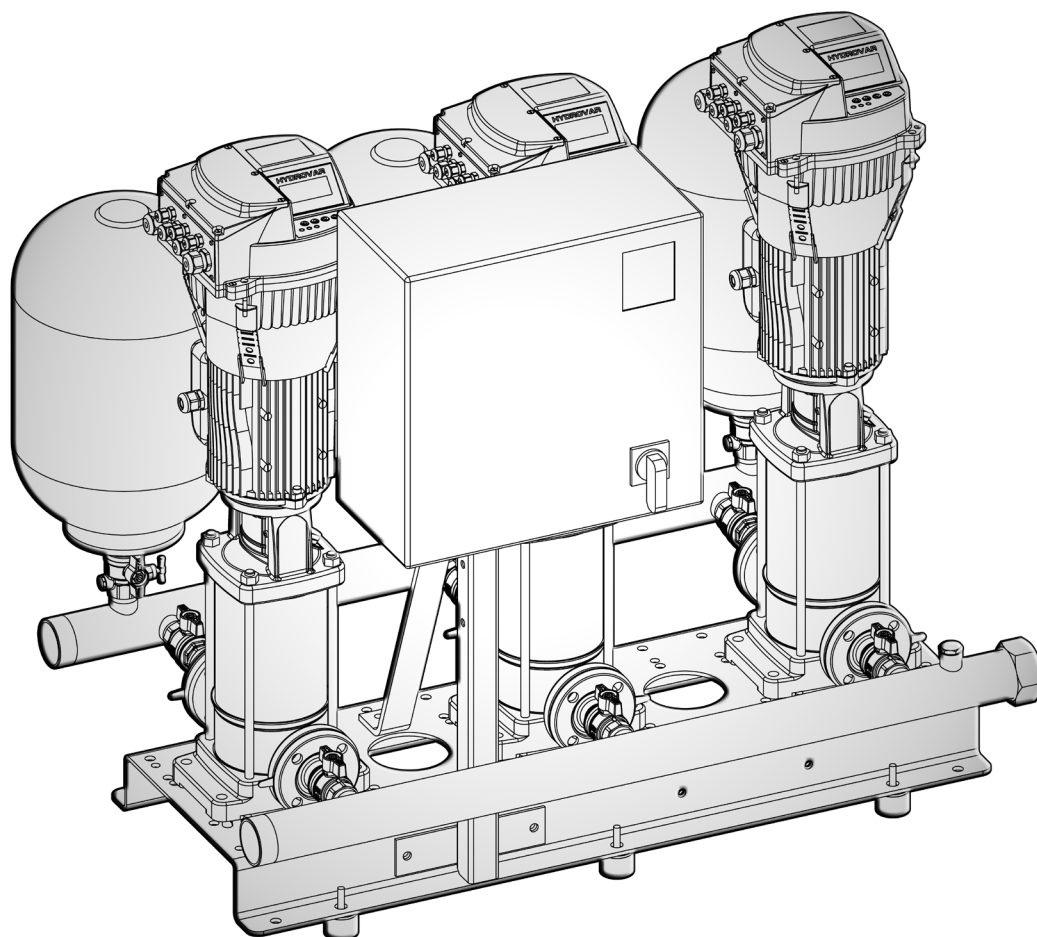


**50 Hz**



# GHV10-GHV20-GHV30-GHV40 Series

VARIABLE SPEED BOOSTER SETS WITH HYDROVAR® (HVL SERIES)  
VERTICAL MULTISTAGE ELECTRIC PUMPS SERIES e-SV™



**UK market only**

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## **GHV BOOSTER SETS SERIES**

### **GENERAL INTRODUCTION – PRODUCT DESCRIPTION**

Lowara GHV series booster sets are designed to transfer and increase the pressure of water, in the following applications:

- Hospitals
- Schools
- Public buildings
- Industries
- Hotels
- Condominiums
- Sports facilities
- Mains water systems

GHV series booster sets are variable speed pumping stations with one to four e-SV series multistage vertical pumps. Each pump is equipped with an HYDROVAR® frequency converter. This means that all the pumps are capable of variable speed operation. Special sets with up to 8 pumps are also available on request.

These types of systems improve the comfort of the end user, reducing noise emissions. Thanks to the gradual switching off of the pumps, “water hammer” is also reduced.

**GHV10:** The pump is connected to a delivery manifold by a non-return valve. Control panel is available as accessory.

**GHV20, GHV20, GHV30, GHV40:** The pumps are installed on a single base and connected to each other by means of suction and delivery pipes.

The pumps are connected to the manifolds by means of on-off valves and non-return valves.

The control panel is secured to the same base by means of a bracket.

**GHV series booster sets with e-SV are certified for use with drinking water.**

GHV series booster sets have been defined with a wide range of pumps to satisfy the different needs of every system. However, Lowara can also offer the GHV series with customisation to satisfy particular working requirements.

Systems for regulating the speed of the electric motors, as in GHV series booster sets, are used in the following cases:

- In case of systems with many users, where the daily consumption varies frequently and in different periods.
- When it is necessary to obtain constant pressure.
- In case of systems with supervision it is possible to monitor and check the performances of the pump stations.

## GHV BOOSTER SETS SERIES

### DESCRIPTION OF OPERATION

In GHV series Lowara sets, all the pumps are controlled by a HYDROVAR® frequency converter, and operate at variable speeds.

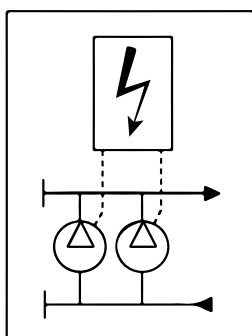
Special sets with up to eight pumps are also available on request. Start-up is automatic, depending on system requirements. Each pump has a pressure transmitter that provides a pressure reading, which is recorded and sent to the frequency converter.

The pump speed is modulated based on system requirements.

Pump start alternation is automatic, following a preset time (parameter available in the frequency converter).

Pump starts and stops are determined based on the pressures entered as set values in the menu of the frequency converter.

### Example operation of a set of three GHV series pumps.



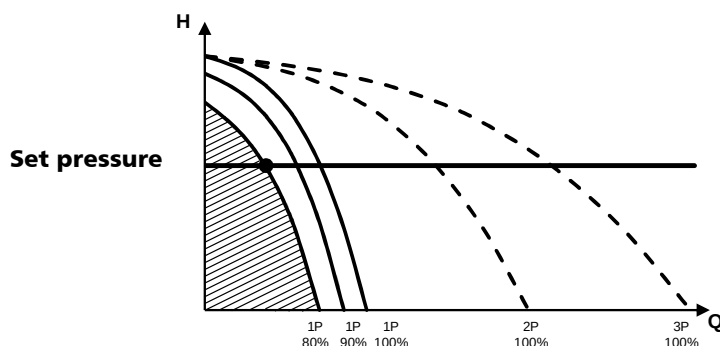
Each pump is controlled by a frequency converter, directly connected to the pump electric motor. The starting priority is changed in accordance with the time set in the relevant HYDROVAR® parameter field. The speed adjustment will apply to all the pumps installed. When the water request decreases, the pumps stop in succession.

The pumps connected to the frequency converter keep the pressure constant by modulating the number of motor revs.

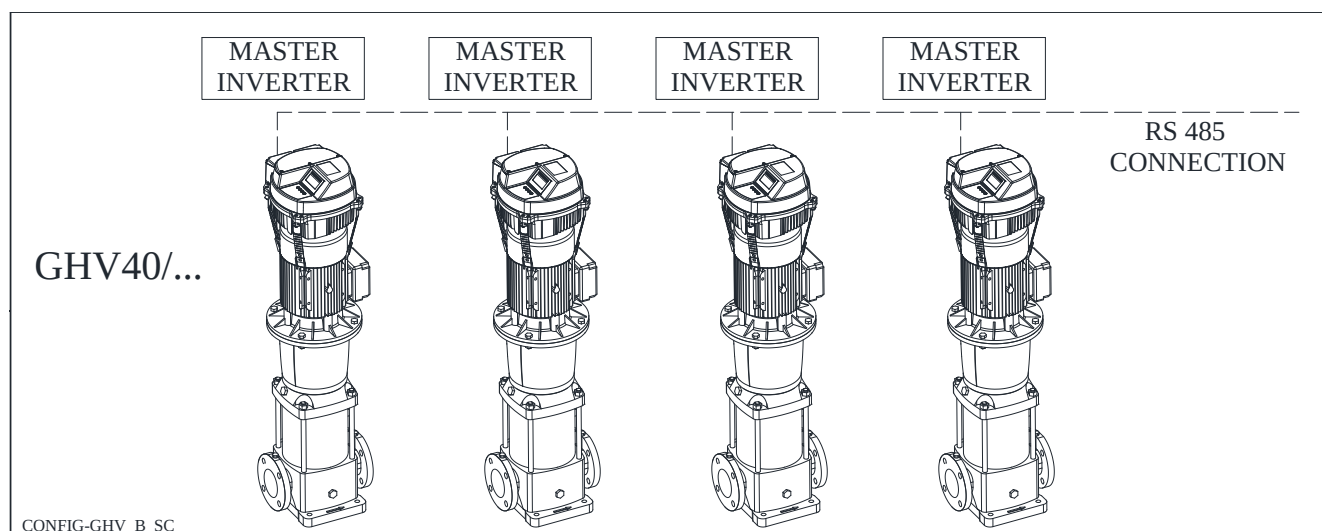
The acceleration and deceleration of the pump, both at start-up and switch off, is of the soft type.

This helps to reduce water hammer and ensures a quiet operation of the booster set.

Lowara GHV series booster sets guarantee constant pressure of the system as in the following example:

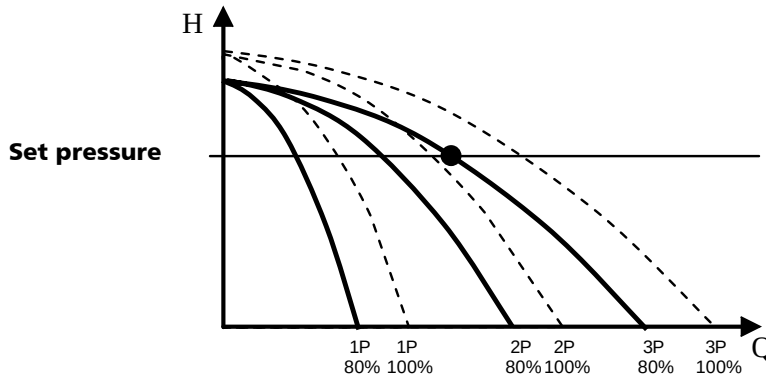


### HYDROVAR® fitted on 0,55 to 22 kW 2 and 4 pole motors (8 units maximum)



## GHV BOOSTER SETS SERIES DESCRIPTION OF OPERATION

When the pressure decreases, an electric pump starts, adjusting the motor speed so that the set pressure value can be guaranteed. When the demand for water increases, the other pumps also start in sequence, at variable speed, to keep the pressure at a constant level.



When the demand for water decreases, the pumps switch off in succession. The number of revolutions of the first pump switched on decreases to a set minimum before switching off.

### Regulating the constant pressure value

GHV series booster sets guarantee constant pressure of the system even during frequent variations in water consumption. The system pressure value is measured by the pressure transducers connected to the delivery manifold.

The value found is compared with the set value. The comparison between the measured pressure and the set pressure is performed through the HYDROVAR® internal "controller", which manages the motor speed acceleration and deceleration ramps (frequency), changing the performance of the pump during the time.

In case of fault of one of the frequency converters, the others will remain active and will continue to guarantee the control of the other pumps and the constant pressure.

### Type of control

GHV series booster sets use one or more sensors as a standard device to control pressure.

For each booster set, there are as many sensors as the number of pumps installed. In case of fault of one of the transducer, the converter connected to the pump stops working. It is also possible to change the unit of measure into bar, psi, m³/h, °C, °F, l/sec, l/min, %. In this case, different transducers may be used, depending on the selected measure, such as flow or temperature transducers.

### Setpoint

It is possible to set up to two setpoints of different values. In this way, the same booster set can be used for systems that require different pressure values at the utility. For example, different setpoints can be used for an irrigation system on a hillside, or one setpoint value can be used for domestic water supply during the day and a second setpoint for irrigation at night.

The setpoints can be changed through an external consensus.

## GHV BOOSTER SETS SERIES

### DESCRIPTION OF OPERATION

#### Cyclical exchange of pumps

In the GHV series with more than one pump, the pump's start is alternated according to a time set for each pump through a clock in the frequency converter menu.

#### Additional protection against dry running

Protection against dry running activates when the water reserve falls below the minimum level guaranteed for suction. The level can be checked using a float switch, a minimum pressure switch, an external contact, or level probes. For the latter, the probes must be connected to the adjustable sensitivity electronic module. The control panel is already preset for the installation of this module.

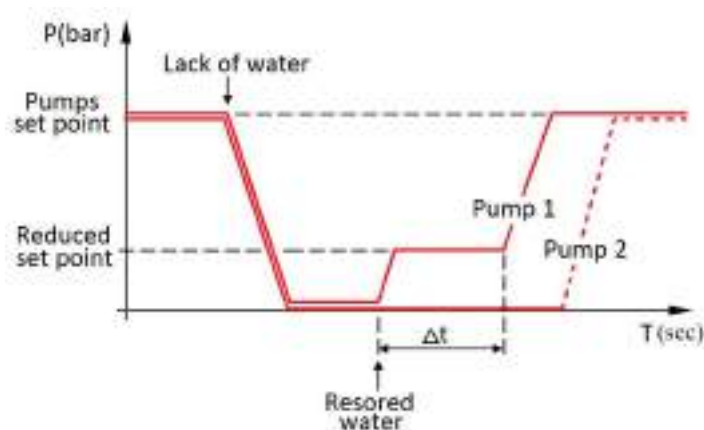
#### Minimum delivery pressure protection

The minimum delivery pressure function can be managed by entering the pressure value in the menu of the HYDROVAR® control card, which will receive the signal through the pressure transducer at the delivery.

#### Filling mode function

When lack of water is detected all HYDROVAR® are stopped. If water in suction side is restored only first HYDROVAR® will be enabled with reducing of set point (filling mode function). After time selected ( $\Delta t$ ) all HYDROVAR® are enable and set point is restored.

#### FILLING SCHEME MODE



## GHV BOOSTER SETS SERIES ENERGY SAVING

The worldwide demand for energy is growing all the time and, while the demand is increasing, production is coming up against serious problems of an environmental nature and related to the supply of raw materials. In other words, energy is an asset that is becoming more precious every day, imposing choices to optimise consumption, especially with a view to safeguarding the environment.

A very important improvement is provided by new technologies, which together with technical performance, include the safeguard for the environment and energy functionality among the important parameters.

Drives for electric motors fall into this category. As well as making a considerable contribution to the decrease in energy consumption and consequently to the improvement of the environment, in many applications they also produce a notable reduction in the overall costs of running the installations.

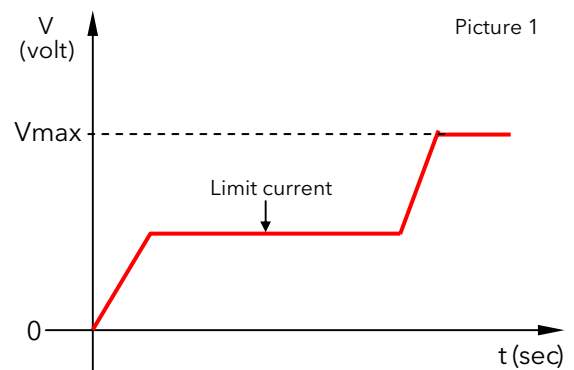
### Drives for Electric Motors

The electronic drives that are most involved in the general improvement of the quality of systems and installations, are those for asynchronous alternating current motors, generally three-phase induction motors. They may be divided into two large categories:

- Drives with variable voltage
- Drives with variable frequency

The first, called "starters" or "soft starters", are appliances that operate at constant frequency (that of the power mains), dose the voltage supplied to the load and have limited current.

The following figure illustrates the typical operation of the "soft starter":



The second, called "Inverters" or "frequency converters" are most important from the point of view of energy saving and are able to supply the motor with a practically sinusoidal current (PMW) at a frequency that may vary from a value of practically 0 Hz to a rated frequency and beyond, with a constant flow (torque) or constant power. Typical example, fig.2:

The applicatory advantages of the two categories of drives will be described below.

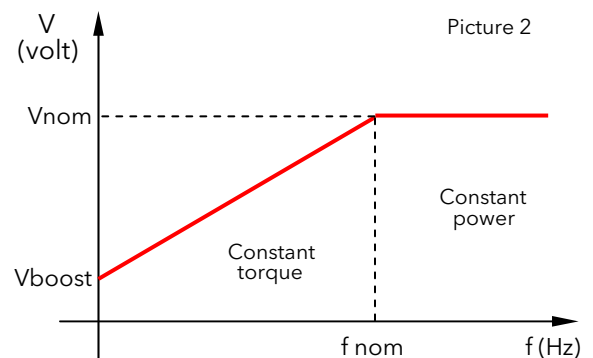
### Soft start

The direct starting of an asynchronous motor presents considerable difficulties due to the peak current in the start phase. Typically the value of the starting current is about 7/8 times the rated current of the motor. Direct start systems are therefore not generally convenient (except for small power); mainly because of the need to increase the size of the power supply mains (switches, fuses, etc. ...), and also problems of a mechanical nature, due to high stress in the start phase which in the medium/long term may prove to be destructive.

The electrical engineering industry has already found various practical solutions to the problems; the main ones are noted below:

- Special motors with double winding
- Starting with autotransformer
- Star/delta starting

These starting systems are certainly an improvement on direct starting, but they do not solve the problem. The advent of electronic starters ("soft starters") made a decisive contribution to solving the question.



## GHV BOOSTER SETS SERIES

### ENERGY SAVING

This type of drive is able to supply performance advantages:

- Progressive start with a voltage ramp having a duration adjustable within wide time limits.
- Limited current start with a value that can be set from 100% to 500% of the rated value.
- Descending voltage ramp having a duration adjustable within wide time limits.
- Voltage ramps at starting and stopping adaptable to particular operations (pumps).
- Low-speed operation, with reversible running direction, for specific applications.
- "Energy Saving" function with automatic reduction of the voltage/current in the case of a prolonged underload.
- Safety devices that can be calibrated to prevent overheating of the motor, over/under currents and over/under voltages.
- Safety devices that can be calibrated to prevent prolonged or too frequent starts.
- Possibility of by-pass operation after starting, keeping all the safety devices active.

All these features make the electronic starter the ideal tool for solving the problems we have mentioned. With the recently designed starters, with both analog and digital control, it is possible to obtain considerable softer and more efficient starts than any other electromechanical system was able to achieve. Moreover, thanks to the intrinsic control and protection systems of the starter, it is generally possible to eliminate other protection equipment that would otherwise be necessary in the system.

In conclusion, in many applications, one can SAVE on:

- Structure and auxiliary equipment of the power supply system.
- Protection of the mechanical system against excessive stress.

### Speed Adjustment

The speed adjustment systems allow energy consumption in proportion to the use of the system based on user demand. This allows considerable savings in systems working on a daily basis (24h).

Alongside applications that require operation of the electric motors at a constant speed, with steady voltage and frequency, there are many in which the electric motor must be able to vary its speed of rotation (frequency); moreover, in many applications the process control obtained by varying the speed (adjustment of flow rate, pressure, etc...) is much more convenient than any other method of adjustment.

For these applications the most suitable drives are certainly frequency converters, referred to below as "Inverters", which can supply the motor with the desired torque from a few rpm up to the rated speed beyond which they are still able to operate at constant power with a decreasing torque. The advantage of using the Inverter lies in the greater efficiency of the performance that it is able to give in comparison with electromechanical controls.

A useful application of frequency converters may simply be that of obtaining a soft start for a load that is particularly heavy to start (pump) and variable over time (flow rate). In any case the advantage of a soft start is present in all inverter-controlled systems for starting a motor, even in cases where speed adjustment is not needed.

The advantage is due to the fact that the inverter is able to supply the rated torque (with possibility of 150% overload with respect to the rated current), right from frequency zero. This is possible because the voltage to the motor, generated by the inverter, is in phase with the number of revolutions right from the start (unless the motor is running). In this way the losses in the motor are considerably reduced.

The starting torque that can be obtained using the inverter is greater than that obtained with a soft starter, and the demand for current in the whole starting phase is much lower.

The yearly saving, for a lost power of 40000 Kwh, with electromechanical start, may be as much as 2000 Euro.

The reliability and efficiency of the pump speed control systems means optimising consumption and processes as well as savings. In the specific case of pumping appliances, the immediate consequence of the use of these systems is the realisation of pumps with greater operative flexibility, with much larger and optimal performance curves. There are many advantages. Above all, a pump that always works, irrespective of variations in the installation, in optimal conditions, with less wear and less malfunctions. So there are less problems from downtime and the pumps require less frequent maintenance. Moreover, an installation where the pumps are controlled by an inverter is more efficient and less subject to stress:

- absence of water hammer (which occurs when switching off pumps driven in a traditional way);
- lower working pressures than systems with an autoclave or piezometric tank;
- pressure and flow rate conditions always adequate for the demands, because the inverter is able to adjust the pump gradually in real time according to the pressure trend in the installation.

## GHV BOOSTER SETS SERIES ENERGY SAVING

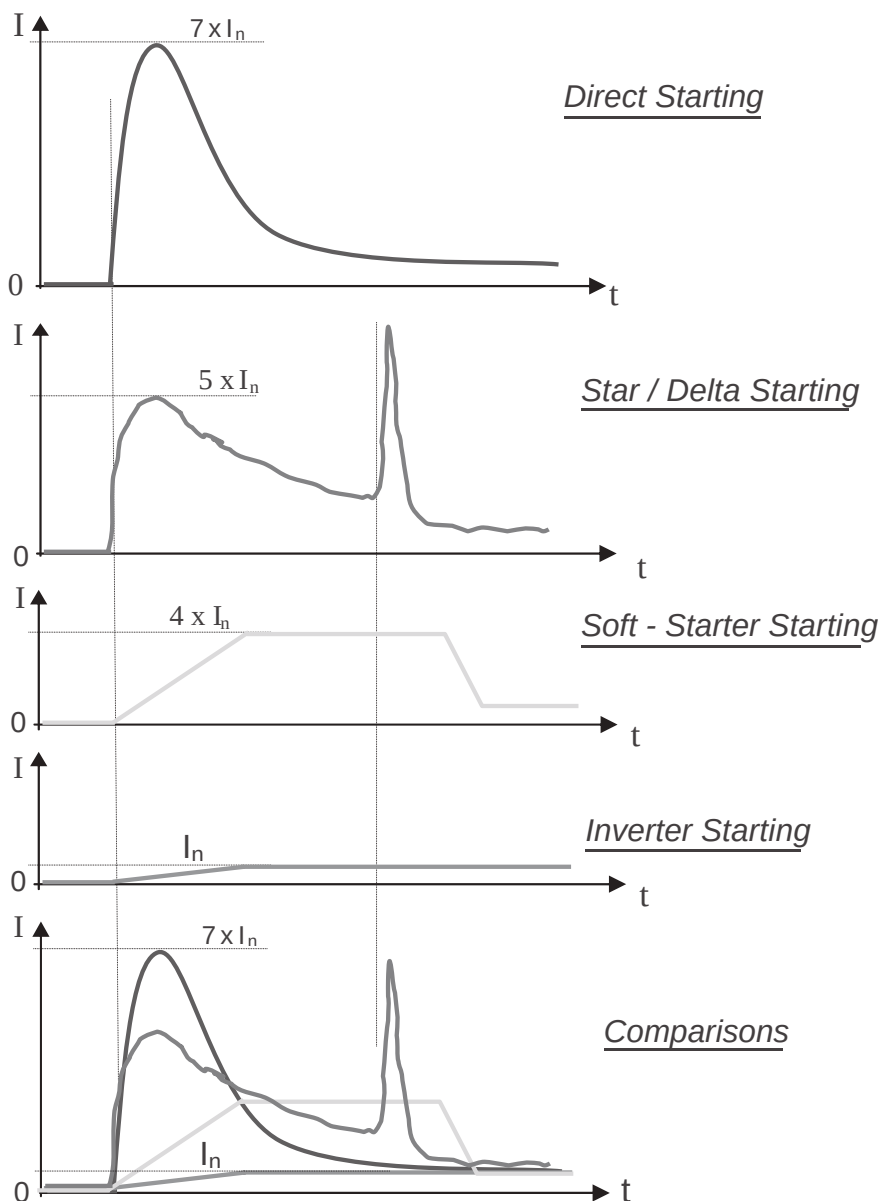
All this results in less stress on all the components in the distribution network, and therefore in less maintenance of the network, greater reliability of supply and lower running costs.

In short, using a pumping system with one or more variable-speed pumps means:

- ✓ Saving energy
- ✓ Optimising resources and processes
- ✓ Having the possibility of complete integration of the management, control and supervision systems
- ✓ Prolonging the life of the installations
- ✓ Reducing maintenance costs
- ✓ Increasing the productivity and yield of an installation

Below is a comparison of the different starting systems:

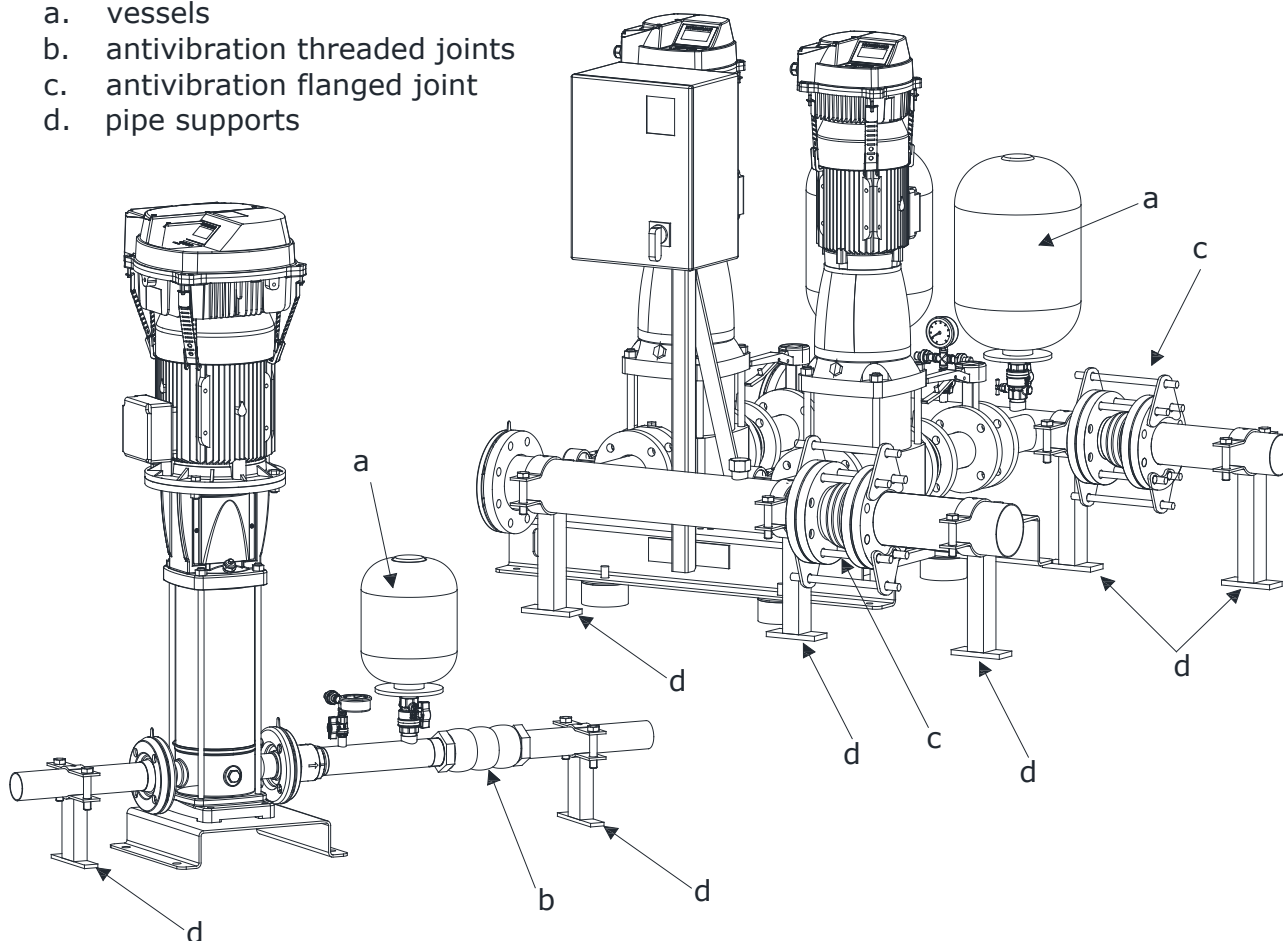
having examined the various starting systems that can be realised for electric motors, direct start, star/delta, soft starter and inverter, they can be compared, analysing the absorbed currents ( $I_n$ ) and therefore the energy consumed (current = energy = kWh = MONEY)



## GHV BOOSTER SETS SERIES INSTALLATION

The booster sets must be installed in areas protected against frost and with adequate ventilation to cool the motors. It is a good practice to connect the suction and delivery pipes with vibration-damping joints to limit vibrations and resonance in the whole system.

- a. vessels
- b. antivibration threaded joints
- c. antivibration flanged joint
- d. pipe supports



ghv-uk\_vibration-support\_a\_sc

The booster sets must be connected to pressurised tanks with an adequate capacity for the system to operate correctly. These tanks can avoid any problems due to water hammer that is created due to the sudden stopping of the pumps running at a fixed speed. For this type of system, it is possible to use diaphragm tanks (hydro tube) that when installed in the delivery piping perform a pressure dampening function, as they are not intended to store water like autoclave systems. Due to their design, variable-speed booster sets can satisfy users' demands by moderating the pump speed.

Considering also that variable-pressure sets are very sensitive to swings of pressure in the system, the use of diaphragm tanks allows the pressure to stabilise when requests are low or inexistent, and avoids the pumps remaining in operation at minimum speed without stopping.



## GHV BOOSTER SETS SERIES CHOICE AND SELECTION

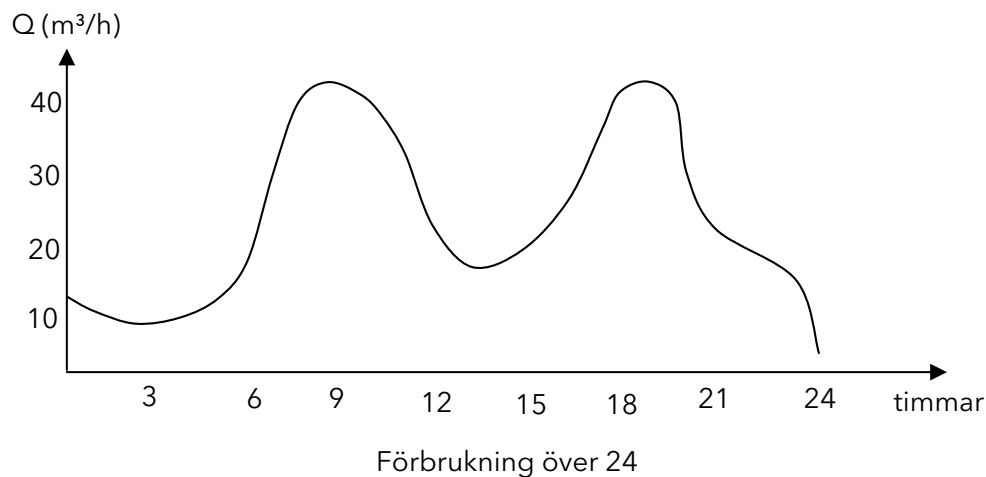
The following conditions should be considered when choosing a variable pressure set:

- The system's requirements should be met regarding flow rate and pressure.
- The unit must not be oversized, avoiding unnecessary installation and running costs.

Generally water distribution systems such as those for domestic water supply or for large agglomerates such as hospitals, hotels or similar, have "variable" water consumption i.e. in a 24-hour period there may be sudden variations in consumption that are difficult to foresee.

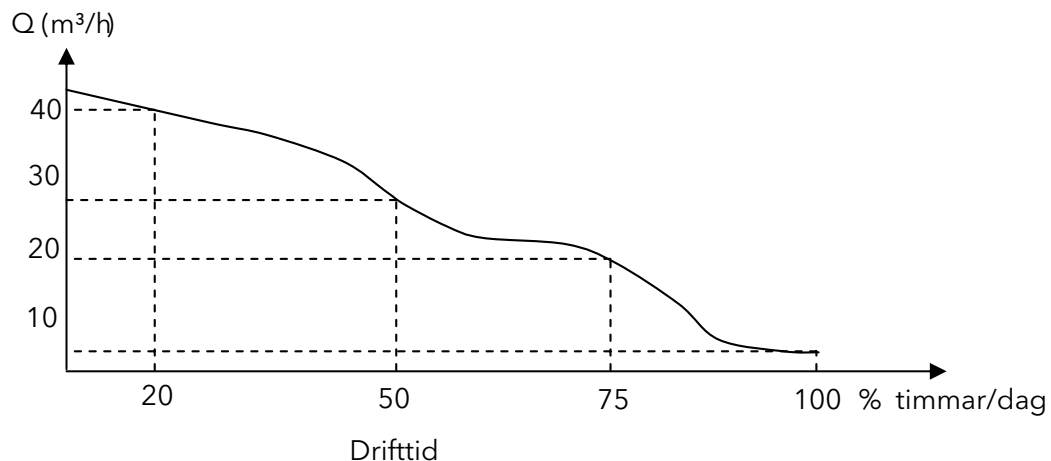
A pattern of consumption may occur in 24 hours, but the daily percentage of unit operation may also occur at various flow rates.

Generally the definition of flow rate for these types of systems is based on either the "probability calculation" which is a very complex system of calculation, or based on tables or diagrams in the national standards which provide guidelines for the sizing of the systems and therefore for calculating the maximum simultaneous flow rate.



The operating time of the unit still calculated over 24h, gives us a view of the daily percentage of operation at the various flow rates.

This means that there may be daily peaks where the maximum flow rate requested is concentrated in a short space of time. In the example given below, it can be seen that in 100% of the time there is a consumption of 4 m³/h, while in 20% of the operating time there is a consumption of 40 m³/h.



## **GHV BOOSTER SETS SERIES CHOICE AND SELECTION**

When selecting the booster set the consumption figure of the system must be considered, which is generally supplied by the person who designed the system.

For systems where consumption varies continuously and suddenly over time it is advisable to install GHV series booster sets with variable regulation of the pump speed.

The calculation of the size of the booster set (its performance and the number of pumps) is based on the take-off point and therefore on the consumption value which takes the following factors into account:

- The value of the peak in consumption
- Efficiency
- NPSH
- Standby pumps
- Jockey pumps
- Diaphragm tanks

By adjusting their operation over time, variable-speed booster sets give the end user energy savings which can be calculated directly on the control board with a metering module fitted in the electric control panel.

This allows checking of the system yield, especially in complex systems with many users and many ranges of consumption.

It is possible to install a standby pump if it is necessary to have some kind of additional safety in the pump station.

This is typical in systems of a certain importance, such as hospitals or factories, or in the field of crop irrigation.

If small users have to be served in the same system, it is preferable to install what is commonly called a jockey pump, where instead of running the main pump, which usually has higher power, the service is guaranteed with a smaller pump and therefore lower energy consumption.

GHV series booster sets are equipped with diaphragm tanks (for the size of the tank, see the specific chapter in this catalogue).

The capacity of each tanks is 24lt.

Diaphragm tanks avoid the risk of water hammer, which is harmful for both the system and the pumps.

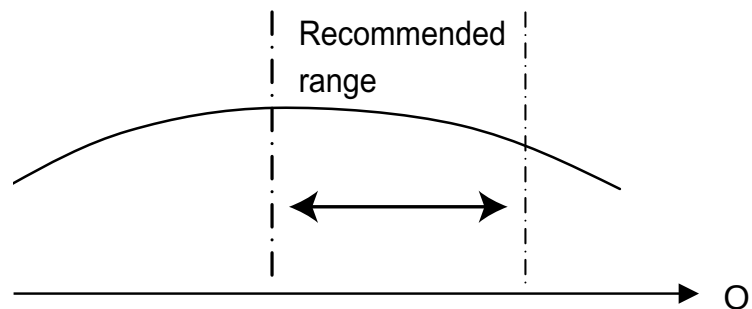
Generally for systems with highly variable or sudden variations in consumption, it is recommended to install a booster set with variable pump speed, such as the GHV series, to guarantee constant pressure.

## GHV BOOSTER SETS SERIES SELECTING THE PUMPS

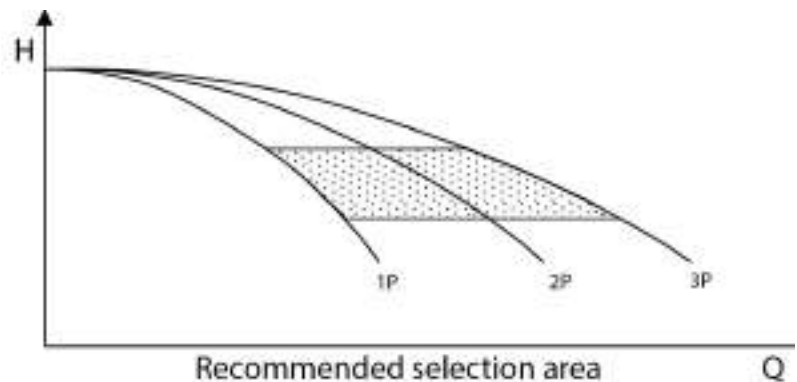
What type of pump to choose?

Generally, the selection of pump is based on the maximum duty point of the system, which is usually the highest possible. The maximum request value is normally for short periods, so the pump must also be able to satisfy variable requests throughout its time in service.

Generally the choice of the pump, based on the performance curve, should fall around the maximum efficiency point. The pump must ensure operation within its rated performance. Since the unit is sized according to the maximum possible consumption, the maximum duty point of the pumps must be in the area on the right of the performance curve so that, if there is a fall in consumption, the efficiency remains high.

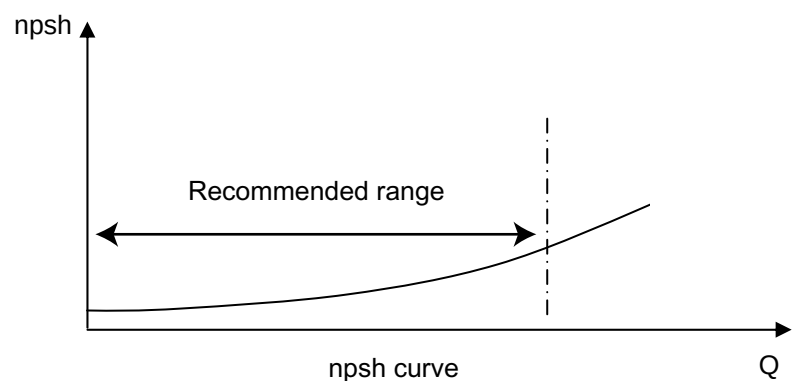


If we make a choice on the characteristic curve of the pump, we can see that the area where it is best to select the pump is represented by the following graph:



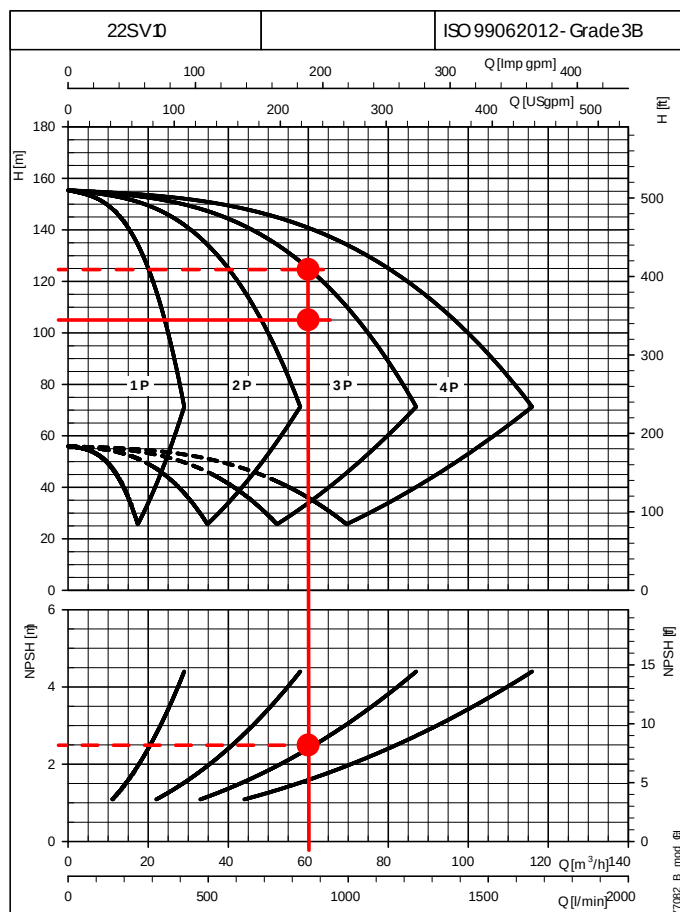
Another factor to be considered when choosing the pumps is its NPSH value. Never choose a pump where the maximum duty point is too far to the right of the NPSH curve. This risks not having good pump suction, which may be aggravated by the type of installation (where negative suction is possible).

In these cases there is the risk of cavitation. The NPSH of the pump must always be checked at the maximum flow rate requested.



## GHV BOOSTER SETS SERIES SELECTING THE PUMPS

The choice of pump is therefore based on the characteristic curve of the pump depending on the flow rate and the pressure required for the system. Starting from the required flow rate, a vertical line is drawn until it meets the horizontal line of the required pressure. The point of intersection of the lines gives both the type and the number of pumps necessary for the system.



The example alongside refers to a required flow rate of  $60 \text{ m}^3/\text{h}$  and a pressure of 105 m water column

As shown in the operating curves on page 85, the selection requires three 22SV10 pumps.

Moreover the take-off point falls in the npsh area farthest to the left and therefore in an area with a low cavitation risk.

The values obtained are those for the performance of the pumps. A correct check of the net pressure value must be made due to the intrinsic load loss of the booster set and the conditions of installation.

For this reason it is recommended to see the specific chapter in this catalogue.

### NPSH

The minimum operating values that can be reached by the pump suction are limited by the appearance of cavitation. Cavitation consists in the formation of steam pockets in the liquid when the local pressure reaches a critical value. A critical value is when the local pressure is equal or just below the pressure of the liquid steam.

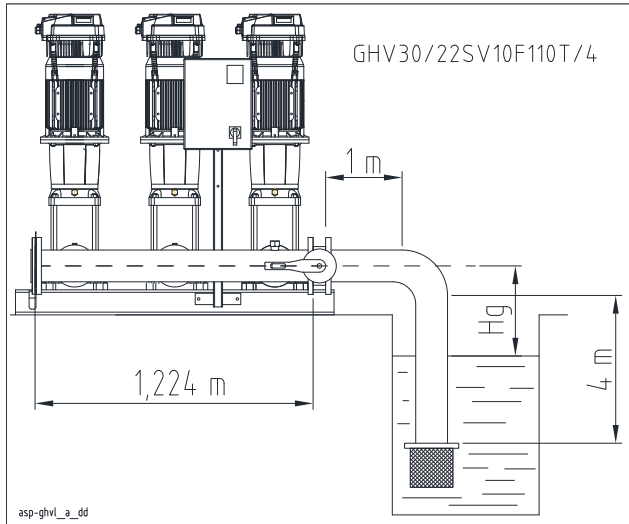
Steam cavitation flows with the current. When it reaches a higher pressure area, condensation of the contained steam occurs. The pockets collide, causing pressure waves that are transmitted to the walls, which are therefore subjected to stress cycles that can cause deformation and then breaks due to fatigue.

This phenomena, characterised by a metallic noise due to the hammering of the walls, is called incipient cavitation. Cavitation damage can be made worse by electrochemical corrosion, and by local temperature increases due to the plastic deformation of the walls. The materials with the highest resistance to heat and corrosion are alloyed steels, and particularly austenitic steels. The conditions that cause cavitation can be predicted by calculating the total suction height, indicated in the technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (in m) of the flow measured at the suction in incipient cavitation conditions, net of the steam pressure (in m) of the fluid at the input of the pump.

## GHV BOOSTER SETS SERIES SUCTION CONDITIONS

Once the type and the number of pumps of the set have been identified, the suction conditions must also be assessment. Below is an example of the assessment of the suction lift installation conditions, in relation to the previously described case:



in suction lift installation, it is necessary to calculate the maximum Hg height - which must not be exceeded due to safety reasons -, to avoid cavitation, and therefore the unpriming of the pump itself. The relation that must be assessed, and which connects this value, is the following:

$NPSH_{available} \geq NPSH_{required}$ , when the equality condition represents the limit condition.

$$NPSH_{available} = Patm + Hg - \Sigma t - \Sigma a$$

Where:

Patm is the atmospheric pressure, equal to 10,33 m

Hg is the geodetic level difference

$\Sigma t$  are the pressure drops for suction components such as foot check valve, suction piping, curve, gate valve.

$\Sigma a$  are the pressure drops for suction set branch.

L'NPSH requested is a parameter obtained from the performance curve; in our case, at the flow of each pump equal to 20 m<sup>3</sup>/h, it corresponds to 2.5 m (page 85). Before calculating the L'NPSH available, it is necessary to calculate the pressure drops at the suction, using the tables on page 115-116, and taking into account the material, such as the type of stainless steel for the piping and cast iron for the valves. The total sum of the pressure drops  $\Sigma t$  for suction components is made in the following way, considering that the diameter of the suction piping is DN100, equal to the diameter of the suction manifold of the set (page 59).

Calculation of suction drops  $\Sigma c$  for cast iron components

Equivalent piping length for DN100 foot check valve = 4,7 m

Equivalent piping length for DN100 gate valve = 0,4 m

Total equivalent length = 4,7 + 0,4 = 5,1 m

Pressure drops in the suction piping (cast iron)  $\Sigma c = 5,1 \times 7,79 / 100 = 0,39$  m

Calculation of suction drops  $\Sigma s$  for stainless steel components

Equivalent piping length for DN100 90° curve = 2,1 m

Total equivalent length = 2,1 m

Horizontal suction pipe length = 1 m

Vertical suction pipe length = 4 m

Pressure drops in the suction piping (stainless steel)  $\Sigma s = (2,1 + 4 + 1) \times 7,79 \times 0,54 / 100 = 0,29$  m

Pressure drops for suction components  $\Sigma t = \Sigma c + \Sigma s = 0,39 + 0,29 = 0,68$  m

The total sum of the pressure drops  $\Sigma t$  for suction components is made in the following way, considering that the diameter of the suction piping is DN100, equal to the diameter of the suction manifold of the set (page 59).

Hc pressure drops for suction set branch must be assessed on the B curve (pag.100, scheme B0401\_A\_CH); at the flow value of each pump equal to 20 m<sup>3</sup>/h, a value of Hc = 2,7 m is obtained

Calculation of suction drops  $\Sigma s$  for stainless steel components

Equivalent piping length for DN100 manifold T fitting = 4,3 m

Suction manifold length = 1,224 m

Pressure drops in the suction manifold (steel)  $\Sigma t = (4,3 + 1,224) \times 7,79 \times 0,54 / 100 = 0,23$  m

Pressure drops  $\Sigma a = Hc + \Sigma s = 2,7 + 0,23 = 2,93$  m

Remembering that  $NPSH_{available} = Patm + Hg - \Sigma t - \Sigma a$  and that  $NPSH_{available} \geq NPSH_{requested}$  we have that

$Patm + Hg - \Sigma t - \Sigma a$  must be  $\geq NPSH_{requested}$ .

Substituting the values we get that  $10,33 + Hg - 0,68 - 2,93 \geq 2,5$  m ( $NPSH_{requested}$ ),

$Hg = 2,5 + 0,68 + 2,93 - 10,33 = -4,9$  m, it represents the limit condition for which

**NPSH available = NPSH requested**

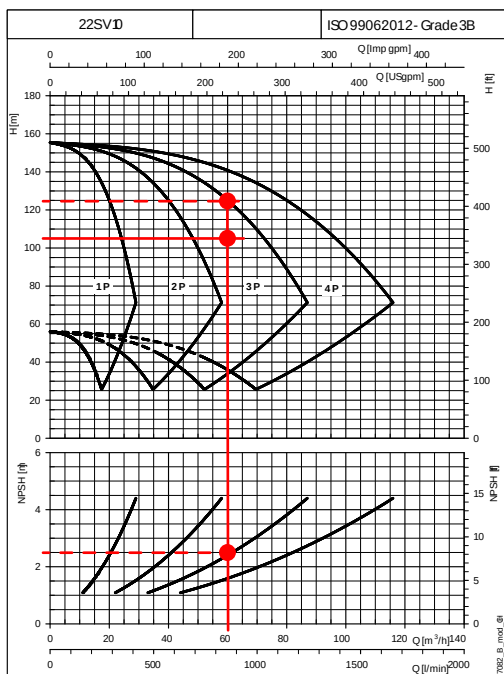
Therefore, in order to guarantee the conditions for the correct operation of the system as far as cavitation risks, it will be necessary to position the pump above the water level, so that the Hg height is below the limit value of 4,9 m

## GHV BOOSTER SETS SERIES

### NET PRESSURE CALCULATION

When selecting GHV booster sets, the performance levels of the pump must be taken into account. Performance levels are obtained from the characteristic curves of the pumps, and do not take into account any pressure drops due to system piping and valves. The following example helps the customer to obtain the correct delivery manifold pressure value: by knowing the system operating point  $Q = 60 \text{ m}^3/\text{h}$  and  $H = 105 \text{ mca}$  ( $P_{\text{requested}}$ ), and the installation height  $H_g$  (estimated to 5 m), in order to make the calculations easier we use the pressure drop curves for each single pump on page 100 of this catalogue.

Assuming that a booster set GHV30/22SV with non-return valves on the delivery has been selected, we proceed as follows:



$P_{\text{net available}} \geq P_{\text{requested}}$ , when the equality condition represents the limit condition.

$$P_{\text{net available}} = H - (H_g + \sum t + \sum a + \sum m)$$

Where:

$H$  head value of booster set

$H_g$  is the geodetic level difference (estimated to 5 m)

$\sum t$  are the pressure drops for suction components such as foot check valve, suction piping, curve and gate valve.

$\sum a$  are the pressure drops for suction set branch

$\sum m$  are the pressure drops for delivery set branch

The total sum of the pressure drops  $\sum t$  for suction components is made in the following way, considering that the diameter of the suction piping is DN100, equal to the diameter of the suction manifold of the set (page 59).

Calculation of suction drops  $\sum c$  for cast iron components

Equivalent piping length for DN100 foot check valve = 4,7 m

Equivalent piping length for DN100 gate valve = 0,4 m

Total equivalent length = 4,7 + 0,4 = 5,1 m

Pressure drops in the suction piping (cast iron)

$$\sum c = 5,1 \times 7,79 / 100 = 0,39 \text{ m}$$

Calculation of suction drops  $\sum s$  for stainless steel components

Equivalent piping length for DN100 90° curve = 2,1 m

Total equivalent length = 2,1 m

Horizontal suction pipe length = 1 m

Vertical suction pipe length = 4 m

$$\text{Pressure drops in the suction piping (stainless steel)} \sum s = (2,1 + 4 + 1) \times 7,79 \times 0,54 / 100 = 0,29 \text{ m}$$

$$\text{Pressure drops for suction components } \sum t = \sum c + \sum s = 0,39 + 0,29 = 0,68 \text{ m}$$

The total sum of the pressure drops  $\sum t$  for suction components is made in the following way, considering that the diameter of the suction piping is DN100, equal to the diameter of the suction manifold of the set (page 59).

$H_c$  pressure drops for suction set branch must be assessed on the B curve (pag.100, scheme B0401\_A\_CH);

at the flow value of each pump equal to 20 m³/h, a value of  $H_c = 2,7 \text{ m}$  is obtained

Calculation of suction drops  $\sum s$  for stainless steel components

Equivalent piping length for DN100 manifold T fitting = 4,3 m

Suction manifold length = 1,224 m

$$\text{Pressure drops in the suction manifold (steel)} \sum t = (4,3 + 1,224) \times 7,79 \times 0,54 / 100 = 0,23 \text{ m}$$

$$\text{Pressure drops } \sum a = H_c + \sum s = 2,7 + 0,23 = 2,93 \text{ m}$$

The total sum of the pressure drops  $\sum m$  for delivery branch is made in the following way, considering that the diameter of the delivery manifold is DN100, equal to the diameter of the delivery manifold of the set (page 59).

$H_c$  pressure drops for delivery set branch must be assessed on the A curve (pag.100 scheme B0401\_A\_CH);

at the flow value of each pump equal to 20 m³/h, a value of  $H_c = 0,0034 \text{ m}$  is obtained

Calculation of delivery drops  $\sum s$  for stainless steel components

Equivalent piping length for DN100 manifold TEE fitting = 4,3 m

Delivery manifold length = 1,224 m

$$\text{Pressure drops in the delivery manifold (steel)} \sum s = (4,3 + 1,224) \times 7,79 \times 0,54 / 100 = 0,23 \text{ m}$$

$$\text{Pressure drops in delivery manifold } \sum m = H_c + \sum s = 0,0034 + 0,23 = 0,2334 \text{ m}$$

If we analyse the performance of the set at the flow value of 60 m³/h, the head value  $H$  is 125 m.

The net pressure at the delivery manifold will be  $P_{\text{net available}} = H - (H_g + \sum t + \sum a + \sum m)$

$$\text{Substituting the values we get that } P_{\text{net available}} = 125 - (5 + 0,68 + 2,93 + 0,2334) = 123,84 \text{ m}$$

When comparing this value with the design value (not taking into account the dynamic energy)

we see that  $123,84 \text{ m} > 105 \text{ m}$  [ $P_{\text{net available}} > P_{\text{Required}}$ ]

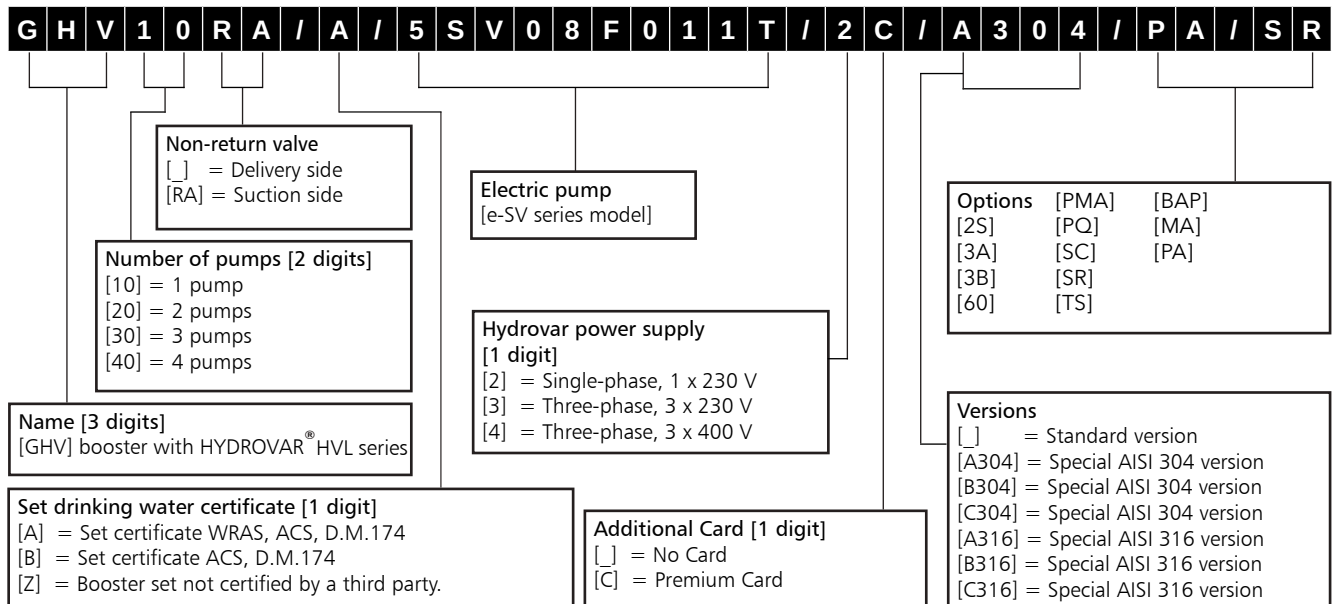
**The set is therefore capable of meeting system requirements.**

## **GHV.../SV Series**

Variable speed booster sets  
with HYDROVAR® (HVL series)  
e-SV™ series multistage vertical electric pumps  
with high efficiency motors  
Flow rates up to 640 m<sup>3</sup>/h and pressures up to 16 bar

**50 Hz**

## BOOSTER SET IDENTIFICATION CODE



## VERSIONS AVAILABLE

- A304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Galvanised screws and bolts. Flanges not in contact with the liquid galvanised (Available in the Z version).
- B304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Screws and bolts in AISI 304 stainless steel or higher. Flanges not in contact with the liquid in AISI 304 stainless steel (Available in the Z version).
- C304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Base, brackets, supports, screws and bolts in AISI 304 stainless steel or higher. Flanges not in contact with the liquid in AISI 304 stainless steel or higher. Valves fully made of AISI 304 stainless steel (body, heads, disc) (Available in the Z version).
- A316** Main components in contact with the liquid in AISI 316 stainless steel or higher. Galvanised screws and bolts. Flanges not in contact with the liquid galvanised (Available in the Z version).\*
- B316** Main components in contact with the liquid in AISI 316 stainless steel. Screws and bolts in AISI 316 stainless steel. Flanges not in contact with the liquid in AISI 316 stainless steel (Available in the Z version).\*
- C316** Main components in contact with the liquid in AISI 316 stainless steel. Base, brackets, supports, screws and bolts in AISI 316 stainless steel. Flanges not in contact with the liquid in AISI 316 stainless steel. Valves fully made of AISI 316 stainless steel (body, heads, disc) (Available in the Z version).\*

\* Vessel in AISI 304 only.

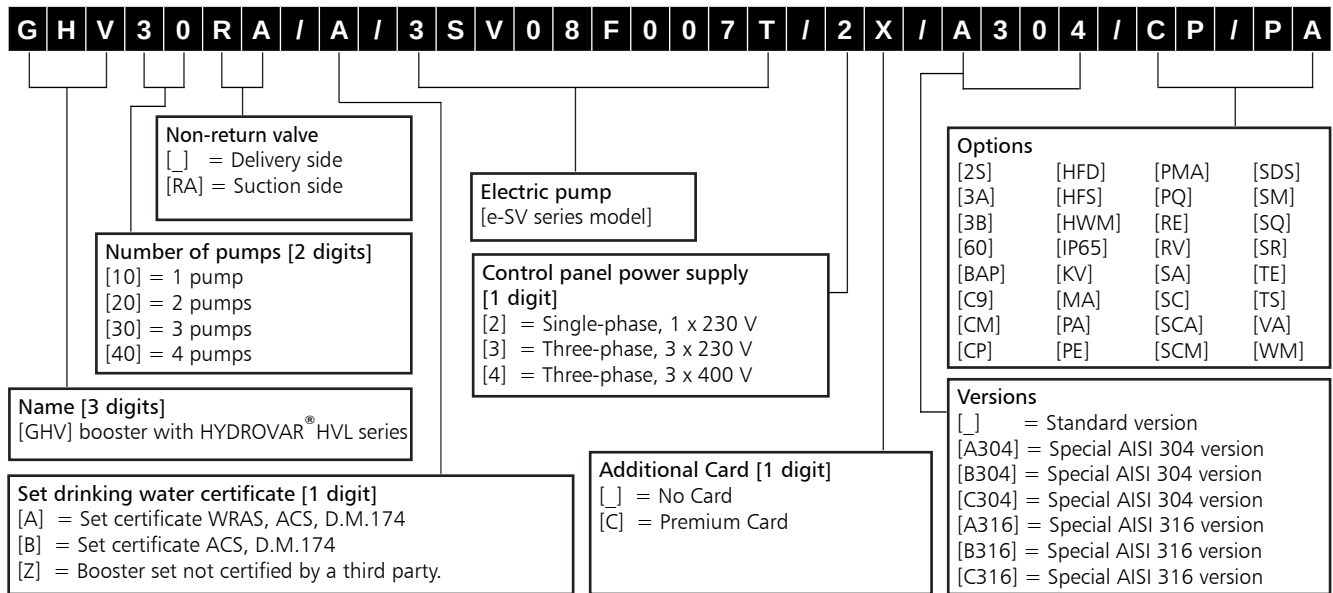
## OPTIONS

- 2S** HYDROVAR® equipped with double sensor for each pump, one in stand-by (both in delivery side)
- 3A** Set with 1A certified pumps (Factory test report issued from end of line, QH curve included).
- 3B** Set with 1B certified pumps (Test bulletin issued by Sala Audit (Audit Room); it includes QH curve, output and power).
- 60** Set operating frequency 60 Hz, electric pumps with 60Hz motor. Maximum HYDROVAR® output frequency set at 60Hz.
- BAP** High pressure switch on the delivery manifold.\*\*
- MA** Pressure gauge installed on the suction manifold.
- PA** Minimum pressure pressure switch on the suction manifold, for protection against dry running.\*\*
- PMA** Minimum pressure pressure switch and vacuum pressure gauge for protection against dry running, installed on the suction manifold.\*\*
- PQ** Set for aqueduct installation (with pressure gauge/ pressure switches/transmitters oversized by one size).
- SC** Set without control devices such as pressure switches and transmitters; with pressure gauge.
- SR** Without non-return valve.
- TS** Set with electric pumps with special seals.

\*\* These options are not feasible concurrently in the same unit.



## BOOSTER SET IDENTIFICATION CODE



## VERSIONS AVAILABLE

- A304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Galvanised screws and bolts. Flanges not in contact with the liquid galvanised (Available in the Z version).
- B304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Screws and bolts in AISI 304 stainless steel or higher. Flanges not in contact with the liquid in AISI 304 stainless steel (Available in the Z version).
- C304** Main components in contact with the liquid in AISI 304 stainless steel or higher. Base, brackets, supports, screws and bolts in AISI 304 stainless steel or higher. Flanges not in contact with the liquid in AISI 304 stainless steel or higher. Valves fully made of AISI 304 stainless steel (body, heads, disc) (Available in the Z version).
- A316** Main components in contact with the liquid in AISI 316 stainless steel or higher. Galvanised screws and bolts. Flanges not in contact with the liquid galvanised (Available in the Z version).
- B316** Main components in contact with the liquid in AISI 316 stainless steel. Screws and bolts in AISI 316 stainless steel. Flanges not in contact with the liquid in AISI 316 stainless steel (Available in the Z version).
- C316** Main components in contact with the liquid in AISI 316 stainless steel. Base, brackets, supports, screws and bolts in AISI 316 stainless steel. Flanges not in contact with the liquid in AISI 316 stainless steel. Valves fully made of AISI 316 stainless steel (body, heads, disc) (Available in the Z version).

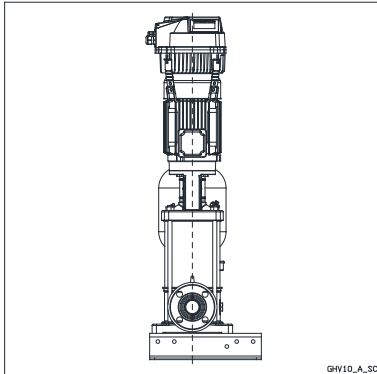
\* Vessel in AISI 304 only.

## OPTIONS

- 2S** HYDROVAR® equipped with double sensor for each pump, one in stand-by (both in delivery side)
- 3A** Set with 1A certified pumps (Factory test report issued from end of line, QH curve included).
- 3B** Set with 1B certified pumps (Test bulletin issued by Sala Audit (Audit Room); it includes QH curve, output and power).
- 60** Set operating frequency 60 Hz, electric pumps with 60Hz motor. Maximum HYDROVAR® output frequency set at 60Hz.
- BAP** High pressure switch on the delivery manifold.
- C9** Delivery manifold turned by 90°, curves. It is not possible to install expansion vessels directly on the manifold.
- CM** Suction or delivery manifold larger than standard size.
- CP** Control panel with clean contacts: converter faulty, operation/stop for each pump.
- HFD** HYDROVAR® and control panel mounted on bracket on the delivery side, fastened to the base of the set.
- HFS** HYDROVAR® and control panel mounted on bracket on the suction z, fastened to the base of the set.
- HWM** HYDROVAR® wall mounted version, motor cable length 5m.
- IP65** IP65 protection degree control panel.
- MA** Pressure gauge installed on the suction manifold.
- PA** Minimum pressure pressure switch on the suction manifold, for protection against dry running.
- PE** Control panel with emergency button.
- PMA** Minimum pressure pressure switch and vacuum pressure gauge for protection against dry running, installed on the suction manifold.
- PQ** Set for aqueduct installation (with pressure gauge/ pressure switches/transmitters oversized by one size).
- RE** Control panel with condensation resistance, controlled by a thermostat.
- RV** Control panel with phase missing, phase asymmetry, and minimum and maximum voltage value control.
- SA** Without suction: without suction valves and without suction manifold.
- SC** Set without control devices such as pressure switches and transmitters; with pressure gauge.
- SCA** Without suction manifold (but with suction valves).
- SCM** Without delivery manifold (without pressure switches, transmitters and pressure gauge; with delivery valves).
- SDS** HYDROVAR® equipped with 1 sensor in suction side and 1 in delivery side
- SM** Without delivery: without delivery valves and without delivery manifold.
- SQ** Booster set without control panel and bracket; with pressure transmitters and HYDROVAR® units.
- SR** Without non-return valve.
- TE** Control panel with timer, for booster set change after the set time (1 minute).
- TS** Set with electric pumps with special seals.
- VA** Control panel with digital voltmeter and ammeter.
- WM** Wall mounted control panel; cables L=5m.

## ELECTRIC PUMP RANGE AND CHARACTERISTICS

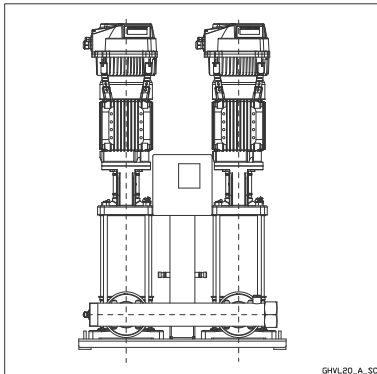
The standard range of GHV series variable-speed booster sets includes models with 1 to 4 pumps in different configurations, to adapt to the specific needs of each application.  
For other models refer to your usual sales representative.



### GHV10 SERIES

- Variable speed sets with HYDROVAR frequency converter and one multistage vertical pump with power up to 11 kW.

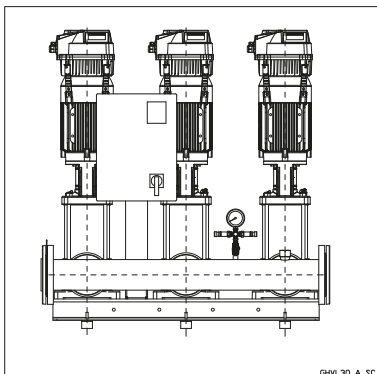
**Head** up to 160 m.  
**Flow rate** up to 29 m<sup>3</sup>/h.



### GHV20 SERIES

- Variable speed sets with HYDROVAR frequency converter and two multistage vertical pumps with power up to 22 kW.

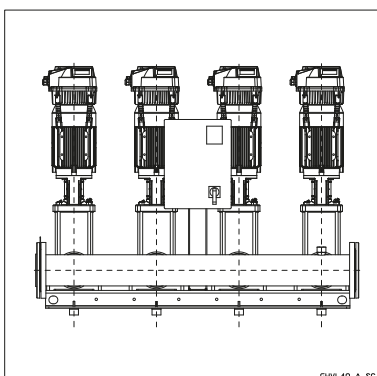
**Head** up to 160 m.  
**Flow rate** up to 320 m<sup>3</sup>/h.



### GHV30 SERIES

- Variable speed sets with HYDROVAR frequency converter and three multistage vertical pumps with power up to 22 kW.

**Head** up to 160 m.  
**Flow rate** up to 480 m<sup>3</sup>/h.



### GHV40 SERIES

- Variable speed sets with HYDROVAR frequency converter and four multistage vertical pumps with power up to 22 kW.

**Head** up to 160 m.  
**Flow rate** up to 640 m<sup>3</sup>/h.

## ELECTRIC PUMPS GENERAL DESCRIPTION

The **e-SV** pump is a multistage vertical pump, not self-priming, combined with a normalised standard motor. The liquid end, located between the upper cover end the pump casing, is held in place by tie rods. The pump casing is available with different configurations and connection types.

GHV.../SV



### Technical Information:

Flow rates: up to 160 m<sup>3</sup>/h.  
Heads: up to 160 m.  
(referred to the pump range used in this catalogue).

Temperature of pumped liquid:  
from -30°C to +120°C (standard version).

Tested to ISO 9906:2012 - Grade 3B  
(ex ISO 9906:1999 - annex A).  
Direction of rotation: clockwise looking at the pump from the top down (indicated with an arrow on the bracket and joint).

Mechanical seal: Silicon carbide/Carbon/EPDM.  
e-SV pumps (only for 10, 15, 22SV ≥ 5,5 kW and 33, 46, 66, 92, 125SV) are fitted standard with a balanced mechanical seal that can be replaced without having to remove the motor from the pump.

Elastomers: EPDM.

### Motor

**Supplied IE3 three-phase surface motors ≥ 0,75 kW as standard.**

Electrical performances according to EN 60034-1.  
Insulation class 155 (F).  
IP55 protection.  
Condensate drain plugs on standard version.  
Cooling by fan according to EN 60034-6.  
Cable gland metric size according to EN 50262.  
Standard supplied e-SV electric pumps are equipped with Standard motors.

Standard voltage:

- **Single-phase version:** 220-240 V 50 Hz.
- **Three-phase version:** 220-240/380-415 V 50 Hz.

For electrical data of the motors used see page 24

### Materials

The pumps for F, T, R, N, G versions are certified for drinking water use (**WRAS, ACS and D.M.174**).

**For complete information see dedicated e-SV technical catalogue.**

## ELECTRIC PUMPS 3, 5, 10, 15, 22SV SERIES CHARACTERISTICS

- Multistage centrifugal vertical electric pumps.  
All metal parts in contact with pumped liquid are made of stainless steel.
- **F** version: round flanges, in-line delivery and suction ports, AISI 304 stainless steel.
- Further choice possibilities among the following versions:
  - **T**: oval flanges, in-line delivery and suction ports, AISI 304 stainless steel.
  - **R**: round flanges, delivery port above the suction port and adjustable in four positions, AISI 304 stainless steel.
  - **N**: round flanges, in-line delivery and suction ports, AISI 316 stainless steel.
- Reduced axial thrusts enable the use of **standard motors** that are easily found on the market.
- Standard mechanical seal according to EN 12756 (formerly DIN 24960) and ISO 3069 for series 1, 3, 5SV and 10, 15, 22SV ( $\leq$  di 4 kW).
- **Balanced mechanical seal** according to EN 12756 (formerly DIN 24960) and ISO 3069, easy to replace **without removing the pump motor**, for series 10, 15 and 22SV ( $\geq$  di 5,5 kW).
- Seal housing designed to avoid air accumulation inside the critical area adjoining the mechanical seal.
- Second loading plug available for series 10, 15, 22SV.
- Easy maintenance. No special tools required for assembly or disassembly.

**F, T, R and N pumps are certified for use with drinking water (WRAS, ACS and D.M.174).**

## 33, 46, 66, 92, 125SV SERIES CHARACTERISTICS

- Version **G**: Multistage vertical centrifugal electric pump with impellers, diffusers and outer jacket fully made of stainless steel; superior cast iron pump body and head. Round flanges, in-line delivery and suction ports.
- Further choice possibilities among the following versions:
  - **N, P**: fully made of AISI 316 stainless steel.
- In pumps with higher heads, the axial load compensation system allows a reduction of axial thrusts, and therefore the use of **normalised standard motors**, easy to find on the market.
- **Balanced mechanical seal** according to EN 12756 (formerly DIN 24960) and ISO 3069, **easy to replace without removing the pump motor**.
- Seal housing designed to avoid air accumulation inside the critical area adjoining the mechanical seal.
- Pump body supplied with the necessary attachments for a pressure gauge on the flanges, both on the suction and the delivery side.
- Mechanical strength and easy maintenance. No special tools required for assembly or disassembly.

**G and N pumps are certified for use with drinking water (WRAS, ACS and D.M.174).**

## ELECTRIC PUMPS

### THREE-PHASE MOTORS AT 50 Hz, 2-POLE (up to 22 kW)

GHV.../SV

| P <sub>N</sub><br>kW | Efficiency $\eta_N$<br>%  |      |      |                           |      |      |                           |      |      |                           |      |      |                           |      |      |                |      |      | IE | Year of<br>manufacture |              |
|----------------------|---------------------------|------|------|---------------------------|------|------|---------------------------|------|------|---------------------------|------|------|---------------------------|------|------|----------------|------|------|----|------------------------|--------------|
|                      | $\Delta$ 220 V<br>Y 380 V |      |      | $\Delta$ 230 V<br>Y 400 V |      |      | $\Delta$ 240 V<br>Y 415 V |      |      | $\Delta$ 380 V<br>Y 660 V |      |      | $\Delta$ 400 V<br>Y 690 V |      |      | $\Delta$ 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                 | -                         | -    | -    | -                         | -    | -    | -                         | -    | -    | -                         | -    | -    | -                         | -    | -    | -              | -    | -    | -  | 3                      | From 11/2014 |
| 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 |    |                        |              |
| 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 |    |                        |              |
| 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 |    |                        |              |
| 2,2                  | 86,5                      | 87,4 | 86,8 | 86,4                      | 86,9 | 85,7 | 86,6                      | 86,7 | 85,0 | 86,4                      | 86,7 | 85,0 | 86,4                      | 86,7 | 85,0 | 86,4           | 86,7 | 85,0 |    |                        |              |
| 3                    | 87,2                      | 88,5 | 88,3 | 87,5                      | 88,2 | 87,5 | 87,5                      | 87,8 | 86,4 | 87,2                      | 87,8 | 86,4 | 87,2                      | 87,8 | 86,4 | 87,2           | 87,8 | 86,4 |    |                        |              |
| 4                    | 89,1                      | 90,1 | 89,2 | 89,1                      | 90,1 | 89,2 | 89,1                      | 90,1 | 89,2 | 89,1                      | 90,3 | 90,4 | 89,6                      | 90,4 | 89,9 | 89,6           | 90,1 | 89,2 |    |                        |              |
| 5,5                  | 89,5                      | 89,6 | 88,0 | 89,5                      | 89,6 | 88,0 | 89,5                      | 89,6 | 88,0 | 89,5                      | 90,3 | 89,9 | 89,7                      | 90,0 | 89,0 | 89,6           | 89,6 | 88,0 |    |                        |              |
| 7,5                  | 90,6                      | 90,5 | 89,0 | 90,6                      | 90,5 | 89,0 | 90,6                      | 90,5 | 89,0 | 90,6                      | 91,0 | 90,2 | 90,8                      | 90,8 | 89,6 | 90,7           | 90,5 | 89,0 |    |                        |              |
| 11                   | 91,3                      | 92,0 | 91,1 | 91,3                      | 92,0 | 91,1 | 91,3                      | 92,0 | 91,1 | 91,3                      | 92,2 | 92,2 | 91,6                      | 92,2 | 91,7 | 91,7           | 92,0 | 91,1 |    |                        |              |
| 15                   | 92,5                      | 92,4 | 91,2 | 92,5                      | 92,4 | 91,2 | 92,5                      | 92,4 | 91,2 | 92,7                      | 93,3 | 92,9 | 93,1                      | 93,3 | 92,7 | 92,5           | 92,4 | 91,2 |    |                        |              |
| 18,5                 | 92,6                      | 93,1 | 92,4 | 92,6                      | 93,1 | 92,4 | 92,6                      | 93,1 | 92,4 | 92,6                      | 93,2 | 93,0 | 92,9                      | 93,3 | 92,8 | 92,9           | 93,1 | 92,4 |    |                        |              |
| 22                   | 93,0                      | 92,7 | 91,3 | 93,0                      | 92,7 | 91,3 | 93,0                      | 92,7 | 91,3 | 93,0                      | 93,2 | 92,4 | 93,1                      | 93,0 | 91,9 | 93,0           | 92,7 | 91,3 |    |                        |              |

| P <sub>N</sub><br>kW | Manufacturer                                                                             |  | IEC SIZE* | Construction<br>Design | N. of<br>Poles | f <sub>N</sub><br>Hz | Data for 400 V / 50 Hz Voltage |                                 |                      |                   |       |
|----------------------|------------------------------------------------------------------------------------------|--|-----------|------------------------|----------------|----------------------|--------------------------------|---------------------------------|----------------------|-------------------|-------|
|                      | Xylem Service Italia Srl<br>Reg. No. 07520560967<br>Montecchio Maggiore Vicenza - Italia |  |           |                        |                |                      | cosφ                           | I <sub>s</sub> / I <sub>N</sub> | T <sub>N</sub><br>Nm | Ts/T <sub>N</sub> | Tm/Tn |
|                      | Model                                                                                    |  |           |                        |                |                      |                                |                                 |                      |                   |       |
| 0,37                 | SM71RB14/304                                                                             |  | 71R       | V18/B14                | 2              | 50                   | 0,64                           | 4,35                            | 1,37                 | 4,14              | 4,10  |
| 0,55                 | SM71B14/305                                                                              |  | 71        |                        |                |                      | 0,74                           | 5,97                            | 1,85                 | 3,74              | 3,56  |
| 0,75                 | SM80B14/307 PE                                                                           |  | 80        |                        |                |                      | 0,78                           | 7,38                            | 2,48                 | 3,57              | 3,75  |
| 1,1                  | SM80B14/311 PE                                                                           |  | 80        |                        |                |                      | 0,79                           | 8,31                            | 3,63                 | 3,95              | 3,95  |
| 1,5                  | SM90RB14/315 PE                                                                          |  | 90R       |                        |                |                      | 0,80                           | 8,80                            | 4,96                 | 4,31              | 4,10  |
| 2,2                  | PLM90B14/322 E3                                                                          |  | 90        |                        |                |                      | 0,80                           | 8,77                            | 7,28                 | 3,72              | 3,70  |
| 3                    | PLM100RB14/330 E3                                                                        |  | 100R      |                        |                |                      | 0,79                           | 7,81                            | 9,93                 | 4,26              | 3,94  |
| 4                    | PLM112RB14S6/340 E3                                                                      |  | 112R      |                        |                |                      | 0,85                           | 9,13                            | 13,2                 | 3,82              | 4,32  |
| 5,5                  | PLM132RB5/355 E3                                                                         |  | 132R      | V1/B5                  |                |                      | 0,85                           | 10,5                            | 18,1                 | 4,74              | 5,11  |
| 7,5                  | PLM132B5/375 E3                                                                          |  | 132       |                        |                |                      | 0,85                           | 10,2                            | 24,4                 | 3,43              | 4,76  |
| 11                   | PLM160RB5/3110 E3                                                                        |  | 160R      |                        |                |                      | 0,86                           | 9,89                            | 35,9                 | 3,46              | 4,59  |
| 15                   | PLM160B5/3150 E3                                                                         |  | 160       |                        |                |                      | 0,88                           | 9,51                            | 48,6                 | 2,73              | 4,32  |
| 18,5                 | PLM160B5/3185 E3                                                                         |  | 160       |                        |                |                      | 0,88                           | 9,81                            | 59,9                 | 2,81              | 4,53  |
| 22                   | PLM180RB5/3220 E3                                                                        |  | 180R      |                        |                |                      | 0,85                           | 10,9                            | 71,1                 | 3,26              | 5,12  |

| P <sub>N</sub><br>kW | Voltage U <sub>N</sub><br>V |       |       |       |       |       |       |       |       |       |       | n <sub>N</sub><br>min <sup>-1</sup> | Observe the regulations and codes locally<br>in force regarding sorted waste disposal. | Operating conditions **            |                         |      |
|----------------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------------------|----------------------------------------------------------------------------------------|------------------------------------|-------------------------|------|
|                      | Δ                           |       |       | Y     |       |       | Δ     |       |       | Y     |       |                                     |                                                                                        | Altitude<br>Above Sea<br>Level (m) | T. amb<br>min/max<br>°C | ATEX |
|                      | 220 V                       | 230 V | 240 V | 380 V | 400 V | 415 V | 380 V | 400 V | 415 V | 660 V | 690 V |                                     |                                                                                        |                                    |                         |      |
|                      | I <sub>N</sub> (A)          |       |       |       |       |       |       |       |       |       |       |                                     |                                                                                        |                                    |                         |      |
| 0,37                 | 2,03                        | 2,18  | 2,32  | 1,17  | 1,26  | 1,34  | -     | -     | -     | -     | -     | 2745 ÷ 2800                         |                                                                                        | ≤ 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                  | 7,97                        | 7,90  | 7,98  | 4,6   | 4,56  | 4,61  | 4,57  | 4,54  | 4,57  | 2,64  | 2,62  | 2880 ÷ 2900                         |                                                                                        |                                    |                         |      |
| 3                    | 11,0                        | 11,0  | 11,2  | 6,35  | 6,33  | 6,44  | 6,29  | 6,27  | 6,34  | 3,63  | 3,62  | 2865 ÷ 2895                         |                                                                                        |                                    |                         |      |
| 4                    | 13,6                        | 13,4  | 13,4  | 7,87  | 7,75  | 7,74  | 7,80  | 7,62  | 7,61  | 4,50  | 4,40  | 2885 ÷ 2910                         |                                                                                        |                                    |                         |      |
| 5,5                  | 18,1                        | 17,9  | 18,1  | 10,4  | 10,4  | 10,4  | 10,6  | 10,5  | 10,7  | 6,10  | 6,05  | 2880 ÷ 2910                         |                                                                                        |                                    |                         |      |
| 7,5                  | 24,8                        | 24,4  | 24,3  | 14,3  | 14,1  | 14,0  | 14,4  | 14,1  | 14,2  | 8,32  | 8,16  | 2920 ÷ 2935                         |                                                                                        |                                    |                         |      |
| 11                   | 35,7                        | 35,0  | 34,9  | 20,6  | 20,2  | 20,2  | 20,6  | 20,2  | 20,2  | 11,9  | 11,7  | 2910 ÷ 2930                         |                                                                                        |                                    |                         |      |
| 15                   | 47,6                        | 46,1  | 45,2  | 27,5  | 26,6  | 26,1  | 27,5  | 26,6  | 26,1  | 15,9  | 15,3  | 2940 ÷ 2950                         |                                                                                        |                                    |                         |      |
| 18,5                 | 58,3                        | 56,7  | 55,6  | 33,7  | 32,7  | 32,1  | 34,0  | 33,0  | 32,7  | 19,6  | 19,0  | 2940 ÷ 2950                         |                                                                                        |                                    |                         |      |
| 22                   | 72,9                        | 73,1  | 73,7  | 42,1  | 42,2  | 42,6  | 40,9  | 40,4  | 40,6  | 23,6  | 23,3  | 2950 ÷ 2960                         |                                                                                        |                                    |                         |      |

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

sv-IE3-mott22-2p50-en\_a\_te

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

## ELECTRIC PUMPS

### THREE-PHASE MOTORS AT 50 Hz, 2-POLE (from 30 to 55 kW)

| P <sub>N</sub><br>kW | Efficiency $\eta_N$<br>%  |      |      |                           |      |      |                |      |      | IE | Year of<br>manufacture |
|----------------------|---------------------------|------|------|---------------------------|------|------|----------------|------|------|----|------------------------|
|                      | $\Delta$ 380 V<br>Y 660 V |      |      | $\Delta$ 400 V<br>Y 690 V |      |      | $\Delta$ 415 V |      |      |    |                        |
|                      | 4/4                       | 3/4  | 2/4  | 4/4                       | 3/4  | 2/4  | 4/4            | 3/4  | 2/4  |    |                        |
|                      |                           |      |      |                           |      |      |                |      |      |    |                        |
| 30                   | 94,0                      | 94,0 | 93,1 | 94,1                      | 94,0 | 92,8 | 94,2           | 93,9 | 92,6 | 3  | From<br>11/2014        |
| 37                   | 94,4                      | 94,0 | 93,5 | 94,6                      | 94,0 | 93,3 | 94,7           | 93,9 | 93,1 |    |                        |
| 45                   | 94,8                      | 94,9 | 94,6 | 95,1                      | 95,1 | 94,6 | 95,3           | 95,2 | 94,5 |    |                        |
| 55                   | 95,1                      | 95,0 | 94,9 | 95,4                      | 95,3 | 94,9 | 95,5           | 95,3 | 94,8 |    |                        |

| P <sub>N</sub><br>kW | Manufacturer                                                                                   | IEC SIZE | Construction<br>Design | N. of<br>Poles | f <sub>N</sub><br>Hz | Data for 400 V / 50 Hz Voltage |                                 |                      |                                |                                |
|----------------------|------------------------------------------------------------------------------------------------|----------|------------------------|----------------|----------------------|--------------------------------|---------------------------------|----------------------|--------------------------------|--------------------------------|
|                      | WEG Equipamentos Eletricos S.A.<br>Reg. No. 07.175.725/0010-50<br>Jaragua do Sul - SC (Brazil) |          |                        |                |                      | cos $\phi$                     | I <sub>s</sub> / I <sub>N</sub> | T <sub>N</sub><br>Nm | T <sub>s</sub> /T <sub>N</sub> | T <sub>m</sub> /T <sub>N</sub> |
|                      | Model                                                                                          |          |                        |                |                      |                                |                                 |                      |                                |                                |
| 30                   | W22 200L V1 30KW E3                                                                            | 200      | V1                     | 2              | 50                   | 0,86                           | 7,30                            | 96,60                | 2,60                           | 2,90                           |
| 37                   | W22 200L V1 37KW E3                                                                            | 200      |                        |                |                      | 0,86                           | 7,30                            | 119,2                | 2,60                           | 2,90                           |
| 45                   | W22 225S/M V1 45KW E3                                                                          | 225      |                        |                |                      | 0,88                           | 8,00                            | 144,7                | 2,70                           | 3,20                           |
| 55                   | W22 250S/M V1 55KW E3                                                                          | 250      |                        |                |                      | 0,89                           | 7,90                            | 177,1                | 2,80                           | 2,90                           |

| P <sub>N</sub><br>kW | Voltage U <sub>N</sub><br>V |       |       |       |       | n <sub>N</sub><br>min <sup>-1</sup> | See note. | Operating conditions **            |                         |      |
|----------------------|-----------------------------|-------|-------|-------|-------|-------------------------------------|-----------|------------------------------------|-------------------------|------|
|                      | Δ                           |       |       | Y     |       |                                     |           | Altitude<br>Above Sea<br>Level (m) | T. amb<br>min/max<br>°C | ATEX |
|                      | 380 V                       | 400 V | 415 V | 660 V | 690 V |                                     |           |                                    |                         |      |
|                      | I <sub>N</sub> (A)          |       |       |       |       |                                     |           |                                    |                         |      |
| 30                   | 55,1                        | 53,5  | 52,7  | 31,7  | 31,0  | 2960 ÷ 2970                         | ≤ 1000    | -15 / 40                           | No                      |      |
| 37                   | 67,7                        | 65,6  | 64,7  | 39,0  | 38,0  | 2960 ÷ 2970                         |           |                                    |                         |      |
| 45                   | 80,1                        | 77,6  | 74,6  | 46,1  | 45,0  | 2965 ÷ 2970                         |           |                                    |                         |      |
| 55                   | 97,6                        | 93,5  | 91,0  | 56,2  | 54,2  | 2960 ÷ 2965                         |           |                                    |                         |      |

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

sv-IE3-mott55-2p50-en\_a\_te

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

## HYDROVAR® HVL GENERAL DESCRIPTION

GHV booster sets use the **HYDROVAR®** frequency converter, an automatic device that gives the possibility of changing the **number of electric pump revolutions**, and maintain the system **pressure constant**.

Power converters up to 22 kW are **installed directly on the motor fan cover**. Using the additional **fan kit**, they can also be installed on the wall, or on a bracket attached to the set. 30 or 45 kW models are only suitable for wall or bracket installation.

The basic function of HYDROVAR®, is to control the pump based on system requirements.

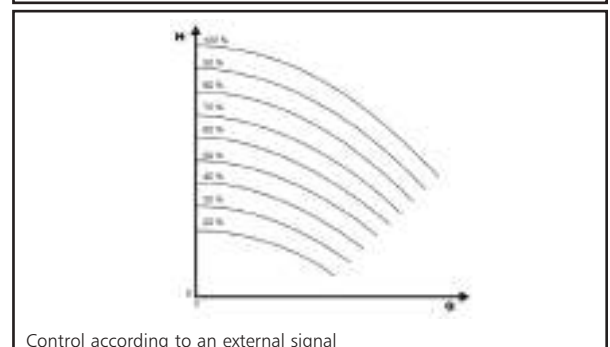
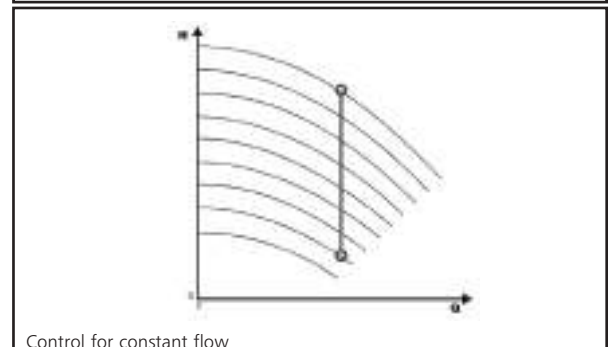
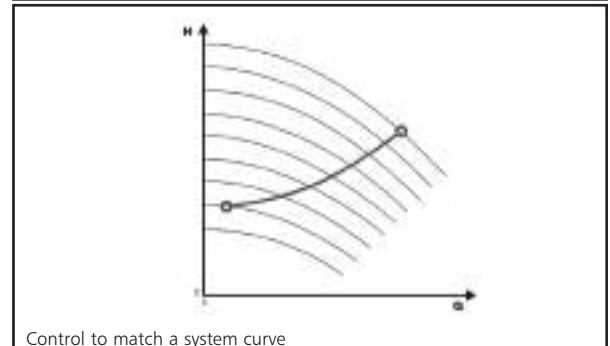
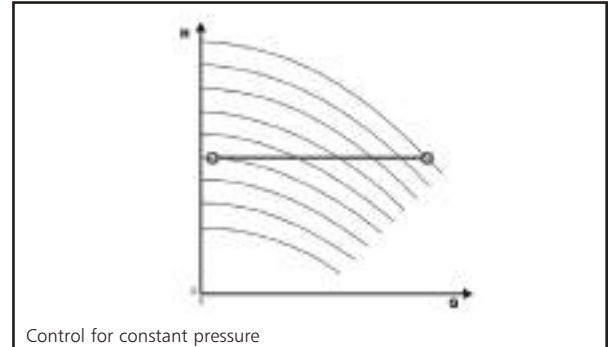
The basic function of the HYDROVAR® device is to control the pump to meet the system demands.

### HYDROVAR® performs these functions by:

- 1) Measuring the system pressure or flow via a transmitter mounted on the pump's delivery side.
- 2) Calculating the motor speed to maintain the correct flow or pressure.
- 3) Sending out a signal to the pump to start the motor, increase speed, decrease speed or stop.
- 4) In the case of multiple pump installations, HYDROVAR® will automatically provide for the cyclic changeover of the pumps' starting sequence.

In addition to these basic functions, HYDROVAR® can perform controls only manageable by the most advanced computerized control systems. Some examples are:

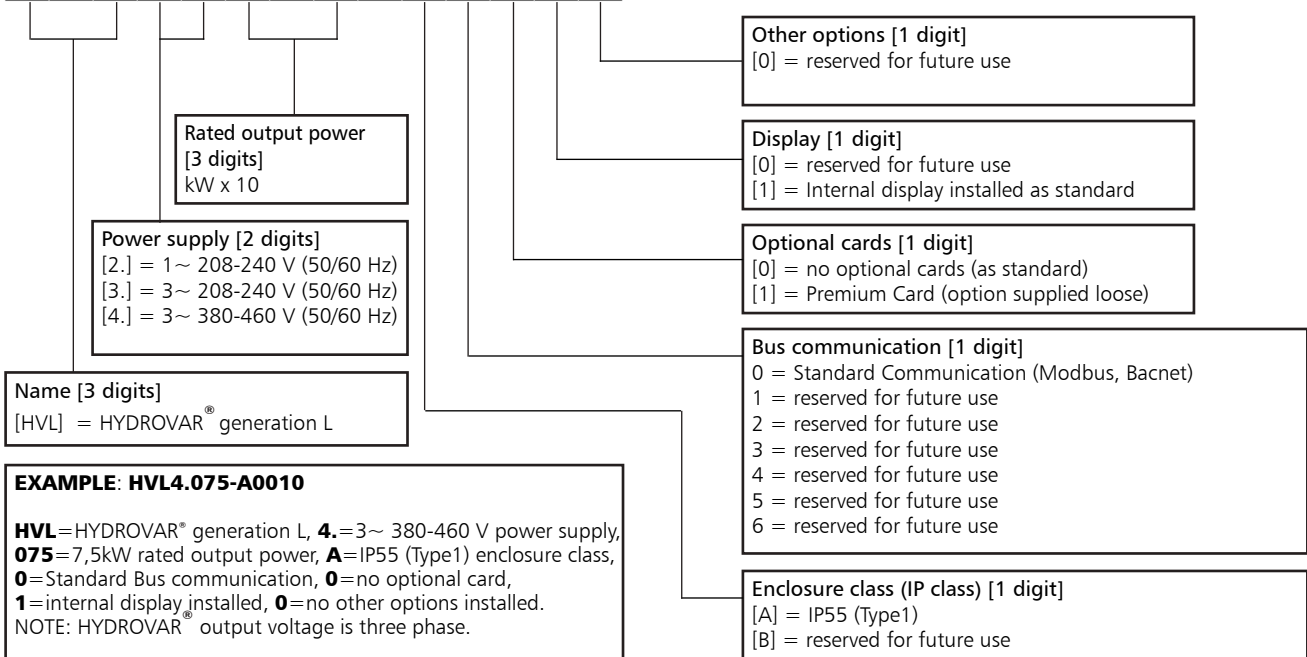
- Stop the pump(s) at zero demand.
- Stop the pump(s) in case of water failure on the suction side (protection against dry running).
- Stop the pump if the required delivery exceeds the pump's capacity (protection against cavitation caused by excessive demand), or automatically switch on the next pump in a multiple series.
- Protect the pump and motor from over-voltage, under-voltage, overload, and earth fault.
- Vary the pump speed: acceleration and deceleration time.
- Compensate for increased flow resistance at high flow rates.
- Conduct automatic tests at set intervals.
- Monitor the converter and motor operating hours.
- Monitor the energy consumption (kWh).
- Display all functions on an LCD in different languages (Italian, English, French, German, Spanish, Portuguese, Dutch, etc...).
- Send a signal to a remote control system which is proportional to the pressure and frequency.
- Communicate with external control system via Modbus (RS 485 interface) and Bacnet as standard.





## HYDROVAR® HVL IDENTIFICATION CODE

**H V L 4 . 0 7 5 - A 0 0 1 0**



GHV.../SV

## DIMENSIONS AND WEIGHTS



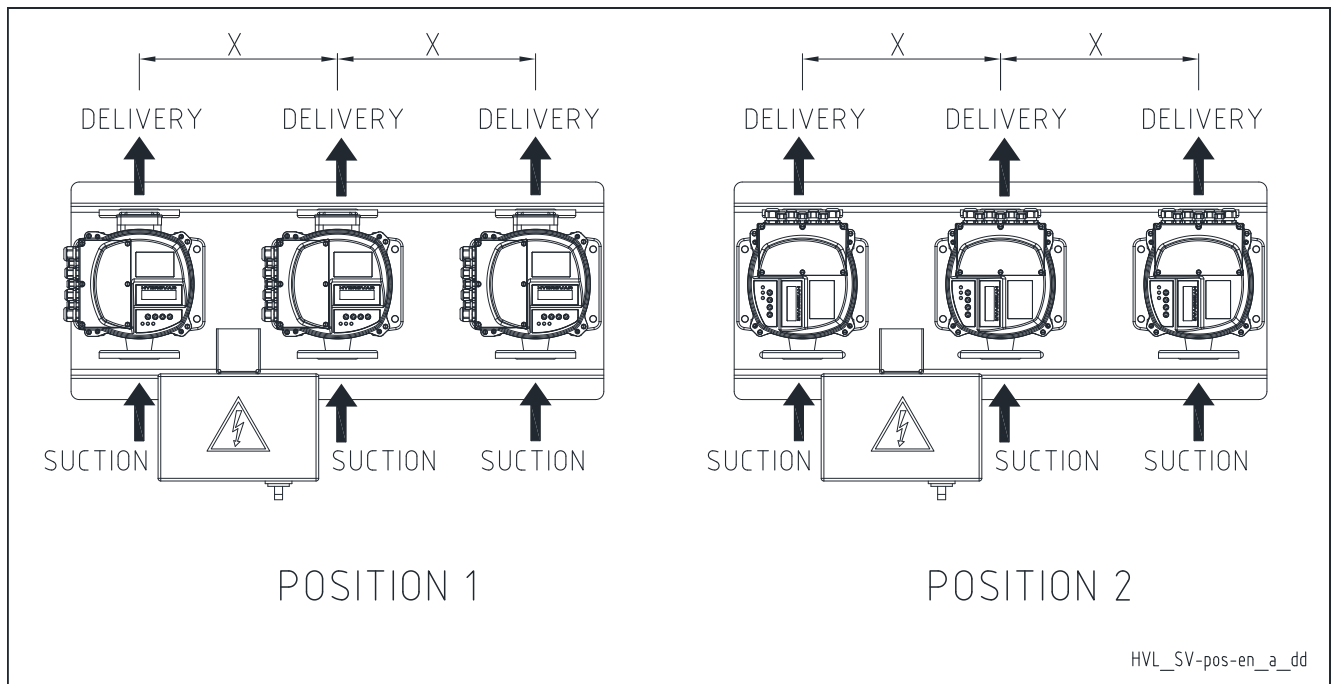
| TYPE   | MODELS           |                  |                  | DIMENSIONS (mm) |     |     |     | WEIGHT<br>Kg |
|--------|------------------|------------------|------------------|-----------------|-----|-----|-----|--------------|
|        | /2               | /3               | /4               | L               | B   | H   | X   |              |
| SIZE A | HVL2.015 ÷ 2.022 | HVL3.015 ÷ 3.022 | HVL4.015 ÷ 4.040 | 216             | 205 | 170 | 243 | 5,6          |
| SIZE B | HVL2.030 ÷ 2.040 | HVL3.030 ÷ 3.055 | HVL4.055 ÷ 4.110 | 276             | 265 | 185 | 305 | 10,5         |
| SIZE C | -                | HVL3.075 ÷ 3.110 | HVL4.150 ÷ 4.220 | 366             | 337 | 200 | 407 | 15,6         |

HVL\_dim-en\_b\_td



## HYDROVAR HVL DISPLAY POSITION

GHV.../SV



| HVL SIZE A |                  |
|------------|------------------|
| X (mm)     | HVL STD position |
| 300        | 1                |
| 370        | 1                |
| 440        | 1                |
| 490        | 1                |

| HVL SIZE B |                  |
|------------|------------------|
| X (mm)     | HVL STD position |
| 300        | 2                |
| 370        | 2                |
| 440        | 1                |
| 490        | 1                |
| 570        | 1                |

| HVL SIZE C |                  |
|------------|------------------|
| X (mm)     | HVL STD position |
| 370        | 2                |
| 440        | 2                |
| 490        | 1                |
|            | 2 (only 22 kW)   |
| 570        | 1                |

HVL\_SV-pos-en\_a\_td

\*GHV10 position 1 as standard

## HYDROVAR HVL TECHNICAL DATA

| Inverter  |                  |           |              | Motor            |            |
|-----------|------------------|-----------|--------------|------------------|------------|
| Model (*) | Power supply (V) | IP Degree | Installation | Power supply (V) | Power (kW) |
| HVL 2.015 | 1x230            | IP 55     | Motor        | 3x230            | 0,55-1,5   |
| HVL 2.022 | 1x230            | IP 55     | Motor        | 3x230            | 2,2        |
| HVL 2.030 | 1x230            | IP 55     | Motor        | 3x230            | 3          |
| HVL 2.040 | 1x230            | IP 55     | Motor        | 3x230            | 4          |
| HVL 4.015 | 3x400            | IP 55     | Motor        | 3x400            | 0,55-1,5   |
| HVL 4.022 | 3x400            | IP 55     | Motor        | 3x400            | 2,2        |
| HVL 4.030 | 3x400            | IP 55     | Motor        | 3x400            | 3          |
| HVL 4.040 | 3x400            | IP 55     | Motor        | 3x400            | 4          |
| HVL 4.055 | 3x400            | IP 55     | Motor        | 3x400            | 5,5        |
| HVL 4.075 | 3x400            | IP 55     | Motor        | 3x400            | 7,5        |
| HVL 4.110 | 3x400            | IP 55     | Motor        | 3x400            | 11         |
| HVL 4.150 | 3x400            | IP 55     | Motor        | 3x400            | 15         |
| HVL 4.185 | 3x400            | IP 55     | Motor        | 3x400            | 18,5       |
| HVL 4.220 | 3x400            | IP 55     | Motor        | 3x400            | 22         |
| HVL 3.015 | 3x230            | IP 55     | Motor        | 3x230            | 0,55-1,5   |
| HVL 3.022 | 3x230            | IP 55     | Motor        | 3x230            | 2,2        |
| HVL 3.030 | 3x230            | IP 55     | Motor        | 3x230            | 3          |
| HVL 3.040 | 3x230            | IP 55     | Motor        | 3x230            | 4          |
| HVL 3.055 | 3x230            | IP 55     | Motor        | 3x230            | 5,5        |
| HVL 3.075 | 3x230            | IP 55     | Motor        | 3x230            | 7,5        |
| HVL 3.110 | 3x230            | IP 55     | Motor        | 3x230            | 11         |

GHV with Hydrovar HVL 3 available on request

ghvl-2p-en\_a\_te

## HYDROVAR® HVL EMC COMPATIBILITY

### EMC requirements

HYDROVAR® fulfills the product standard EN61800-3:2004 + A1:2012, which defines categories (C1 to C4) for device application areas.

Depending on the motor cable length, a classification of HYDROVAR® by category (based on EN61800-3) is reported in the following tables:

| HVL           | HYDROVAR® classification by categories based on EN61800-3 |
|---------------|-----------------------------------------------------------|
| 2.015 ÷ 2.040 | C1 (*)                                                    |
| 3.015 ÷ 3.110 | C2 (*)                                                    |
| 4.015 ÷ 4.220 | C2 (*)                                                    |

(\*) 0,75 motor cable length; contact Xylem for further information

En-Rev\_A

## CARD

### Premium Card HYDROVAR® (optional)

For the e-SVH series, the Premium Card comes fitted as option on the standalone HYDROVAR®.

This allows to control up to five fix speed pumps via an external panel.

The Premium Card will allow additional features listed below:

- 2 additional Analog Inputs
- 2 Analog Outputs
- 1 additional digital input
- 5 relays.

Booster set GHV...SV...C

(See identification code pag.20).



## OPTIONAL COMPONENTS

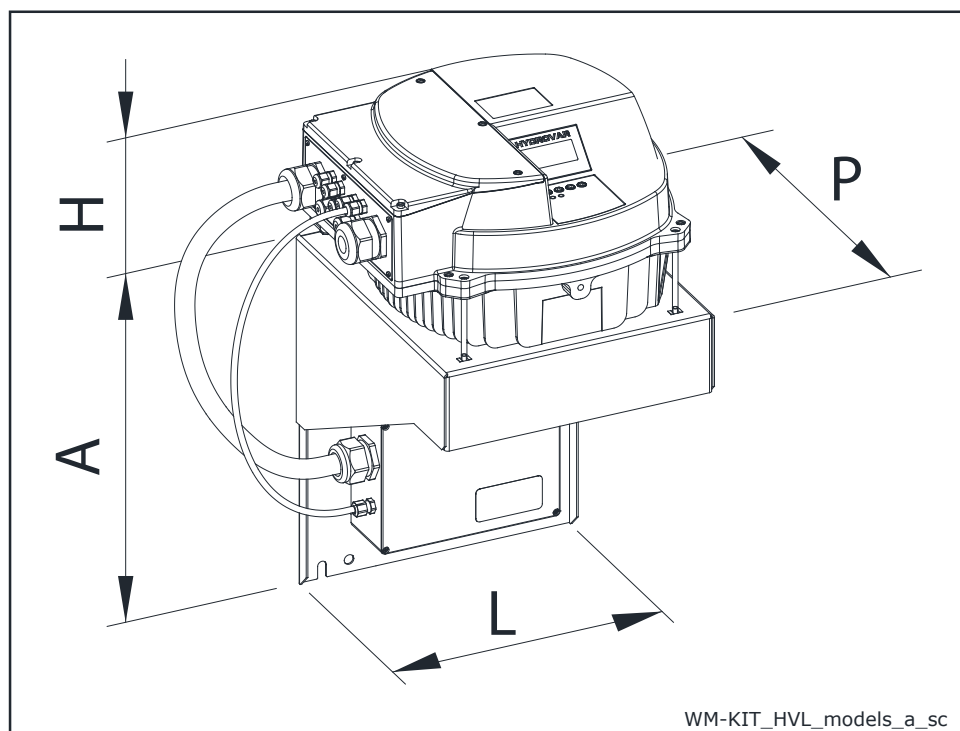
### Sensors

The following sensors are available for HYDROVAR®:

- Pressure-transducer
- Differential pressure-transducer
- Temperature-sensor
- Flow indicator (orifice plate, inductive flow meter)
- Level-sensor.

## HYDROVAR® HVL (WALL MOUNTING KIT) DIMENSIONS AND WEIGHTS

As an option a HYDROVAR® wall mounting kit is also available, this is used where mounting on the pump unit is impossible or where you would like the controls in another location, these are available for the new generation HYDROVAR® HVL 2.015-4.220 (22 kW). The speed of the cooling fan modulates with the HYDROVAR® usage which optimizes energy consumption and also reduces noise.



| WM KIT<br>TYPE   | kW   | WM KIT<br>POWER SUPPLY | HVL<br>SIZE | DIMENSIONS (mm) |     |     |     | WEIGHT (kg) |        |
|------------------|------|------------------------|-------------|-----------------|-----|-----|-----|-------------|--------|
|                  |      |                        |             | A               | H   | L   | P   | HVL         | WM KIT |
| WM KIT HVL 2.015 | 1,5  | 1~ 230V                | A           | 220             | 170 | 202 | 232 | 5,6         | 2,6    |
| WM KIT HVL 2.022 | 2,2  |                        |             | 220             | 170 | 202 | 232 | 5,6         | 2,6    |
| WM KIT HVL 2.030 | 3    |                        | B           | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 2.040 | 4    |                        |             | 320             | 175 | 288 | 305 | 10,5        | 5,4    |
| WM KIT HVL 3.015 | 1,5  | 3~ 230V                | A           | 220             | 170 | 202 | 232 | 5,6         | 2,6    |
| WM KIT HVL 3.022 | 2,2  |                        |             | 220             | 170 | 202 | 232 | 5,6         | 2,6    |
| WM KIT HVL 3.030 | 3    |                        | B           | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 3.040 | 4    |                        |             | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 3.055 | 5,5  |                        |             | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 3.075 | 7,5  |                        | C           | 400             | 200 | 325 | 365 | 15,6        | 11,6   |
| WM KIT HVL 3.110 | 11   |                        |             | 400             | 200 | 325 | 365 | 15,6        | 11,6   |
| WM KIT HVL 4.015 | 1,5  | 3~ 400V                | A           | 240             | 170 | 258 | 290 | 5,6         | 8,2    |
| WM KIT HVL 4.022 | 2,2  |                        |             | 240             | 170 | 258 | 290 | 5,6         | 8,2    |
| WM KIT HVL 4.030 | 3    |                        |             | 240             | 170 | 258 | 290 | 5,6         | 8,2    |
| WM KIT HVL 4.040 | 4    |                        |             | 240             | 170 | 258 | 290 | 5,6         | 8,2    |
| WM KIT HVL 4.055 | 5,5  |                        | B           | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 4.075 | 7,5  |                        |             | 240             | 175 | 258 | 290 | 10,5        | 8,2    |
| WM KIT HVL 4.110 | 11   |                        | C           | 320             | 175 | 288 | 305 | 10,5        | 5,4    |
| WM KIT HVL 4.150 | 15   |                        |             | 400             | 200 | 325 | 365 | 15,6        | 11,6   |
| WM KIT HVL 4.185 | 18,5 |                        |             | 400             | 200 | 325 | 365 | 15,6        | 11,6   |
| WM KIT HVL 4.220 | 22   |                        |             | 400             | 200 | 325 | 365 | 15,6        | 11,6   |

WM-KIT\_HVL\_models-EN\_b\_td

## GHV.../SV BOOSTER SETS SERIES CONTROL PANEL

Standard control panel for protecting up to four electric pumps with HYDROVAR® HVL frequency converter:

- power supply **voltage single-phase 1x230 V** +/-10%, 50/60Hz (GHV.../2)
- power supply **voltage three-phase 3x400 V** +/-10%, 50/60Hz (GHV.../4)
- **on request**, power supply voltage three-phase **3x230 V** +/-10%, 50/60Hz (GHV.../3)

Cabinet of panel is made by metal and protected to **IP55**  
The IP65 degree is optional (GHV.../IP65)

### Main characteristics:

- Automatic switch with thermal magnetic protection for each HYDROVAR® frequency converter.
- Standard with "clean" potential-free contacts for signalling: pump running, frequency converter faulty. Configured for enable from external contact
- Protection against dry running:

Protection against dry running activates when the water reserve falls below the minimum level guaranteed for suction.

The level can be checked using a float switch, a minimum pressure switch, an external contact, or level probes. For the latter, the probes must be connected to the adjustable sensitivity electronic module optional. The control panel is already preset for the installation of this module.

When lack of water is detected all HYDROVAR® are stopped. If water in suction side is restored only first HYDROVAR® will be enabled with reducing of set point (filling mode function). After time selected all HYDROVAR® are enable and set point is restored.

For booster sets requiring a wall mounted control panel (GHV.../WM), the panel is supplied with 5 metre cables.

Other options available:

- GHV.../PA
- GHV.../PE
- GHV.../RE
- GHV.../RV
- GHV.../VA

See the option description on page 20

GHV10 booster series: the control panel is available as accessory.



## GHV10 BOOSTER SETS SERIES MAIN COMPONENTS

- **Non return valve** on the delivery of each electric pump, spring type.
- **Delivery side** with threaded ends.
- **Pressure gauge and transmitters** for control, installed on the delivery side of the set.
- **Pressure tank** 8lt or 24lt depending on the electric pump model.

### Optional components:

#### Sensors

The following sensors are available:

- Pressure-transducer
- Level-sensor

## GHV.../SV BOOSTER SETS SERIES MAIN COMPONENTS

- **Main on-off valves** at the suction and delivery of each pump; ball type up to 2" included. For higher diameters, butterfly valves to be installed between the flanges.
- **Non return valve** on the delivery of each pump; spring type up to 2" included, double head type for larger sizes.
- **Suction manifold** with threaded or flanged ends, depending on set type (see drawings). Threaded fitting for water loading.
- **Delivery manifold** with threaded or flanged ends, depending on set type (see drawings). It has R1" threaded fittings with corresponding caps, for connection with diaphragm expansion vessels (hydro tube).
- **Pressure gauge and transmitters** for control, installed on the delivery manifold of the set.
- **Control** panel.
- **Various fittings** for the connections.
- **Support base** for the pump set and control panel bracket.
- **Anti-vibration feet** sized depending on the set. For some sets, the assembling is the responsibility of the customer.

### Versions available

Manifolds, valves, flanges, base and main components made of AISI 304 or AISI 316 stainless steel;

versions:

GHV.../A304, GHV.../B304, GHV.../C304,  
GHV.../A316, GHV.../B316, GHV.../C316

Available in the Z version.

### Accessories on request:

- Devices **for protection against dry running** in one of the following versions:
  - float switch
  - level probes (electodes) kit
  - minimum pressure switch

### • Vibration dampers

### • QHV10 control panel

### Versions available

Manifolds, valves, flanges, base and main components made of AISI 304 or AISI 316 stainless steel;

versions:

GHV.../A304, GHV.../B304, GHV.../C304,  
GHV.../A316, GHV.../B316, GHV.../C316

Available in the Z version.

### Accessories on request:

- Devices **for protection against dry running** in one of the following versions:
  - float switch
  - pack of electronic module and probe electrodes
  - minimum pressure switch
- **Diaphragm expansion vessel kit**  
Hydrotube with on-off valve, depending on the maximum head of the pump:
  - 24 lt, 8 bar hydro tube kit
  - 24 lt, 10 bar hydro tube kit
  - 24 lt, 16 bar hydro tube kit
  - 20 lt, 25 bar hydro tube kit

### SPECIAL EQUIPMENT ON REQUEST (Contact the Sales and Technical Assistance Service)

- Sets with stainless steel expansion vessels.
- Sets with special valves.
- Sets with 5 to 8 electric pumps.
- Sets with jockey pump.

GHV series booster sets with e-SV are certified for use with drinking water.

## GHV.../SV BOOSTER SETS SERIES

### MATERIAL TABLE FOR SETS PUMPS, 3-5-10-15-22SV

| DENOMINATION                                          | G...<br>(STANDARD)             | G.../A304                      | G.../A316                      |
|-------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Manifolds                                             | AISI 304                       | AISI 304                       | AISI 316                       |
| On-off valves                                         | Nickel-plated brass            | AISI 316                       | AISI 316                       |
| Non-return valves                                     | Brass                          | AISI 304                       | AISI 316                       |
| Pressure switches                                     | Galvanized steel/AISI 301      | AISI 301                       | AISI 301                       |
| Pressure transmitters                                 | AISI 304                       | AISI 304                       | AISI 304                       |
| Caps/plugs                                            | AISI 304 / 316                 | AISI 304 / 316                 | AISI 316                       |
| Sliding/Blind Flanges<br>(not in contact with liquid) | Galvanized steel               | Galvanized steel *             | Galvanized steel *             |
| Welded flanges<br>(contact with liquid)               | AISI 304                       | AISI 304                       | AISI 316                       |
| Fittings                                              | AISI 316                       | AISI 316                       | AISI 316                       |
| Bracket                                               | Galvanized steel/painted steel | Galvanized steel/painted steel | Galvanized steel/painted steel |
| Base                                                  | Painted steel                  | Painted steel                  | Painted steel                  |

\* B304, C304 version in AISI 304; B316, C316 version in AISI 316

g\_wad\_3-22sv-en\_b\_tm

GHV.../SV

### MATERIAL TABLE FOR SETS WITH PUMPS, 33-46-66-92-125SV

| DENOMINATION                                          | G...<br>(STANDARD)                              | G.../A304          | G.../A316          |
|-------------------------------------------------------|-------------------------------------------------|--------------------|--------------------|
| Manifolds                                             | AISI 304                                        | AISI 304           | AISI 316           |
| On-off valves (disc)                                  | Epoxy                                           | AISI 316           | AISI 316           |
| Non-return valves                                     | Painted cast iron<br>with stainless steel flaps | AISI 304           | AISI 316           |
| Pressure switches                                     | Galvanized steel/AISI 301                       | AISI 301           | AISI 301           |
| Pressure transmitters                                 | AISI 316                                        | AISI 316           | AISI 316           |
| Caps/plugs                                            | AISI 304 / 316                                  | AISI 316           | AISI 316           |
| Sliding/Blind Flanges<br>(not in contact with liquid) | Galvanized steel                                | Galvanized steel * | Galvanized steel * |
| Welded flanges<br>(contact with liquid)               | AISI 304                                        | AISI 304           | AISI 316           |
| Fittings                                              | AISI 316                                        | AISI 316           | AISI 316           |
| Bracket                                               | Painted steel                                   | Painted steel      | Painted steel      |
| Base                                                  | Painted steel                                   | Painted steel      | Painted steel      |

\* B304, C304 version in AISI 304; B316, C316 version in AISI 316

g\_wad\_33-125sv-en\_d\_tm

## GHV.../SV BOOSTER SETS SERIES WORKING LIMITS

The input pressure of the pump, added to the pressure with the port shut off, must not exceed the maximum permitted operating pressure (PN) of the set.

GHV.../SV

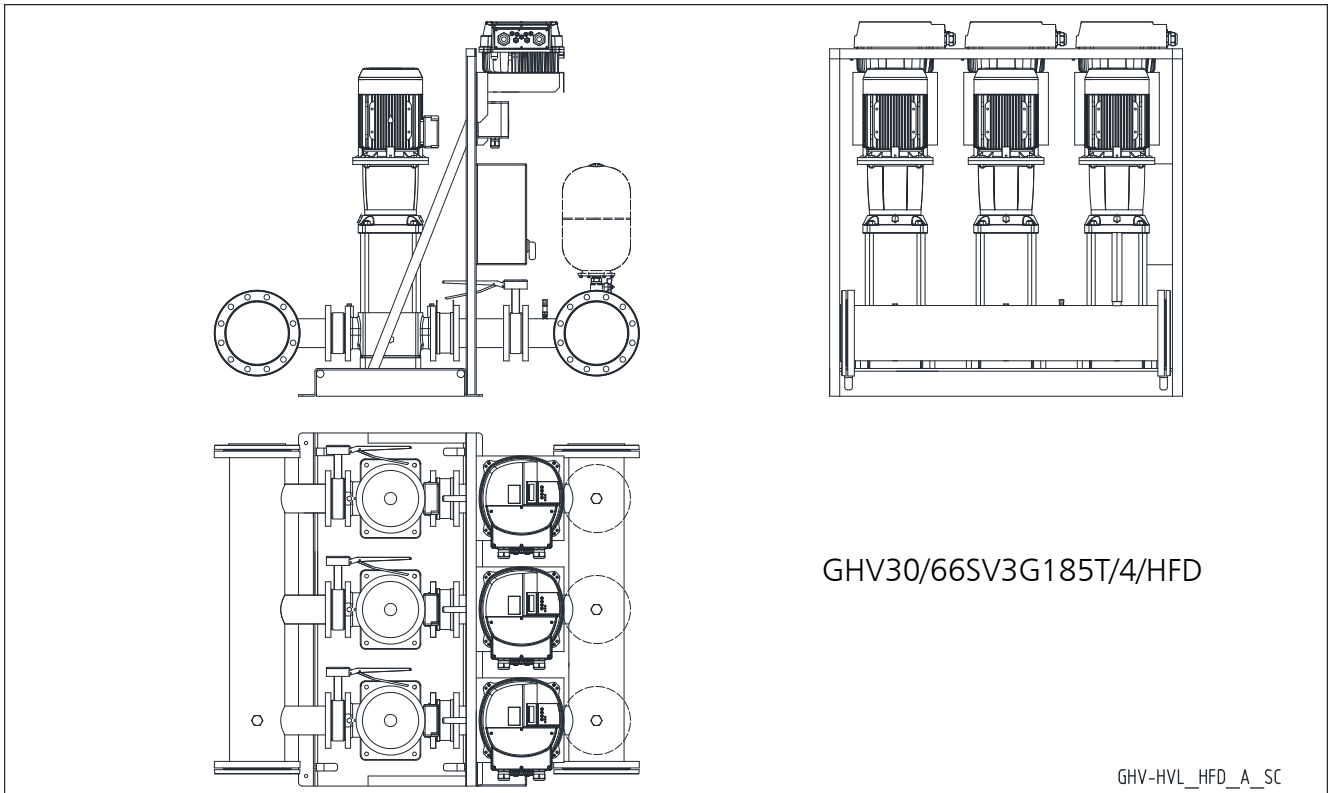
|                             |                                                                                                                                                     |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Permitted liquids           | Water without gases and corrosive and/or aggressive substances.                                                                                     |
| Fluid temperature           | -10°C to + 80 °C                                                                                                                                    |
| Ambient temperature         | 0°C to + 40 °C                                                                                                                                      |
| Maximum operating pressure* | Max 16 bar                                                                                                                                          |
| Minimum input pressure      | In line with the NPSH curve and the losses, with a margin of at least 0,5 m                                                                         |
| Maximum input pressure      | The input pressure added to the pump pressure without flow must be lower than the maximum operating pressure of the set.                            |
| Installation                | Internal environment protected from atmospheric agents. Away from heat sources.<br>Max altitude 1000 a.s.l. Max humidity 50%, without condensation. |
| Sound emission              | See table                                                                                                                                           |

\* Higher PN available on request depending on pump type

ghvl\_2p-en\_a\_ti

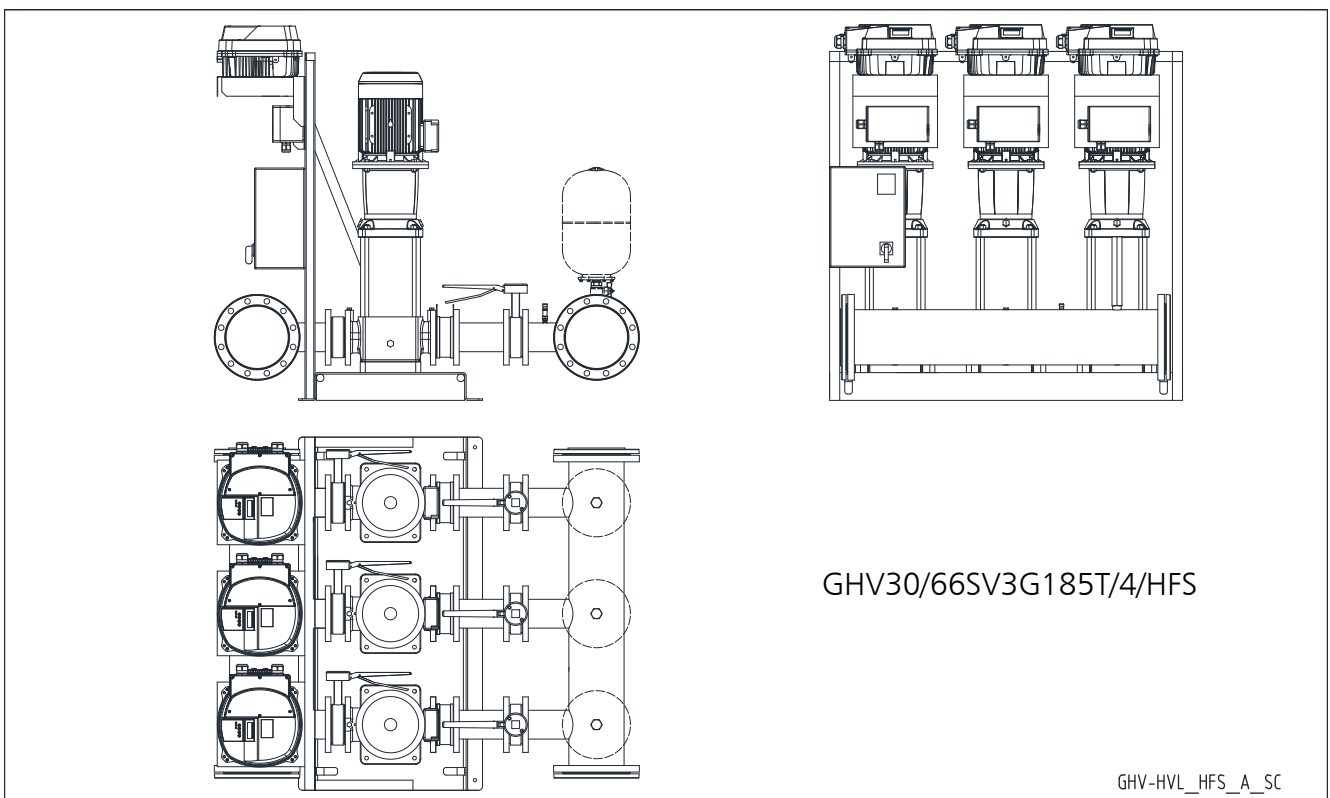
**SPECIAL SETS**

**HYDROVAR® AND CONTROL PANEL INSTALLED ON DELIVERY SIDE BRACKET**



GHV.../SV

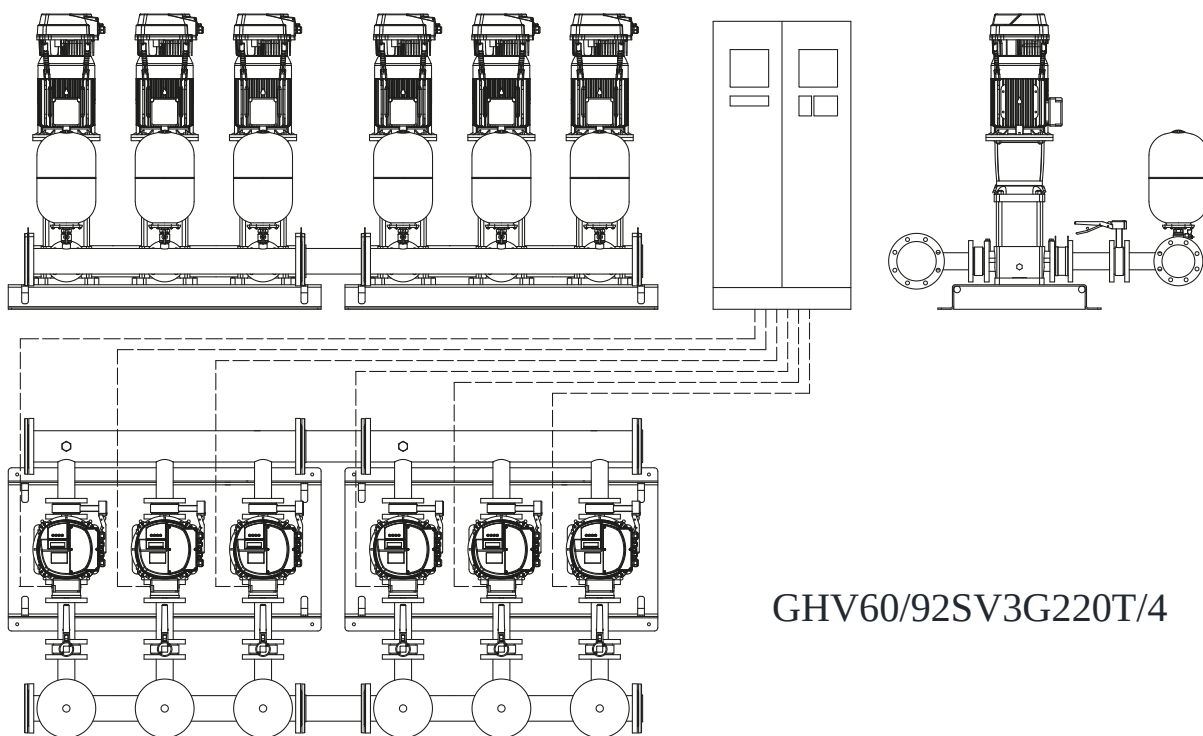
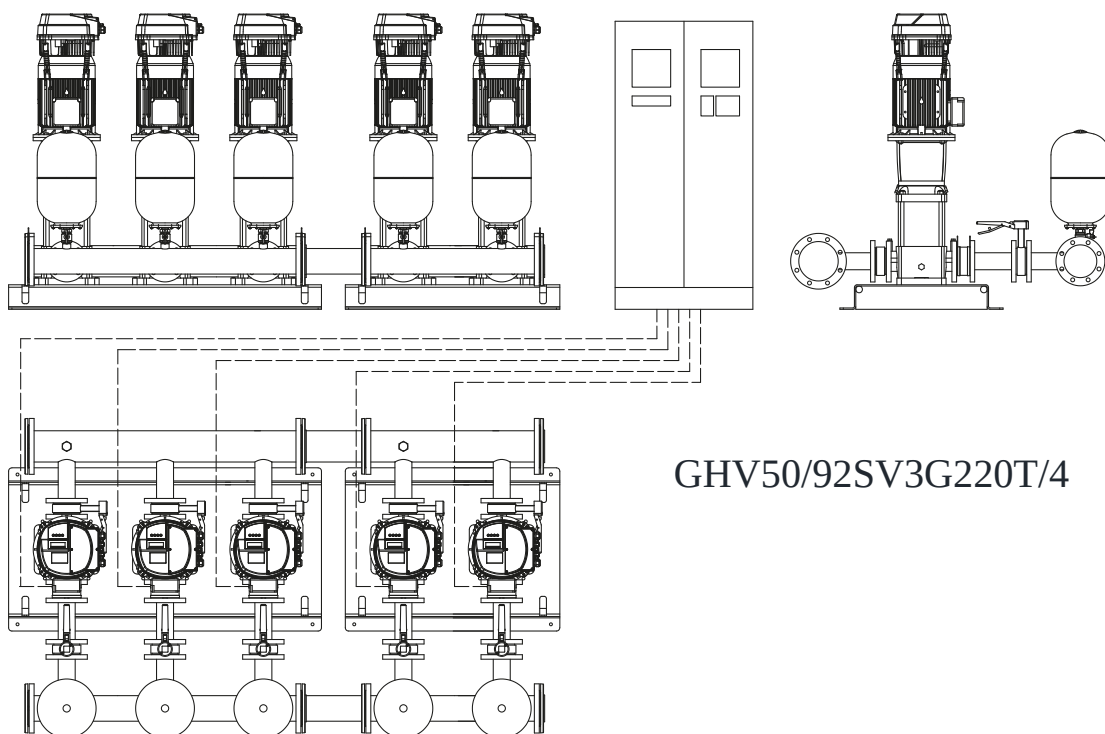
**HYDROVAR® AND CONTROL PANEL INSTALLED ON SUCTION SIDE BRACKET**





**SPECIAL SETS  
VERSION WITH 5/6 PUMPS**

GHV.../SV



GHV\_SPEC-SV\_B\_DD

Note: please request other special versions with regard to materials used, working temperatures, electric panels with additional functions.

## TABLE OF HYDRAULIC PERFORMANCE AT 50 Hz (SERVICE PUMP) GHV10/1-3-5SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥ | Q = DELIVERY                                |       |       |       |       |       |       |       |       |       |       |       |      |      |
|--------------|----------------|-------|---------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
|              |                |       | l/min 0                                     | 12    | 20    | 25    | 30    | 35    | 40    | 45    | 50    | 60    | 73    | 100   | 120  | 141  |
|              | kW             | (1)   | m³/h 0                                      | 0.7   | 1.2   | 1.5   | 1.8   | 2.1   | 2.4   | 2.7   | 3.0   | 3.6   | 4.4   | 6.0   | 7.2  | 8.5  |
|              |                |       | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |       |       |       |       |       |       |       |       |       |       |       |      |      |
| 1SV11        | 1 x 0,55       | 0.70  | 65.1                                        | 64.5  | 60.4  | 55.5  | 48.5  | 39.5  | 28.5  |       |       |       |       |       |      |      |
| 1SV15        | 1 x 0,75       | 0.70  | 90.9                                        | 90.5  | 85.6  | 79.3  | 70.1  | 58.1  | 43.1  |       |       |       |       |       |      |      |
| 1SV22        | 1 x 1,1        | 0.70  | 134.6                                       | 134.1 | 127.4 | 118.1 | 104.4 | 86.1  | 63.5  |       |       |       |       |       |      |      |
| 1SV25        | 1 x 1,5        | 0.70  | 152.6                                       | 152.4 | 145.5 | 135.4 | 120.0 | 99.1  | 72.7  |       |       |       |       |       |      |      |
| 3SV06        | 1 x 0,55       | 0.70  | 44.4                                        |       | 43.4  | 42.6  | 41.6  | 40.2  | 38.6  | 36.6  | 34.3  | 28.5  | 18.5  |       |      |      |
| 3SV08        | 1 x 0,75       | 0.70  | 60.0                                        |       | 59.1  | 58.2  | 57.0  | 55.4  | 53.4  | 51.0  | 48.1  | 40.7  | 27.5  |       |      |      |
| 3SV12        | 1 x 1,1        | 0.70  | 89.6                                        |       | 87.8  | 86.4  | 84.5  | 82.1  | 79.1  | 75.5  | 71.1  | 59.9  | 40.1  |       |      |      |
| 3SV16        | 1 x 1,5        | 0.70  | 119.9                                       |       | 117.8 | 116.1 | 113.6 | 110.5 | 106.5 | 101.6 | 95.8  | 80.9  | 54.2  |       |      |      |
| 3SV21        | 1 x 2,2        | 0.70  | 159.3                                       |       | 156.9 | 154.6 | 151.4 | 147.3 | 142.1 | 135.7 | 128.0 | 108.5 | 73.6  |       |      |      |
| 5SV04        | 1 x 0,55       | 0.70  | 30.0                                        |       |       |       |       |       | 28.2  | 27.9  | 27.5  | 26.6  | 25.2  | 21.2  | 17.3 | 12.2 |
| 5SV05        | 1 x 0,75       | 0.70  | 38.0                                        |       |       |       |       |       | 36.4  | 36.0  | 35.5  | 34.5  | 32.9  | 28.2  | 23.5 | 17.1 |
| 5SV08        | 1 x 1,1        | 0.70  | 60.1                                        |       |       |       |       |       | 57.6  | 57.0  | 56.2  | 54.6  | 51.8  | 44.1  | 36.2 | 25.8 |
| 5SV11        | 1 x 1,5        | 0.70  | 82.8                                        |       |       |       |       |       | 79.3  | 78.4  | 77.5  | 75.2  | 71.4  | 60.7  | 49.9 | 35.6 |
| 5SV16        | 1 x 2,2        | 0.70  | 120.5                                       |       |       |       |       |       | 115.9 | 114.6 | 113.1 | 109.6 | 103.9 | 87.8  | 72.1 | 51.8 |
| 5SV21        | 1 x 3          | 0.70  | 157.9                                       |       |       |       |       |       | 152.0 | 150.3 | 148.3 | 143.6 | 136.1 | 114.9 | 94.2 | 67.6 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

1p\_1-5sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 1 pump running.

## GHV10/10-15-22SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER | MEI ≥ | Q = DELIVERY |       |       |       |       |        |       |       |       |       |       |      |      |        |
|---------------------------------------------|----------------|-------|--------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|------|------|--------|
|                                             |                |       | l/min 0      | 83.34 | 100   | 133   | 170   | 183.34 | 233   | 270   | 330   | 350   | 400   | 430  | 460  | 483.33 |
|                                             | kW             | (1)   | m³/h 0       | 5.0   | 6.0   | 8.0   | 10.2  | 11.0   | 14.0  | 16.2  | 19.8  | 21.0  | 24.0  | 25.8 | 27.6 | 29.0   |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                |       |              |       |       |       |       |        |       |       |       |       |       |      |      |        |
| 10SV02                                      | 1 x 0,75       | 0.70  | 23.6         | 21.9  | 21.3  | 19.6  | 17.0  | 15.8   | 10.0  |       |       |       |       |      |      |        |
| 10SV03                                      | 1 x 1,1        | 0.70  | 35.7         | 33.0  | 32.1  | 29.6  | 25.8  | 24.1   | 16.0  |       |       |       |       |      |      |        |
| 10SV04                                      | 1 x 1,5        | 0.70  | 47.7         | 44.2  | 43.0  | 39.9  | 34.8  | 32.6   | 21.7  |       |       |       |       |      |      |        |
| 10SV06                                      | 1 x 2,2        | 0.70  | 71.8         | 66.8  | 65.0  | 60.4  | 53.1  | 49.8   | 33.9  |       |       |       |       |      |      |        |
| 10SV08                                      | 1 x 3          | 0.70  | 95.3         | 88.9  | 86.5  | 80.1  | 70.2  | 65.7   | 44.5  |       |       |       |       |      |      |        |
| 10SV11                                      | 1 x 4          | 0.70  | 129.6        | 121.3 | 118.1 | 109.6 | 96.3  | 90.3   | 62.1  |       |       |       |       |      |      |        |
| 10SV13                                      | 1 x 5,5        | 0.70  | 156.0        | 146.5 | 142.7 | 132.6 | 116.4 | 109.2  | 74.3  |       |       |       |       |      |      |        |
| 15SV01                                      | 1 x 1,1        | 0.70  | 14.0         |       |       | 12.9  | 12.4  | 12.2   | 11.3  | 10.4  | 8.4   | 7.6   | 5.1   |      |      |        |
| 15SV02                                      | 1 x 2,2        | 0.70  | 28.7         |       |       | 26.7  | 25.9  | 25.5   | 23.9  | 22.4  | 18.9  | 17.4  | 13.1  |      |      |        |
| 15SV03                                      | 1 x 3          | 0.70  | 43.3         |       |       | 40.4  | 39.1  | 38.6   | 36.2  | 33.8  | 28.7  | 26.5  | 20.1  |      |      |        |
| 15SV05                                      | 1 x 4          | 0.70  | 72.7         |       |       | 67.8  | 65.8  | 65.0   | 61.0  | 57.1  | 48.7  | 45.2  | 34.9  |      |      |        |
| 15SV07                                      | 1 x 5,5        | 0.70  | 101.9        |       |       | 94.5  | 91.9  | 90.8   | 85.7  | 80.6  | 69.4  | 64.7  | 50.5  |      |      |        |
| 15SV09                                      | 1 x 7,5        | 0.70  | 131.9        |       |       | 124.4 | 121.0 | 119.6  | 112.8 | 106.1 | 91.5  | 85.5  | 67.4  |      |      |        |
| 15SV10                                      | 1 x 11         | 0.70  | 147.7        |       |       | 138.8 | 135.3 | 133.8  | 126.7 | 119.6 | 103.9 | 97.4  | 77.5  |      |      |        |
| 22SV01                                      | 1 x 1,1        | 0.70  | 14.7         |       |       |       |       | 13.5   | 12.7  | 12.0  | 10.4  | 9.7   | 7.7   | 6.3  | 4.7  | 3.4    |
| 22SV02                                      | 1 x 2,2        | 0.70  | 30.4         |       |       |       |       | 28.4   | 27.2  | 26.0  | 23.3  | 22.2  | 18.9  | 16.6 | 13.8 | 11.5   |
| 22SV03                                      | 1 x 3          | 0.70  | 45.4         |       |       |       |       | 42.2   | 40.4  | 38.5  | 34.5  | 32.8  | 27.8  | 24.2 | 20.2 | 16.6   |
| 22SV04                                      | 1 x 4          | 0.70  | 60.9         |       |       |       |       | 56.8   | 54.4  | 51.9  | 46.6  | 44.4  | 37.9  | 33.1 | 27.7 | 23.0   |
| 22SV05                                      | 1 x 5,5        | 0.70  | 76.0         |       |       |       |       | 70.9   | 67.9  | 64.9  | 58.3  | 55.6  | 47.4  | 41.4 | 34.7 | 28.8   |
| 22SV07                                      | 1 x 7,5        | 0.70  | 108.5        |       |       |       |       | 103.1  | 99.4  | 95.7  | 87.2  | 83.7  | 73.1  | 65.3 | 56.5 | 48.8   |
| 22SV10                                      | 1 x 11         | 0.70  | 155.4        |       |       |       |       | 148.2  | 143.1 | 137.8 | 125.9 | 120.9 | 105.8 | 94.8 | 82.3 | 71.3   |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

1p\_10-22sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 1 pump running.

## GHV20/3SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥ | Q = DELIVERY                                |     |       |       |       |       |       |       |       |       |      |      |      |      |
|--------------|----------------|-------|---------------------------------------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|
|              |                |       | l/min 0                                     | 24  | 40    | 50    | 60    | 70    | 80    | 90    | 100   | 120   | 146  | 200  | 240  | 282  |
|              |                |       | m³/h 0                                      | 1,4 | 2,4   | 3,0   | 3,6   | 4,2   | 4,8   | 5,4   | 6,0   | 7,2   | 8,8  | 12,0 | 14,4 | 16,9 |
|              | kW             | (1)   | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |     |       |       |       |       |       |       |       |       |      |      |      |      |
| 3SV05        | 2 x 0,55       | 0,70  | 37,2                                        |     | 36,4  | 35,8  | 35,0  | 33,9  | 32,6  | 31,1  | 29,2  | 24,5  | 16,2 |      |      |      |
| 3SV06        | 2 x 0,55       | 0,70  | 44,4                                        |     | 43,4  | 42,6  | 41,6  | 40,2  | 38,6  | 36,6  | 34,3  | 28,5  | 18,5 |      |      |      |
| 3SV07        | 2 x 0,75       | 0,70  | 52,5                                        |     | 51,8  | 51,0  | 50,0  | 48,7  | 47,0  | 45,0  | 42,5  | 36,1  | 24,6 |      |      |      |
| 3SV08        | 2 x 0,75       | 0,70  | 60,0                                        |     | 59,1  | 58,2  | 57,0  | 55,4  | 53,4  | 51,0  | 48,1  | 40,7  | 27,5 |      |      |      |
| 3SV09        | 2 x 1,1        | 0,70  | 67,7                                        |     | 66,8  | 65,8  | 64,5  | 62,8  | 60,6  | 57,9  | 54,6  | 46,4  | 31,6 |      |      |      |
| 3SV10        | 2 x 1,1        | 0,70  | 75,0                                        |     | 73,8  | 72,7  | 71,3  | 69,3  | 66,9  | 63,8  | 60,2  | 51,0  | 34,5 |      |      |      |
| 3SV11        | 2 x 1,1        | 0,70  | 82,3                                        |     | 81,0  | 79,7  | 78,0  | 75,8  | 73,1  | 69,7  | 65,7  | 55,5  | 37,4 |      |      |      |
| 3SV12        | 2 x 1,1        | 0,70  | 89,6                                        |     | 87,8  | 86,4  | 84,5  | 82,1  | 79,1  | 75,5  | 71,1  | 59,9  | 40,1 |      |      |      |
| 3SV13        | 2 x 1,5        | 0,70  | 98,1                                        |     | 96,7  | 95,4  | 93,5  | 91,0  | 87,8  | 83,9  | 79,2  | 67,2  | 45,6 |      |      |      |
| 3SV14        | 2 x 1,5        | 0,70  | 105,6                                       |     | 104,1 | 102,5 | 100,4 | 97,7  | 94,2  | 89,9  | 84,8  | 71,8  | 48,5 |      |      |      |
| 3SV16        | 2 x 1,5        | 0,70  | 119,9                                       |     | 117,8 | 116,1 | 113,6 | 110,5 | 106,5 | 101,6 | 95,8  | 80,9  | 54,2 |      |      |      |
| 3SV19        | 2 x 2,2        | 0,70  | 144,3                                       |     | 142,3 | 140,3 | 137,5 | 133,9 | 129,2 | 123,5 | 116,7 | 99,1  | 67,6 |      |      |      |
| 3SV21        | 2 x 2,2        | 0,70  | 159,3                                       |     | 156,9 | 154,6 | 151,4 | 147,3 | 142,1 | 135,7 | 128,0 | 108,5 | 73,6 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_3sv-055-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 2 pumps running.

GHV.../SV

## GHV20/5SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER | MEI ≥<br><br>(1) | Q = DELIVERY |     |     |     |     |     |       |       |       |       |       |       |      |      |
|---------------------------------------------|----------------|------------------|--------------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|------|------|
|                                             |                |                  | l/min 0      | 24  | 40  | 50  | 60  | 70  | 80    | 90    | 100   | 120   | 146   | 200   | 240  | 282  |
|                                             |                |                  | m³/h 0       | 1,4 | 2,4 | 3,0 | 3,6 | 4,2 | 4,8   | 5,4   | 6,0   | 7,2   | 8,8   | 12,0  | 14,4 | 16,9 |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                |                  |              |     |     |     |     |     |       |       |       |       |       |       |      |      |
| 5SV03                                       | 2 x 0,55       | 0,70             | 22,8         |     |     |     |     |     | 21,8  | 21,6  | 21,3  | 20,7  | 19,7  | 16,9  | 14,1 | 10,3 |
| 5SV04                                       | 2 x 0,55       | 0,70             | 30,0         |     |     |     |     |     | 28,2  | 27,9  | 27,5  | 26,6  | 25,2  | 21,2  | 17,3 | 12,2 |
| 5SV05                                       | 2 x 0,75       | 0,70             | 38,0         |     |     |     |     |     | 36,4  | 36,0  | 35,5  | 34,5  | 32,9  | 28,2  | 23,5 | 17,1 |
| 5SV06                                       | 2 x 1,1        | 0,70             | 45,3         |     |     |     |     |     | 43,7  | 43,3  | 42,8  | 41,6  | 39,6  | 33,9  | 28,1 | 20,3 |
| 5SV07                                       | 2 x 1,1        | 0,70             | 52,7         |     |     |     |     |     | 50,7  | 50,1  | 49,5  | 48,1  | 45,8  | 39,1  | 32,2 | 23,1 |
| 5SV08                                       | 2 x 1,1        | 0,70             | 60,1         |     |     |     |     |     | 57,6  | 57,0  | 56,2  | 54,6  | 51,8  | 44,1  | 36,2 | 25,8 |
| 5SV09                                       | 2 x 1,5        | 0,70             | 68,0         |     |     |     |     |     | 65,5  | 64,8  | 64,0  | 62,2  | 59,3  | 50,6  | 41,9 | 30,2 |
| 5SV10                                       | 2 x 1,5        | 0,70             | 75,5         |     |     |     |     |     | 72,4  | 71,7  | 70,8  | 68,7  | 65,4  | 55,7  | 46,0 | 33,0 |
| 5SV11                                       | 2 x 1,5        | 0,70             | 82,8         |     |     |     |     |     | 79,3  | 78,4  | 77,5  | 75,2  | 71,4  | 60,7  | 49,9 | 35,6 |
| 5SV12                                       | 2 x 2,2        | 0,70             | 90,8         |     |     |     |     |     | 88,0  | 87,0  | 86,0  | 83,4  | 79,3  | 67,4  | 55,7 | 40,5 |
| 5SV13                                       | 2 x 2,2        | 0,70             | 98,3         |     |     |     |     |     | 95,0  | 94,0  | 92,8  | 90,0  | 85,5  | 72,6  | 59,9 | 43,5 |
| 5SV14                                       | 2 x 2,2        | 0,70             | 105,7        |     |     |     |     |     | 102,0 | 100,9 | 99,6  | 96,6  | 91,7  | 77,8  | 64,0 | 46,3 |
| 5SV15                                       | 2 x 2,2        | 0,70             | 113,1        |     |     |     |     |     | 109,0 | 107,8 | 106,4 | 103,1 | 97,8  | 82,8  | 68,1 | 49,1 |
| 5SV16                                       | 2 x 2,2        | 0,70             | 120,5        |     |     |     |     |     | 115,9 | 114,6 | 113,1 | 109,6 | 103,9 | 87,8  | 72,1 | 51,8 |
| 5SV18                                       | 2 x 3          | 0,70             | 135,8        |     |     |     |     |     | 131,1 | 129,7 | 128,0 | 124,1 | 117,8 | 99,9  | 82,3 | 59,5 |
| 5SV21                                       | 2 x 3          | 0,70             | 157,9        |     |     |     |     |     | 152,0 | 150,3 | 148,3 | 143,6 | 136,1 | 114,9 | 94,2 | 67,6 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_5sv-055-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/10SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |       |       |       |      |       |      |      |      |      |      |      |      |       |
|---------------------------------------------|--------------------------|------------------|--------------|-------|-------|-------|------|-------|------|------|------|------|------|------|------|-------|
|                                             |                          |                  | l/min 0      | 166,7 | 200   | 266   | 340  | 366,7 | 466  | 540  | 660  | 700  | 800  | 860  | 920  | 966,7 |
|                                             |                          |                  | m³/h 0       | 10,0  | 12,0  | 16,0  | 20,4 | 22,0  | 28,0 | 32,4 | 39,6 | 42,0 | 48,0 | 51,6 | 55,2 | 58,0  |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                          |                  |              |       |       |       |      |       |      |      |      |      |      |      |      |       |
| 10SV01                                      | 2 x 0,75                 | 0,70             | 11,8         | 11,2  | 10,9  | 9,9   | 8,3  | 7,6   | 4,3  |      |      |      |      |      |      |       |
| 10SV02                                      | 2 x 0,75                 | 0,70             | 23,6         | 21,9  | 21,3  | 19,6  | 17,0 | 15,8  | 10,0 |      |      |      |      |      |      |       |
| 10SV03                                      | 2 x 1,1                  | 0,70             | 35,7         | 33,0  | 32,1  | 29,6  | 25,8 | 24,1  | 16,0 |      |      |      |      |      |      |       |
| 10SV04                                      | 2 x 1,5                  | 0,70             | 47,7         | 44,2  | 43,0  | 39,9  | 34,8 | 32,6  | 21,7 |      |      |      |      |      |      |       |
| 10SV05                                      | 2 x 2,2                  | 0,70             | 60,0         | 56,1  | 54,7  | 50,9  | 44,9 | 42,2  | 29,0 |      |      |      |      |      |      |       |
| 10SV06                                      | 2 x 2,2                  | 0,70             | 71,8         | 66,8  | 65,0  | 60,4  | 53,1 | 49,8  | 33,9 |      |      |      |      |      |      |       |
| 10SV07                                      | 2 x 3                    | 0,70             | 83,6         | 78,3  | 76,2  | 70,8  | 62,1 | 58,3  | 39,8 |      |      |      |      |      |      |       |
| 10SV08                                      | 2 x 3                    | 0,70             | 95,3         | 88,9  | 86,5  | 80,1  | 70,2 | 65,7  | 44,5 |      |      |      |      |      |      |       |
| 10SV09                                      | 2 x 4                    | 0,70             | 106,3        | 100,1 | 97,5  | 90,8  | 80,0 | 75,1  | 52,1 |      |      |      |      |      |      |       |
| 10SV10                                      | 2 x 4                    | 0,70             | 118,0        | 110,8 | 107,9 | 100,3 | 88,2 | 82,8  | 57,2 |      |      |      |      |      |      |       |
| 10SV11                                      | 2 x 4                    | 0,70             | 129,6        | 121,3 | 118,1 | 109,6 | 96,3 | 90,3  | 62,1 |      |      |      |      |      |      |       |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_10sv-040-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/15SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER | MEI ≥<br><br>(1) | Q = DELIVERY |       |      |       |       |       |       |       |       |      |      |      |     |       |
|---------------------------------------------|----------------|------------------|--------------|-------|------|-------|-------|-------|-------|-------|-------|------|------|------|-----|-------|
|                                             |                |                  | l/min 0      | 166,7 | 200  | 266   | 340   | 366,7 | 466   | 540   | 660   | 700  | 800  | 860  | 920 | 966,7 |
|                                             | m³/h 0         | 10,0             | 12,0         | 16,0  | 20,4 | 22,0  | 28,0  | 32,4  | 39,6  | 42,0  | 48,0  | 51,6 | 55,2 | 58,0 |     |       |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                |                  |              |       |      |       |       |       |       |       |       |      |      |      |     |       |
| 15SV01                                      | 2 x 1,1        | 0,70             | 14,0         |       |      | 12,9  | 12,4  | 12,2  | 11,3  | 10,4  | 8,4   | 7,6  | 5,1  |      |     |       |
| 15SV02                                      | 2 x 2,2        | 0,70             | 28,7         |       |      | 26,7  | 25,9  | 25,5  | 23,9  | 22,4  | 18,9  | 17,4 | 13,1 |      |     |       |
| 15SV03                                      | 2 x 3          | 0,70             | 43,3         |       |      | 40,4  | 39,1  | 38,6  | 36,2  | 33,8  | 28,7  | 26,5 | 20,1 |      |     |       |
| 15SV04                                      | 2 x 4          | 0,70             | 58,4         |       |      | 54,7  | 53,1  | 52,5  | 49,4  | 46,3  | 39,7  | 36,9 | 28,7 |      |     |       |
| 15SV05                                      | 2 x 4          | 0,70             | 72,7         |       |      | 67,8  | 65,8  | 65,0  | 61,0  | 57,1  | 48,7  | 45,2 | 34,9 |      |     |       |
| 15SV06                                      | 2 x 5,5        | 0,70             | 87,6         |       |      | 81,5  | 79,4  | 78,4  | 74,1  | 69,9  | 60,3  | 56,3 | 44,2 |      |     |       |
| 15SV07                                      | 2 x 5,5        | 0,70             | 101,9        |       |      | 94,5  | 91,9  | 90,8  | 85,7  | 80,6  | 69,4  | 64,7 | 50,5 |      |     |       |
| 15SV08                                      | 2 x 7,5        | 0,70             | 117,4        |       |      | 110,9 | 108,0 | 106,8 | 100,8 | 94,9  | 82,0  | 76,7 | 60,6 |      |     |       |
| 15SV09                                      | 2 x 7,5        | 0,70             | 131,9        |       |      | 124,4 | 121,0 | 119,6 | 112,8 | 106,1 | 91,5  | 85,5 | 67,4 |      |     |       |
| 15SV10                                      | 2 x 11         | 0,70             | 147,7        |       |      | 138,8 | 135,3 | 133,8 | 126,7 | 119,6 | 103,9 | 97,4 | 77,5 |      |     |       |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_15sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/22SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥<br><br>(1) | Q = DELIVERY                                |       |      |      |      |       |       |       |       |       |       |      |      |       |
|--------------|----------------|------------------|---------------------------------------------|-------|------|------|------|-------|-------|-------|-------|-------|-------|------|------|-------|
|              |                |                  | l/min 0                                     | 166,7 | 200  | 266  | 340  | 366,7 | 466   | 540   | 660   | 700   | 800   | 860  | 920  | 966,7 |
|              |                |                  | m³/h 0                                      | 10,0  | 12,0 | 16,0 | 20,4 | 22,0  | 28,0  | 32,4  | 39,6  | 42,0  | 48,0  | 51,6 | 55,2 | 58,0  |
|              |                |                  | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |       |      |      |      |       |       |       |       |       |       |      |      |       |
| 22SV01       | 2 x 1,1        | 0,70             | 14,7                                        |       |      |      |      | 13,5  | 12,7  | 12,0  | 10,4  | 9,7   | 7,7   | 6,3  | 4,7  | 3,4   |
| 22SV02       | 2 x 2,2        | 0,70             | 30,4                                        |       |      |      |      | 28,4  | 27,2  | 26,0  | 23,3  | 22,2  | 18,9  | 16,6 | 13,8 | 11,5  |
| 22SV03       | 2 x 3          | 0,70             | 45,4                                        |       |      |      |      | 42,2  | 40,4  | 38,5  | 34,5  | 32,8  | 27,8  | 24,2 | 20,2 | 16,6  |
| 22SV04       | 2 x 4          | 0,70             | 60,9                                        |       |      |      |      | 56,8  | 54,4  | 51,9  | 46,6  | 44,4  | 37,9  | 33,1 | 27,7 | 23,0  |
| 22SV05       | 2 x 5,5        | 0,70             | 76,0                                        |       |      |      |      | 70,9  | 67,9  | 64,9  | 58,3  | 55,6  | 47,4  | 41,4 | 34,7 | 28,8  |
| 22SV06       | 2 x 7,5        | 0,70             | 93,2                                        |       |      |      |      | 88,8  | 85,7  | 82,5  | 75,4  | 72,4  | 63,3  | 56,7 | 49,1 | 42,6  |
| 22SV07       | 2 x 7,5        | 0,70             | 108,5                                       |       |      |      |      | 103,1 | 99,4  | 95,7  | 87,2  | 83,7  | 73,1  | 65,3 | 56,5 | 48,8  |
| 22SV08       | 2 x 11         | 0,70             | 124,6                                       |       |      |      |      | 119,2 | 115,2 | 111,0 | 101,6 | 97,7  | 85,7  | 77,0 | 66,9 | 58,2  |
| 22SV09       | 2 x 11         | 0,70             | 140,1                                       |       |      |      |      | 133,7 | 129,2 | 124,4 | 113,8 | 109,3 | 95,8  | 86,0 | 74,6 | 64,8  |
| 22SV10       | 2 x 11         | 0,70             | 155,4                                       |       |      |      |      | 148,2 | 143,1 | 137,8 | 125,9 | 120,9 | 105,8 | 94,8 | 82,3 | 71,3  |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_22sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/33SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER | MEI ≥ | Q = DELIVERY |       |      |     |     |      |      |      |      |      |      |
|---------------------------------------|----------------|-------|--------------|-------|------|-----|-----|------|------|------|------|------|------|
|                                       |                |       | l/min 0      | 500   | 600  | 733 | 833 | 1000 | 1167 | 1333 | 1500 | 1800 | 2000 |
|                                       | kW             | (1)   | m³/h 0       | 30    | 36   | 44  | 50  | 60   | 70   | 80   | 90   | 108  | 120  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                |       |              |       |      |     |     |      |      |      |      |      |      |
| 33SV1/1A                              | 2 x 2,2        | 0,70  | 17,4         | 16,2  | 15,7 | 15  | 14  | 12,2 | 9,8  | 6,7  |      |      |      |
| 33SV1                                 | 2 x 3          | 0,70  | 23,8         | 21,7  | 21,2 | 20  | 20  | 17,8 | 15,5 | 12,7 |      |      |      |
| 33SV2/2A                              | 2 x 4          | 0,70  | 35,1         | 34,1  | 33,3 | 32  | 30  | 27   | 22,4 | 16,6 |      |      |      |
| 33SV2/1A                              | 2 x 4          | 0,70  | 40,8         | 38,8  | 37,9 | 36  | 35  | 32   | 27,5 | 22,3 |      |      |      |
| 33SV2                                 | 2 x 5,5        | 0,70  | 47,8         | 45    | 44,1 | 43  | 41  | 39   | 35   | 29,9 |      |      |      |
| 33SV3/2A                              | 2 x 5,5        | 0,70  | 57,7         | 55,2  | 53,8 | 51  | 49  | 44   | 38   | 29,6 |      |      |      |
| 33SV3/1A                              | 2 x 7,5        | 0,70  | 64,5         | 61,3  | 60   | 58  | 56  | 51   | 45   | 37   |      |      |      |
| 33SV3                                 | 2 x 7,5        | 0,70  | 71,5         | 67,4  | 66,0 | 64  | 62  | 58   | 52,0 | 44,6 |      |      |      |
| 33SV4/2A                              | 2 x 7,5        | 0,70  | 82           | 78,8  | 77   | 74  | 72  | 66   | 58   | 47,2 |      |      |      |
| 33SV4/1A                              | 2 x 11         | 0,70  | 88,9         | 85    | 83   | 81  | 78  | 73   | 65   | 55,1 |      |      |      |
| 33SV4                                 | 2 x 11         | 0,70  | 95,9         | 91,1  | 90   | 87  | 85  | 80   | 73   | 63,1 |      |      |      |
| 33SV5/2A                              | 2 x 11         | 0,70  | 106          | 101,6 | 100  | 96  | 93  | 85   | 76   | 63   |      |      |      |
| 33SV5/1A                              | 2 x 11         | 0,70  | 112,7        | 107,2 | 105  | 102 | 99  | 92   | 82   | 70   |      |      |      |
| 33SV5                                 | 2 x 15         | 0,70  | 120,4        | 114,9 | 113  | 110 | 107 | 101  | 92   | 80,5 |      |      |      |
| 33SV6/2A                              | 2 x 15         | 0,70  | 131,2        | 126,9 | 125  | 120 | 116 | 108  | 96   | 81,2 |      |      |      |
| 33SV6/1A                              | 2 x 15         | 0,70  | 139,1        | 133,5 | 131  | 128 | 124 | 116  | 105  | 90,4 |      |      |      |
| 33SV6                                 | 2 x 15         | 0,70  | 145,6        | 139   | 137  | 133 | 129 | 121  | 110  | 96,1 |      |      |      |
| 33SV7/2A                              | 2 x 15         | 0,70  | 156          | 149,9 | 147  | 143 | 138 | 128  | 115  | 98,2 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_33sv-2p50-en\_a\_th

The table refers to performance with 2 pumps running.

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

GHV.../SV

## GHV20/46SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |     |     |       |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|-----|-----|-------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 500 | 600 | 733   | 833  | 1000 | 1167 | 1333 | 1500 | 1800 | 2000 |
|                                       |                          |                  | m³/h 0       | 30  | 36  | 44    | 50   | 60   | 70   | 80   | 90   | 108  | 120  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |     |     |       |      |      |      |      |      |      |      |
| 46SV1/1A                              | 2 x 3                    | 0,70             | 19,5         |     |     | 19    | 18,8 | 17,9 | 16,7 | 15,1 | 13,1 | 8,5  | 4,6  |
| 46SV1                                 | 2 x 4                    | 0,70             | 27,2         |     |     | 24,0  | 23,5 | 22,5 | 21,4 | 19,9 | 18,2 | 14,3 | 10,8 |
| 46SV2/2A                              | 2 x 5,5                  | 0,70             | 38,8         |     |     | 39,8  | 39,2 | 37,8 | 35,7 | 32,9 | 29,4 | 21,1 | 13,9 |
| 46SV2                                 | 2 x 7,5                  | 0,70             | 52,6         |     |     | 48,5  | 48   | 46   | 44   | 42   | 39   | 31,4 | 25,1 |
| 46SV3/2A                              | 2 x 11                   | 0,70             | 64,7         |     |     | 65,1  | 64   | 62   | 60   | 56   | 52   | 40   | 30,8 |
| 46SV3                                 | 2 x 11                   | 0,70             | 80,8         |     |     | 74,3  | 73   | 71   | 68   | 65   | 60   | 50   | 40,7 |
| 46SV4/2A                              | 2 x 15                   | 0,70             | 92,4         |     |     | 90,7  | 90   | 87   | 83   | 79   | 73   | 58   | 45,6 |
| 46SV4                                 | 2 x 15                   | 0,70             | 107,3        |     |     | 99,8  | 98   | 96   | 92   | 87   | 82   | 68   | 55,9 |
| 46SV5/2A                              | 2 x 18,5                 | 0,70             | 117,2        |     |     | 114,8 | 113  | 110  | 106  | 100  | 93   | 75   | 60,2 |
| 46SV5                                 | 2 x 18,5                 | 0,70             | 134,5        |     |     | 125,1 | 123  | 120  | 116  | 110  | 103  | 86   | 71,5 |
| 46SV6/2A                              | 2 x 22                   | 0,70             | 144          |     |     | 139,3 | 138  | 134  | 129  | 122  | 113  | 92   | 73   |
| 46SV6                                 | 2 x 22                   | 0,70             | 161          |     |     | 149,9 | 148  | 144  | 139  | 132  | 124  | 104  | 86   |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_46sv-2p50-en\_a\_th

The table refers to performance with 2 pumps running.

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

## GHV20/66SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |       |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|-------|------|------|------|------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 1000  | 1200 | 1400 | 1500 | 1800 | 2000 | 2400 | 2600 | 2833 | 3200 | 3600 | 4000 |
|                                       |                          |                  | m³/h 0       | 60    | 72   | 84   | 90   | 108  | 120  | 144  | 156  | 170  | 192  | 216  | 240  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |       |      |      |      |      |      |      |      |      |      |      |      |
| 66SV1/1A                              | 2 x 4                    | 0,70             | 23,8         | 21,4  | 20,7 | 19,9 | 19,4 | 17,8 | 16,6 | 13,3 | 11,2 | 8,3  |      |      |      |
| 66SV1                                 | 2 x 5,5                  | 0,70             | 29,2         | 25,8  | 24,8 | 23,8 | 23,3 | 21,8 | 20,7 | 17,9 | 16,1 | 13,5 |      |      |      |
| 66SV2/2A                              | 2 x 7,5                  | 0,70             | 47,5         | 42,6  | 41,2 | 39,5 | 38,6 | 36   | 32,9 | 26,4 | 22,2 | 16,4 |      |      |      |
| 66SV2/1A                              | 2 x 11                   | 0,70             | 54,2         | 49,6  | 48,2 | 46,7 | 45,8 | 42,9 | 40,6 | 34,8 | 31,2 | 26,2 |      |      |      |
| 66SV2                                 | 2 x 11                   | 0,70             | 60,4         | 55,7  | 54,4 | 52,8 | 52   | 49,3 | 47,1 | 42   | 38,9 | 34,7 |      |      |      |
| 66SV3/2A                              | 2 x 15                   | 0,70             | 78,4         | 71,6  | 70   | 67   | 66   | 62   | 58   | 49   | 43,3 | 35,3 |      |      |      |
| 66SV3/1A                              | 2 x 15                   | 0,70             | 84,7         | 77,8  | 76   | 74   | 72   | 68   | 65   | 56   | 51   | 44,0 |      |      |      |
| 66SV3                                 | 2 x 18,5                 | 0,70             | 91,4         | 84,7  | 83   | 81   | 79   | 75   | 72   | 64   | 60   | 53,5 |      |      |      |
| 66SV4/2A                              | 2 x 18,5                 | 0,70             | 108,9        | 99,6  | 97   | 94   | 92   | 86   | 82   | 70   | 63   | 52,8 |      |      |      |
| 66SV4/1A                              | 2 x 22                   | 0,70             | 115,2        | 105,9 | 103  | 100  | 99   | 93   | 89   | 78   | 71   | 61,8 |      |      |      |
| 66SV4                                 | 2 x 22                   | 0,70             | 121,6        | 112,5 | 110  | 107  | 105  | 100  | 96   | 86   | 79   | 70,8 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_66sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/92SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|--------------------------|------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|              |                          |                  | l/min 0                               | 1000 | 1200 | 1400 | 1500 | 1800 | 2000 | 2400 | 2600 | 2833 | 3200 | 3600 | 4000 |
|              |                          |                  | m³/h 0                                | 60   | 72   | 84   | 90   | 108  | 120  | 144  | 156  | 170  | 192  | 216  | 240  |
|              |                          |                  | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |
| 92SV1/1A     | 2 x 5,5                  | 0,60             | 24,5                                  |      |      |      | 22,2 | 21,5 | 20,9 | 19,4 | 18,5 | 17,3 | 15,0 | 11,8 | 7,9  |
| 92SV1        | 2 x 7,5                  | 0,60             | 33,5                                  |      |      |      | 28,7 | 27,2 | 26,2 | 24,3 | 23,3 | 22,2 | 20,2 | 17,6 | 14,3 |
| 92SV2/2A     | 2 x 11                   | 0,60             | 49,4                                  |      |      |      | 45,1 | 44   | 42,5 | 39,6 | 37,9 | 35,5 | 30,9 | 24,6 | 16,8 |
| 92SV2        | 2 x 15                   | 0,60             | 67,8                                  |      |      |      | 58,2 | 55,3 | 53,4 | 49,5 | 47,6 | 45,2 | 41,4 | 36,3 | 29,6 |
| 92SV3/2A     | 2 x 18,5                 | 0,60             | 82,4                                  |      |      |      | 74   | 71,6 | 69,6 | 65   | 62,1 | 58,6 | 52,2 | 43,6 | 32,9 |
| 92SV3        | 2 x 22                   | 0,60             | 102,2                                 |      |      |      | 88   | 84   | 81   | 76   | 72,6 | 69,2 | 63,4 | 55,9 | 46,3 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_92sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV20/125SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER<br><br>kW | MEI ≥ | Q = DELIVERY                                |      |      |      |      |      |      |      |      |      |      |      |
|--------------|--------------------------|-------|---------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|              |                          |       | l/min 0                                     | 1500 | 1800 | 2000 | 2400 | 2832 | 3400 | 3800 | 4000 | 4300 | 4600 | 2666 |
|              |                          |       | m³/h 0                                      | 90   | 108  | 120  | 144  | 170  | 204  | 228  | 240  | 258  | 276  | 320  |
|              |                          |       | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |
| 125SV1       | 2 x 7,5                  | -     | 27,6                                        |      |      | 20,8 | 19,8 | 18,6 | 16,8 | 15,3 | 14,4 | 12,9 | 11,3 | 6,2  |
| 125SV2       | 2 x 15                   | -     | 53,8                                        |      |      | 44,4 | 42,5 | 40,4 | 37,1 | 34,4 | 32,9 | 30,4 | 27,7 | 19,6 |
| 125SV3       | 2 x 22                   | -     | 80,7                                        |      |      | 66,5 | 63,8 | 60,6 | 55,7 | 51,6 | 49,4 | 45,7 | 41,5 | 29,4 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

2p\_125sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 2 pumps running.

## GHV30/5SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |     |     |     |     |     |       |       |       |       |       |       |      |      |
|---------------------------------------------|--------------------------|------------------|--------------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|------|------|
|                                             |                          |                  | l/min 0      | 36  | 60  | 75  | 90  | 105 | 120   | 135   | 150   | 180   | 219   | 300   | 360  | 423  |
|                                             |                          |                  | m³/h 0       | 2,2 | 3,6 | 4,5 | 5,4 | 6,3 | 7,2   | 8,1   | 9,0   | 10,8  | 13,1  | 18,0  | 21,6 | 25,4 |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                          |                  |              |     |     |     |     |     |       |       |       |       |       |       |      |      |
| 5SV03                                       | 3 x 0,55                 | 0,70             | 22,8         |     |     |     |     |     | 21,8  | 21,6  | 21,3  | 20,7  | 19,7  | 16,9  | 14,1 | 10,3 |
| 5SV04                                       | 3 x 0,55                 | 0,70             | 30,0         |     |     |     |     |     | 28,2  | 27,9  | 27,5  | 26,6  | 25,2  | 21,2  | 17,3 | 12,2 |
| 5SV05                                       | 3 x 0,75                 | 0,70             | 38,0         |     |     |     |     |     | 36,4  | 36,0  | 35,5  | 34,5  | 32,9  | 28,2  | 23,5 | 17,1 |
| 5SV06                                       | 3 x 1,1                  | 0,70             | 45,3         |     |     |     |     |     | 43,7  | 43,3  | 42,8  | 41,6  | 39,6  | 33,9  | 28,1 | 20,3 |
| 5SV07                                       | 3 x 1,1                  | 0,70             | 52,7         |     |     |     |     |     | 50,7  | 50,1  | 49,5  | 48,1  | 45,8  | 39,1  | 32,2 | 23,1 |
| 5SV08                                       | 3 x 1,1                  | 0,70             | 60,1         |     |     |     |     |     | 57,6  | 57,0  | 56,2  | 54,6  | 51,8  | 44,1  | 36,2 | 25,8 |
| 5SV09                                       | 3 x 1,5                  | 0,70             | 68,0         |     |     |     |     |     | 65,5  | 64,8  | 64,0  | 62,2  | 59,3  | 50,6  | 41,9 | 30,2 |
| 5SV10                                       | 3 x 1,5                  | 0,70             | 75,5         |     |     |     |     |     | 72,4  | 71,7  | 70,8  | 68,7  | 65,4  | 55,7  | 46,0 | 33,0 |
| 5SV11                                       | 3 x 1,5                  | 0,70             | 82,8         |     |     |     |     |     | 79,3  | 78,4  | 77,5  | 75,2  | 71,4  | 60,7  | 49,9 | 35,6 |
| 5SV12                                       | 3 x 2,2                  | 0,70             | 90,8         |     |     |     |     |     | 88,0  | 87,0  | 86,0  | 83,4  | 79,3  | 67,4  | 55,7 | 40,5 |
| 5SV13                                       | 3 x 2,2                  | 0,70             | 98,3         |     |     |     |     |     | 95,0  | 94,0  | 92,8  | 90,0  | 85,5  | 72,6  | 59,9 | 43,5 |
| 5SV14                                       | 3 x 2,2                  | 0,70             | 105,7        |     |     |     |     |     | 102,0 | 100,9 | 99,6  | 96,6  | 91,7  | 77,8  | 64,0 | 46,3 |
| 5SV15                                       | 3 x 2,2                  | 0,70             | 113,1        |     |     |     |     |     | 109,0 | 107,8 | 106,4 | 103,1 | 97,8  | 82,8  | 68,1 | 49,1 |
| 5SV16                                       | 3 x 2,2                  | 0,70             | 120,5        |     |     |     |     |     | 115,9 | 114,6 | 113,1 | 109,6 | 103,9 | 87,8  | 72,1 | 51,8 |
| 5SV18                                       | 3 x 3                    | 0,70             | 135,8        |     |     |     |     |     | 131,1 | 129,7 | 128,0 | 124,1 | 117,8 | 99,9  | 82,3 | 59,5 |
| 5SV21                                       | 3 x 3                    | 0,70             | 157,9        |     |     |     |     |     | 152,0 | 150,3 | 148,3 | 143,6 | 136,1 | 114,9 | 94,2 | 67,6 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_5sv-055-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 3 pumps running.

GHV.../SV

## GHV30/10SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER                              | MEI ≥<br><br>(1) | Q = DELIVERY |       |       |       |       |       |      |      |      |      |      |      |      |      |
|--------------|---------------------------------------------|------------------|--------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
|              |                                             |                  | l/min 0      | 250   | 300   | 399   | 510   | 550   | 699  | 810  | 990  | 1050 | 1200 | 1290 | 1380 | 1450 |
|              |                                             |                  | m³/h 0       | 15    | 18    | 23,9  | 30,6  | 33    | 41,9 | 48,6 | 59,4 | 63   | 72   | 77,4 | 82,8 | 87   |
|              | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                  |              |       |       |       |       |       |      |      |      |      |      |      |      |      |
| 10SV01       | 3 x 0,75                                    | 0,70             | 11,8         | 11,2  | 10,9  | 9,9   | 8,3   | 7,6   | 4,3  |      |      |      |      |      |      |      |
| 10SV02       | 3 x 0,75                                    | 0,70             | 23,6         | 21,9  | 21,3  | 19,6  | 17,0  | 15,8  | 10,0 |      |      |      |      |      |      |      |
| 10SV03       | 3 x 1,1                                     | 0,70             | 35,7         | 33,0  | 32,1  | 29,6  | 25,8  | 24,1  | 16,0 |      |      |      |      |      |      |      |
| 10SV04       | 3 x 1,5                                     | 0,70             | 47,7         | 44,2  | 43,0  | 39,9  | 34,8  | 32,6  | 21,7 |      |      |      |      |      |      |      |
| 10SV05       | 3 x 2,2                                     | 0,70             | 60,0         | 56,1  | 54,7  | 50,9  | 44,9  | 42,2  | 29,0 |      |      |      |      |      |      |      |
| 10SV06       | 3 x 2,2                                     | 0,70             | 71,8         | 66,8  | 65,0  | 60,4  | 53,1  | 49,8  | 33,9 |      |      |      |      |      |      |      |
| 10SV07       | 3 x 3                                       | 0,70             | 83,6         | 78,3  | 76,2  | 70,8  | 62,1  | 58,3  | 39,8 |      |      |      |      |      |      |      |
| 10SV08       | 3 x 3                                       | 0,70             | 95,3         | 88,9  | 86,5  | 80,1  | 70,2  | 65,7  | 44,5 |      |      |      |      |      |      |      |
| 10SV09       | 3 x 4                                       | 0,70             | 106,3        | 100,1 | 97,5  | 90,8  | 80,0  | 75,1  | 52,1 |      |      |      |      |      |      |      |
| 10SV10       | 3 x 4                                       | 0,70             | 118,0        | 110,8 | 107,9 | 100,3 | 88,2  | 82,8  | 57,2 |      |      |      |      |      |      |      |
| 10SV11       | 3 x 4                                       | 0,70             | 129,6        | 121,3 | 118,1 | 109,6 | 96,3  | 90,3  | 62,1 |      |      |      |      |      |      |      |
| 10SV13       | 3 x 5,5                                     | 0,70             | 156,0        | 146,5 | 142,7 | 132,6 | 116,4 | 109,2 | 74,3 |      |      |      |      |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_10sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV30/15SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥ | Q = DELIVERY                                |      |      |       |       |       |       |       |       |      |      |      |      |      |
|--------------|----------------|-------|---------------------------------------------|------|------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
|              |                |       | l/min 0                                     | 250  | 300  | 399   | 510   | 550   | 699   | 810   | 990   | 1050 | 1200 | 1290 | 1380 | 1450 |
|              | m³/h 0         | 15,0  | 18,0                                        | 23,9 | 30,6 | 33,0  | 41,9  | 48,6  | 59,4  | 63,0  | 72,0  | 77,4 | 82,8 | 87,0 |      |      |
|              | kW             | (1)   | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |      |      |       |       |       |       |       |       |      |      |      |      |      |
| 15SV01       | 3 x 1,1        | 0,70  | 14,0                                        |      |      | 12,9  | 12,4  | 12,2  | 11,3  | 10,4  | 8,4   | 7,6  | 5,1  |      |      |      |
| 15SV02       | 3 x 2,2        | 0,70  | 28,7                                        |      |      | 26,7  | 25,9  | 25,5  | 23,9  | 22,4  | 18,9  | 17,4 | 13,1 |      |      |      |
| 15SV03       | 3 x 3          | 0,70  | 43,3                                        |      |      | 40,4  | 39,1  | 38,6  | 36,2  | 33,8  | 28,7  | 26,5 | 20,1 |      |      |      |
| 15SV04       | 3 x 4          | 0,70  | 58,4                                        |      |      | 54,7  | 53,1  | 52,5  | 49,4  | 46,3  | 39,7  | 36,9 | 28,7 |      |      |      |
| 15SV05       | 3 x 4          | 0,70  | 72,7                                        |      |      | 67,8  | 65,8  | 65,0  | 61,0  | 57,1  | 48,7  | 45,2 | 34,9 |      |      |      |
| 15SV06       | 3 x 5,5        | 0,70  | 87,6                                        |      |      | 81,5  | 79,4  | 78,4  | 74,1  | 69,9  | 60,3  | 56,3 | 44,2 |      |      |      |
| 15SV07       | 3 x 5,5        | 0,70  | 101,9                                       |      |      | 94,5  | 91,9  | 90,8  | 85,7  | 80,6  | 69,4  | 64,7 | 50,5 |      |      |      |
| 15SV08       | 3 x 7,5        | 0,70  | 117,4                                       |      |      | 110,9 | 108,0 | 106,8 | 100,8 | 94,9  | 82,0  | 76,7 | 60,6 |      |      |      |
| 15SV09       | 3 x 7,5        | 0,70  | 131,9                                       |      |      | 124,4 | 121,0 | 119,6 | 112,8 | 106,1 | 91,5  | 85,5 | 67,4 |      |      |      |
| 15SV10       | 3 x 11         | 0,70  | 147,7                                       |      |      | 138,8 | 135,3 | 133,8 | 126,7 | 119,6 | 103,9 | 97,4 | 77,5 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_15sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV30/22SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER                              | MEI ≥<br><br>(1) | Q = DELIVERY |       |     |     |      |       |       |       |       |       |       |      |      |       |
|--------------|---------------------------------------------|------------------|--------------|-------|-----|-----|------|-------|-------|-------|-------|-------|-------|------|------|-------|
|              |                                             |                  | l/min 0      | 83,34 | 100 | 133 | 170  | 183,3 | 233   | 270   | 330   | 350   | 400   | 430  | 460  | 483,3 |
|              |                                             |                  | m³/h 0       | 5,0   | 6,0 | 8,0 | 10,2 | 11,0  | 14,0  | 16,2  | 19,8  | 21,0  | 24,0  | 25,8 | 27,6 | 29,0  |
|              | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                  |              |       |     |     |      |       |       |       |       |       |       |      |      |       |
| 22SV01       | 3 x 1,1                                     | 0,70             | 14,7         |       |     |     |      | 13,5  | 12,7  | 12,0  | 10,4  | 9,7   | 7,7   | 6,3  | 4,7  | 3,4   |
| 22SV02       | 3 x 2,2                                     | 0,70             | 30,4         |       |     |     |      | 28,4  | 27,2  | 26,0  | 23,3  | 22,2  | 18,9  | 16,6 | 13,8 | 11,5  |
| 22SV03       | 3 x 3                                       | 0,70             | 45,4         |       |     |     |      | 42,2  | 40,4  | 38,5  | 34,5  | 32,8  | 27,8  | 24,2 | 20,2 | 16,6  |
| 22SV04       | 3 x 4                                       | 0,70             | 60,9         |       |     |     |      | 56,8  | 54,4  | 51,9  | 46,6  | 44,4  | 37,9  | 33,1 | 27,7 | 23,0  |
| 22SV05       | 3 x 5,5                                     | 0,70             | 76,0         |       |     |     |      | 70,9  | 67,9  | 64,9  | 58,3  | 55,6  | 47,4  | 41,4 | 34,7 | 28,8  |
| 22SV06       | 3 x 7,5                                     | 0,70             | 93,2         |       |     |     |      | 88,8  | 85,7  | 82,5  | 75,4  | 72,4  | 63,3  | 56,7 | 49,1 | 42,6  |
| 22SV07       | 3 x 7,5                                     | 0,70             | 108,5        |       |     |     |      | 103,1 | 99,4  | 95,7  | 87,2  | 83,7  | 73,1  | 65,3 | 56,5 | 48,8  |
| 22SV08       | 3 x 11                                      | 0,70             | 124,6        |       |     |     |      | 119,2 | 115,2 | 111,0 | 101,6 | 97,7  | 85,7  | 77,0 | 66,9 | 58,2  |
| 22SV09       | 3 x 11                                      | 0,70             | 140,1        |       |     |     |      | 133,7 | 129,2 | 124,4 | 113,8 | 109,3 | 95,8  | 86,0 | 74,6 | 64,8  |
| 22SV10       | 3 x 11                                      | 0,70             | 155,4        |       |     |     |      | 148,2 | 143,1 | 137,8 | 125,9 | 120,9 | 105,8 | 94,8 | 82,3 | 71,3  |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_22sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV30/33SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |       |      |      |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|-------|------|------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 750   | 900  | 1100 | 1250 | 1500 | 1750 | 2000 | 2250 | 2700 | 3000 |
|                                       |                          |                  | m³/h 0       | 45    | 54   | 66   | 75   | 90   | 105  | 120  | 135  | 162  | 180  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |       |      |      |      |      |      |      |      |      |      |
| 33SV1/1A                              | 3 x 2,2                  | 0,70             | 17,4         | 16,2  | 15,7 | 15   | 14   | 12,2 | 9,8  | 6,7  |      |      |      |
| 33SV1                                 | 3 x 3                    | 0,70             | 23,8         | 21,7  | 21,2 | 20   | 20   | 17,8 | 15,5 | 12,7 |      |      |      |
| 33SV2/2A                              | 3 x 4                    | 0,70             | 35,1         | 34,1  | 33,3 | 32   | 30   | 27   | 22,4 | 16,6 |      |      |      |
| 33SV2/1A                              | 3 x 4                    | 0,70             | 40,8         | 38,8  | 37,9 | 36   | 35   | 32   | 27,5 | 22,3 |      |      |      |
| 33SV2                                 | 3 x 5,5                  | 0,70             | 47,8         | 45    | 44,1 | 43   | 41   | 39   | 35   | 29,9 |      |      |      |
| 33SV3/2A                              | 3 x 5,5                  | 0,70             | 57,7         | 55,2  | 53,8 | 51   | 49   | 44   | 38   | 29,6 |      |      |      |
| 33SV3/1A                              | 3 x 7,5                  | 0,70             | 64,5         | 61,3  | 60   | 58   | 56   | 51   | 45   | 37   |      |      |      |
| 33SV3                                 | 3 x 7,5                  | 0,70             | 71,5         | 67,4  | 66,0 | 64   | 62   | 58   | 52,0 | 44,6 |      |      |      |
| 33SV4/2A                              | 3 x 7,5                  | 0,70             | 82           | 78,8  | 77   | 74   | 72   | 66   | 58   | 47,2 |      |      |      |
| 33SV4/1A                              | 3 x 11                   | 0,70             | 88,9         | 85    | 83   | 81   | 78   | 73   | 65   | 55,1 |      |      |      |
| 33SV4                                 | 3 x 11                   | 0,70             | 95,9         | 91,1  | 90   | 87   | 85   | 80   | 73   | 63,1 |      |      |      |
| 33SV5/2A                              | 3 x 11                   | 0,70             | 106          | 101,6 | 100  | 96   | 93   | 85   | 76   | 63   |      |      |      |
| 33SV5/1A                              | 3 x 11                   | 0,70             | 112,7        | 107,2 | 105  | 102  | 99   | 92   | 82   | 70   |      |      |      |
| 33SV5                                 | 3 x 15                   | 0,70             | 120,4        | 114,9 | 113  | 110  | 107  | 101  | 92   | 80,5 |      |      |      |
| 33SV6/2A                              | 3 x 15                   | 0,70             | 131,2        | 126,9 | 125  | 120  | 116  | 108  | 96   | 81,2 |      |      |      |
| 33SV6/1A                              | 3 x 15                   | 0,70             | 139,1        | 133,5 | 131  | 128  | 124  | 116  | 105  | 90,4 |      |      |      |
| 33SV6                                 | 3 x 15                   | 0,70             | 145,6        | 139   | 137  | 133  | 129  | 121  | 110  | 96,1 |      |      |      |
| 33SV7/2A                              | 3 x 15                   | 0,70             | 156          | 149,9 | 147  | 143  | 138  | 128  | 115  | 98,2 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_33sv-2p50-en\_a\_th

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

The table refers to performance with 3 pumps running.



## GHV30/46SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |     |     |       |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|-----|-----|-------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 750 | 900 | 1100  | 1250 | 1500 | 1750 | 2000 | 2250 | 2700 | 3000 |
|                                       |                          |                  | m³/h 0       | 45  | 54  | 66    | 75   | 90   | 105  | 120  | 135  | 162  | 180  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |     |     |       |      |      |      |      |      |      |      |
| 46SV1/1A                              | 3 x 3                    | 0,70             | 19,5         |     |     | 19    | 18,8 | 17,9 | 16,7 | 15,1 | 13,1 | 8,5  | 4,6  |
| 46SV1                                 | 3 x 4                    | 0,70             | 27,2         |     |     | 24,0  | 23,5 | 22,5 | 21,4 | 19,9 | 18,2 | 14,3 | 10,8 |
| 46SV2/2A                              | 3 x 5,5                  | 0,70             | 38,8         |     |     | 39,8  | 39,2 | 37,8 | 35,7 | 32,9 | 29,4 | 21,1 | 13,9 |
| 46SV2                                 | 3 x 7,5                  | 0,70             | 52,6         |     |     | 48,5  | 48   | 46   | 44   | 42   | 39   | 31,4 | 25,1 |
| 46SV3/2A                              | 3 x 11                   | 0,70             | 64,7         |     |     | 65,1  | 64   | 62   | 60   | 56   | 52   | 40   | 30,8 |
| 46SV3                                 | 3 x 11                   | 0,70             | 80,8         |     |     | 74,3  | 73   | 71   | 68   | 65   | 60   | 50   | 40,7 |
| 46SV4/2A                              | 3 x 15                   | 0,70             | 92,4         |     |     | 90,7  | 90   | 87   | 83   | 79   | 73   | 58   | 45,6 |
| 46SV4                                 | 3 x 15                   | 0,70             | 107,3        |     |     | 99,8  | 98   | 96   | 92   | 87   | 82   | 68   | 55,9 |
| 46SV5/2A                              | 3 x 18,5                 | 0,70             | 117,2        |     |     | 114,8 | 113  | 110  | 106  | 100  | 93   | 75   | 60,2 |
| 46SV5                                 | 3 x 18,5                 | 0,70             | 134,5        |     |     | 125,1 | 123  | 120  | 116  | 110  | 103  | 86   | 71,5 |
| 46SV6/2A                              | 3 x 22                   | 0,70             | 144          |     |     | 139,3 | 138  | 134  | 129  | 122  | 113  | 92   | 73   |
| 46SV6                                 | 3 x 22                   | 0,70             | 161          |     |     | 149,9 | 148  | 144  | 139  | 132  | 124  | 104  | 86   |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_46sv-2p50-en\_a\_th

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

The table refers to performance with 3 pumps running.

GHV.../SV

## GHV30/66SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥<br><br>(1) | Q = DELIVERY                          |       |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|------------------|---------------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|
|              |                |                  | l/min 0                               | 1500  | 1800 | 2100 | 2250 | 2700 | 3000 | 3600 | 3900 | 4250 | 4800 | 5400 | 6000 |
|              | m³/h 0         | 90               | 108                                   | 126   | 135  | 162  | 180  | 216  | 234  | 255  | 288  | 324  | 360  |      |      |
| kW           |                |                  | H = TOTAL HEAD METRES COLUMN OF WATER |       |      |      |      |      |      |      |      |      |      |      |      |
| 66SV1/1A     | 3 x 4          | 0,70             | 23,8                                  | 21,4  | 20,7 | 19,9 | 19,4 | 17,8 | 16,6 | 13,3 | 11,2 | 8,3  |      |      |      |
| 66SV1        | 3 x 5,5        | 0,70             | 29,2                                  | 25,8  | 24,8 | 23,8 | 23,3 | 21,8 | 20,7 | 17,9 | 16,1 | 13,5 |      |      |      |
| 66SV2/2A     | 3 x 7,5        | 0,70             | 47,5                                  | 42,6  | 41,2 | 39,5 | 38,6 | 36   | 32,9 | 26,4 | 22,2 | 16,4 |      |      |      |
| 66SV2/1A     | 3 x 11         | 0,70             | 54,2                                  | 49,6  | 48,2 | 46,7 | 45,8 | 42,9 | 40,6 | 34,8 | 31,2 | 26,2 |      |      |      |
| 66SV2        | 3 x 11         | 0,70             | 60,4                                  | 55,7  | 54,4 | 52,8 | 52   | 49,3 | 47,1 | 42   | 38,9 | 34,7 |      |      |      |
| 66SV3/2A     | 3 x 15         | 0,70             | 78,4                                  | 71,6  | 70   | 67   | 66   | 62   | 58   | 49   | 43,3 | 35,3 |      |      |      |
| 66SV3/1A     | 3 x 15         | 0,70             | 84,7                                  | 77,8  | 76   | 74   | 72   | 68   | 65   | 56   | 51   | 44,0 |      |      |      |
| 66SV3        | 3 x 18,5       | 0,70             | 91,4                                  | 84,7  | 83   | 81   | 79   | 75   | 72   | 64   | 60   | 53,5 |      |      |      |
| 66SV4/2A     | 3 x 18,5       | 0,70             | 108,9                                 | 99,6  | 97   | 94   | 92   | 86   | 82   | 70   | 63   | 52,8 |      |      |      |
| 66SV4/1A     | 3 x 22         | 0,70             | 115,2                                 | 105,9 | 103  | 100  | 99   | 93   | 89   | 78   | 71   | 61,8 |      |      |      |
| 66SV4        | 3 x 22         | 0,70             | 121,6                                 | 112,5 | 110  | 107  | 105  | 100  | 96   | 86   | 79   | 70,8 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_66sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV30/92SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|--------------------------|------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|              |                          |                  | l/min 0                               | 1500 | 1800 | 2100 | 2250 | 2700 | 3000 | 3600 | 3900 | 4250 | 4800 | 5400 | 6000 |
|              |                          |                  | m³/h 0                                | 90   | 108  | 126  | 135  | 162  | 180  | 216  | 234  | 255  | 288  | 324  | 360  |
|              |                          |                  | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |
| 92SV1/1A     | 3 x 5,5                  | 0,60             | 24,5                                  |      |      |      | 22,2 | 21,5 | 20,9 | 19,4 | 18,5 | 17,3 | 15,0 | 11,8 | 7,9  |
| 92SV1        | 3 x 7,5                  | 0,60             | 33,5                                  |      |      |      | 28,7 | 27,2 | 26,2 | 24,3 | 23,3 | 22,2 | 20,2 | 17,6 | 14,3 |
| 92SV2/2A     | 3 x 11                   | 0,60             | 49,4                                  |      |      |      | 45,1 | 44   | 42,5 | 39,6 | 37,9 | 35,5 | 30,9 | 24,6 | 16,8 |
| 92SV2        | 3 x 15                   | 0,60             | 67,8                                  |      |      |      | 58,2 | 55,3 | 53,4 | 49,5 | 47,6 | 45,2 | 41,4 | 36,3 | 29,6 |
| 92SV3/2A     | 3 x 18,5                 | 0,60             | 82,4                                  |      |      |      | 74   | 71,6 | 69,6 | 65   | 62,1 | 58,6 | 52,2 | 43,6 | 32,9 |
| 92SV3        | 3 x 22                   | 0,60             | 102,2                                 |      |      |      | 88   | 84   | 81   | 76   | 72,6 | 69,2 | 63,4 | 55,9 | 46,3 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_92sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV30/125SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER<br><br>kW | MEI ≥ | Q = DELIVERY        |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------------|--------------------------|-------|---------------------|------|------|------|------|------|------|------|------|------|------|------|
|                                             |                          |       | l/min 0             | 2250 | 2700 | 3000 | 3600 | 4248 | 5100 | 5700 | 6000 | 6450 | 6900 | 2666 |
|                                             |                          |       | m <sup>3</sup> /h 0 | 135  | 162  | 180  | 216  | 255  | 306  | 342  | 360  | 387  | 414  | 480  |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                          |       |                     |      |      |      |      |      |      |      |      |      |      |      |
| 125SV1                                      | 3 x 7,5                  | -     | 27,6                |      |      | 20,8 | 19,8 | 18,6 | 16,8 | 15,3 | 14,4 | 12,9 | 11,3 | 6,2  |
| 125SV2                                      | 3 x 15                   | -     | 53,8                |      |      | 44,4 | 42,5 | 40,4 | 37,1 | 34,4 | 32,9 | 30,4 | 27,7 | 19,6 |
| 125SV3                                      | 3 x 22                   | -     | 80,7                |      |      | 66,5 | 63,8 | 60,6 | 55,7 | 51,6 | 49,4 | 45,7 | 41,5 | 29,4 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

3p\_125sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 3 pumps running.

## GHV40/10SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |       |       |       |       |       |      |      |      |      |      |       |       |       |
|---------------------------------------------|--------------------------|------------------|--------------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|
|                                             |                          |                  | l/min 0      | 333,4 | 400   | 532   | 680   | 733,4 | 932  | 1080 | 1320 | 1400 | 1600 | 1720  | 1840  | 1933  |
|                                             |                          |                  | m³/h 0       | 20,0  | 24,0  | 31,9  | 40,8  | 44,0  | 55,9 | 64,8 | 79,2 | 84,0 | 96,0 | 103,2 | 110,4 | 116,0 |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                          |                  |              |       |       |       |       |       |      |      |      |      |      |       |       |       |
| 10SV01                                      | 4 x 0,75                 | 0,70             | 11,8         | 11,2  | 10,9  | 9,9   | 8,3   | 7,6   | 4,3  |      |      |      |      |       |       |       |
| 10SV02                                      | 4 x 0,75                 | 0,70             | 23,6         | 21,9  | 21,3  | 19,6  | 17,0  | 15,8  | 10,0 |      |      |      |      |       |       |       |
| 10SV03                                      | 4 x 1,1                  | 0,70             | 35,7         | 33,0  | 32,1  | 29,6  | 25,8  | 24,1  | 16,0 |      |      |      |      |       |       |       |
| 10SV04                                      | 4 x 1,5                  | 0,70             | 47,7         | 44,2  | 43,0  | 39,9  | 34,8  | 32,6  | 21,7 |      |      |      |      |       |       |       |
| 10SV05                                      | 4 x 2,2                  | 0,70             | 60,0         | 56,1  | 54,7  | 50,9  | 44,9  | 42,2  | 29,0 |      |      |      |      |       |       |       |
| 10SV06                                      | 4 x 2,2                  | 0,70             | 71,8         | 66,8  | 65,0  | 60,4  | 53,1  | 49,8  | 33,9 |      |      |      |      |       |       |       |
| 10SV07                                      | 4 x 3                    | 0,70             | 83,6         | 78,3  | 76,2  | 70,8  | 62,1  | 58,3  | 39,8 |      |      |      |      |       |       |       |
| 10SV08                                      | 4 x 3                    | 0,70             | 95,3         | 88,9  | 86,5  | 80,1  | 70,2  | 65,7  | 44,5 |      |      |      |      |       |       |       |
| 10SV09                                      | 4 x 4                    | 0,70             | 106,3        | 100,1 | 97,5  | 90,8  | 80,0  | 75,1  | 52,1 |      |      |      |      |       |       |       |
| 10SV10                                      | 4 x 4                    | 0,70             | 118,0        | 110,8 | 107,9 | 100,3 | 88,2  | 82,8  | 57,2 |      |      |      |      |       |       |       |
| 10SV11                                      | 4 x 4                    | 0,70             | 129,6        | 121,3 | 118,1 | 109,6 | 96,3  | 90,3  | 62,1 |      |      |      |      |       |       |       |
| 10SV13                                      | 4 x 5,5                  | 0,70             | 156,0        | 146,5 | 142,7 | 132,6 | 116,4 | 109,2 | 74,3 |      |      |      |      |       |       |       |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_10sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 4 pumps running.

GHV.../SV

## GHV40/15SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥ | Q = DELIVERY                                |       |      |       |       |       |       |       |       |      |      |       |       |       |
|--------------|----------------|-------|---------------------------------------------|-------|------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|
|              |                |       | l/min 0                                     | 333,4 | 400  | 532   | 680   | 733,4 | 932   | 1080  | 1320  | 1400 | 1600 | 1720  | 1840  | 1933  |
|              |                |       | m³/h 0                                      | 20,0  | 24,0 | 31,9  | 40,8  | 44,0  | 55,9  | 64,8  | 79,2  | 84,0 | 96,0 | 103,2 | 110,4 | 116,0 |
|              | kW             | (1)   | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |       |      |       |       |       |       |       |       |      |      |       |       |       |
| 15SV01       | 4 x 1,1        | 0,70  | 14,0                                        |       |      | 12,9  | 12,4  | 12,2  | 11,3  | 10,4  | 8,4   | 7,6  | 5,1  |       |       |       |
| 15SV02       | 4 x 2,2        | 0,70  | 28,7                                        |       |      | 26,7  | 25,9  | 25,5  | 23,9  | 22,4  | 18,9  | 17,4 | 13,1 |       |       |       |
| 15SV03       | 4 x 3          | 0,70  | 43,3                                        |       |      | 40,4  | 39,1  | 38,6  | 36,2  | 33,8  | 28,7  | 26,5 | 20,1 |       |       |       |
| 15SV04       | 4 x 4          | 0,70  | 58,4                                        |       |      | 54,7  | 53,1  | 52,5  | 49,4  | 46,3  | 39,7  | 36,9 | 28,7 |       |       |       |
| 15SV05       | 4 x 4          | 0,70  | 72,7                                        |       |      | 67,8  | 65,8  | 65,0  | 61,0  | 57,1  | 48,7  | 45,2 | 34,9 |       |       |       |
| 15SV06       | 4 x 5,5        | 0,70  | 87,6                                        |       |      | 81,5  | 79,4  | 78,4  | 74,1  | 69,9  | 60,3  | 56,3 | 44,2 |       |       |       |
| 15SV07       | 4 x 5,5        | 0,70  | 101,9                                       |       |      | 94,5  | 91,9  | 90,8  | 85,7  | 80,6  | 69,4  | 64,7 | 50,5 |       |       |       |
| 15SV08       | 4 x 7,5        | 0,70  | 117,4                                       |       |      | 110,9 | 108,0 | 106,8 | 100,8 | 94,9  | 82,0  | 76,7 | 60,6 |       |       |       |
| 15SV09       | 4 x 7,5        | 0,70  | 131,9                                       |       |      | 124,4 | 121,0 | 119,6 | 112,8 | 106,1 | 91,5  | 85,5 | 67,4 |       |       |       |
| 15SV10       | 4 x 11         | 0,70  | 147,7                                       |       |      | 138,8 | 135,3 | 133,8 | 126,7 | 119,6 | 103,9 | 97,4 | 77,5 |       |       |       |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_15sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 4 pumps running.

## GHV40/22SV BOOSTER SETS SERIES

| PUMP<br>TYPE                                | RATED<br>POWER | MEI ≥ | Q = DELIVERY |       |     |     |      |       |       |       |       |       |       |      |      |       |
|---------------------------------------------|----------------|-------|--------------|-------|-----|-----|------|-------|-------|-------|-------|-------|-------|------|------|-------|
|                                             |                |       | l/min 0      | 83,34 | 100 | 133 | 170  | 183,3 | 233   | 270   | 330   | 350   | 400   | 430  | 460  | 483,3 |
|                                             | kW             | (1)   | m³/h 0       | 5,0   | 6,0 | 8,0 | 10,2 | 11,0  | 14,0  | 16,2  | 19,8  | 21,0  | 24,0  | 25,8 | 27,6 | 29,0  |
| H = TOTAL HEAD IN METRES OF COLUMN OF WATER |                |       |              |       |     |     |      |       |       |       |       |       |       |      |      |       |
| 22SV01                                      | 4 x 1,1        | 0,70  | 14,7         |       |     |     |      | 13,5  | 12,7  | 12,0  | 10,4  | 9,7   | 7,7   | 6,3  | 4,7  | 3,4   |
| 22SV02                                      | 4 x 2,2        | 0,70  | 30,4         |       |     |     |      | 28,4  | 27,2  | 26,0  | 23,3  | 22,2  | 18,9  | 16,6 | 13,8 | 11,5  |
| 22SV03                                      | 4 x 3          | 0,70  | 45,4         |       |     |     |      | 42,2  | 40,4  | 38,5  | 34,5  | 32,8  | 27,8  | 24,2 | 20,2 | 16,6  |
| 22SV04                                      | 4 x 4          | 0,70  | 60,9         |       |     |     |      | 56,8  | 54,4  | 51,9  | 46,6  | 44,4  | 37,9  | 33,1 | 27,7 | 23,0  |
| 22SV05                                      | 4 x 5,5        | 0,70  | 76,0         |       |     |     |      | 70,9  | 67,9  | 64,9  | 58,3  | 55,6  | 47,4  | 41,4 | 34,7 | 28,8  |
| 22SV06                                      | 4 x 7,5        | 0,70  | 93,2         |       |     |     |      | 88,8  | 85,7  | 82,5  | 75,4  | 72,4  | 63,3  | 56,7 | 49,1 | 42,6  |
| 22SV07                                      | 4 x 7,5        | 0,70  | 108,5        |       |     |     |      | 103,1 | 99,4  | 95,7  | 87,2  | 83,7  | 73,1  | 65,3 | 56,5 | 48,8  |
| 22SV08                                      | 4 x 11         | 0,70  | 124,6        |       |     |     |      | 119,2 | 115,2 | 111,0 | 101,6 | 97,7  | 85,7  | 77,0 | 66,9 | 58,2  |
| 22SV09                                      | 4 x 11         | 0,70  | 140,1        |       |     |     |      | 133,7 | 129,2 | 124,4 | 113,8 | 109,3 | 95,8  | 86,0 | 74,6 | 64,8  |
| 22SV10                                      | 4 x 11         | 0,70  | 155,4        |       |     |     |      | 148,2 | 143,1 | 137,8 | 125,9 | 120,9 | 105,8 | 94,8 | 82,3 | 71,3  |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_22sv-2p50-en\_a\_th

(1) Value referred to the F, T, R, N, V, C, K versions. P version excluded.

The table refers to performance with 4 pumps running.

## GHV40/33SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER | MEI ≥ | Q = DELIVERY |       |      |      |      |      |      |      |      |      |      |
|---------------------------------------|----------------|-------|--------------|-------|------|------|------|------|------|------|------|------|------|
|                                       |                |       | l/min 0      | 1000  | 1200 | 1467 | 1667 | 2000 | 2333 | 2667 | 3000 | 3600 | 4000 |
|                                       | kW             | (1)   | m³/h 0       | 60    | 72   | 88   | 100  | 120  | 140  | 160  | 180  | 216  | 240  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                |       |              |       |      |      |      |      |      |      |      |      |      |
| 33SV1/1A                              | 4 x 2,2        | 0,70  | 17,4         | 16,2  | 15,7 | 15   | 14   | 12,2 | 9,8  | 6,7  |      |      |      |
| 33SV1                                 | 4 x 3          | 0,70  | 23,8         | 21,7  | 21,2 | 20   | 20   | 17,8 | 15,5 | 12,7 |      |      |      |
| 33SV2/2A                              | 4 x 4          | 0,70  | 35,1         | 34,1  | 33,3 | 32   | 30   | 27   | 22,4 | 16,6 |      |      |      |
| 33SV2/1A                              | 4 x 4          | 0,70  | 40,8         | 38,8  | 37,9 | 36   | 35   | 32   | 27,5 | 22,3 |      |      |      |
| 33SV2                                 | 4 x 5,5        | 0,70  | 47,8         | 45    | 44,1 | 43   | 41   | 39   | 35   | 29,9 |      |      |      |
| 33SV3/2A                              | 4 x 5,5        | 0,70  | 57,7         | 55,2  | 53,8 | 51   | 49   | 44   | 38   | 29,6 |      |      |      |
| 33SV3/1A                              | 4 x 7,5        | 0,70  | 64,5         | 61,3  | 60   | 58   | 56   | 51   | 45   | 37   |      |      |      |
| 33SV3                                 | 4 x 7,5        | 0,70  | 71,5         | 67,4  | 66,0 | 64   | 62   | 58   | 52,0 | 44,6 |      |      |      |
| 33SV4/2A                              | 4 x 7,5        | 0,70  | 82           | 78,8  | 77   | 74   | 72   | 66   | 58   | 47,2 |      |      |      |
| 33SV4/1A                              | 4 x 11         | 0,70  | 88,9         | 85    | 83   | 81   | 78   | 73   | 65   | 55,1 |      |      |      |
| 33SV4                                 | 4 x 11         | 0,70  | 95,9         | 91,1  | 90   | 87   | 85   | 80   | 73   | 63,1 |      |      |      |
| 33SV5/2A                              | 4 x 11         | 0,70  | 106          | 101,6 | 100  | 96   | 93   | 85   | 76   | 63   |      |      |      |
| 33SV5/1A                              | 4 x 11         | 0,70  | 112,7        | 107,2 | 105  | 102  | 99   | 92   | 82   | 70   |      |      |      |
| 33SV5                                 | 4 x 15         | 0,70  | 120,4        | 114,9 | 113  | 110  | 107  | 101  | 92   | 80,5 |      |      |      |
| 33SV6/2A                              | 4 x 15         | 0,70  | 131,2        | 126,9 | 125  | 120  | 116  | 108  | 96   | 81,2 |      |      |      |
| 33SV6/1A                              | 4 x 15         | 0,70  | 139,1        | 133,5 | 131  | 128  | 124  | 116  | 105  | 90,4 |      |      |      |
| 33SV6                                 | 4 x 15         | 0,70  | 145,6        | 139   | 137  | 133  | 129  | 121  | 110  | 96,1 |      |      |      |
| 33SV7/2A                              | 4 x 15         | 0,70  | 156          | 149,9 | 147  | 143  | 138  | 128  | 115  | 98,2 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_33sv-2p50-en\_a\_th

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

The table refers to performance with 4 pumps running.

## GHV40/46SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |      |      |       |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|------|------|-------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 1000 | 1200 | 1467  | 1667 | 2000 | 2333 | 2667 | 3000 | 3600 | 4000 |
|                                       |                          |                  | m³/h 0       | 60   | 72   | 88    | 100  | 120  | 140  | 160  | 180  | 216  | 240  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |      |      |       |      |      |      |      |      |      |      |
| 46SV1/1A                              | 4 x 3                    | 0,70             | 19,5         |      |      | 19    | 18,8 | 17,9 | 16,7 | 15,1 | 13,1 | 8,5  | 4,6  |
| 46SV1                                 | 4 x 4                    | 0,70             | 27,2         |      |      | 24,0  | 23,5 | 22,5 | 21,4 | 19,9 | 18,2 | 14,3 | 10,8 |
| 46SV2/2A                              | 4 x 5,5                  | 0,70             | 38,8         |      |      | 39,8  | 39,2 | 37,8 | 35,7 | 32,9 | 29,4 | 21,1 | 13,9 |
| 46SV2                                 | 4 x 7,5                  | 0,70             | 52,6         |      |      | 48,5  | 48   | 46   | 44   | 42   | 39   | 31,4 | 25,1 |
| 46SV3/2A                              | 4 x 11                   | 0,70             | 64,7         |      |      | 65,1  | 64   | 62   | 60   | 56   | 52   | 40   | 30,8 |
| 46SV3                                 | 4 x 11                   | 0,70             | 80,8         |      |      | 74,3  | 73   | 71   | 68   | 65   | 60   | 50   | 40,7 |
| 46SV4/2A                              | 4 x 15                   | 0,70             | 92,4         |      |      | 90,7  | 90   | 87   | 83   | 79   | 73   | 58   | 45,6 |
| 46SV4                                 | 4 x 15                   | 0,70             | 107,3        |      |      | 99,8  | 98   | 96   | 92   | 87   | 82   | 68   | 55,9 |
| 46SV5/2A                              | 4 x 18,5                 | 0,70             | 117,2        |      |      | 114,8 | 113  | 110  | 106  | 100  | 93   | 75   | 60,2 |
| 46SV5                                 | 4 x 18,5                 | 0,70             | 134,5        |      |      | 125,1 | 123  | 120  | 116  | 110  | 103  | 86   | 71,5 |
| 46SV6/2A                              | 4 x 22                   | 0,70             | 144          |      |      | 139,3 | 138  | 134  | 129  | 122  | 113  | 92   | 73   |
| 46SV6                                 | 4 x 22                   | 0,70             | 161          |      |      | 149,9 | 148  | 144  | 139  | 132  | 124  | 104  | 86   |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_46sv-2p50-en\_a\_th

(1) Value referred to the G and N versions with PN ≤ 16 bar (1600 kPa). P version is excluded.

The table refers to performance with 4 pumps running.

## GHV40/66SV BOOSTER SETS SERIES

| PUMP<br>TYPE                          | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY |       |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------|--------------------------|------------------|--------------|-------|------|------|------|------|------|------|------|------|------|------|------|
|                                       |                          |                  | l/min 0      | 2000  | 2400 | 2800 | 3000 | 3600 | 4000 | 4800 | 5200 | 5667 | 6400 | 7200 | 8000 |
|                                       |                          |                  | m³/h 0       | 120   | 144  | 168  | 180  | 216  | 240  | 288  | 312  | 340  | 384  | 432  | 480  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                          |                  |              |       |      |      |      |      |      |      |      |      |      |      |      |
| 66SV1/1A                              | 4 x 4                    | 0,70             | 23,8         | 21,4  | 20,7 | 19,9 | 19,4 | 17,8 | 16,6 | 13,3 | 11,2 | 8,3  |      |      |      |
| 66SV1                                 | 4 x 5,5                  | 0,70             | 29,2         | 25,8  | 24,8 | 23,8 | 23,3 | 21,8 | 20,7 | 17,9 | 16,1 | 13,5 |      |      |      |
| 66SV2/2A                              | 4 x 7,5                  | 0,70             | 47,5         | 42,6  | 41,2 | 39,5 | 38,6 | 36   | 32,9 | 26,4 | 22,2 | 16,4 |      |      |      |
| 66SV2/1A                              | 4 x 11                   | 0,70             | 54,2         | 49,6  | 48,2 | 46,7 | 45,8 | 42,9 | 40,6 | 34,8 | 31,2 | 26,2 |      |      |      |
| 66SV2                                 | 4 x 11                   | 0,70             | 60,4         | 55,7  | 54,4 | 52,8 | 52   | 49,3 | 47,1 | 42   | 38,9 | 34,7 |      |      |      |
| 66SV3/2A                              | 4 x 15                   | 0,70             | 78,4         | 71,6  | 70   | 67   | 66   | 62   | 58   | 49   | 43,3 | 35,3 |      |      |      |
| 66SV3/1A                              | 4 x 15                   | 0,70             | 84,7         | 77,8  | 76   | 74   | 72   | 68   | 65   | 56   | 51   | 44,0 |      |      |      |
| 66SV3                                 | 4 x 18,5                 | 0,70             | 91,4         | 84,7  | 83   | 81   | 79   | 75   | 72   | 64   | 60   | 53,5 |      |      |      |
| 66SV4/2A                              | 4 x 18,5                 | 0,70             | 108,9        | 99,6  | 97   | 94   | 92   | 86   | 82   | 70   | 63   | 52,8 |      |      |      |
| 66SV4/1A                              | 4 x 22                   | 0,70             | 115,2        | 105,9 | 103  | 100  | 99   | 93   | 89   | 78   | 71   | 61,8 |      |      |      |
| 66SV4                                 | 4 x 22                   | 0,70             | 121,6        | 112,5 | 110  | 107  | 105  | 100  | 96   | 86   | 79   | 70,8 |      |      |      |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_66sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 4 pumps running.

GHV.../SV

## GHV40/92SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER<br><br>kW | MEI ≥<br><br>(1) | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|--------------------------|------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|              |                          |                  | l/min 0                               | 2000 | 2400 | 2800 | 3000 | 3600 | 4000 | 4800 | 5200 | 5667 | 6400 | 7200 | 8000 |
|              |                          |                  | m³/h 0                                | 120  | 144  | 168  | 180  | 216  | 240  | 288  | 312  | 340  | 384  | 432  | 480  |
|              |                          |                  | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |
| 92SV1/1A     | 4 x 5,5                  | 0,60             | 24,5                                  |      |      |      | 22,2 | 21,5 | 20,9 | 19,4 | 18,5 | 17,3 | 15,0 | 11,8 | 7,9  |
| 92SV1        | 4 x 7,5                  | 0,60             | 33,5                                  |      |      |      | 28,7 | 27,2 | 26,2 | 24,3 | 23,3 | 22,2 | 20,2 | 17,6 | 14,3 |
| 92SV2/2A     | 4 x 11                   | 0,60             | 49,4                                  |      |      |      | 45,1 | 44   | 42,5 | 39,6 | 37,9 | 35,5 | 30,9 | 24,6 | 16,8 |
| 92SV2        | 4 x 15                   | 0,60             | 67,8                                  |      |      |      | 58,2 | 55,3 | 53,4 | 49,5 | 47,6 | 45,2 | 41,4 | 36,3 | 29,6 |
| 92SV3/2A     | 4 x 18,5                 | 0,60             | 82,4                                  |      |      |      | 74   | 71,6 | 69,6 | 65   | 62,1 | 58,6 | 52,2 | 43,6 | 32,9 |
| 92SV3        | 4 x 22                   | 0,60             | 102,2                                 |      |      |      | 88   | 84   | 81   | 76   | 72,6 | 69,2 | 63,4 | 55,9 | 46,3 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_92sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 4 pumps running.

## GHV40/125SV BOOSTER SETS SERIES

| PUMP<br>TYPE | RATED<br>POWER | MEI ≥                                       | Q = DELIVERY |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|---------------------------------------------|--------------|------|------|------|------|------|------|------|------|------|------|------|
|              |                |                                             | l/min 0      | 3000 | 3600 | 4000 | 4800 | 5664 | 6800 | 7600 | 8000 | 8600 | 9200 | 2666 |
|              |                |                                             | m³/h 0       | 180  | 216  | 240  | 288  | 340  | 408  | 456  | 480  | 516  | 552  | 640  |
|              | kW             | H = TOTAL HEAD IN METRES OF COLUMN OF WATER |              |      |      |      |      |      |      |      |      |      |      |      |
| 125SV1       | 4 x 7,5        | -                                           | 27,6         |      |      | 20,8 | 19,8 | 18,6 | 16,8 | 15,3 | 14,4 | 12,9 | 11,3 | 6,2  |
| 125SV2       | 4 x 15         | -                                           | 53,8         |      |      | 44,4 | 42,5 | 40,4 | 37,1 | 34,4 | 32,9 | 30,4 | 27,7 | 19,6 |
| 125SV3       | 4 x 22         | -                                           | 80,7         |      |      | 66,5 | 63,8 | 60,6 | 55,7 | 51,6 | 49,4 | 45,7 | 41,5 | 29,4 |

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

4p\_125sv-220-2p50-en\_a\_th

(1) Value referred to the G, N versions. P version excluded.

The table refers to performance with 4 pumps running.

## GHV.../SV BOOSTER SETS SERIES

### ELECTRICAL DATA TABLE AT 50 Hz

GHV.../SV

| ELECTRIC<br>PUMP<br><br>TYPE | kW   | CURRENT ABSORBED<br>(A) |        |        |        |        |        |        |        |
|------------------------------|------|-------------------------|--------|--------|--------|--------|--------|--------|--------|
|                              |      | GHV10                   |        | GHV20  |        | GHV30  |        | GHV40  |        |
|                              |      | /2                      | /4     | /2     | /4     | /2     | /4     | /2     | /4     |
|                              |      | 1~230V                  | 3~400V | 1~230V | 3~400V | 1~230V | 3~400V | 1~230V | 3~400V |
| 1SV11                        | 0.55 | 2.9                     | 1.1    | -      | -      | -      | -      | -      | -      |
| 1SV15                        | 0.75 | 4.0                     | 1.4    | -      | -      | -      | -      | -      | -      |
| 1SV22                        | 1.1  | 5.8                     | 2.1    | -      | -      | -      | -      | -      | -      |
| 1SV25                        | 1.5  | 8.0                     | 2.8    | -      | -      | -      | -      | -      | -      |
| 3SV05                        | 0.55 | -                       | -      | 5.8    | 2.1    | -      | -      | -      | -      |
| 3SV06                        | 0.55 | 2.9                     | 1.1    | 5.8    | 2.1    | -      | -      | -      | -      |
| 3SV07                        | 0.75 | -                       | -      | 8.0    | 2.8    | -      | -      | -      | -      |
| 3SV08                        | 0.75 | 4.0                     | 1.4    | 8.0    | 2.8    | -      | -      | -      | -      |
| 3SV09                        | 1.1  | -                       | -      | 11.7   | 4.1    | -      | -      | -      | -      |
| 3SV10                        | 1.1  | -                       | -      | 11.7   | 4.1    | -      | -      | -      | -      |
| 3SV11                        | 1.1  | -                       | -      | 11.7   | 4.1    | -      | -      | -      | -      |
| 3SV12                        | 1.1  | 5.8                     | 2.1    | 11.7   | 4.1    | -      | -      | -      | -      |
| 3SV13                        | 1.5  | -                       | -      | 15.9   | 5.7    | -      | -      | -      | -      |
| 3SV14                        | 1.5  | -                       | -      | 15.9   | 5.7    | -      | -      | -      | -      |
| 3SV16                        | 1.5  | 8.0                     | 2.8    | 15.9   | 5.7    | -      | -      | -      | -      |
| 3SV19                        | 2.2  | -                       | -      | 23.4   | 8.3    | -      | -      | -      | -      |
| 3SV21                        | 2.2  | 11.7                    | 4.1    | 23.4   | 8.3    | -      | -      | -      | -      |
| 5SV03                        | 0.55 | -                       | -      | 5.8    | 2.1    | -      | 3.1    | -      | -      |
| 5SV04                        | 0.55 | 2.9                     | 1.1    | 5.8    | 2.1    | -      | 3.1    | -      | -      |
| 5SV05                        | 0.75 | 4.0                     | 1.4    | 8.0    | 2.8    | -      | 4.2    | -      | -      |
| 5SV06                        | 1.1  | -                       | -      | 11.7   | 4.1    | -      | 6.2    | -      | -      |
| 5SV07                        | 1.1  | -                       | -      | 11.7   | 4.1    | -      | 6.2    | -      | -      |
| 5SV08                        | 1.1  | 5.8                     | 2.1    | 11.7   | 4.1    | -      | 6.2    | -      | -      |
| 5SV09                        | 1.5  | -                       | -      | 15.9   | 5.7    | -      | 8.5    | -      | -      |
| 5SV10                        | 1.5  | -                       | -      | 15.9   | 5.7    | -      | 8.5    | -      | -      |
| 5SV11                        | 1.5  | 8.0                     | 2.8    | 15.9   | 5.7    | -      | 8.5    | -      | -      |
| 5SV12                        | 2.2  | -                       | -      | 23.4   | 8.3    | -      | 12.4   | -      | -      |
| 5SV13                        | 2.2  | -                       | -      | 23.4   | 8.3    | -      | 12.4   | -      | -      |
| 5SV14                        | 2.2  | -                       | -      | 23.4   | 8.3    | -      | 12.4   | -      | -      |
| 5SV15                        | 2.2  | -                       | -      | 23.4   | 8.3    | -      | 12.4   | -      | -      |
| 5SV16                        | 2.2  | 11.7                    | 4.1    | 23.4   | 8.3    | -      | 12.4   | -      | -      |
| 5SV18                        | 3    | -                       | -      | -      | 11.2   | -      | 16.9   | -      | -      |
| 5SV21                        | 3    | -                       | 5.6    | -      | 11.2   | -      | 16.9   | -      | -      |

| ELECTRIC<br>PUMP<br><br>TYPE | kW   | CURRENT ABSORBED<br>(A) |        |        |        |        |        |        |        |
|------------------------------|------|-------------------------|--------|--------|--------|--------|--------|--------|--------|
|                              |      | GHV10                   |        | GHV20  |        | GHV30  |        | GHV40  |        |
|                              |      | /2                      | /4     | /2     | /4     | /2     | /4     | /2     | /4     |
|                              |      | 1~230V                  | 3~400V | 1~230V | 3~400V | 1~230V | 3~400V | 1~230V | 3~400V |
| 10SV01                       | 0.75 | -                       | -      | 8.0    | 2.8    | -      | 4.2    | -      | 21.3   |
| 10SV02                       | 0.75 | 4.0                     | 1.4    | 8.0    | 2.8    | -      | 4.2    | -      | 21.3   |
| 10SV03                       | 1.1  | 5.8                     | 2.1    | 11.7   | 4.1    | -      | 6.2    | -      | 8.3    |
| 10SV04                       | 1.5  | 8.0                     | 2.8    | 15.9   | 4.1    | -      | 8.5    | -      | 11.3   |
| 10SV05                       | 2.2  | -                       | -      | 23.4   | 8.3    | -      | 12.4   | -      | 16.6   |
| 10SV06                       | 2.2  | 11.7                    | 4.1    | 23.4   | 8.3    | -      | 12.4   | -      | 16.6   |
| 10SV07                       | 3    | -                       | -      | -      | 11.2   | -      | 16.9   | -      | 22.5   |
| 10SV08                       | 3    | -                       | 5.6    | -      | 11.2   | -      | 16.9   | -      | 22.5   |
| 10SV09                       | 4    | -                       | -      | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 10SV10                       | 4    | -                       | -      | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 10SV11                       | 4    | -                       | 7.3    | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 10SV13                       | 5.5  | -                       | 10.1   | -      | -      | -      | 30.2   | -      | 40.3   |
| 15SV01                       | 1.1  | 5.8                     | 2.1    | -      | 4.1    | -      | 6.2    | -      | 8.3    |
| 15SV02                       | 2.2  | 11.7                    | 4.1    | -      | 8.3    | -      | 12.4   | -      | 16.6   |
| 15SV03                       | 3    | -                       | 5.6    | -      | 11.2   | -      | 16.9   | -      | 22.5   |
| 15SV04                       | 4    | -                       | -      | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 15SV05                       | 4    | -                       | 7.3    | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 15SV06                       | 5.5  | -                       | -      | -      | 20.1   | -      | 30.2   | -      | 40.3   |
| 15SV07                       | 5.5  | -                       | 10.1   | -      | 20.1   | -      | 30.2   | -      | 40.3   |
| 15SV08                       | 7.5  | -                       | -      | -      | 27.3   | -      | 41.0   | -      | 54.7   |
| 15SV09                       | 7.5  | -                       | 13.7   | -      | 27.3   | -      | 41.0   | -      | 54.7   |
| 15SV10                       | 11   | -                       | 19.4   | -      | 38.7   | -      | 58.1   | -      | 77.5   |
| 22SV01                       | 1.1  | 5.8                     | 2.1    | -      | 4.1    | -      | 6.2    | -      | 8.3    |
| 22SV02                       | 2.2  | 11.7                    | 4.1    | -      | 8.3    | -      | 12.4   | -      | 16.6   |
| 22SV03                       | 3    | -                       | 5.6    | -      | 11.2   | -      | 16.9   | -      | 22.5   |
| 22SV04                       | 4    | -                       | 7.3    | -      | 14.6   | -      | 21.9   | -      | 29.2   |
| 22SV05                       | 5.5  | -                       | 10.1   | -      | 20.1   | -      | 30.2   | -      | 40.3   |
| 22SV06                       | 7.5  | -                       | -      | -      | 27.3   | -      | 41.0   | -      | 54.7   |
| 22SV07                       | 7.5  | -                       | 13.7   | -      | 27.3   | -      | 41.0   | -      | 54.7   |
| 22SV08                       | 11   | -                       | -      | -      | 38.7   | -      | 58.1   | -      | 77.5   |
| 22SV09                       | 11   | -                       | -      | -      | 38.7   | -      | 58.1   | -      | 77.5   |
| 22SV10                       | 11   | -                       | 19.4   | -      | 38.7   | -      | 58.1   | -      | 77.5   |

GHV-1\_22SV-HVL-2p50-en\_a\_te

## GHV.../SV BOOSTER SETS SERIES

### ELECTRICAL DATA TABLE AT 50 Hz

| ELECTRIC<br>PUMP<br><br>TYPE | kW   | CURRENT ABSORBED<br>(A) |          |          |          |          |          |
|------------------------------|------|-------------------------|----------|----------|----------|----------|----------|
|                              |      | GHV20                   |          | GHV30    |          | GHV40    |          |
|                              |      | /2                      | /4       | /2       | /4       | /2       | /4       |
|                              |      | 1 ~ 230V                | 3 ~ 400V | 1 ~ 230V | 3 ~ 400V | 1 ~ 230V | 3 ~ 400V |
| 33SV1/1A                     | 2,2  | -                       | 8,3      | -        | 12,4     | -        | 16,6     |
| 33SV1                        | 3    | -                       | 11,2     | -        | 16,9     | -        | 22,5     |
| 33SV2/2A                     | 4    | -                       | 14,6     | -        | 21,9     | -        | 29,2     |
| 33SV2/1A                     | 4    | -                       | 14,6     | -        | 21,9     | -        | 29,2     |
| 33SV2                        | 5,5  | -                       | 20,1     | -        | 30,2     | -        | 41,4     |
| 33SV3/2A                     | 5,5  | -                       | 20,1     | -        | 30,2     | -        | 41,4     |
| 33SV3/1A                     | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 33SV3                        | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 33SV4/2A                     | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 33SV4/1A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 33SV4                        | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 33SV5/2A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 33SV5/1A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 33SV5                        | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 33SV6/2A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 33SV6/1A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 33SV6                        | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 33SV7/2A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 46SV1/1A                     | 3    | -                       | 11,2     | -        | 16,9     | -        | 22,5     |
| 46SV1                        | 4    | -                       | 14,6     | -        | 21,9     | -        | 29,2     |
| 46SV2/2A                     | 5,5  | -                       | 20,1     | -        | 30,2     | -        | 41,4     |
| 46SV2                        | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 46SV3/2A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 46SV3                        | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 46SV4/2A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 46SV4                        | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 46SV5/2A                     | 18,5 | -                       | 64,3     | -        | 96,4     | -        | 128,6    |
| 46SV5                        | 18,5 | -                       | 64,3     | -        | 96,4     | -        | 128,6    |
| 46SV6/2A                     | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |
| 46SV6                        | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |

GHV-33\_125SV-HVL-2p50-en\_a\_te

| ELECTRIC<br>PUMP<br><br>TYPE | kW   | CURRENT ABSORBED<br>(A) |          |          |          |          |          |
|------------------------------|------|-------------------------|----------|----------|----------|----------|----------|
|                              |      | GHV20                   |          | GHV30    |          | GHV40    |          |
|                              |      | /2                      | /4       | /2       | /4       | /2       | /4       |
|                              |      | 1 ~ 230V                | 3 ~ 400V | 1 ~ 230V | 3 ~ 400V | 1 ~ 230V | 3 ~ 400V |
| 66SV1/1A                     | 4    | -                       | 14,6     | -        | 21,9     | -        | 29,2     |
| 66SV1                        | 5,5  | -                       | 20,1     | -        | 30,2     | -        | 41,4     |
| 66SV2/2A                     | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 66SV2/1A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 66SV2                        | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 66SV3/2A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 66SV3/1A                     | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 66SV3                        | 18,5 | -                       | 64,3     | -        | 96,4     | -        | 128,6    |
| 66SV4/2A                     | 18,5 | -                       | 64,3     | -        | 96,4     | -        | 128,6    |
| 66SV4/1A                     | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |
| 66SV4                        | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |
| 92SV1/1A                     | 5,5  | -                       | 20,1     | -        | 30,2     | -        | 41,4     |
| 92SV1                        | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 92SV2/2A                     | 11   | -                       | 38,7     | -        | 58,1     | -        | 77,5     |
| 92SV2                        | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 92SV3/2A                     | 18,5 | -                       | 64,3     | -        | 96,4     | -        | 128,6    |
| 92SV3                        | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |
| 125SV1                       | 7,5  | -                       | 27,3     | -        | 41,0     | -        | 54,7     |
| 125SV2                       | 15   | -                       | 52,2     | -        | 78,3     | -        | 104,4    |
| 125SV3                       | 22   | -                       | 76,1     | -        | 114,2    | -        | 152,2    |

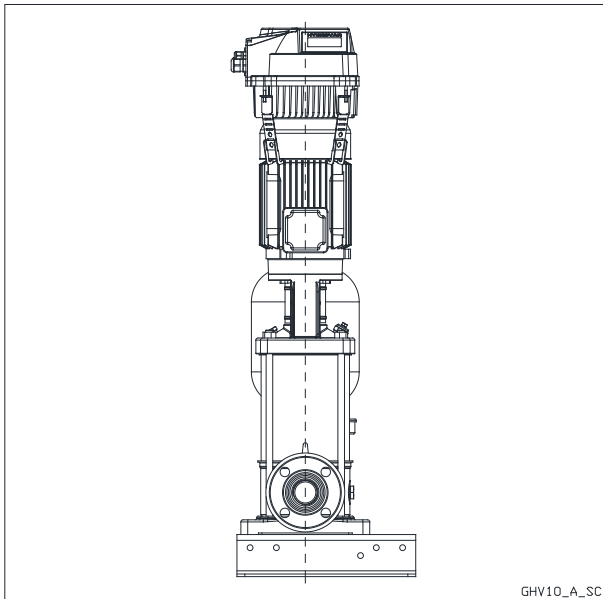
## Booster sets

## MARKET SECTORS RESIDENTIAL-CIVIL, INDUSTRIAL

### APPLICATIONS

- Water network supply in housing complexes, offices, hotels, shopping centres, industrial plants.
- Supply of water networks for agricultural applications (e.g. irrigation).

## GHV10 Series



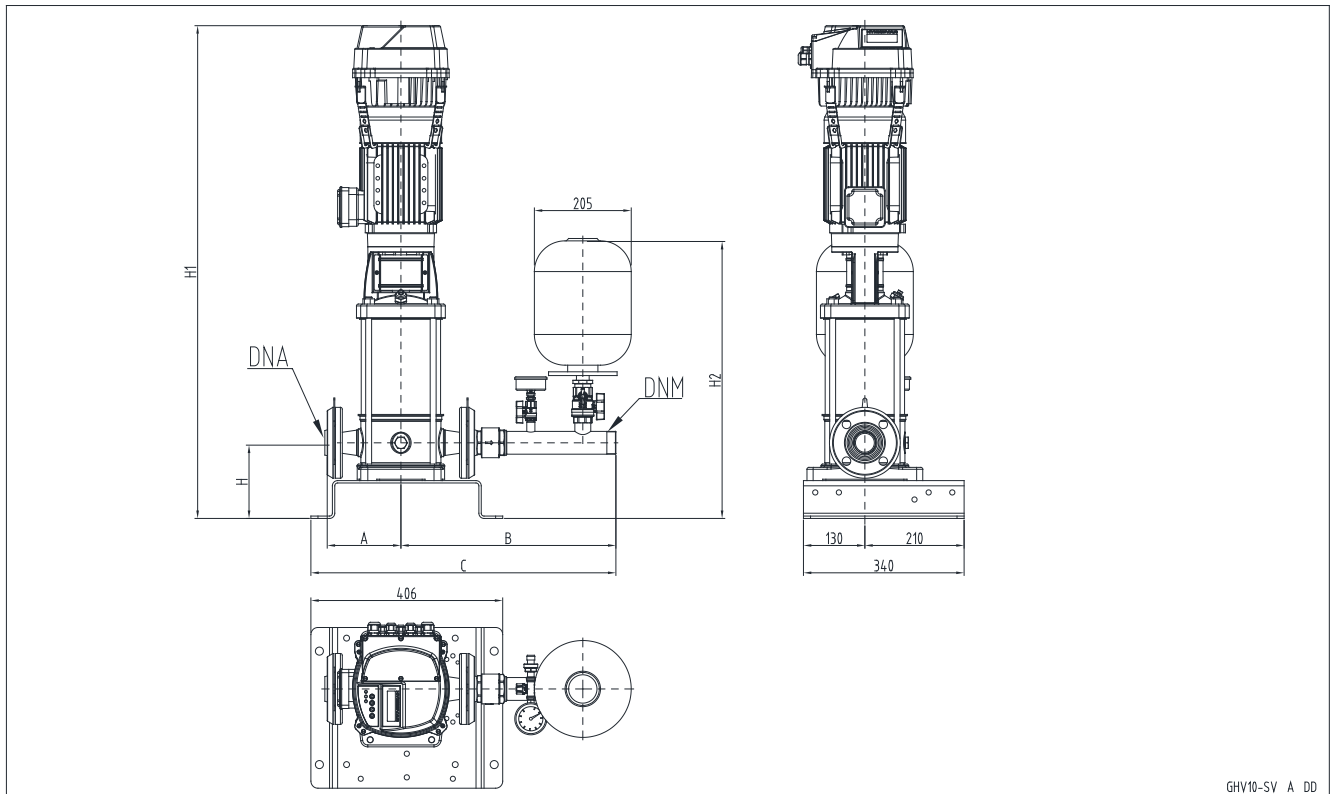
## SPECIFICATIONS

- **Flow rate**  
up to 29 m<sup>3</sup>/h.
- **Head**  
up to 160 m.
- **Frequency** 50Hz
- **e-SV™** vertical axis electric pump
- **HVL** series HYDROVAR®
- **Protection class IP55** for:
  - electrical pump motor
  - HVL converter
- Maximum operating **pressure**:  
16 bar.
- Maximum liquid **temperature**:  
max +80°C.
- Maximum electric pump **power**:  
1 x 11 kW.
- **Progressive** motor start.

**GHV series booster sets with e-SV are certified for use with drinking water.**



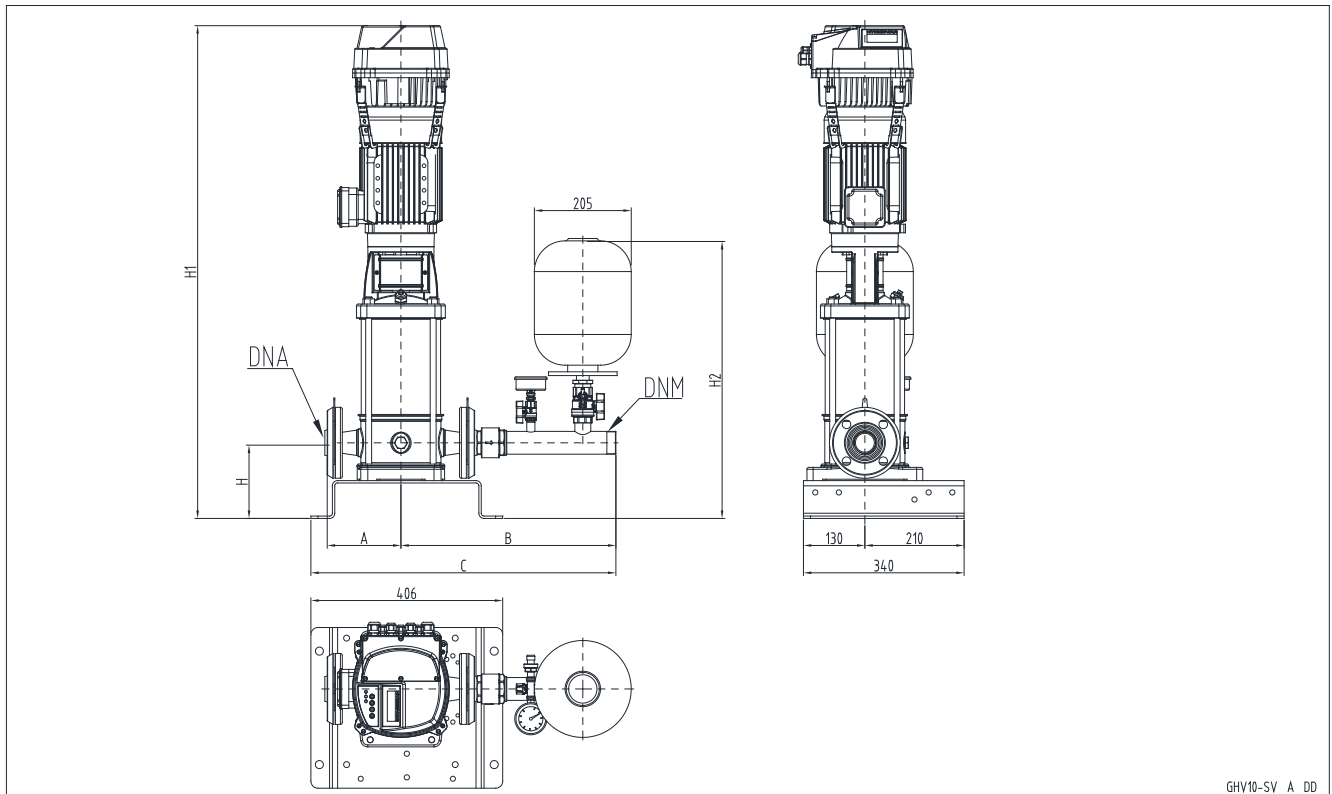
**SET OF 1 PUMP  
SINGLE-PHASE POWER SUPPLY (GHV10.../2)**



| GHV 10      | DNA     | DNM    | A   | B   | C   | H   | H1   | H2  |
|-------------|---------|--------|-----|-----|-----|-----|------|-----|
| 1SV11F055T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 919  | 568 |
| 1SV15F075T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1041 | 568 |
| 1SV22F011T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1181 | 568 |
| 1SV25F015T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1285 | 568 |
| 3SV06F055T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 819  | 568 |
| 3SV08F075T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 901  | 568 |
| 3SV12F011T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 981  | 568 |
| 3SV16F015T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1071 | 568 |
| 3SV21F022T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1206 | 568 |
| 5SV04F055T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 799  | 586 |
| 5SV05F075T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 866  | 586 |
| 5SV08F011T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 941  | 586 |
| 5SV11F015T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 1026 | 586 |
| 5SV16F022T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 1186 | 586 |
| 10SV02F075T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 870  | 594 |
| 10SV03F011T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 902  | 594 |
| 10SV04F015T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 944  | 594 |
| 10SV06F022T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 1043 | 594 |
| 15SV01F011T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 912  | 743 |
| 15SV02F022T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 957  | 743 |
| 22SV01F011T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 912  | 743 |
| 22SV02F022T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 956  | 743 |

ghv10-sv-mono\_a\_td

## SET OF 1 PUMP SINGLE-PHASE POWER SUPPLY (GHV10.../4)



GHV10-SV\_A\_DD

| GHV 10      | DNA     | DNM    | A   | B   | C   | H   | H1   | H2  |
|-------------|---------|--------|-----|-----|-----|-----|------|-----|
| 1SV11F055T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 919  | 568 |
| 1SV15F075T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1041 | 568 |
| 1SV22F011T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1181 | 568 |
| 1SV25F015T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1285 | 568 |
| 3SV06F055T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 819  | 568 |
| 3SV08F075T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 901  | 568 |
| 3SV12F011T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 981  | 568 |
| 3SV16F015T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1071 | 568 |
| 3SV21F022T  | Rp1"    | R1"    | 144 | 436 | 611 | 155 | 1206 | 568 |
| 5SV04F055T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 799  | 586 |
| 5SV05F075T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 866  | 586 |
| 5SV08F011T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 941  | 586 |
| 5SV11F015T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 1026 | 586 |
| 5SV16F022T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 1186 | 586 |
| 5SV21F030T  | Rp1"1/4 | R1"1/4 | 144 | 446 | 621 | 155 | 1321 | 586 |
| 10SV02F075T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 870  | 594 |
| 10SV03F011T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 902  | 594 |
| 10SV04F015T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 944  | 594 |
| 10SV06F022T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 1043 | 594 |
| 10SV08F030T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 1117 | 594 |
| 10SV11F040T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 1234 | 594 |
| 10SV13F055T | Rp1"1/2 | R1"1/2 | 162 | 455 | 630 | 160 | 1436 | 594 |
| 15SV01F011T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 912  | 743 |
| 15SV02F022T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 957  | 743 |
| 15SV03F030T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1015 | 743 |
| 15SV05F040T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1132 | 743 |
| 15SV07F055T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1366 | 743 |
| 15SV09F075T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1454 | 743 |
| 15SV10F110T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1592 | 743 |
| 22SV01F011T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 912  | 743 |
| 22SV02F022T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 956  | 743 |
| 22SV03F030T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1015 | 743 |
| 22SV04F040T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1084 | 743 |
| 22SV05F055T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1270 | 743 |
| 22SV07F075T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1358 | 743 |
| 22SV10F110T | Rp2"    | R2"    | 177 | 534 | 709 | 170 | 1593 | 743 |

ghv10-sv-tri\_a\_td

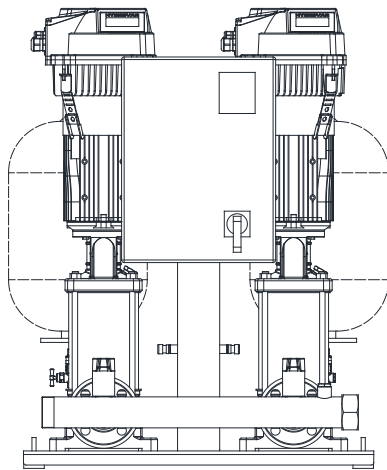
## Booster sets

**MARKET SECTORS**  
RESIDENTIAL-CIVIL, INDUSTRIAL

### APPLICATIONS

- Water network supply in housing complexes, offices, hotels, shopping centres, industrial plants.
- Supply of water networks for agricultural applications (e.g. irrigation).

## GHV20 Series



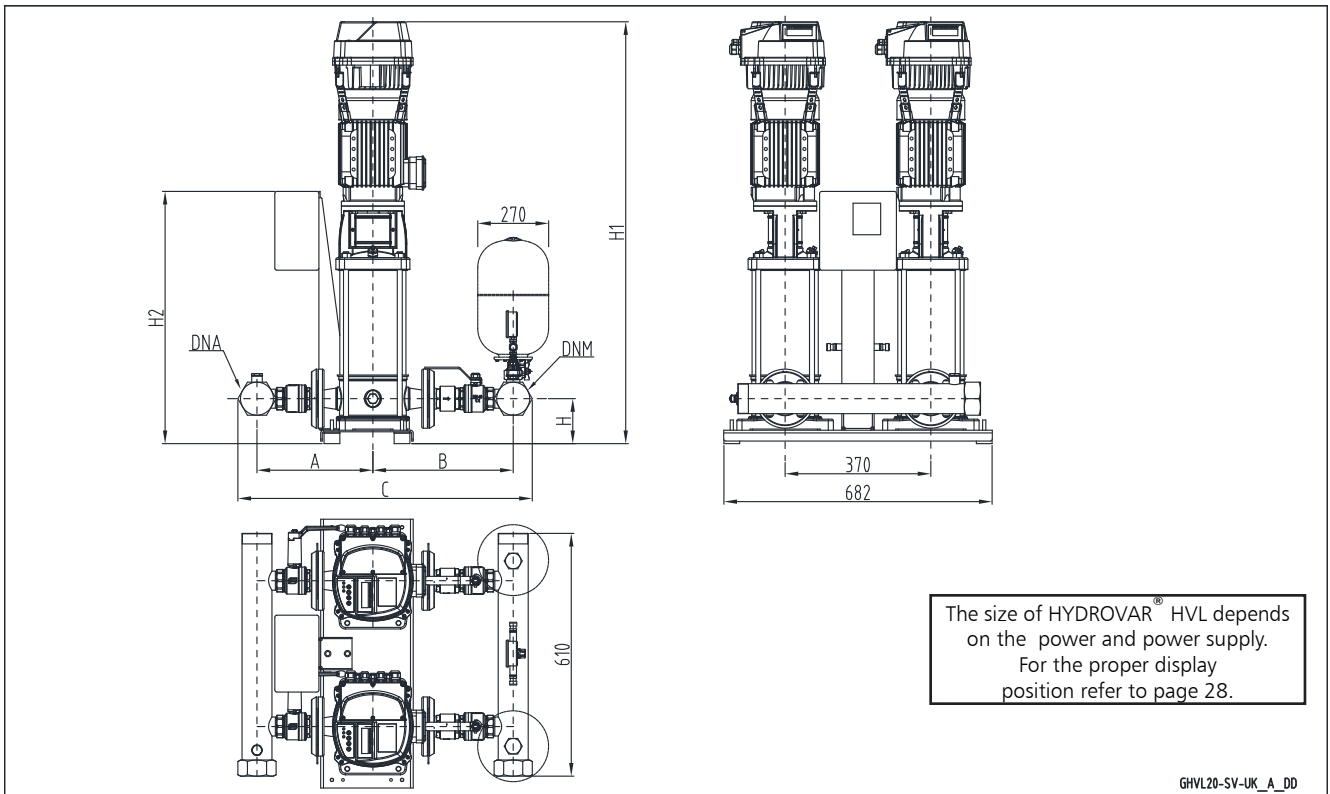
GHVL20-UK\_B\_SC

## SPECIFICATIONS

- **Flow rate**  
up to 320 m<sup>3</sup>/h.
- **Head**  
up to 160 m.
- Electrical panel **supply voltage**:
  - single-phase 1 x 230V  $\pm$  10% 50/60Hz (GHV.../2)
  - three-phase 3 x 400V  $\pm$  10% 50/60Hz (GHV.../4)
- **Frequency** 50Hz
- **e-SV™** vertical axis electric pump
- **HVL** series HYDROVAR®
- **Protection class IP55** for:
  - electrical control panel
  - electrical pump motor
  - HVL converter
- Maximum operating **pressure**:  
16 bar.
- Maximum liquid **temperature**:  
max +80°C.
- Maximum electric pump **power**:  
2 x 22 kW.
- **Progressive** motor start.

**GHV series booster sets with e-SV are certified for use with drinking water.**

## SET OF 2 PUMPS SINGLE-PHASE POWER SUPPLY (GHV20.../2)



GHV20

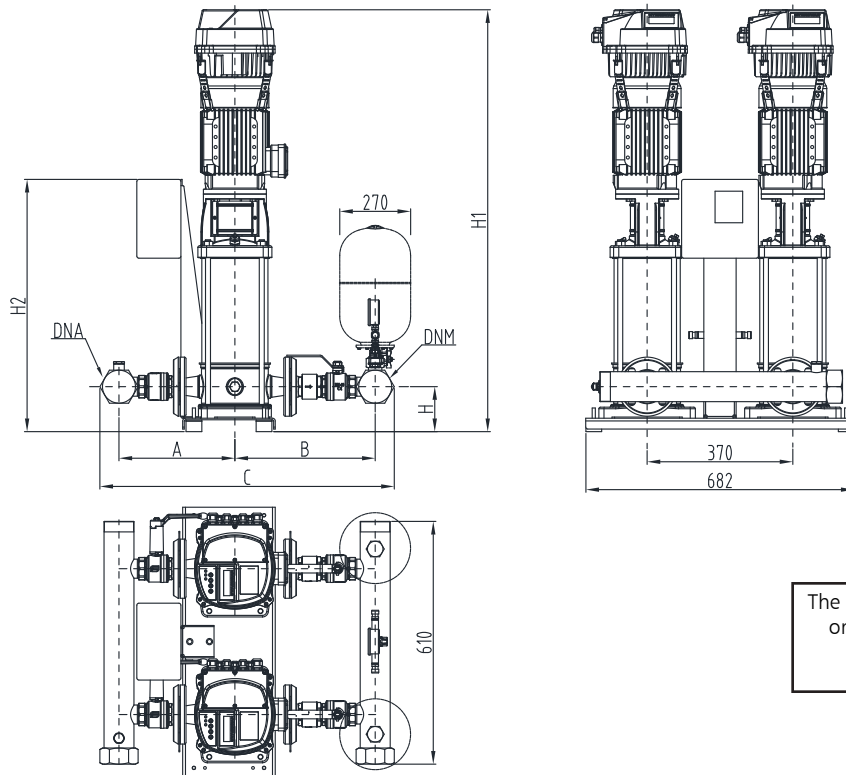
| GHV 20      | DNA     | DNM     | A   |      | B   |      | C   |      | H   | H1   | H2  |
|-------------|---------|---------|-----|------|-----|------|-----|------|-----|------|-----|
|             |         |         | STD | AISI | STD | AISI | STD | AISI |     |      |     |
| 3SV05F005T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 753  | 800 |
| 3SV06F005T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 773  | 800 |
| 3SV07F007T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 835  | 800 |
| 3SV08F007T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 855  | 800 |
| 3SV09F011T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 875  | 800 |
| 3SV10F011T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 895  | 800 |
| 3SV11F011T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 915  | 800 |
| 3SV12F011T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 935  | 800 |
| 3SV13F015T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 965  | 800 |
| 3SV14F015T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 985  | 800 |
| 3SV16F015T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 1025 | 800 |
| 3SV19F022T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 1120 | 800 |
| 3SV21F022T  | R 2"    | R 2"    | 256 | 257  | 311 | 363  | 627 | 680  | 109 | 1160 | 800 |
| 5SV03F005T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 728  | 800 |
| 5SV04F005T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 753  | 800 |
| 5SV05F007T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 820  | 800 |
| 5SV06F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 845  | 800 |
| 5SV07F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 870  | 800 |
| 5SV08F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 895  | 800 |
| 5SV09F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 930  | 800 |
| 5SV10F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 955  | 800 |
| 5SV11F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 980  | 800 |
| 5SV12F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 1040 | 800 |
| 5SV13F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 1065 | 800 |
| 5SV14F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 1090 | 800 |
| 5SV15F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 1115 | 800 |
| 5SV16F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 109 | 1140 | 800 |
| 10SV01F007T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 824  | 800 |
| 10SV02F007T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 824  | 800 |
| 10SV03F011T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 856  | 800 |
| 10SV04F015T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 898  | 800 |
| 10SV05F022T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 965  | 800 |
| 10SV06F022T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 114 | 997  | 800 |

ghvm20\_esv-uk\_a\_td

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

## SET OF 2 PUMPS THREE-PHASE POWER SUPPLY (GHV20.../4)

GHV20



The size of HYDROVAR® HVL depends on the power and power supply.  
For the proper display position refer to page 28.

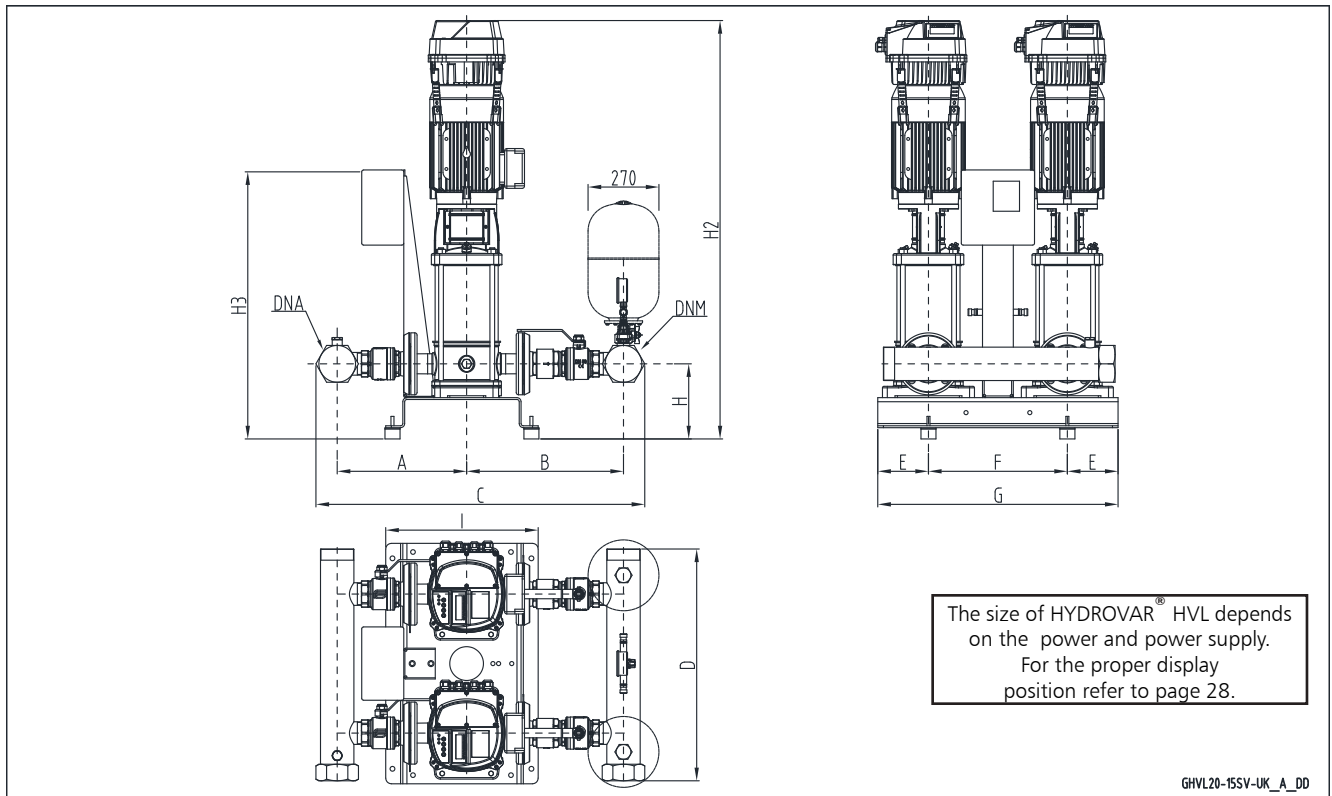
GHV20-SV-UK\_A\_DD

| GHV 20      | DNA      | DNM      | A   |      | B   |      | C   |      | H   | H1   | H2  |
|-------------|----------|----------|-----|------|-----|------|-----|------|-----|------|-----|
|             |          |          | STD | AISI | STD | AISI | STD | AISI |     |      |     |
| 3SV05F005T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 753  | 800 |
| 3SV06F005T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 773  | 800 |
| 3SV07F007T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 835  | 800 |
| 3SV08F007T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 855  | 800 |
| 3SV09F011T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 875  | 800 |
| 3SV10F011T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 895  | 800 |
| 3SV11F011T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 915  | 800 |
| 3SV12F011T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 935  | 800 |
| 3SV13F015T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 965  | 800 |
| 3SV14F015T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 985  | 800 |
| 3SV16F015T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 1025 | 800 |
| 3SV19F022T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 1120 | 800 |
| 3SV21F022T  | R 2"     | R 2"     | 256 | 257  | 311 | 301  | 627 | 680  | 109 | 1160 | 800 |
| 5SV03F005T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 728  | 800 |
| 5SV04F005T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 753  | 800 |
| 5SV05F007T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 820  | 800 |
| 5SV06F011T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 845  | 800 |
| 5SV07F011T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 870  | 800 |
| 5SV08F011T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 895  | 800 |
| 5SV09F015T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 930  | 800 |
| 5SV10F015T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 955  | 800 |
| 5SV11F015T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 980  | 800 |
| 5SV12F022T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1040 | 800 |
| 5SV13F022T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1065 | 800 |
| 5SV14F022T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1090 | 800 |
| 5SV15F022T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1115 | 800 |
| 5SV16F022T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1140 | 800 |
| 5SV18F030T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1200 | 800 |
| 5SV21F030T  | R 2"     | R 2"     | 260 | 267  | 329 | 311  | 649 | 714  | 109 | 1275 | 800 |
| 10SV01F007T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 824  | 800 |
| 10SV02F007T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 824  | 800 |
| 10SV03F011T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 856  | 800 |
| 10SV04F015T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 898  | 800 |
| 10SV05F022T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 965  | 800 |
| 10SV06F022T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 997  | 800 |
| 10SV07F030T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 1039 | 800 |
| 10SV08F030T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 1071 | 800 |
| 10SV09F040T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 1124 | 800 |
| 10SV10F040T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 1156 | 800 |
| 10SV11F040T | R 2 1/2" | R 2 1/2" | 294 | 301  | 356 | 356  | 726 | 830  | 114 | 1188 | 800 |

ghvt20\_esv-uk\_a\_td

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

**SET OF 2 PUMPS  
THREE-PHASE POWER SUPPLY (GHV20.../4)**



**GHV20**

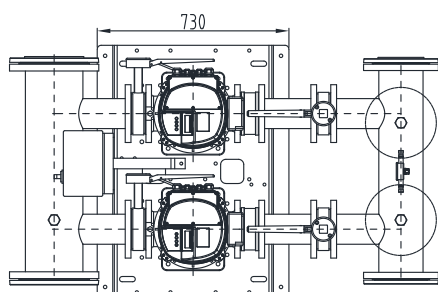
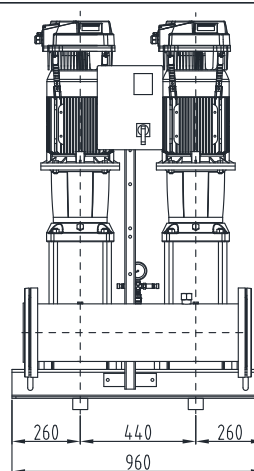
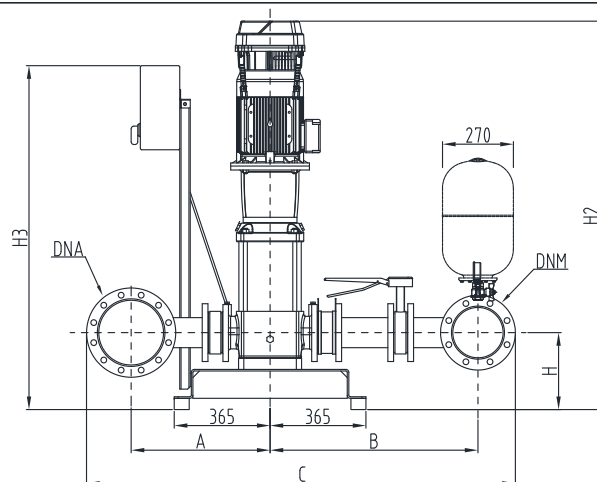
| GHV 20      | DNA  | DNM  | A   |      | B   |      | C   |      | D   | E   | F   | G   | H   | H2   | H3  | I   |
|-------------|------|------|-----|------|-----|------|-----|------|-----|-----|-----|-----|-----|------|-----|-----|
|             |      |      | STD | AISI | STD | AISI | STD | AISI |     |     |     |     |     |      |     |     |
| 15SV01F011T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 942  | 748 | 406 |
| 15SV02F022T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 987  | 748 | 406 |
| 15SV03F030T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1045 | 748 | 406 |
| 15SV04F040T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1114 | 748 | 406 |
| 15SV05F040T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1162 | 748 | 406 |
| 15SV06F055T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1348 | 748 | 406 |
| 15SV07F055T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1396 | 748 | 406 |
| 15SV08F075T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1436 | 748 | 406 |
| 15SV09F075T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1484 | 748 | 406 |
| 15SV10F110T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 680 | 260 | 440 | 960 | 250 | 1673 | 798 | 730 |
| 22SV01F011T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 942  | 748 | 406 |
| 22SV02F022T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 987  | 748 | 406 |
| 22SV03F030T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1045 | 748 | 406 |
| 22SV04F040T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1114 | 748 | 406 |
| 22SV05F055T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1300 | 748 | 406 |
| 22SV06F075T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1340 | 748 | 406 |
| 22SV07F075T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 610 | 135 | 370 | 640 | 200 | 1388 | 748 | 406 |
| 22SV08F110T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 680 | 260 | 440 | 960 | 250 | 1577 | 847 | 730 |
| 22SV09F110T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 680 | 260 | 440 | 960 | 250 | 1625 | 847 | 730 |
| 22SV10F110T | R 3" | R 3" | 345 | 351  | 418 | 409  | 851 | 848  | 680 | 260 | 440 | 960 | 250 | 1673 | 847 | 730 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv20\_15esv\_e\_td

# **SET OF 2 PUMPS** **THREE-PHASE POWER SUPPLY (GHV20.../4)**

**GHV20**



The size of HYDROVAR<sup>®</sup> HVL depends on the power and power supply.  
For the proper display position refer to page 28.

GHV20-46SV-UK\_A\_DD

## SET OF 2 PUMPS

### THREE-PHASE POWER SUPPLY (GHV20.../4)

| GHV 20        | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|---------------|-----|-----|-----|-----|------|-----|------|------|
| 33SV1/1AG022T | 100 | 80  | 448 | 701 | 1359 | 265 | 1117 | 1186 |
| 33SV1G030T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1117 | 1186 |
| 33SV2/2AG040T | 100 | 80  | 448 | 701 | 1359 | 265 | 1213 | 1186 |
| 33SV2/1AG040T | 100 | 80  | 448 | 701 | 1359 | 265 | 1213 | 1186 |
| 33SV2G055T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1304 | 1317 |
| 33SV3/2AG055T | 100 | 80  | 448 | 701 | 1359 | 265 | 1379 | 1317 |
| 33SV3/1AG075T | 100 | 80  | 448 | 701 | 1359 | 265 | 1371 | 1317 |
| 33SV3G075T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1371 | 1317 |
| 33SV4/2AG075T | 100 | 80  | 448 | 701 | 1359 | 265 | 1446 | 1317 |
| 33SV4/1AG110T | 100 | 80  | 448 | 701 | 1359 | 265 | 1542 | 1317 |
| 33SV4G110T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1542 | 1317 |
| 33SV5/2AG110T | 100 | 80  | 448 | 701 | 1359 | 265 | 1617 | 1317 |
| 33SV5/1AG110T | 100 | 80  | 448 | 701 | 1359 | 265 | 1617 | 1317 |
| 33SV5G150T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1698 | 1317 |
| 33SV6/2AG150T | 100 | 80  | 448 | 701 | 1359 | 265 | 1773 | 1317 |
| 33SV6/1AG150T | 100 | 80  | 448 | 701 | 1359 | 265 | 1773 | 1317 |
| 33SV6G150T    | 100 | 80  | 448 | 701 | 1359 | 265 | 1773 | 1317 |
| 33SV7/2AG150T | 100 | 80  | 448 | 701 | 1359 | 265 | 1848 | 1317 |
| 46SV1/1AG030T | 125 | 100 | 484 | 739 | 1457 | 300 | 1157 | 1186 |
| 46SV1G040T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1178 | 1186 |
| 46SV2/2AG055T | 125 | 100 | 484 | 739 | 1457 | 300 | 1344 | 1317 |
| 46SV2G075T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1336 | 1317 |
| 46SV3/2AG110T | 125 | 100 | 484 | 739 | 1457 | 300 | 1507 | 1317 |
| 46SV3G110T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1507 | 1317 |
| 46SV4/2AG150T | 125 | 100 | 484 | 739 | 1457 | 300 | 1663 | 1317 |
| 46SV4G150T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1663 | 1317 |
| 46SV5/2AG185T | 125 | 100 | 484 | 739 | 1457 | 300 | 1738 | 1397 |
| 46SV5G185T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1738 | 1397 |
| 46SV6/2AG220T | 125 | 100 | 484 | 739 | 1457 | 300 | 1813 | 1397 |
| 46SV6G220T    | 125 | 100 | 484 | 739 | 1457 | 300 | 1813 | 1397 |
| 66SV1/1AG040T | 150 | 125 | 504 | 780 | 1551 | 300 | 1203 | 1186 |
| 66SV1G055T    | 150 | 125 | 504 | 780 | 1551 | 300 | 1294 | 1317 |
| 66SV2/2AG075T | 150 | 125 | 504 | 780 | 1551 | 300 | 1376 | 1317 |
| 66SV2/1AG110T | 150 | 125 | 504 | 780 | 1551 | 300 | 1472 | 1317 |
| 66SV2G110T    | 150 | 125 | 504 | 780 | 1551 | 300 | 1472 | 1317 |
| 66SV3/2AG150T | 150 | 125 | 504 | 780 | 1551 | 300 | 1643 | 1317 |
| 66SV3/1AG150T | 150 | 125 | 504 | 780 | 1551 | 300 | 1643 | 1317 |
| 66SV3G185T    | 150 | 125 | 504 | 780 | 1551 | 300 | 1643 | 1397 |
| 66SV4/2AG185T | 150 | 125 | 504 | 780 | 1551 | 300 | 1733 | 1397 |
| 66SV4/1AG220T | 150 | 125 | 504 | 780 | 1551 | 300 | 1733 | 1397 |
| 66SV4G220T    | 150 | 125 | 504 | 780 | 1551 | 300 | 1733 | 1397 |
| 92SV1/1AG055T | 200 | 150 | 529 | 794 | 1635 | 300 | 1294 | 1317 |
| 92SV1G075T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1286 | 1317 |
| 92SV2/2AG110T | 200 | 150 | 529 | 794 | 1635 | 300 | 1472 | 1317 |
| 92SV2G150T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1553 | 1317 |
| 92SV3/2AG185T | 200 | 150 | 529 | 794 | 1635 | 300 | 1643 | 1397 |
| 92SV3G220T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1643 | 1397 |

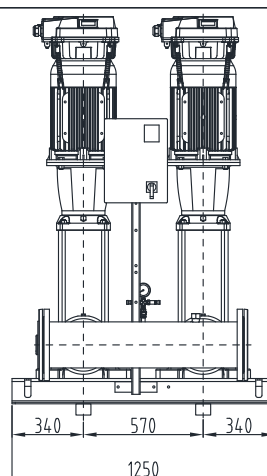
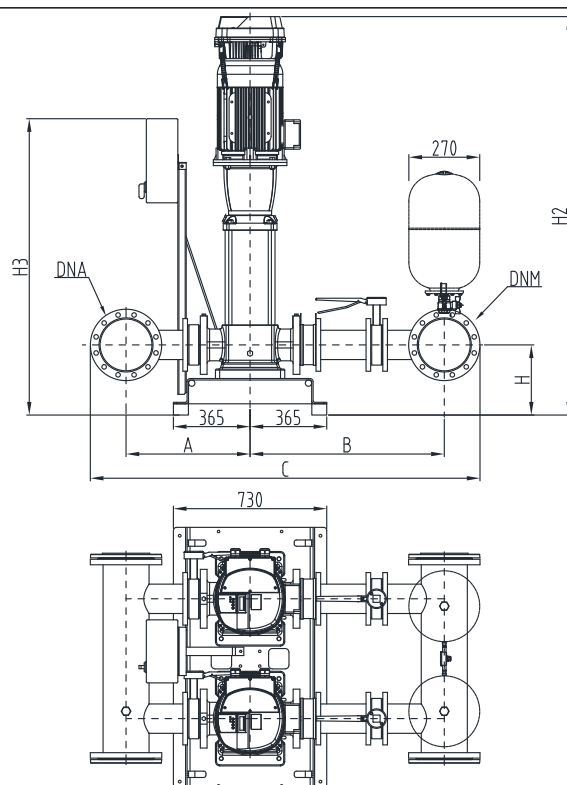
Dimensions in mm. Tolerance  $\pm 10$  mm.  
 AISI: same sizes /A304 /A316

ghv20\_sv46-en\_e\_td



# **SET OF 2 PUMPS** **THREE-PHASE POWER SUPPLY (GHV20.../4)**

**GHV20**



The size of HYDROVAR<sup>®</sup> HVL depends on the power and power supply.  
For the proper display position refer to page 28.

GHV20-125SV-UK\_A\_DD

| GHV 20      | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|-------------|-----|-----|-----|-----|------|-----|------|------|
| 125SV1G075T | 200 | 200 | 591 | 927 | 1857 | 330 | 1415 | 1318 |
| 125SV2G150T | 200 | 200 | 591 | 927 | 1857 | 330 | 1742 | 1318 |
| 125SV3G220T | 200 | 200 | 591 | 927 | 1857 | 330 | 1892 | 1398 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv20\_125sv-en\_b\_td

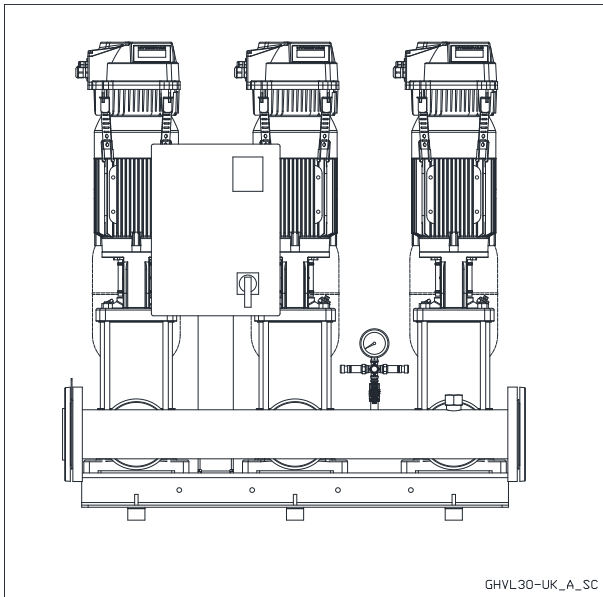
## Booster sets

**MARKET SECTORS**  
RESIDENTIAL-CIVIL, INDUSTRIAL

### APPLICATIONS

- Water network supply in housing complexes, offices, hotels, shopping centres, industrial plants.
- Supply of water networks for agricultural applications (e.g. irrigation)

## GHV30 Series



GHV30

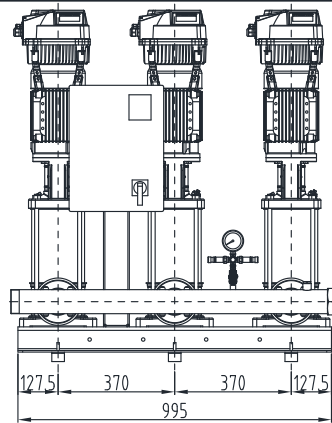
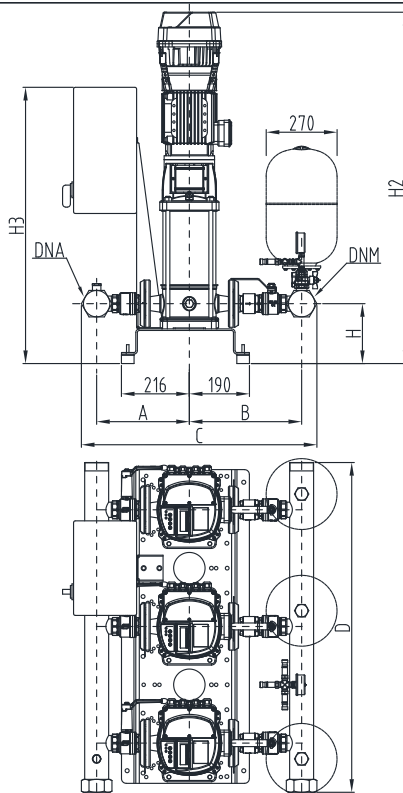
## SPECIFICATIONS

- **Flow rate**  
up to 480 m<sup>3</sup>/h.
- **Head**  
up to 160 m.
- Electrical panel **supply voltage**:
  - single-phase 1 x 230V ± 10% 50/60Hz (GHV.../2)
  - three-phase 3 x 400V ± 10% 50/60Hz (GHV.../4)
- **Frequency** 50Hz
- **e-SV™** vertical axis electric pump
- **HVL** series HYDROVAR®
- **Protection class IP55** for:
  - electrical control panel
  - electrical pump motor
  - HVL converter
- Maximum operating **pressure**:  
16 bar.
- Maximum liquid **temperature**:  
max +80°C.
- Maximum electric pump **power**:  
3 x 22 kW.
- **Progressive** motor start.

**GHV series booster sets with e-SV are certified for use with drinking water.**

**SET OF 3 PUMPS  
THREE-PHASE POWER SUPPLY (GHV30.../4)**

**GHV30**



The size of HYDROVAR® HVL depends on the power and power supply.  
For the proper display position refer to page 28.

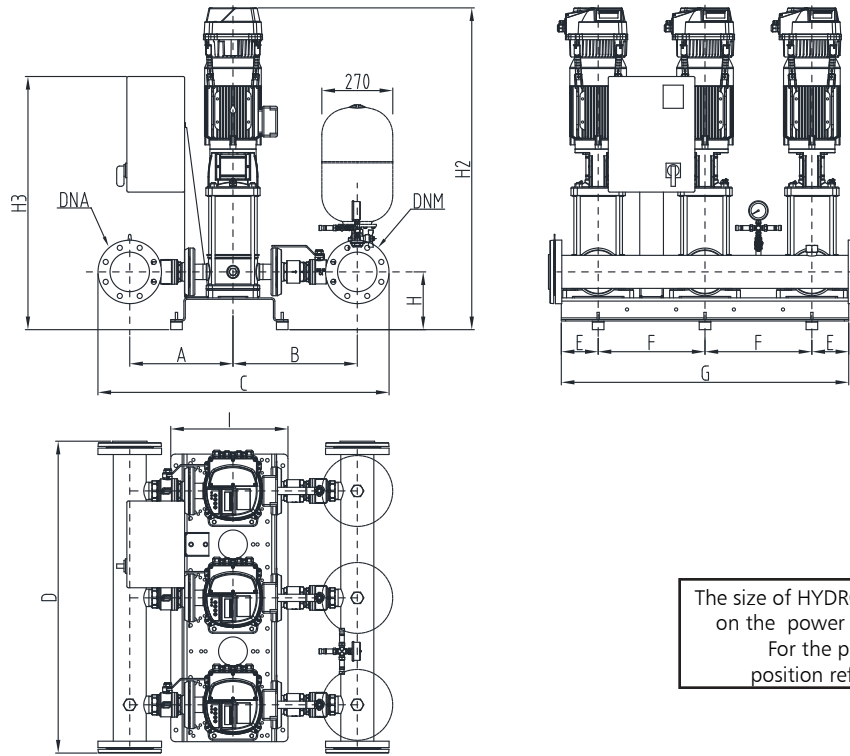
GHV30-SV-UK\_A\_DD

| GHV 30      | DNA     | DNM     | A   |      | B   |      | C   |      | D    | H   | H2   | H3  |
|-------------|---------|---------|-----|------|-----|------|-----|------|------|-----|------|-----|
|             |         |         | STD | AISI | STD | AISI | STD | AISI |      |     |      |     |
| 5SV03F005T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 804  | 876 |
| 5SV04F005T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 829  | 876 |
| 5SV05F007T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 896  | 876 |
| 5SV06F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 921  | 876 |
| 5SV07F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 946  | 876 |
| 5SV08F011T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 971  | 876 |
| 5SV09F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1006 | 876 |
| 5SV10F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1031 | 876 |
| 5SV11F015T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1056 | 876 |
| 5SV12F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1116 | 876 |
| 5SV13F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1141 | 876 |
| 5SV14F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1166 | 876 |
| 5SV15F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1191 | 876 |
| 5SV16F022T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1216 | 876 |
| 5SV18F030T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1276 | 876 |
| 5SV21F030T  | R 2"    | R 2"    | 260 | 267  | 329 | 387  | 649 | 714  | 1040 | 185 | 1351 | 876 |
| 10SV01F007T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 900  | 876 |
| 10SV02F007T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 900  | 876 |
| 10SV03F011T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 932  | 876 |
| 10SV04F015T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 974  | 876 |
| 10SV05F022T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1041 | 876 |
| 10SV06F022T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1073 | 876 |
| 10SV07F030T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1115 | 876 |
| 10SV08F030T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1147 | 876 |
| 10SV09F040T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1200 | 876 |
| 10SV10F040T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1232 | 876 |
| 10SV11F040T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1264 | 876 |
| 10SV13F055T | R 2"1/2 | R 2"1/2 | 294 | 301  | 356 | 453  | 726 | 830  | 1040 | 190 | 1466 | 876 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv30\_10esv\_d\_td

**SET OF 3 PUMPS  
THREE-PHASE POWER SUPPLY (GHV30.../4)**



GHV30-15SV-UK\_A\_DD

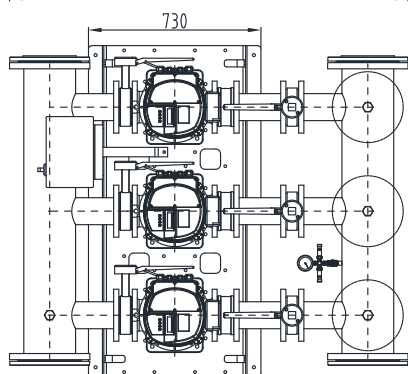
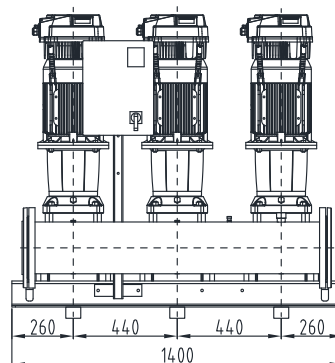
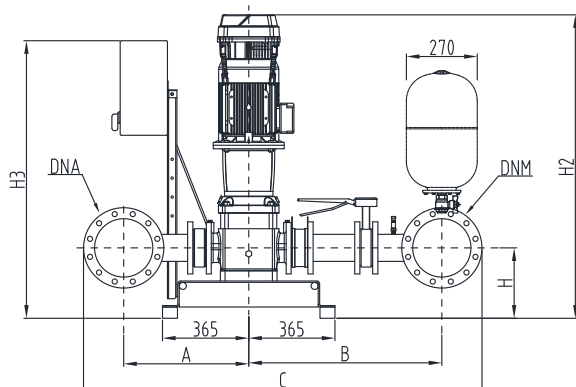
**GHV30**

| GHV 30      | DNA | DNM | A   |      | B   |      | C    |      | D    | E   | F   | G    | H   | H2   | H3   | I   |
|-------------|-----|-----|-----|------|-----|------|------|------|------|-----|-----|------|-----|------|------|-----|
|             |     |     | STD | AISI | STD | AISI | STD  | AISI |      |     |     |      |     |      |      |     |
| 15SV01F011T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 942  | 876  | 406 |
| 15SV02F022T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 987  | 876  | 406 |
| 15SV03F030T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1045 | 876  | 406 |
| 15SV04F040T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1114 | 876  | 406 |
| 15SV05F040T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1162 | 876  | 406 |
| 15SV06F055T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1348 | 876  | 406 |
| 15SV07F055T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1396 | 876  | 406 |
| 15SV08F075T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1436 | 876  | 406 |
| 15SV09F075T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1084 | 128 | 370 | 995  | 200 | 1484 | 876  | 406 |
| 15SV10F110T | 100 | 80  | 357 | 363  | 418 | 409  | 985  | 982  | 1224 | 260 | 440 | 1400 | 280 | 1673 | 1003 | 730 |
| 22SV01F011T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 942  | 876  | 406 |
| 22SV02F022T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 987  | 876  | 406 |
| 22SV03F030T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 1045 | 876  | 406 |
| 22SV04F040T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 1114 | 876  | 406 |
| 22SV05F055T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 1300 | 876  | 406 |
| 22SV06F075T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 1340 | 876  | 406 |
| 22SV07F075T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1084 | 128 | 370 | 995  | 200 | 1388 | 876  | 406 |
| 22SV08F110T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1224 | 260 | 440 | 1400 | 280 | 1577 | 1003 | 730 |
| 22SV09F110T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1224 | 260 | 440 | 1400 | 280 | 1625 | 1003 | 730 |
| 22SV10F110T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1224 | 260 | 440 | 1400 | 280 | 1673 | 1003 | 730 |

ghv30\_15sv\_g\_td

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

## SET OF 3 PUMPS THREE-PHASE POWER SUPPLY (GHV30.../4)



The size of HYDROVAR<sup>®</sup> HVL depends on the power and power supply.  
For the proper display position refer to page 28.

GHVL30-46SV-UK\_A\_DD

GHV30

## SET OF 3 PUMPS

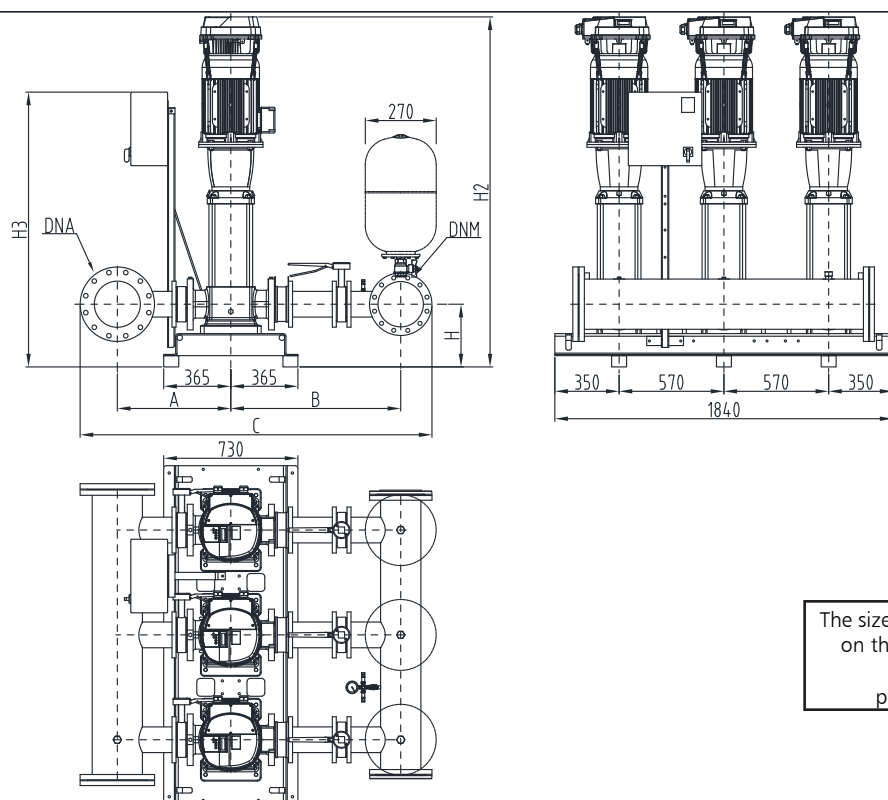
### THREE-PHASE POWER SUPPLY (GHV30.../4)

| GHV 30        | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|---------------|-----|-----|-----|-----|------|-----|------|------|
| 33SV1/1AG022T | 125 | 100 | 461 | 713 | 1409 | 265 | 1117 | 1397 |
| 33SV1G030T    | 125 | 100 | 461 | 713 | 1409 | 265 | 1117 | 1397 |
| 33SV2/2AG040T | 125 | 100 | 461 | 713 | 1409 | 265 | 1213 | 1397 |
| 33SV2/1AG040T | 125 | 100 | 461 | 713 | 1409 | 265 | 1213 | 1397 |
| 33SV2G055T    | 125 | 100 | 461 | 713 | 1409 | 265 | 1304 | 1397 |
| 33SV3/2AG055T | 125 | 100 | 461 | 713 | 1409 | 265 | 1379 | 1397 |
| 33SV3/1AG075T | 125 | 100 | 461 | 713 | 1409 | 265 | 1371 | 1397 |
| 33SV3G075T    | 125 | 100 | 461 | 713 | 1409 | 265 | 1371 | 1397 |
| 33SV4/2AG075T | 125 | 100 | 461 | 713 | 1409 | 265 | 1446 | 1397 |
| 33SV4/1AG110T | 125 | 100 | 461 | 713 | 1423 | 265 | 1542 | 1274 |
| 33SV4G110T    | 125 | 100 | 461 | 713 | 1423 | 265 | 1542 | 1274 |
| 33SV5/2AG110T | 125 | 100 | 461 | 713 | 1423 | 265 | 1617 | 1274 |
| 33SV5/1AG110T | 125 | 100 | 461 | 713 | 1423 | 265 | 1617 | 1274 |
| 33SV5G150T    | 125 | 100 | 461 | 713 | 1423 | 265 | 1698 | 1274 |
| 33SV6/2AG150T | 125 | 100 | 461 | 713 | 1423 | 265 | 1773 | 1274 |
| 33SV6/1AG150T | 125 | 100 | 461 | 713 | 1423 | 265 | 1773 | 1274 |
| 33SV6G150T    | 125 | 100 | 461 | 713 | 1423 | 265 | 1773 | 1274 |
| 33SV7/2AG150T | 125 | 100 | 461 | 713 | 1423 | 265 | 1848 | 1274 |
| 46SV1/1AG030T | 150 | 125 | 498 | 752 | 1517 | 300 | 1157 | 1397 |
| 46SV1G040T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1178 | 1397 |
| 46SV2/2AG055T | 150 | 125 | 498 | 752 | 1517 | 300 | 1344 | 1397 |
| 46SV2G075T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1336 | 1397 |
| 46SV3/2AG110T | 150 | 125 | 498 | 752 | 1517 | 300 | 1507 | 1274 |
| 46SV3G110T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1507 | 1274 |
| 46SV4/2AG150T | 150 | 125 | 498 | 752 | 1517 | 300 | 1663 | 1274 |
| 46SV4G150T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1663 | 1274 |
| 46SV5/2AG185T | 150 | 125 | 498 | 752 | 1517 | 300 | 1738 | 1274 |
| 46SV5G185T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1738 | 1274 |
| 46SV6/2AG220T | 150 | 125 | 498 | 752 | 1517 | 300 | 1813 | 1274 |
| 46SV6G220T    | 150 | 125 | 498 | 752 | 1517 | 300 | 1813 | 1274 |
| 66SV1/1AG040T | 200 | 150 | 529 | 794 | 1635 | 300 | 1203 | 1397 |
| 66SV1G055T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1294 | 1397 |
| 66SV2/2AG075T | 200 | 150 | 529 | 794 | 1635 | 300 | 1376 | 1397 |
| 66SV2/1AG110T | 200 | 150 | 529 | 794 | 1635 | 300 | 1472 | 1274 |
| 66SV2G110T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1472 | 1274 |
| 66SV3/2AG150T | 200 | 150 | 529 | 794 | 1635 | 300 | 1643 | 1274 |
| 66SV3/1AG150T | 200 | 150 | 529 | 794 | 1635 | 300 | 1643 | 1274 |
| 66SV3G185T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1643 | 1274 |
| 66SV4/2AG185T | 200 | 150 | 529 | 794 | 1635 | 300 | 1733 | 1274 |
| 66SV4/1AG220T | 200 | 150 | 529 | 794 | 1635 | 300 | 1733 | 1274 |
| 66SV4G220T    | 200 | 150 | 529 | 794 | 1635 | 300 | 1733 | 1274 |
| 92SV1/1AG055T | 200 | 200 | 529 | 819 | 1688 | 300 | 1294 | 1397 |
| 92SV1G075T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1286 | 1397 |
| 92SV2/2AG110T | 200 | 200 | 529 | 819 | 1688 | 300 | 1472 | 1274 |
| 92SV2G150T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1553 | 1274 |
| 92SV3/2AG185T | 200 | 200 | 529 | 819 | 1688 | 300 | 1643 | 1274 |
| 92SV3G220T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1643 | 1274 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
 AISI: same sizes /A304 /A316

ghv30\_sv46-en\_e\_td

# **SET OF 3 PUMPS** **THREE-PHASE POWER SUPPLY (GHV30.../4)**



GHV130-125SV-UK\_A\_DD

| GHV 30      | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|-------------|-----|-----|-----|-----|------|-----|------|------|
| 125SV1G075T | 250 | 200 | 618 | 927 | 1917 | 330 | 1415 | 1398 |
| 125SV2G150T | 250 | 200 | 618 | 927 | 1917 | 330 | 1742 | 1275 |
| 125SV3G220T | 250 | 200 | 618 | 927 | 1917 | 330 | 1892 | 1275 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv30\_125sv-en\_b\_td

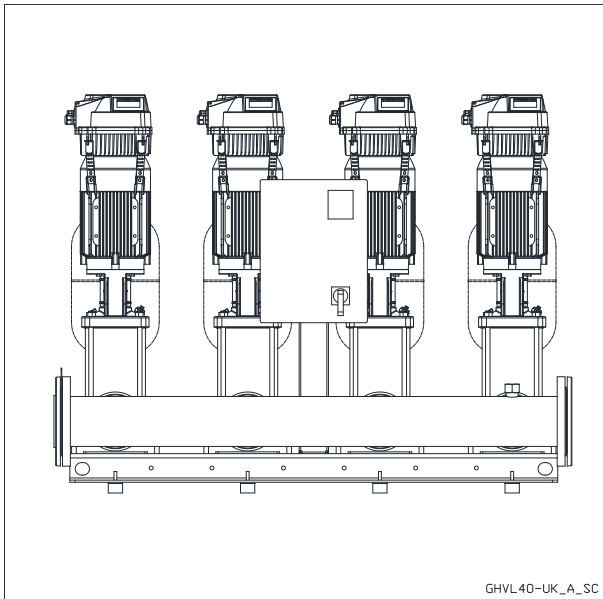
## Booster sets

**MARKET SECTORS**  
RESIDENTIAL-CIVIL, INDUSTRIAL

### APPLICATIONS

- Water network supply in housing complexes, offices, hotels, shopping centres, industrial plants.
- Supply of water networks for agricultural applications (e.g. irrigation)

## GHV40 Series



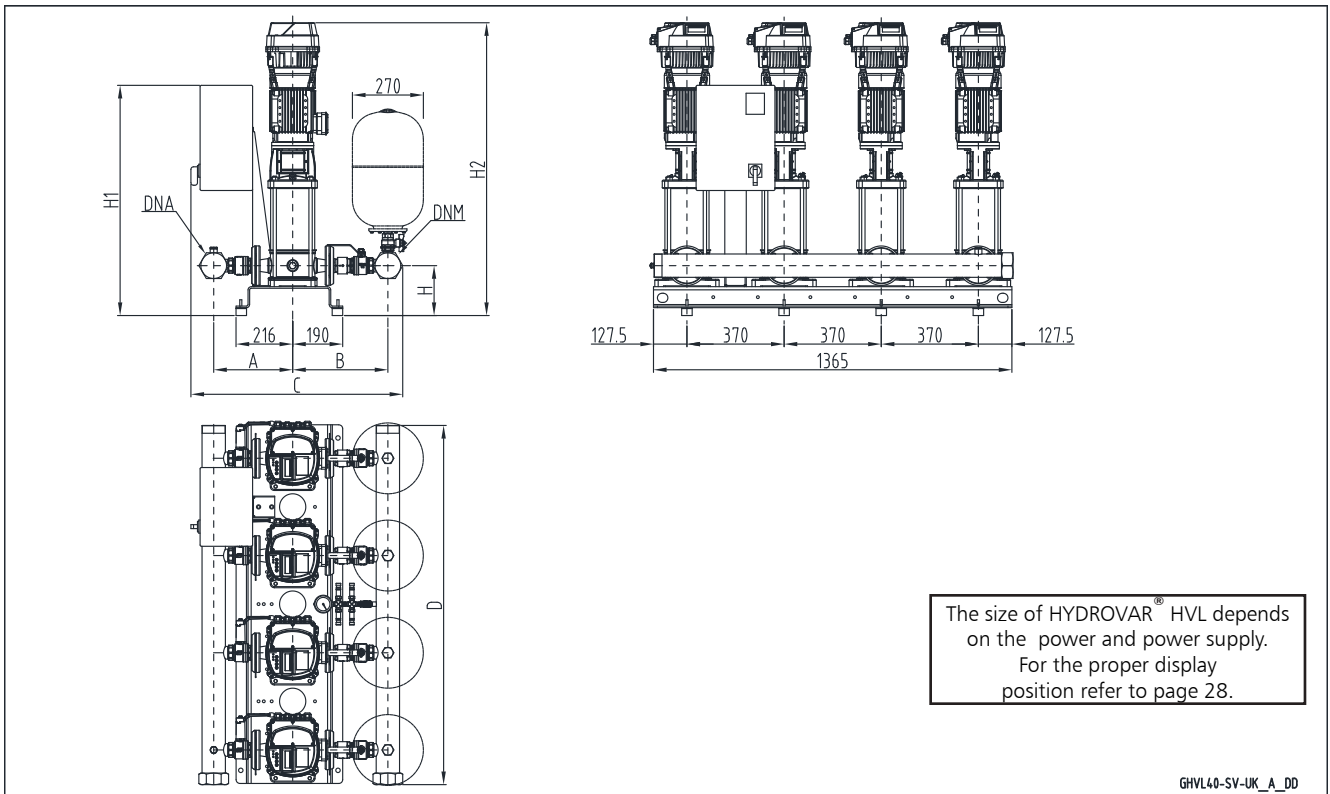
### SPECIFICATIONS

- **Flow rate**  
up to 640 m<sup>3</sup>/h.
- **Head**  
up to 160 m.
- Electrical panel **supply voltage**:
  - single-phase 1 x 230V ± 10% 50/60Hz (GHV.../2)
  - three-phase 3 x 400V ± 10% 50/60Hz (GHV.../4)
- **Frequency** 50Hz
- **e-SV™** vertical axis electric pump
- **HVL** series HYDROVAR®
- **Protection class IP55** for:
  - electrical control panel
  - electrical pump motor
  - HVL converter
- Maximum operating **pressure**:  
16 bar.
- Maximum liquid **temperature**:  
max +80°C.
- Maximum electric pump **power**:  
4 x 22 kW.
- **Progressive** motor start.

**GHV series booster sets with e-SV are certified for use with drinking water.**



**SET OF 4 PUMPS  
THREE-PHASE POWER SUPPLY (GHV40.../4)**



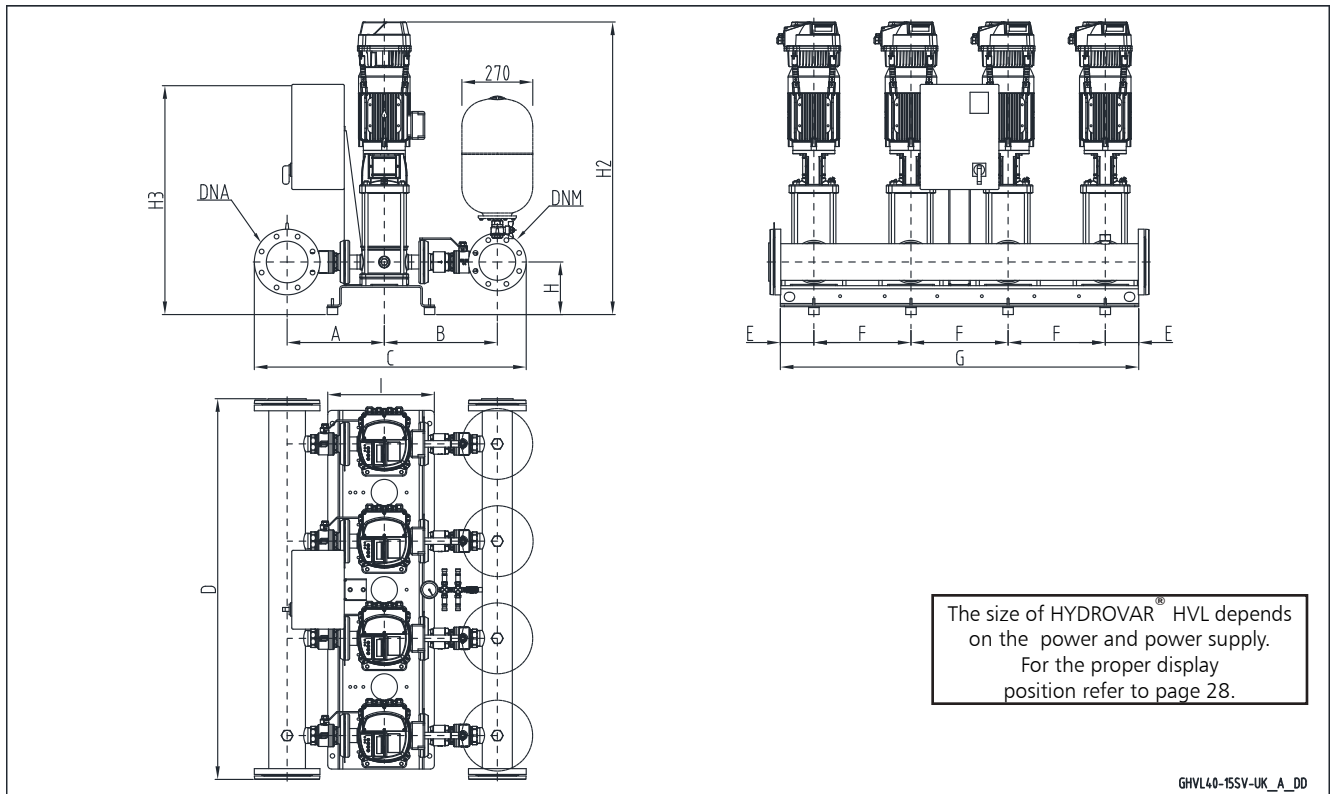
**GHV40**

| GHV 40      | DNA  | DNM  | A   |      | B   |      | C   |      | D    | H   | H2   | H3  |
|-------------|------|------|-----|------|-----|------|-----|------|------|-----|------|-----|
|             |      |      | STD | AISI | STD | AISI | STD | AISI |      |     |      |     |
| 10SV01F007T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 900  | 876 |
| 10SV02F007T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 900  | 876 |
| 10SV03F011T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 932  | 876 |
| 10SV04F015T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 974  | 876 |
| 10SV05F022T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1041 | 876 |
| 10SV06F022T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1073 | 876 |
| 10SV07F030T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1115 | 876 |
| 10SV08F030T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1147 | 876 |
| 10SV09F040T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1200 | 876 |
| 10SV10F040T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1232 | 876 |
| 10SV11F040T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1264 | 876 |
| 10SV13F055T | R 3" | R 3" | 301 | 308  | 363 | 460  | 752 | 856  | 1410 | 190 | 1466 | 876 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv40\_10esv-en\_c\_td

## SET OF 4 PUMPS THREE-PHASE POWER SUPPLY (GHV40.../4)

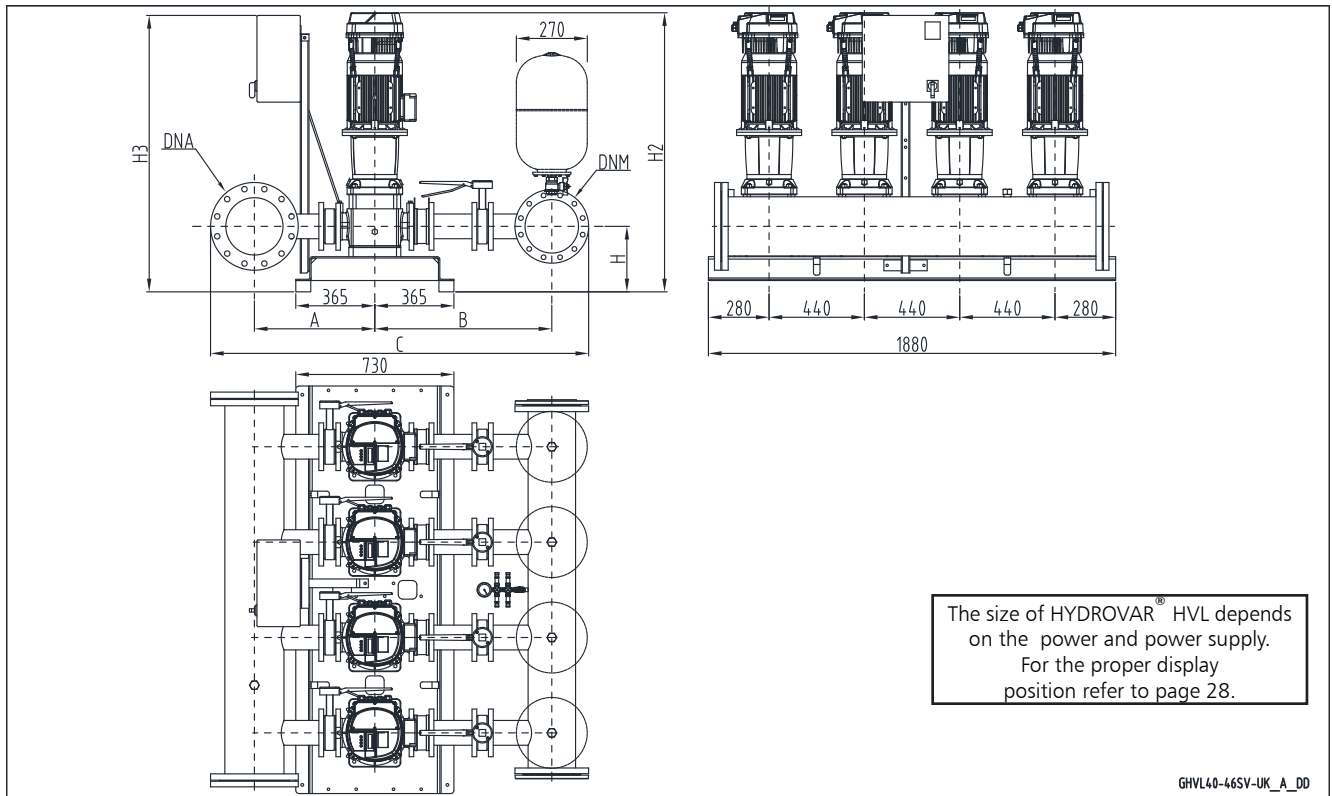


| GHV 40      | DNA | DNM | A   |      | B   |      | C    |      | D    | E   | F   | G    | H   | H2   | H3   | I   |
|-------------|-----|-----|-----|------|-----|------|------|------|------|-----|-----|------|-----|------|------|-----|
|             |     |     | STD | AISI | STD | AISI | STD  | AISI |      |     |     |      |     |      |      |     |
| 15SV01F011T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 942  | 876  | 406 |
| 15SV02F022T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 987  | 876  | 406 |
| 15SV03F030T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1045 | 876  | 406 |
| 15SV04F040T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1114 | 876  | 406 |
| 15SV05F040T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1162 | 876  | 406 |
| 15SV06F055T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1348 | 876  | 406 |
| 15SV07F055T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1396 | 876  | 406 |
| 15SV08F075T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1436 | 1223 | 406 |
| 15SV09F075T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1454 | 128 | 370 | 1365 | 200 | 1484 | 1223 | 406 |
| 15SV10F110T | 100 | 100 | 357 | 363  | 430 | 421  | 1007 | 1004 | 1664 | 280 | 440 | 1880 | 250 | 1673 | 1243 | 730 |
| 22SV01F011T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 942  | 876  | 406 |
| 22SV02F022T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 987  | 876  | 406 |
| 22SV03F030T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 1045 | 876  | 406 |
| 22SV04F040T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 1114 | 876  | 406 |
| 22SV05F055T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 1300 | 876  | 406 |
| 22SV06F075T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 1340 | 1223 | 406 |
| 22SV07F075T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1454 | 128 | 370 | 1365 | 200 | 1388 | 1223 | 406 |
| 22SV08F110T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1664 | 280 | 440 | 1880 | 250 | 1577 | 1243 | 730 |
| 22SV09F110T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1664 | 280 | 440 | 1880 | 250 | 1625 | 1243 | 730 |
| 22SV10F110T | 125 | 100 | 370 | 376  | 430 | 421  | 1035 | 1032 | 1664 | 280 | 440 | 1880 | 250 | 1673 | 1243 | 730 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv40\_15sv-en\_e\_td

**SET OF 4 PUMPS  
THREE-PHASE POWER SUPPLY (GHV40.../4)**



## SET OF 4 PUMPS

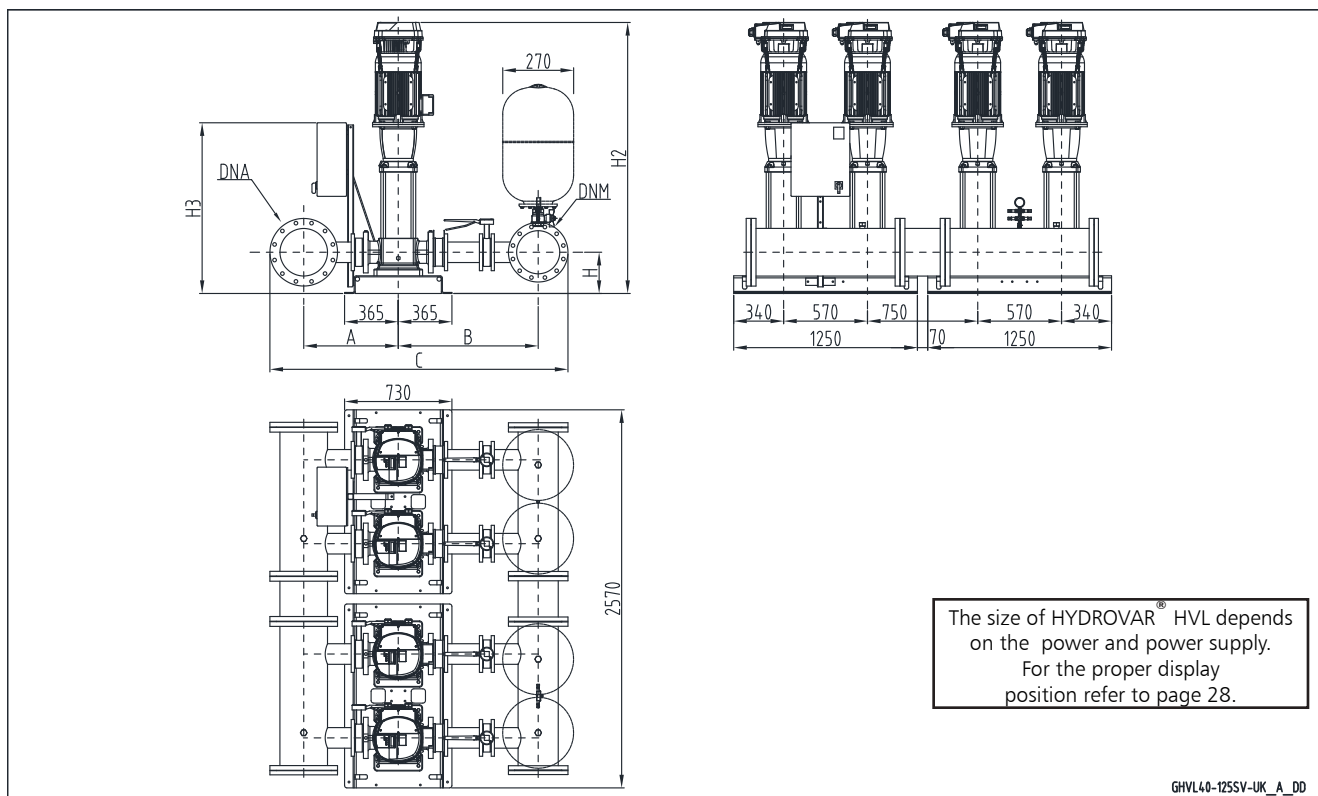
### THREE-PHASE POWER SUPPLY (GHV40.../4)

| GHV40         | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|---------------|-----|-----|-----|-----|------|-----|------|------|
| 33SV1/1AG022T | 125 | 125 | 461 | 726 | 1437 | 265 | 1117 | 1397 |
| 33SV1G030T    | 125 | 125 | 461 | 726 | 1437 | 265 | 1117 | 1397 |
| 33SV2/2AG040T | 125 | 125 | 461 | 726 | 1437 | 265 | 1213 | 1397 |
| 33SV2/1AG040T | 125 | 125 | 461 | 726 | 1437 | 265 | 1213 | 1397 |
| 33SV2G055T    | 125 | 125 | 461 | 726 | 1437 | 265 | 1304 | 1397 |
| 33SV3/2AG055T | 125 | 125 | 461 | 726 | 1437 | 265 | 1379 | 1397 |
| 33SV3/1AG075T | 125 | 125 | 461 | 726 | 1451 | 265 | 1371 | 1274 |
| 33SV3G075T    | 125 | 125 | 461 | 726 | 1451 | 265 | 1371 | 1274 |
| 33SV4/2AG075T | 125 | 125 | 461 | 726 | 1451 | 265 | 1446 | 1274 |
| 33SV4/1AG110T | 125 | 125 | 461 | 726 | 1451 | 265 | 1542 | 1274 |
| 33SV4G110T    | 125 | 125 | 461 | 726 | 1451 | 265 | 1542 | 1274 |
| 33SV5/2AG110T | 125 | 125 | 461 | 726 | 1451 | 265 | 1617 | 1274 |
| 33SV5/1AG110T | 125 | 125 | 461 | 726 | 1451 | 265 | 1617 | 1274 |
| 33SV5G150T    | 125 | 125 | 461 | 726 | 1451 | 265 | 1698 | 1274 |
| 33SV6/2AG150T | 125 | 125 | 461 | 726 | 1451 | 265 | 1773 | 1274 |
| 33SV6/1AG150T | 125 | 125 | 461 | 726 | 1451 | 265 | 1773 | 1274 |
| 33SV6G150T    | 125 | 125 | 461 | 726 | 1451 | 265 | 1773 | 1274 |
| 33SV7/2AG150T | 125 | 125 | 461 | 726 | 1451 | 265 | 1848 | 1274 |
| 46SV1/1AG030T | 150 | 150 | 498 | 766 | 1548 | 300 | 1157 | 1397 |
| 46SV1G040T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1178 | 1397 |
| 46SV2/2AG055T | 150 | 150 | 498 | 766 | 1548 | 300 | 1344 | 1397 |
| 46SV2G075T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1336 | 1274 |
| 46SV3/2AG110T | 150 | 150 | 498 | 766 | 1548 | 300 | 1507 | 1274 |
| 46SV3G110T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1507 | 1274 |
| 46SV4/2AG150T | 150 | 150 | 498 | 766 | 1548 | 300 | 1663 | 1274 |
| 46SV4G150T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1663 | 1274 |
| 46SV5/2AG185T | 150 | 150 | 498 | 766 | 1548 | 300 | 1738 | 1201 |
| 46SV5G185T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1738 | 1201 |
| 46SV6/2AG220T | 150 | 150 | 498 | 766 | 1548 | 300 | 1813 | 1201 |
| 46SV6G220T    | 150 | 150 | 498 | 766 | 1548 | 300 | 1813 | 1201 |
| 66SV1/1AG040T | 200 | 200 | 529 | 819 | 1688 | 300 | 1203 | 1397 |
| 66SV1G055T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1294 | 1397 |
| 66SV2/2AG075T | 200 | 200 | 529 | 819 | 1688 | 300 | 1376 | 1274 |
| 66SV2/1AG110T | 200 | 200 | 529 | 819 | 1688 | 300 | 1472 | 1274 |
| 66SV2G110T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1472 | 1274 |
| 66SV3/2AG150T | 200 | 200 | 529 | 819 | 1688 | 300 | 1643 | 1274 |
| 66SV3/1AG150T | 200 | 200 | 529 | 819 | 1688 | 300 | 1643 | 1274 |
| 66SV3G185T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1643 | 1201 |
| 66SV4/2AG185T | 200 | 200 | 529 | 819 | 1688 | 300 | 1733 | 1201 |
| 66SV4/1AG220T | 200 | 200 | 529 | 819 | 1688 | 300 | 1733 | 1201 |
| 66SV4G220T    | 200 | 200 | 529 | 819 | 1688 | 300 | 1733 | 1201 |
| 92SV1/1AG055T | 250 | 200 | 556 | 819 | 1748 | 300 | 1294 | 1397 |
| 92SV1G075T    | 250 | 200 | 556 | 819 | 1748 | 300 | 1286 | 1274 |
| 92SV2/2AG110T | 250 | 200 | 556 | 819 | 1748 | 300 | 1472 | 1274 |
| 92SV2G150T    | 250 | 200 | 556 | 819 | 1748 | 300 | 1553 | 1274 |
| 92SV3/2AG185T | 250 | 200 | 556 | 819 | 1748 | 300 | 1643 | 1201 |
| 92SV3G220T    | 250 | 200 | 556 | 819 | 1748 | 300 | 1643 | 1201 |

Dimensions in mm. Tolerance  $\pm 10$  mm.  
 AISI: same sizes /A304 /A316

ghv40\_sv46-en\_e\_td

## SET OF 4 PUMPS THREE-PHASE POWER SUPPLY (GHV40.../4)



GHV40

| GHV40       | DNA | DNM | A   | B   | C    | H   | H2   | H3   |
|-------------|-----|-----|-----|-----|------|-----|------|------|
| 125SV1G075T | 300 | 250 | 643 | 954 | 2029 | 330 | 1415 | 1275 |
| 125SV2G150T | 300 | 250 | 643 | 954 | 2029 | 330 | 1742 | 1275 |
| 125SV3G220T | 300 | 250 | 643 | 954 | 2029 | 330 | 1892 | 1202 |

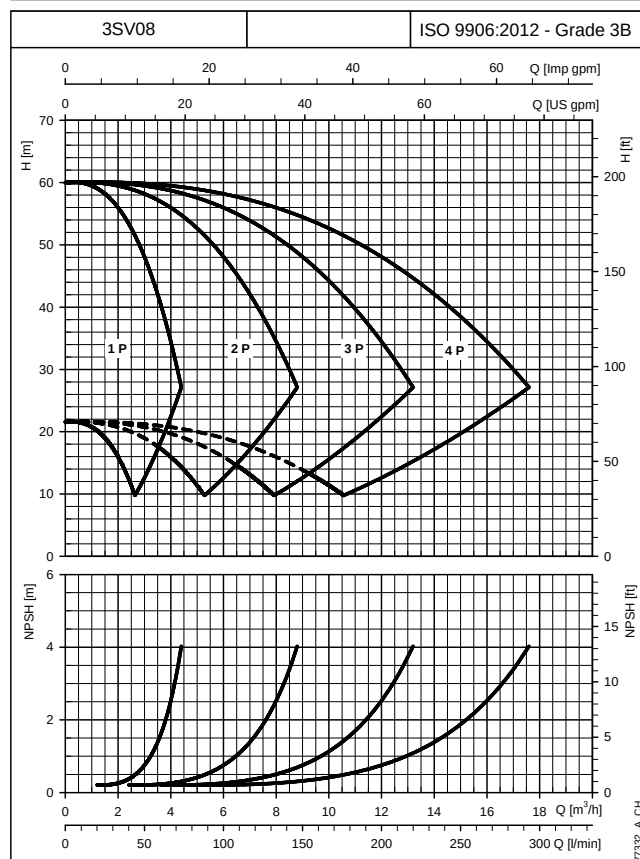
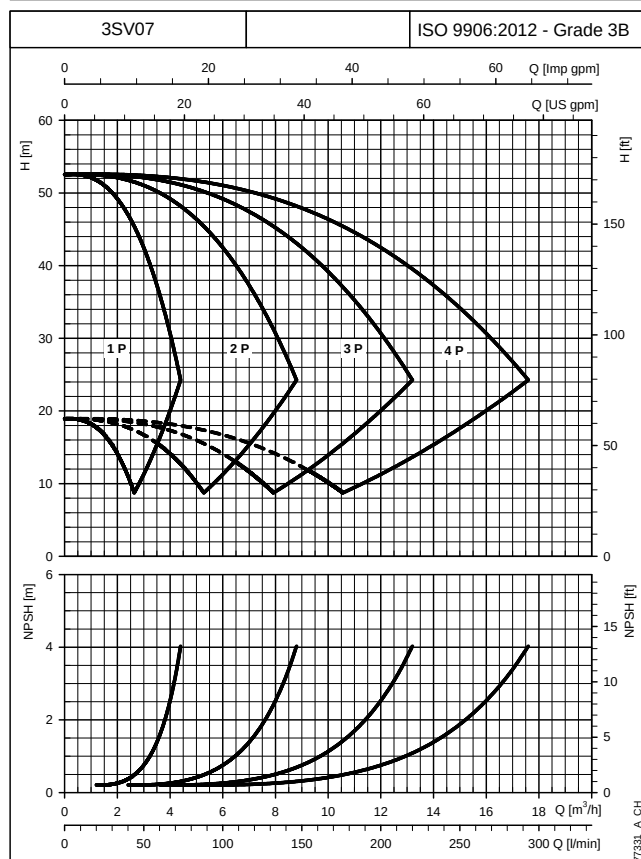
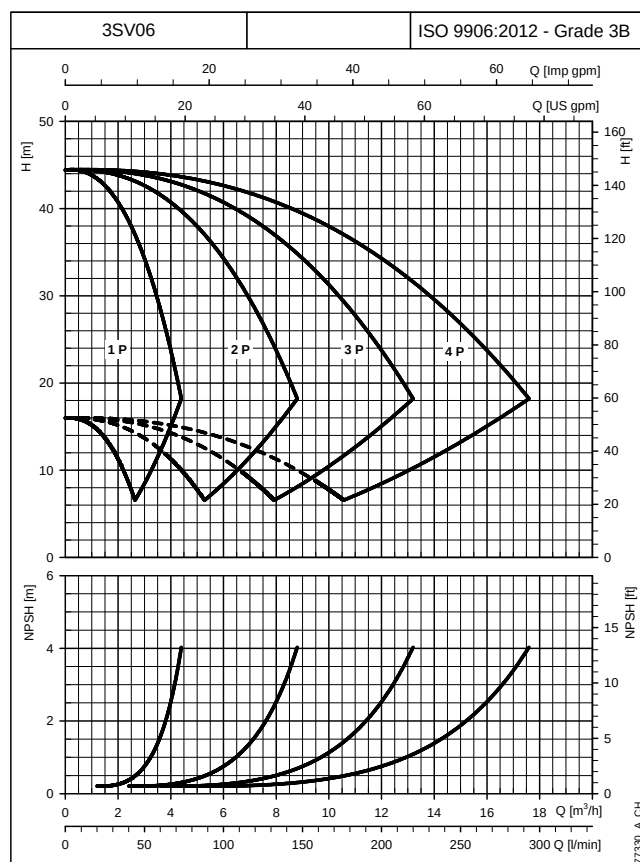
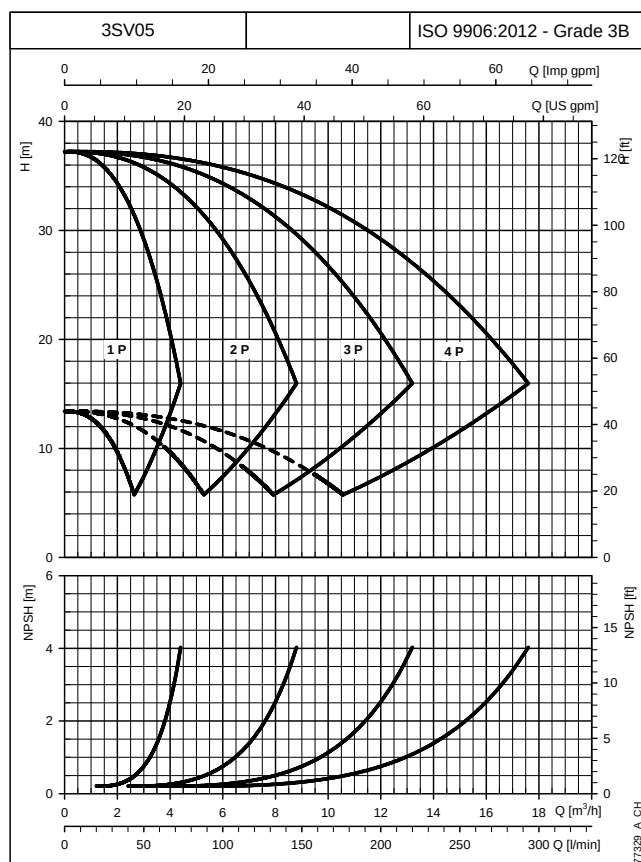
Dimensions in mm. Tolerance  $\pm 10$  mm.  
AISI: same sizes /A304 /A316

ghv40\_125sv-en\_b\_td



# PERFORMANCE CURVES

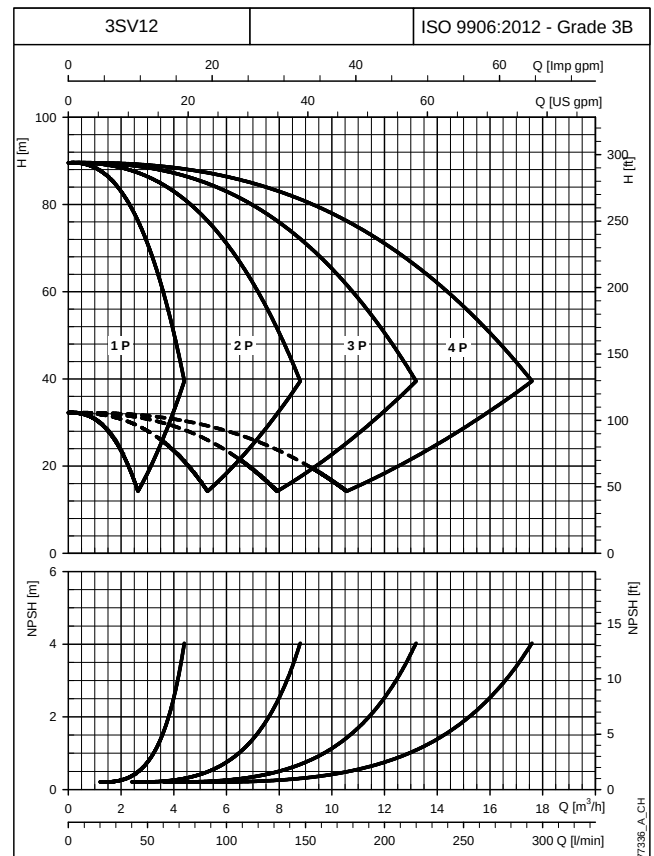
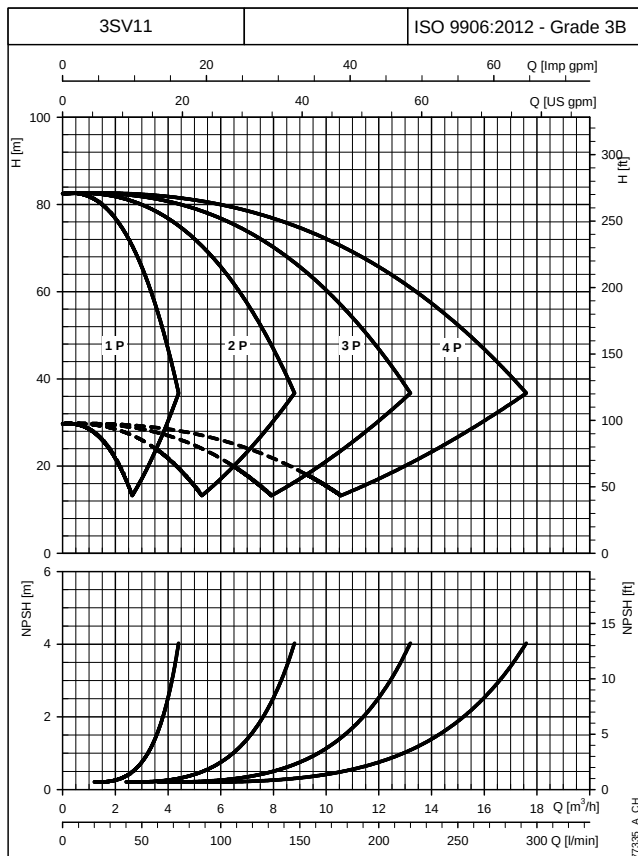
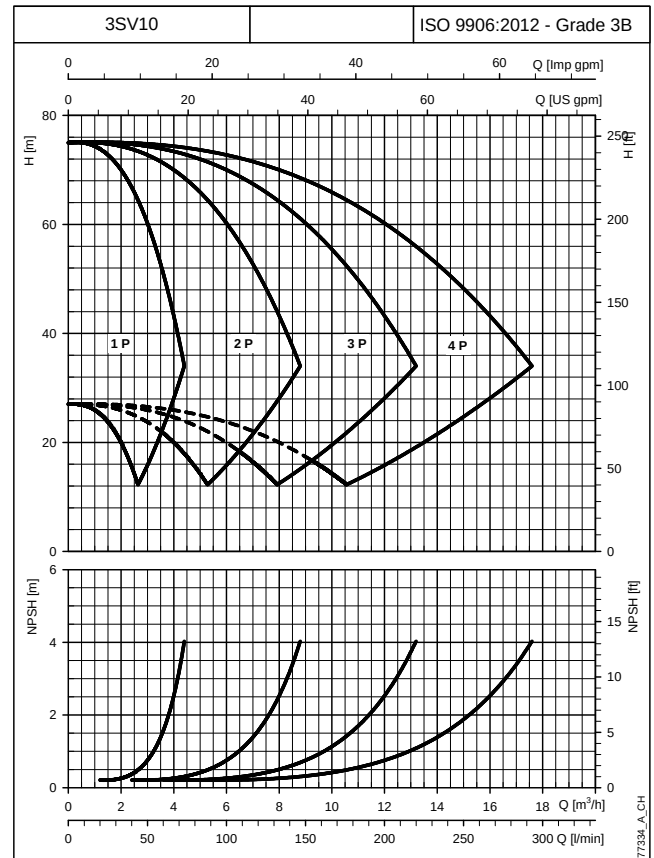
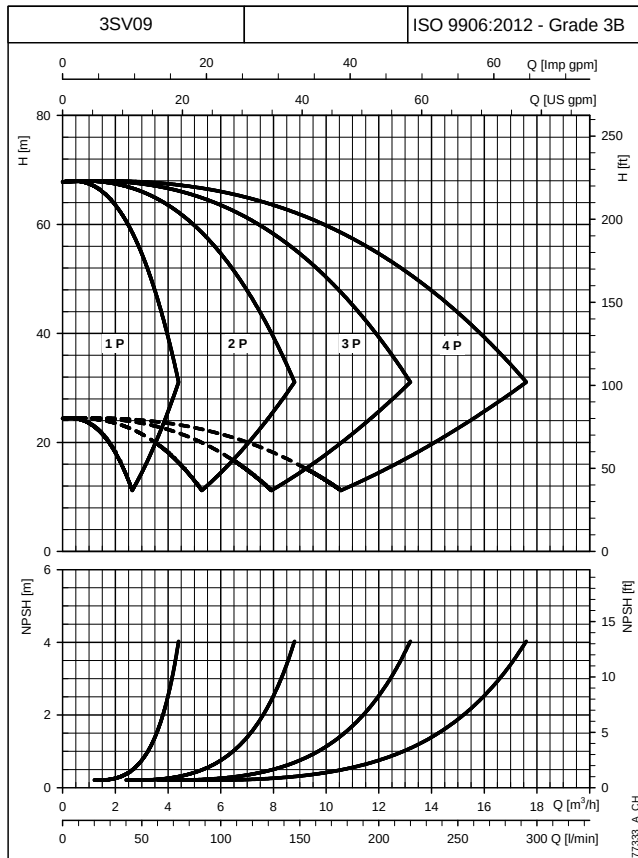
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

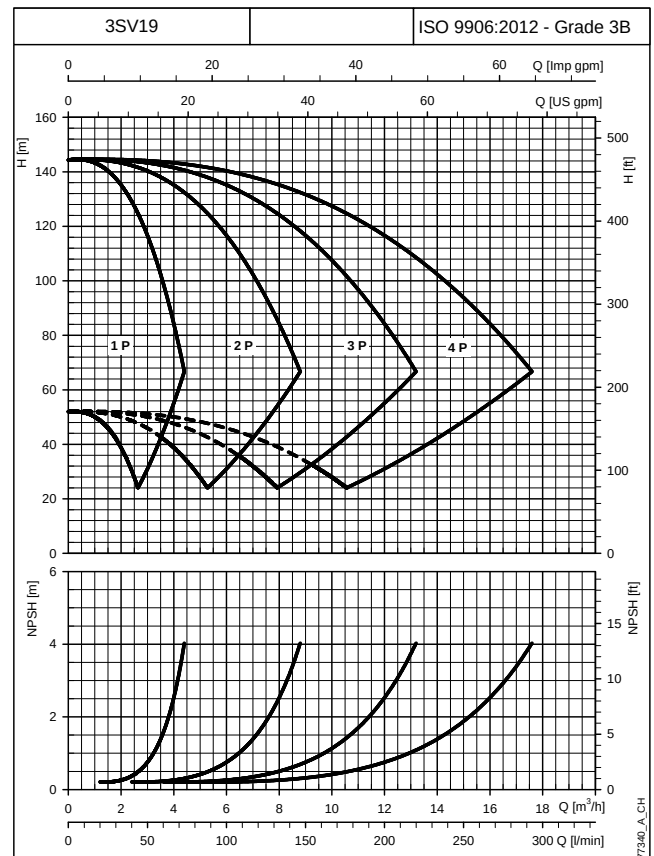
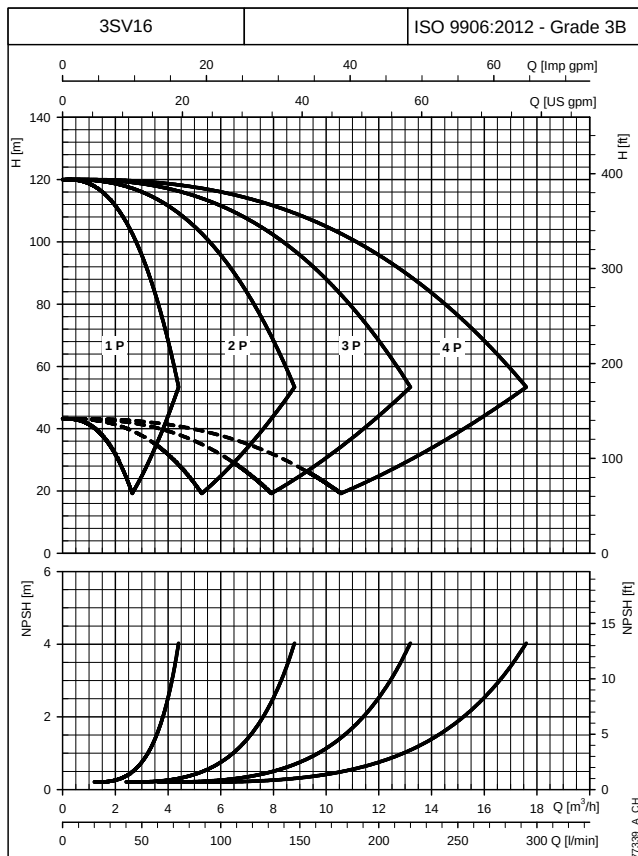
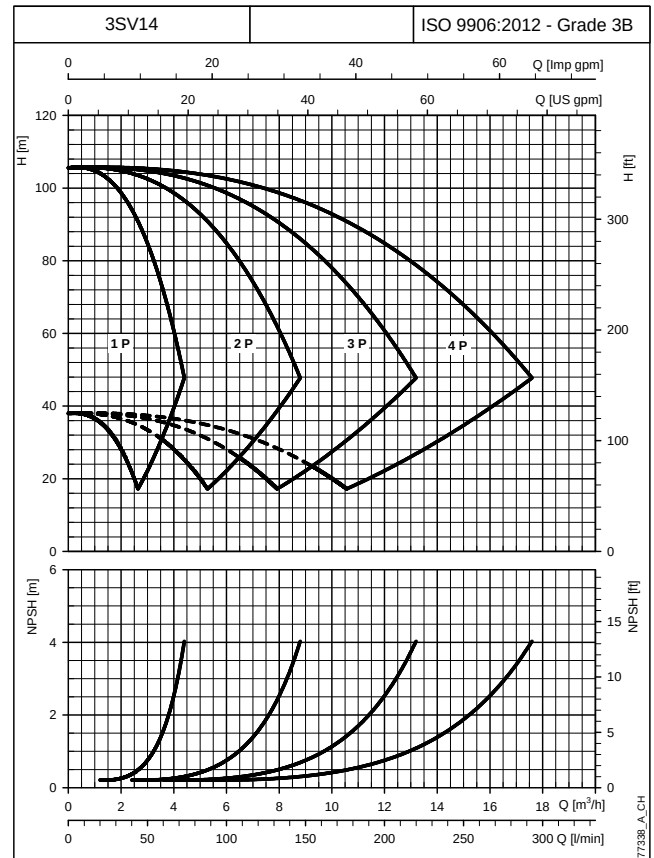
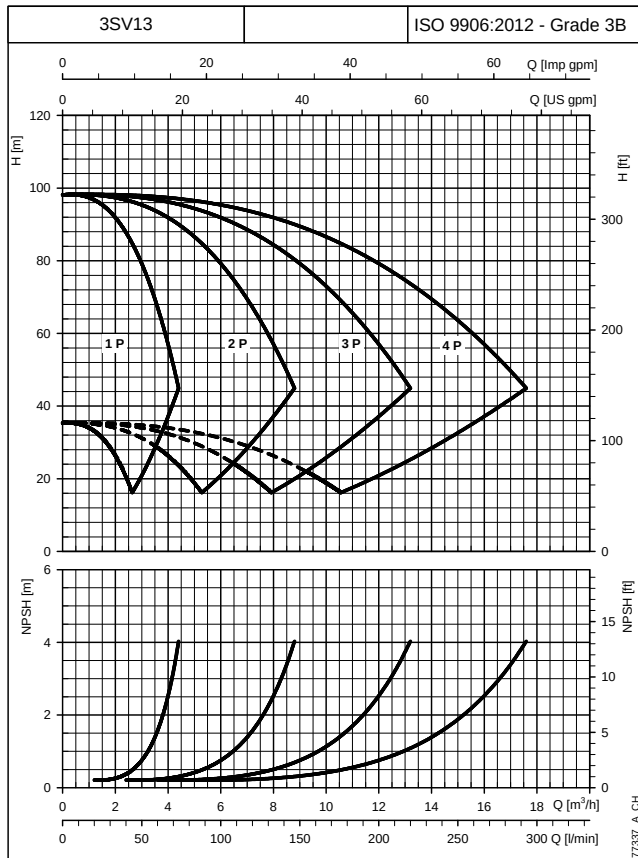


## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

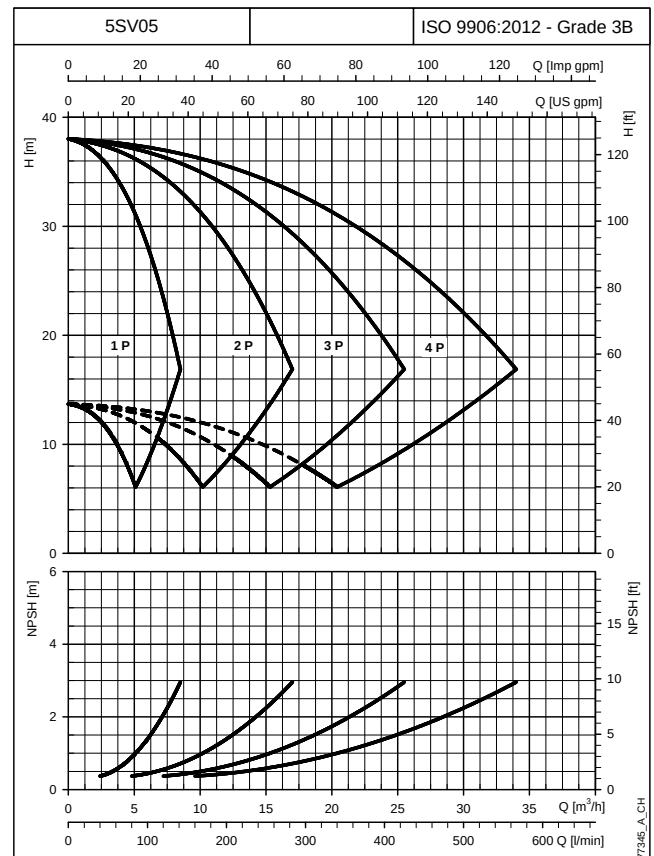
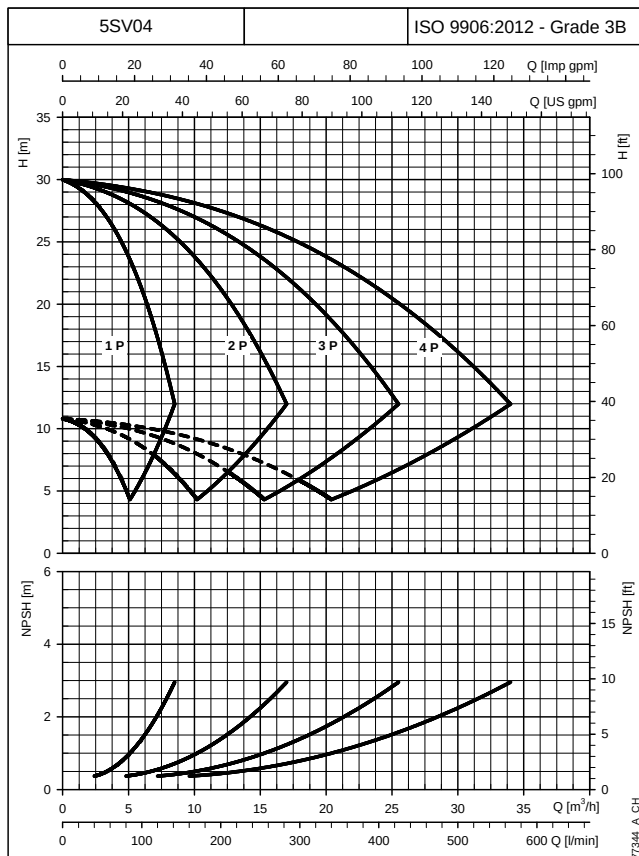
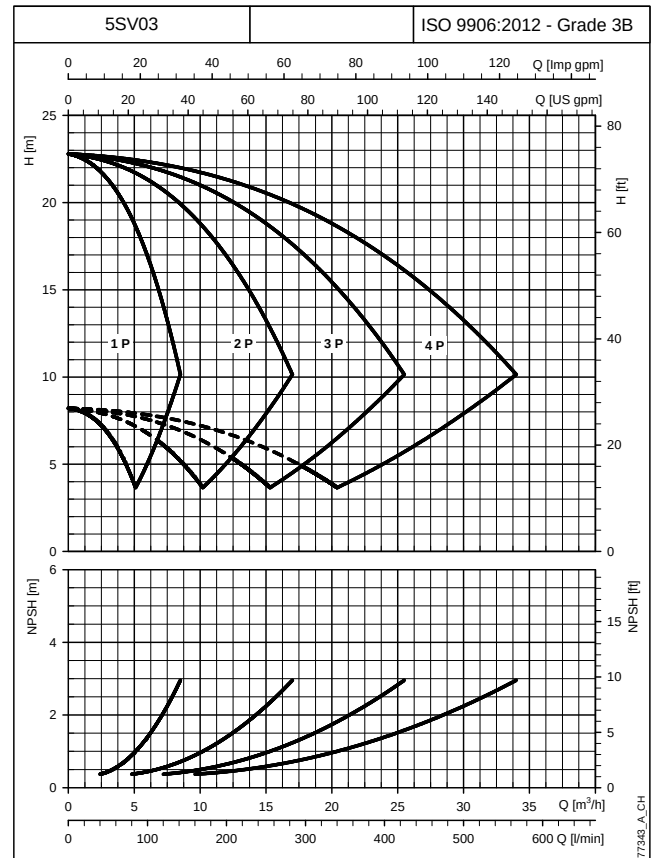
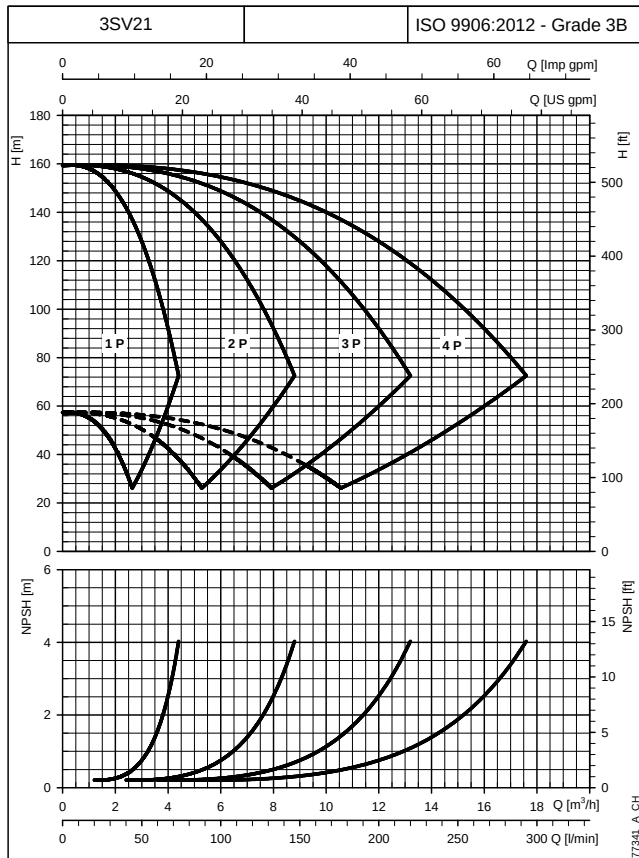
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



CURVES

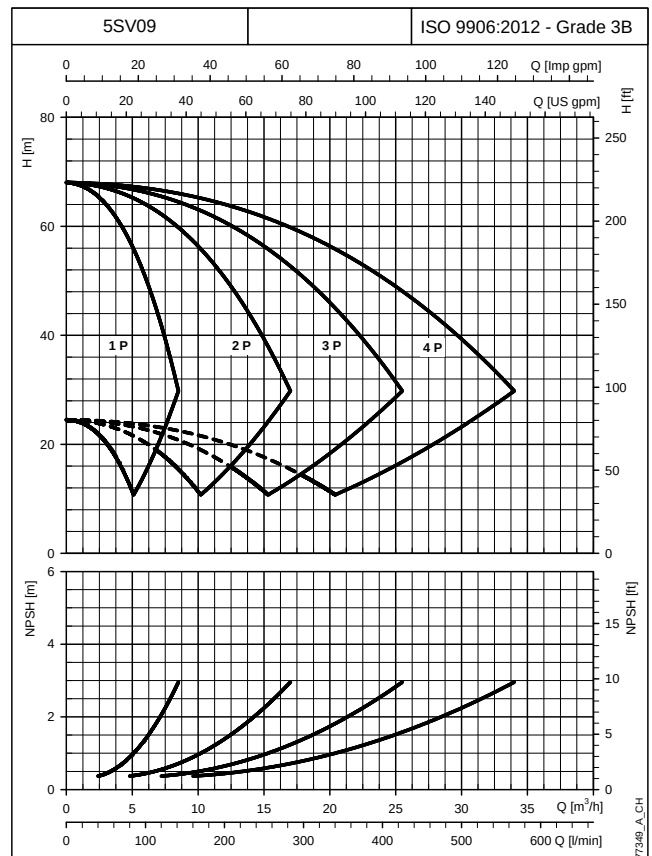
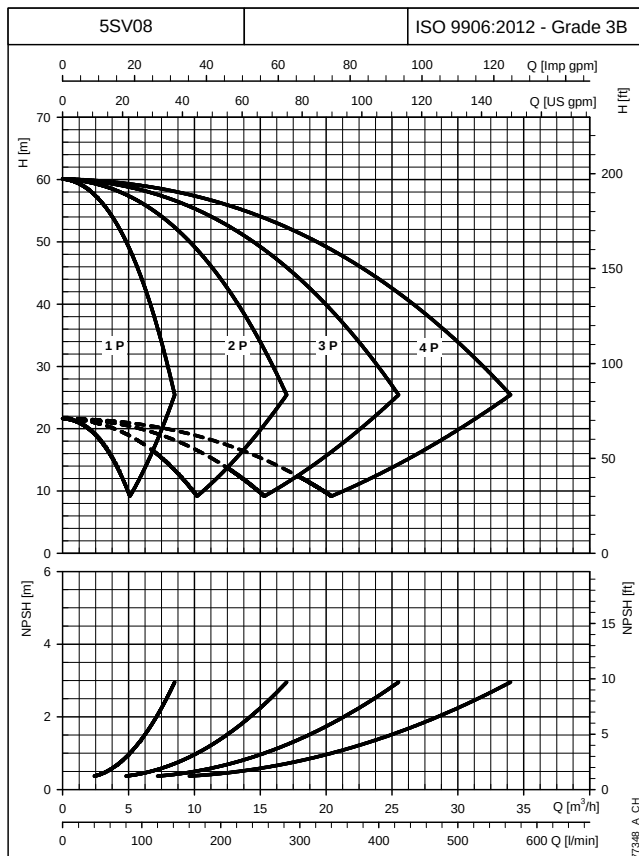
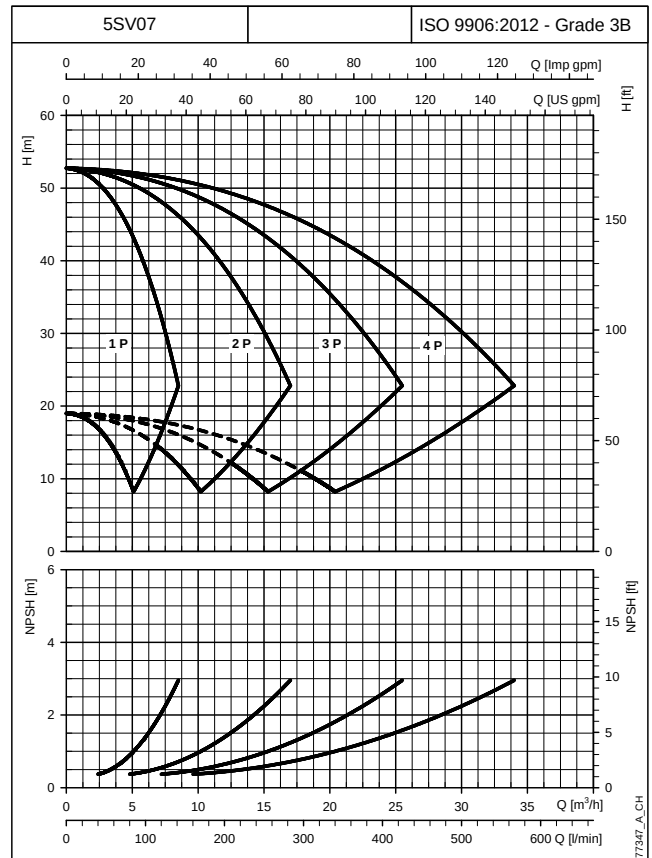
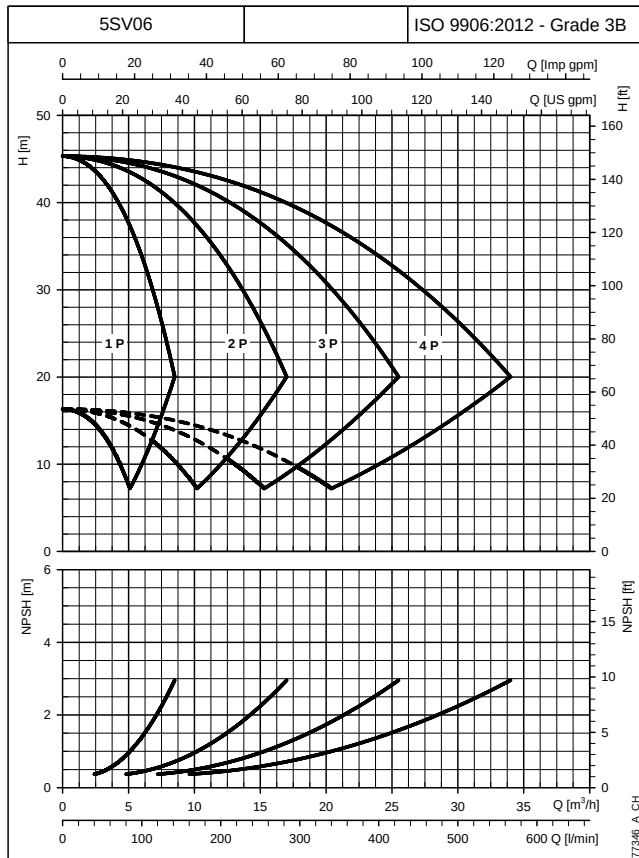
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

# GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



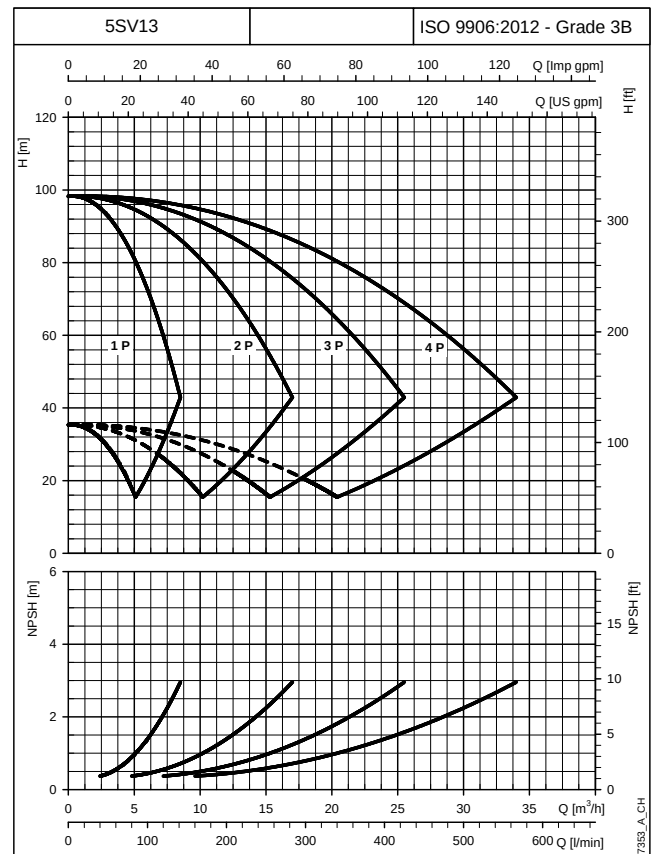
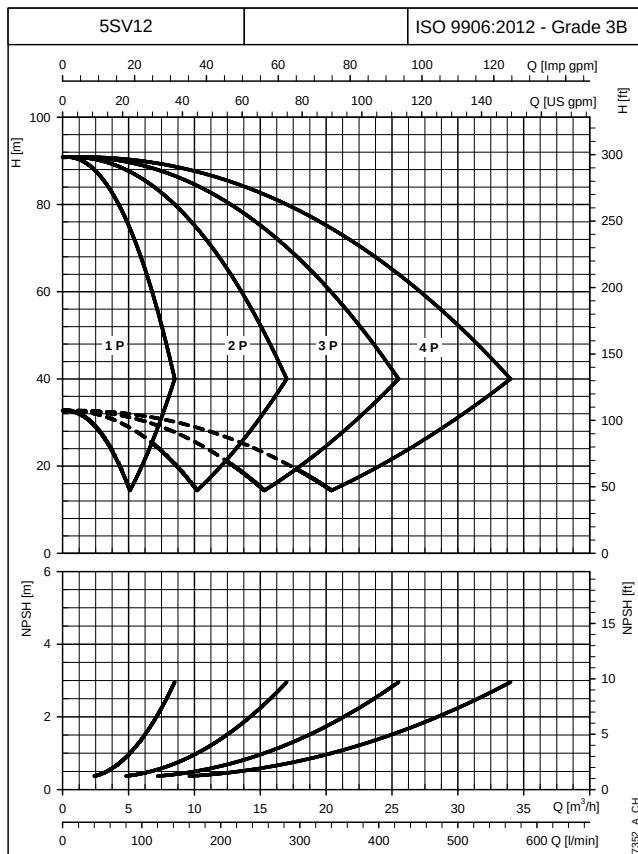
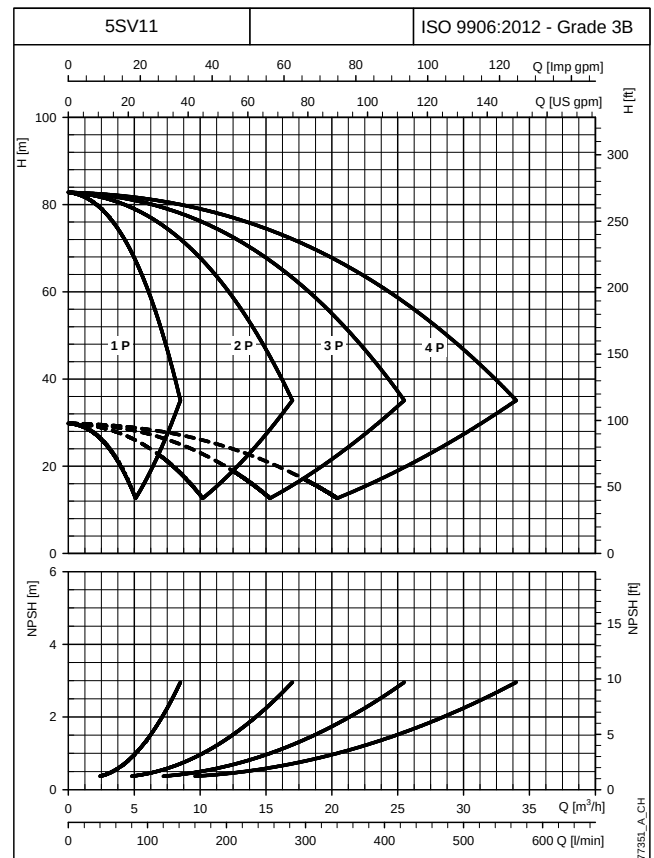
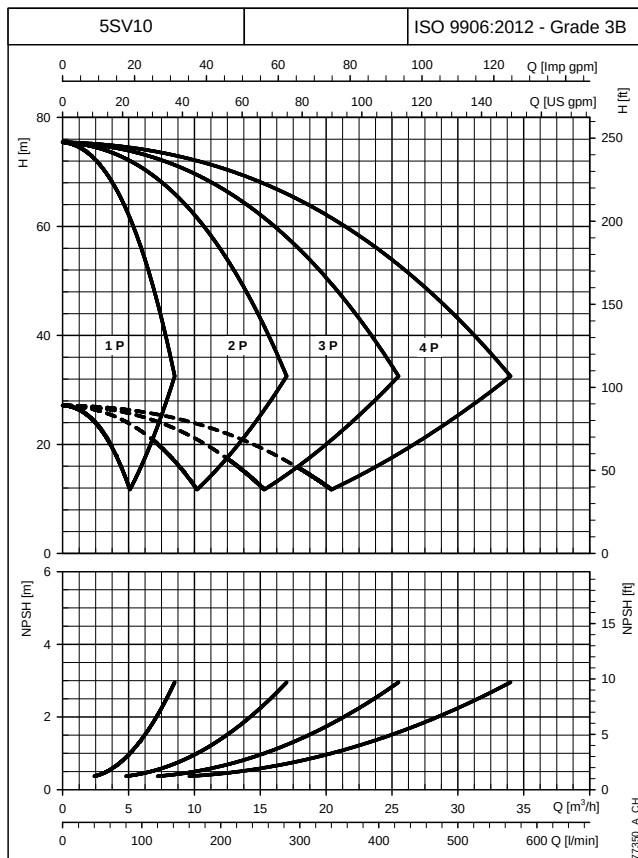
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



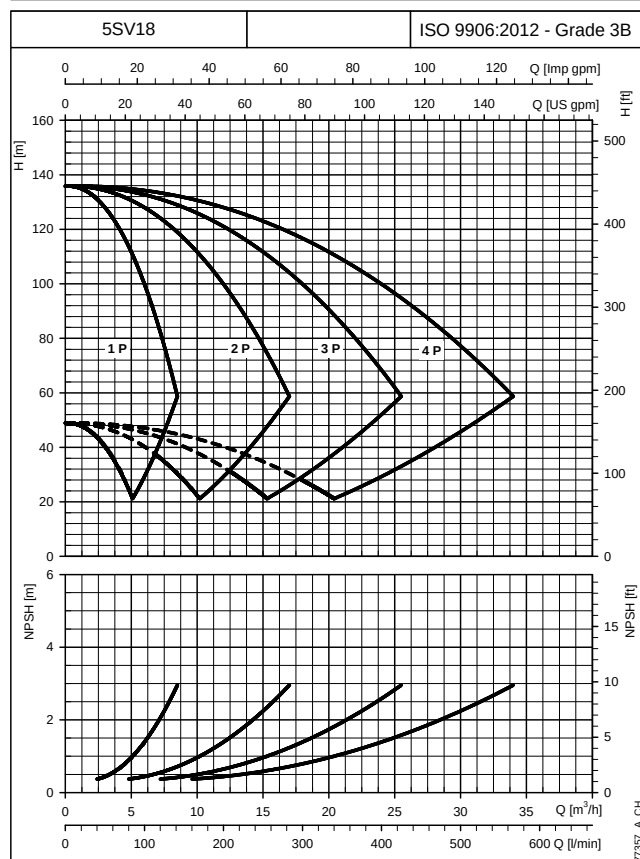
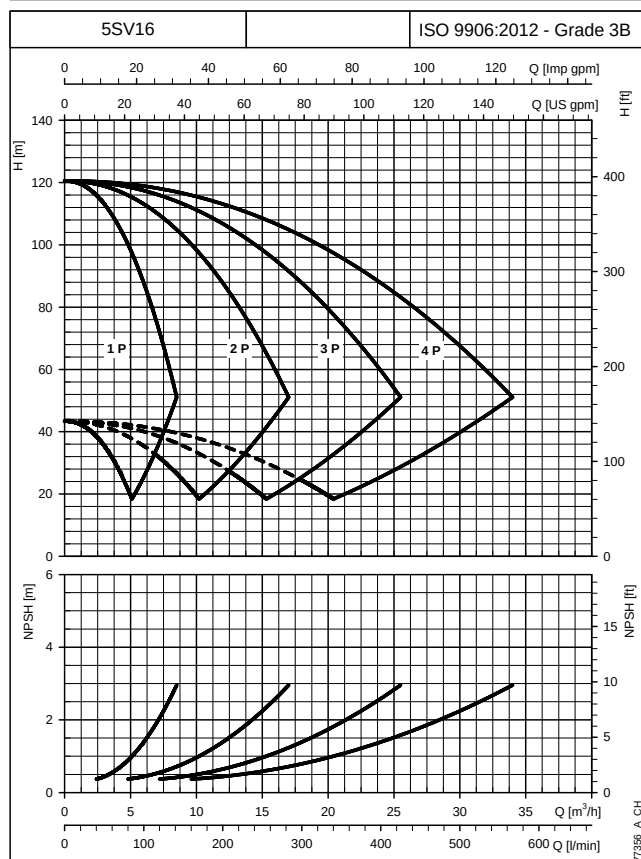
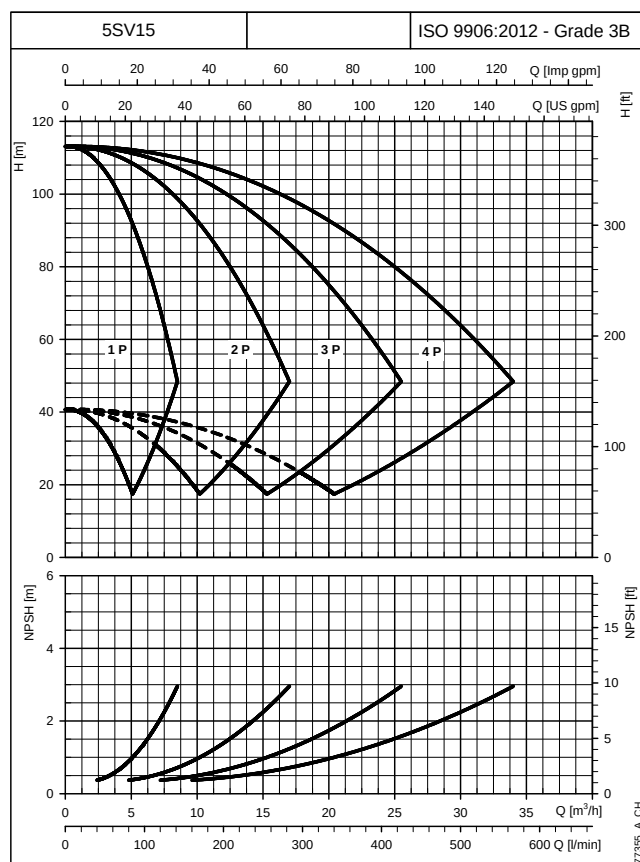
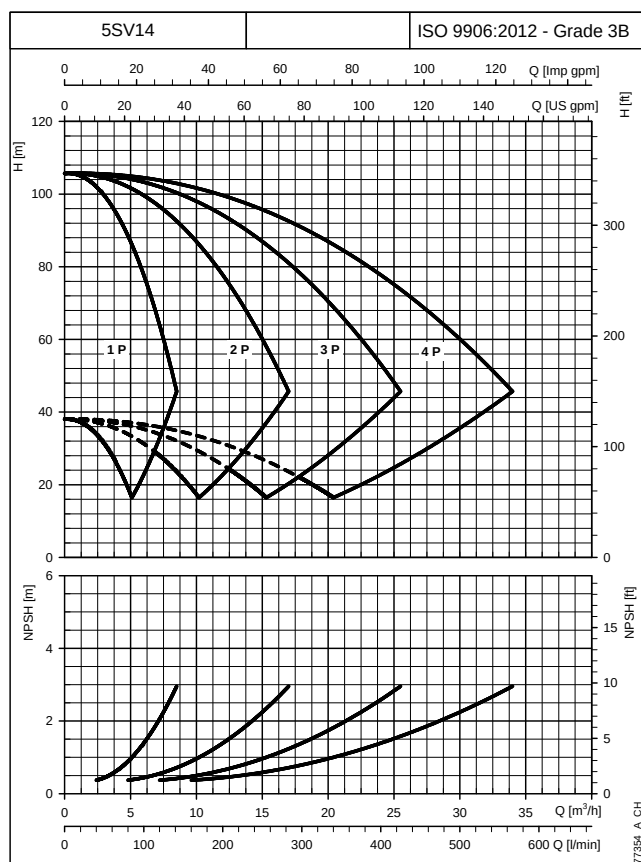
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



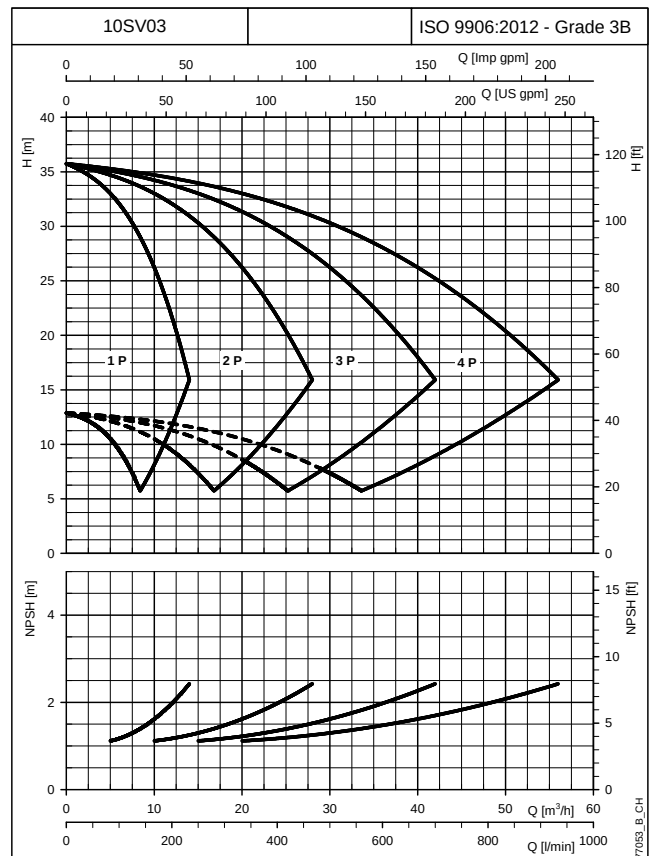
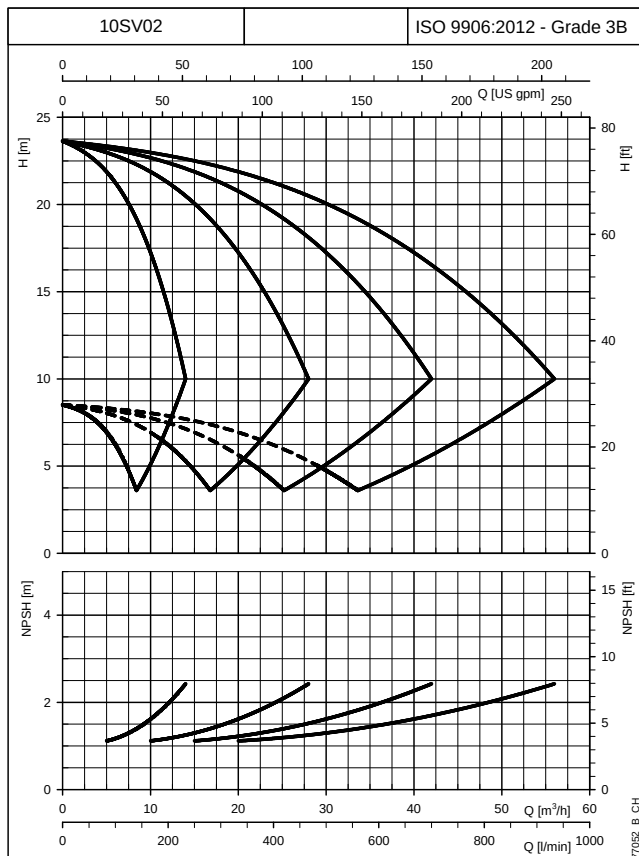
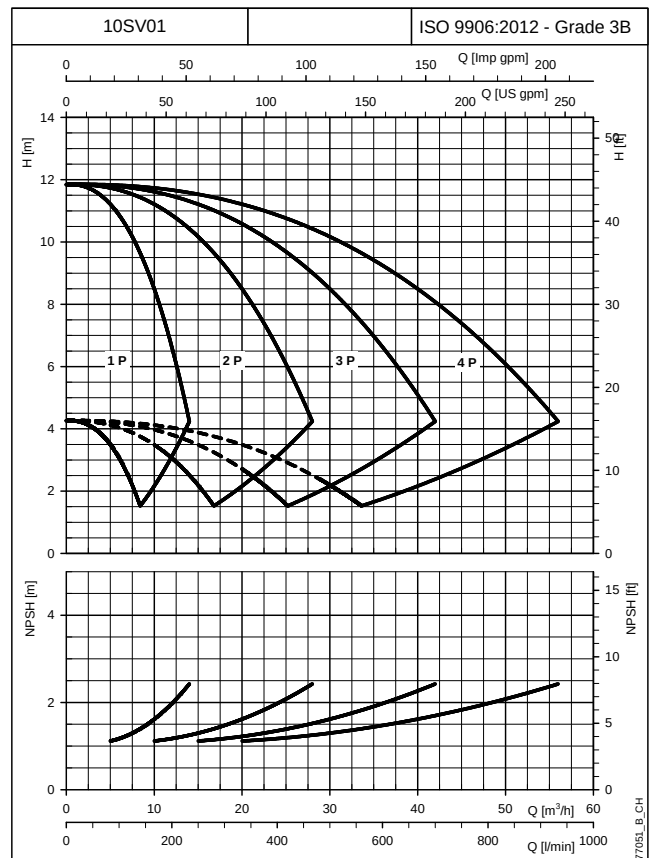
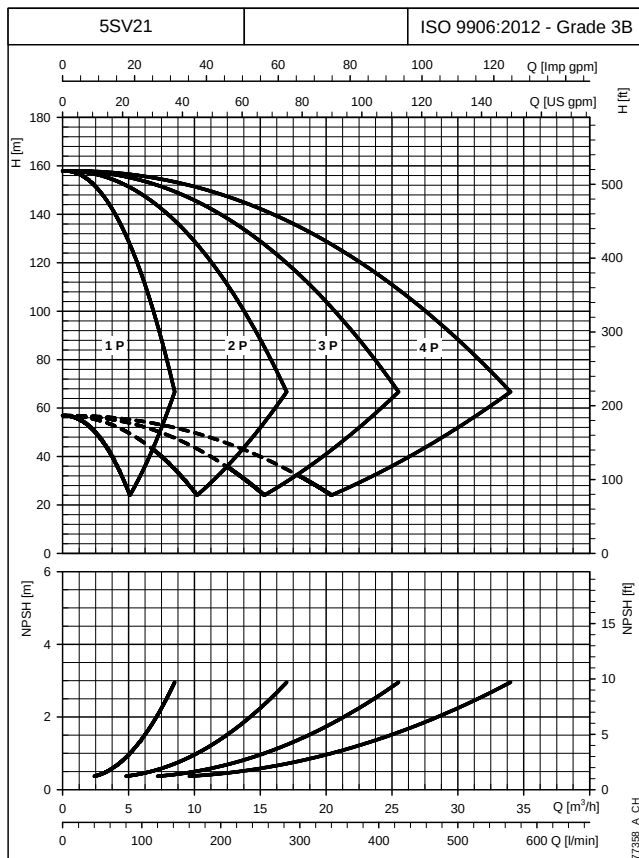
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## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



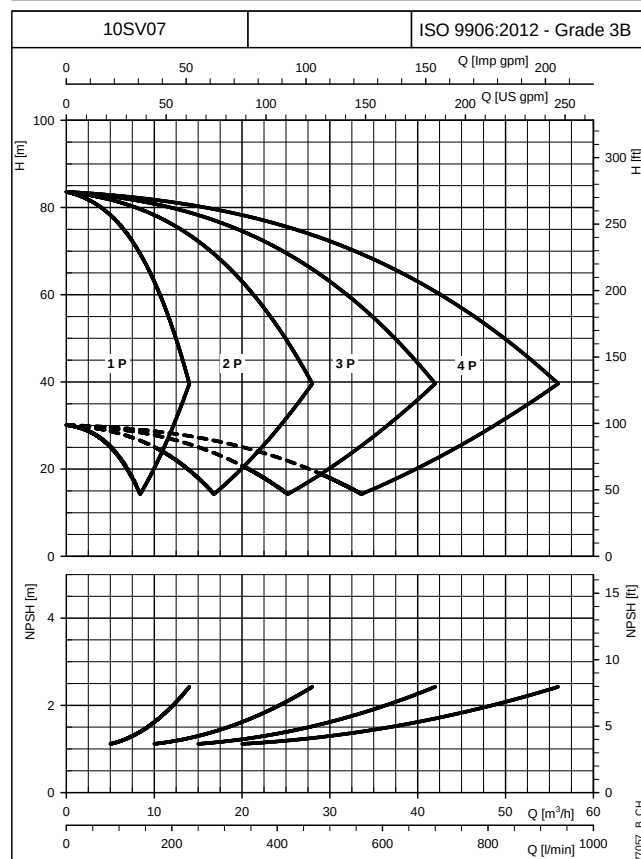
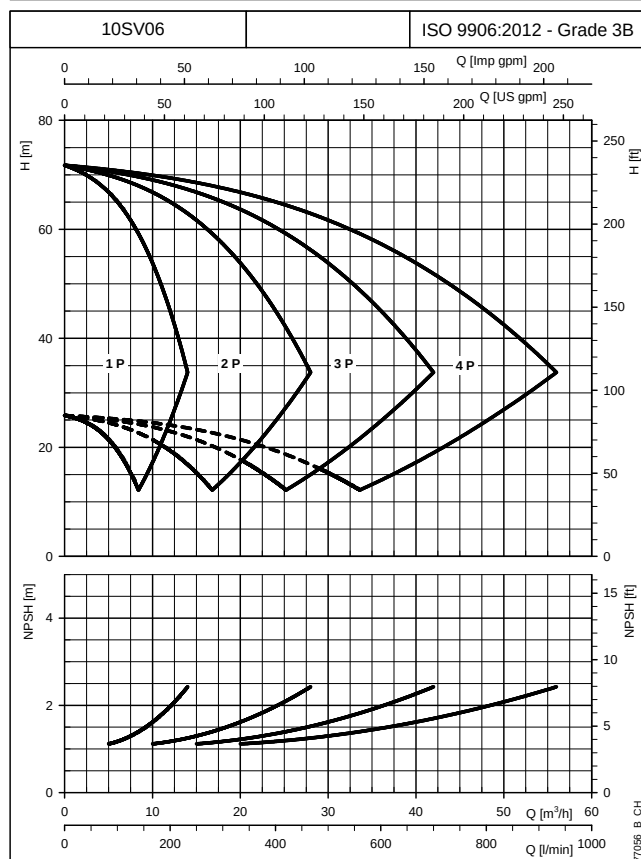
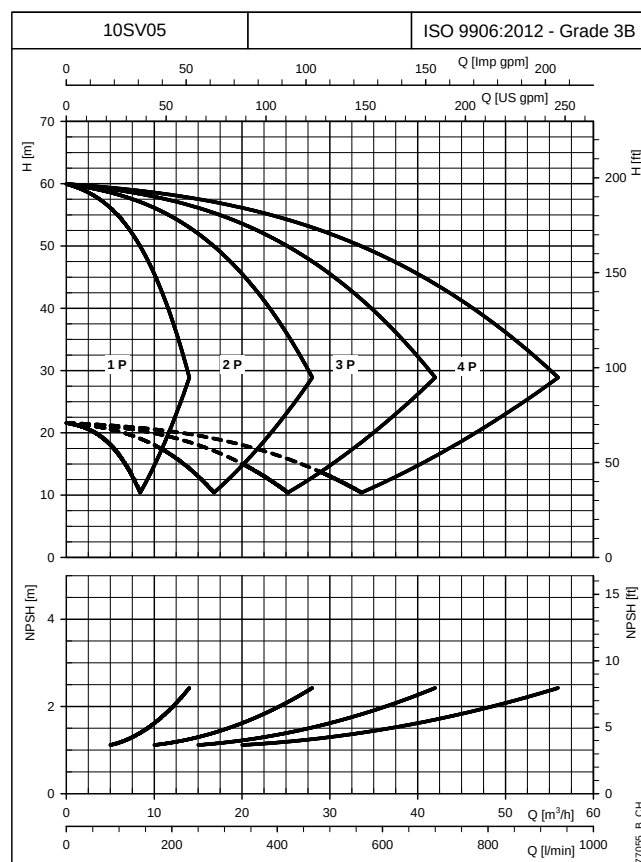
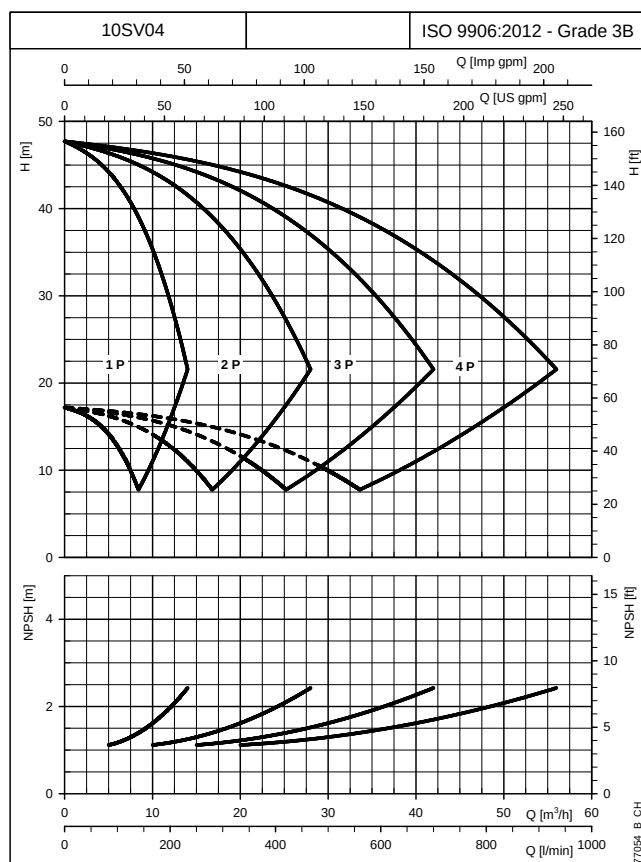
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## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz

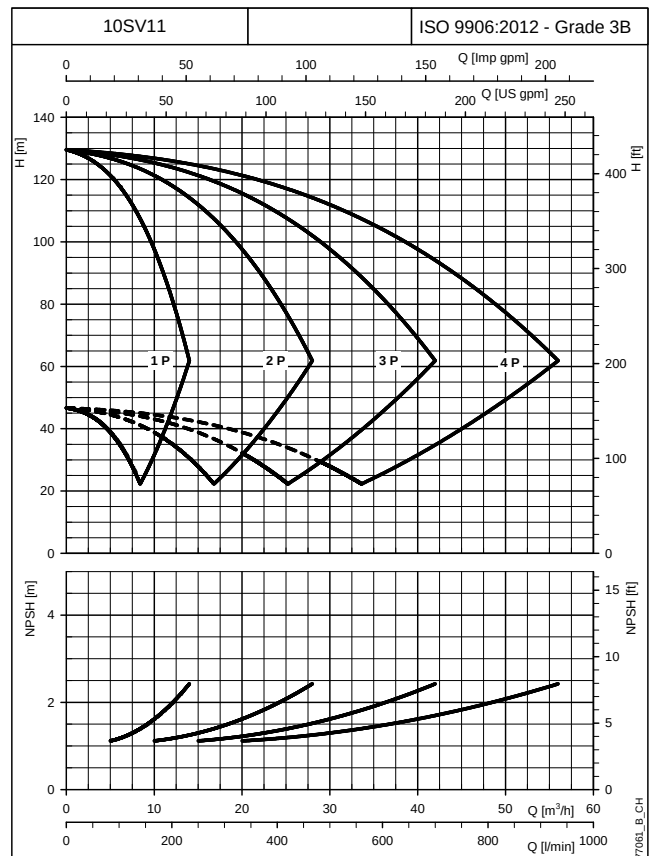
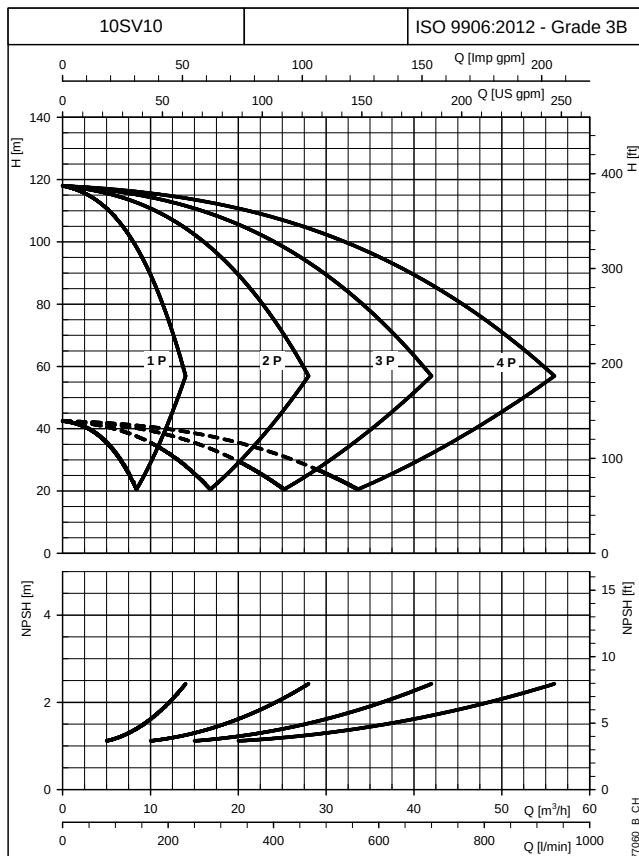
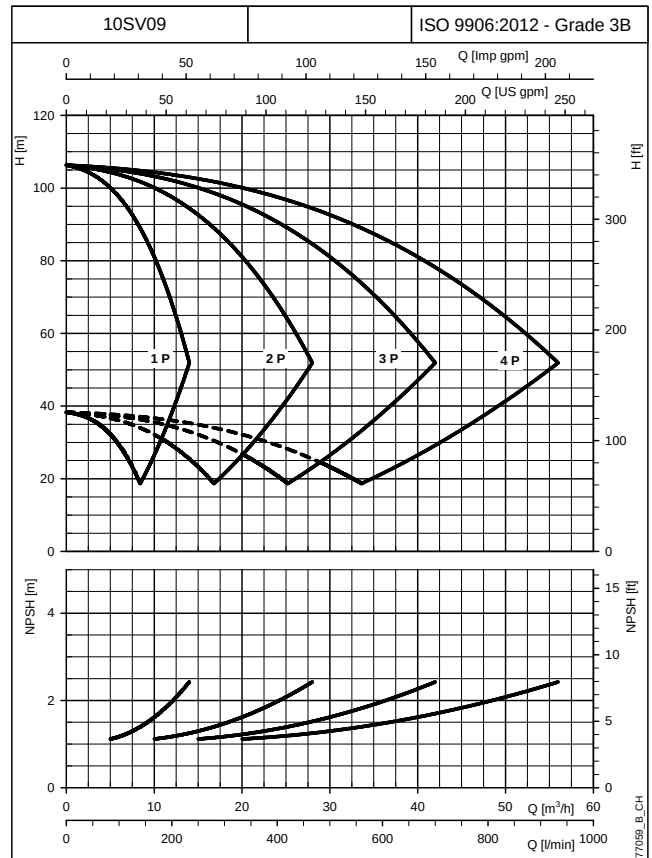
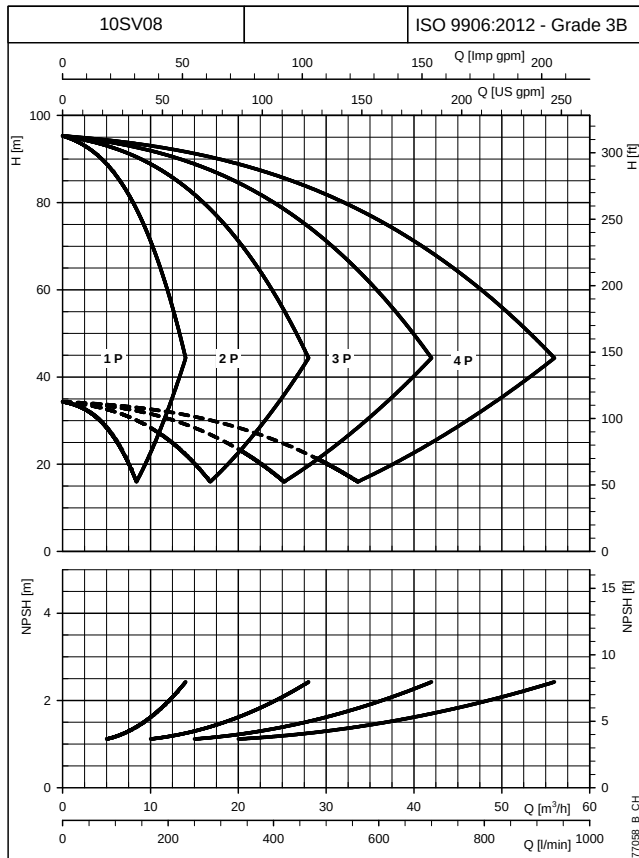


CURVES

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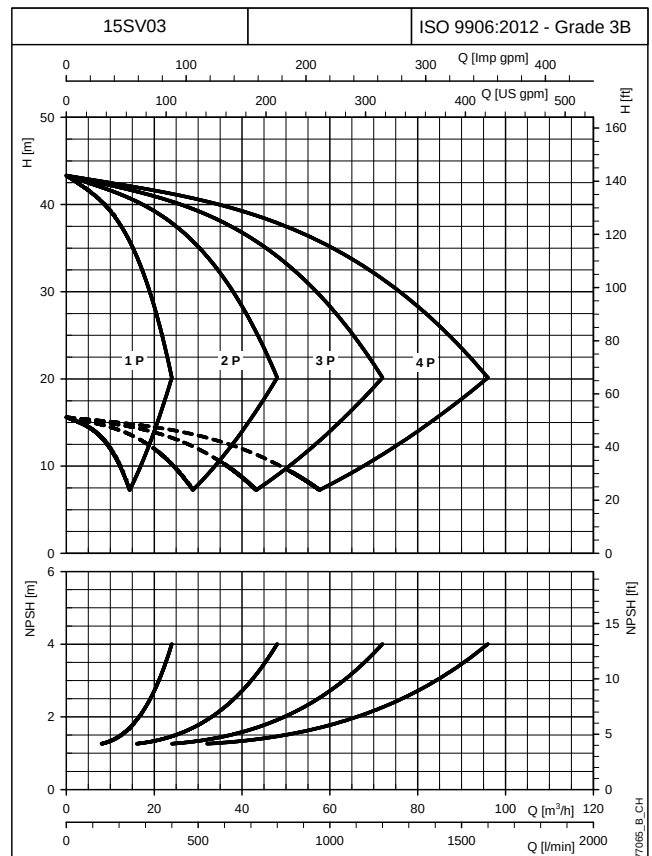
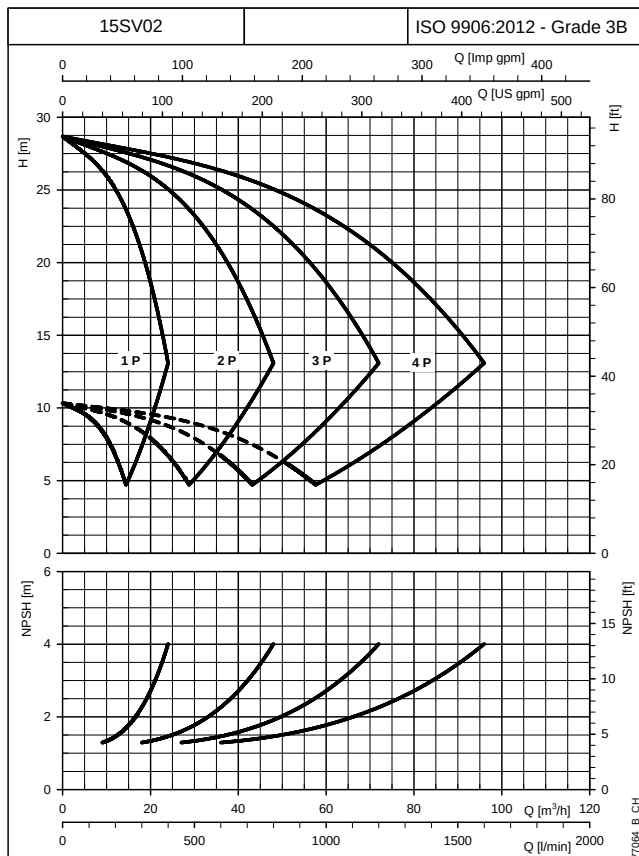
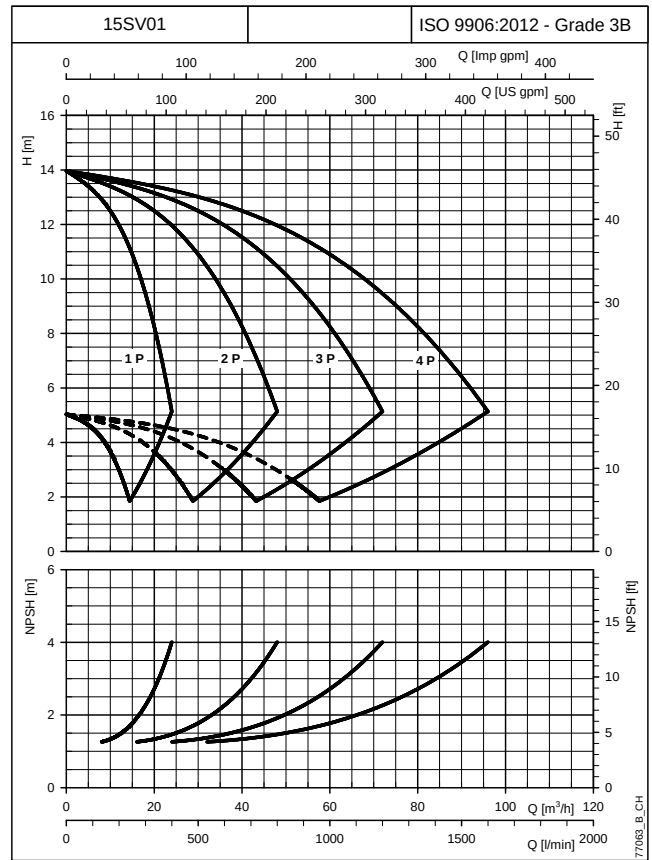
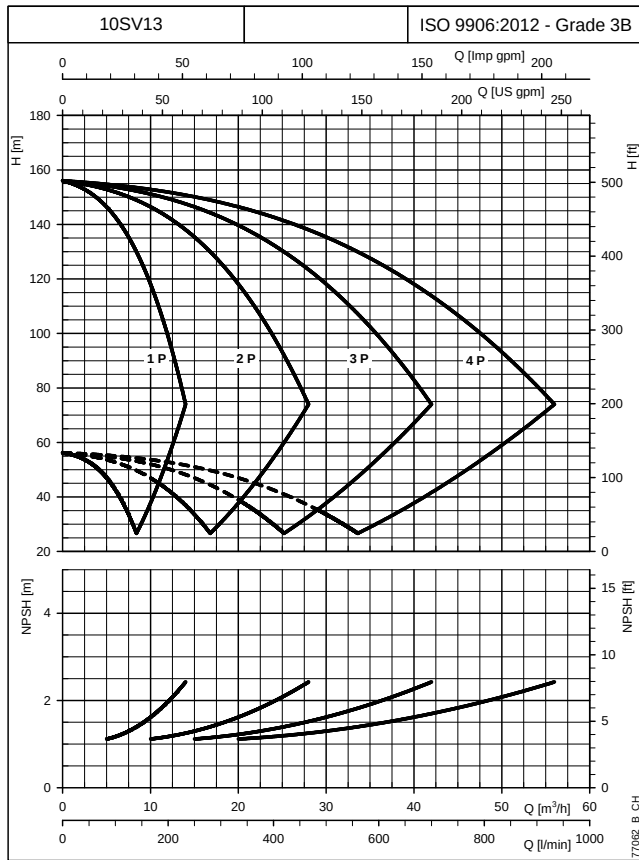


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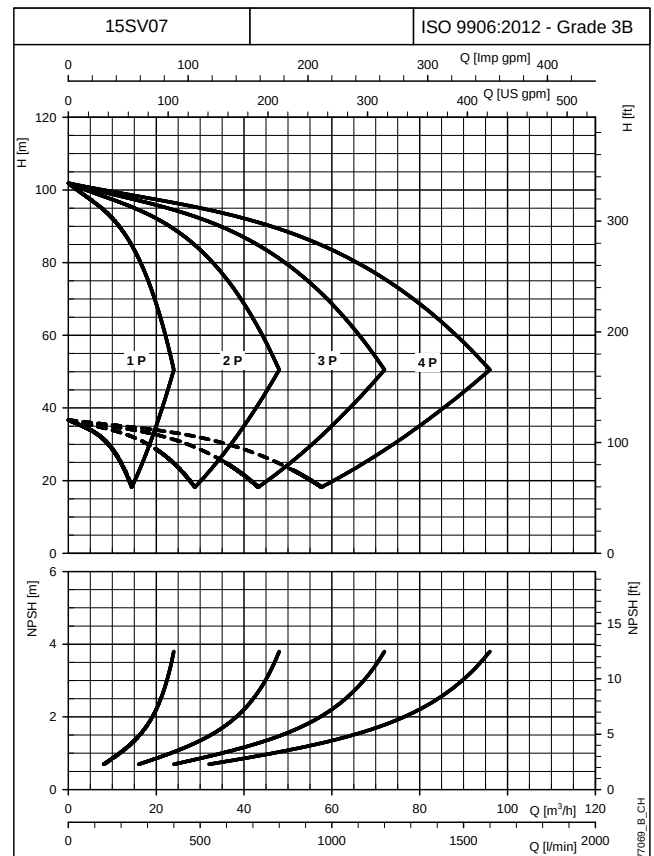
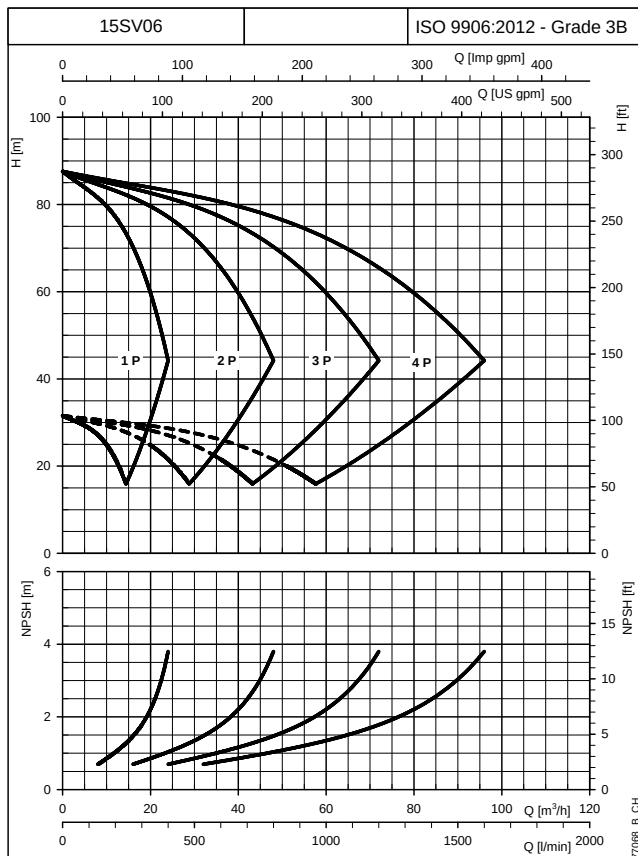
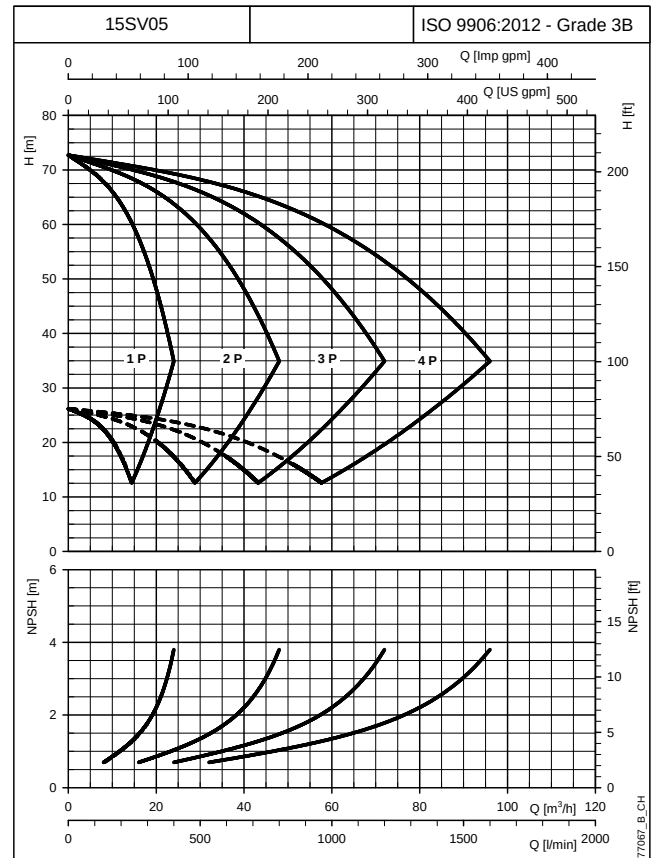
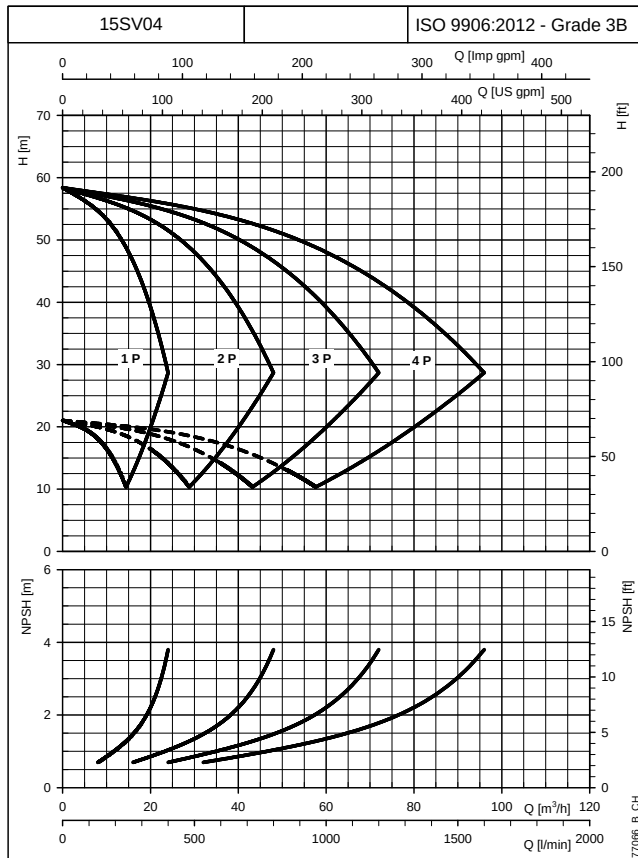
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



CURVES

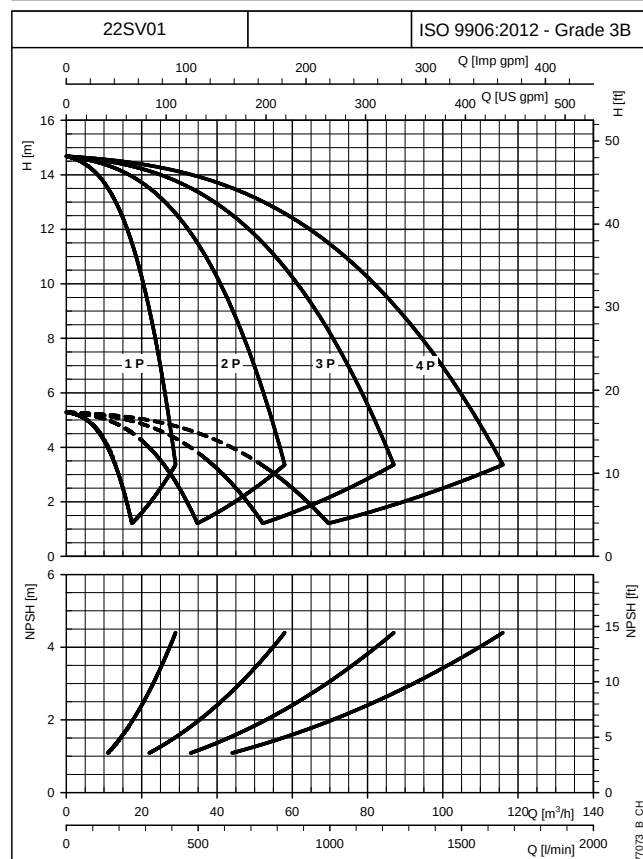
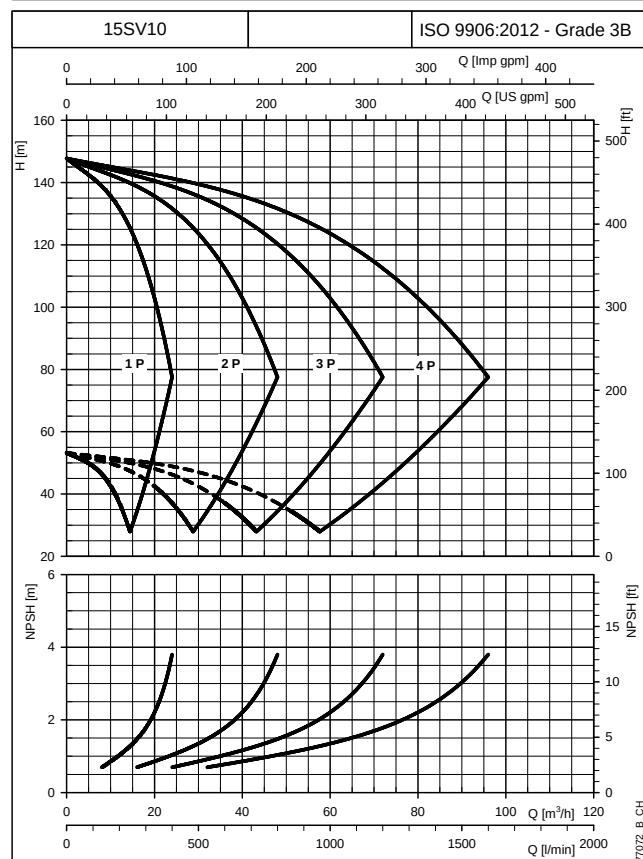
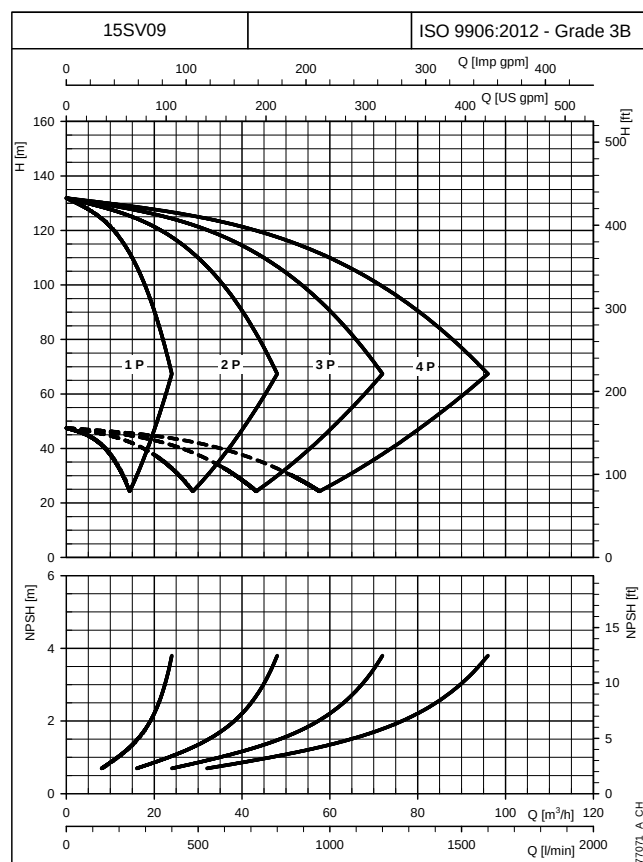
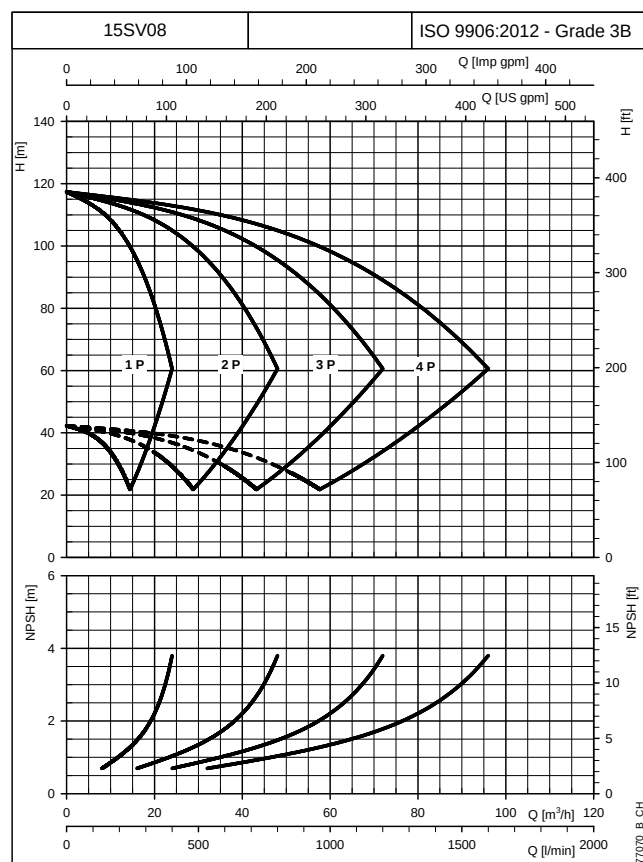
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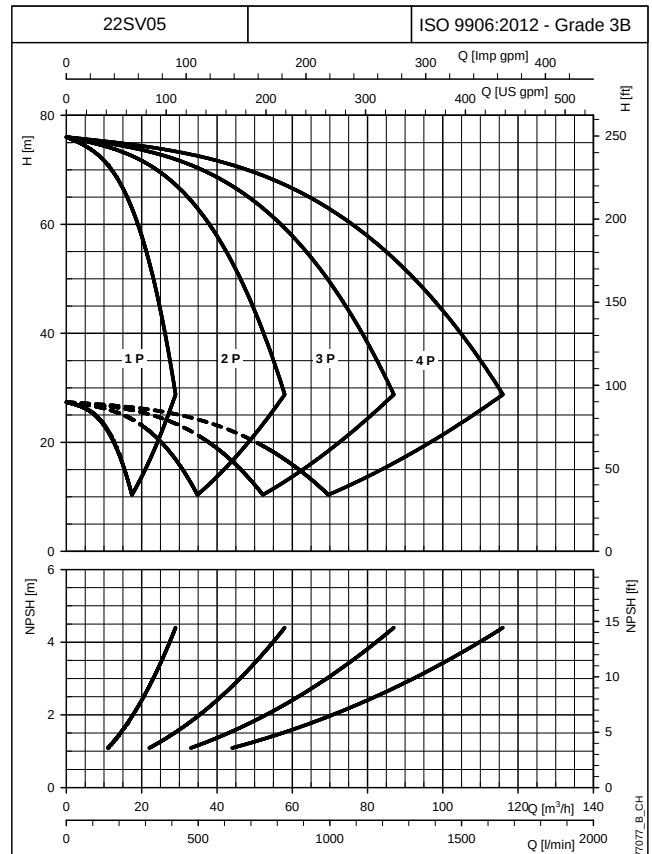
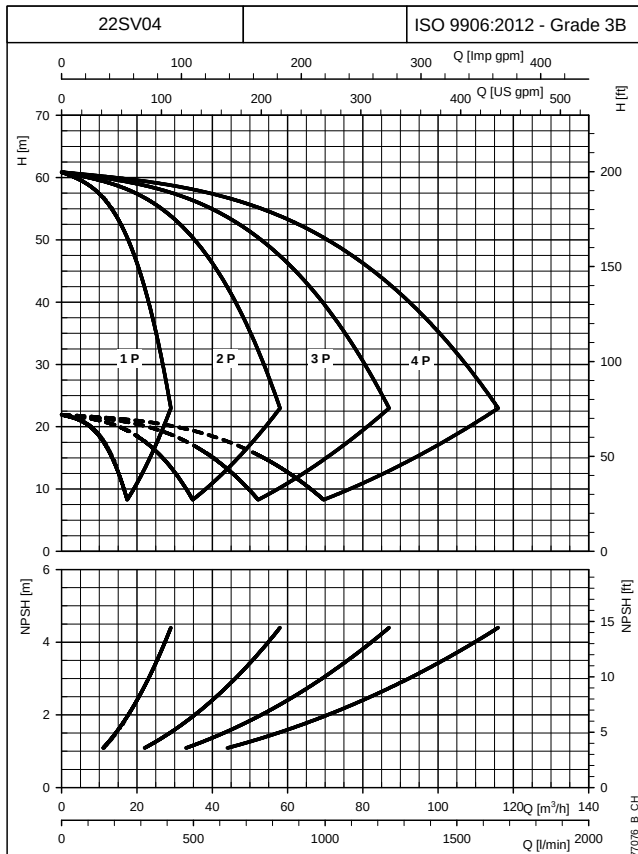
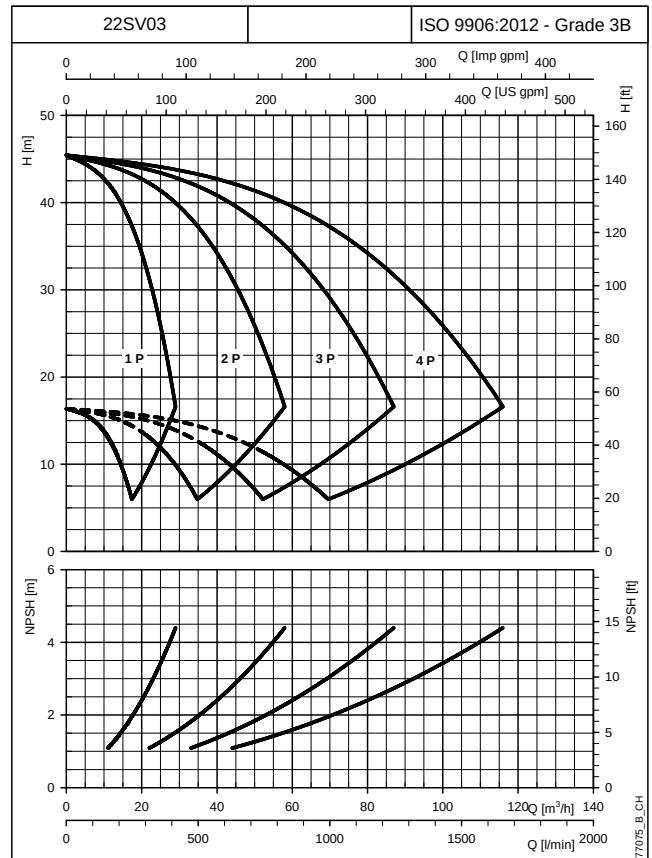
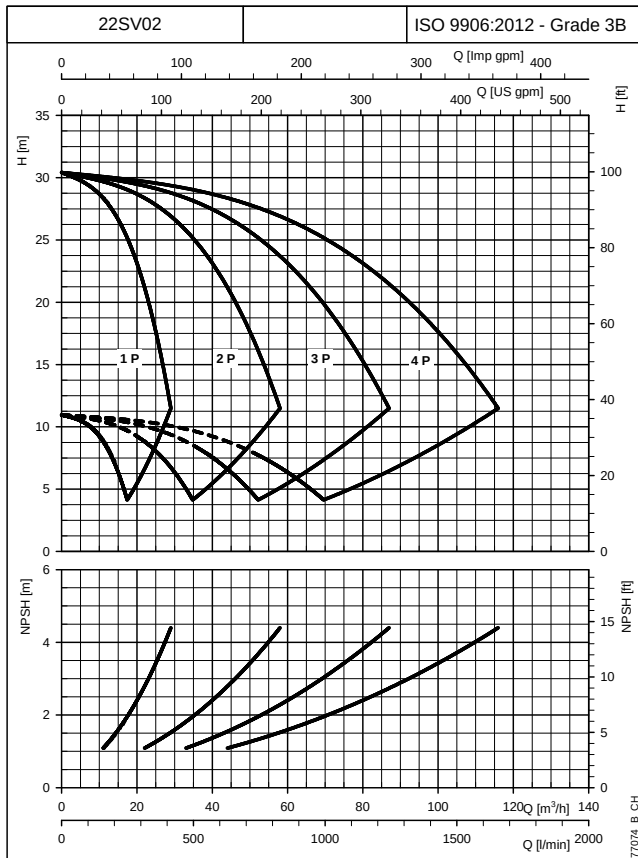
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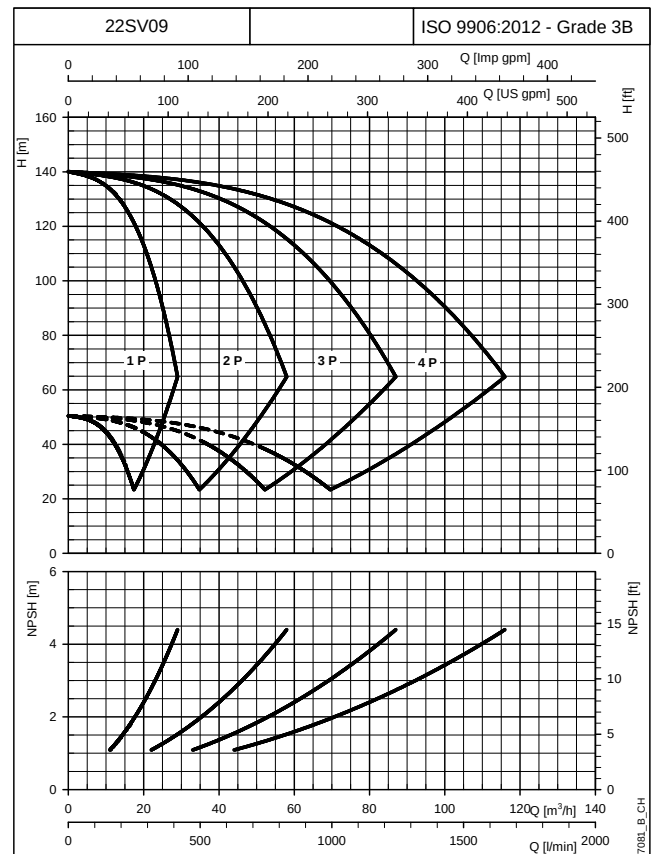
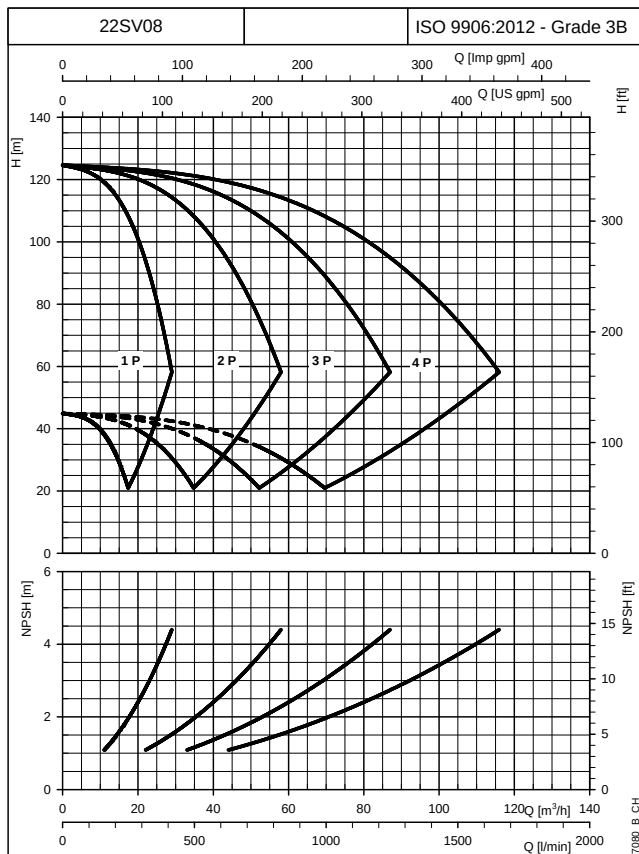
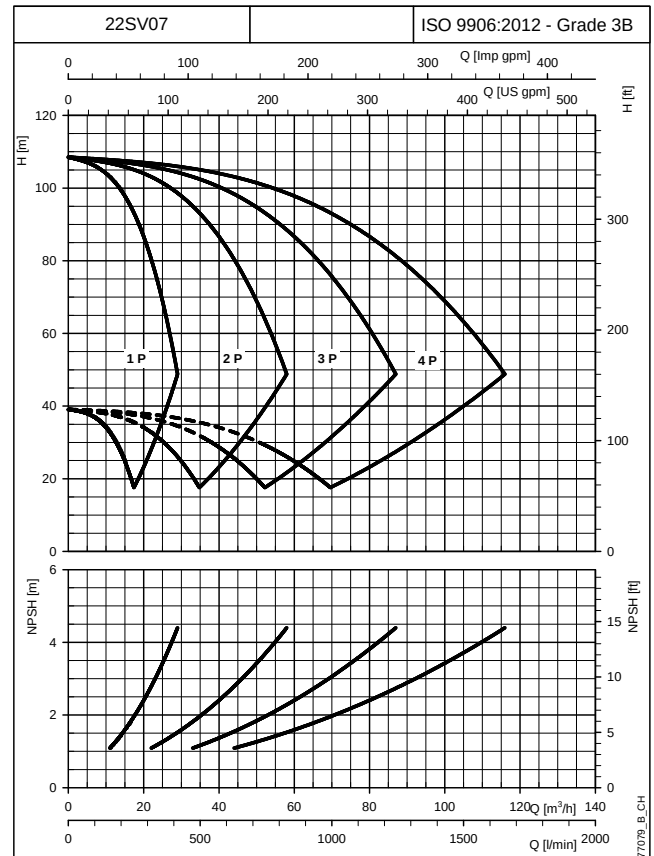
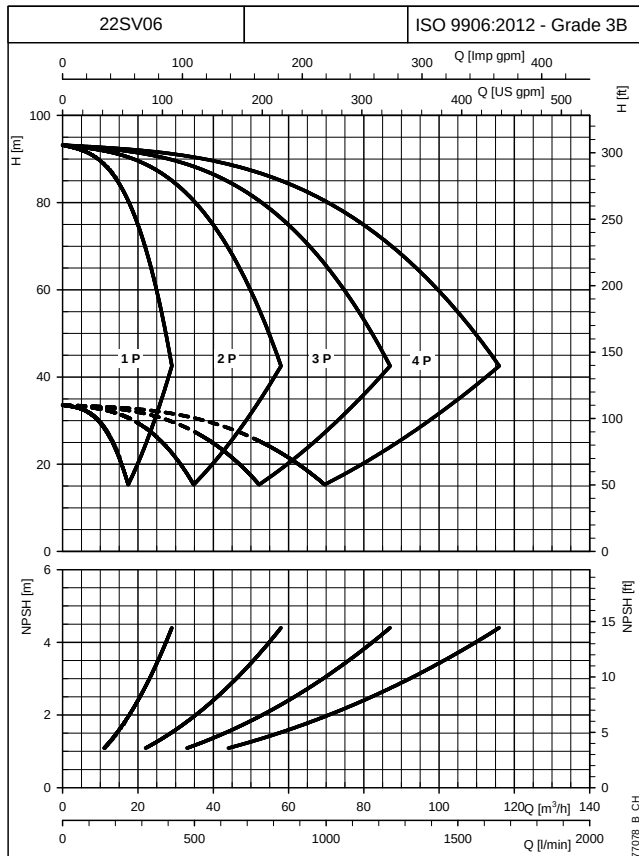
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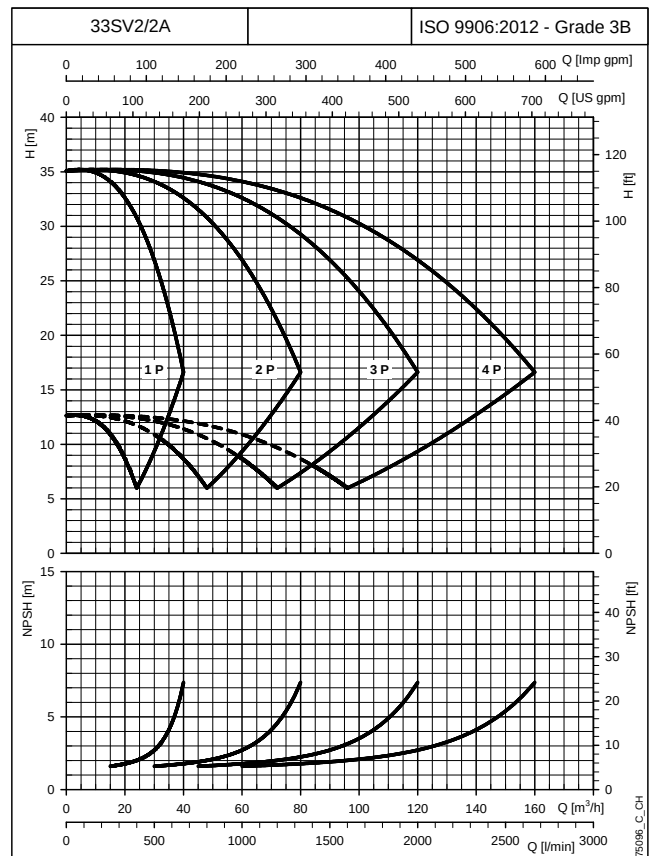
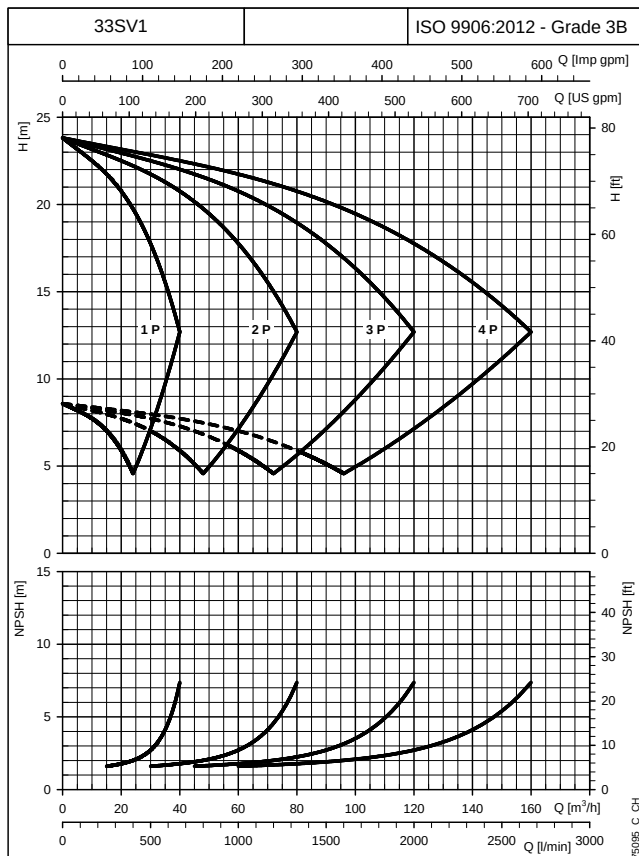
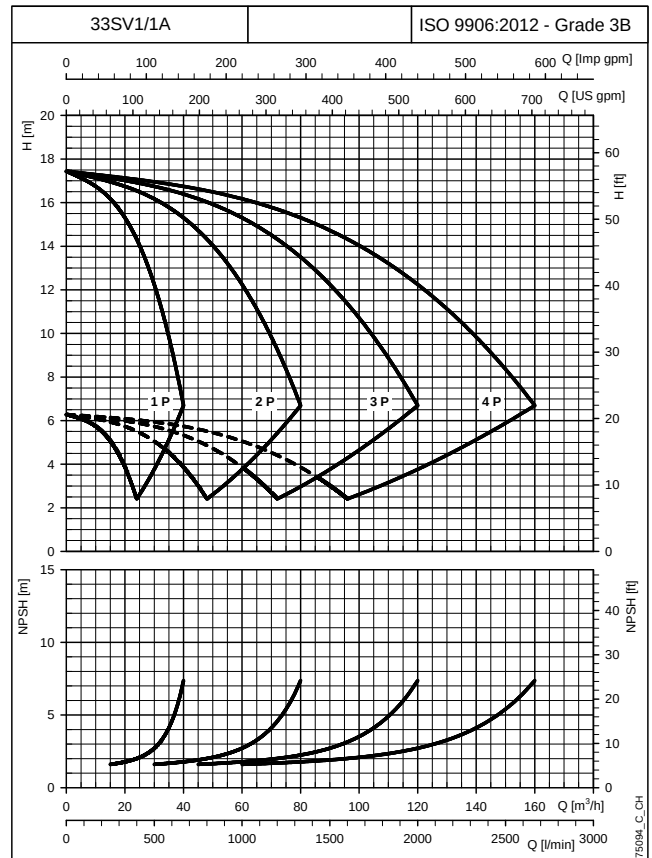
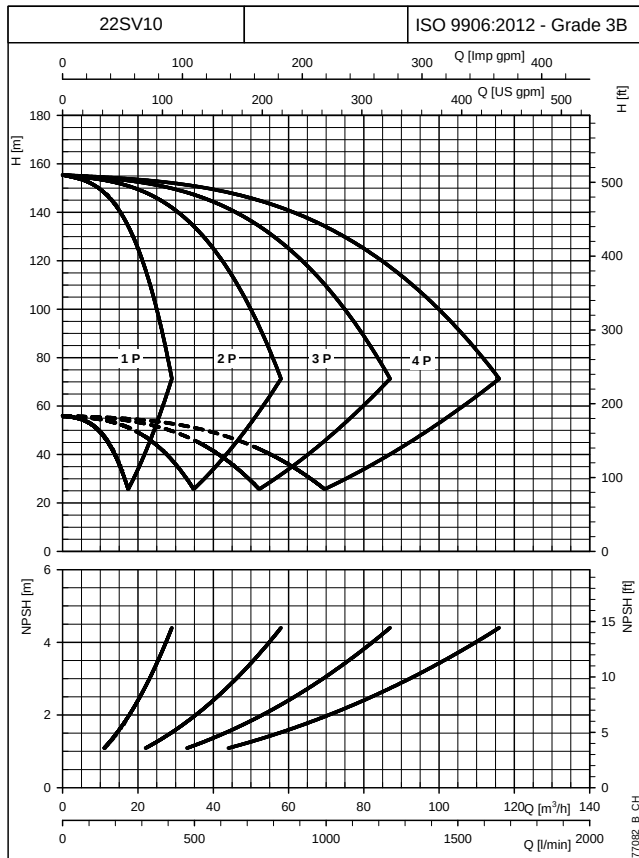
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



CURVES

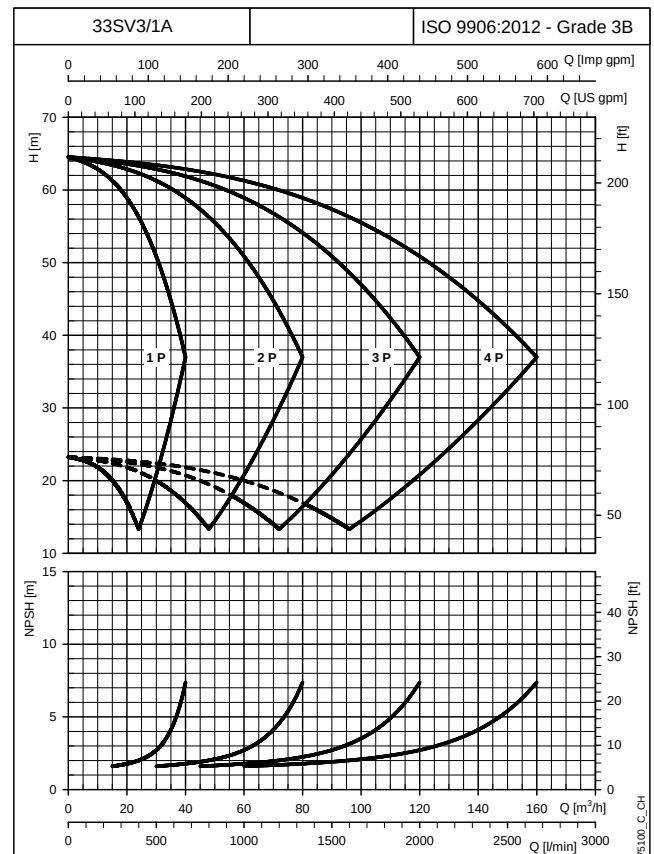
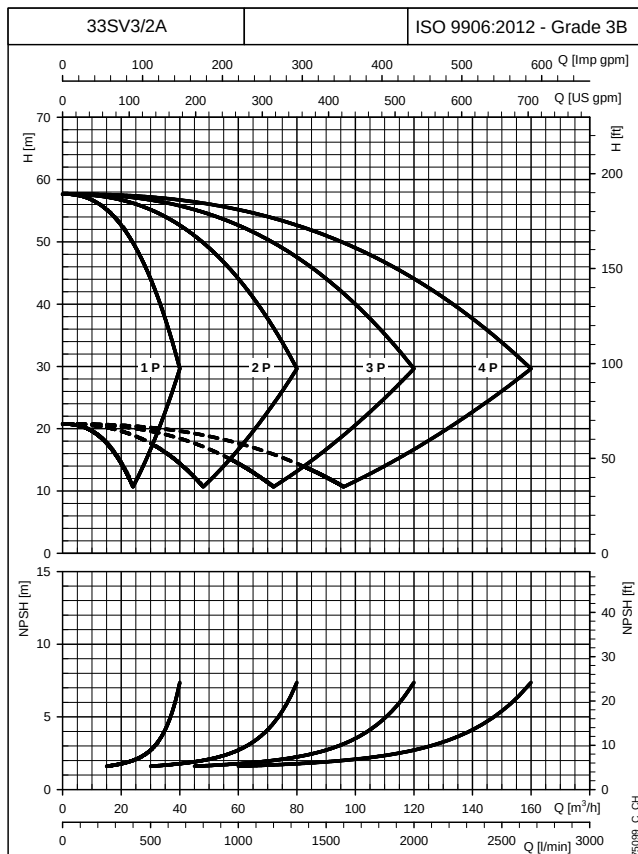
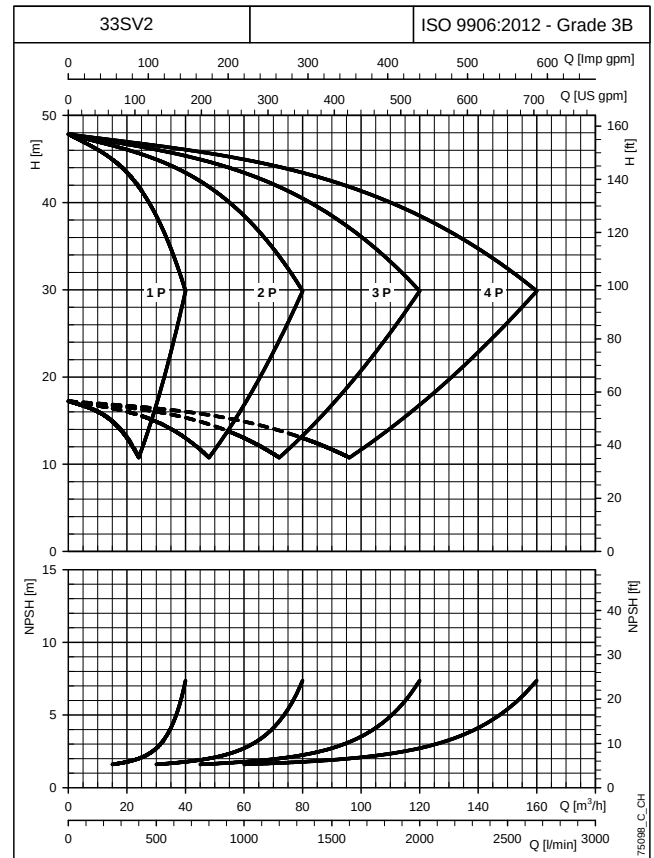
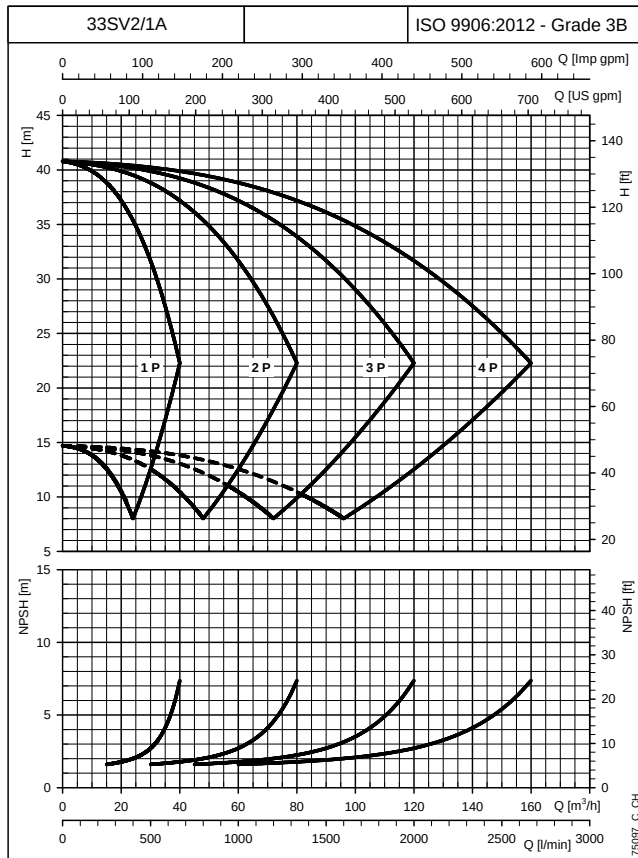
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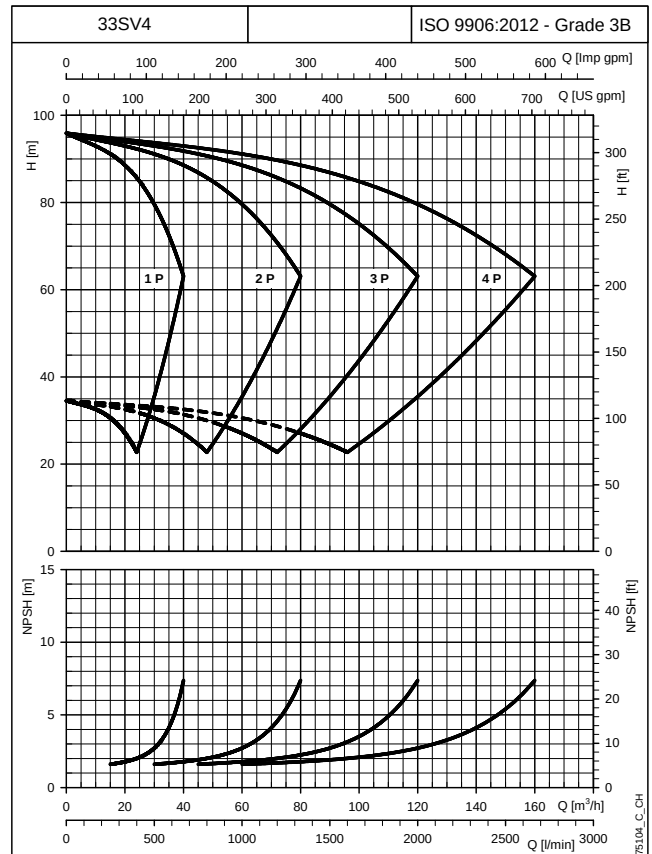
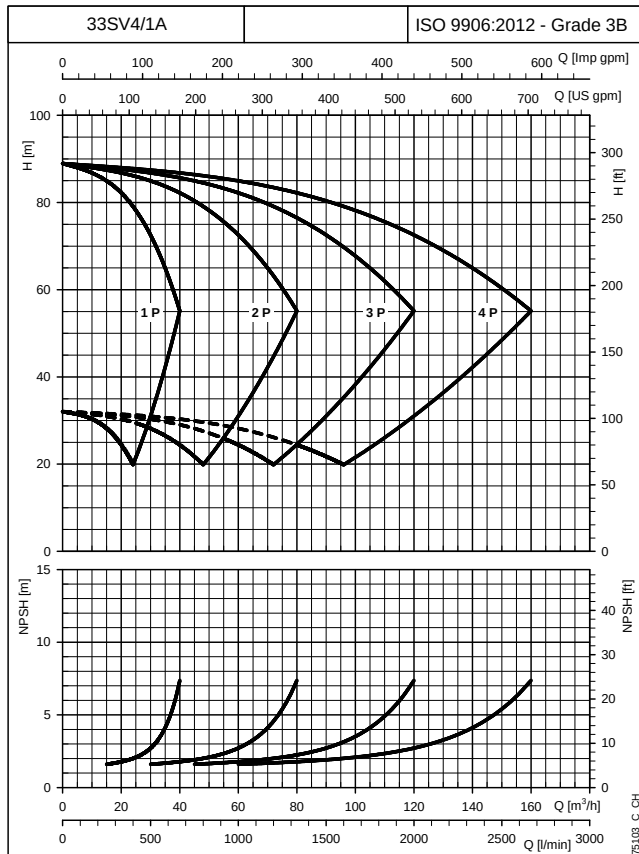
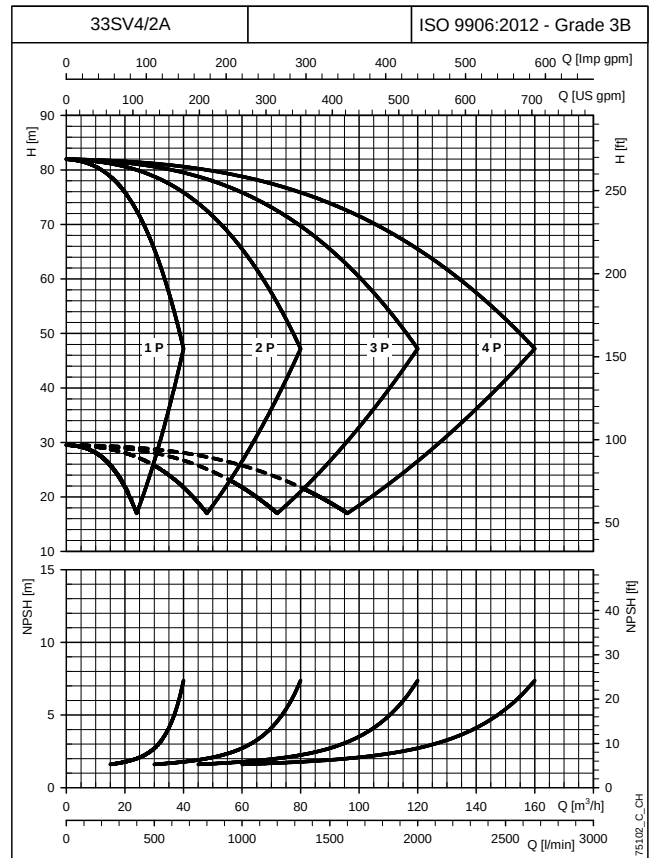
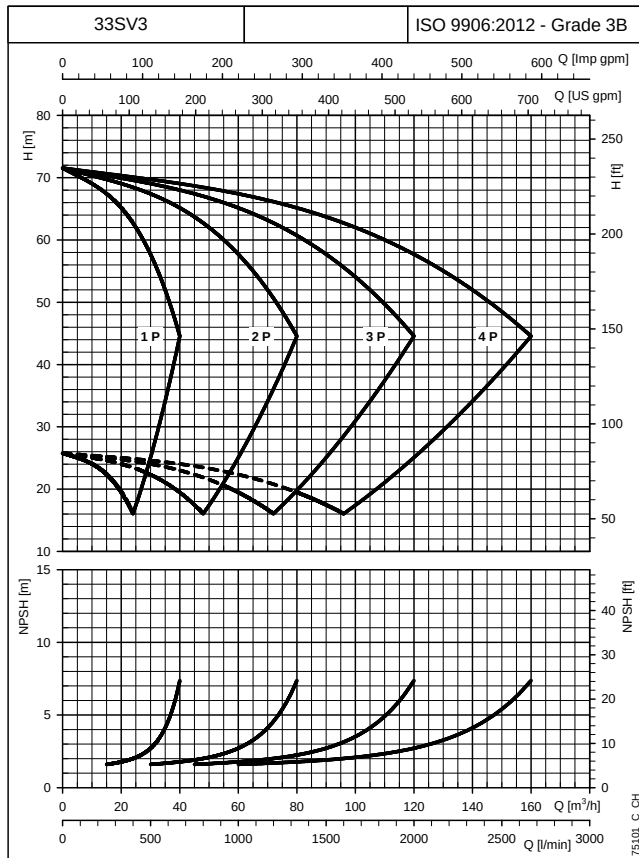
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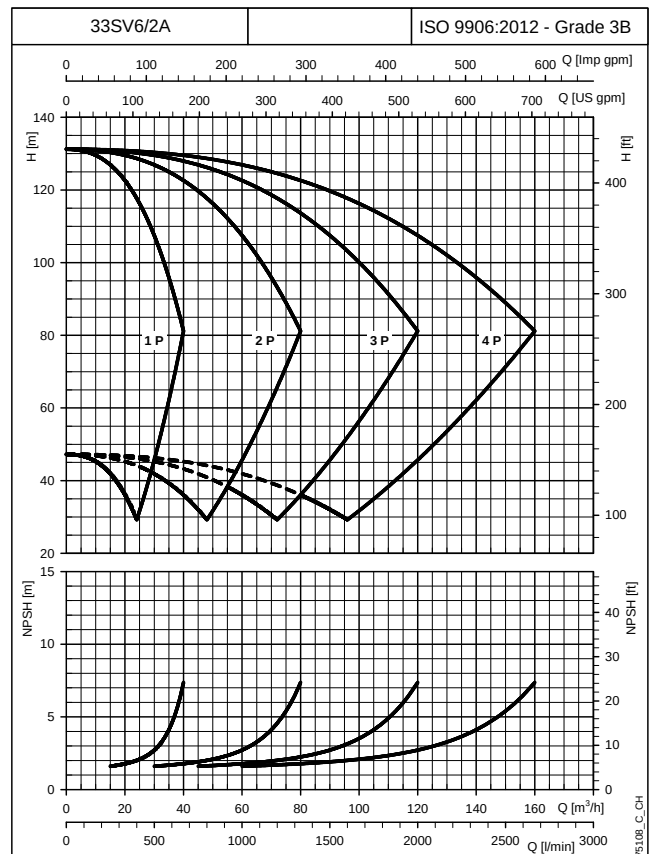
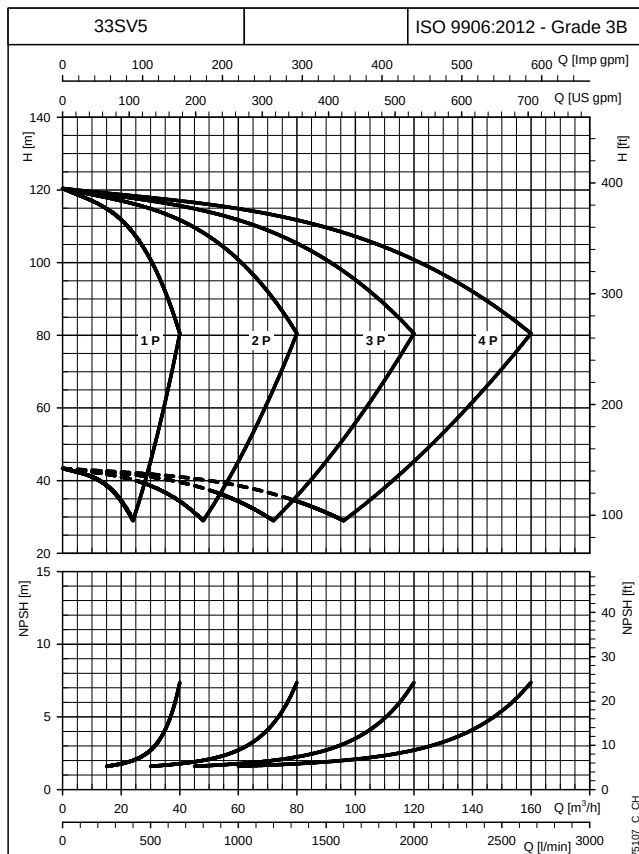
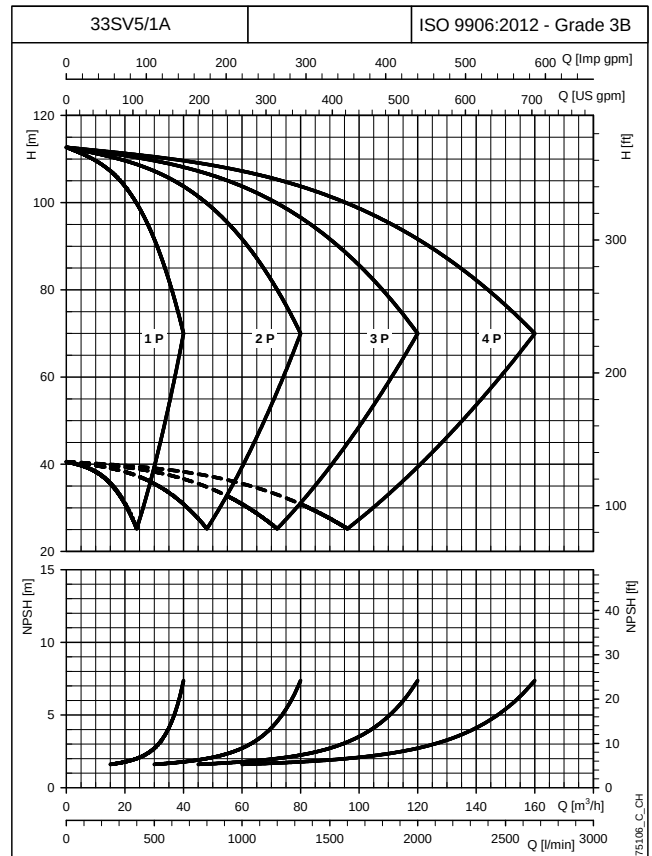
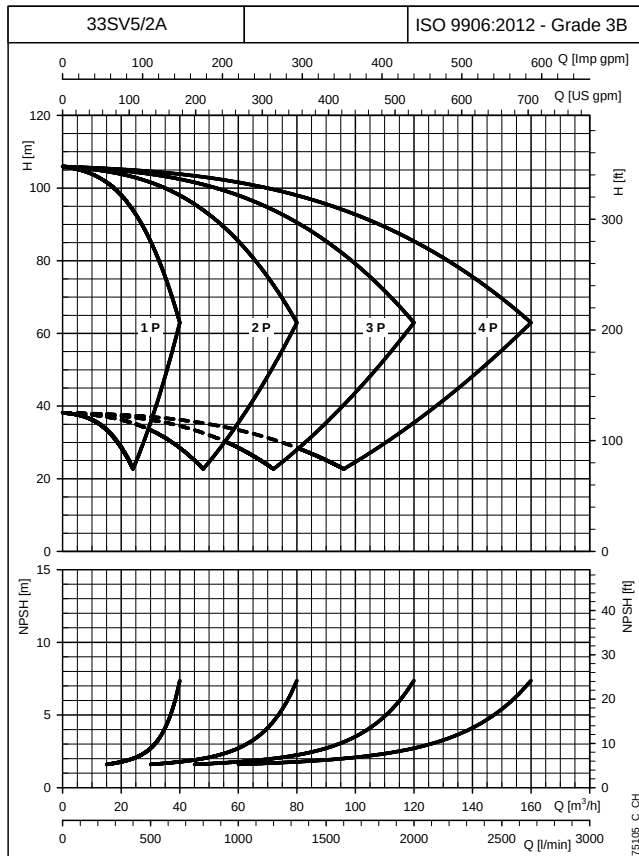


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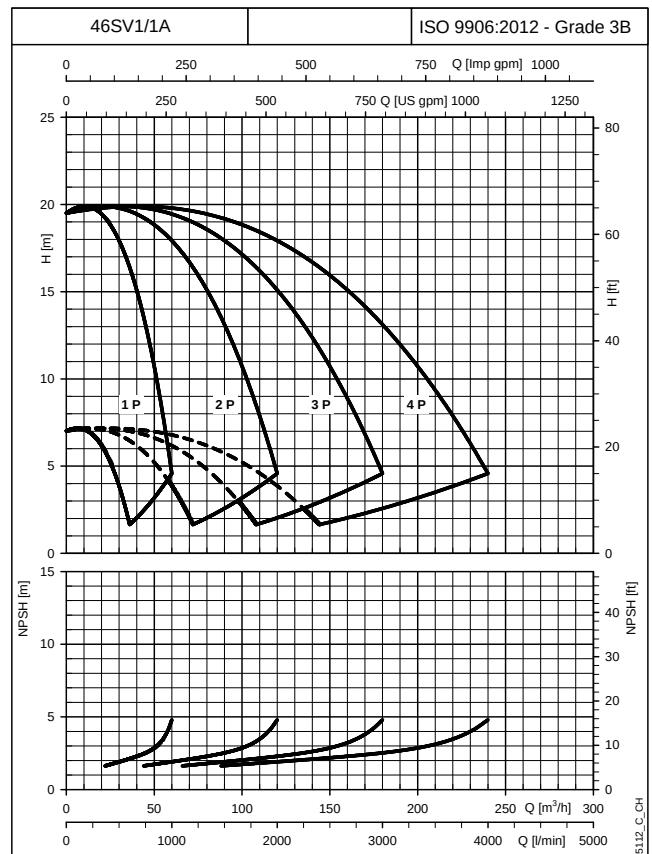
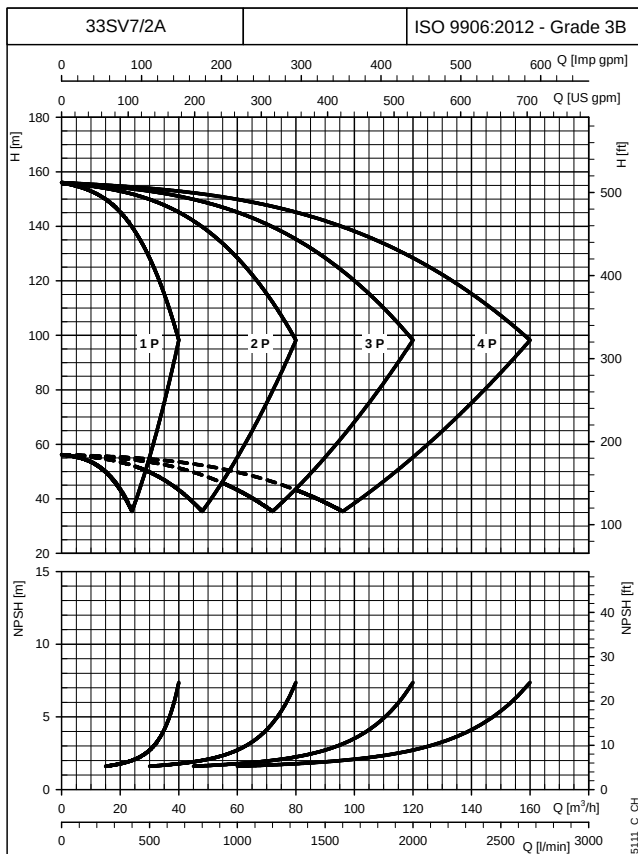
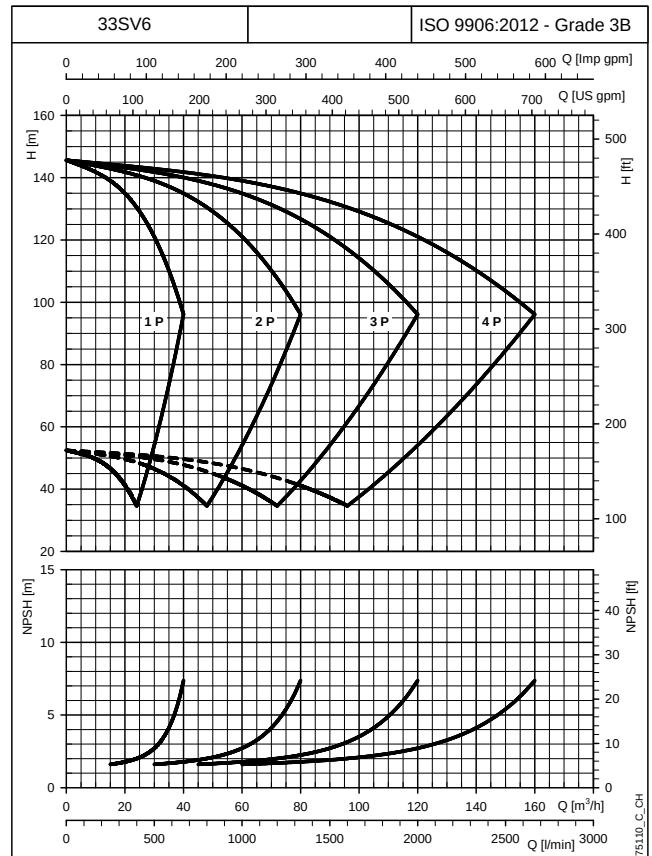
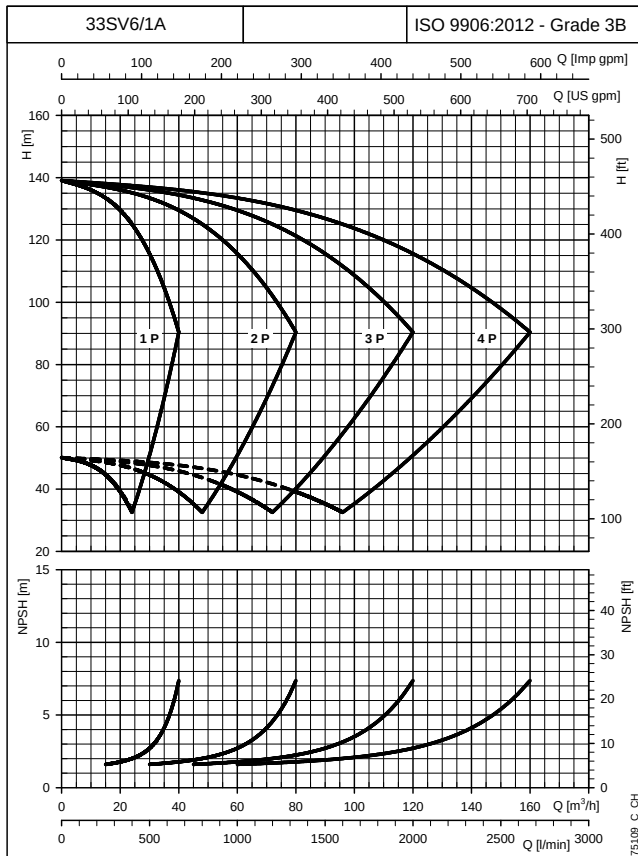
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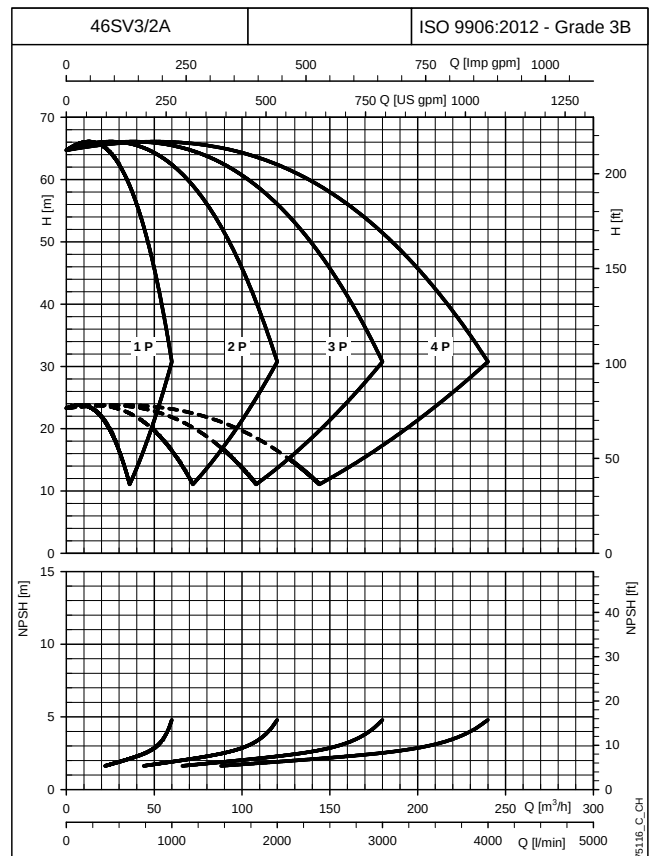
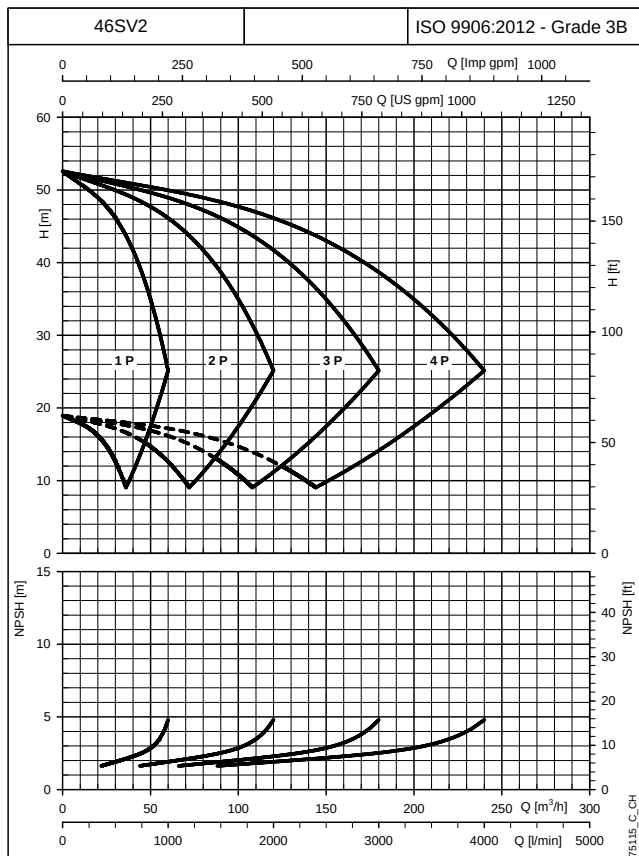
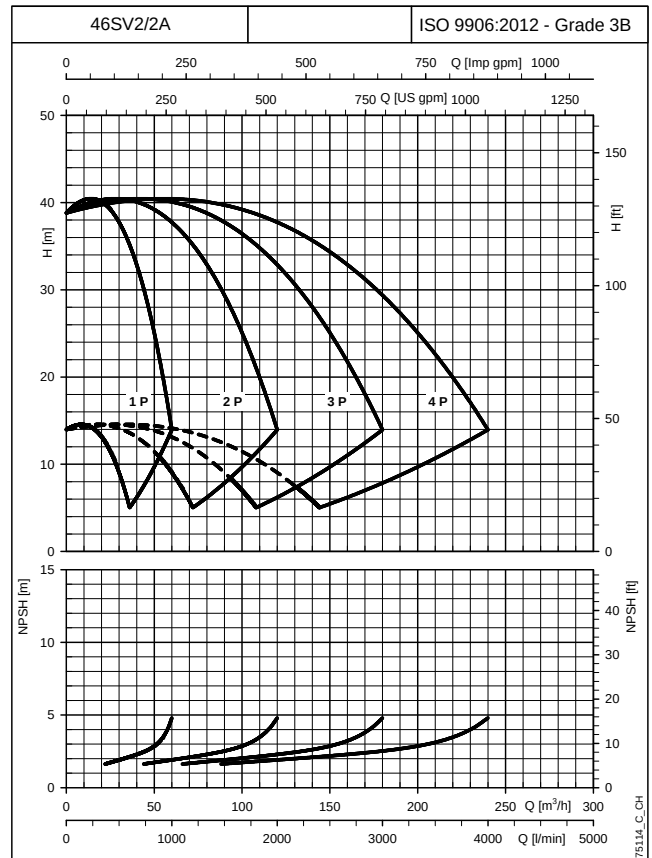
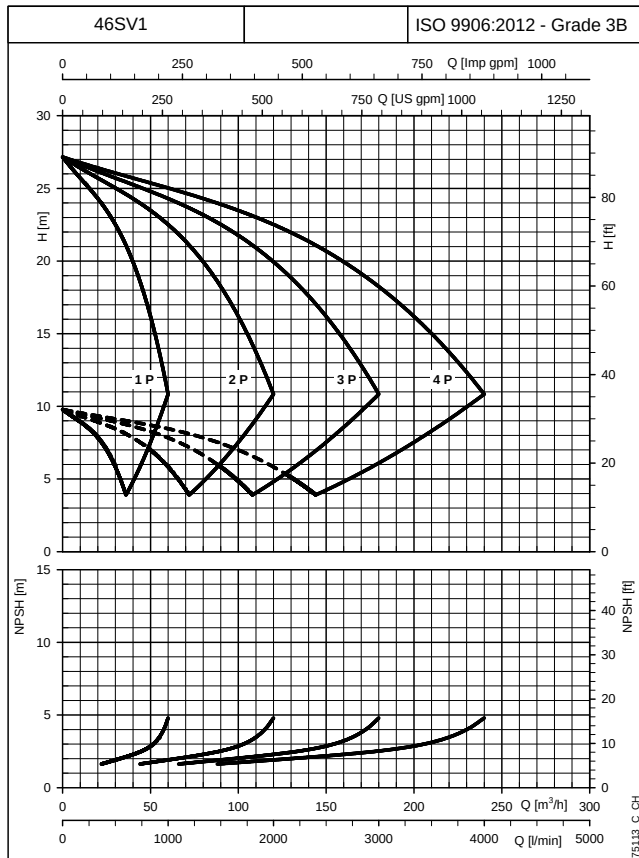
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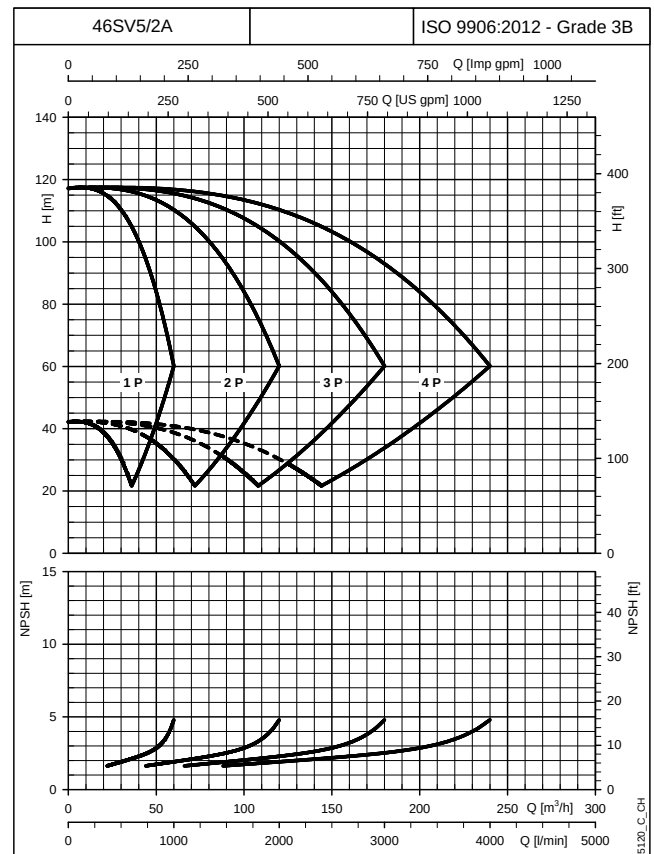
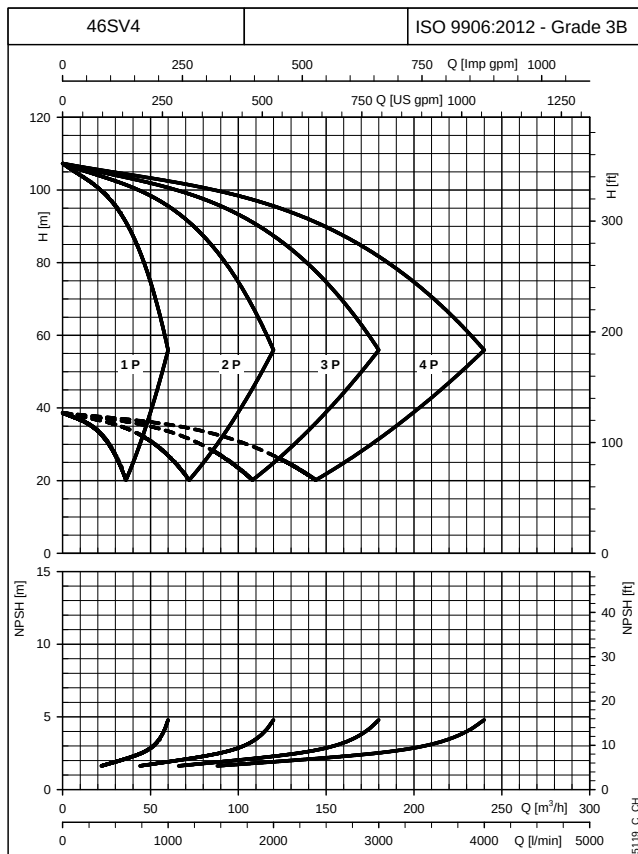
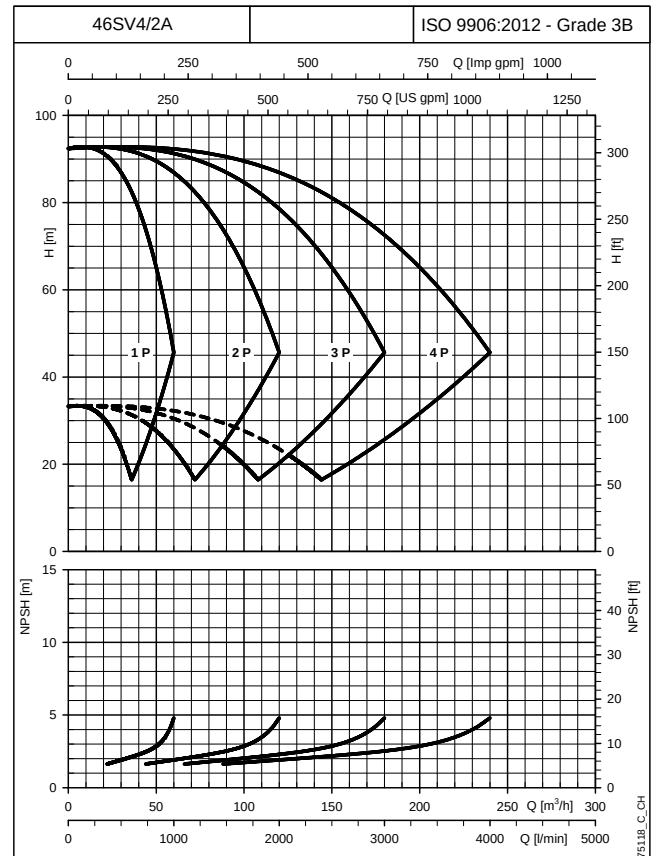
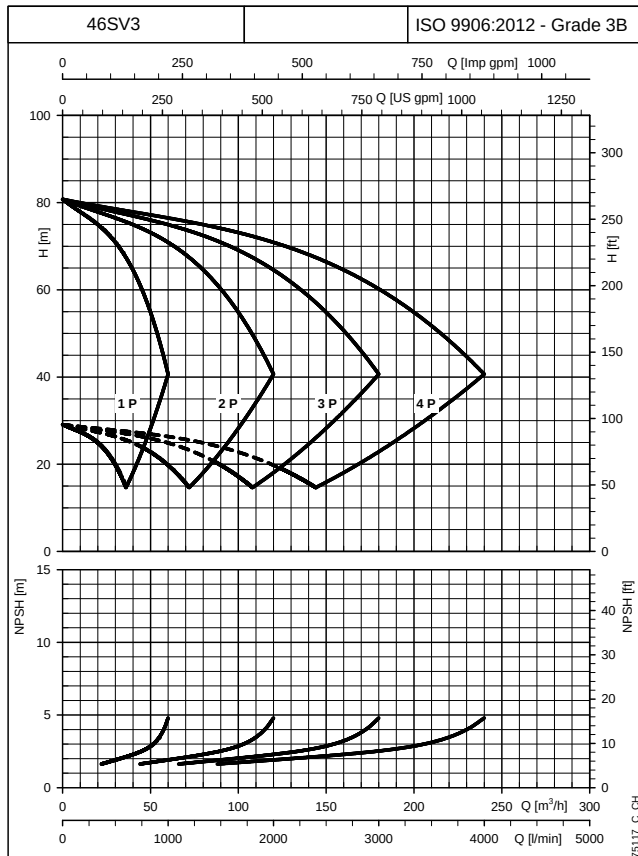
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



CURVES

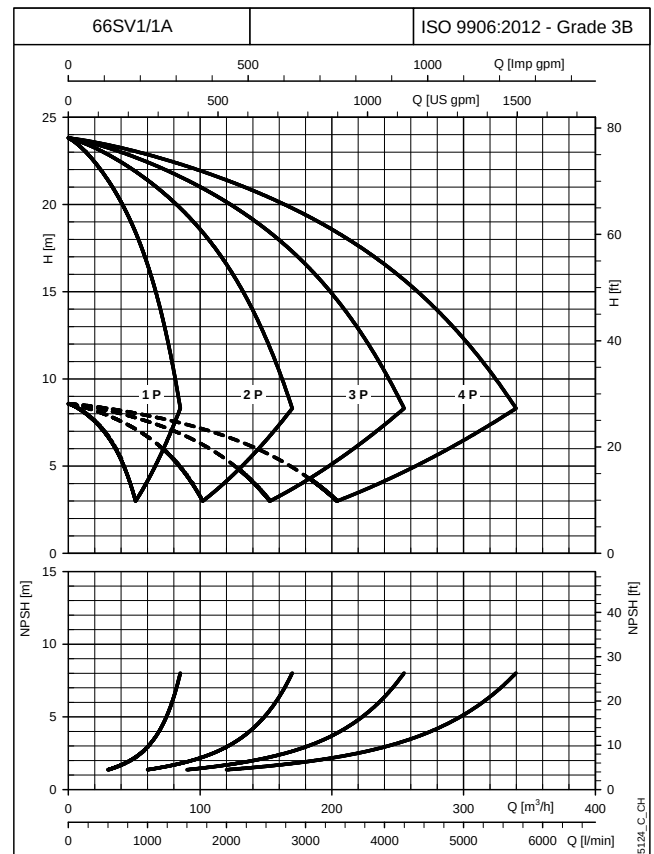
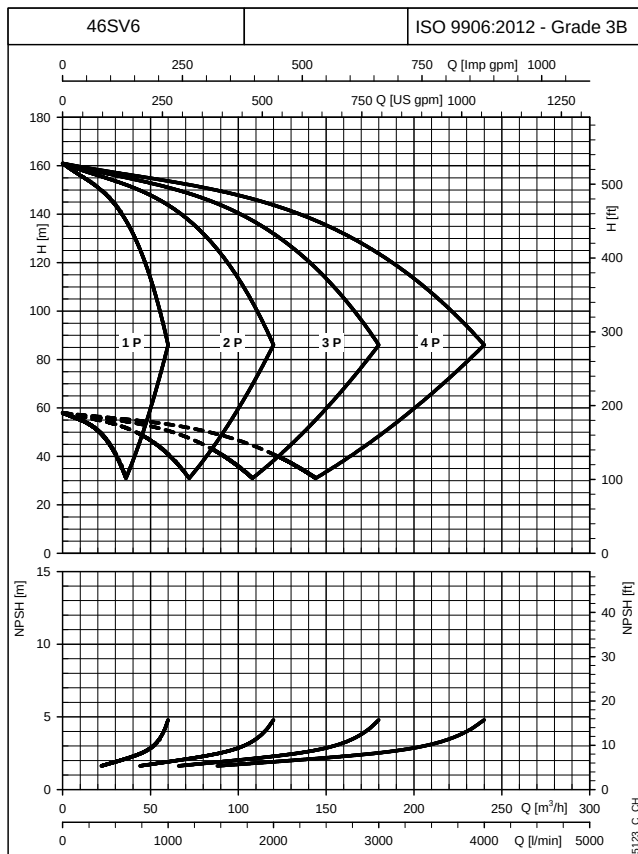
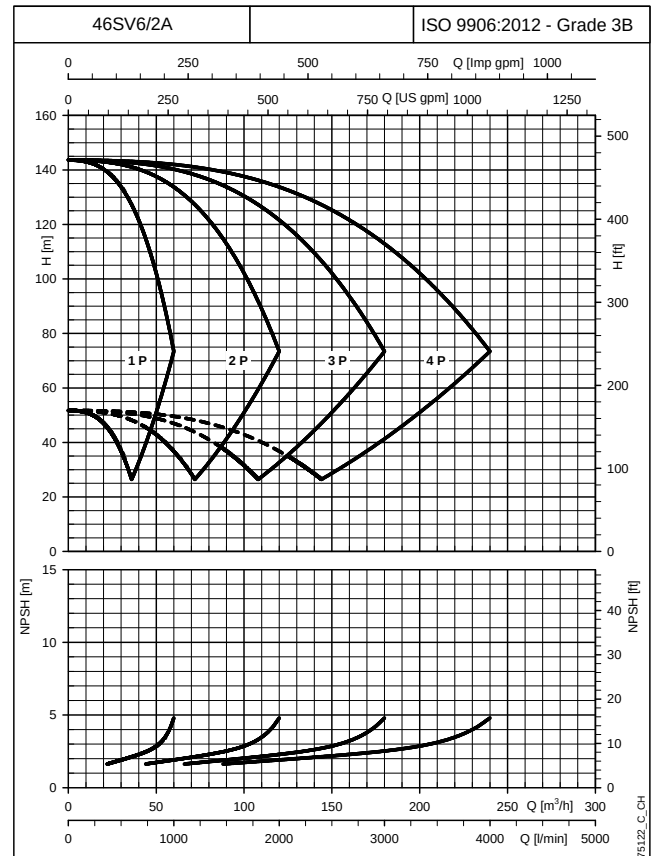
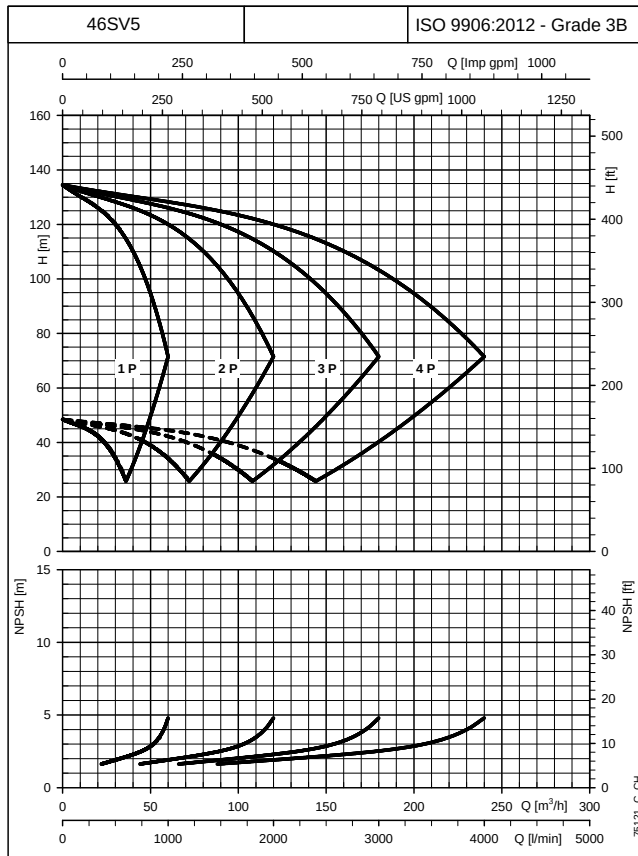
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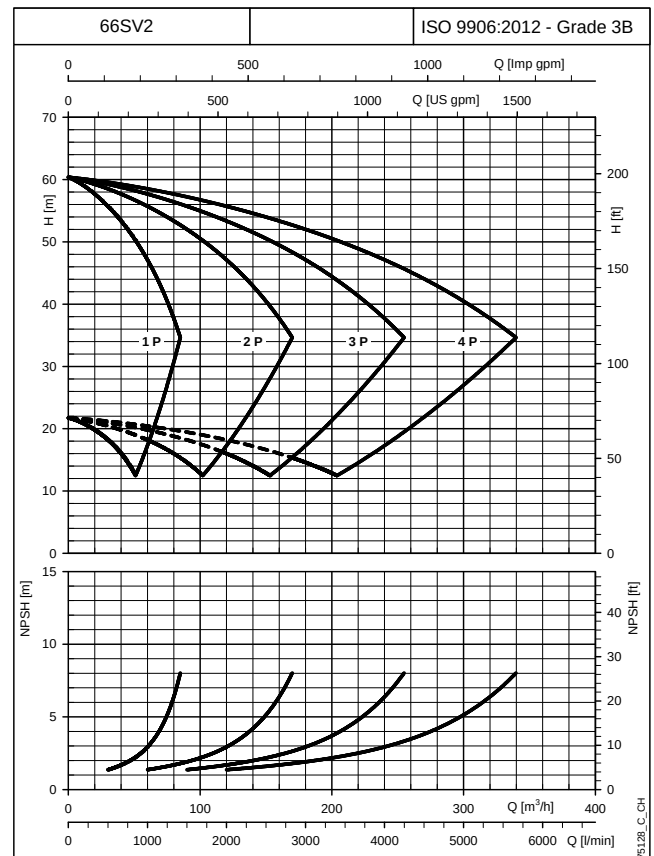
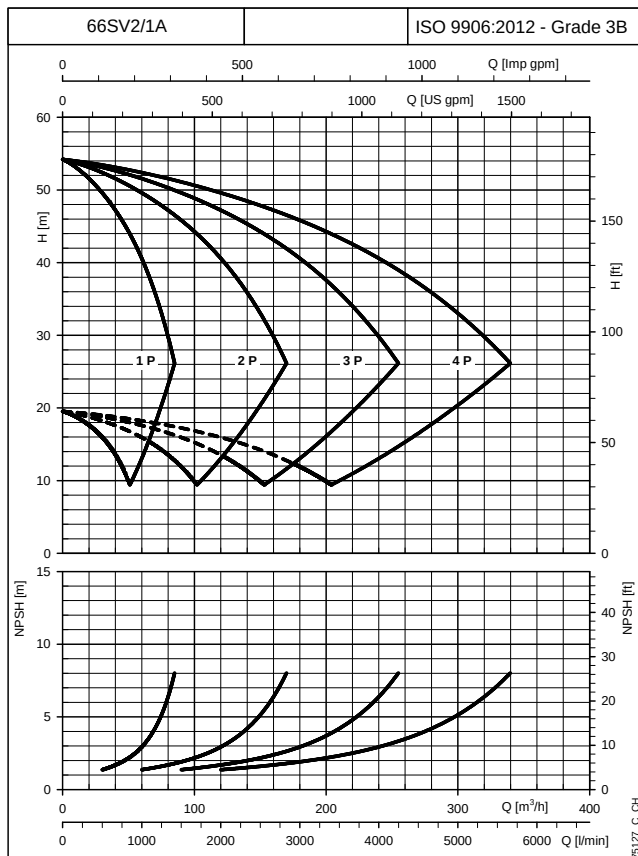
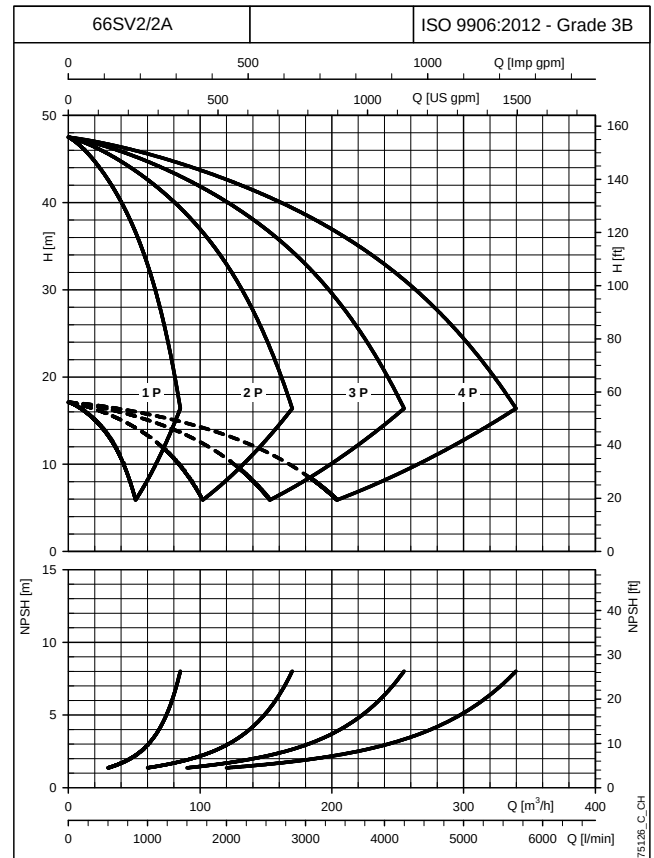
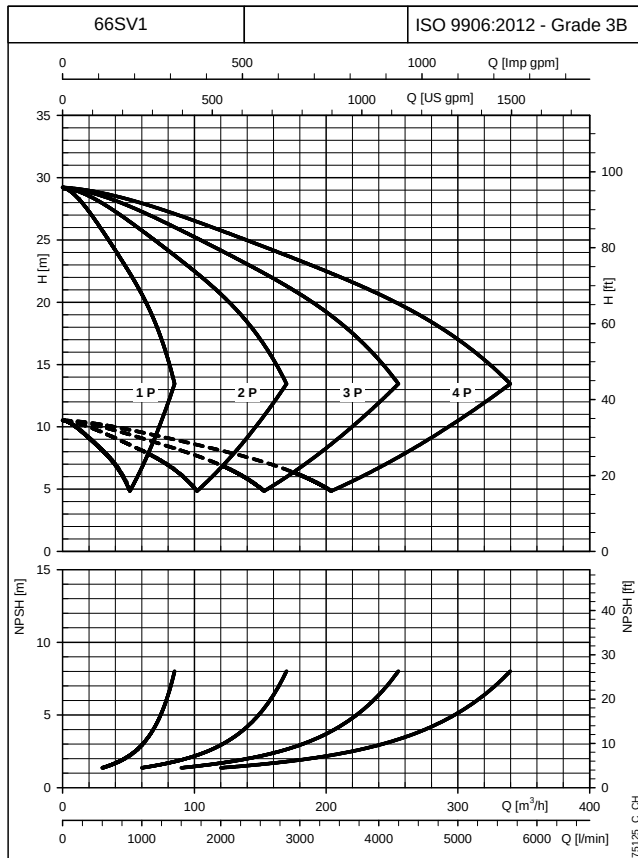
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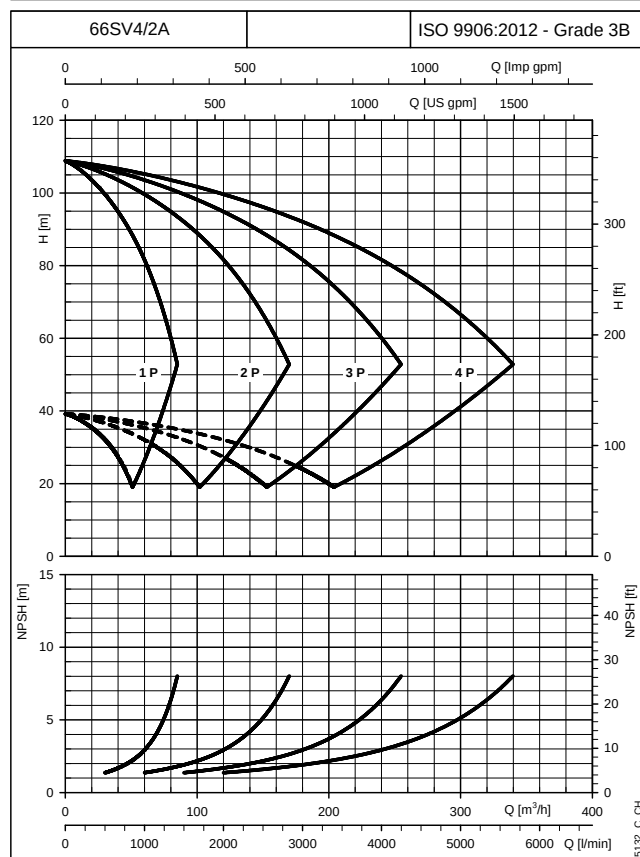
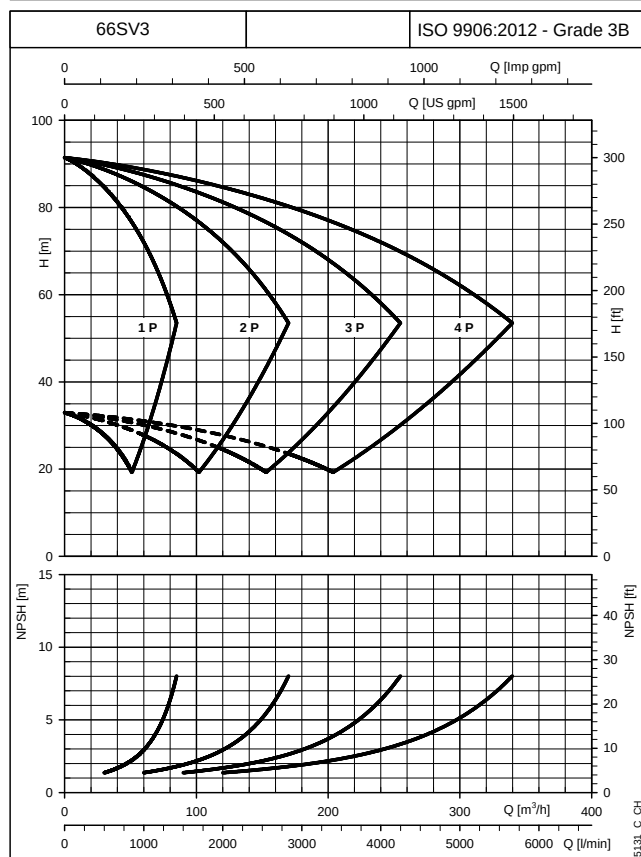
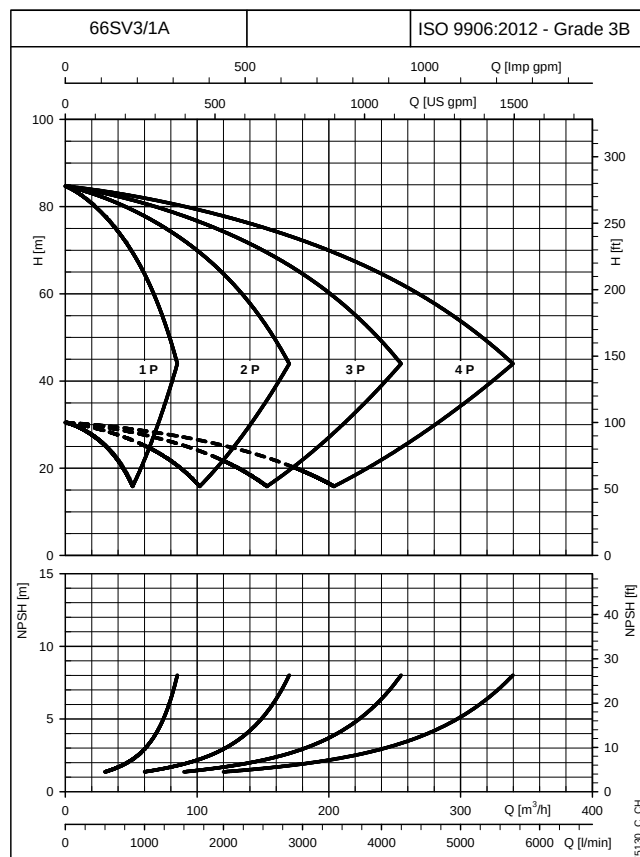
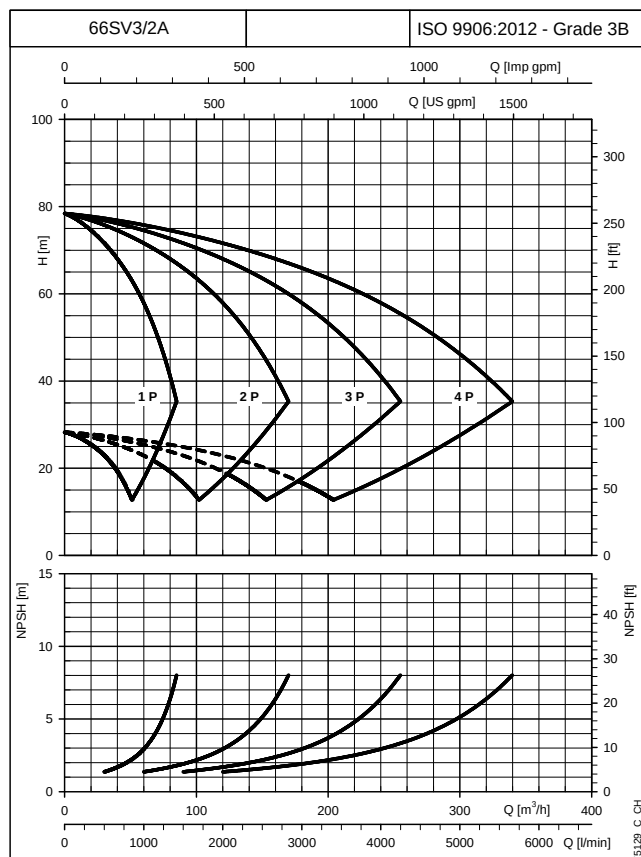
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## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



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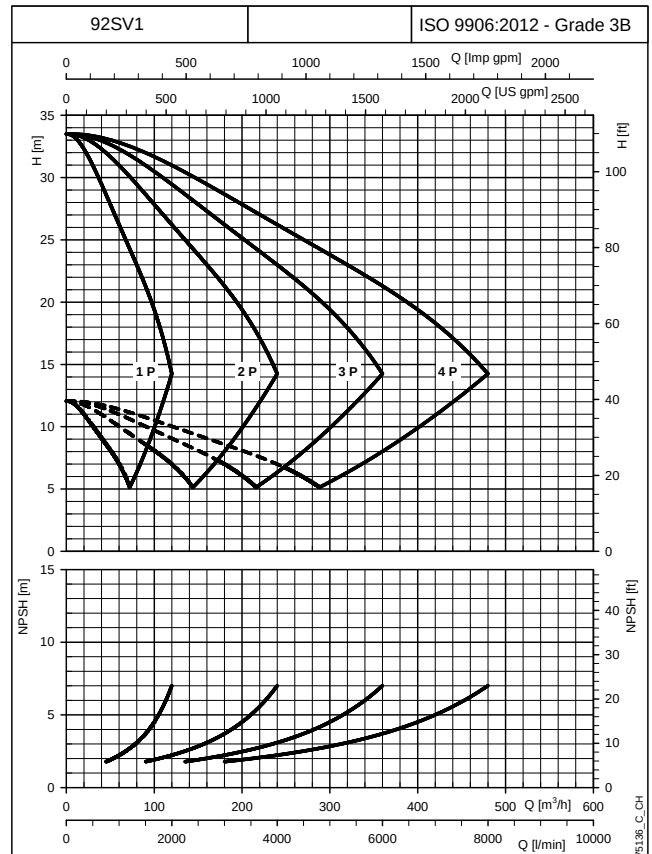
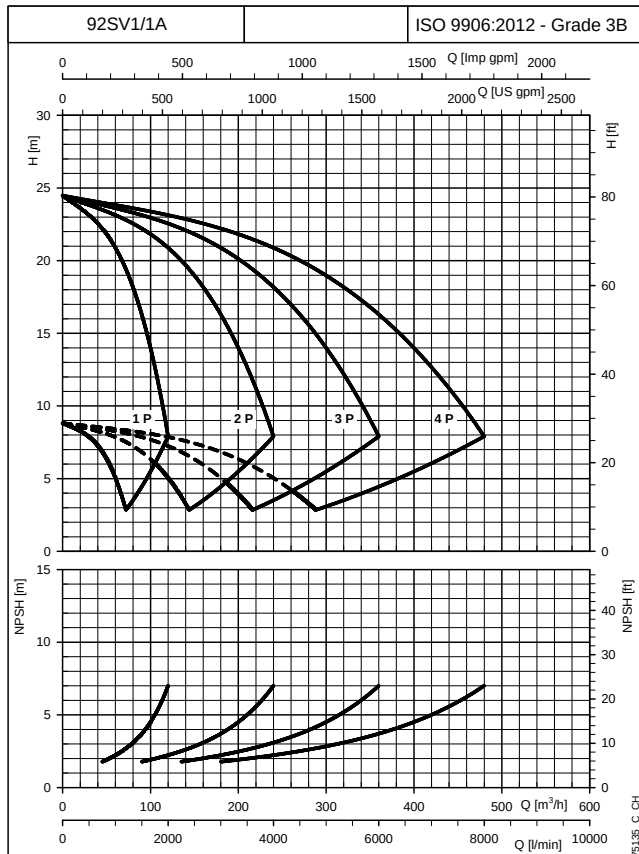
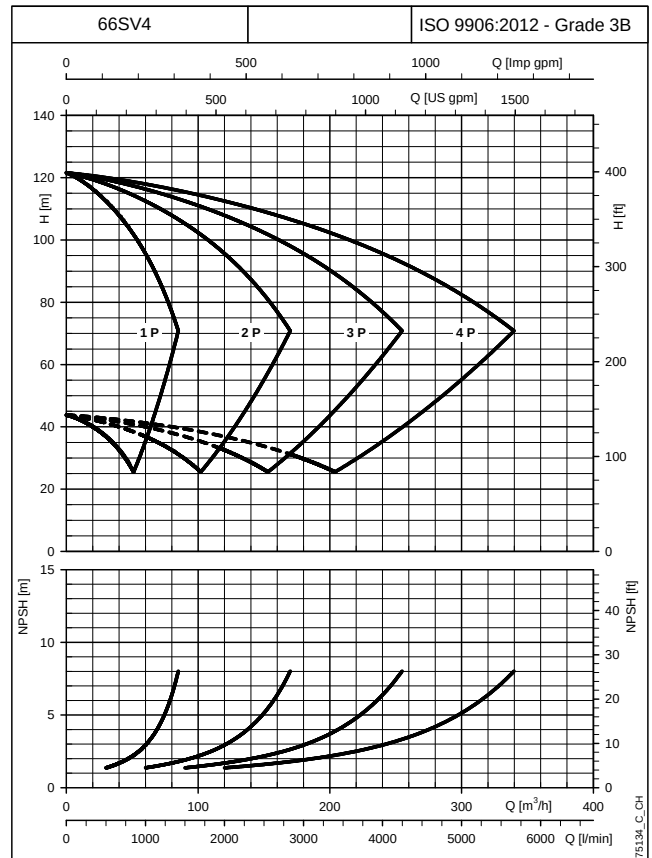
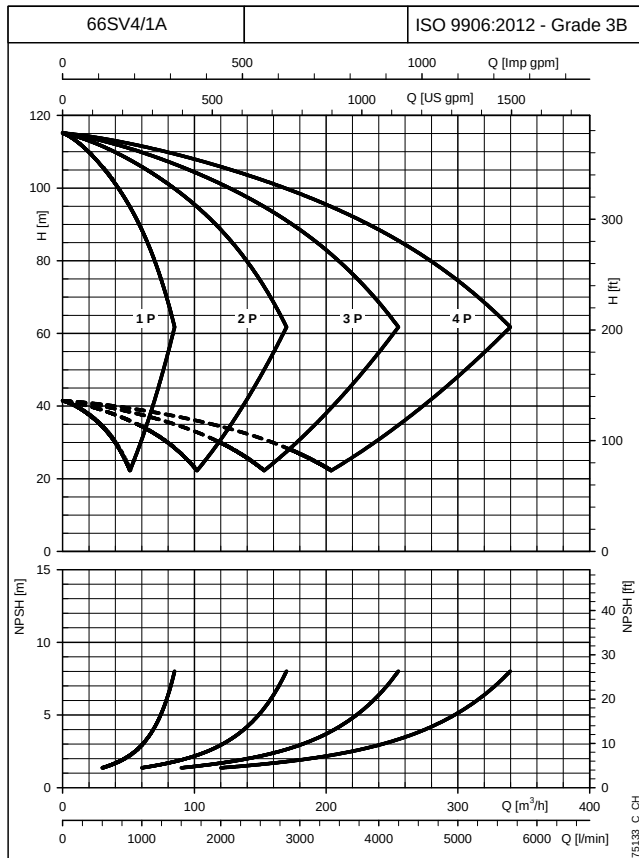
## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

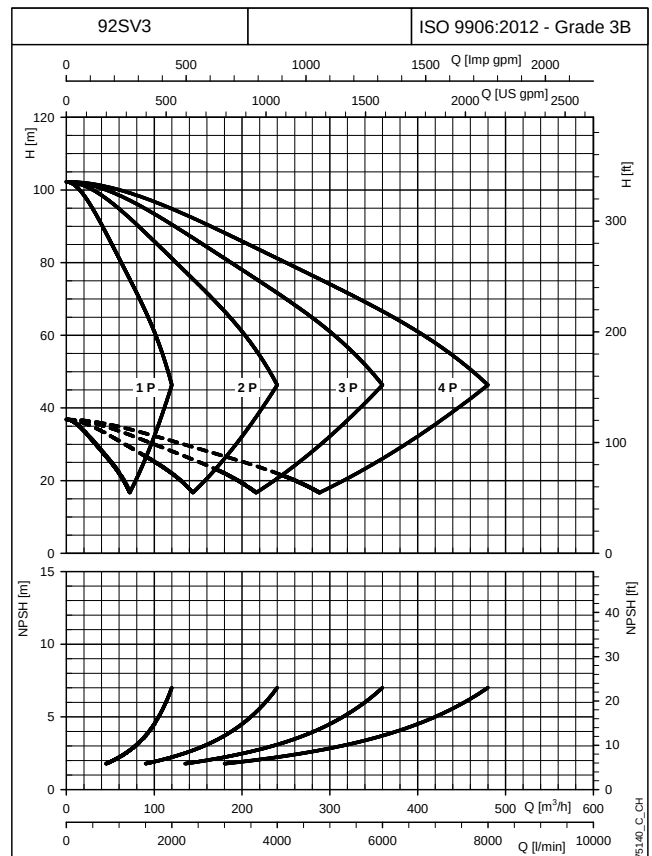
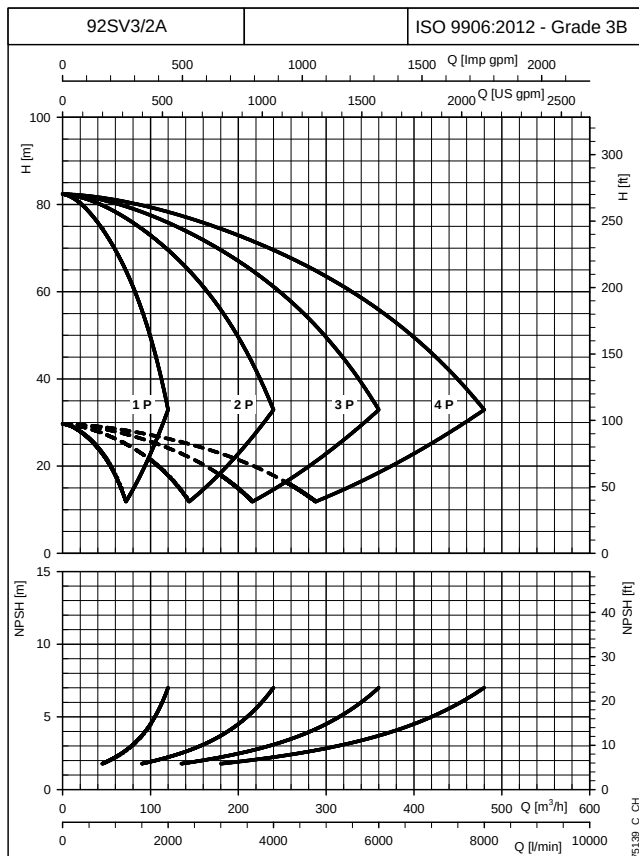
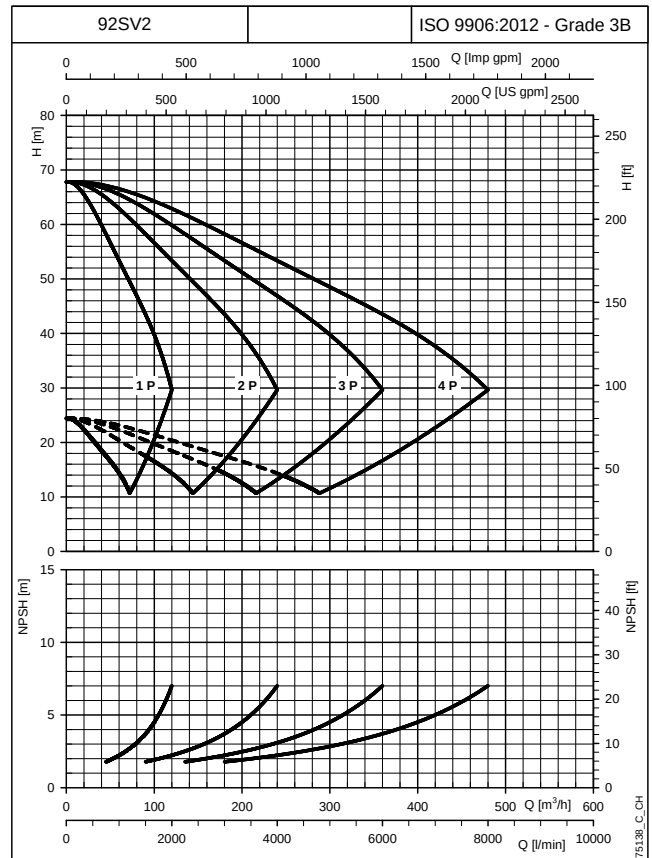
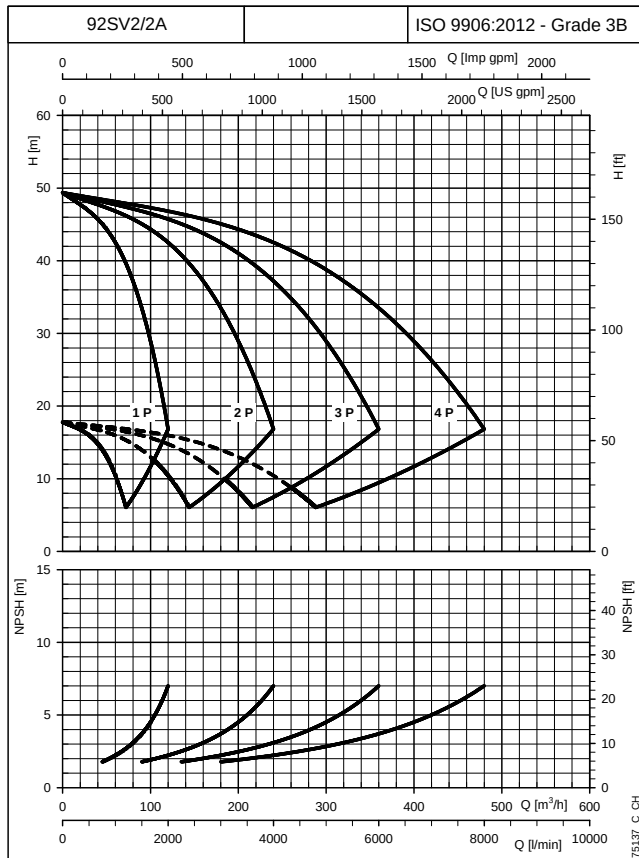


# GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



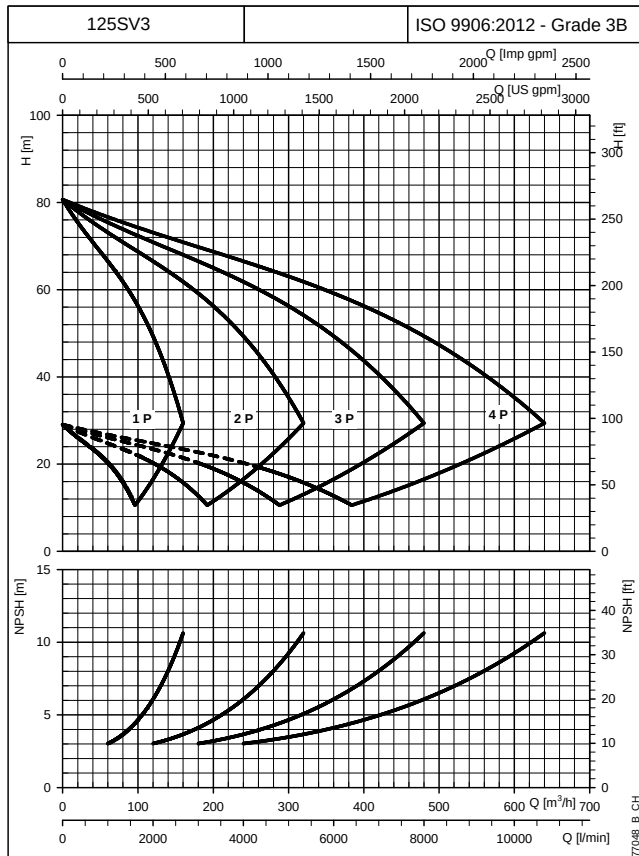
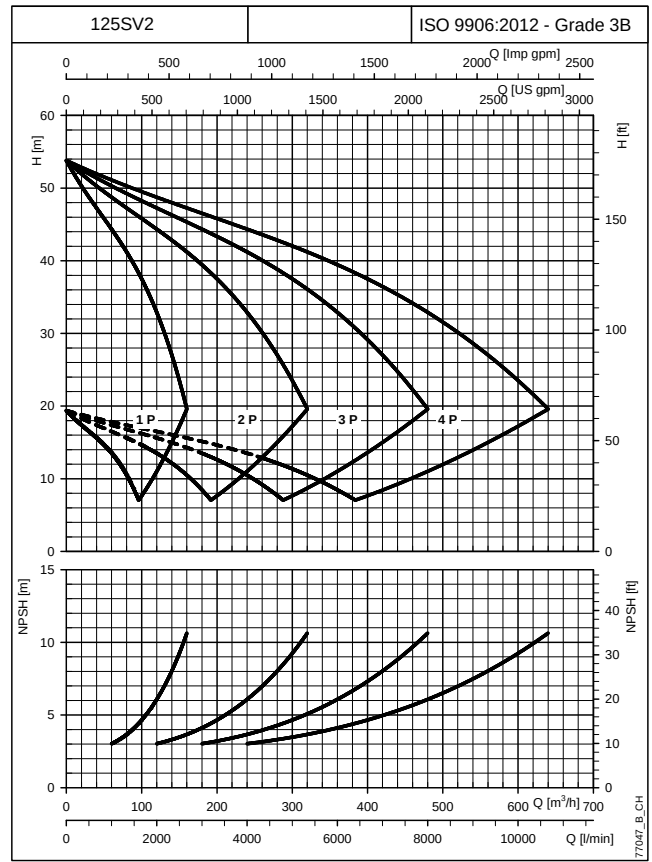
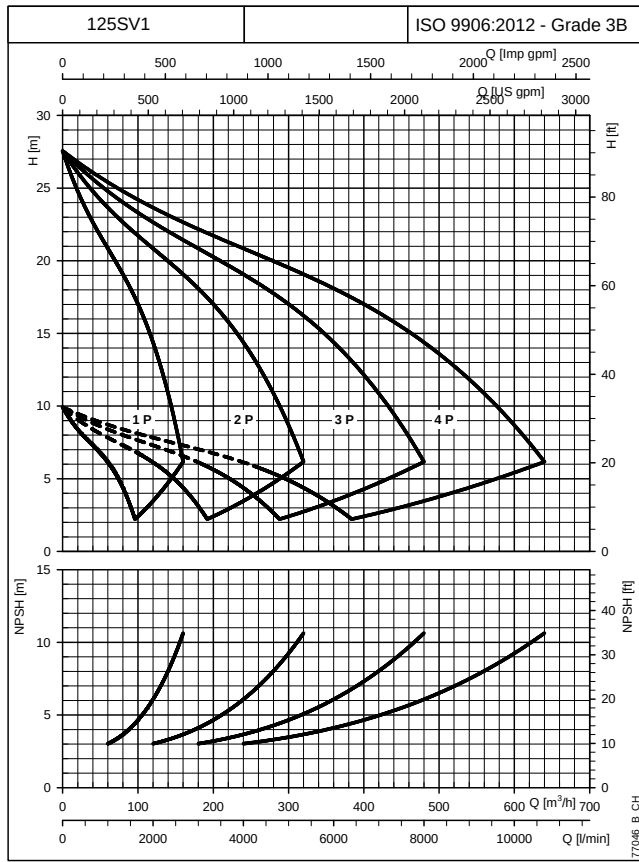
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0\ Kg/dm^3$  and kinematic viscosity  $\nu = 1\ mm^2/sec$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



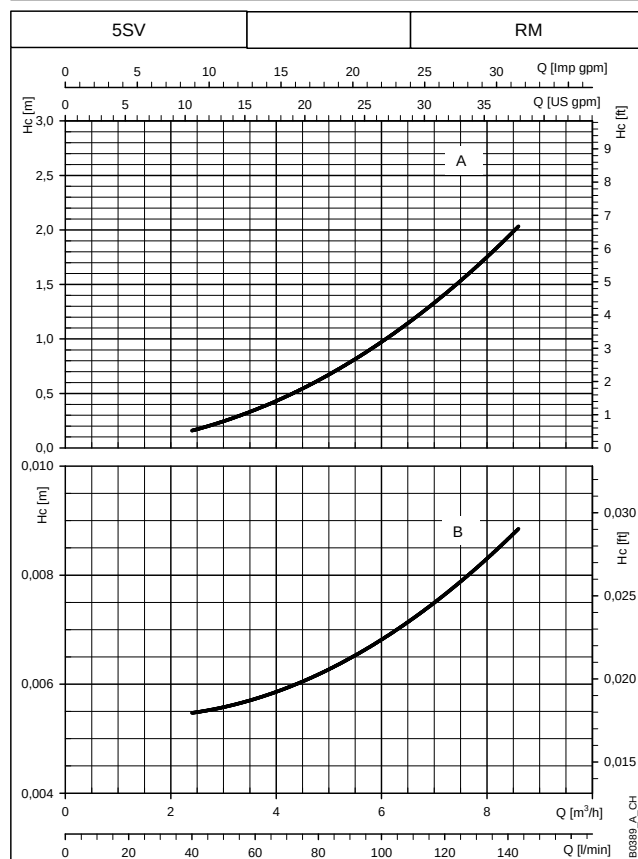
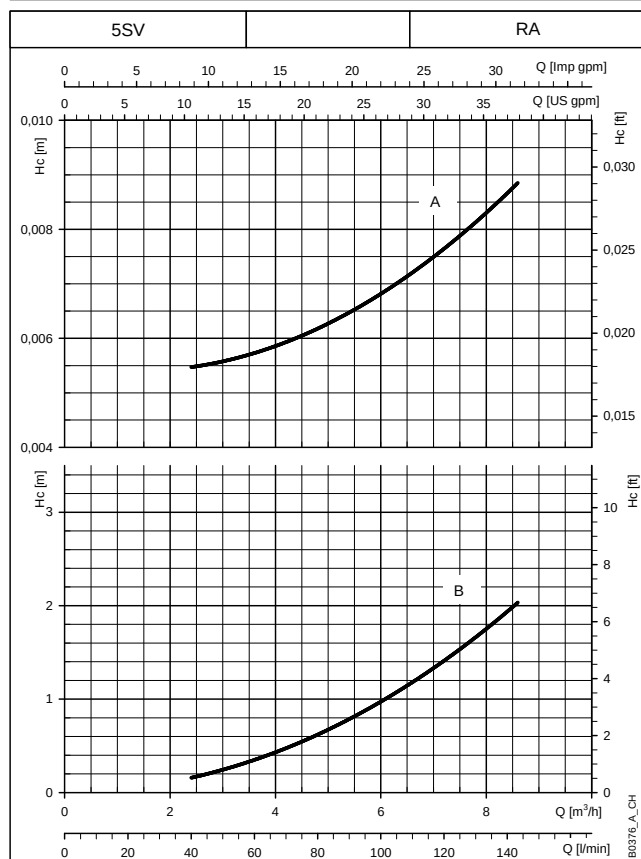
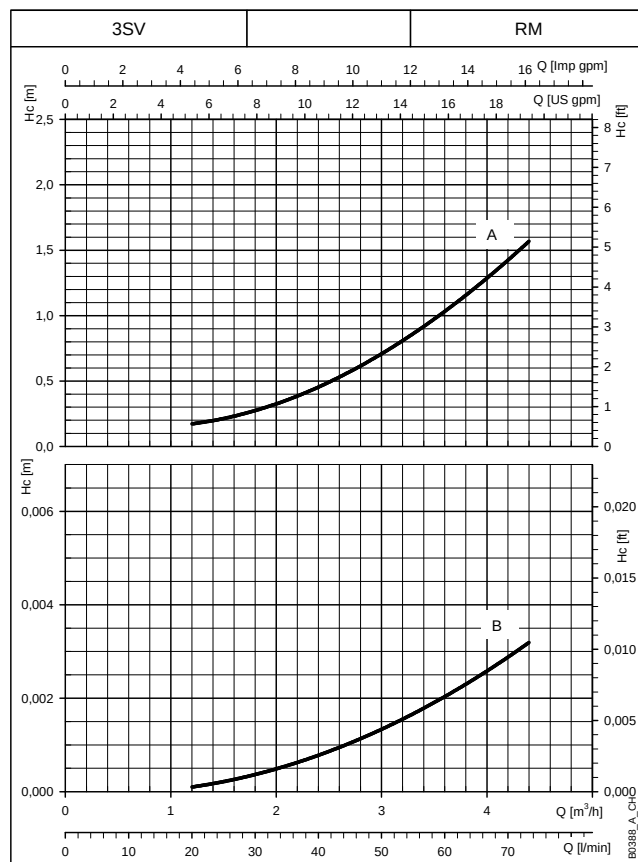
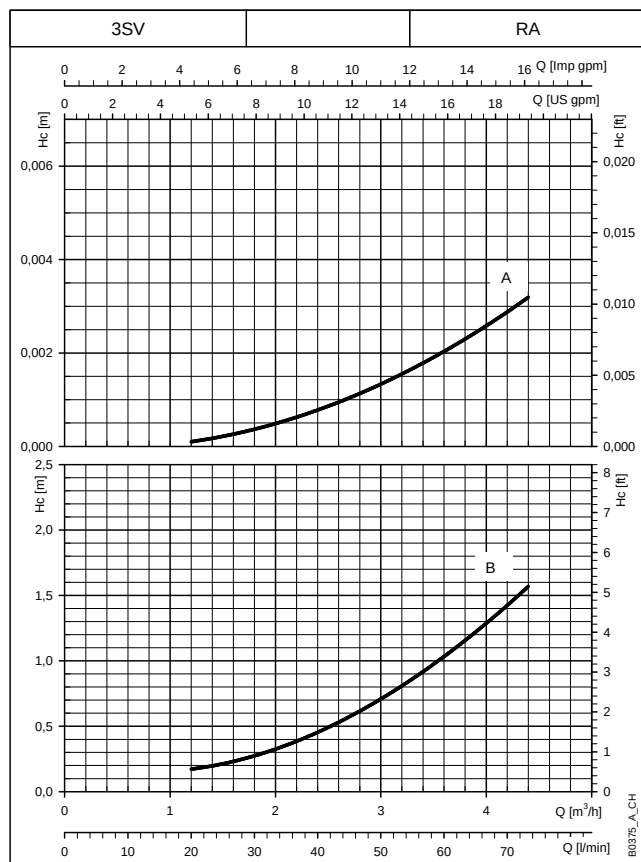
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running. These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ . The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

## GHV.../SV BOOSTER SETS SERIES OPERATING CHARACTERISTICS AT 30..50 Hz



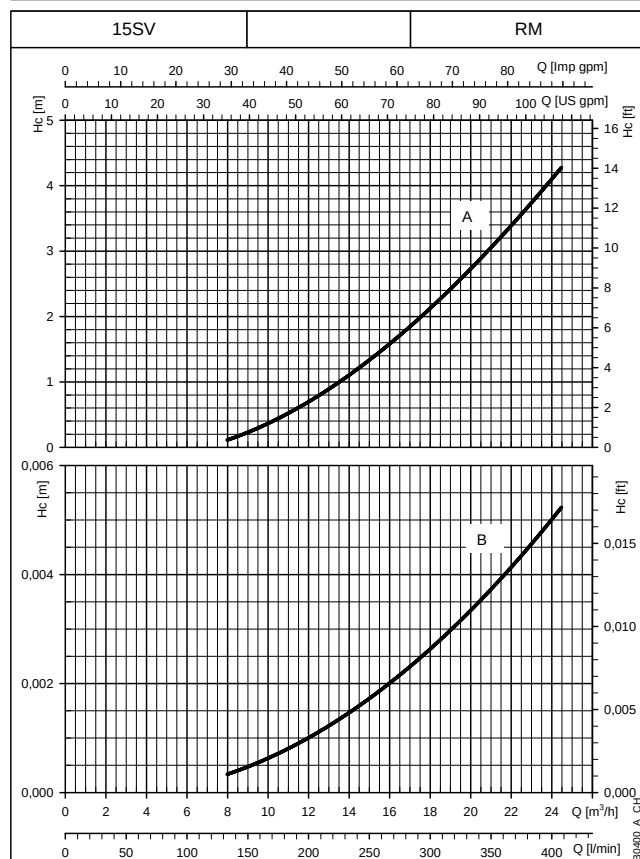
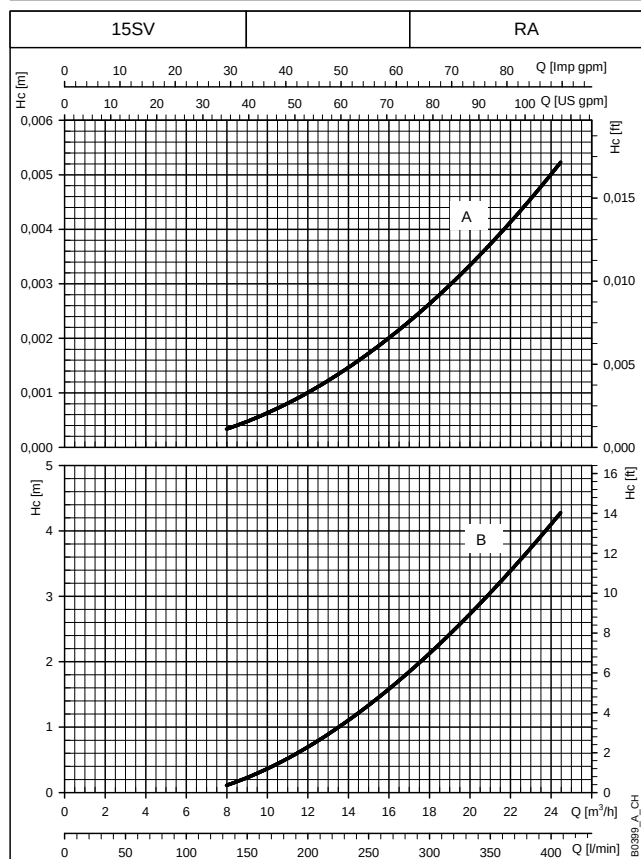
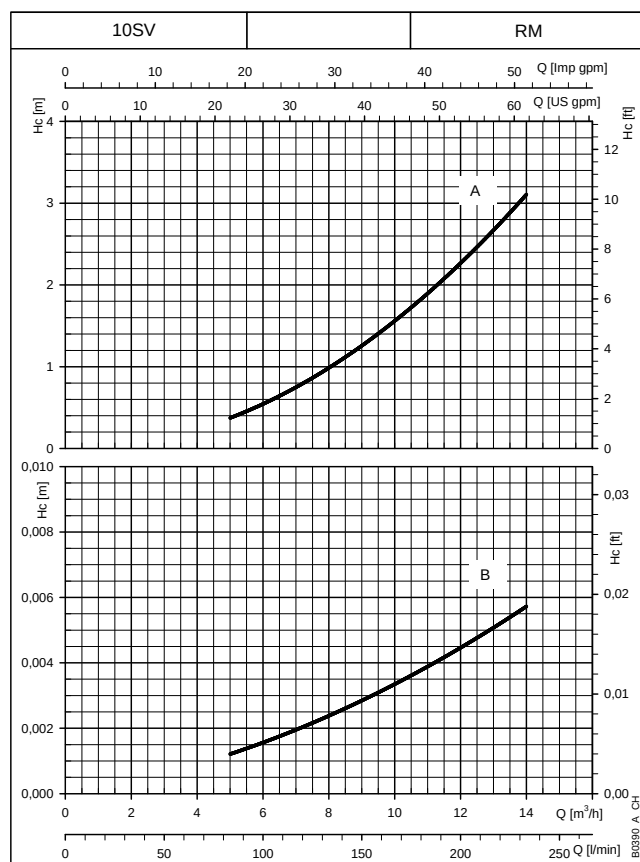
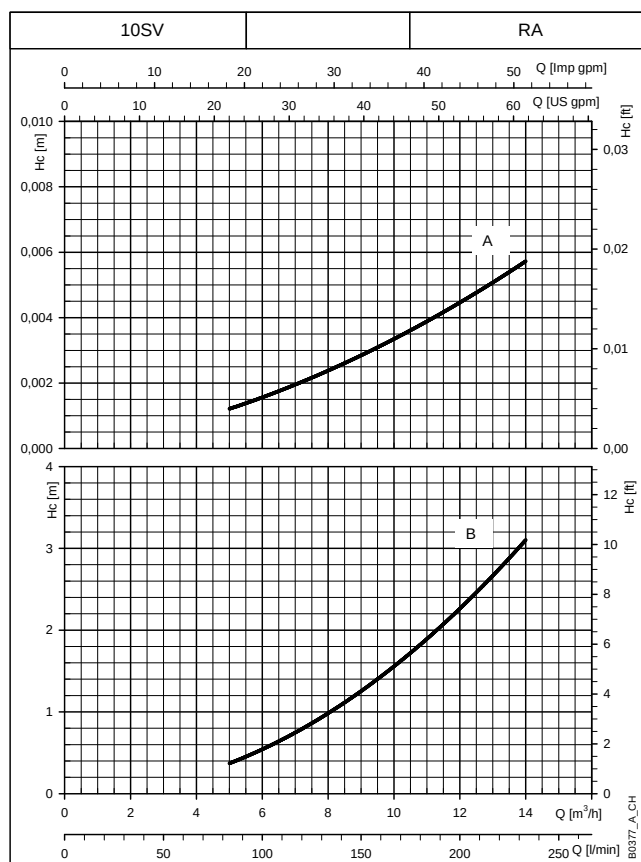
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## GHV./SV BOOSTER SETS SERIES HC PRESSURE DROP CURVE



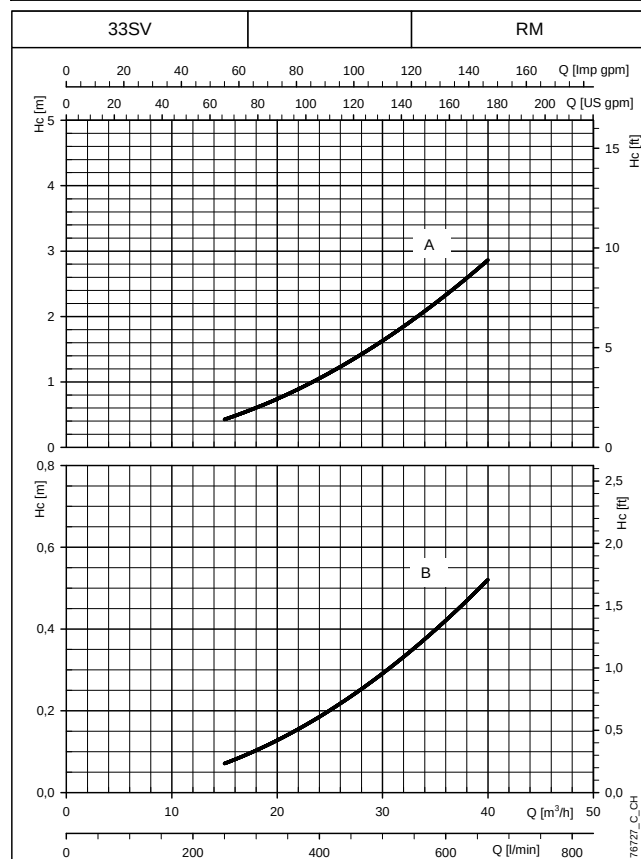
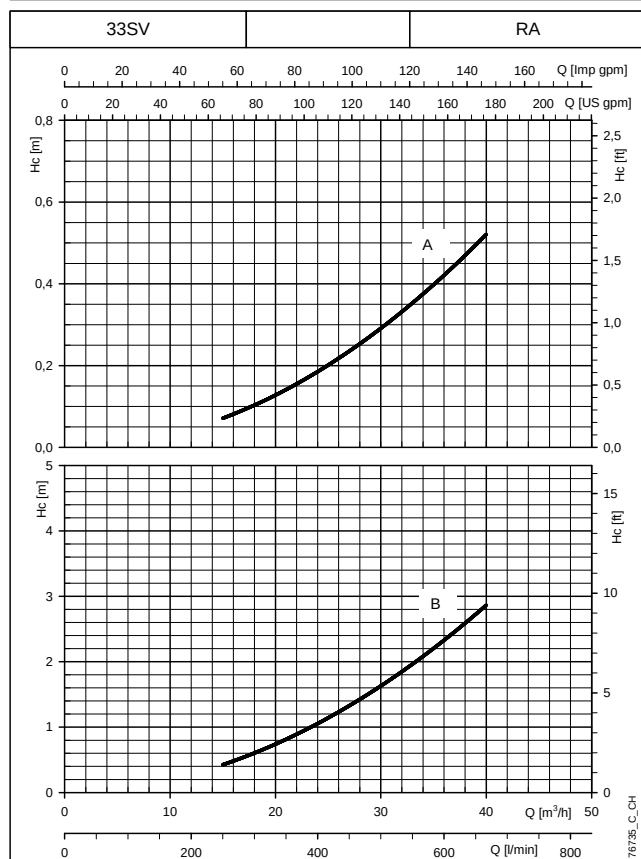
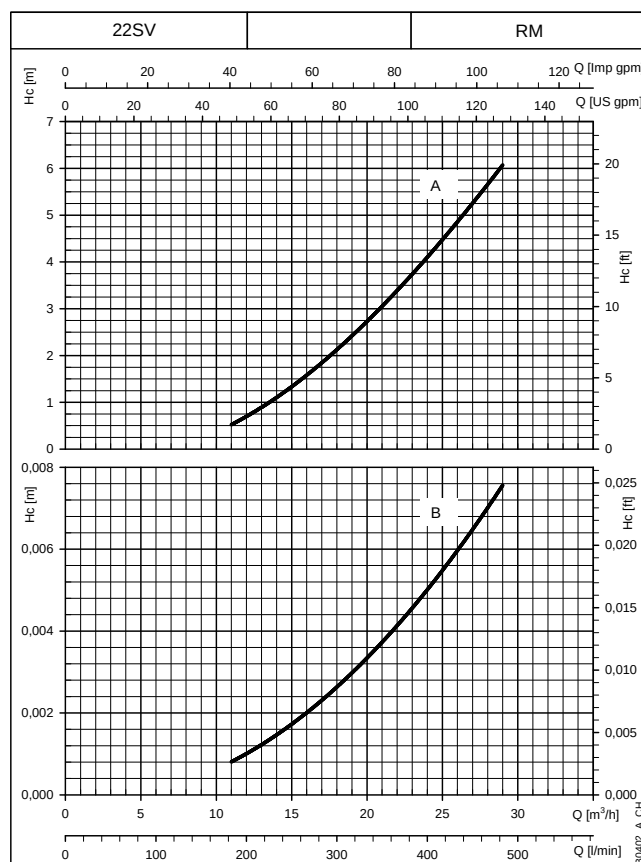
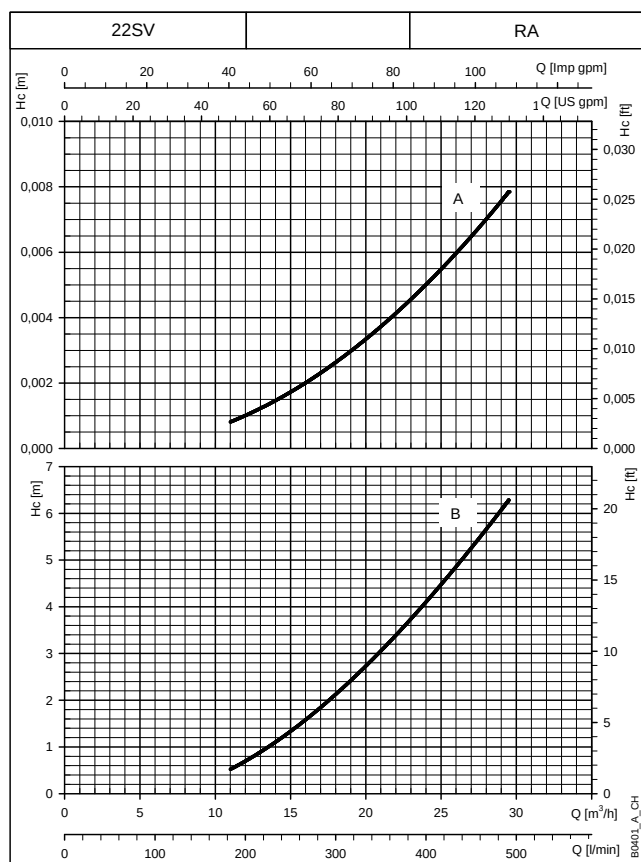
The declared curves are valid for liquids with density  $\rho = 1 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .  
Hc (A): Pressure drop curve on delivery side of the pump. Hc (B): Pressure drop curve on suction side of the pump.  
RA: check valve on suction side. RM: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

## GHV./SV BOOSTER SETS SERIES HC PRESSURE DROP CURVE



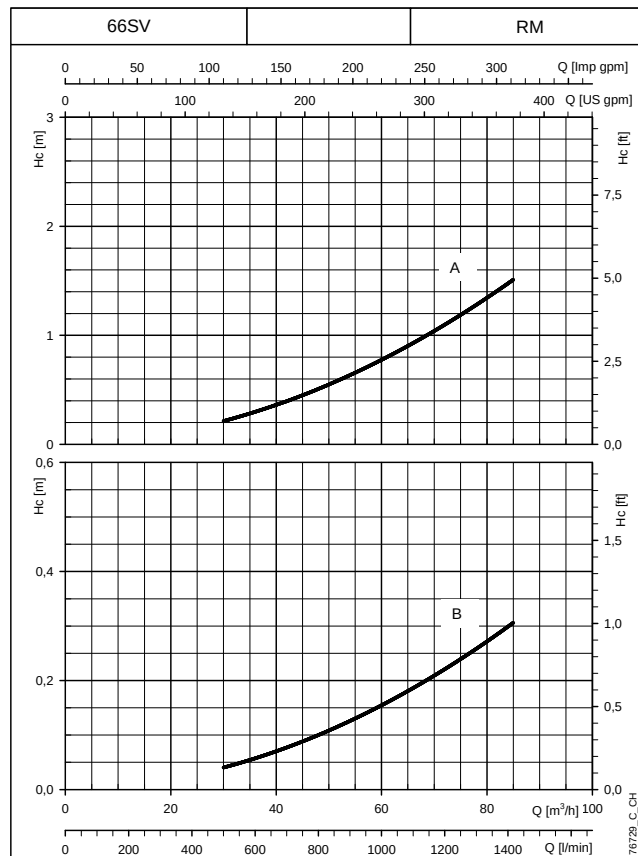
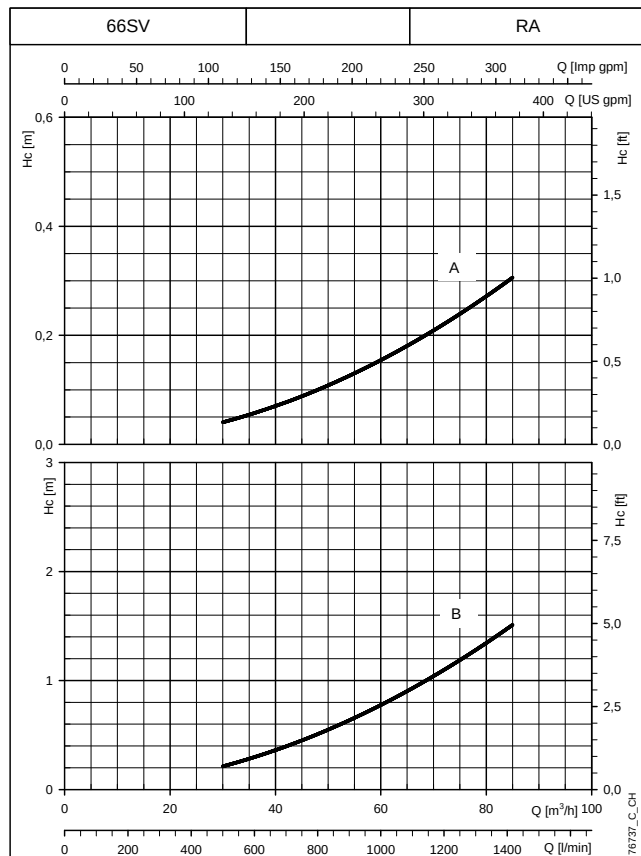
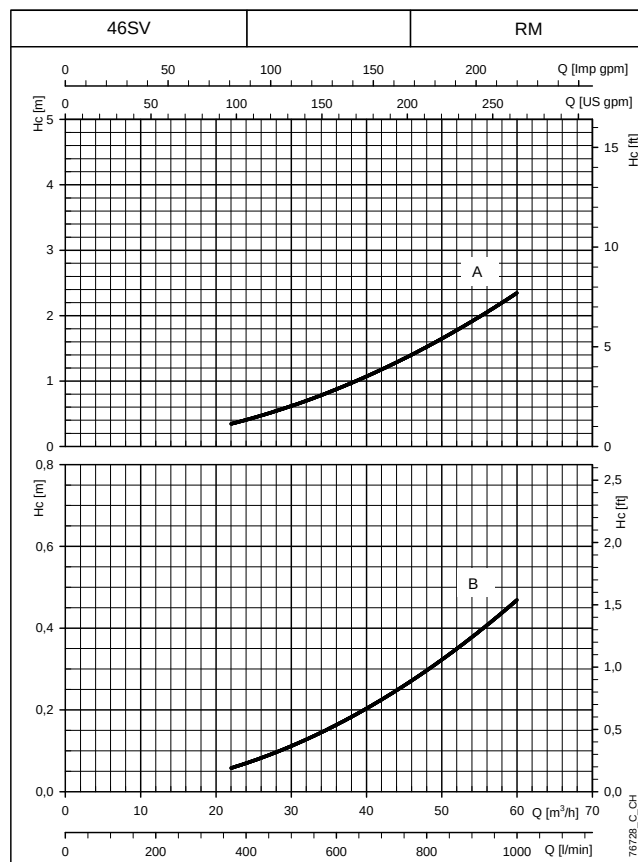
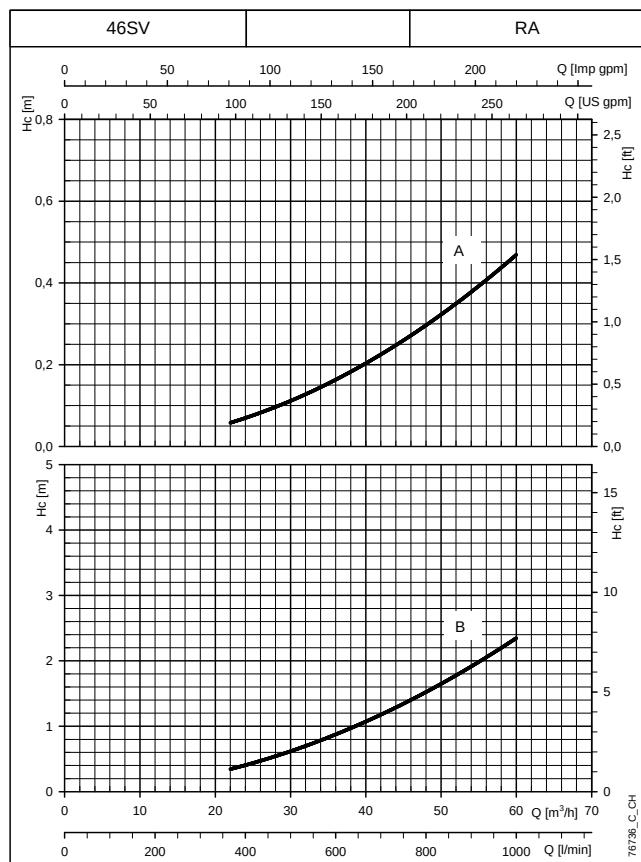
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RA: check valve on suction side. RM: check valve on delivery side.  
The pressure drops do not consider the distributed pressure drops on the manifold.

## GHV./SV BOOSTER SETS SERIES HC PRESSURE DROP CURVE



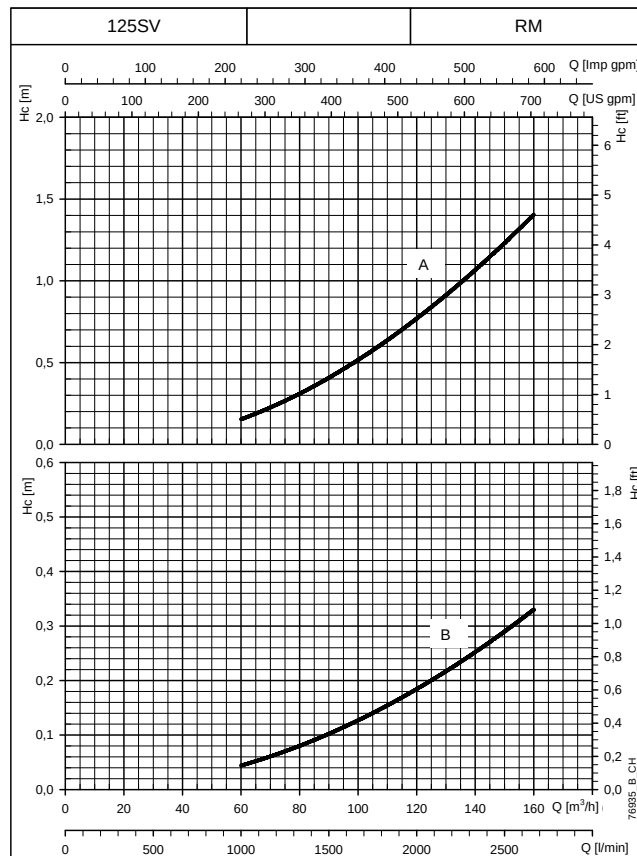
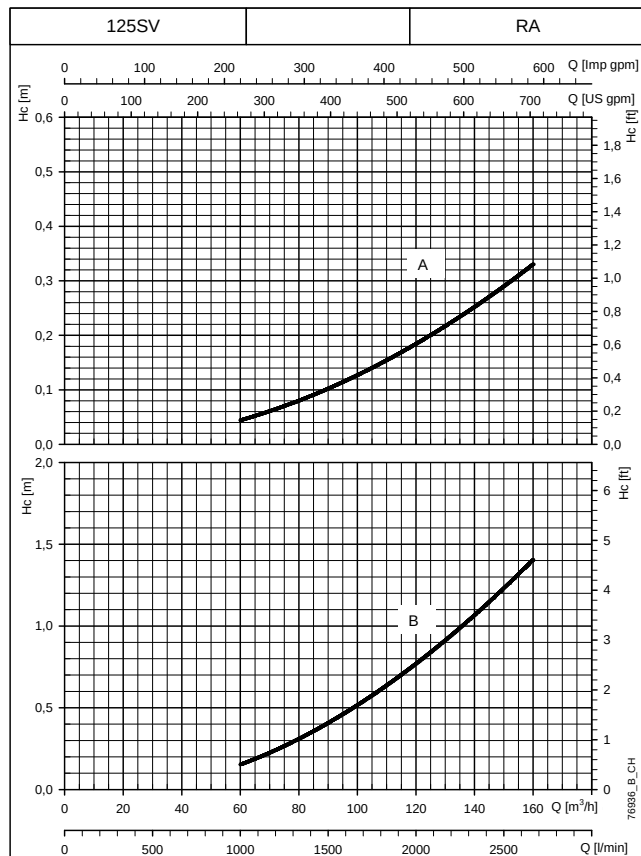
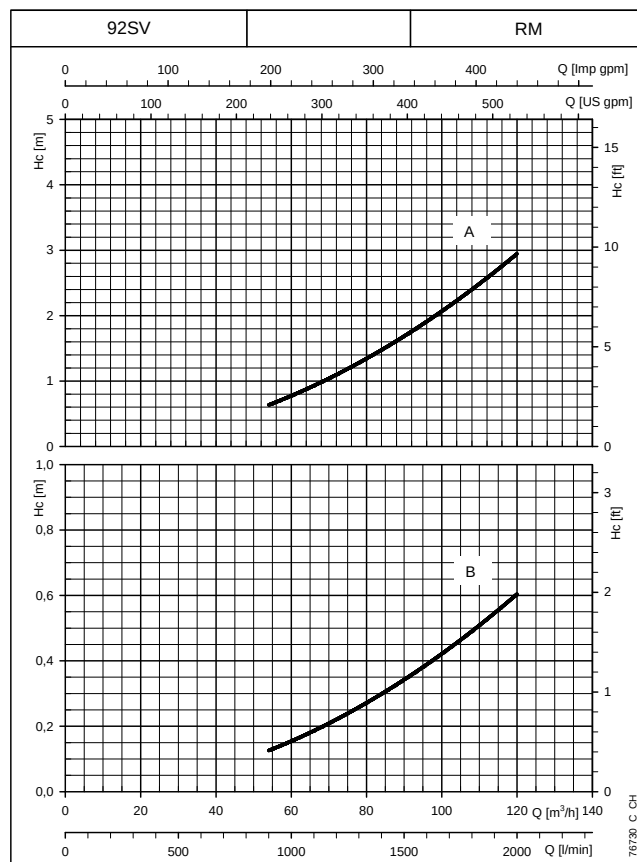
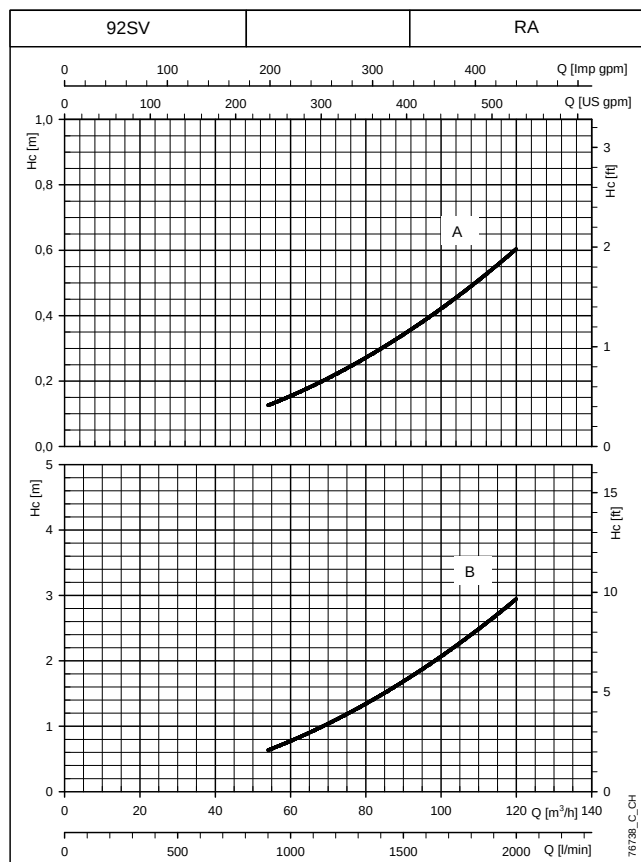
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The pressure drops do not consider the distributed pressure drops on the manifold.

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The pressure drops do not consider the distributed pressure drops on the manifold.



# ACCESSORIES

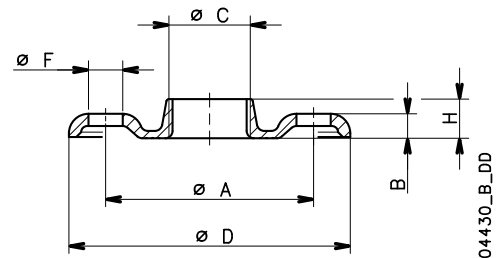
## FLANGE KIT

Manifolds up to 3" are supplied with threaded attachments and caps for sealing the unused ends.  
For these manifolds, stainless steel AISI 304 or 316 flanges for connection to the system are available on request.

## THREADED COUNTERFLANGES

| KIT<br>TYPE | DN | ø C      | DIMENSIONS (mm) |    |     |    | HOLES |    |    |
|-------------|----|----------|-----------------|----|-----|----|-------|----|----|
|             |    |          | ø A             | B  | ø D | H  | ø F   | N° | PN |
| 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 |

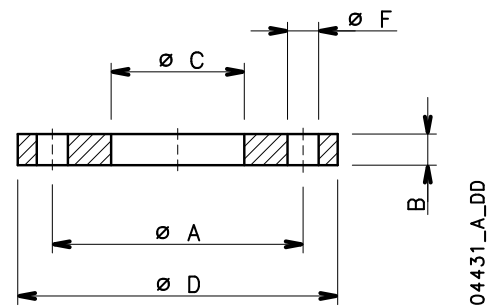
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## WELD-ON COUNTERFLANGES

| KIT<br>TYPE | DN  | ø C   | DIMENSIONS (mm) |    |     |     | HOLES |    |  |
|-------------|-----|-------|-----------------|----|-----|-----|-------|----|--|
|             |     |       | ø A             | B  | ø D | ø F | N°    | PN |  |
| 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 |  |

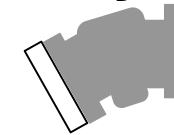
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## ANTI-VIBRATION JOINT KIT

Anti-vibration joints, or compensation joints, can be used to absorb deformations, expansions, pipe noise and reduce water hammering. They can also withstand a high level of vacuum, which enables the absorption of negative expansions due to depression.

Due to its elasticity, the material can deform or expand as necessary, making installation easier, simpler and quicker, even when the piping is not aligned. It does not required assembly joints.

| TABELLA 1<br>TABLE 1                          |       | <div>L</div>  | A-B-C-D non possono essere sommati                                                                                            |                                                                                                                           | A-B-C-D can not be cumulative                                                                                                |                                                                                                                                            |     |
|-----------------------------------------------|-------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----|
| GIUNTI ELASTICI<br><br>RUBBER EXPANSION JOINT |       |                                                                                                | <div>A</div> <br>COMPRESSIONE<br>COMPRESSION | <div>B</div> <br>ESTENSIONE<br>EXTENSION | <div>C</div> <br>SPOSTAMENTO<br>TRANSVERSE | <div>D</div> <br>FLESSIONE ANGOLARE<br>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                                                                                                                                         |     |

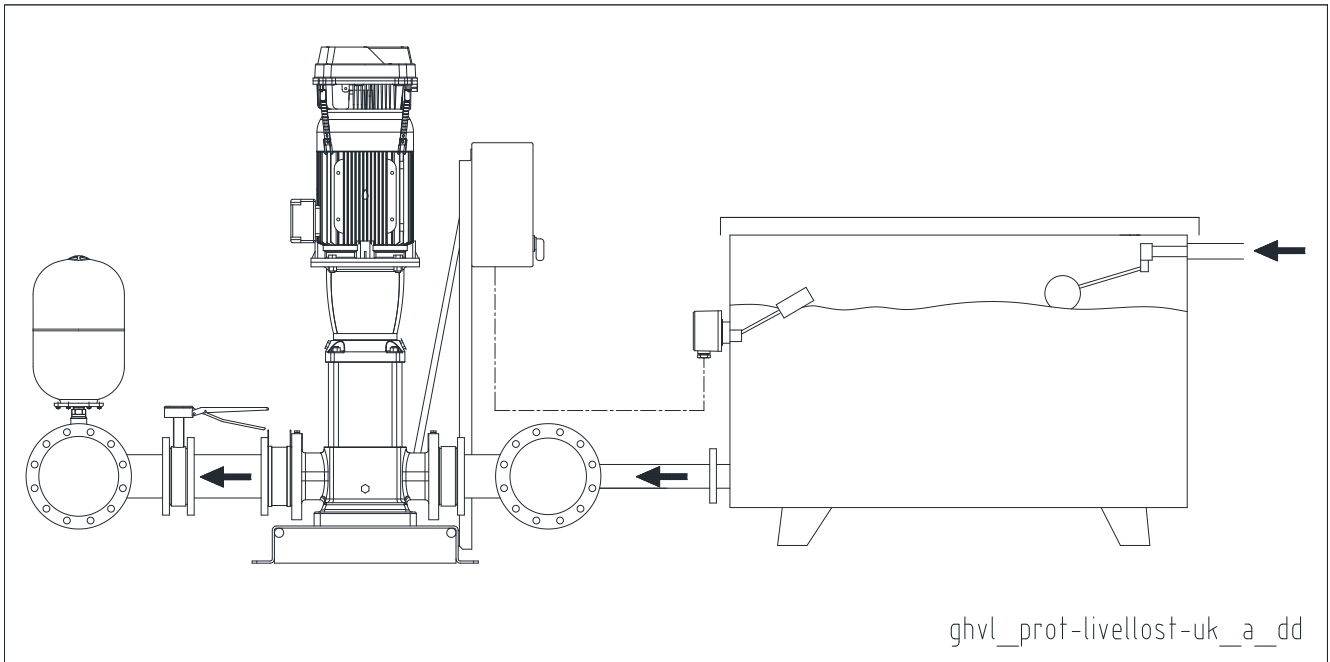
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## PROTECTION SYSTEMS AGAINST DRY RUNNING

To avoid damaging the pumps, protection systems must be used to prevent it from dry running.

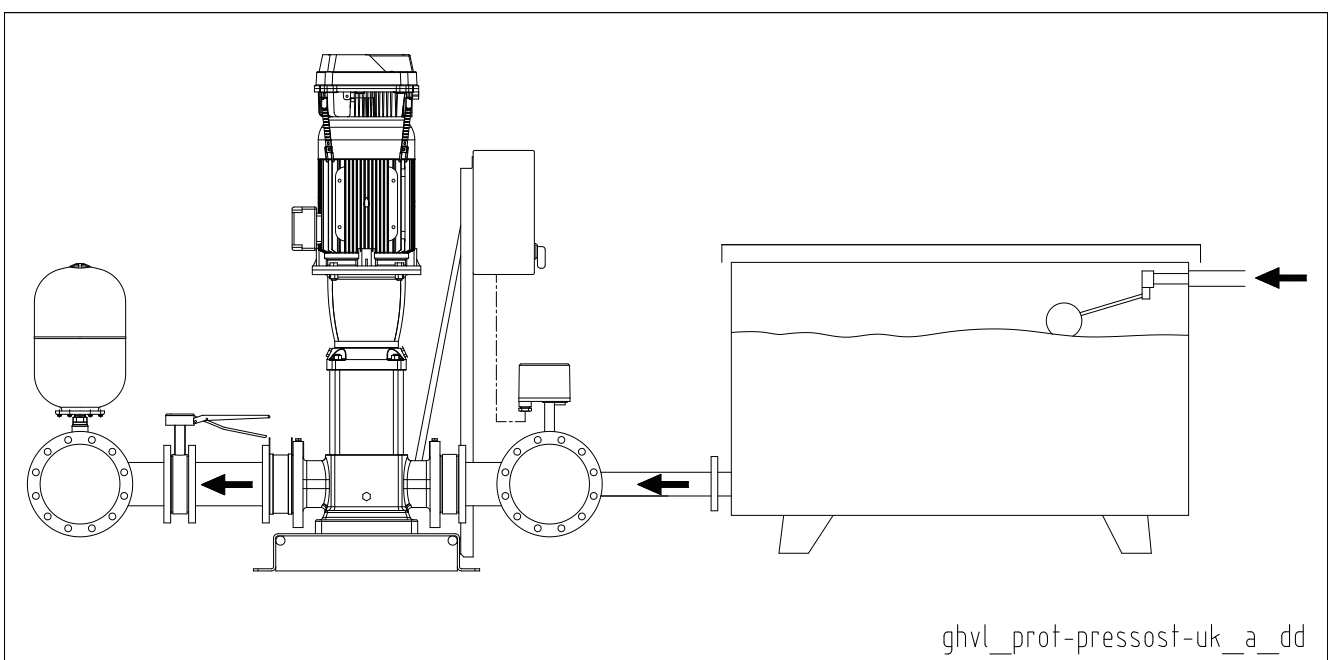
### FLOAT SWITCH PROTECTION

The float switch system is used for supplies from open tanks. The float switch immersed in the tank must be connected to the control panel. If there is no water, the float switch opens the electrical contact and the pumps stop.



### MINIMUM PRESSURE SWITCH PROTECTION

The system with minimum pressure switch is used for water supplies from pressurised networks or tanks. The pressure switch is connected to the control panel. In case of water shortage, it opens the electric contact, causing the stop of the pumps.



## PROTECTION SENSOR AGAINST DRY RUNNING



Sensor for detecting the presence of water based on the optoelectronic principle, therefore non-invasive and with no moving parts. The sensor features an electronic contact (on/off) which stops the pump if there is no water in the seal area. The sensor opens the electric contact if there is no water after they factory-set delay (10 seconds) elapses. The sensor is supplied as a kit complete with 2 metres of cable, an EPDM O-ring gasket and a stainless steel adapter.

### General operating features

- The sensor can be fitted directly on the filling cap of the e-SV™ series of pumps.
- Operation is independent of the hardness and conductivity of the water. The sensor cannot detect frozen liquids.

### Available in two power versions depending on foreseen use:

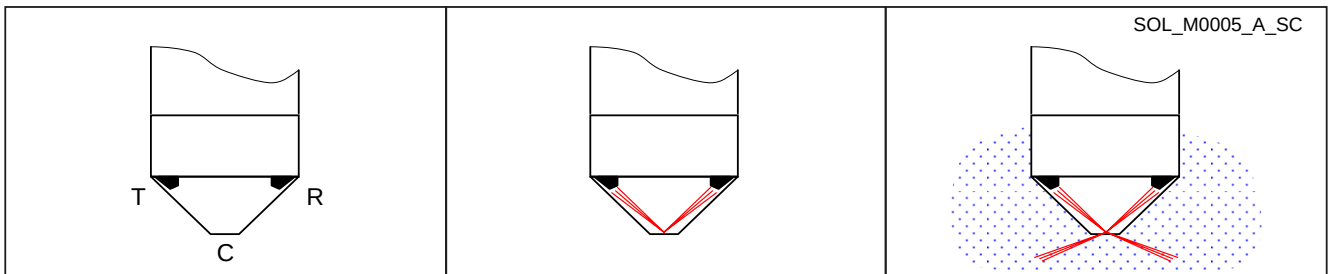
- 21 ÷ 27 Vac, universal solid state output for external relay at 24 Vac (21 ÷ 27 Vac, 50 mA).
- 15 ÷ 25 Vdc, NPN output at 25 V (10 mA) for HYDROVAR® inverter.

### Operating principle

Operation is based on the change in the refractive index on the surfaces. The optic sensor comprises a glass cap (C) containing a transmitter (T) and an infrared receiver (R).

If there is no liquid, all the infrared light emitted by the transmitter is internally reflected by the surface of the glass cap of the receiver. The electronic contact will be open.

If liquid is present, the refractive index of the surface changes. Most of the infrared light emitted by the transmitter is dispersed in the liquid. The receiver receives less light and the electronic contact is closed.



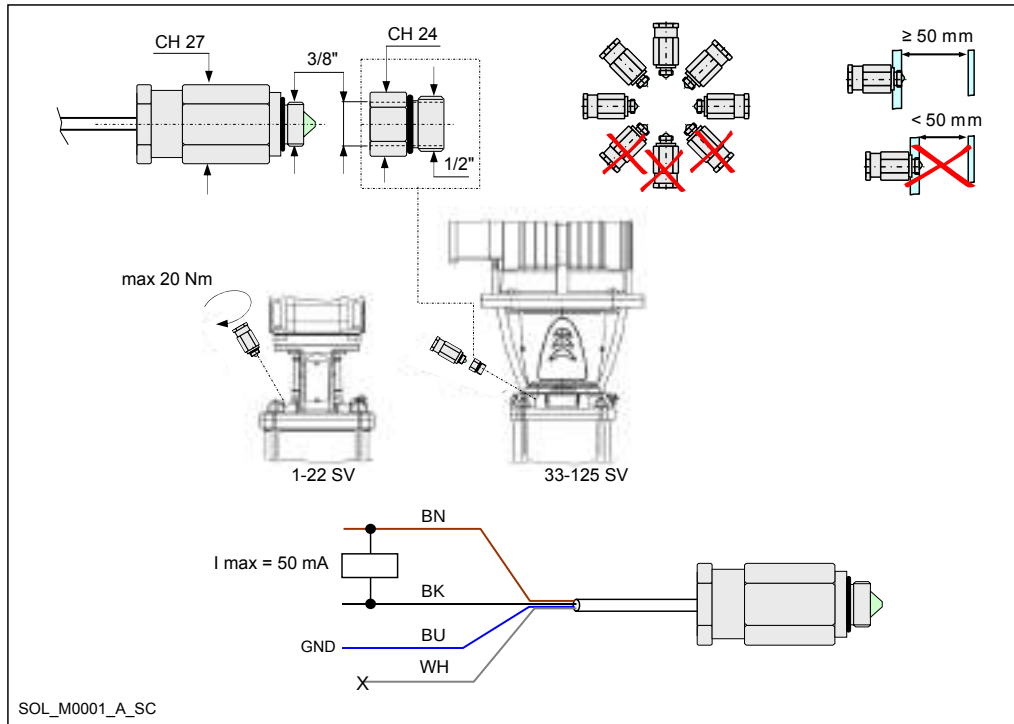
## SPECIFICATIONS

- Materials:
  - Body in AISI 316L stainless steel
  - Glass optic cap
  - EPDM gasket
- Liquids: clean water, demi water. Operation is not affected by the hardness and conductivity of the liquid. To check the suitability of other liquids, contact the Lowara technical assistance service providing the characteristics of the liquid.
- Temperature of liquid: -20°C ÷ +120°C (cannot be used to detect frozen liquids).
- Ambient temperature: -5°C ÷ +50°C
- Maximum pressure (PN): 25 bar
- Connector: 3/8" (3/8" x 1/2" adaptor plug included in the Kit)
- Dimensions: 27x 60 mm
- IP55 protection
- Electrical characteristics:
  - Input voltage SENSOR KIT DRP-GP: 21 ÷ 27 Vac  
SENSOR KIT DRP-HV: 15 ÷ 25 Vdc
  - Output SENSOR KIT DRP-GP: universal solid state 21 ÷ 27 Vac (50 mA) for 24 Vac external relay  
SENSOR KIT DRP-HV: NPN 25 V (10 mA) for HYDROVAR® inverter
  - Alarm delay: 10 seconds (factory setting)
  - FROR cable 4 x 0,34 mm² (PVC-CEI 20-22) 2 metres long.

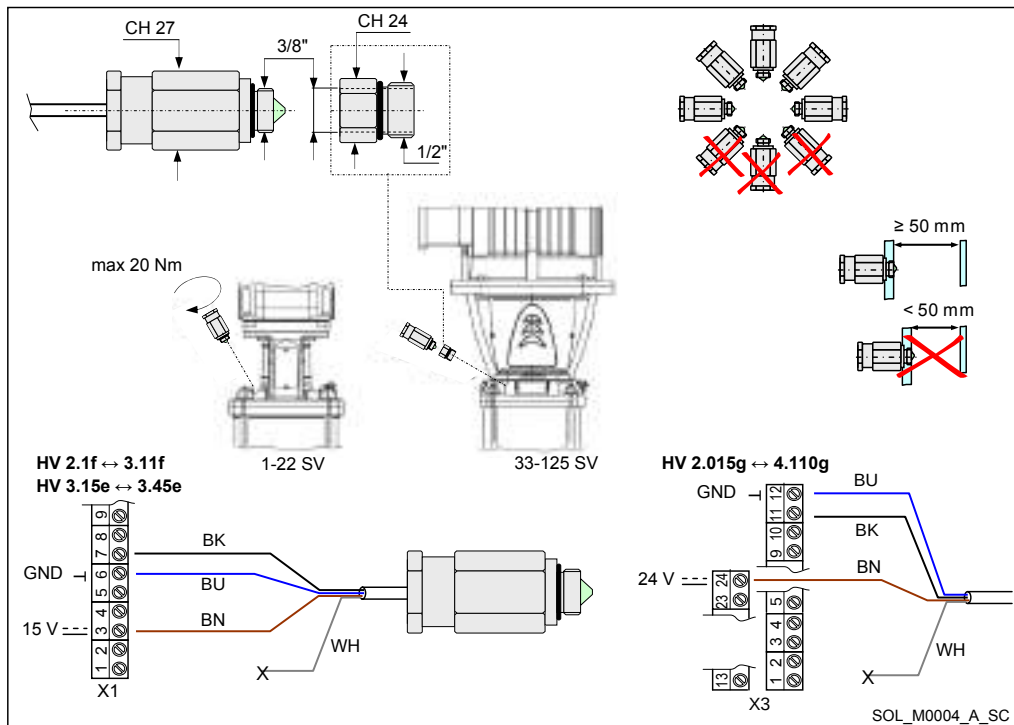
## WIRING DIAGRAM

The sensor can be directly mounted on the filling plug of the e-SV™ pumps.  
For the 33, 46, 66, 92, 125SV series, the 3/8" x 1/2" adaptor ring included in the Kit must also be mounted.

### KIT SENSOR DRP-GP (code 109394610)



### KIT SENSOR DRP-HV (code 109394600)



BK Black    BN Brown    BU Blue    WH White    X1, X3 Terminal board

## ACCESSORIES/SPARE PARTS



HYDROTUBE



PRESSURE SWITCH



FLOAT SWITCHES



VALVES



OPTIC SENSORS



NON-RETURN VALVES



JOINTS



PRESSURE SENSOR





# TECHNICAL APPENDIX

## VAPOUR PRESSURE VAPOUR PRESSURE $p_s$ AND $\rho$ DENSITY OF WATER TABLE

| t<br>°C | T<br>K | $p_s$<br>bar | $\rho$<br>kg/dm <sup>3</sup> | t<br>°C | T<br>K | $p_s$<br>bar | $\rho$<br>kg/dm <sup>3</sup> | t<br>°C | T<br>K | $p_s$<br>bar | $\rho$<br>kg/dm <sup>3</sup> |
|---------|--------|--------------|------------------------------|---------|--------|--------------|------------------------------|---------|--------|--------------|------------------------------|
| 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     | 433,15 | 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                       |         |        |              |                              |

G-at\_npsb\_b\_sc

## TANK 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.

### 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:**

22SV10F110T electric pump

$P_{max}$  = 23 wcm

$P_{min}$  = 15 wcm

$Q_p$  = 20  $m^3/h$

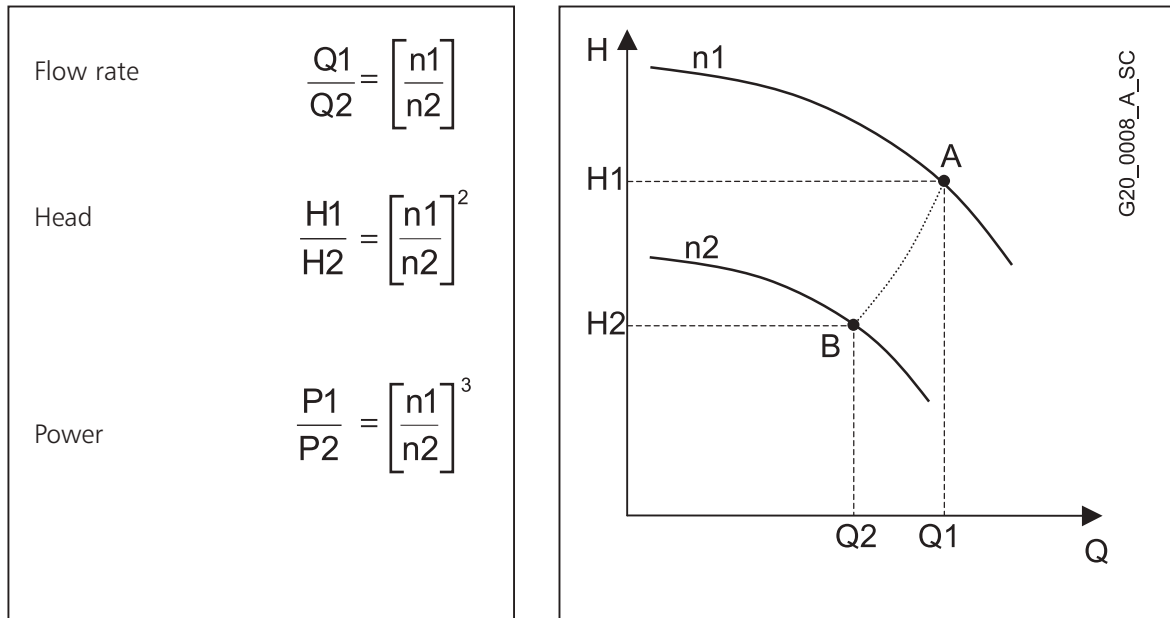
$Z$  = 25

$$V_m = \frac{Q_p}{4 \times Z} \times \frac{1}{1 - \frac{(P_{min} - 2)}{P_{max}}} = 0,46 \text{ m}^3$$

A 500-litre surge tank is therefore required.

## PERFORMANCE WITH VARYING SPEED EQUIVALENCE RELATIONS

Fitting the electric pump with a frequency converter makes it possible to vary the pump rotation speed, normally according to the system pressure parameter. **Variations in electric pump speed** result in **modified performances** according to the equivalence relations.



$n1$  = initial speed;  
 $Q1$  = initial flow rate;  
 $H1$  = initial head;  
 $P1$  = initial power;

$n2$  = speed required.  
 $Q2$  = flow rate required.  
 $H2$  = head required.  
 $P2$  = power required

**Frequency ratios** can be used instead of speed in practical applications, keeping 30 Hz as the bottom limit.

**Example** : 2-pole 50 Hz electric pump  $n1 = 2900$  (point A)

Flow rate (A) = 100 l/min; Head (A) = 50m

By reducing the frequency to 30 Hz the speed is reduced to approx.  $n2 = 1740$  rpm (point B)

Flow rate (B) = 60 l/min; Head (B) = 18 m

The power of the new work point B is cut to about 22% of the initial power.

## -sizing the diaphragm tank in systems with speed variation

**Variable speed** booster sets need **smaller tanks** compared to traditional systems. Generally speaking, a tank with a litre capacity of just 10% of the nominal capacity of a single pump, expressed in litres per minute, is needed. The **gradual starting** of the pumps controlled by the frequency converters reduces the need to limit the number of hourly starts; the main purpose of the tank is to compensate for small system losses, stabilize the pressure and make up for pressure variations caused by sudden demand.

Make the following calculation:

Set made up of three electric pumps, each with a maximum flow rate of 400 l/min, for a total capacity of 1200 l/min. The **volume** required for the tank is 40 litres. This size can be obtained by using two 24-litre tanks mounted directly onto the set's manifold.

The calculation establishes the minimum value needed for proper operation.

## 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 <sup>3</sup> /h | l/min |                                   | 15<br>1/2"   | 20<br>3/4"    | 25<br>1"     | 32<br>1 1/4" | 40<br>1 1/2" | 50<br>2      | 65<br>2 1/2"  | 80<br>3"                                                                                                                                                               | 100<br>4"    | 125<br>5"    | 150<br>6"    | 175<br>7"    | 200<br>8"    | 250<br>10"   | 300<br>12"   | 350<br>14" | 400<br>16" |
| 0,6               | 10    | v<br>hr                           | 0,94<br>16   | 0,53<br>3,94  | 0,34<br>1,33 | 0,21<br>0,40 | 0,13<br>0,13 |              |               | The hr values must be multiplied by:<br><br>0,71 for galvanized or painted steel pipes<br><br>0,54 for stainless steel or copper pipes<br><br>0,47 for PVC or PE pipes |              |              |              |              |              |              |              |            |            |
| 0,9               | 15    | v<br>hr                           | 1,42<br>33,9 | 0,80<br>8,35  | 0,51<br>2,82 | 0,31<br>0,85 | 0,20<br>0,29 |              |               |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 1,2               | 20    | v<br>hr                           | 1,89<br>57,7 | 1,06<br>14,21 | 0,68<br>4,79 | 0,41<br>1,44 | 0,27<br>0,49 | 0,17<br>0,16 |               |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 1,5               | 25    | v<br>hr                           | 2,36<br>87,2 | 1,33<br>21,5  | 0,85<br>7,24 | 0,52<br>2,18 | 0,33<br>0,73 | 0,21<br>0,25 |               |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 1,8               | 30    | v<br>hr                           | 2,83<br>122  | 1,59<br>30,1  | 1,02<br>10,1 | 0,62<br>3,05 | 0,40<br>1,03 | 0,25<br>0,35 |               |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 2,1               | 35    | v<br>hr                           | 3,30<br>162  | 1,86<br>40,0  | 1,19<br>13,5 | 0,73<br>4,06 | 0,46<br>1,37 | 0,30<br>0,46 |               |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 2,4               | 40    | v<br>hr                           |              | 2,12<br>51,2  | 1,36<br>17,3 | 0,83<br>5,19 | 0,53<br>1,75 | 0,34<br>0,59 | 0,20<br>0,16  |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 3                 | 50    | v<br>hr                           |              | 2,65<br>77,4  | 1,70<br>26,1 | 1,04<br>7,85 | 0,66<br>2,65 | 0,42<br>0,89 | 0,25<br>0,25  |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 3,6               | 60    | v<br>hr                           |              | 3,18<br>108   | 2,04<br>36,6 | 1,24<br>11,0 | 0,80<br>3,71 | 0,51<br>1,25 | 0,30<br>0,35  |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 4,2               | 70    | v<br>hr                           |              | 3,72<br>144   | 2,38<br>48,7 | 1,45<br>14,6 | 0,93<br>4,93 | 0,59<br>1,66 | 0,35<br>0,46  |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 4,8               | 80    | v<br>hr                           |              | 4,25<br>185   | 2,72<br>62,3 | 1,66<br>18,7 | 1,06<br>6,32 | 0,68<br>2,13 | 0,40<br>0,59  |                                                                                                                                                                        |              |              |              |              |              |              |              |            |            |
| 5,4               | 90    | v<br>hr                           |              |               | 3,06<br>77,5 | 1,87<br>23,3 | 1,19<br>7,85 | 0,76<br>2,65 | 0,45<br>0,74  | 0,30<br>0,27                                                                                                                                                           |              |              |              |              |              |              |              |            |            |
| 6                 | 100   | v<br>hr                           |              |               | 3,40<br>94,1 | 2,07<br>28,3 | 1,33<br>9,54 | 0,85<br>3,22 | 0,50<br>0,90  | 0,33<br>0,33                                                                                                                                                           |              |              |              |              |              |              |              |            |            |
| 7,5               | 125   | v<br>hr                           |              |               | 4,25<br>142  | 2,59<br>42,8 | 1,66<br>14,4 | 1,06<br>4,86 | 0,63<br>1,36  | 0,41<br>0,49                                                                                                                                                           |              |              |              |              |              |              |              |            |            |
| 9                 | 150   | v<br>hr                           |              |               |              | 3,11<br>59,9 | 1,99<br>20,2 | 1,27<br>6,82 | 0,75<br>1,90  | 0,50<br>0,69                                                                                                                                                           | 0,32<br>0,23 |              |              |              |              |              |              |            |            |
| 10,5              | 175   | v<br>hr                           |              |               |              | 3,63<br>79,7 | 2,32<br>26,9 | 1,49<br>9,07 | 0,88<br>2,53  | 0,58<br>0,92                                                                                                                                                           | 0,37<br>0,31 |              |              |              |              |              |              |            |            |
| 12                | 200   | v<br>hr                           |              |               |              | 4,15<br>102  | 2,65<br>34,4 | 1,70<br>11,6 | 1,01<br>3,23  | 0,66<br>1,18                                                                                                                                                           | 0,42<br>0,40 |              |              |              |              |              |              |            |            |
| 15                | 250   | v<br>hr                           |              |               |              | 5,18<br>154  | 3,32<br>52,0 | 2,12<br>17,5 | 1,26<br>4,89  | 0,83<br>1,78                                                                                                                                                           | 0,53<br>0,60 | 0,34<br>0,20 |              |              |              |              |              |            |            |
| 18                | 300   | v<br>hr                           |              |               |              |              | 3,98<br>72,8 | 2,55<br>24,6 | 1,51<br>6,85  | 1,00<br>2,49                                                                                                                                                           | 0,64<br>0,84 | 0,41<br>0,28 |              |              |              |              |              |            |            |
| 24                | 400   | v<br>hr                           |              |               |              |              | 5,31<br>124  | 3,40<br>41,8 | 2,01<br>11,66 | 1,33<br>4,24                                                                                                                                                           | 0,85<br>1,43 | 0,54<br>0,48 | 0,38<br>0,20 |              |              |              |              |            |            |
| 30                | 500   | v<br>hr                           |              |               |              |              | 6,63<br>187  | 4,25<br>63,2 | 2,51<br>17,6  | 1,66<br>6,41                                                                                                                                                           | 1,06<br>2,16 | 0,68<br>0,73 | 0,47<br>0,30 |              |              |              |              |            |            |
| 36                | 600   | v<br>hr                           |              |               |              |              | 5,10<br>88,6 | 3,02<br>24,7 | 1,99<br>8,98  | 1,27<br>3,03                                                                                                                                                           | 0,82<br>1,02 | 0,57<br>0,42 | 0,42<br>0,20 |              |              |              |              |            |            |
| 42                | 700   | v<br>hr                           |              |               |              |              | 5,94<br>118  | 3,52<br>32,8 | 2,32<br>11,9  | 1,49<br>4,03                                                                                                                                                           | 0,95<br>1,36 | 0,66<br>0,56 | 0,49<br>0,26 |              |              |              |              |            |            |
| 48                | 800   | v<br>hr                           |              |               |              |              | 6,79<br>151  | 4,02<br>42,0 | 2,65<br>15,3  | 1,70<br>5,16                                                                                                                                                           | 1,09<br>1,74 | 0,75<br>0,72 | 0,55<br>0,34 |              |              |              |              |            |            |
| 54                | 900   | v<br>hr                           |              |               |              |              | 7,64<br>188  | 4,52<br>52,3 | 2,99<br>19,0  | 1,91<br>6,41                                                                                                                                                           | 1,22<br>2,16 | 0,85<br>0,89 | 0,62<br>0,42 |              |              |              |              |            |            |
| 60                | 1000  | v<br>hr                           |              |               |              |              | 5,03<br>63,5 | 3,32<br>23,1 | 2,12<br>7,79  | 1,36<br>2,63                                                                                                                                                           | 0,94<br>1,08 | 0,69<br>0,51 | 0,53<br>0,27 |              |              |              |              |            |            |
| 75                | 1250  | v<br>hr                           |              |               |              |              | 6,28<br>96,0 | 4,15<br>34,9 | 2,65<br>11,8  | 1,70<br>3,97                                                                                                                                                           | 1,18<br>1,63 | 0,87<br>0,77 | 0,66<br>0,40 |              |              |              |              |            |            |
| 90                | 1500  | v<br>hr                           |              |               |              |              | 7,54<br>134  | 4,98<br>48,9 | 3,18<br>16,5  | 2,04<br>5,57                                                                                                                                                           | 1,42<br>2,29 | 1,04<br>1,08 | 0,80<br>0,56 |              |              |              |              |            |            |
| 105               | 1750  | v<br>hr                           |              |               |              |              | 8,79<br>179  | 5,81<br>65,1 | 3,72<br>21,9  | 2,38<br>7,40                                                                                                                                                           | 1,65<br>3,05 | 1,21<br>1,44 | 0,93<br>0,75 |              |              |              |              |            |            |
| 120               | 2000  | v<br>hr                           |              |               |              |              | 6,63<br>83,3 | 4,25<br>28,1 | 2,72<br>9,48  | 1,89<br>3,90                                                                                                                                                           | 1,39<br>1,84 | 1,06<br>0,96 | 0,68<br>0,32 |              |              |              |              |            |            |
| 150               | 2500  | v<br>hr                           |              |               |              |              | 8,29<br>126  | 5,31<br>42,5 | 3,40<br>14,3  | 2,36<br>5,89                                                                                                                                                           | 1,73<br>2,78 | 1,33<br>1,45 | 0,85<br>0,49 |              |              |              |              |            |            |
| 180               | 3000  | v<br>hr                           |              |               |              |              |              | 6,37<br>59,5 | 4,08<br>20,1  | 2,83<br>8,26                                                                                                                                                           | 2,08<br>3,90 | 1,59<br>2,03 | 1,02<br>0,69 | 0,71<br>0,28 |              |              |              |            |            |
| 210               | 3500  | v<br>hr                           |              |               |              |              |              | 7,43<br>79,1 | 4,76<br>26,7  | 3,30<br>11,0                                                                                                                                                           | 2,43<br>5,18 | 1,86<br>2,71 | 1,19<br>0,91 | 0,83<br>0,38 |              |              |              |            |            |
| 240               | 4000  | v<br>hr                           |              |               |              |              |              | 8,49<br>101  | 5,44<br>34,2  | 3,77<br>14,1                                                                                                                                                           | 2,77<br>6,64 | 2,12<br>3,46 | 1,36<br>1,17 | 0,94<br>0,48 |              |              |              |            |            |
| 300               | 5000  | v<br>hr                           |              |               |              |              |              | 6,79<br>51,6 | 4,72<br>21,2  | 3,47<br>10,0                                                                                                                                                           | 2,65<br>5,23 | 1,70<br>1,77 | 1,18<br>0,73 |              |              |              |              |            |            |
| 360               | 6000  | v<br>hr                           |              |               |              |              |              | 8,15<br>72,3 | 5,66<br>14,1  | 4,16<br>7,33                                                                                                                                                           | 3,18<br>2,47 | 2,04<br>2,47 | 1,42<br>1,02 |              |              |              |              |            |            |
| 420               | 7000  | v<br>hr                           |              |               |              |              |              | 6,61<br>39,6 | 4,85<br>18,7  | 3,72<br>9,75                                                                                                                                                           | 2,38<br>3,29 | 1,65<br>1,35 | 1,21<br>0,64 |              |              |              |              |            |            |
| 480               | 8000  | v<br>hr                           |              |               |              |              |              | 7,55<br>50,7 | 5,55<br>23,9  | 4,25<br>12,49                                                                                                                                                          | 2,72<br>4,21 | 1,89<br>1,73 | 1,39<br>0,82 |              |              |              |              |            |            |
| 540               | 9000  | v<br>hr                           |              |               |              |              |              | 8,49<br>63,0 | 6,24<br>15,5  | 4,78<br>5,24                                                                                                                                                           | 3,06<br>2,16 | 2,12<br>1,77 | 1,56<br>0,53 | 1,19<br>0,65 |              |              |              |            |            |
| 600               | 10000 | v<br>hr                           |              |               |              |              |              |              |               |                                                                                                                                                                        |              | 6,93<br>36,2 | 5,31<br>18,9 | 3,40<br>6,36 | 2,36<br>2,62 | 1,73<br>1,24 | 1,33<br>0,65 |            |            |

hr = flow resistance for 100 m of straight pipeline (m)

V = water speed (m/s)

G-at-pct-en\_b\_th

## 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<br>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 valve         | -                              | -   | -   | 0,2 | 0,2 | 0,2 | 0,4 | 0,4 | 0,6 | 0,9 | 1,1  | 1,3  |
| Foot check 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 |
| 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-en\_b\_th

The table is valid for the Hazen Williams coefficient  $C=100$  (cast iron pipework)  
 for galvanized steel or painted steel multiply the values by 0,71;  
 for stainless steel and copper multiply the values by 0,54;  
 for Pvc and PE multiply the values by 0,47.

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

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 manufacturers.

## 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

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

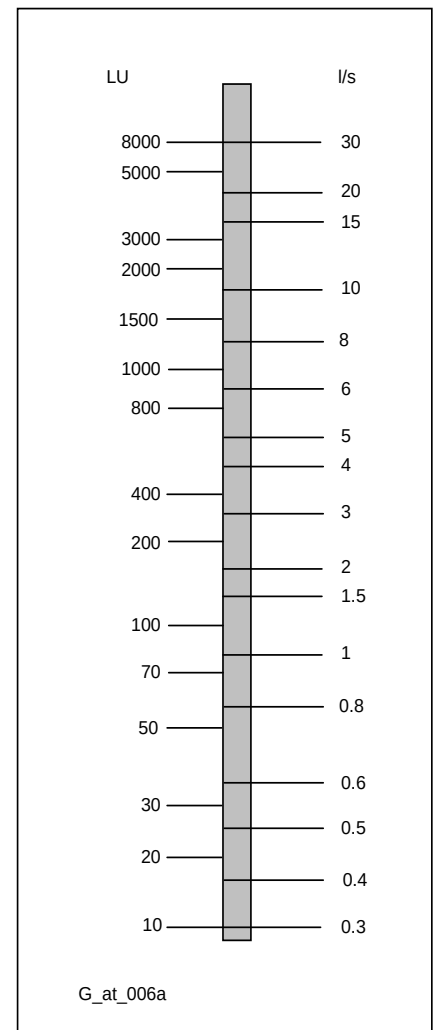
See loading unit table below.

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

I valori di consumo variano per ogni tipo di apparecchio.

| APPLIANCE               | LOADING UNIT (LU) | RECOMMENDED FLOW (l/s) |
|-------------------------|-------------------|------------------------|
| WC                      | 1,5               | 0,12                   |
| WASH BASIN (hot & cold) | 3                 | 0,30                   |
| SINK (hot & cold)       | 6                 | 0,40                   |
| BATH (hot & cold)       | 20                | 0,60                   |
| SHOWER (hot & cold)     | 10                | 0,24                   |
| WASHING MACHINE         | 2                 | 0,30                   |

g\_at\_cm\_uk-en\_a\_th



### 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.

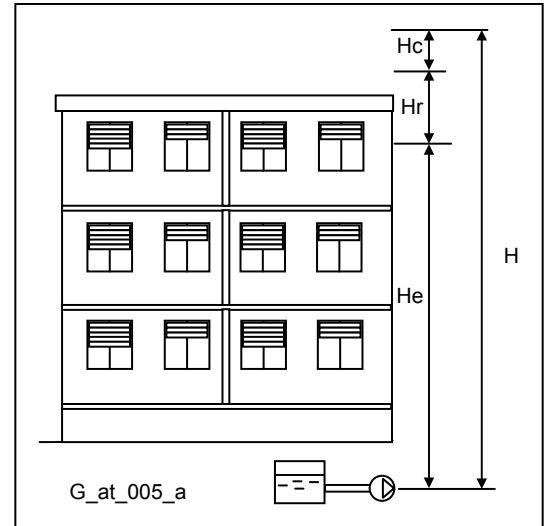
**Static head (He):** this is the difference between the break tank low water line and the highest discharge point in the building. If the height of the build is not known, then  $2,8 \div 3,0$  metres per floor can be used to assess the building height.

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

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 (Hc).



### Example

Static head (He): Building height four floors @ 2,8 m each = 11,2 m

Residual pressure (Hr): Pressure at highest outlet = 20 m

Friction losses (Hc):  $11,2 \text{ (static head)} \times 0,05 = 0,56 \text{ m}$

Total pump head required  $H = 11,2 + 20 + 0,56 = 31,76 \text{ m (3,11bar)}$

### 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<br>m/s | DELIVERY PIPE<br>m/s |
|------------------|---------------------|----------------------|
| up to 80 mm      | 0,46                | 0,91 to 1,07         |
| 100-150 mm       | 0,55                | 1,22 to 1,52         |
| 200 mm           | 0,76                | 1,68                 |
| 250 mm and above | 0,91                | 1,82 to 2,13         |

g\_ve\_uk-en\_a\_th

### 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.



## VOLUMETRIC CAPACITY

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

## PRESSURE AND HEAD

| Newton per<br>square metre<br>N/m <sup>2</sup> | kilo Pascal<br>kPa | bar<br>bar           | Pound force per<br>square inch<br>psi | Metre<br>of water<br>m H <sub>2</sub> O | Millimetre of<br>mercury<br>mm Hg |
|------------------------------------------------|--------------------|----------------------|---------------------------------------|-----------------------------------------|-----------------------------------|
| <b>1,0000</b>                                  | 0,0010             | 1 x 10 <sup>-5</sup> | 1,45 x 10 <sup>-4</sup>               | 1,02 x 10 <sup>-4</sup>                 | 0,0075                            |
| 1 000,0000                                     | <b>1,0000</b>      | 0,0100               | 0,1450                                | 0,1020                                  | 7,5006                            |
| 1 x 10 <sup>5</sup>                            | 100,0000           | <b>1,0000</b>        | 14,5038                               | 10,1972                                 | 750,0638                          |
| 6 894,7570                                     | 6,8948             | 0,0689               | <b>1,0000</b>                         | 0,7031                                  | 51,7151                           |
| 9 806,6500                                     | 9,8067             | 0,0981               | 1,4223                                | <b>1,0000</b>                           | 73,5561                           |
| 133,3220                                       | 0,1333             | 0,0013               | 0,0193                                | 0,0136                                  | <b>1,0000</b>                     |

## LENGTH

| Millimetre<br>mm | Centimetre<br>cm | Metre<br>m    | Inch<br>in    | Foot<br>ft    | Yard<br>yd    |
|------------------|------------------|---------------|---------------|---------------|---------------|
| <b>1,0000</b>    | 0,1000           | 0,0010        | 0,0394        | 0,0033        | 0,0011        |
| 10,0000          | <b>1,0000</b>    | 0,0100        | 0,3937        | 0,0328        | 0,0109        |
| 1 000,0000       | 100,0000         | <b>1,0000</b> | 39,3701       | 3,2808        | 1,0936        |
| 25,4000          | 2,5400           | 0,0254        | <b>1,0000</b> | 0,0833        | 0,0278        |
| 304,8000         | 30,4800          | 0,3048        | 12,0000       | <b>1,0000</b> | 0,3333        |
| 914,4000         | 91,4400          | 0,9144        | 36,0000       | 3,0000        | <b>1,0000</b> |

## VOLUME

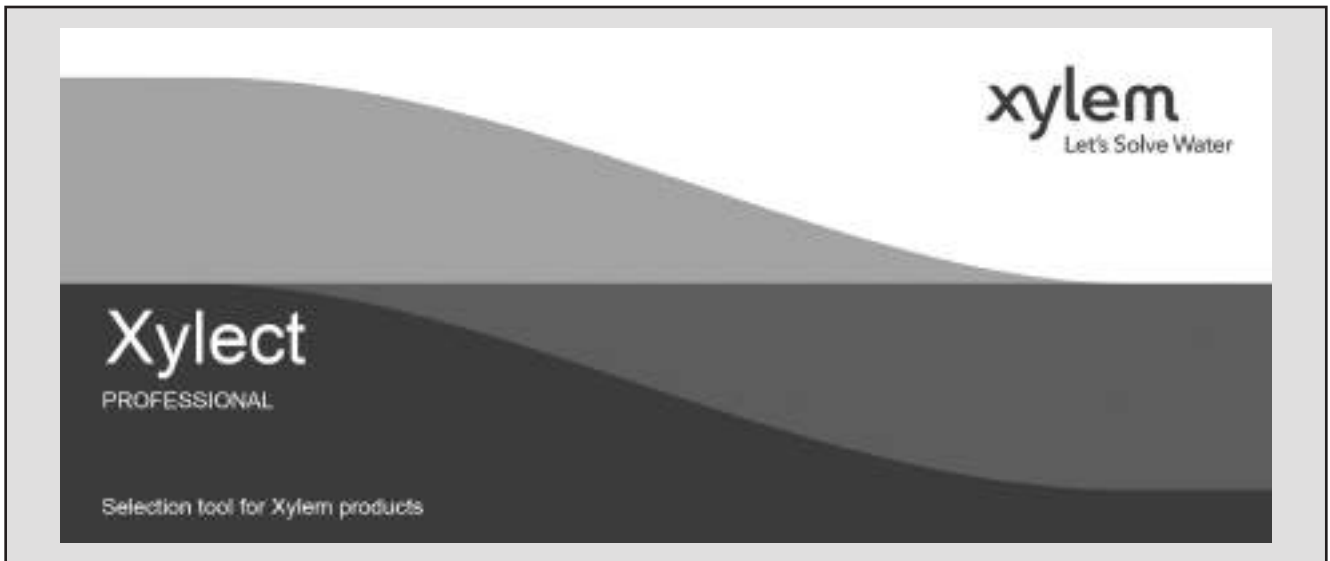
| Cubic metre<br>m <sup>3</sup> | Litre<br>L    | Millilitre<br>ml    | Imperial gallon<br>imp. gal. | U.S. gallon<br>US gal.   | Cubic foot<br>ft <sup>3</sup> |
|-------------------------------|---------------|---------------------|------------------------------|--------------------------|-------------------------------|
| <b>1,0000</b>                 | 1 000,0000    | 1 x 10 <sup>6</sup> | 219,9694                     | 264,1720                 | 35,3147                       |
| 0,0010                        | <b>1,0000</b> | 1 000,0000          | 0,2200                       | 0,2642                   | 0,0353                        |
| 1 x 10 <sup>-6</sup>          | 0,0010        | <b>1,0000</b>       | 2,2 x 10 <sup>-4</sup>       | 2,642 x 10 <sup>-4</sup> | 3,53 x 10 <sup>-5</sup>       |
| 0,0045                        | 4,5461        | 4 546,0870          | <b>1,0000</b>                | 1,2009                   | 0,1605                        |
| 0,0038                        | 3,7854        | 3 785,4120          | 0,8327                       | <b>1,0000</b>            | 0,1337                        |
| 0,0283                        | 28,3168       | 28 316,8466         | 6,2288                       | 7,4805                   | <b>1,0000</b>                 |

## TEMPERATURE

| Water   | Kelvin<br>K | Celsius<br>°C | Fahrenheit<br>°F | $^{\circ}\text{F} = ^{\circ}\text{C} \times \frac{9}{5} + 32$<br>$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times \frac{5}{9}$ |
|---------|-------------|---------------|------------------|----------------------------------------------------------------------------------------------------------------------------------|
| icing   | 273,1500    | 0,0000        | 32,0000          |                                                                                                                                  |
| boiling | 373,1500    | 100,0000      | 212,0000         |                                                                                                                                  |

G-at\_pp-en\_b\_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 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 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™



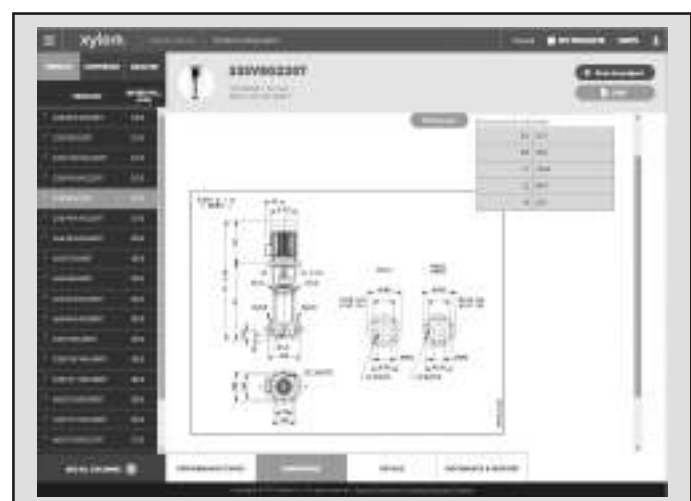
The detailed output makes it easy to select the optimal pump from the given alternatives.

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.

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





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

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