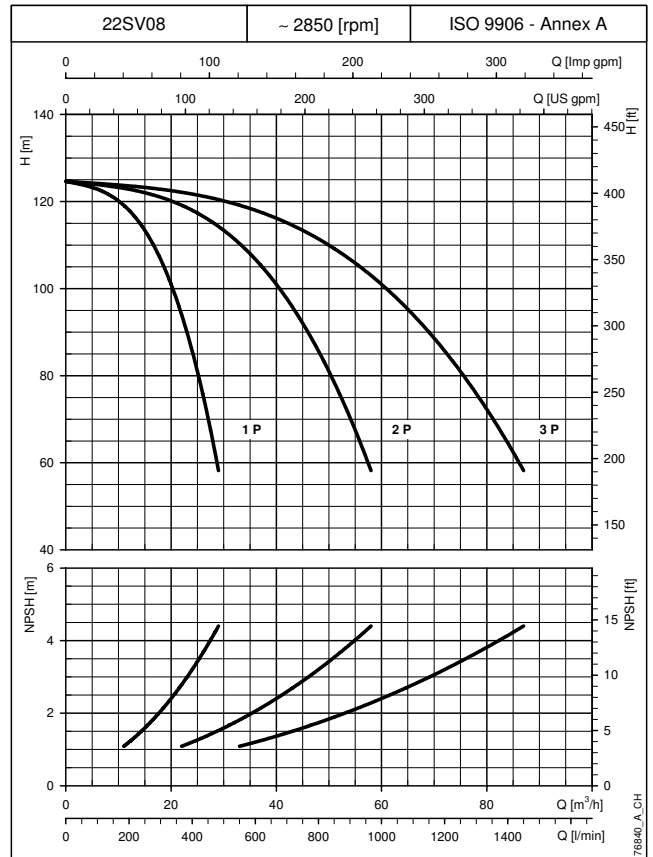
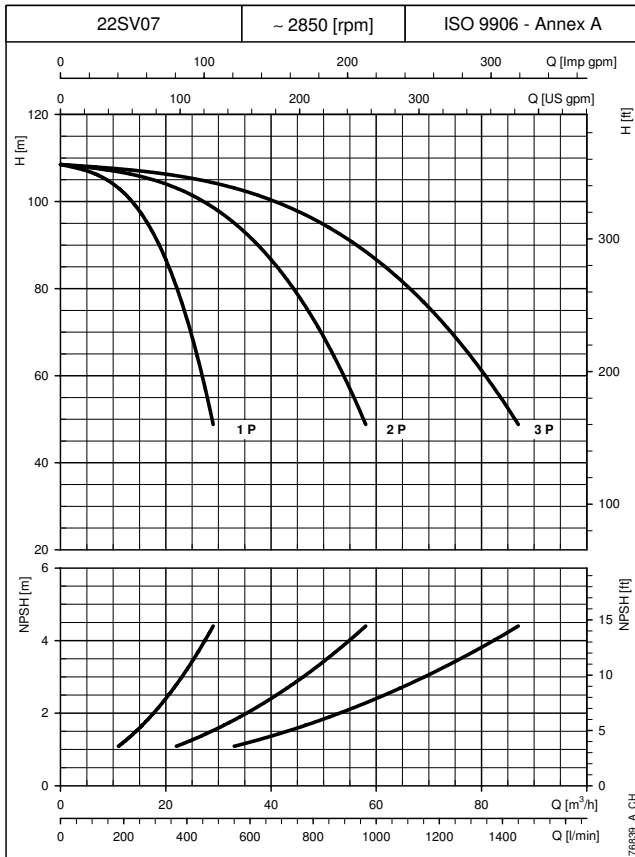
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



The performance curves do not take into account flow resistance in the valves and piping.
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 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
 The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0.5 m.

CURVES

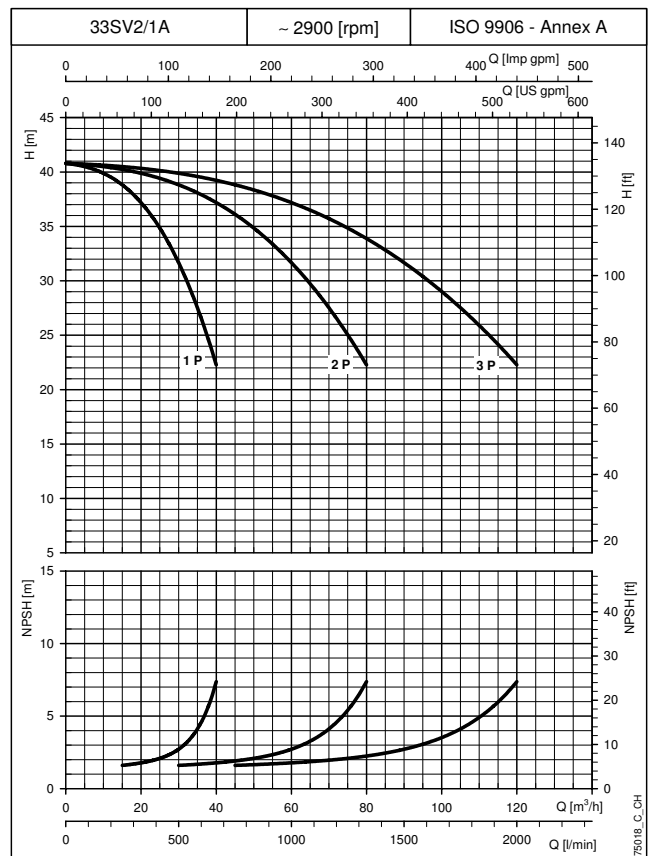
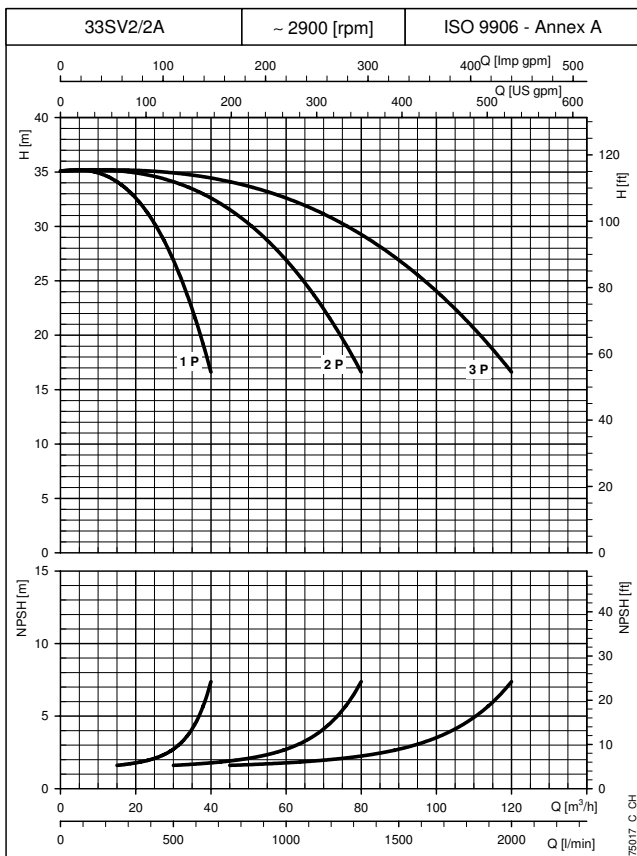
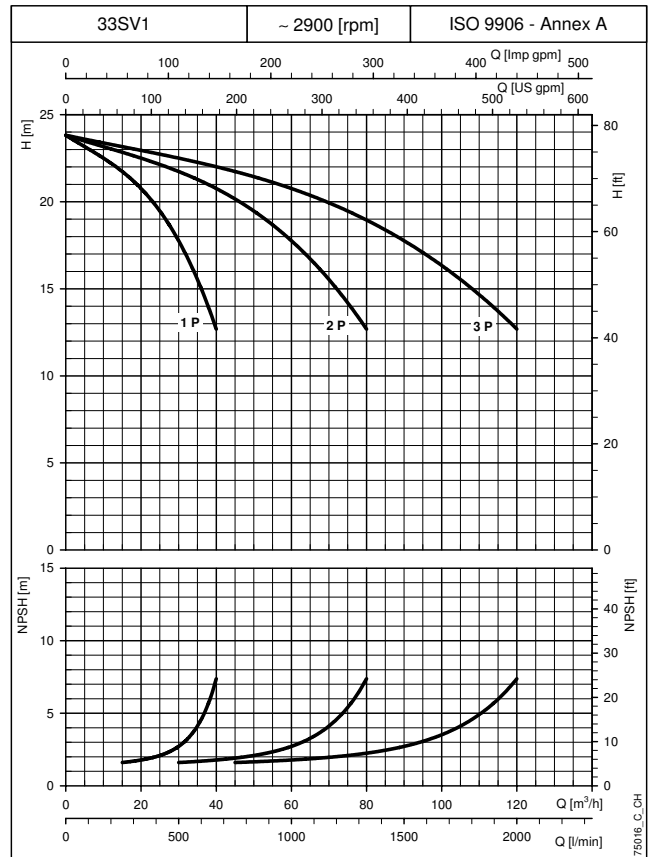
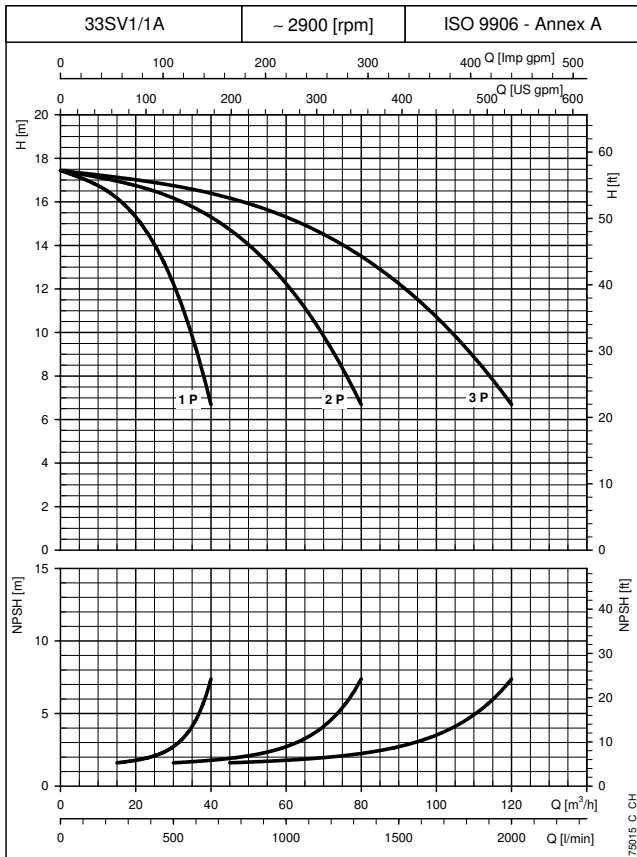
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
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 The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0.5 m.

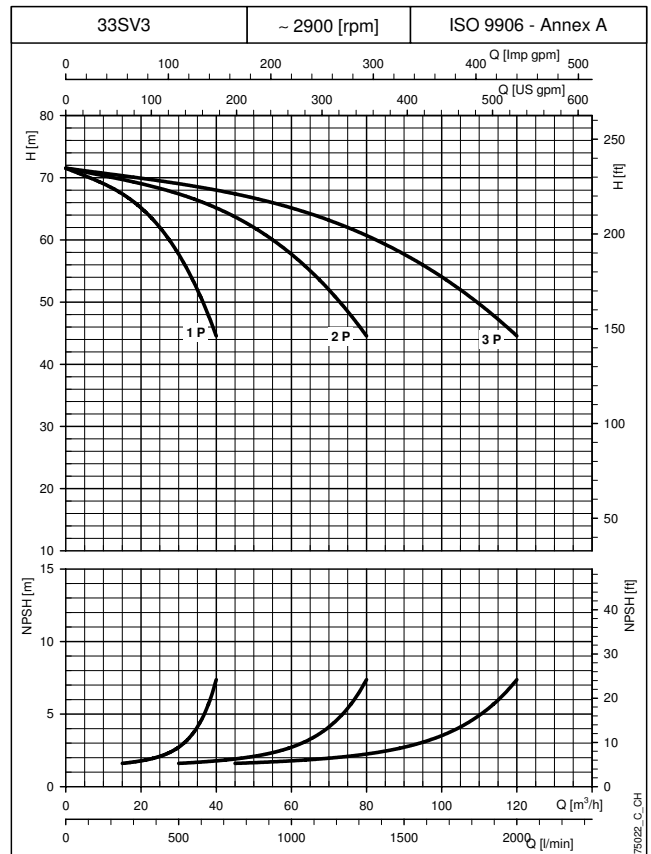
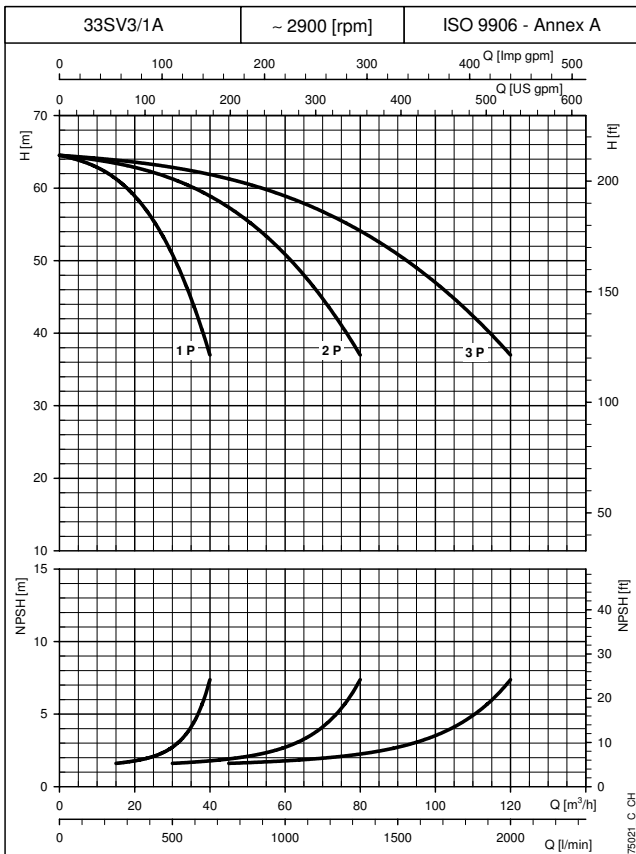
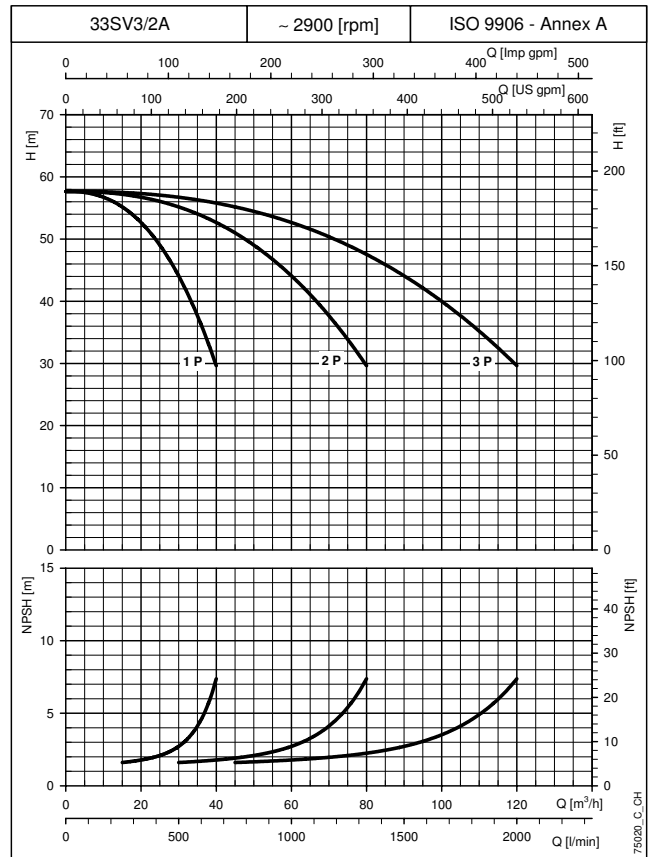
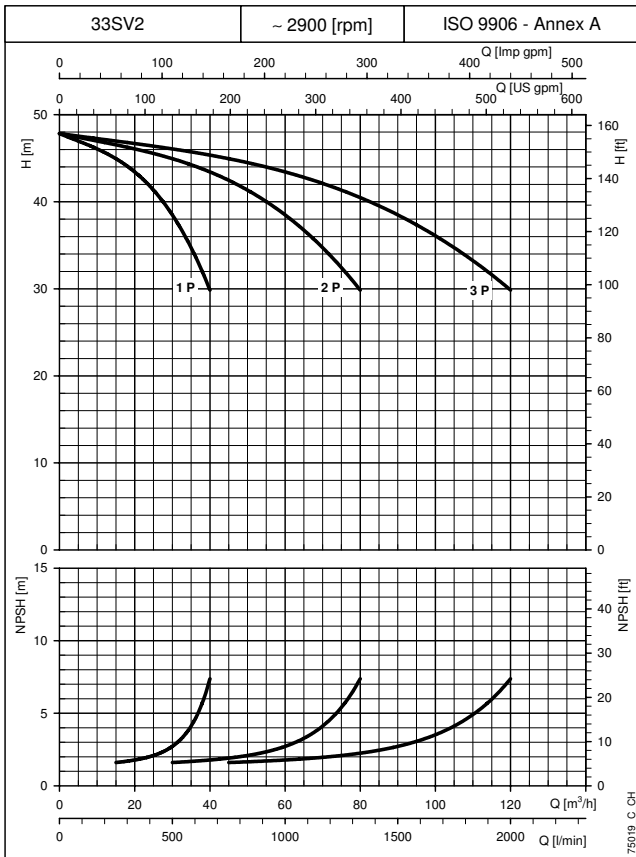
**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
 The declared NPSH values are laboratory values: for practical use we recommend increasing these values by 0.5 m.

CURVES

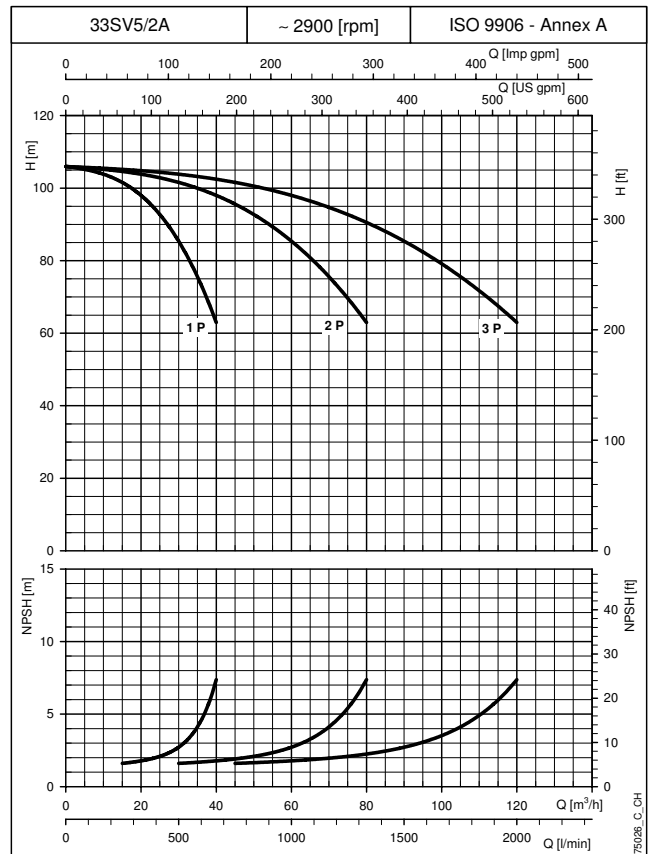
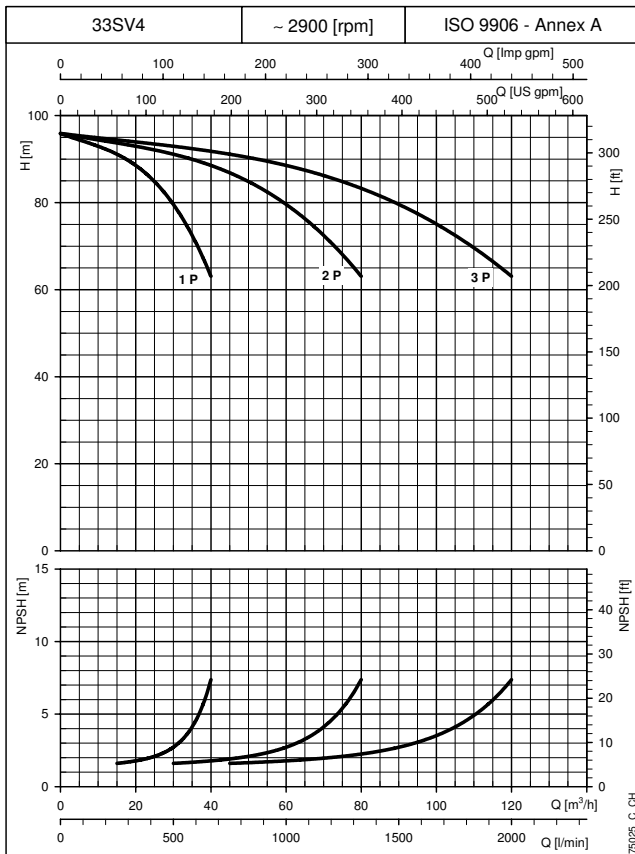
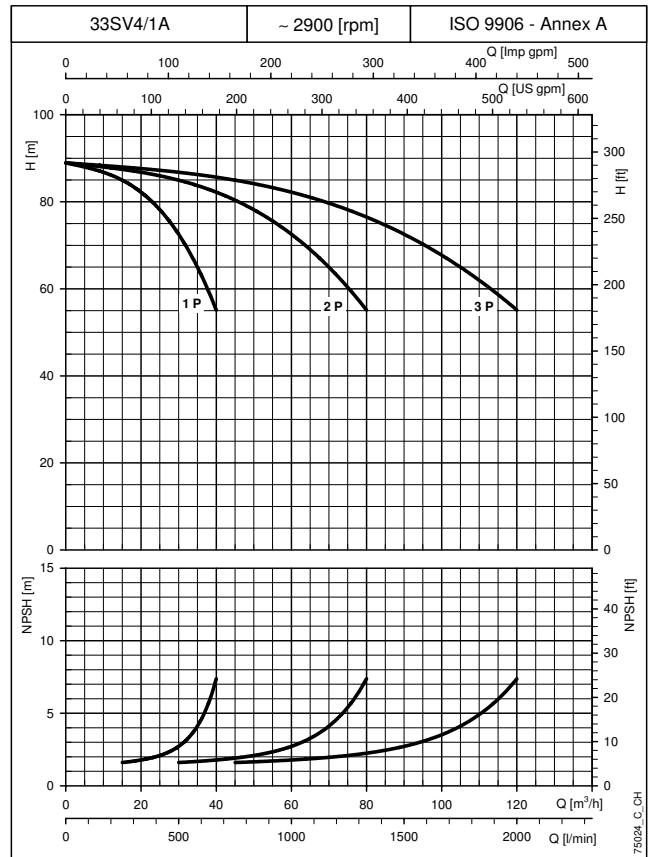
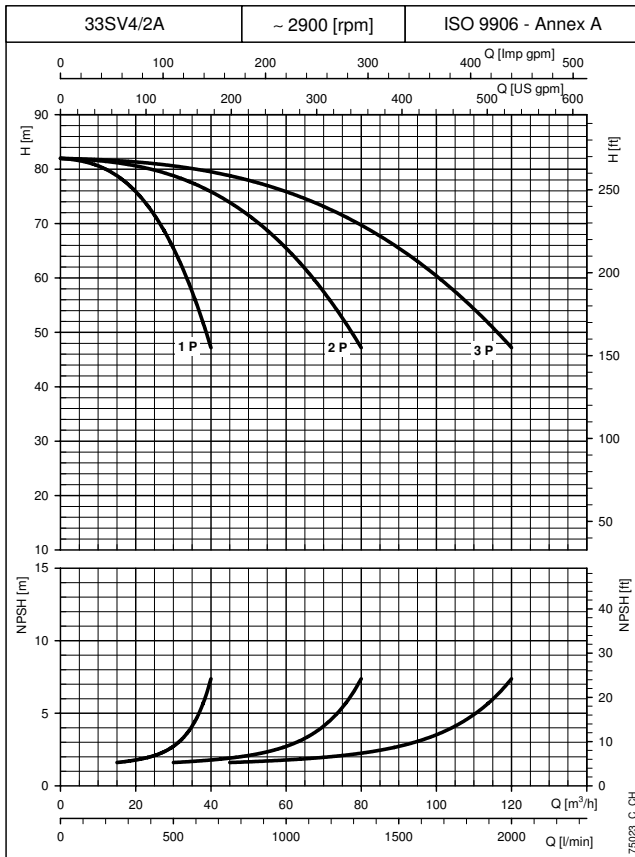
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
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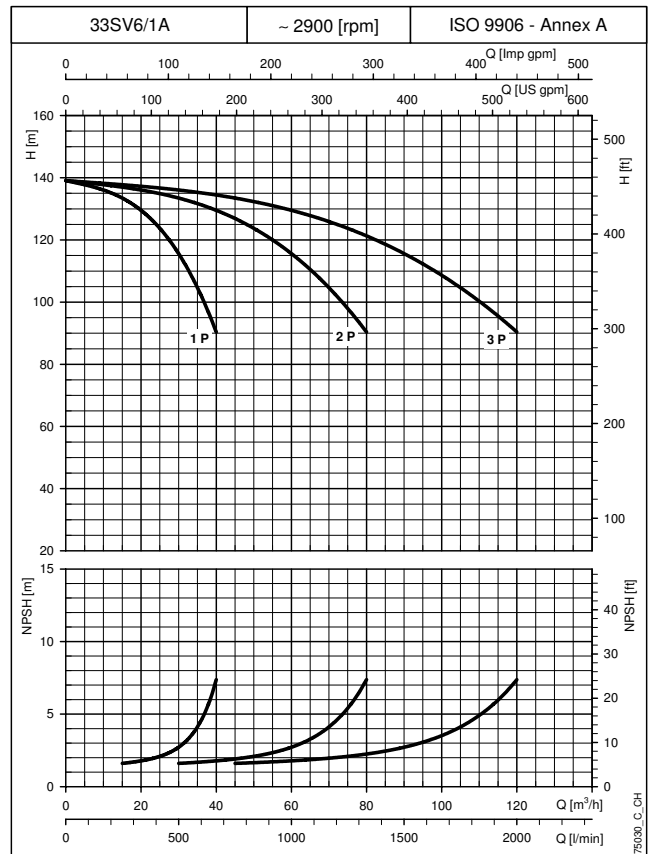
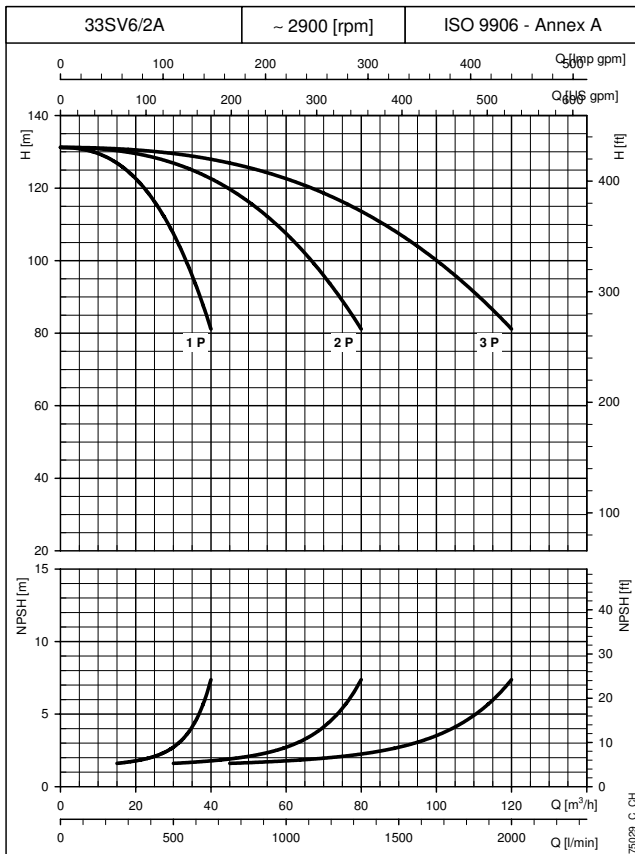
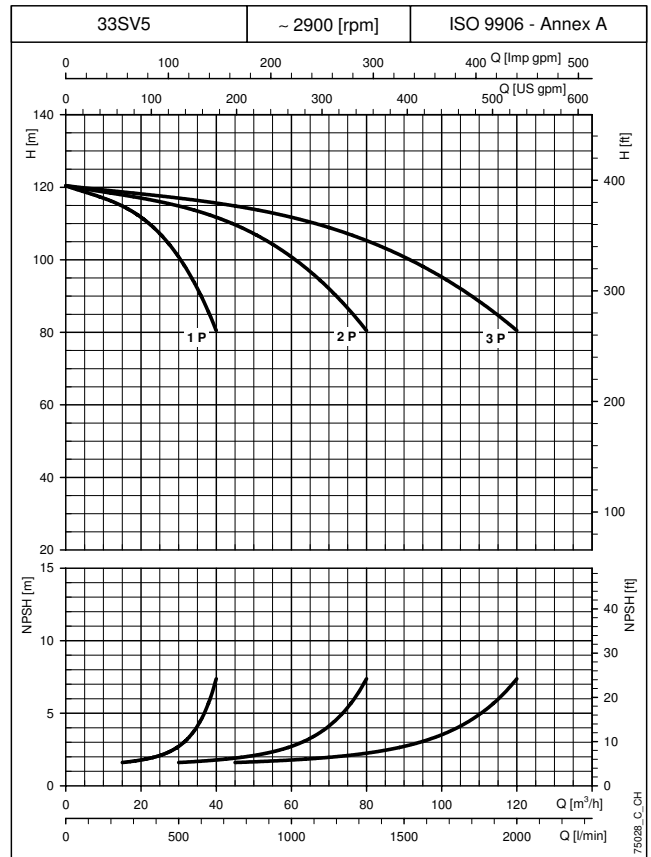
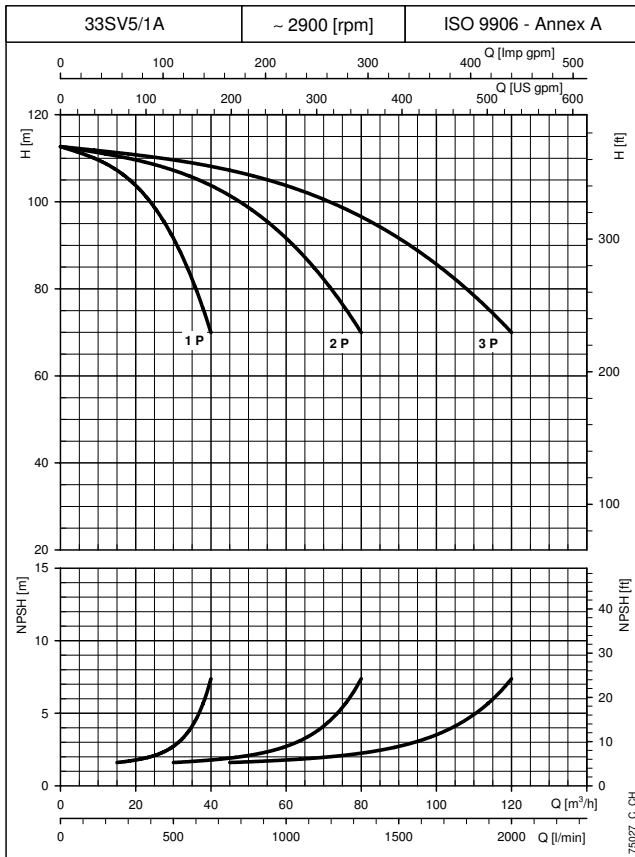
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
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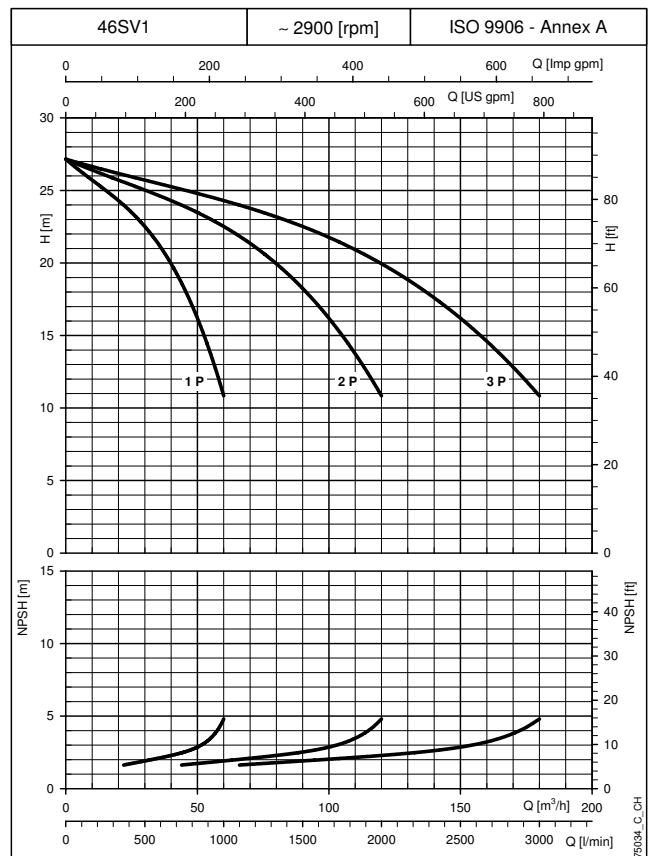
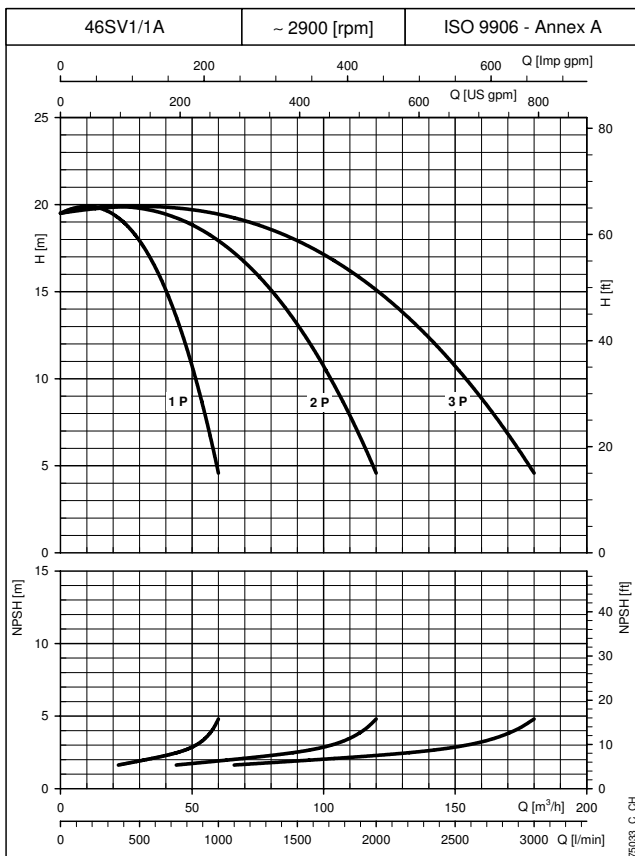
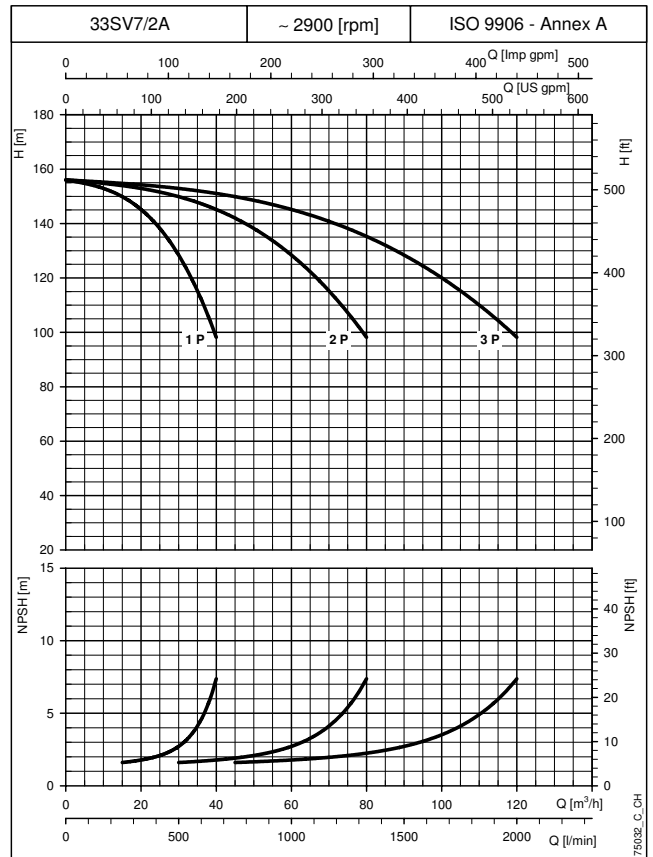
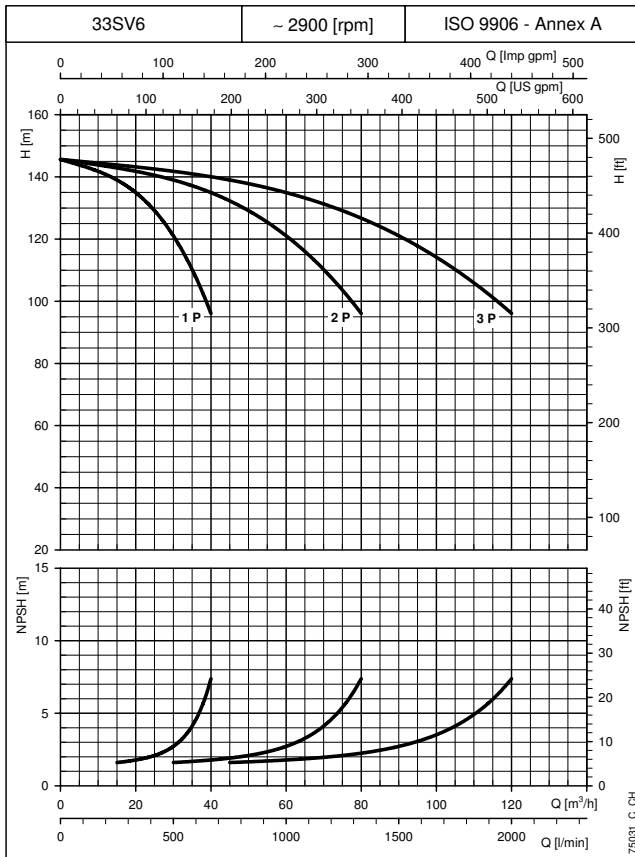
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
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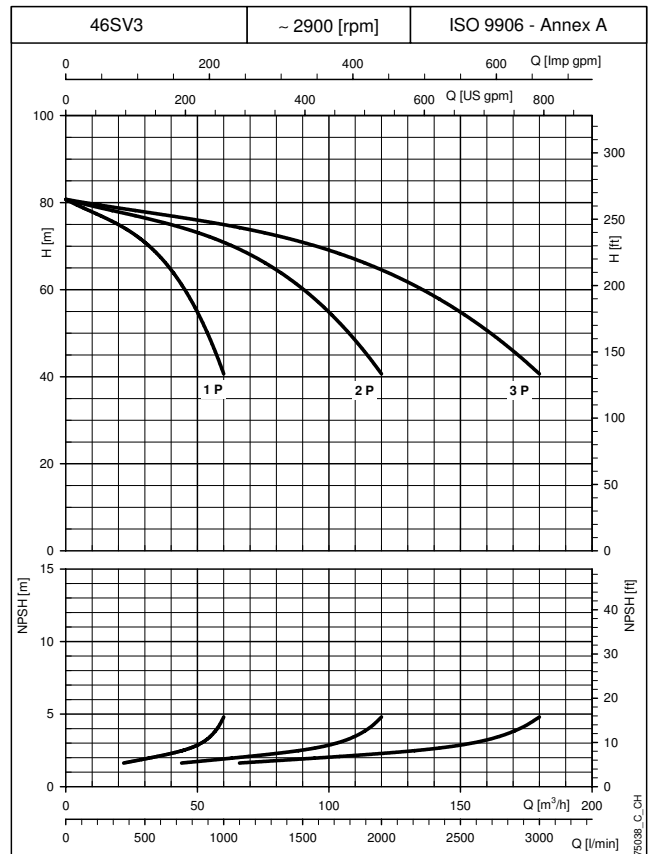
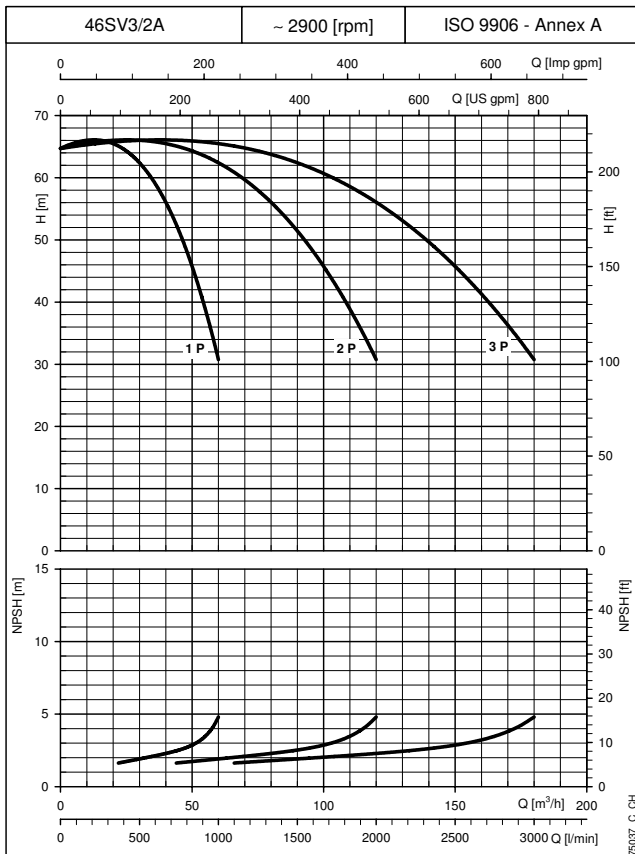
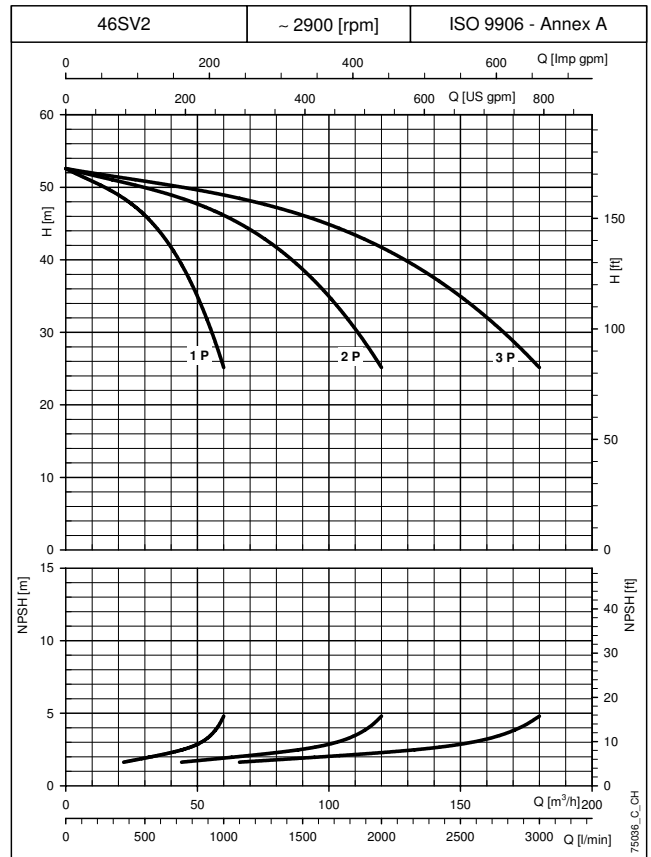
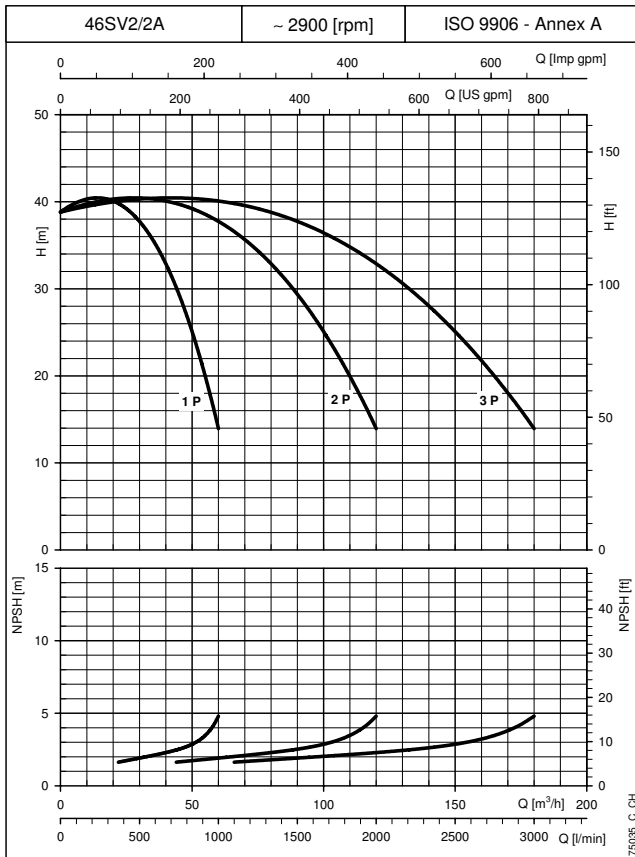
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



The performance curves do not take into account flow resistance in the valves and piping.
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CURVES

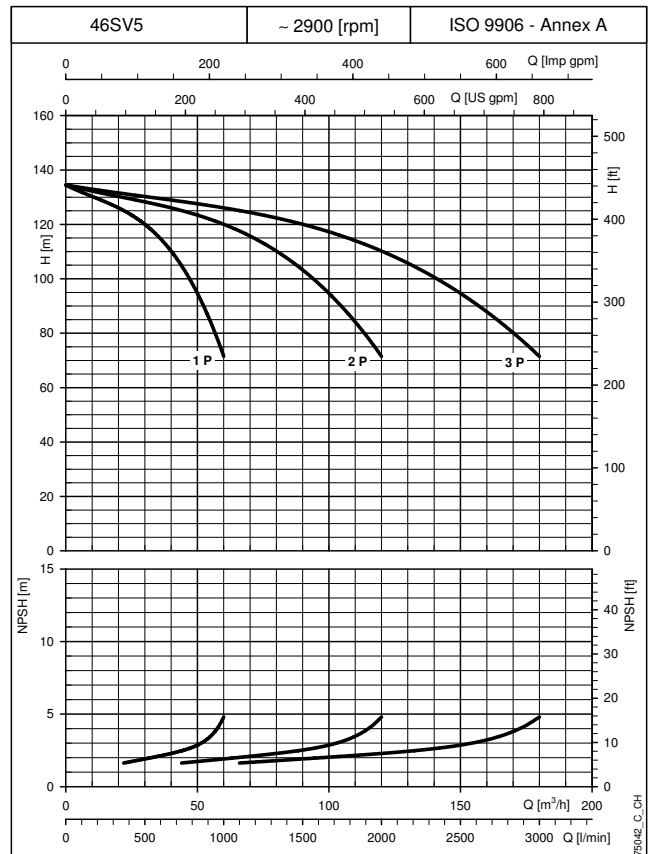
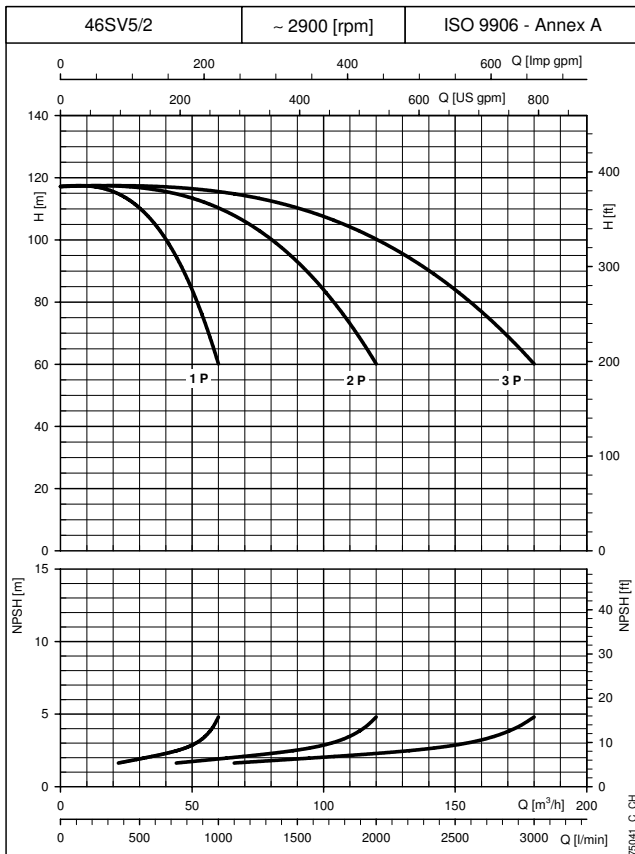
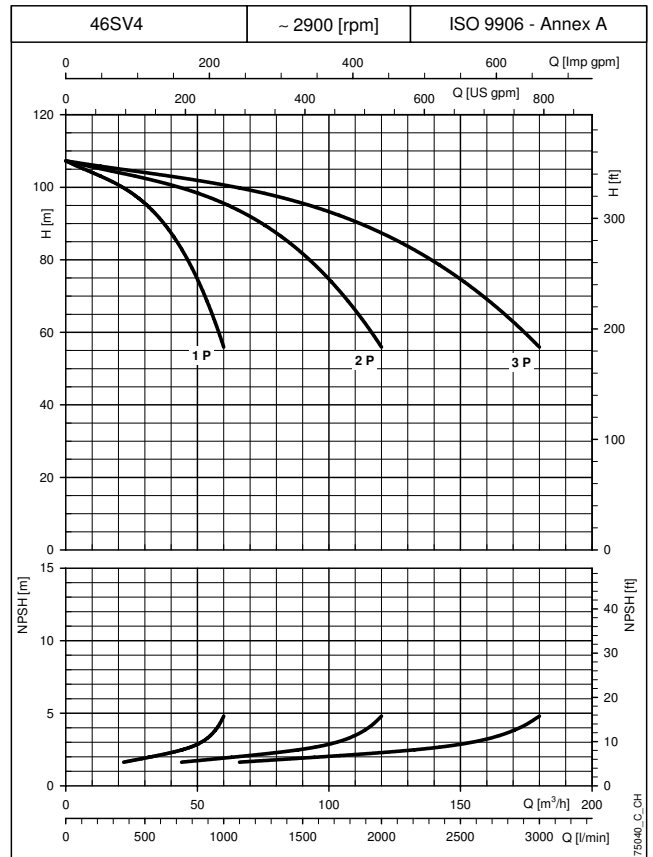
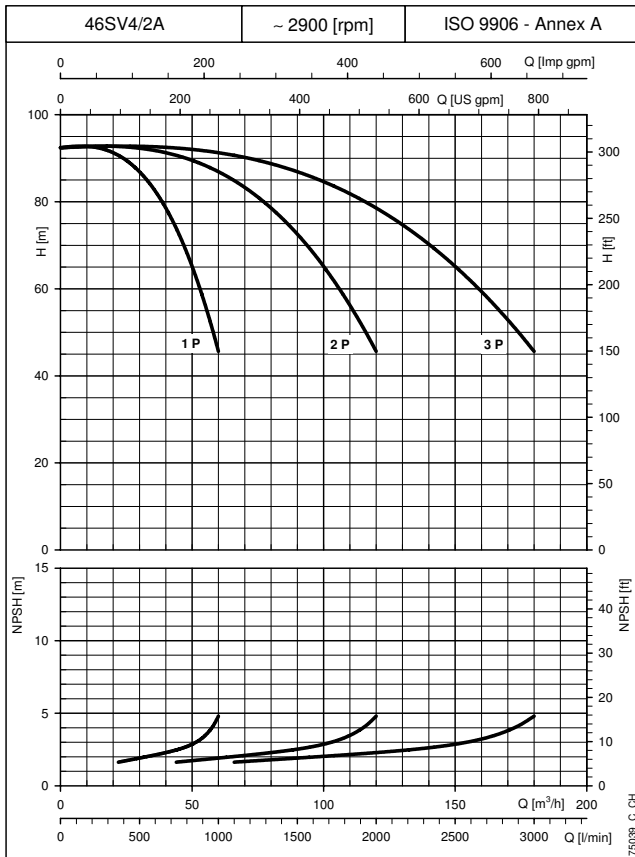
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

The performance curves do not take into account flow resistance in the valves and piping.
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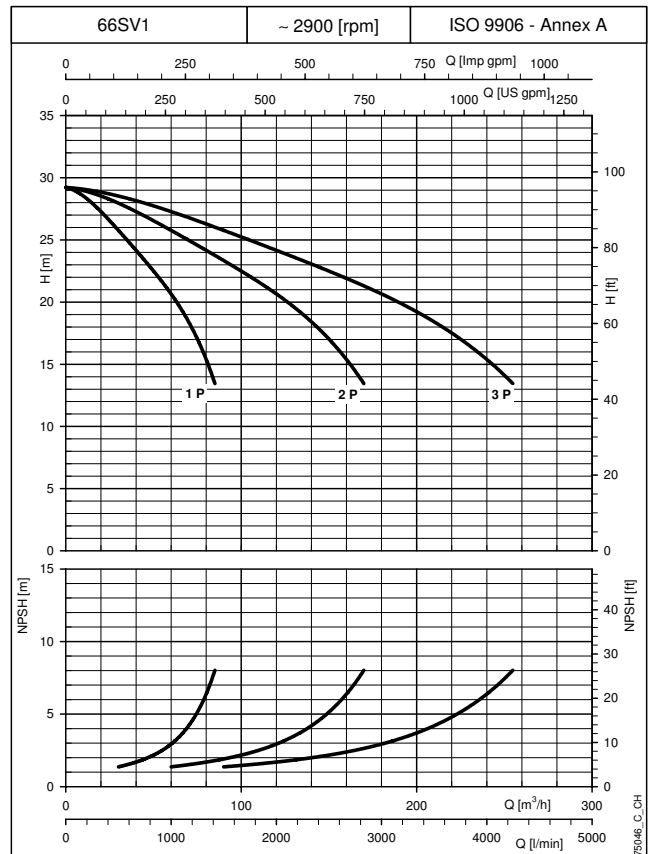
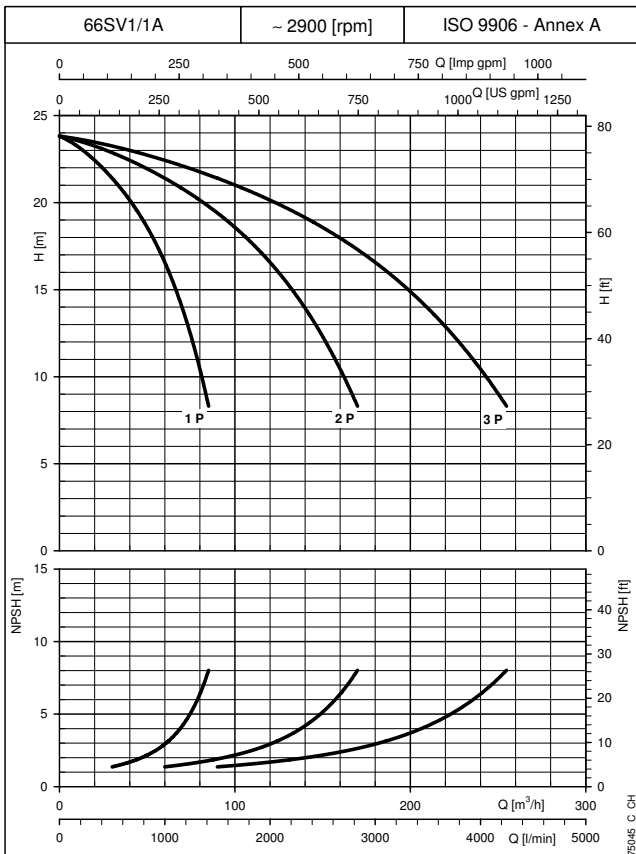
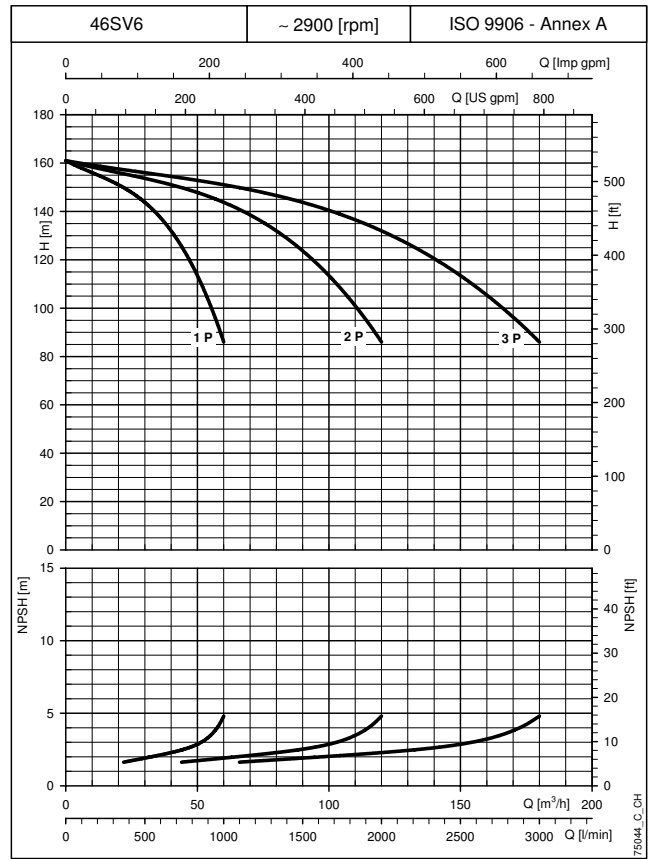
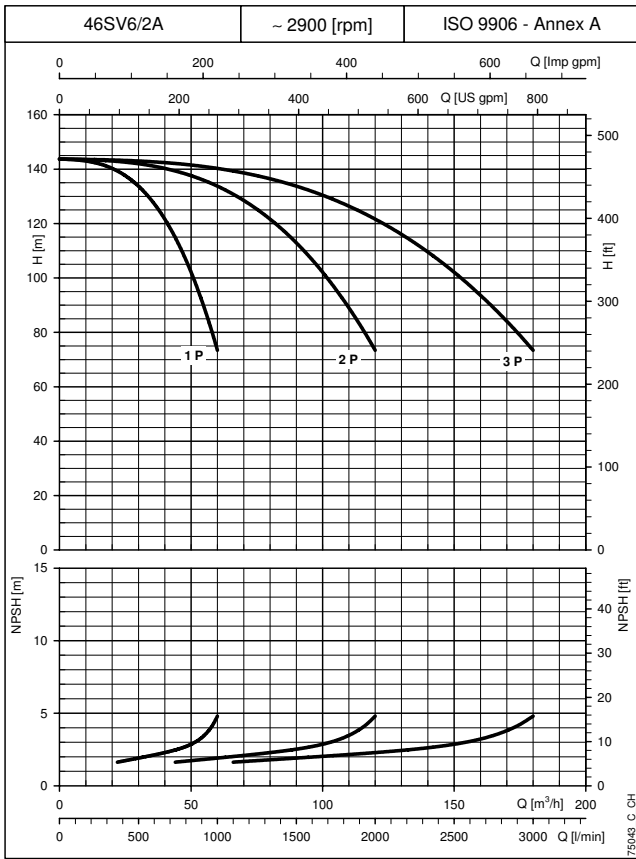
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



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CURVES

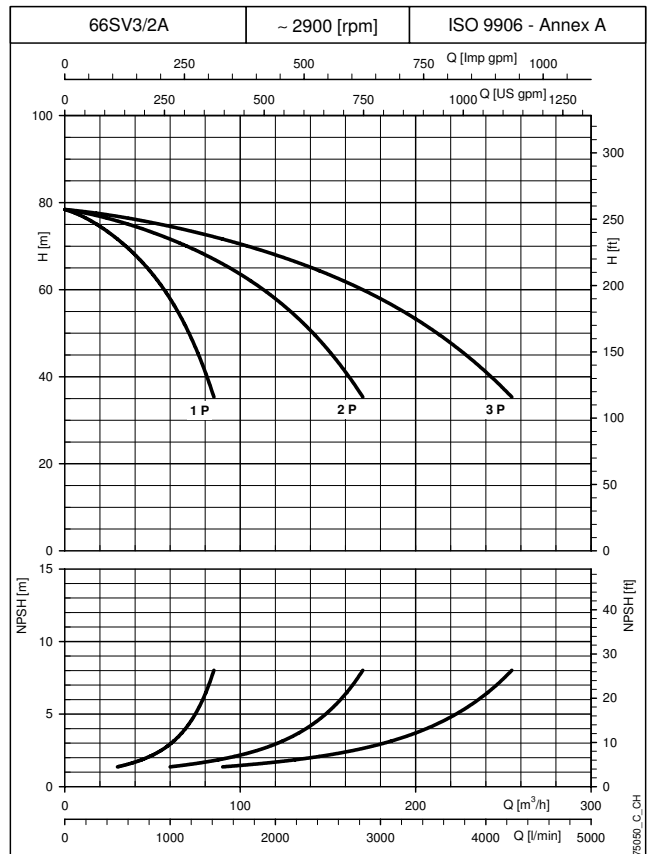
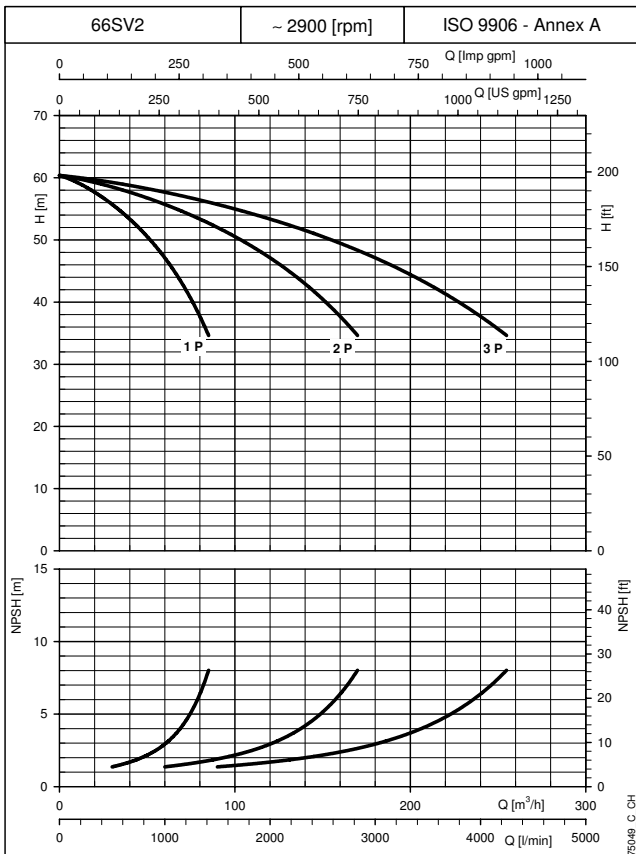
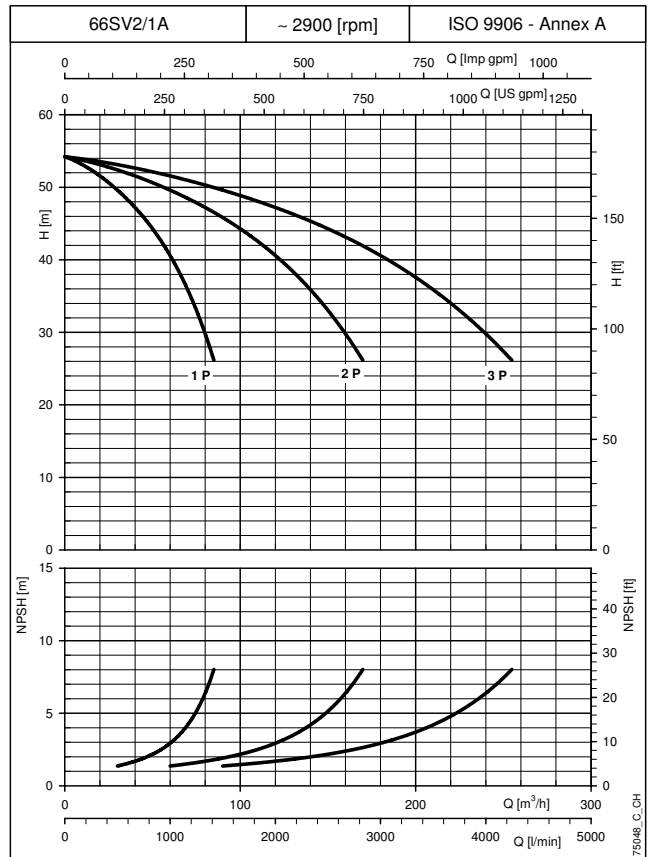
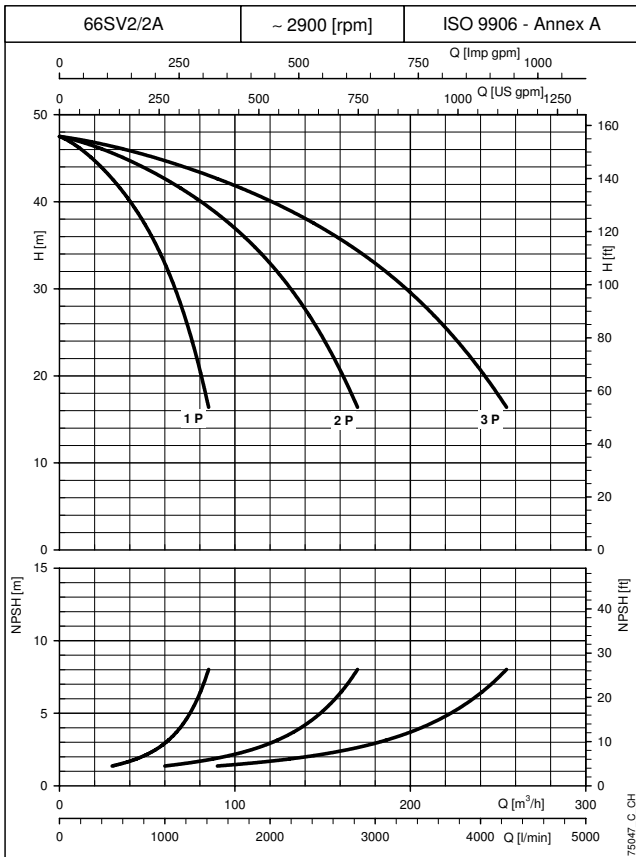
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

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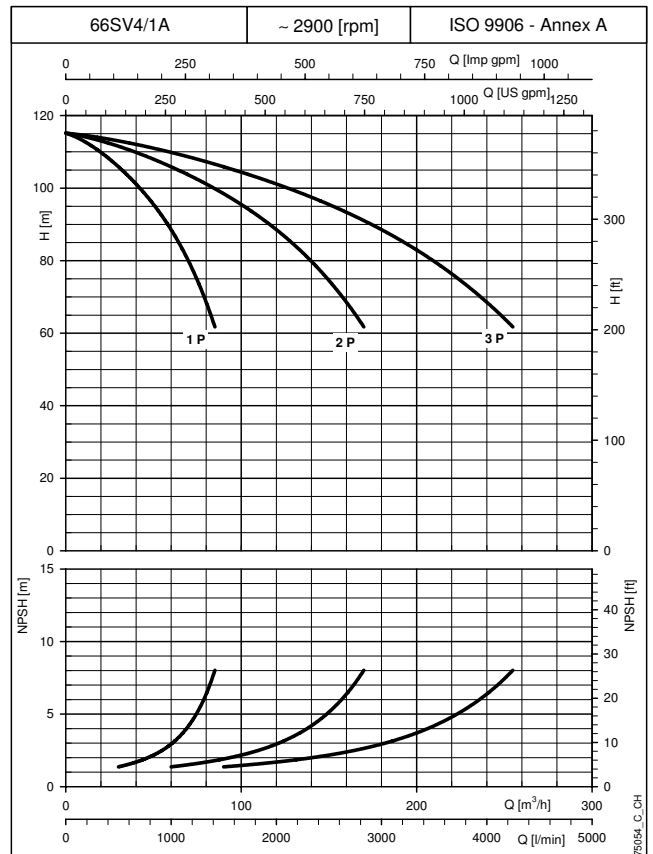
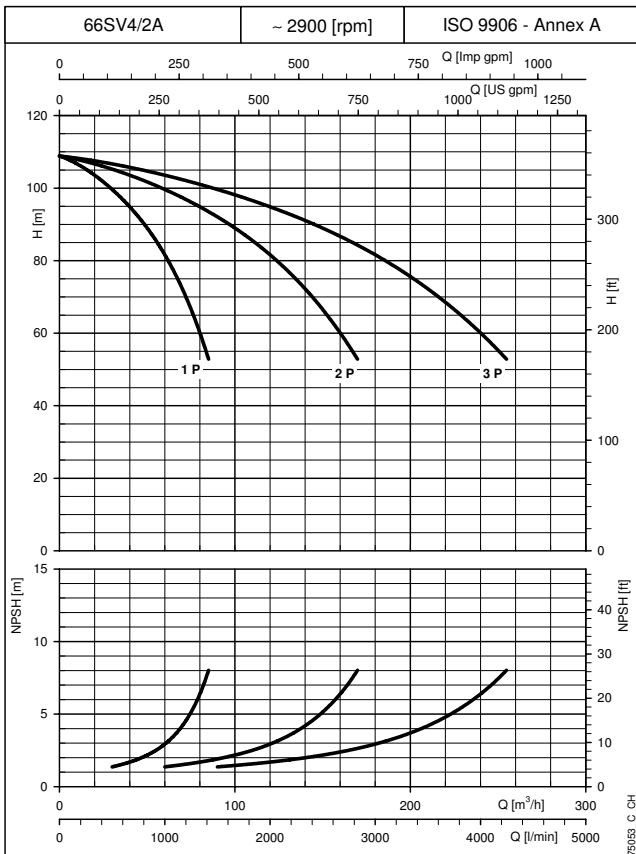
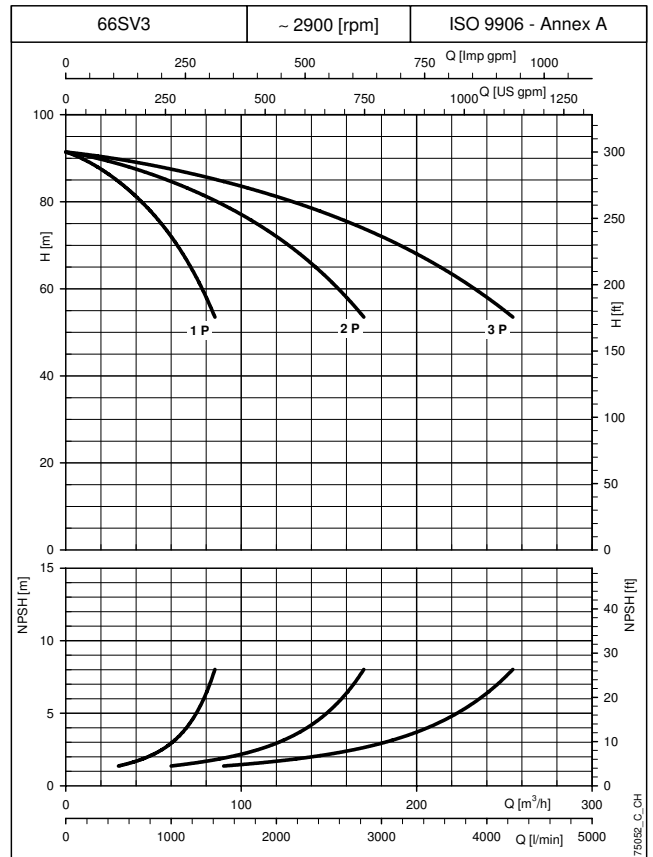
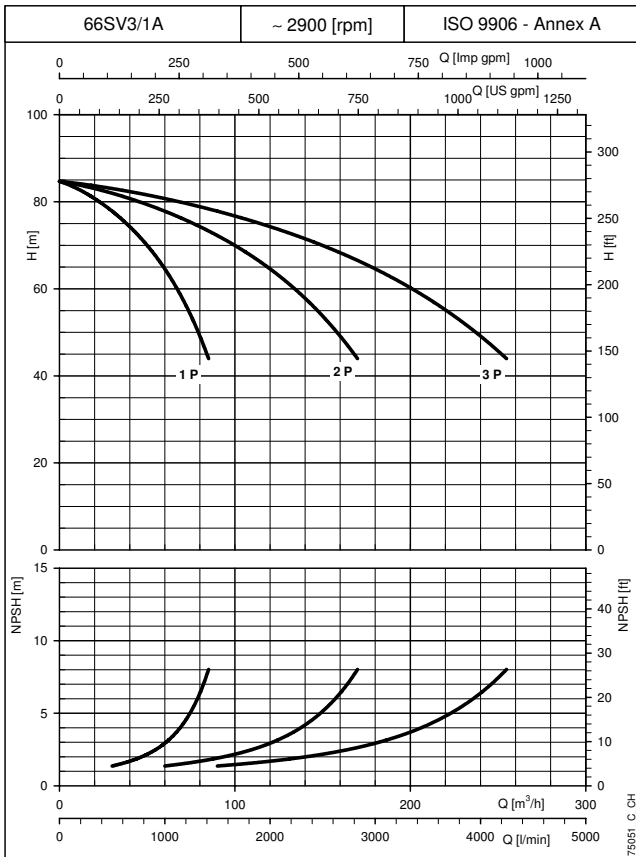
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



The performance curves do not take into account flow resistance in the valves and piping.
 The curves show the performance with one, two and three pumps running.
 These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{s}$.
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CURVES

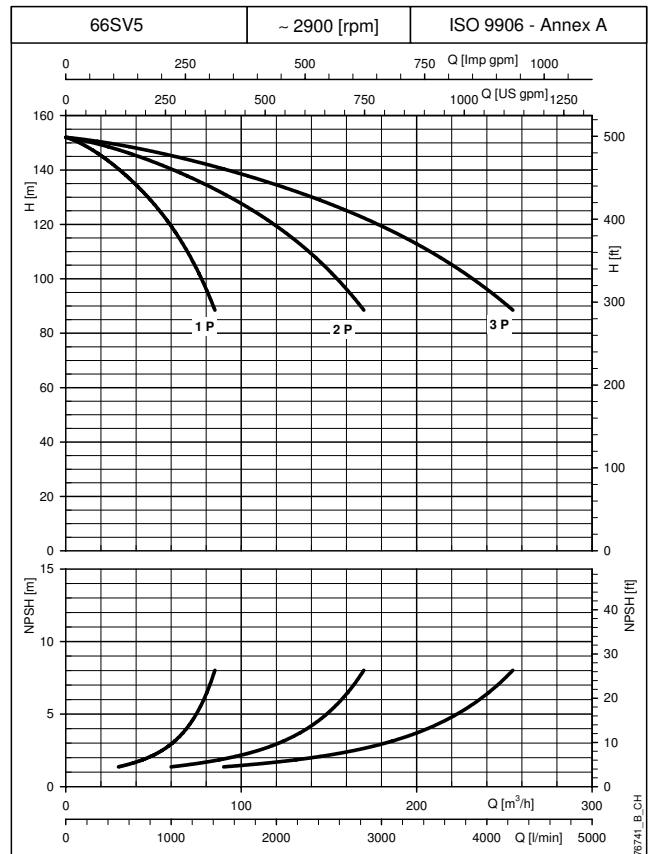
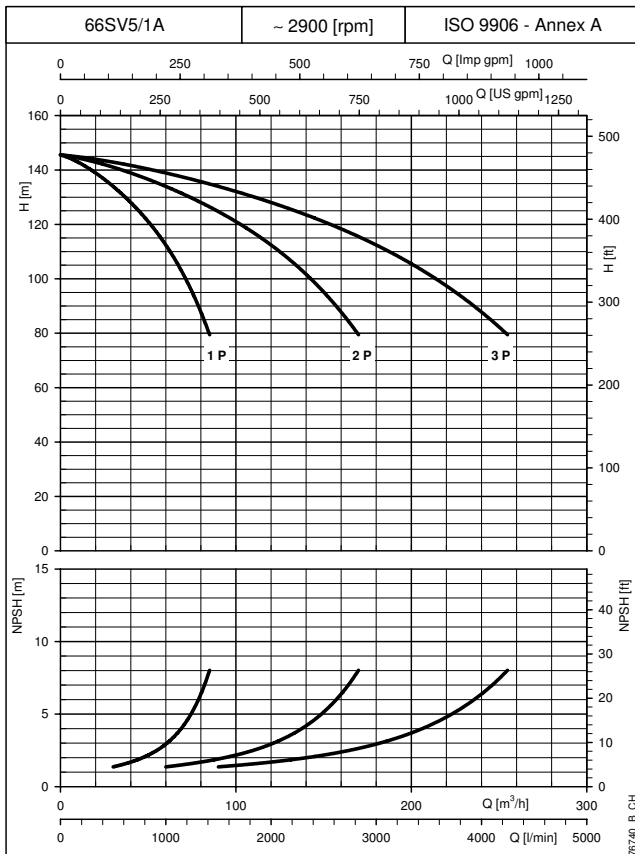
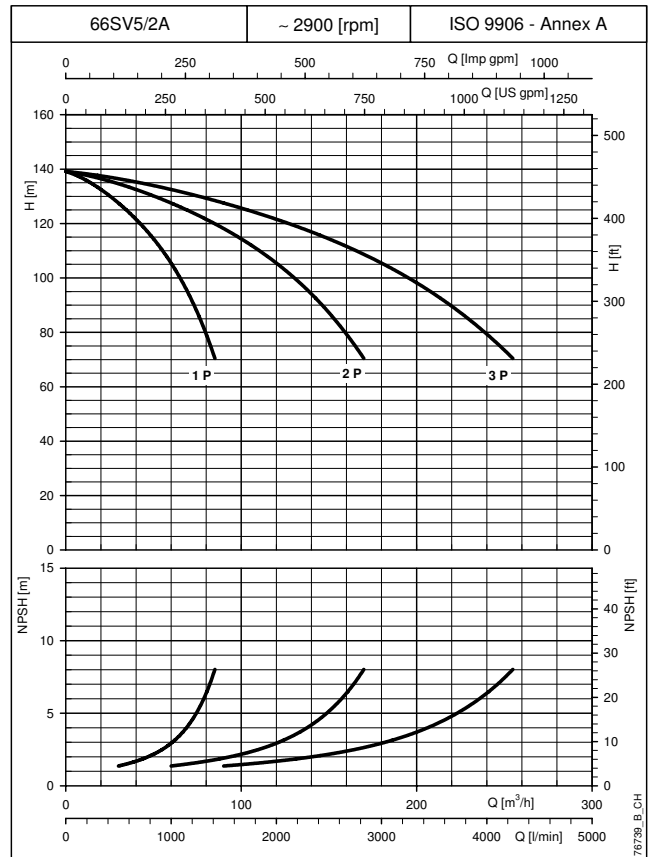
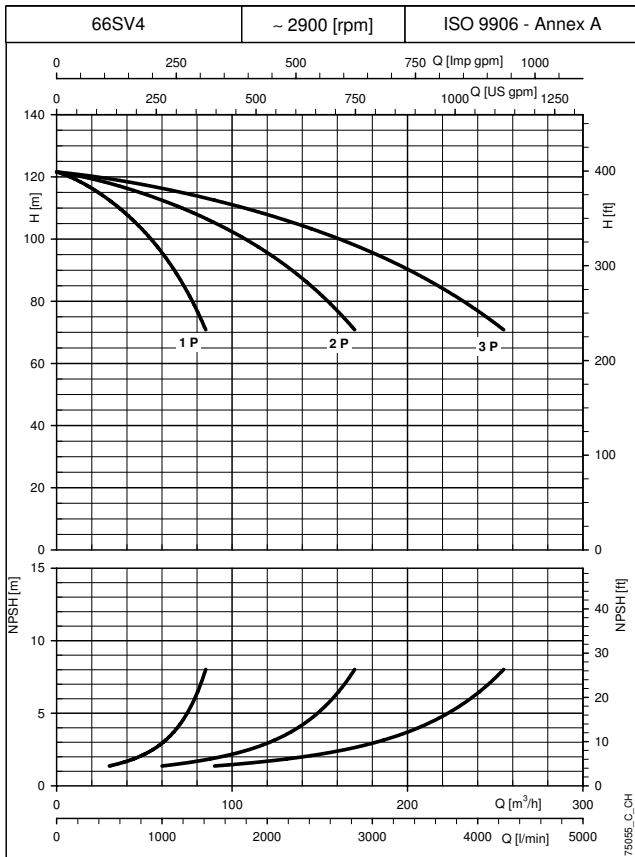
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



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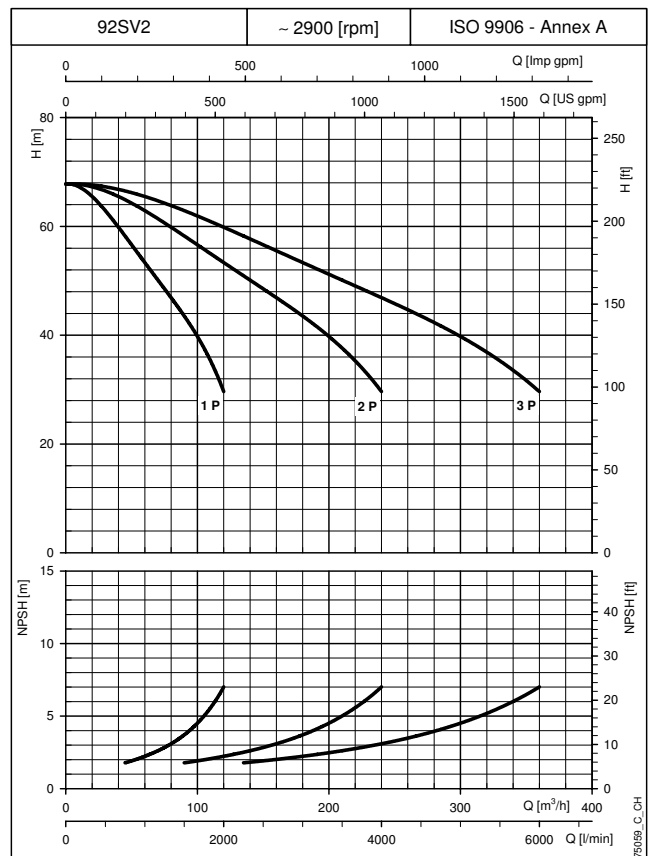
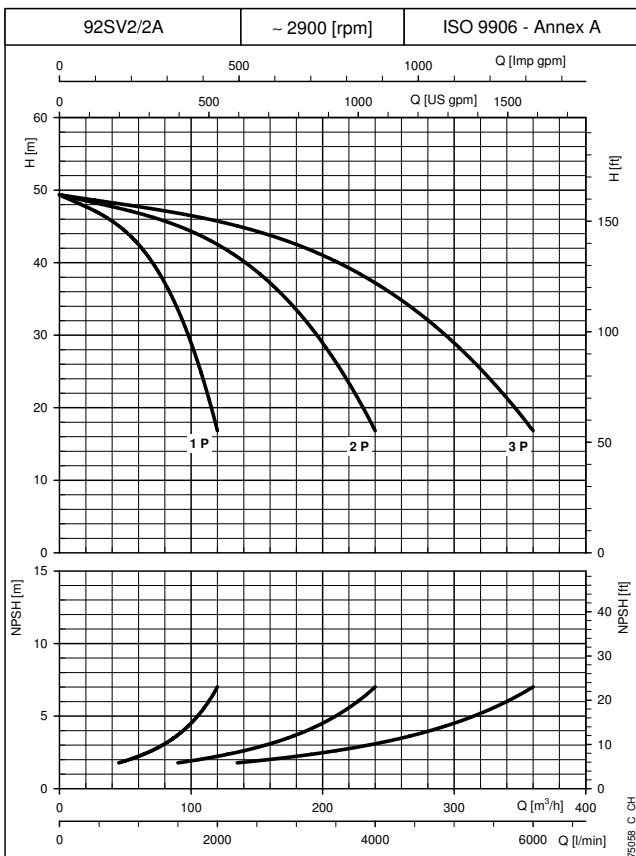
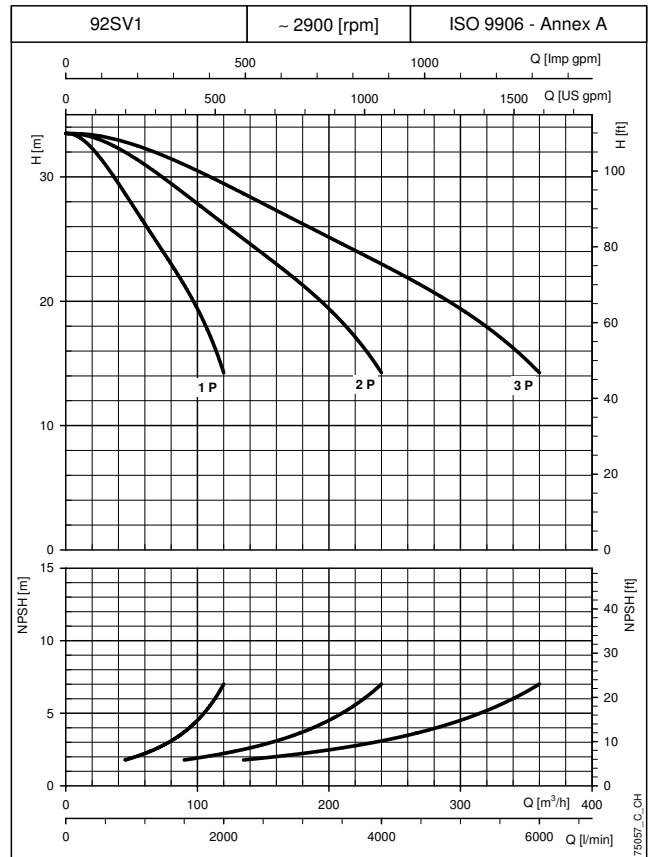
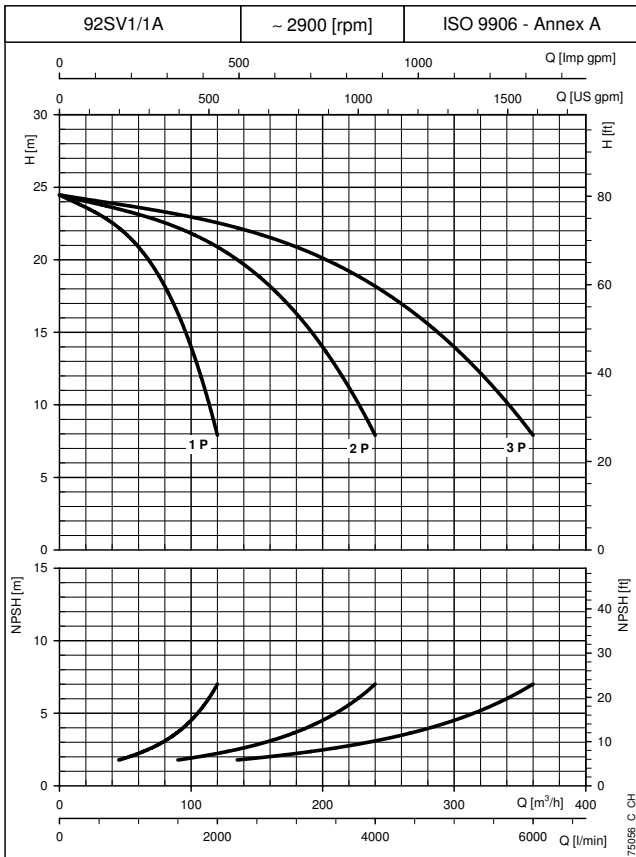
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



CURVES

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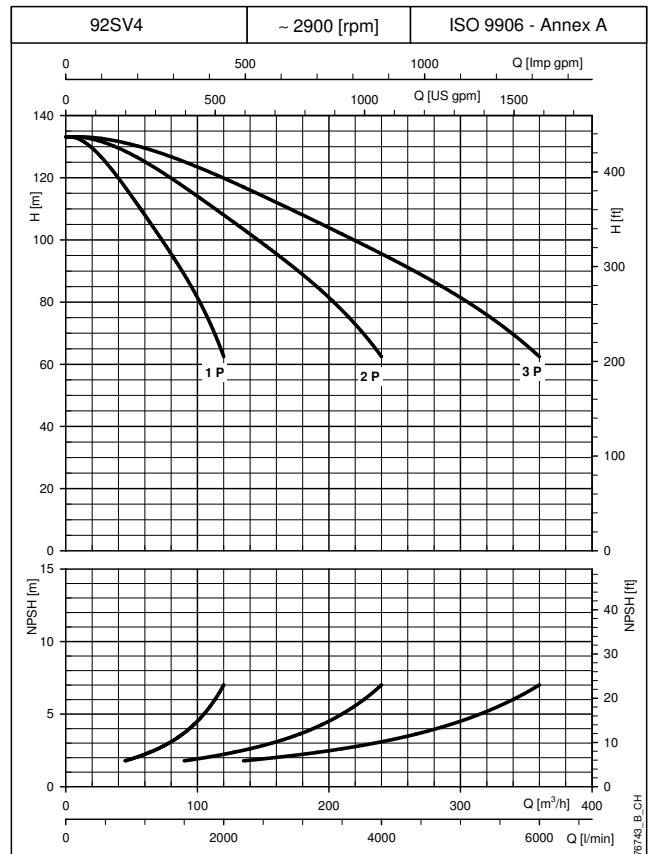
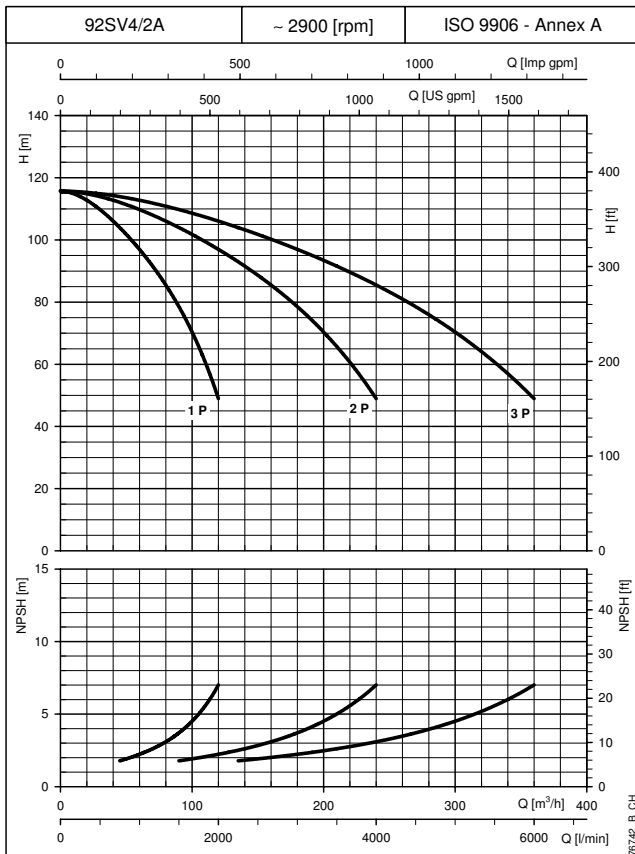
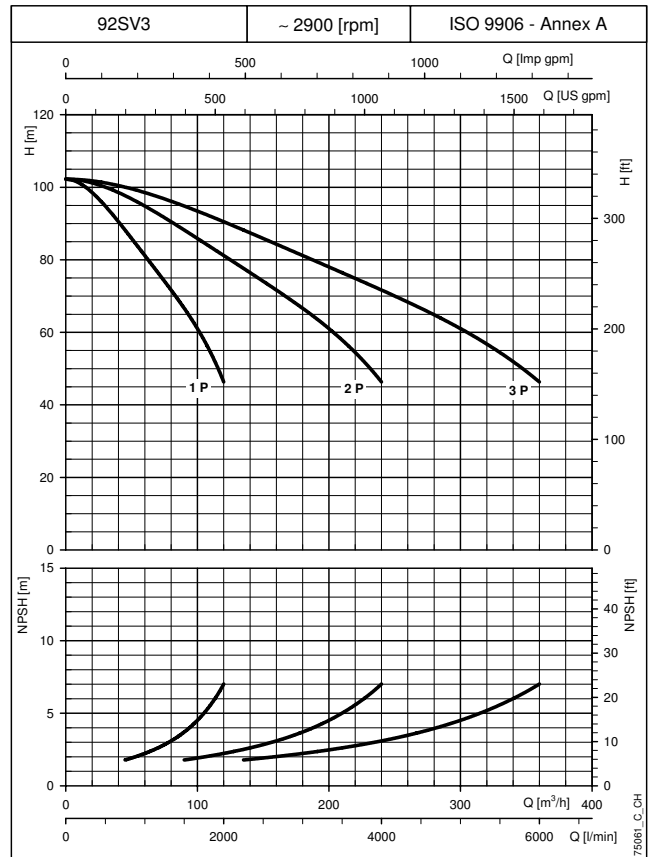
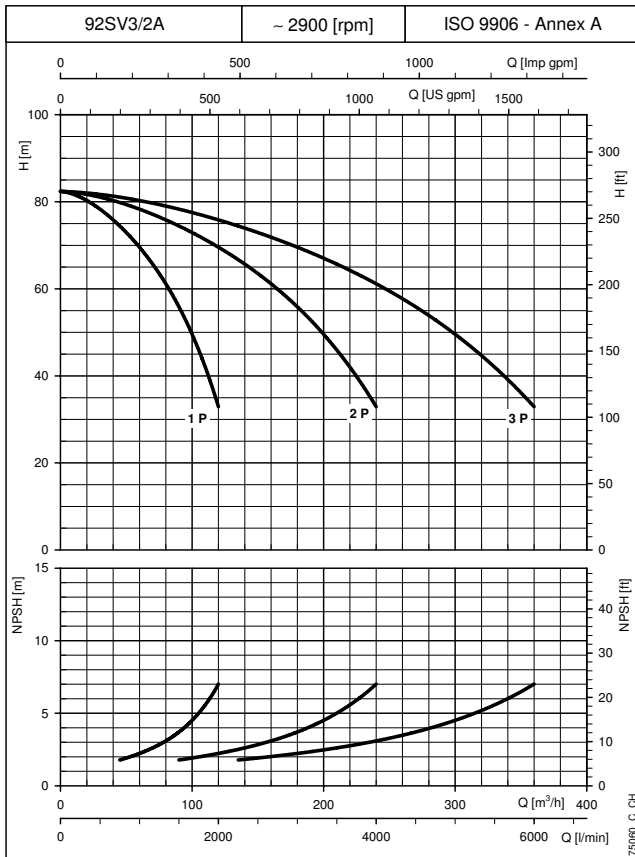
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



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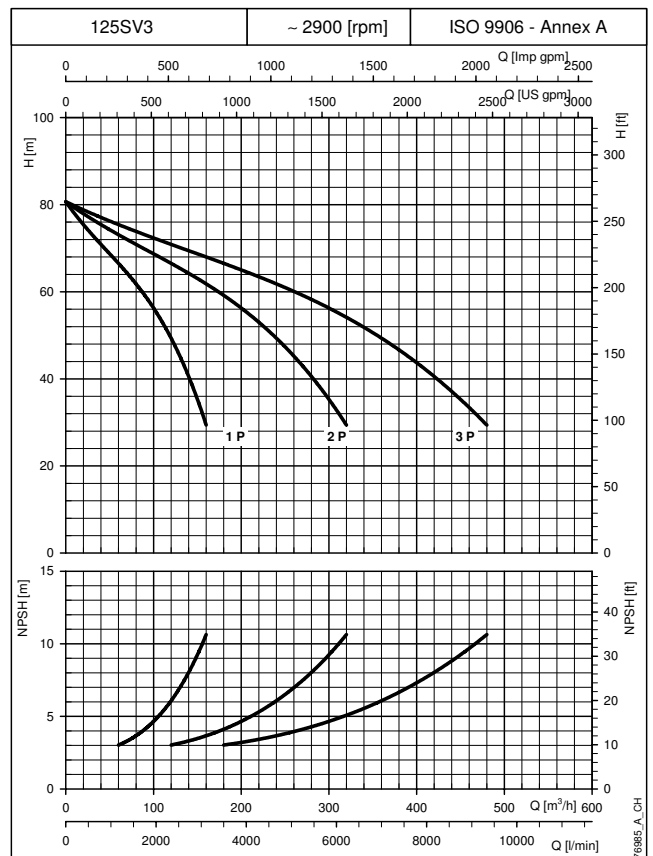
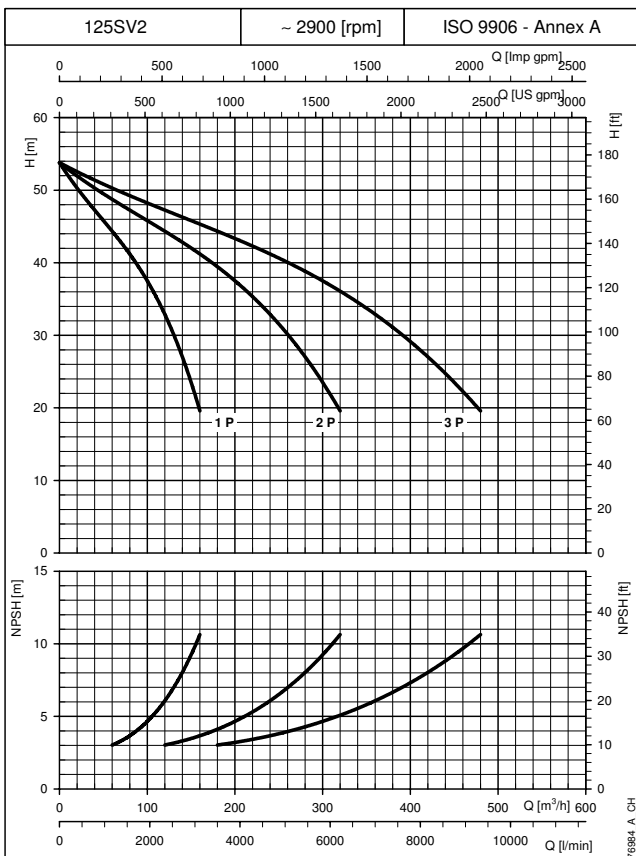
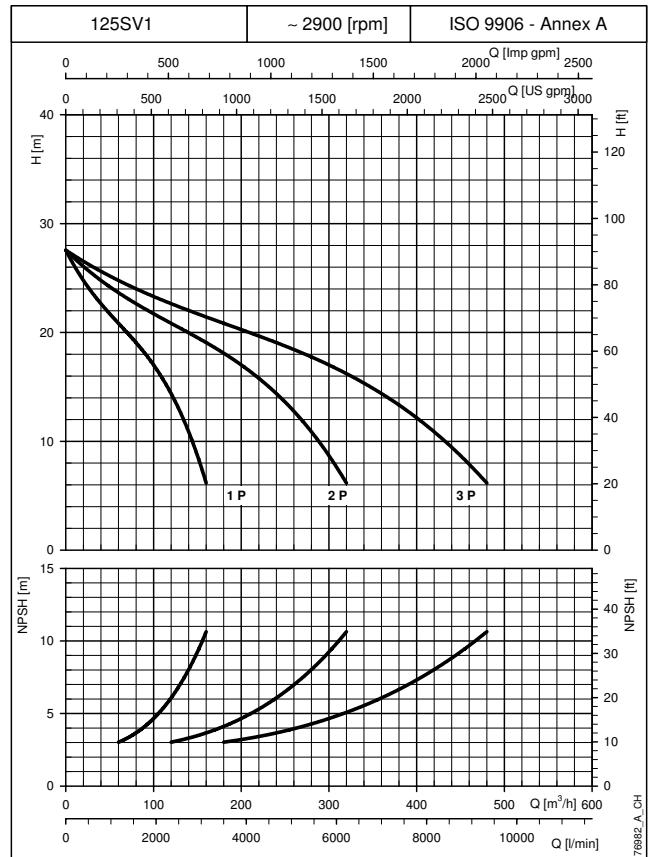
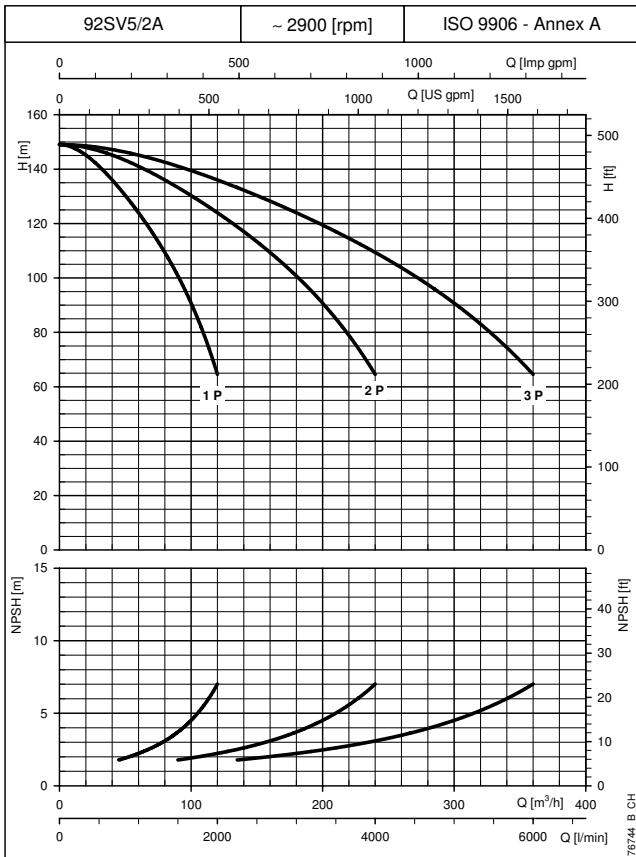
BOOSTER SETS, GS.../SV SERIES OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)



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CURVES

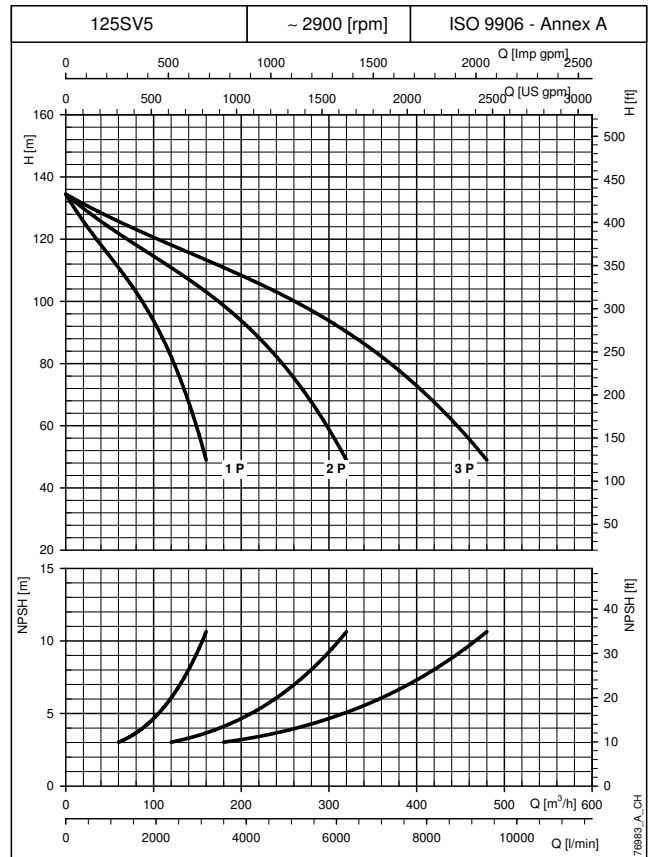
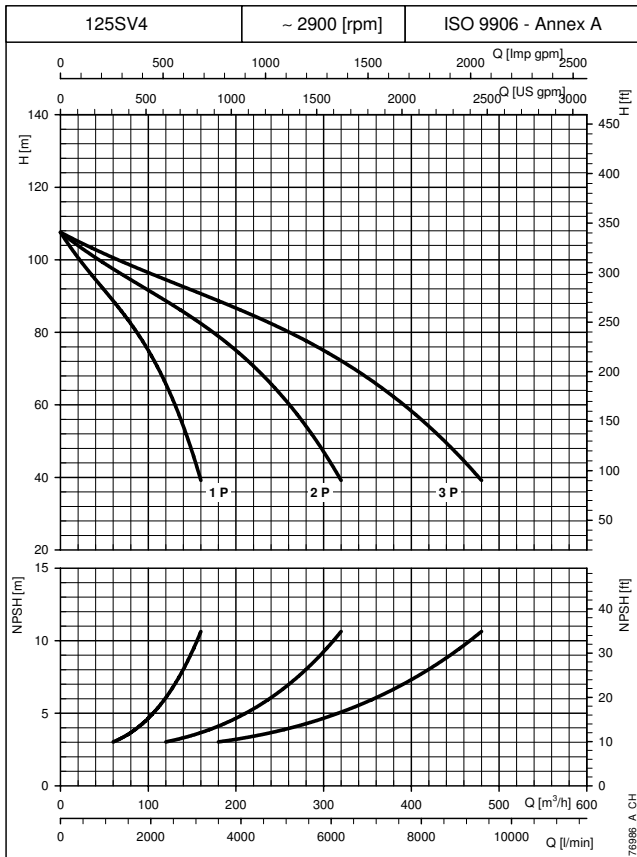
**BOOSTER SETS, GS.../SV SERIES
OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



CURVES

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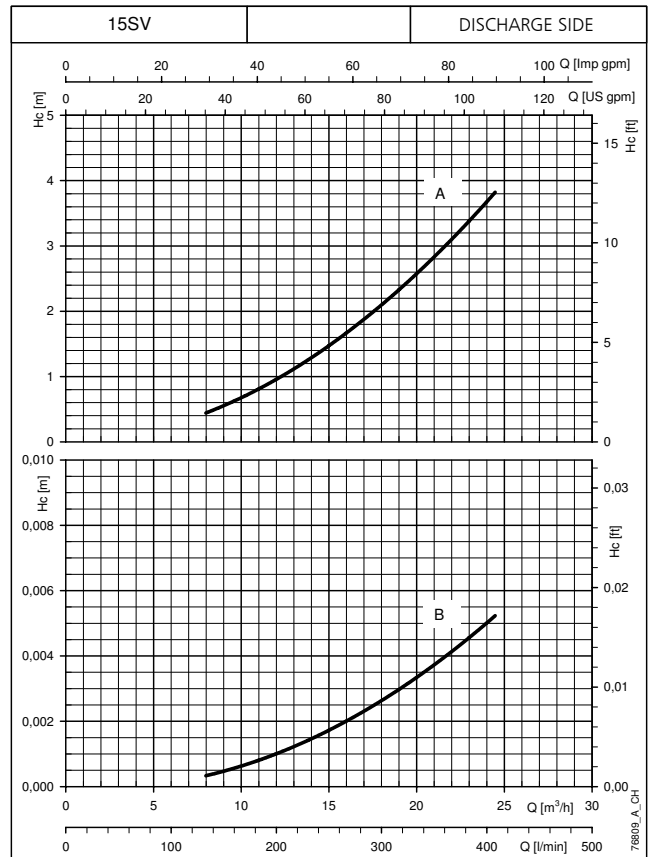
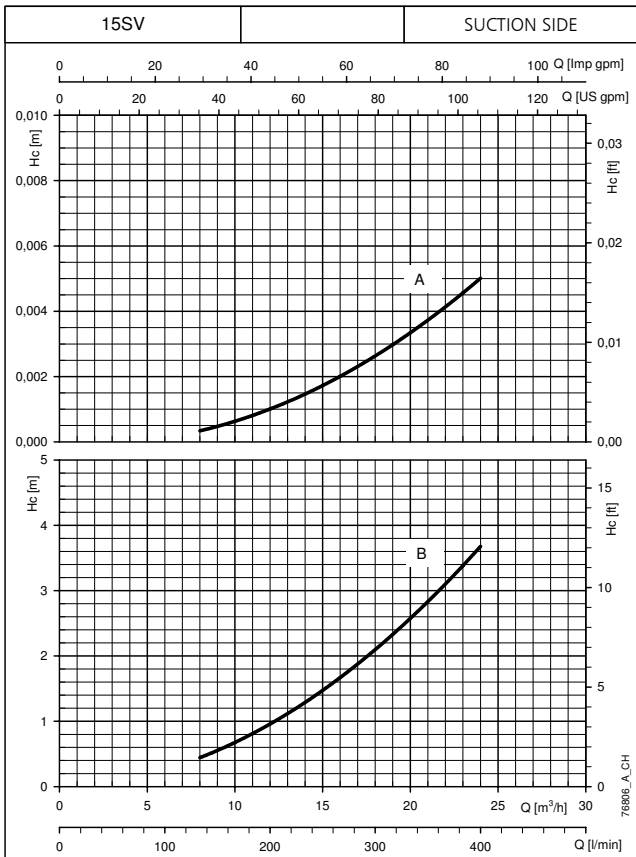
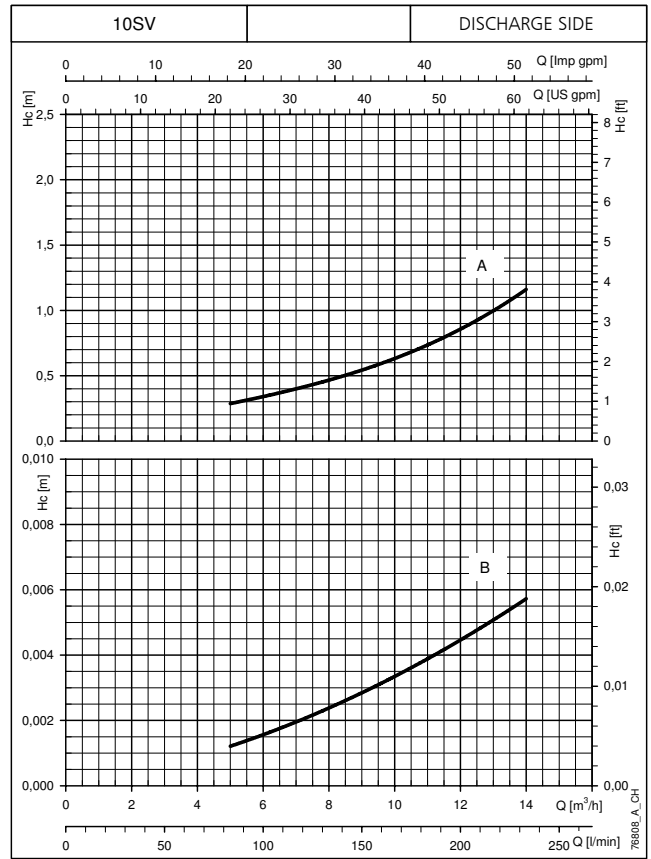
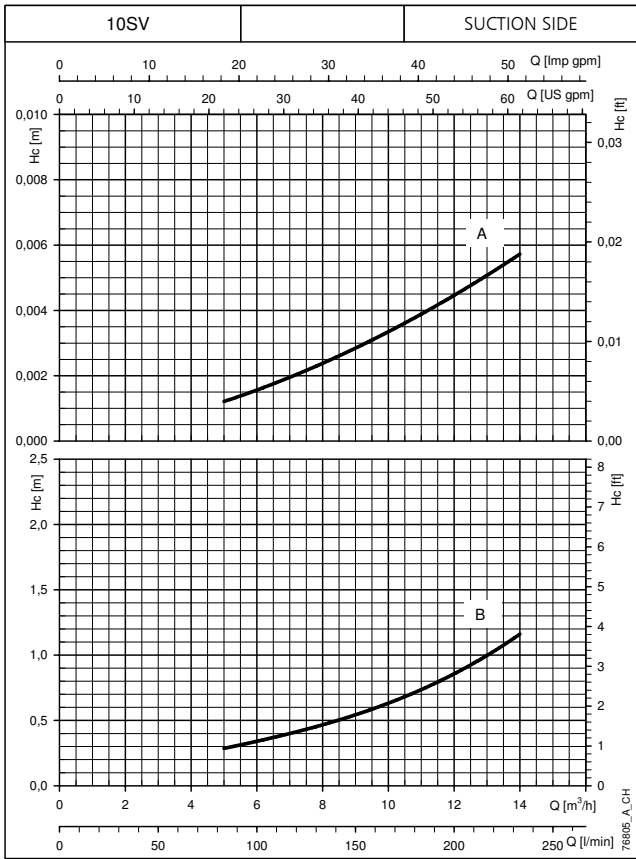
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OPERATING CHARACTERISTICS AT 50 Hz (SERVICE PUMP)**



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CURVE

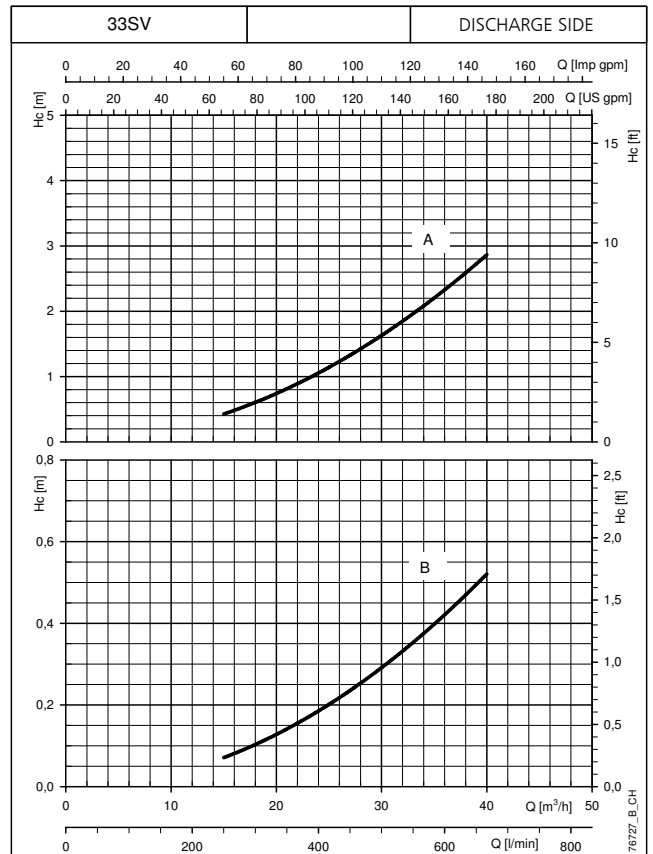
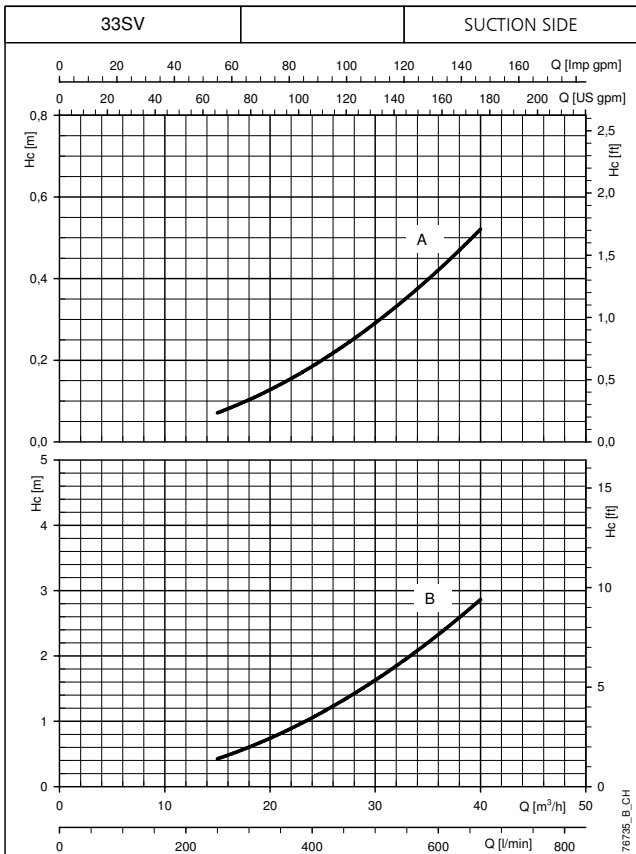
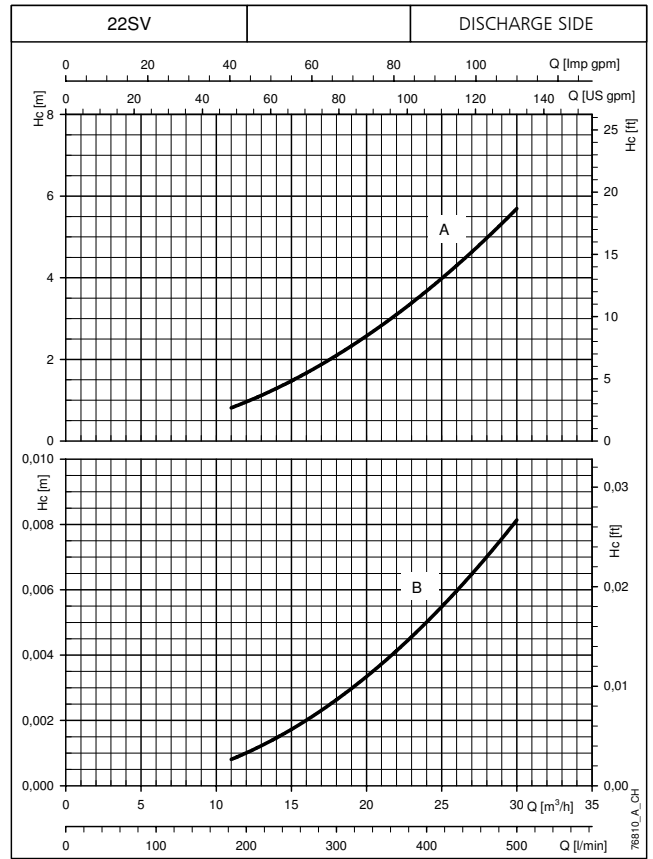
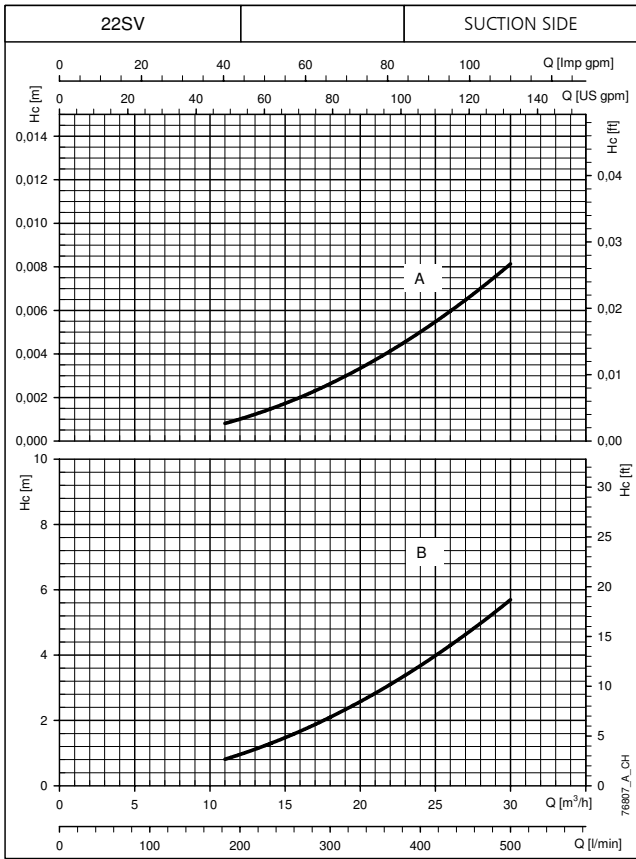
BOOSTER SETS, GS.../SV SERIES
H_c PRESSURE DROP CURVE



CURVE

The declared curves are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.
 H_c (A): Pressure drop curve with check valve installed on the delivery side of the pump.
 H_c (B): Pressure drop curve with check valve installed on the suction side of the pump.
 The pressure drops do not consider the pressure drops distributed in the manifold.

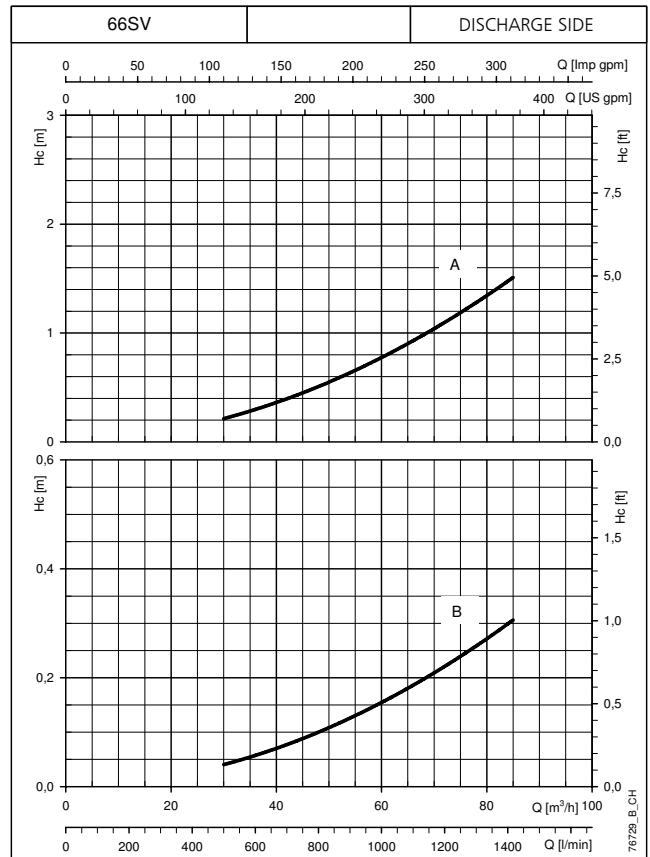
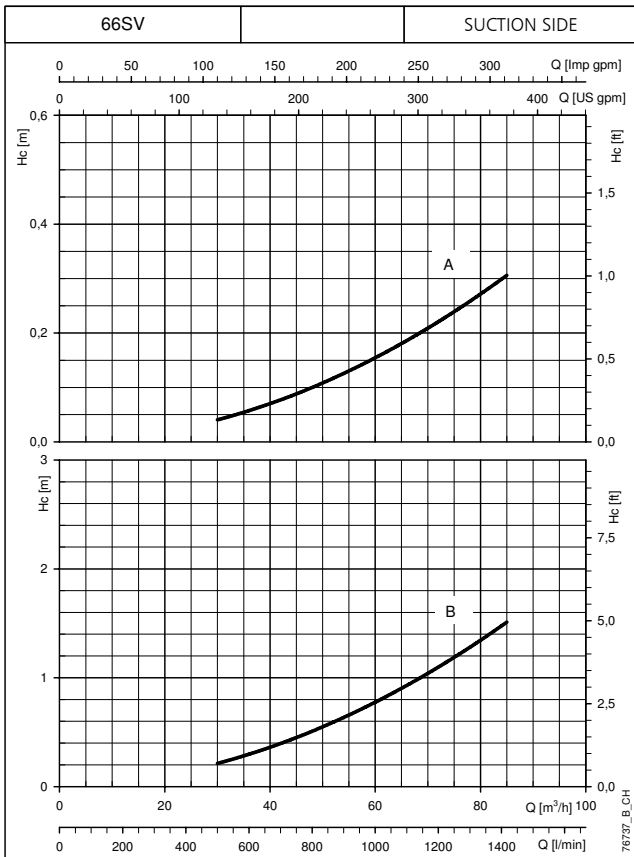
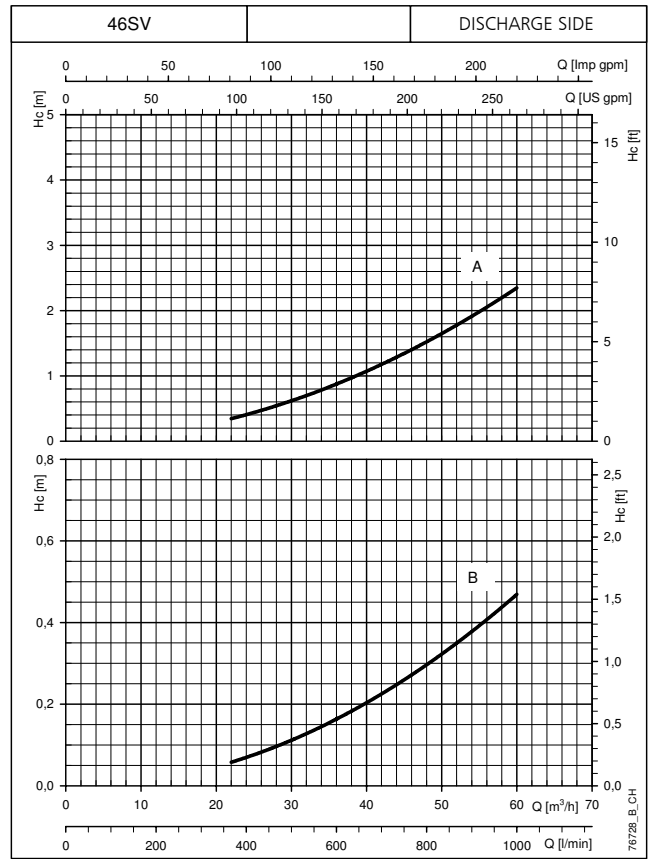
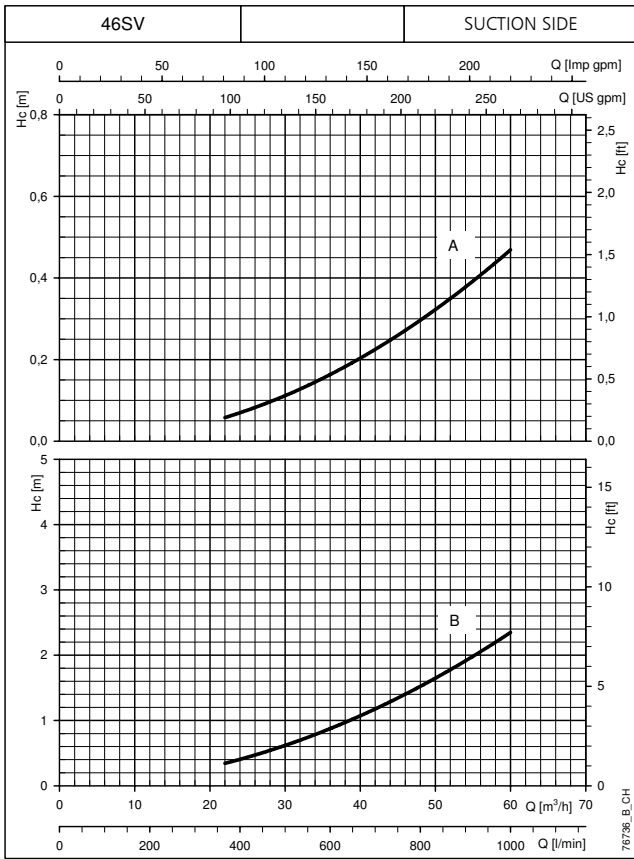
BOOSTER SETS, GS.../SV SERIES
H_c PRESSURE DROP CURVE



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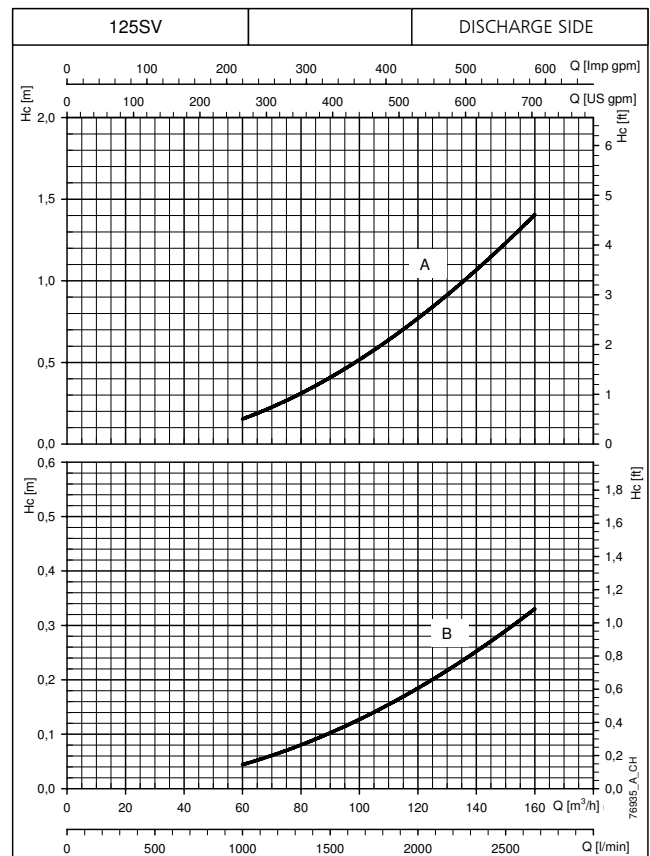
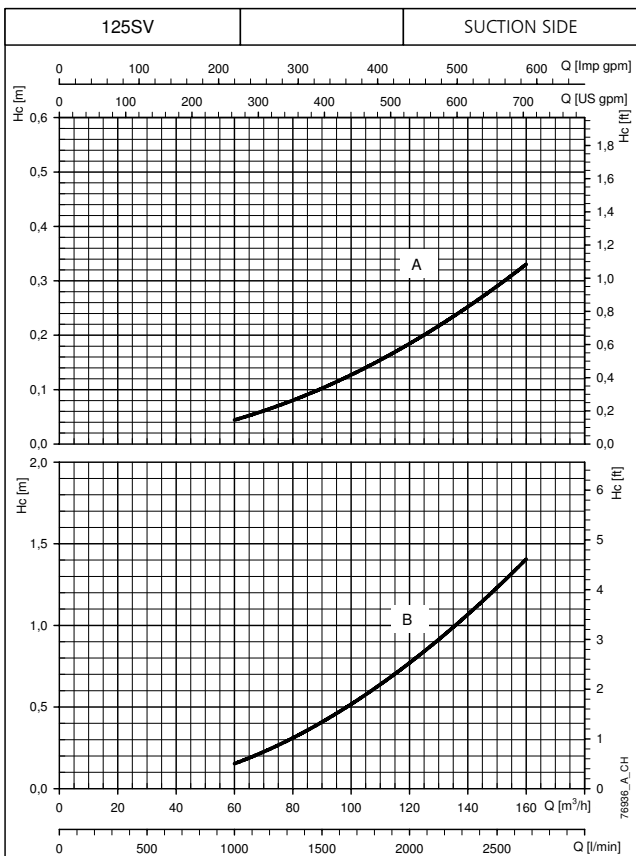
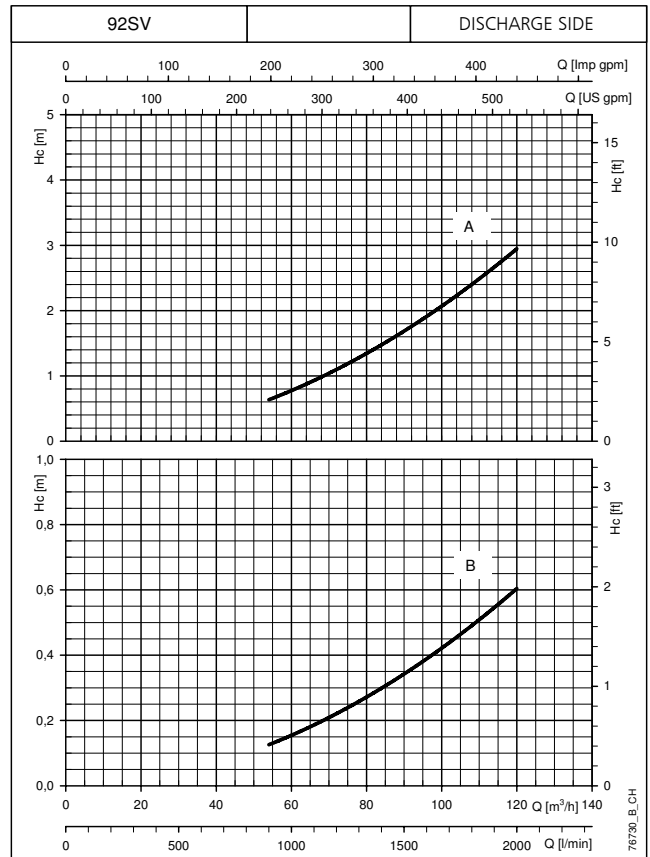
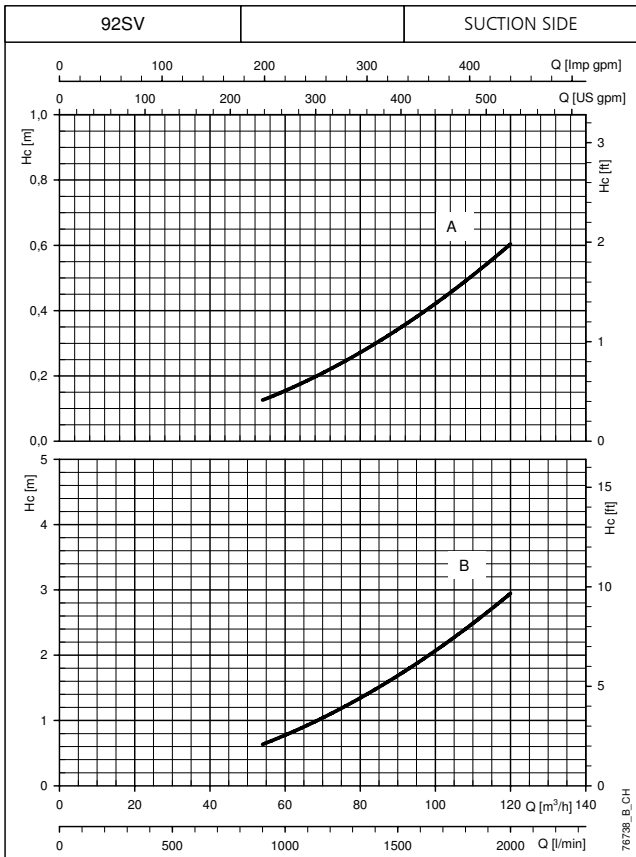
BOOSTER SETS, GS.../SV SERIES
H_c PRESSURE DROP CURVE



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BOOSTER SETS, GS.../SV SERIES
H_c PRESSURE DROP CURVE



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CURVE

ACCESSORIES

DIAPHRAGM TANKS

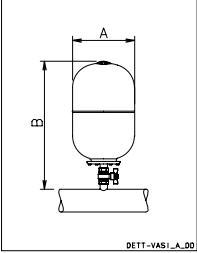
The booster sets are ready for installation, directly on the manifold, of 24-litre diaphragm tanks, one for each pump. The sets are also equipped with caps to close off the unused couplings. Larger tanks can also be connected to the unused end of the discharge manifold. For proper sizing of the tank please refer to the technical appendix.

Kits featuring the following accessories are **available on request**:

- diaphragm tank;
- on-off ball valve;
- operating instructions;
- packaging.

DIAPHRAGM TANK KIT

Volume Litres	PN bar	DIMENSIONS (mm)			Materials		
		ø A	B	Valve	Diaphragm	Vessel	Valve
8	8	205	390	1" FF	EPDM	Painted steel	Nickel-plated brass
24	8	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	10	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	16	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	10	270	575	1" FF	Butyl	Stainless steel	AISI 316 Stainless steel



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COUNTERFLANGE KIT

Manifolds up to 3" in diameter are usually supplied with threaded couplings and caps on unused end.

Counterflange coupling kits made of zinc-plated or stainless steel are available on request.

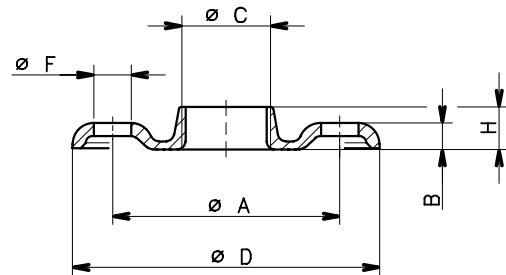
The counterflange kits are equipped with:

- threaded flange.
- gasket and bolts/screws.
- threaded counterflange (weld-on type for 3" diameter).

THREADED COUNTERFLANGES

KIT TYPE	DN	ø C	DIMENSIONS (mm)				HOLES		PN
			ø A	B	ø D	H	ø F	N°	
2"	50	Rp 2	125	16	165	24	18	4	25
2" 1/2	65	Rp 2 1/2	145	16	185	23	18	4	16
3"	80	Rp 3	160	17	200	27	18	8	16

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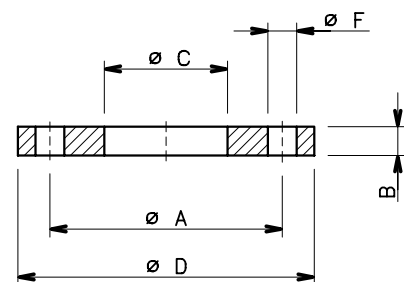


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WELD-ON COUNTERFLANGES

KIT TYPE	DN	ø C	DIMENSIONS (mm)				HOLES		PN
			ø A	B	ø D	ø F	N°		
2"	50	61	125	19	165	18	4	16	
2"1/2	65	77	145	20	185	18	4	16	
3"	80	90	160	20	200	18	8	16	
4"	100	116	180	22	220	18	8	16	
5"	125	141,5	210	22	250	18	8	16	
6"	150	170,5	240	24	285	22	8	16	
8"	200	221,5	295	26	340	22	12	16	
10"	250	276,5	355	29	405	26	12	16	
12"	300	327,5	410	32	460	26	12	16	

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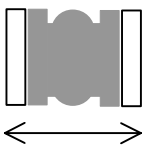


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RUBBER EXPANSION JOINT KIT

The anti-vibrating joints or compensation joints can be used in order to absorb deformations, expansions, noises in the piping and to reduced ram blows. Moreover they can resist a high degree of empty that allows the absorption of negative expansions for depression.

Being of elastic material it can be become deformed and be dilated facilitating therefore the installation, that it becomes simpler and fast, also in which the piping they are not aligned. It does not need assembly joints.

TABELLA 1 TABLE 1		L 	A-B-C-D non possono essere sommati			A-B-C-D can not be cumulative
GIUNTI ELASTICI RUBBER EXPANSION JOINT			A COMPRESSIONE COMPRESSION	B ESTENSIONE EXTENSION	C SPOSTAMENTO TRANSVERSE	D FLESSIONE ANGOLARE ANGULAR MOVEMENT
DN		mm	mm	mm	mm	(°)
32	1"1/4	95	8	4	8	15
40	1"1/2	95	8	4	8	15
50	2"	105	8	5	8	15
65	2"1/2	115	12	6	10	15
80	3"	130	12	6	10	15
100	4"	135	18	10	12	15
125	5"	170	18	10	12	15
150	6"	180	18	10	12	15
200	8"	205	25	14	22	15
250	10"	240	25	14	22	15
300	12"	260	25	14	22	15
350	14"	265	25	16	22	15
400	16"	265	25	16	22	15
450	18"	265	25	16	22	15
500	20"	265	25	16	22	15

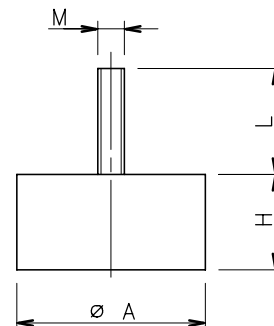
GD_JOINT_A_TD

VIBRATION DAMPERS

TYPE	SHORE	DIMENSIONS (mm)			
		ø A	H	L	M
VIBRATION DAMPER P20X20	60	20	20	18	6
VIBRATION DAMPER P40X30	60	40	30	23	8
VIBRATION DAMPER P100X50	60	100	50	50	16

Note: Available versions M/F and F/F

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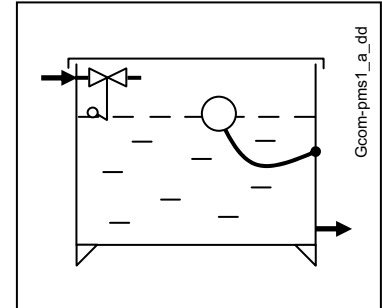
DRY RUNNING PROTECTION SYSTEMS

Dry run shutdown systems should be installed to protect the pumps in case of insufficient water supply.

FLOAT SWITCH PROTECTION METHOD

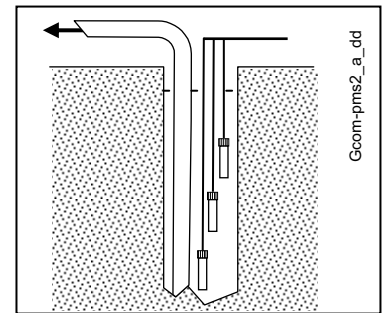
The float switch protection system is used when the water supply comes from open tanks. A float switch immersed in the tank is connected to the electrical panel.

If the water supply is insufficient, the float switch opens the electric contact and the pumps stop running.



ELECTRODE PROBE PROTECTION METHOD

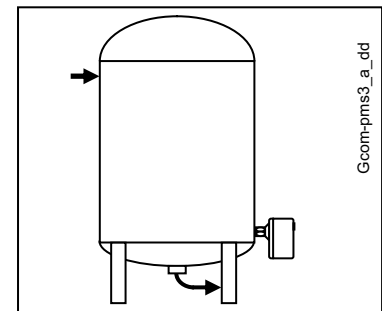
The electrode probe protection system is used when the water supply comes from open tanks or wells. A set of three probes is connected directly to the electronic board in the electrical panel. With the three electrodes immersed in the water, the relay on the electronic board closes the contact, enabling the starting of the pumps. If the water supply is insufficient, the control circuit opens the electric contact and the pumps stop running.



MINIMUM PRESSURE SWITCH PROTECTION METHOD

The minimum pressure switch protection system is used when the water supply comes from water networks or pressurized tanks. The pressure switch is connected to the electronic board in the electrical panel.

If the water supply is insufficient, the pressure switch opens the electric contact and the pumps stop running.



TECHNICAL APPENDIX

WATER REQUIREMENTS IN CIVIL USERS

Determination of the water requirement depends on the type of users and contemporaneity factor. The calculation may be subject to regulations, standards or customs that may vary from country to country. The calculation method shown below is an example based on practical experience, designed to provide a reference value and not a substitute for detailed analytical calculation.

Water requirements in condominiums

The **consumption table** shows the maximum values for each delivery point, depending on the plumbing amenities.

MAXIMUM CONSUMPTION FOR EACH DELIVERY POINT

TYPE	CONSUMPTION (l/min)
Sink	9
Dishwasher	10
Washing machine	12
Shower	12
Bathtub	15
Washbasin	6
Bidet	6
Flush tank WC	6
Controlled flushing system WC	90

G-at-cm_a_th

The **sum of the water consumption values** of each delivery point determines the maximum theoretical requirement, which must be reduced according to the **contemporaneity coefficient**, because in actual fact the delivery points are never used all together.

$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}}$	Coefficient for apartments with one bathroom and flush tank WC
$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}}$	Coefficient for apartments with one bathroom and controlled flushing system WC
$f = \frac{1,03}{\sqrt{(0,545 \times Nr \times Na)}}$	Coefficient for apartments with two bathrooms and flush tank WC
$f = \frac{0,8}{\sqrt{(0,727 \times Nr \times Na)}}$	Coefficient for apartments with two bathrooms and controlled flushing system WC
f= coefficient; Nr= number of delivery points; Na= number of apartments	

The **table of water requirements in civil users** shows the maximum contemporaneity flow-rate values based on the **number of apartments** and the type of WC for apartments with one bathroom and two bathrooms. As regards apartments with one bathroom, 7 drawing points have been taken into consideration, while 11 points have been considered for apartments with two bathrooms. If the number of drawing points or apartments is different, use the formulas to **calculate** the requirement.

TABLE OF WATER REQUIREMENTS IN CIVIL USERS

NUMBER OF APARTMENTS	WITH FLUSH TANK WC		WITH CONTROLLED FLUSHING SYSTEM WC	
	1	2	1	2
	FLOW RATE (l/min)			
1	32	40	60	79
2	45	56	85	111
3	55	68	105	136
4	63	79	121	157
5	71	88	135	176
6	78	97	148	193
7	84	105	160	208
8	90	112	171	223
9	95	119	181	236
10	100	125	191	249
11	105	131	200	261
12	110	137	209	273
13	114	143	218	284
14	119	148	226	295
15	123	153	234	305
16	127	158	242	315
17	131	163	249	325
18	134	168	256	334
19	138	172	263	343
20	142	177	270	352
21	145	181	277	361
22	149	185	283	369
23	152	190	290	378
24	155	194	296	386
25	158	198	302	394
26	162	202	308	401
27	165	205	314	409
28	168	209	320	417
29	171	213	325	424
30	174	217	331	431
35	187	234	357	466
40	200	250	382	498
45	213	265	405	528
50	224	280	427	557
55	235	293	448	584
60	245	306	468	610
65	255	319	487	635
70	265	331	506	659
75	274	342	523	682
80	283	354	540	704
85	292	364	557	726
90	301	375	573	747
95	309	385	589	767
100	317	395	604	787
120	347	433	662	863
140	375	468	715	932
160	401	500	764	996
180	425	530	811	1056
200	448	559	854	1114

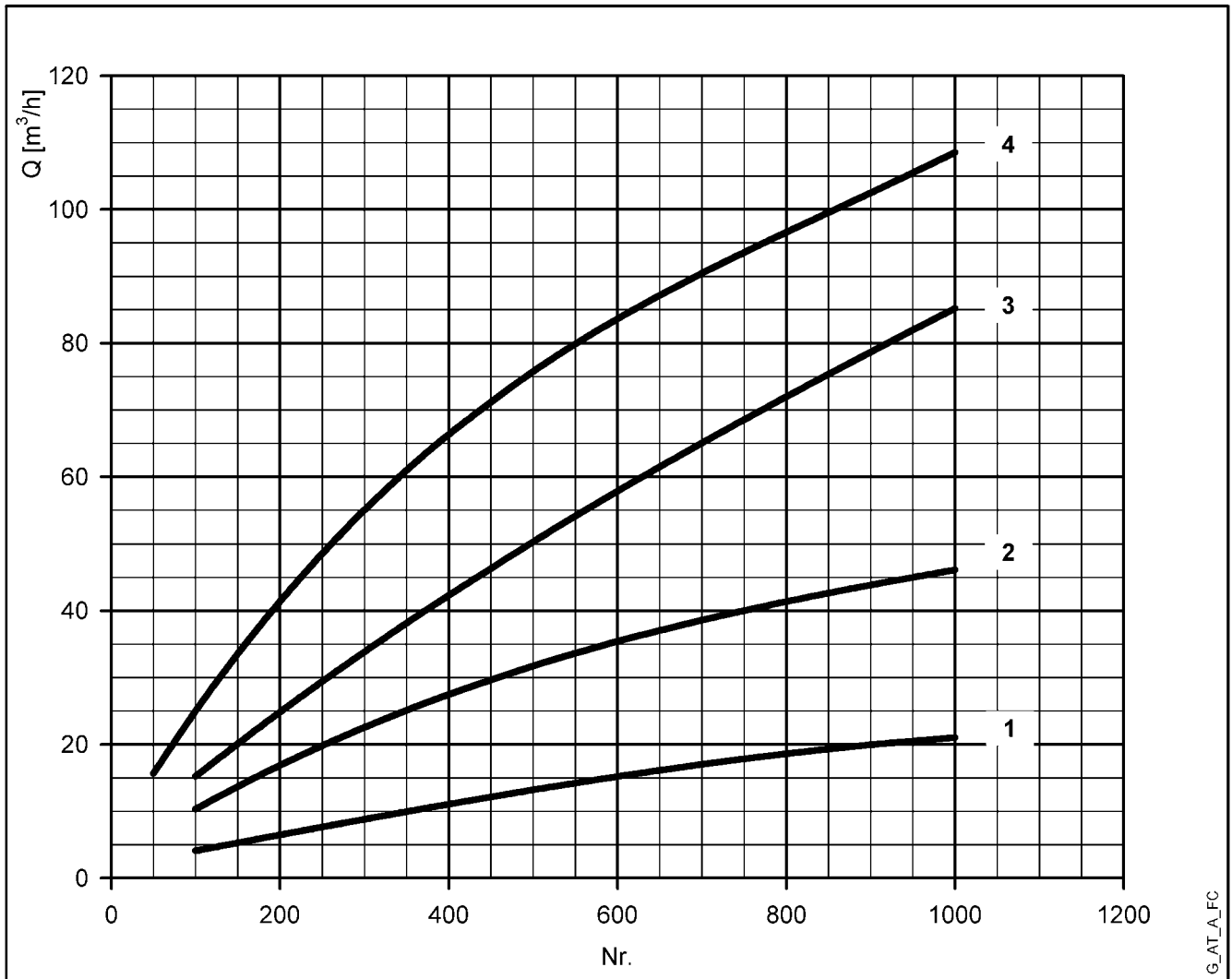
For seaside resorts, a flow rate increased by at least 20% must be considered.

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WATER REQUIREMENTS FOR COMMUNITY BUILDINGS

The requirements of buildings intended for specific uses, such as **offices, residential units, hotels, department stores, nursing homes** and so on, are different from those of condominiums, and both their global daily water consumption and the maximum contemporaneity flow rate are usually greater. The **diagram of water requirements for community buildings** shows the maximum contemporaneity flow rate of some types of communities, for guidance.

These requirements must be determined case by case with the utmost accuracy, using analytical calculation methods, according to particular needs and local provisions.



For seaside resorts, the flow rate must be increased by at least 20%.

- 1 = Offices (N. of people)
- 2 = Department stores (N. of people)
- 3 = Nursing homes (N. of beds)
- 4 = Hotels, residences (N. of beds)

USE OF BOOSTER SET

Water is usually delivered by public supply systems and the pressure is generally sufficient for the proper operation of the users' water and sanitary equipment.

When this pressure is not sufficient, booster sets are employed to increase water pressure and ensure an acceptable minimum value at the furthest points. Therefore, the water supply to a building, group of buildings or to a system in general can be considered satisfactory when all the user points can deliver the required quantity of water.

Set connection methods (intake side)

Water can be supplied to a booster set in two ways:

- 1 - By installing a water storage tank between the user's offtake and the booster set (indirect connection, fig. 7.1.1).
- 2 - By connecting the booster set directly between the user's offtake and the system (direct connection, fig. 7.1.1).

The indirect connection does not allow the water system pressure to be utilized. Therefore, it requires pumps with greater head.

The direct connection allows the water system pressure to be utilized, provided the pressure fluctuation (Δp) does not exceed 1 bar.

If it does, a pressure reducer must be installed for proper operation of the booster set.

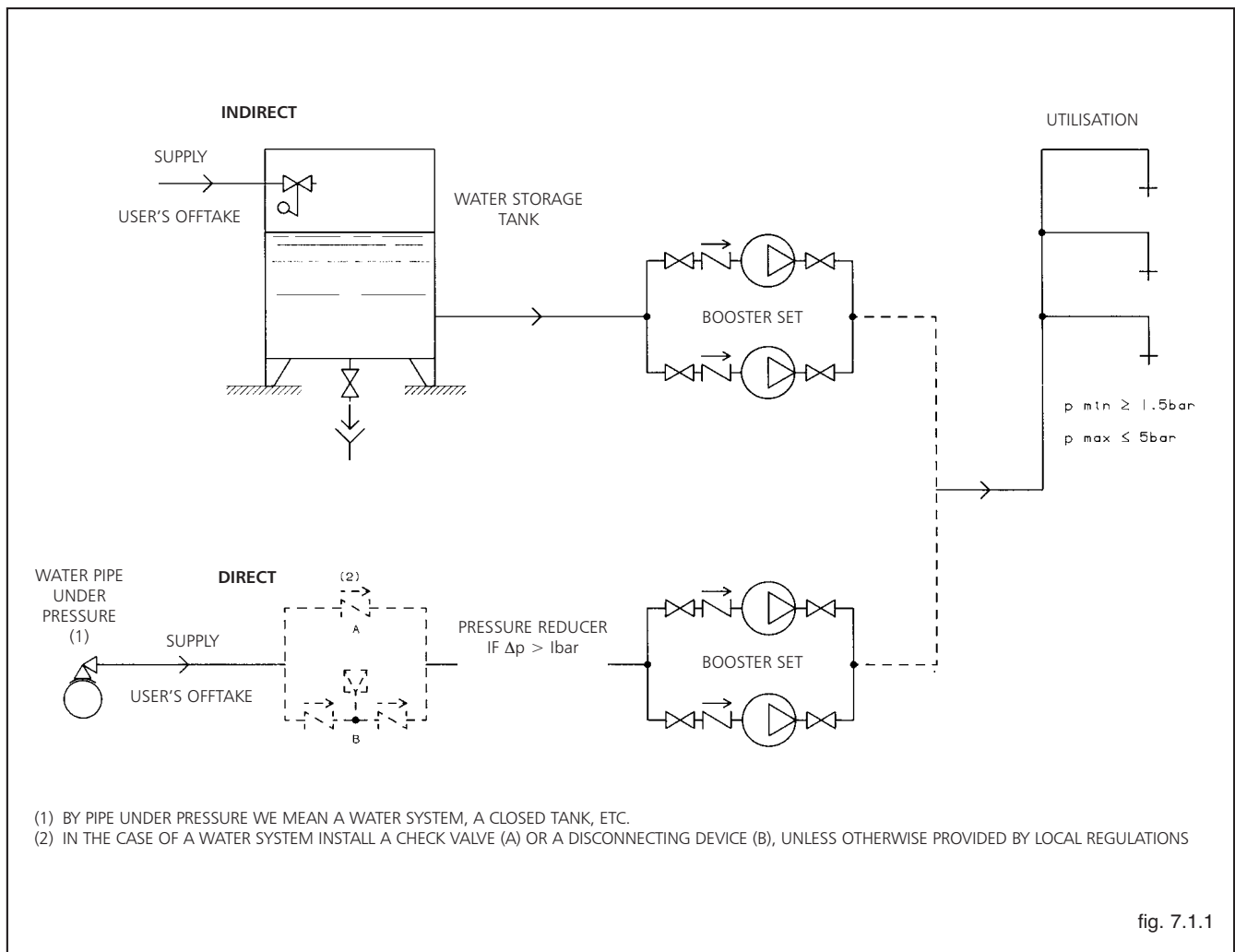


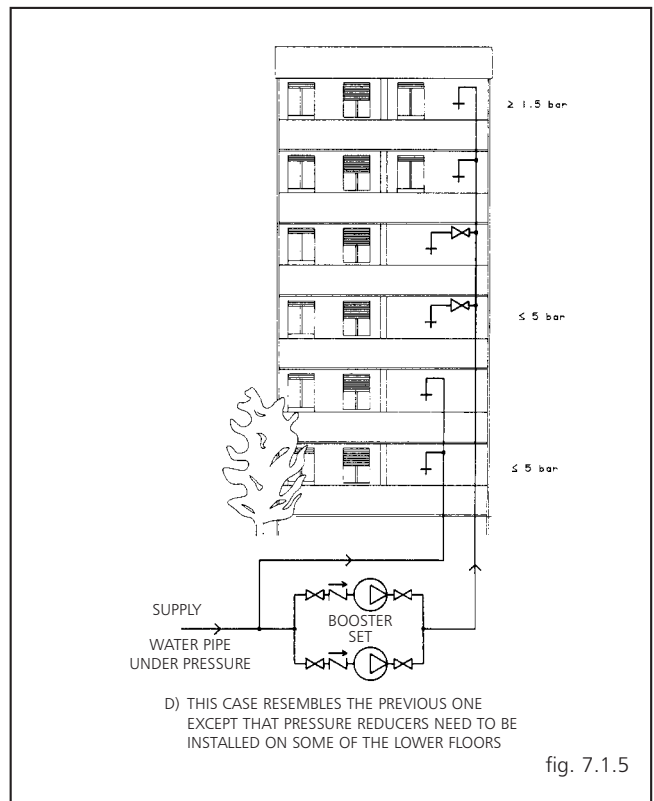
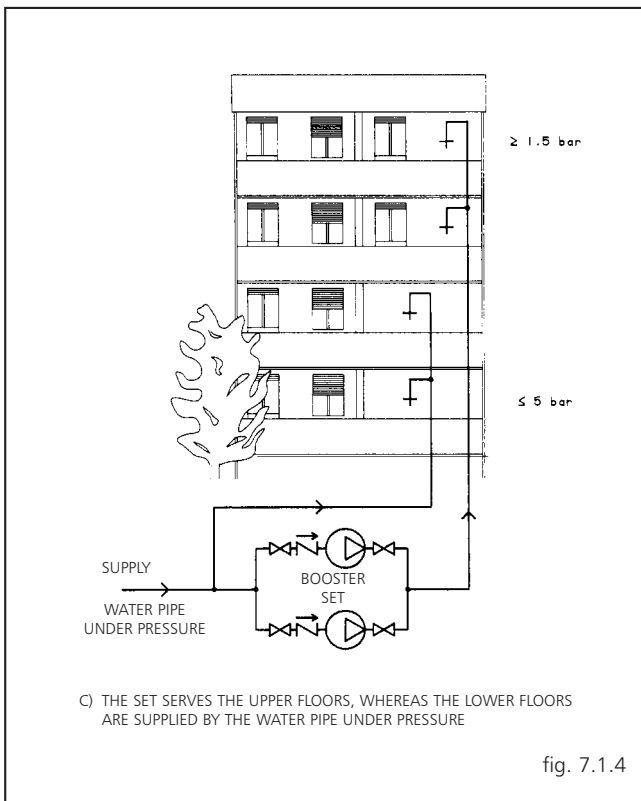
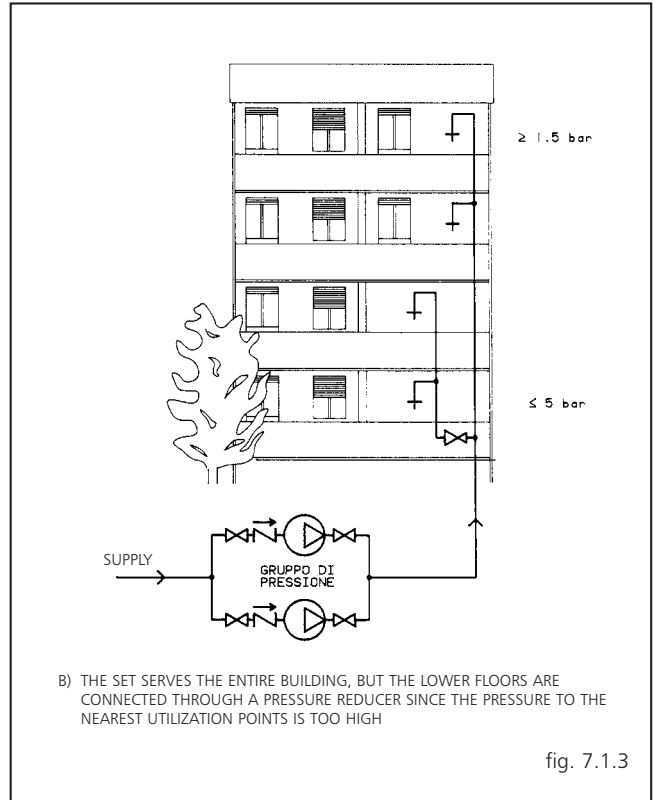
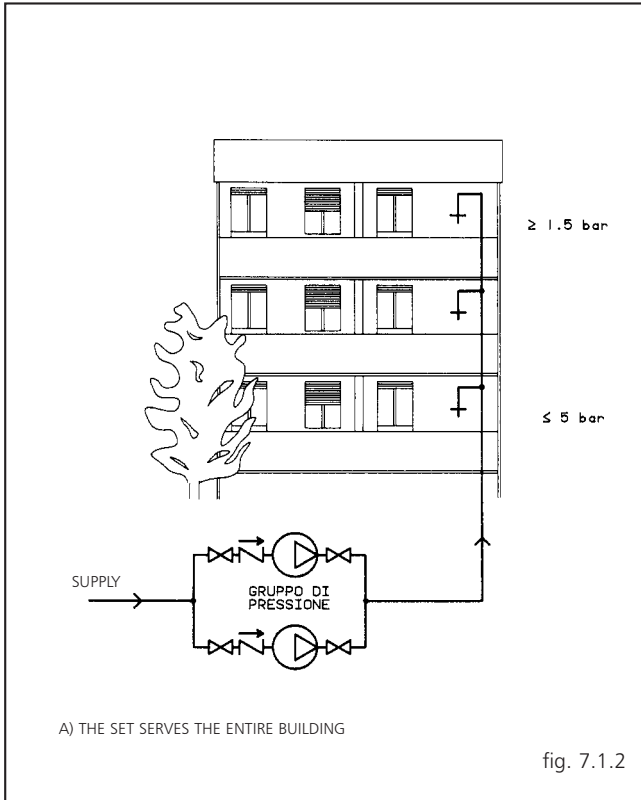
fig. 7.1.1

Water supply systems in civil buildings

The configuration of the supply system must comply with the following conditions:

- The minimum pressure ensuring the proper operation of the equipment must be guaranteed at the most unfavourable drawing point (1.5 bar for valves and flush tank WC, and 2 bar for controlled flushing system WC).
- At the most favourable drawing point, pressure must not exceed 5 bar.

Once these parameters have been satisfied, in relation to the height of the building and to the set intake conditions, the water supply system can have one of the following configurations:



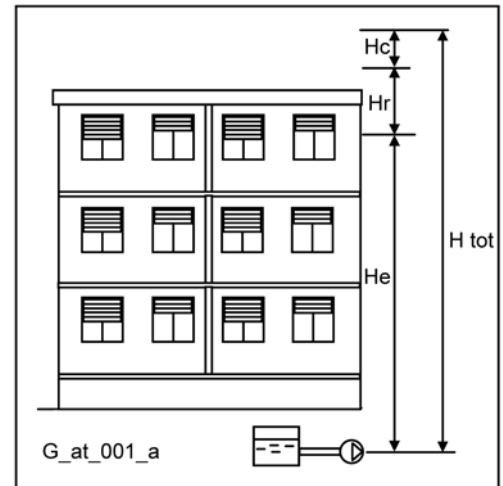
DETERMINING THE HEAD OF THE SET AND INTAKE CONDITIONS

Level intake

The delivery head of the set (H_{tot}) is the sum of:

- H_e : geodetic difference in level between the set and the furthest delivery point.
- H_c : flow resistance along all the pipes and through other system components, such as valves, filters, etc..
- H_r : pressure required at the most unfavourable point.

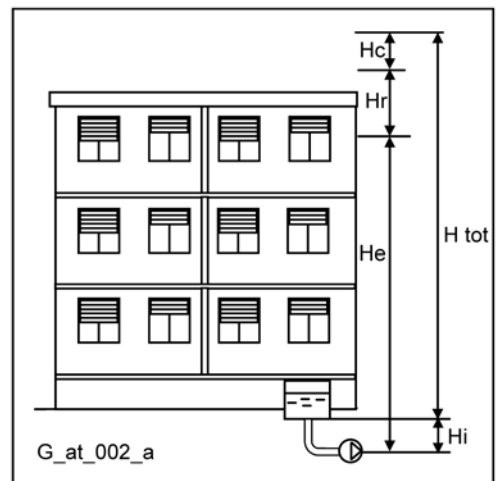
$$H_{tot} = H_e + H_c + H_r$$



Intake with positive head

In this case, the necessary delivery head (H_{tot}) will be reduced by the inlet pressure value (H_i).

$$H_{tot} = H_e + H_c + H_r - H_i$$

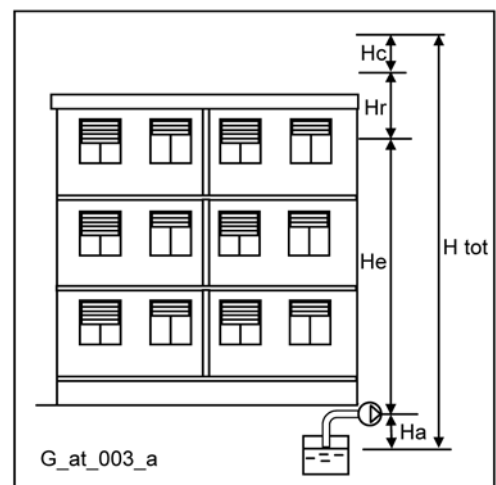


Intake with negative head

When the pumps suck from an underground tank or well, the necessary head will be increased by the value of the intake height (H_a):.

$$H_{tot} = H_e + H_c + H_r + H_a$$

In this case the intake height must be considered very carefully, bearing in mind that an excessive difference in level between the water storage tank and the set, or the wrong sizing of the intake pipe, can have adverse effects on pump operation, such as cavitation and unpriming.



NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height h_z at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (\text{NPSH}_r + 0.5) + h_f + h_{pv} \quad \textcircled{1}$$

where:

- h_p** is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid; h_p is the quotient between the barometric pressure and the specific weight of the liquid.
- h_z** is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.; h_z is negative when the liquid level is lower than the pump axis.
- h_f** is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.
- h_{pv}** is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. h_{pv} is the quotient between the Pv vapour pressure and the liquid's specific weight.
- 0,5** is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

Water temperature (°C)	20	40	60	80	90	110	120
Suction loss (m)	0,2	0,7	2,0	5,0	7,4	15,4	21,5

Elevation above sea level (m)	500	1000	1500	2000	2500	3000
Suction loss (m)	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables at pages 117-118 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

Liquid: water at ~15°C $\gamma = 1 \text{ kg/dm}^3$

Flow rate required: 30 m³/h

Head for required delivery: 43 m.

Suction lift: 3,5 m.

The selection is an FHE 40-200/75 pump whose NPSH required value is, at 30 m³/h, di 2,5 m.

For water at 15 °C

$$h_p = P_a / \gamma = 10,33\text{m}, h_{pv} = P_v / \gamma = 0,174\text{m} (0,01701 \text{ bar})$$

The H_f flow resistance in the suction line with foot valves is ~ 1,2 m.

By substituting the parameters in formula $\textcircled{1}$ with the numeric values above, we have:

$$10,33 + (-3,5) \geq (2,5 + 0,5) + 1,2 + 0,17$$

from which we have: 6,8 > 4,4

The relation is therefore verified.

TECHNICAL APPENDIX VAPOUR PRESSURE PS VAPOUR PRESSURE AND ρ DENSITY OF WATER TABLE

t °C	T K	ps bar	ρ kg/dm ³	t °C	T K	ps bar	ρ kg/dm ³	t °C	T K	ps bar	ρ kg/dm ³
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	443,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

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CHOOSING AND SIZING THE SURGE TANK

The purpose of the surge tank is to limit the number of hourly starts of the pumps, placing part of its stock of water, which is maintained under pressure by the air above it, at the disposal of the system.

The surge tank can be of the air cushion or diaphragm type.

In the air cushion version there is no clear separation between air and water. Since part of the air tends to mix with water, it is necessary to restore it by means of air supply units or a compressor.

In the diaphragm version, neither air supply units nor compressor are needed, as contact between air and water is prevented by a flexible diaphragm inside the tank.

The following method, which is used to determine the volume of a surge tank, is valid both for horizontal and vertical surge tanks.

When calculating the volume of the surge tank, it is generally sufficient to consider the first pump only.

AIR-CUSHION SURGE TANK

It is determined in relation to flow rate, pump pressure, and number of starts per hour allowed by the motor.

$$V_a = \frac{1,25 \times Q_p \times (P_{max} + 10)}{4 \times Z \times (P_{max} - P_{min})}$$

where:

- V_a = Total volume of the air-cushion surge tank in m^3
- Q_p = Average pump flow rate in m^3/h
- P_{max} = Maximum pressure setting (wcm)
- P_{min} = Minimum pressure setting (wcm)
- Z = Maximum number of starts per hour allowed by the motor

Warning! By pump flow rate we mean the average between the flow rate at the maximum pressure switch setting (Q_{max}) and the flow rate at the minimum pressure switch setting (Q_{min}), i.e.:

$$Q_p = \frac{Q_{max} + Q_{min}}{2} \quad (m^3/h)$$

Example:

- CN 32 - 160/22 pump
- P_{max} = 32 mca
- P_{min} = 22 mca
- Q_p = 18 m^3/h
- Z = 30

$$V_a = \frac{1,25 \times 18 \times (32 + 10)}{4 \times 30 \times (32 - 22)} = 0,788 \text{ m}^3$$

A 750-litre surge tank is therefore required.

DIAPHRAGM TANK

If you decide to use a diaphragm tank, the volume will be lower than that of the air-cushion tank. It can be calculated with the following formula:

$$V_m = \frac{Q_p}{4 \times Z} \times \frac{1}{1 - \frac{(P_{min} - 2)}{P_{max}}}$$

where:

- V_m = Total volume of the air-cushion surge tank in m^3
- Q_p = Average pump flow rate in m^3/h
- P_{max} = Maximum pressure setting (wcm)
- P_{min} = Minimum pressure setting (wcm)
- Z = Maximum number of starts per hour allowed by the motor

Example:

- CN 32 - 160/22 pump
- P_{max} = 32 mca
- P_{min} = 22 mca
- Q_p = 18 m^3/h
- Z = 30

$$V_m = \frac{Q_p}{4 \times Z} \times \frac{1}{1 - \frac{(P_{min} - 2)}{P_{max}}} = 0,4 \text{ m}^3$$

A 500-litre surge tank is therefore required.

Approximate comparison between Lowara air-cushion tanks and diaphragm tanks, as regards some pressure switch setting values

NOMINAL CAPACITY OF AIR CUSHION TANK (litres)	PRESSURE SWITCH SETTING (bar) min/max									
	1,5/2,5	2/3	2,5/3,5	3/4	3,5/4,5	4/5	4,5/5,5	5/6	5,5/6,5	6/7
	NOMINAL CAPACITY OF DIAPHRAGM VESSEL (litres)									
100	N°2 ball type vessels/cylinder type vessels or 60l Export tank or 100-litre vessels (ISPESL tested)									
200	100									
300	200									
500	300									
1000	500									
1500	500 + 200		500 + 300							
2000	500 + 500									
2500	500 + 500	500 + 500 + 300								500 + 500

s_swp-en_a_th

TABLE OF FLOW RESISTANCE IN 100 m OF STRAIGHT CAST IRON PIPELINE (HAZEN-WILLIAMS FORMULA C=100)

FLOW RATE		NOMINAL DIAMETER in mm and INCHES																			
m ³ /h	l/min		15	20	25	32	40	50	65	80	100	125	150	175	200	250	300	350	400		
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2	2 1/2"	3"	4"	5"	6"	7"	8"	10"	12"	14"	16"		
0,6	10	v	0,94	0,53	0,34	0,21	0,13														
		hr	16	3,94	1,33	0,40	0,13														
0,9	15	v	1,42	0,80	0,51	0,31	0,20														
		hr	33,9	8,35	2,82	0,85	0,29														
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17													
		hr	57,7	14,21	4,79	1,44	0,49	0,16													
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21													
		hr	87,2	21,5	7,24	2,18	0,73	0,25													
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25													
		hr	122	30,1	10,1	3,05	1,03	0,35													
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30													
		hr	162	40,0	13,5	4,06	1,37	0,46													
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20												
		hr		51,2	17,3	5,19	1,75	0,59	0,16												
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25												
		hr		77,4	26,1	7,85	2,65	0,89	0,25												
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30												
		hr		108	36,6	11,0	3,71	1,25	0,35												
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35												
		hr		144	48,7	14,6	4,93	1,66	0,46												
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40												
		hr		185	62,3	18,7	6,32	2,13	0,59												
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30											
		hr			77,5	23,3	7,85	2,65	0,74	0,27											
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33											
		hr			94,1	28,3	9,54	3,22	0,90	0,33											
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41											
		hr			142	42,8	14,4	4,86	1,36	0,49											
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32										
		hr				59,9	20,2	6,82	1,90	0,69	0,23										
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37										
		hr				79,7	26,9	9,07	2,53	0,92	0,31										
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42										
		hr				102	34,4	11,6	3,23	1,18	0,40										
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34									
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20									
18	300	v					3,98	2,55	1,51	1,00	0,64	0,41									
		hr					72,8	24,6	6,85	2,49	0,84	0,28									
24	400	v					5,31	3,40	2,01	1,33	0,85	0,54	0,38								
		hr					124	41,8	11,66	4,24	1,43	0,48	0,20								
30	500	v					6,63	4,25	2,51	1,66	1,06	0,68	0,47								
		hr					187	63,2	17,6	6,41	2,16	0,73	0,30								
36	600	v					5,10	3,02	1,99	1,27	0,82	0,57	0,42								
		hr					88,6	24,7	8,98	3,03	1,02	0,42	0,20								
42	700	v					5,94	3,52	2,32	1,49	0,95	0,66	0,49								
		hr					118	32,8	11,9	4,03	1,36	0,56	0,26								
48	800	v					6,79	4,02	2,65	1,70	1,09	0,75	0,55								
		hr					151	42,0	15,3	5,16	1,74	0,72	0,34								
54	900	v					7,64	4,52	2,99	1,91	1,22	0,85	0,62								
		hr					188	52,3	19,0	6,41	2,16	0,89	0,42								
60	1000	v						5,03	3,32	2,12	1,36	0,94	0,69	0,53							
		hr						63,5	23,1	7,79	2,63	1,08	0,51	0,27							
75	1250	v						6,28	4,15	2,65	1,70	1,18	0,87	0,66							
		hr						96,0	34,9	11,8	3,97	1,63	0,77	0,40							
90	1500	v						7,54	4,98	3,18	2,04	1,42	1,04	0,80							
		hr						134	48,9	16,5	5,57	2,29	1,08	0,56							
105	1750	v						8,79	5,81	3,72	2,38	1,65	1,21	0,93							
		hr						179	65,1	21,9	7,40	3,05	1,44	0,75							
120	2000	v							6,63	4,25	2,72	1,89	1,39	1,06	0,68						
		hr							83,3	28,1	9,48	3,90	1,84	0,96	0,32						
150	2500	v							8,29	5,31	3,40	2,36	1,73	1,33	0,85						
		hr							126	42,5	14,3	5,89	2,78	1,45	0,49						
180	3000	v								6,37	4,08	2,83	2,08	1,59	1,02	0,71					
		hr								59,5	20,1	8,26	3,90	2,03	0,69	0,28					
210	3500	v									7,43	4,76	3,30	2,43	1,86	1,19	0,83				
		hr									79,1	26,7	11,0	5,18	2,71	0,91	0,38				
240	4000	v									8,49	5,44	3,77	2,77	2,12	1,36	0,94				
		hr									101	34,2	14,1	6,64	3,46	1,17	0,48				
300	5000	v										6,79	4,72	3,47	2,65	1,70	1,18				
		hr											51,6	21,2	10,0	5,23	1,77	0,73			
360	6000	v										8,15	5,66	4,16	3,18	2,04	1,42				
		hr											72,3	29,8	14,1	7,33	2,47	1,02			
420	7000	v											6,61	4,85	3,72	2,38	1,65	1,21			
		hr												39,6	18,7	9,75	3,29	1,35	0,64		
480	8000	v											7,55	5,55	4,25	2,72	1,89	1,39			
		hr												50,7	23,9	12,49	4,21	1,73	0,82		
540	9000	v											8,49	6,24	4,78	3,06	2,12	1,56	1,19		
		hr												63,0	29,8	15,5	5,24	2,			

FLOW RESISTANCE

TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

G-a-pcv_a_th

The table is valid for the Hazen Williams coefficient $C = 100$ (cast iron pipework). For steel pipework, multiply the values by 1.41. For stainless steel, copper and coated cast iron pipework, multiply the values by 1.85.

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by the manufacturers.

Air supply unit

The most commonly used air supply unit model is the "depression" type, which uses the depression produced by the pump suction.

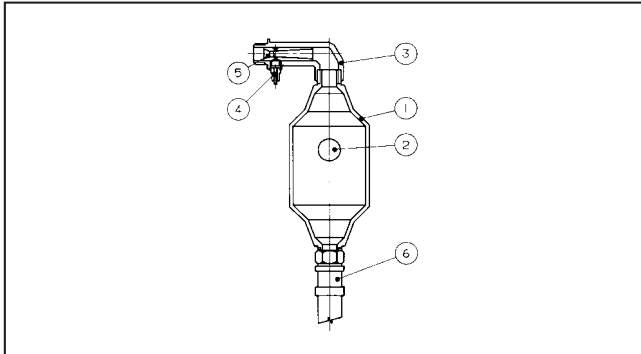


fig. 7.2.2 - The air supply unit consists of a body made of plastic material suitable for foodstuffs (1), a spherical rubber shutter (2), an upper brass union (3) with an air valve (4), a Venturi tube (5), and a flexible pipe (6) to be connected to the pump intake.

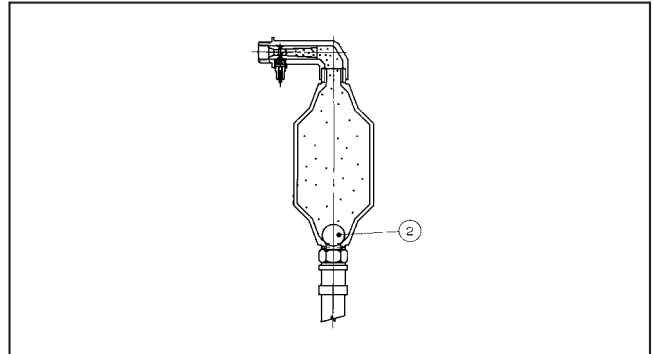


fig. 7.2.5 - The air accumulated inside the body pushes the rubber ball (2) to the bottom, thus blocking the passage. At this point the valve closes and the rubber ball prevents the air accumulated inside the body of the air supply unit from reaching the pump intake.

Air supply unit operation

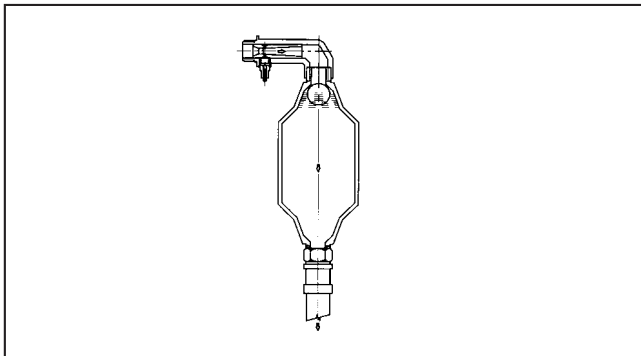


fig. 7.2.3 - When the pump starts up, the intake pressure is lower than the pressure in the surge tank. This difference causes water to flow from the surge tank to the pump intake, through the air supply unit.

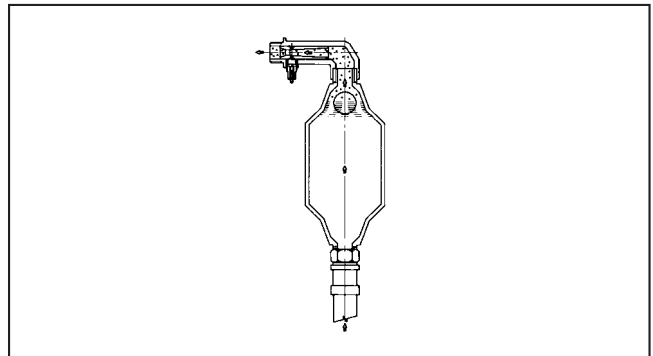


fig. 7.2.6 - When the pump stops the depression ceases and a flow of water is produced, which lifts the ball and pushes the air in the body of the supply unit into the tank.

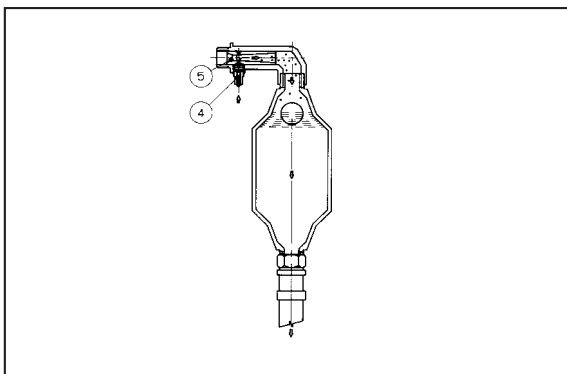


fig. 7.2.4 - The flow of water that passes through the Venturi tube (5) generates a depression and allows the opening of the air valve (4). As a consequence, air enters the body of the supply unit.

Air supply unit selection tank

TANK CAPACITY L	AVERAGE PRESSURE SETTING bar					
	2.5	3.5	4.5	5.5	6.5	7.5
100	LOW 5					
200						
300						
500	LOW 10					
700						
1000	LOW 25					
1500						
2000						
2500	LOW 40					
3000						
4000						
5000						
6000						

g_air-en_a_th

This cycle is repeated each time the pump starts up until the required quantity of air has accumulated. To ensure proper system operation, no check valve must be mounted between the pump delivery outlet and the surge tank, as it would impede the return flow of water through the pump.

ASSESSMENT OF PROBABLE DEMAND (VALID IN U.K. ONLY)

The method adopted is based on loading unit values as detailed in the Plumbing Engineering Design Guide published by the Institute of Plumbing.

When designing a hot or cold water supply system an assessment must be made to obtain the maximum probable simultaneous demand.

Depending on the type of services being provided it rarely occurs for all the appliances to be used at the same time therefore the design usually allows for a peak usage which is less than the maximum.

Probable demand will depend on the type of building and its use, type of appliances installed and frequency of use.

The simultaneous demand in most installations can be calculated with an adequate degree of accuracy using the loading unit concept.

The usage patterns and types of appliances in different installations will vary greatly.

Sports and Leisure centres for example are usually calculated directly by the flow rates of each appliance, without diversity factors. Each case will need to be looked at in its own right and assessed accordingly. Judgement of the designer must prevail.

Loading unit values vary for each type of appliance. A loading unit has no precise value in terms of litres per second.

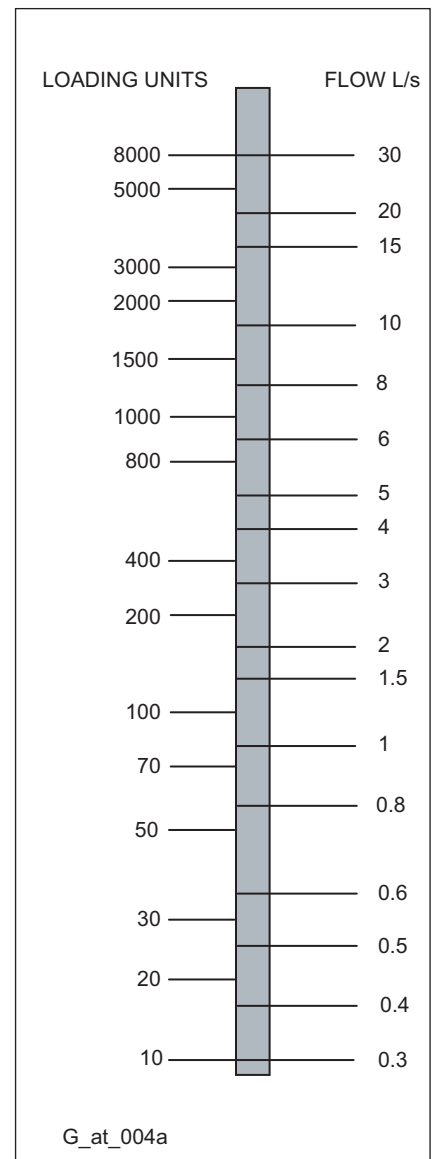
See loading unit table below.

By multiplying the total number of each appliance by the appropriate loading unit number and adding the resultant totals together, the recommended flow can be read from the chart.

Loading unit table

APPLIANCE	Loading Unit	Recommended Flow L/s
WC	1,5	0,12
Wash basin (hot & cold)	3	0,3
Sink (hot & cold)	6	0,4
Bath (hot & cold)	20	0,6
Shower (hot & cold)	10	0,24
Washing machine	2	0,3

g_at_a_LU



Working Example

A block of standard flats containing a total of 70 dwellings

Each standard flat is assumed to have:

1 x Hand basin hot & cold = 3 L/U x 70 = 210

1 x WC cold only = 1.5 L/U x 70 = 105

1 x Shower hot & cold = 10 L/U x 70 = 700

1 x Sink hot & cold = 6 L/U x 70 = 420

Total Loading Unit = 1435

This figure can now be read from the chart opposite: total flow = 8.5 L/s

ASSESSING HEAD REQUIREMENT (VALID IN U.K. ONLY)

The **head** required in a boosted cold water system consists of three components, static head, residual pressure and system friction losses. The values of these three components are added together to give the total required head at the system flow rate.

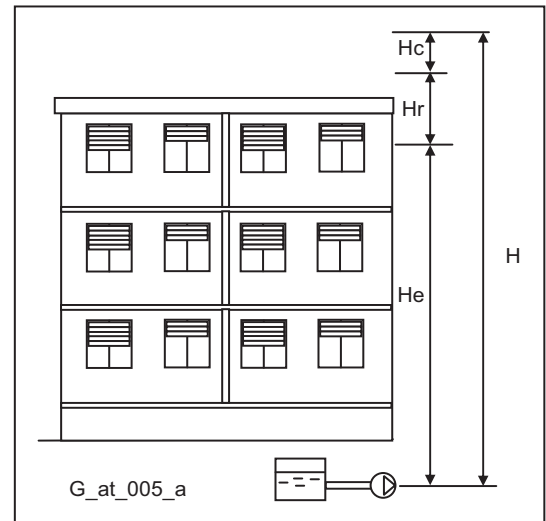
Static head (He): This is the difference between the break tank low water line and the highest discharge point in the building. If the height of the build is not known, then 2.8-3.0 metres per floor can be used to assess the building height.

Residual pressure (Hr): This is the pressure required at the highest outlet device, normally 20metres.

Note: some modern showers may require higher pressures.

System friction losses (Hc): The total losses through pipework, pipework fittings, valves, PRVs and all other equipment fed through the pumpset must be added to find the total system losses.

On conventional systems that do not include excessive runs of pipe or specialised components a rough guide would be to allow 0.05 metres friction loss for each metre of static head.



Example:

Static head (He): Building height four floors @ 2.8m each = 11.2m +
 Residual pressure (Hr): Pressure at highest outlet = 20m +
 Friction losses (Hc): 11.2 (static head) x 0.05 = 0.56m
 Total pump head required (H) = 31.76m (3.11 Bar)

Pressure limitations

The designer must ensure that adequate precautions are taken to ensure that the system is capable of withstanding the closed valve head produced by the pump set. In cases where closed valve pressures cannot be tolerated, pressure reducing valves should be fitted down stream of the booster set.

Velocity

Pipework within the system should be sized to limit the velocity to the figures stated in table below.

Higher velocities will lead to excessive noise, wear and higher running costs.

PIPE SIZE	SUCTION PIPE m/s	DELIVERY PIPE m/s
Less than 80mm	0,46	0,91 to 1,07
100-150mm	0,55	1,22 to 1,52
200mm	0,76	1,68
250 and above	0,91	1,82 to 2,13

g_at_a_fs

BOOSTER SIZING

What information do we require to size a booster set?

- As a minimum we need to know:
 - The total flow rate, or information to assess this.
 - The total head at flow rate, or the height of building.
 - If the pumps are to operate under positive head, or suction lift conditions.
 - Where the set is to be sited, I.E. basement or roof.
 - Preferred choice fixed or variable speed
- Additional information if available:
 - How to split the duty for particular applications I.E. duty/standby or duty/assist.
 - The size and material of the connecting pipework.
 - Is a Jockey pump required.

ACCESSORIES



VOLUMETRIC CAPACITY

Litres per minute l/min	Cubic metres per hour m ³ /h	Cubic feet per hour ft ³ /h	Cubic feet per minute ft ³ /min	Imp. gal. per minute Imp. gal./min	US gal. per minute Us gal./min
1,000	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	1,000	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	1,000	0,0167	0,1038	0,1247
28,3168	1,6990	60,0000	1,000	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	1,000	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	1,000

PRESSURE AND HEAD

Newton per square metre N/m ²	kilo Pascal kPa	bar bar	Pound force per square inch psi	metre of water m H ₂ O	millimetre of mercury mm Hg
1,000	0,0010	1 x 10 ⁻⁵	1.45 x 10 ⁻⁴	1.02 x 10 ⁻⁴	0,0075
1000,0000	1,000	0,0100	0,1450	0,1020	7,5006
1 x 10 ⁵	100,0000	1,000	14,5038	10,1972	750,0638
6894,7570	6,8948	0,0689	1,000	0,7031	51,7151
9806,6500	9,8067	0,0981	1,4223	1,000	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	1,000

LENGTH

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
1,000	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	1,000	0,0100	0,3937	0,0328	0,0109
1000,0000	100,0000	1,000	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	1,000	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	1,000	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	1,000

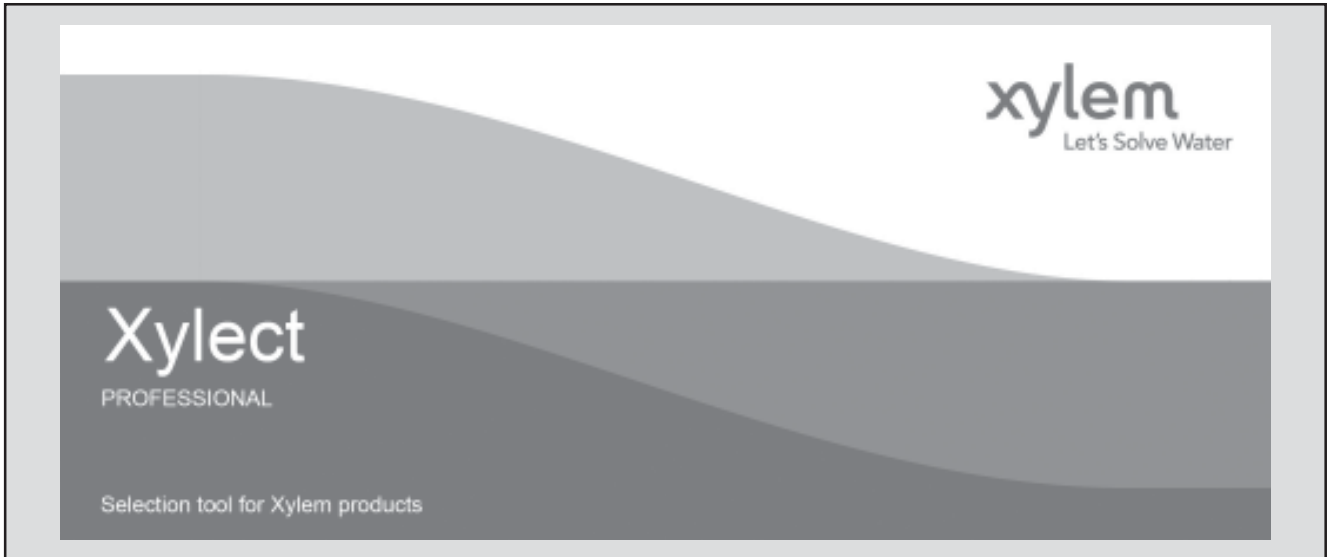
VOLUME

cubic metre m ³	litre litro	millilitre ml	imp. Gallon imp. gal.	US gallon US gal.	cubic foot ft ³
1,000	1000,0000	1 x 10 ⁶	219,9694	264,1720	35,3147
0,0010	1,000	1000,0000	0,2200	0,2642	0,0353
1 x 10 ⁻⁶	0,0010	1,000	2.2 x 10 ⁻⁴	2.642 x 10 ⁻⁴	3.53 x 10 ⁻⁵
0,0045	4,5461	4546,0870	1,000	1,2009	0,1605
0,0038	3,7854	3785,4120	0,8327	1,000	0,1337
0,0283	28,3168	28316,8466	6,2288	7,4805	1,000

G-at_pp-en_a_sc

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



Xylect is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

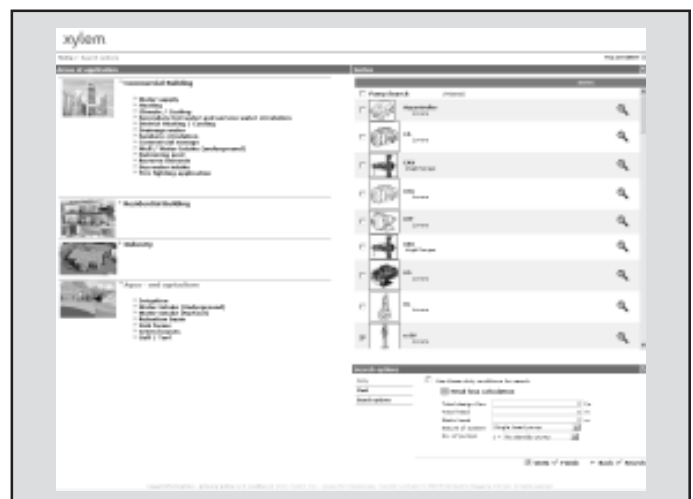
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

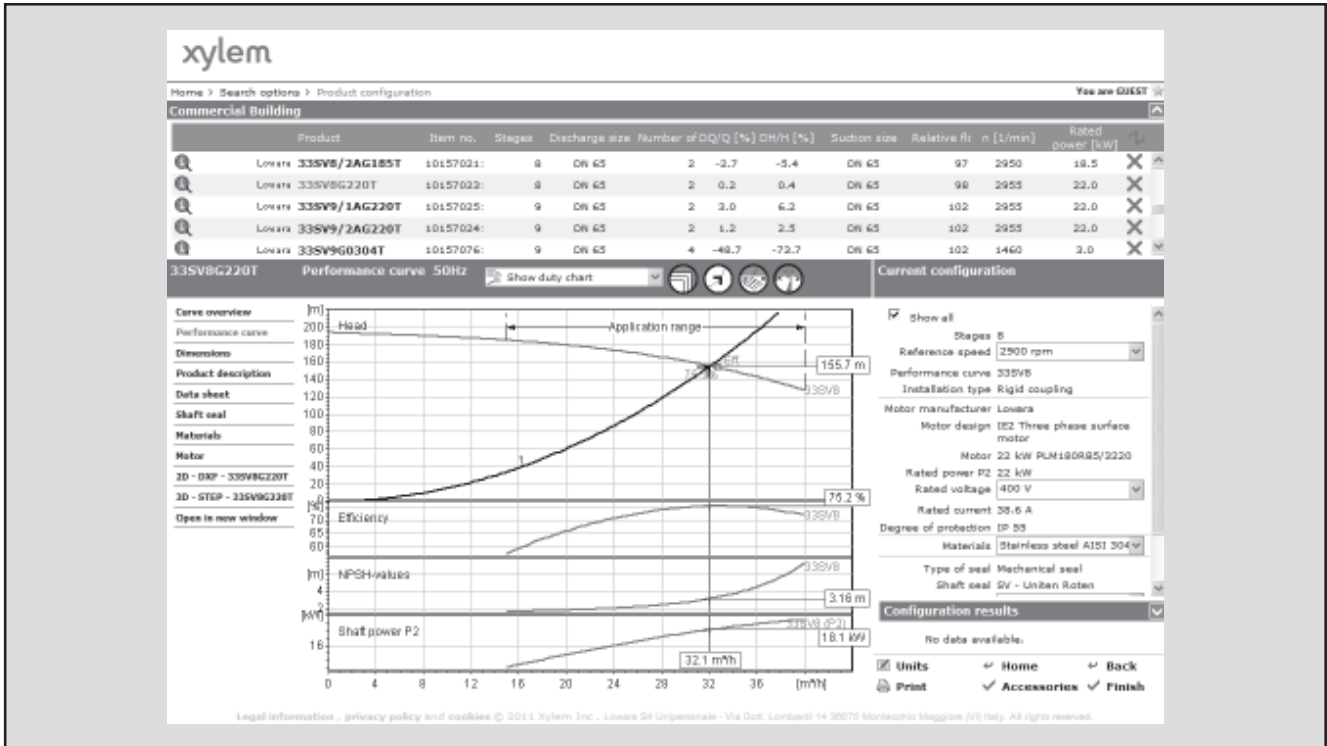
- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



The search by application guides users not familiar with the product range to the right choice.

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



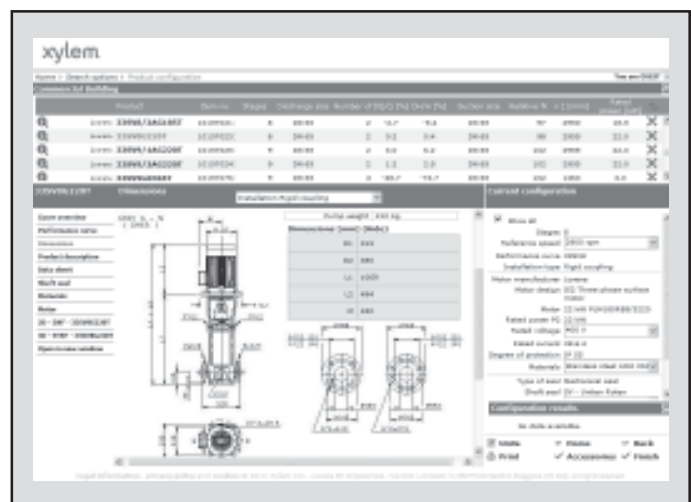
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Xylect is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Xylect users

Every user has a My Xylect space, where all projects are saved.

For more information about Xylect please contact our sales network or visit www.xylect.com.



Dimensional drawings appear on the screen and can be downloaded in dxf format.

BOOSTER SETS, GS SERIES WITH ELECTRIC PUMPS e-SV™ THREE-PHASE MOTORS AT 50 Hz, 2-POLE (up to 22 kW)

P _N kW	Efficiency η _N %																		IE	Year of manufacture							
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V											
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4									
0,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	3	By June 2011	
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	2		
1,5	85,6	86,5	85,8	85,9	86,4	84,9	86,0	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	2		
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11	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,8	91,1	90,3	91,0	91,1	90,3	91,0	91,1	90,3	91,0	91,1	90,3	2		
15	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	2		
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22	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	2		

P _N kW	Manufacturer		IEC SIZE*	Construction Design	N. of Poles	f _N Hz	Data for 400 V / 50 Hz Voltage				
	Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia						cosφ	I _s / I _N	T _N Nm	Ts/T _N	Tm/Tn
	Model										
0,37	SM71RB14/304		71R	V18/B14	2	50	0,66	4,32	1,38	4,14	3,13
0,55	SM71B14/305		71				0,74	5,97	1,85	3,74	3,56
0,75	SM80B14/307PE		80				0,78	7,38	2,48	3,57	3,75
1,1	SM80B14/311PE		80				0,79	8,31	3,63	3,95	3,95
1,5	SM90RB14/315PE		90R				0,80	8,80	4,96	4,31	4,10
2,2	PLM90B14/322		90				0,80	8,63	7,25	3,74	3,71
3	PLM100RB14/330		100R				0,82	8,39	9,96	3,50	3,32
4	PLM112RB14/340		112R				0,85	9,52	13,1	3,04	4,40
5,5	PLM132RB5/355		132R				0,87	10,3	18,1	4,43	5,80
7,5	PLM132B5/375		132				0,87	9,21	24,5	3,26	4,55
11	PLM160RB5/3110		160R				0,87	9,72	36,0	3,46	4,56
15	PLM160B5/3150		160				0,91	8,45	48,6	2,26	3,81
18,5	PLM160B5/3185		160				0,88	9,75	59,8	2,82	4,53
22	PLM180RB5/3220		180R				0,89	9,50	71,1	2,74	4,26

P _N kW	Voltage U _N V											η _N min ⁻¹	Observe the regulations and codes locally in force regarding sorted waste disposal.	Operating conditions **		
	Δ			Y			Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V					
0,37	2,20	2,34	2,51	1,27	1,35	1,45	-	-	-	-	-	2740 ÷ 2790	≤ 1000	-15 / 40	No	
0,55	2,56	2,56	2,62	1,48	1,48	1,51	-	-	-	-	-	2825 ÷ 2850				
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98	2875 ÷ 2895				
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900				
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52	2850 ÷ 2885				
4	13,6	13,5	13,5	7,88	7,77	7,79	7,80	7,63	7,65	4,51	4,41	2895 ÷ 2920				
5,5	18,3	18,0	17,9	10,6	10,4	10,3	10,6	10,4	10,5	6,14	6,02	2885 ÷ 2905				
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935				
11	36,0	35,1	34,7	20,8	20,3	20,0	20,8	20,3	20,1	12,0	11,7	2910 ÷ 2925				
15	47,2	45,3	44,0	27,2	26,2	25,4	27,2	26,0	25,3	15,7	15,0	2940 ÷ 2950				
18,5	58,3	56,9	55,9	33,7	32,9	32,3	34,1	33,2	32,8	19,7	19,1	2945 ÷ 2955				
22	68,3	66,2	64,3	39,4	38,2	37,1	40,0	38,6	37,8	23,1	22,3	2945 ÷ 2955				

* R = Reduced size of motor casing as compared to shaft extension and flange.

sv-ie2-mott22-2p50-en_c_tte

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

BOOSTER SETS, GS SERIES WITH ELECTRIC PUMPS e-SV™ THREE-PHASE MOTORS AT 50 Hz, 2-POLE (from 30 to 55 kW)

P _N kW	Efficiency η_N %									IE	Year of manufacture
	Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V				
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
30	92,6	92,9	92,7	92,5	93,0	92,9	93,0	93,0	92,3	2	By June 2011
37	93,0	93,3	93,2	93,0	93,4	93,3	93,5	93,4	92,8		
45	93,2	93,5	93,4	93,3	93,6	93,6	93,8	93,6	93,1		
55	93,6	93,8	93,8	93,6	93,9	93,9	94,0	93,8	93,3		

P _N kW	Manufacturer	IEC SIZE	Construction Design	N. of Poles	f _N Hz	Data for 400 V / 50 Hz Voltage				
	WEG Equipamentos Eletricos S.A. Reg. No. 07.175.725/0010-50 Jaragua do Sul - SC (Brazil)					cos ϕ	I _s / I _N	T _N Nm	T _s /T _N	T _m /T _n
	Model									
30	W22 200L2-B5 30kW	200	V1/B5	2	50	0,87	6,50	97,00	2,40	2,70
37	W22 200L2-B5 37kW	200				0,87	6,80	120,0	2,40	2,60
45	W22 225S/M2-B5 45kW	225				0,89	7,00	145,0	2,20	2,80
55	W22 250S/M2-B5 55kW	250				0,89	7,00	178,0	2,20	2,80

P _N kW	Voltage U _N V					n _N min ⁻¹	See note:	Operating conditions **		
	Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	380 V	400 V	415 V	660 V	690 V					
	I _N (A)									
30	55,90	53,60	52,20	32,18	31,07	2950 ÷ 2960	≤ 1000	-15 / 40	No	
37	68,70	65,80	64,00	39,55	38,14	2945 ÷ 2955				
45	81,50	78,00	75,80	46,92	45,22	2955 ÷ 2960				
55	99,20	95,00	92,50	57,12	55,07	2955 ÷ 2960				

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

sv-ie2-mott55-2p50-en_a_te

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

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Headquarters

LOWARA S.r.l. Unipersonale
Via Vittorio Lombardi 14
36075 Montecchio Maggiore - Vicenza - Italy
Tel.(+39) 0444 707111 - Fax(+39) 0444 492166
e-mail: lowara.mkt@xylem.com
web: www.lowara.com - www.completewatersystems.com

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