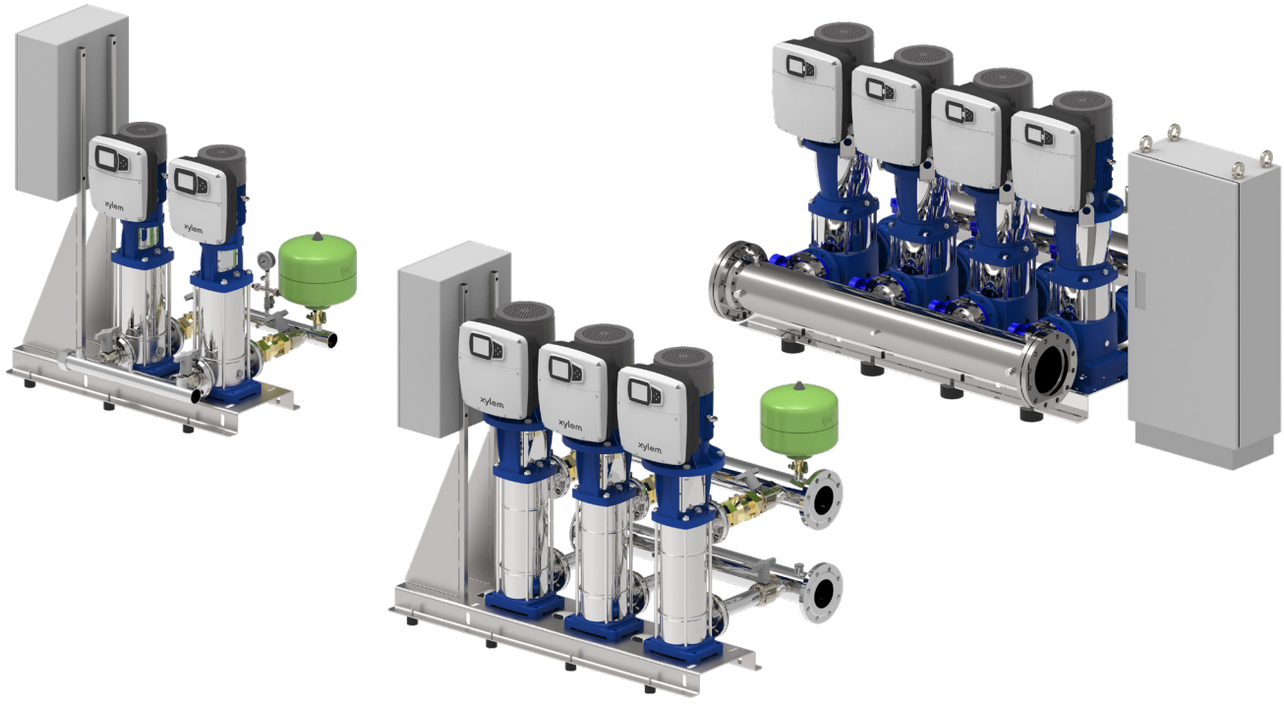
LOWARA
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Technical brochure
Cod. 191020611 Rev. H Ed.09/2026

50/60 Hz



GHV hydrovar X+ Series

GHV10-GHV20-GHV30-GHV40 Series /CB and /CX versions
Variable speed booster sets with e-SVX vertical multistage electric pump series equipped with hydrovar X+

xylem

Directive 2009/125/EC of the European Union

The **Directive 2005/32/EC** on energy-using products (**EuP**) and the subsequent **Directive 2009/125/EC** on energy-related products (**ErP**) established the ecodesign requirements for products to reduce their energy consumption and consequently their environmental impact.

These requirements apply to products placed and used in the European Economic Area (European Union plus Iceland, Liechtenstein and Norway) as a stand-alone unit or as integrated parts in other products.

The following tables show the Regulations that define the requirements applicable to Lowara products.

- Some types of **pump** used for pumping clean water:

Regulations	From	Target
(EU) N. 547/2012 and subsequent updates	1 January 2015	**MEI** ≥ 0,4

- **Circulators** with a rated hydraulic output power of between 1 and 2500 W, designed for use in heating systems or in secondary circuits of cooling distribution systems:

Regulations	From	Target
(EC) N. 641/2009 and subsequent updates	1 August 2015	**EEI** < 0,23

- **Three-phase motors** with frequency 50 or 60 or 50/60 Hz and voltages between 50 and 1000 V (S1 and D.O.L.):

Regulations	From	Target
(EU) 2019/1781 and subsequent updates	1 July 2023	**IE2**: motors with a rated output ≥ 0,12 and < 0,75 kW **IE3**: motors with a rated output ≥ 0,75 and < 75 kW **IE4**: motors with a rated output ≥ 75 and < 201 kW **IE3**: motors with a rated output ≥ 201 and < 1000 kW

- **Single-phase motors** with frequency 50 or 60 or 50/60 Hz and voltages between 50 and 1000 V (S1 and D.O.L.):

Regulations	From	Target
(EU) 2019/1781and subsequent updates	1 July 2023	**IE2**: motors with a rated output ≥ 0,12

- **Variable speed drives** (VSD) with three-phase input and rated output power from 0,12 kW up to 1000 kW, rated for operating with motor included in the same regulations:

Regulations	From	Target
(EU) 2019/1781and subsequent updates	1 July 2021	**IE2**

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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-SVX series multistage vertical pumps. Each pump is equipped with an hydrovar X+ 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 e-SVX pump is connected to a suction manifold complete with shut-off valve and minimum pressure switch. In the delivery there are: manifold, non-return valve, shut-off valve. Hydraulics components of single pump booster set are also available as kit (KIT IDR G/SVX../CB, KIT IDR G/SVX../CX)

GHV20, GHV30, GHV40: The pumps are assembled on a single base. Shut-off valves and check valves are present for each pump. Suction and delivery manifolds connect the entire system.

Materials in contact with water are either certified or approved according to KTW

The control panel is secured to the same base by means of a bracket.
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 customization to satisfy particular working requirements.

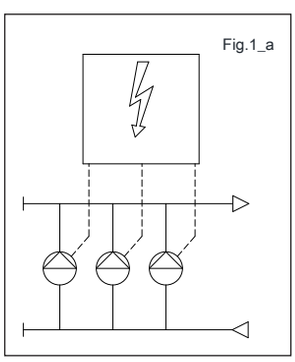
Systems for regulating the speed of the electric motors, as in GHV series booster sets, are used in the following cases:

- 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

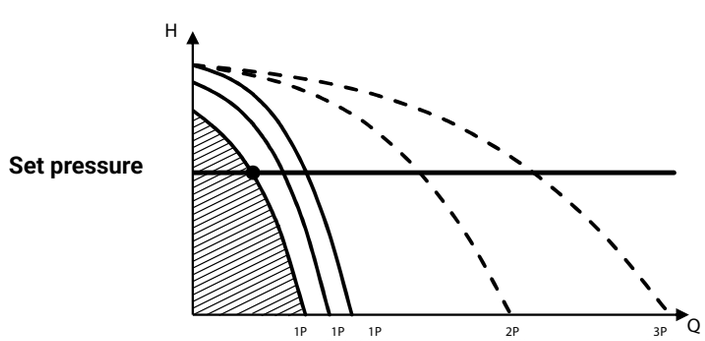
In Lowara GHV series booster sets, all the pumps are controlled by a hydrovar X+ frequency converter, and operate at variable speeds.
Special sets with up to eight pumps are also available on request. Start-up is automatic, depending on system requirements. Each pump has a pressure transmitter that provides 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 of operation of a GHV set with three pumps.

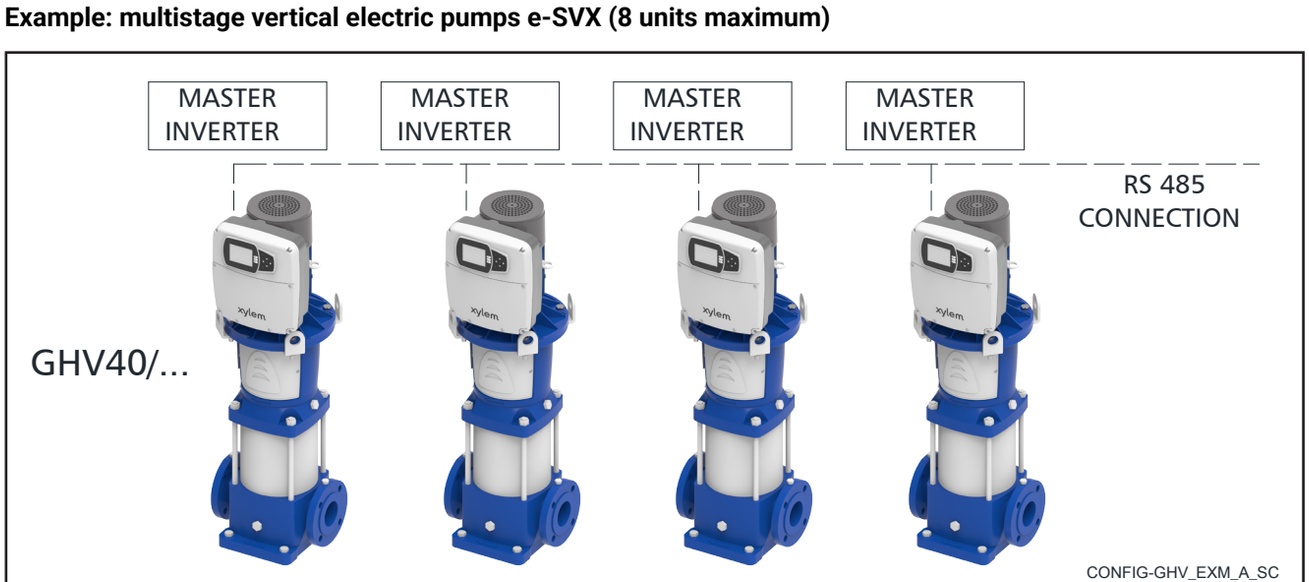


Each pump is controlled by a frequency converter, directly connected to the pump electric motor. The starting priority is changed in accordance with the time set in the relevant hydrovar X+ parameter field. The speed adjustment will apply to all the pumps installed. When the water request decreases,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

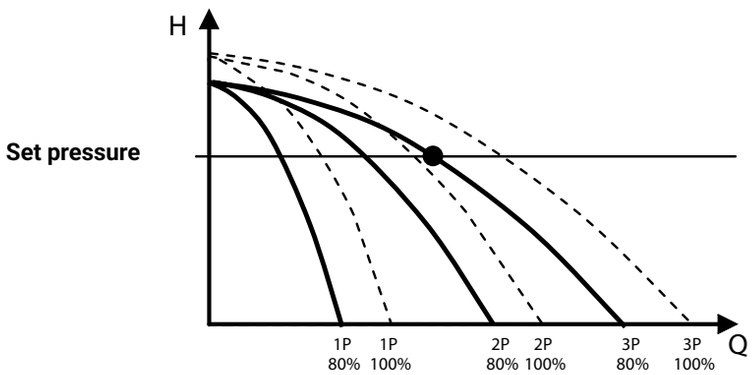


Example: multistage vertical electric pumps e-SVX (8 units maximum)



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 X+ 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. In GHV series booster sets, the control panel includes the electronic module to connect the lack of water's control.

Minimum delivery pressure protection

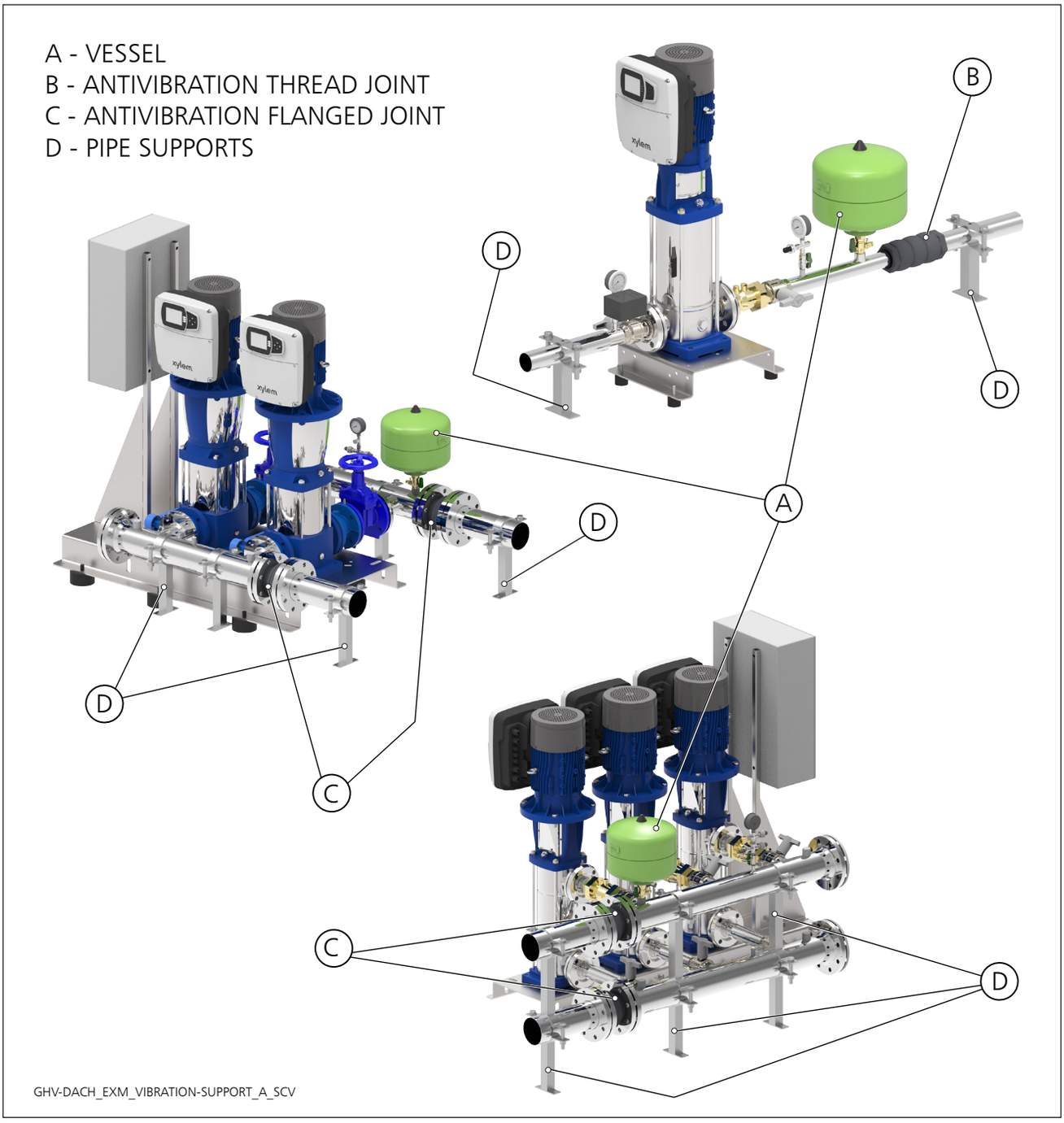
The minimum delivery pressure function can be managed by entering the pressure value in the menu of the hydrovar X+ control card, which will receive the signal through the pressure transducer at the delivery.
The minimum pressure switch is installed as standard.

Filling mode function

The PIPE FILLING FUNCTION controls the filling of the system when it is not pressurized, in order to avoid water hammer. If function is enabled and activated, the unit runs at the MINIMUM SPEED for the PIPE FILLING STEADY TIME and the pressure is monitored. If the pressure is stable for the steady time, the speed is increased by the PIPE FILLING SPEED STEP and then the pressure is monitored. At the end of PIPE FILLING FUNCTION, the unit control goes back to the standard regulation.

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.



The booster sets must be connected to pressurized 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 expansion vessel (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 the user demand by moderating the pump speed.
Considering also that variable-pressure sets are very sensitive to swings of pressure in the system, the use of expansion vessel allows the pressure to stabilize 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

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
- Expansion vessel

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.

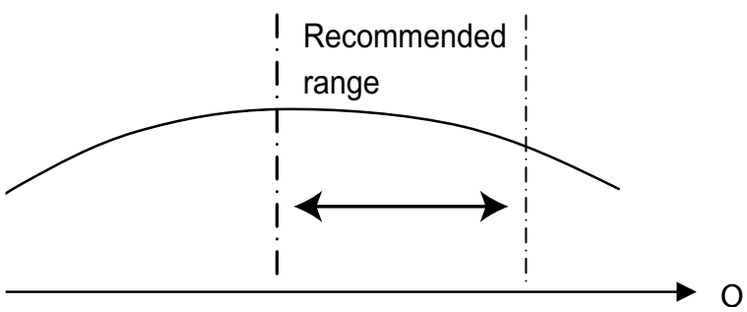
GHV series booster sets are equipped with an expansion vessel, with capacity 25lt PN10 or 12lt PN16. For the sizes, see the specific chapter in this catalogue.
The expansion vessel avoids the risk of water hammer, which is harmful for both the system and the pumps.

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.

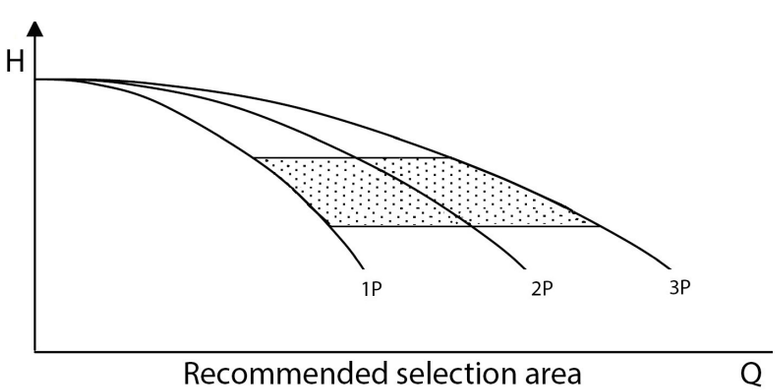
GHV BOOSTER SETS SERIES
SELECTING THE PUMPS

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.

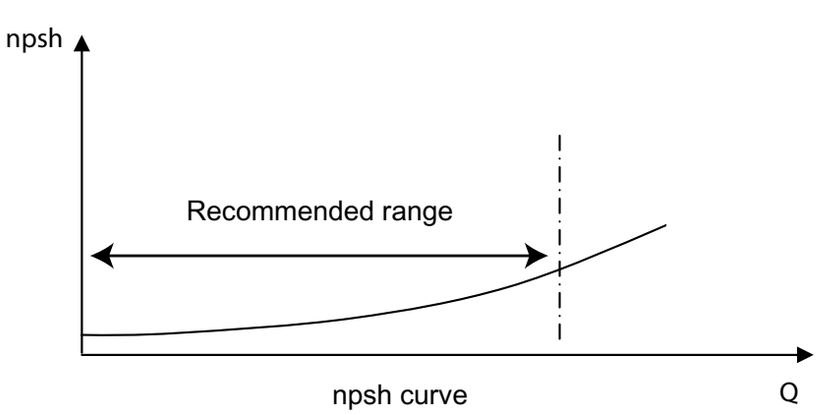
Generally the choice of the pump, based on the performance curve, should fall around the maximum efficiency point. The pump must ensure operation within its rated performance.
Since the unit is sized according to the maximum possible consumption, the maximum duty point of the pumps must be in the area 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
HOW TO READ CURVES OF e-SV with hydrovar X+

To exploit to the maximum potential of GHV BOOSTER SETS it's important to properly read working curves shown in the relevant charts.

① **Pump model**

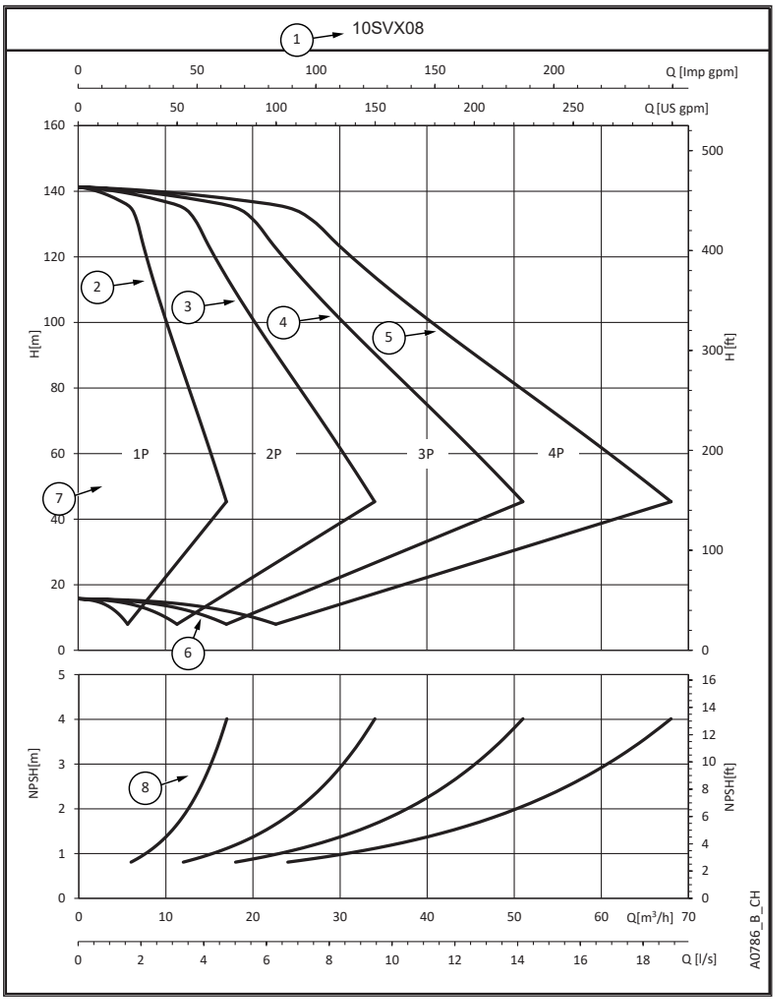
Maximum speed curve (100%) for ② 1 pump, ③ 2 pumps, ④ 3 pumps, ⑤ 4 pumps running: equal to 3600 rpm or pump running at nominal power.

⑥ **Minimum speed curve (0%):** it refers to the minimum rpm level the motor can work at, it's calculated depending on the model of pump maximizing the working area and allowing the highest system flexibility. Pumps run same speed.

⑦ **The part load percentage** calculated depending on maximum speed (max, 100%) and minimum speed (min, equal to 0%, which coincides with the minimum load step under which the drive remains powered but cannot work). Pumps run same speed.

⑧ **NPSH:** is the net positive suction head of pump+motor+drive system working at maximum speed.

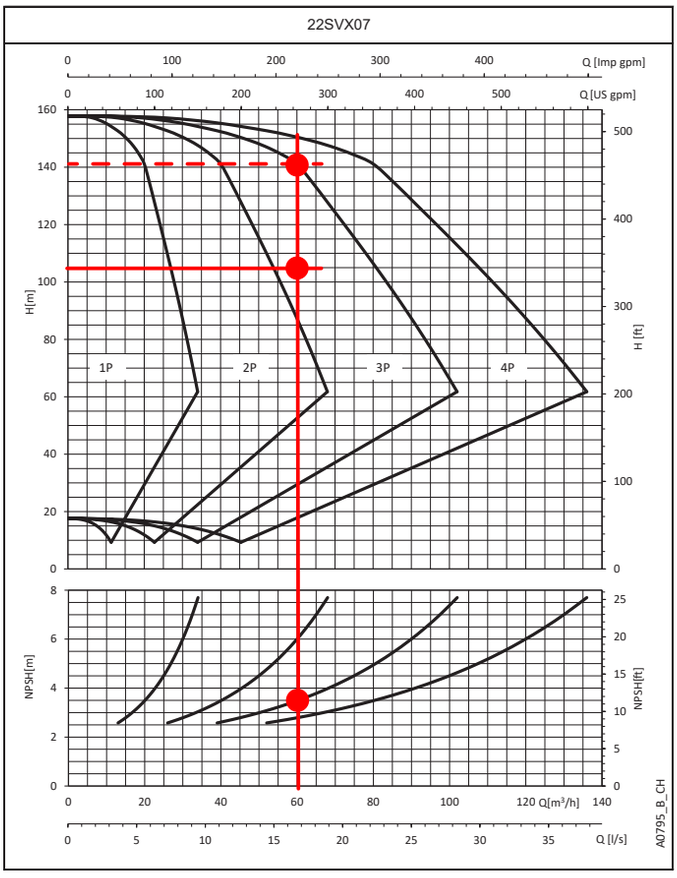
Load control: the booster set GHV series controls and limits power consumption at high flow/low head, in this way the motor stays protected from overload and ensure a longer life of pump +motor+drive system.





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 m³/h and a pressure of 105 m water column.

As shown in the operating curves on page 94, the selection requires three 22SVX07 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.
The example considers all pumps in operation. For the selection of booster it is recommended that one pump is in stand by.

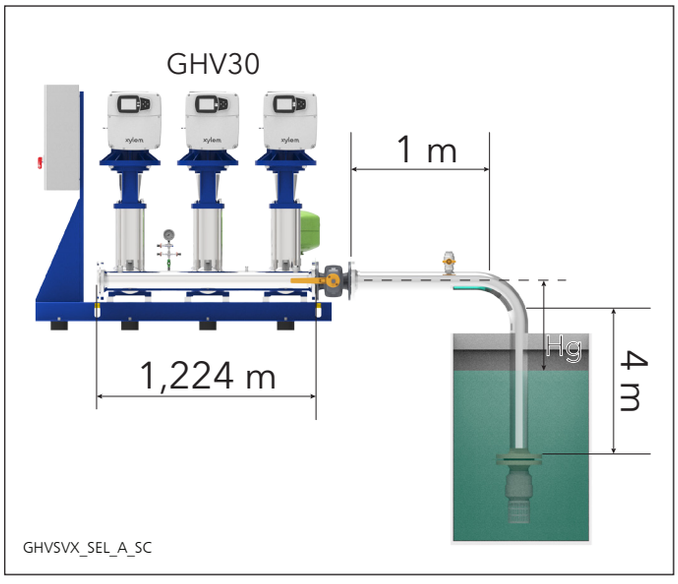
The inlet pressure of the booster or pump plus the pressure supply by pump must always be lower than the maximum operating pressure (PN) of the booster.

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, characterized 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 assessed, and which connects this value, is the following:

NPSH available ≥ NPSH required, when the equality condition represents the limit condition.

NPSH available = Patm + Hg – ∑t – ∑a

Where:
Patm is the atmospheric pressure, equal to 10,33 m
Hg is the geodetic level difference
∑t are the pressure drops for suction components such as foot check valve, suction piping, curve, gate valve.
∑a are the pressure drops for suction set branch.

The NPSH requested is a parameter obtained from the performance curve; in our case, at the flow of each pump equal to 20 m^3/h, it corresponds to 3,5 m (page 94). Before calculating the NPSH available, it is necessary to calculate the pressure drops at the suction, using the tables on pages 145-146 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 ∑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 54).

Calculation of suction drops ∑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) ∑c = 5,1 x 7,79 /100 = 0,39 m

Calculation of suction drops ∑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) ∑s = (2,1 + 4 + 1) x 7,79 x 0,54 / 100 = 0,29 m

Pressure drops for suction components ∑t = ∑c + ∑s = 0,39 + 0,29 = 0,68 m
The total sum of the pressure drops ∑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 54).
Hc pressure drops for suction set branch must be assessed on the B curve (page 117, scheme A0655_A_CH); at the flow value of each pump equal to 20 m^3/h, a value of Hc = 0,0035 m is obtained.
Calculation of suction drops ∑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) ∑t = (4.3 + 1,224) x 7,79 x 0,54 / 100 = 0,23 m
Pressure drops ∑a = Hc + ∑s = 0,0035 + 0,23 = 0,24 m

Remembering that NPSH available = Patm + Hg - ∑t – ∑a and that NPSH available ≥ NPSH requested we have that Patm + Hg - ∑t - ∑a must be ≥ NPSH requested.
Substituting the values we get that 10,33 + Hg - 0,68 – 0,24 ≥ 3,5 m (NPSH requested),
Hg = 3,5 + 0,68 + 0,24 – 10,33 = - 5,91 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 5,91 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 m3/h and H = 105 mca (P requested) and the installation height Hg (estimated to 5 m), in order to make the calculations easier we use the pressure drop curves for each single pump on page 117, of this catalogue. Assuming that a booster set GHV30/22SVX07 with non-return valves on the delivery has been selected, we proceed as follows:

P net available ≥ P requested, when the equality condition represents the limit condition.
P net available = H – (Hg + ∑t + ∑a + ∑m)
Where:
H head value of booster set
Hg is the geodetic level difference (estimated to 5 m)
∑t are the pressure drops for suction components such as foot check valve, suction piping, curve and gate valve.
∑a are the pressure drops for suction set branch
∑m are the pressure drops for delivery set branch

The total sum of the pressure drops ∑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 54).

Calculation of suction drops ∑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)
∑c = 5,1 x 7,79 /100 = 0,39 m

Calculation of suction drops ∑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) ∑s = (2,1 + 4 + 1) x 7,79 x 0,54 / 100 = 0,29 m

Pressure drops for suction components ∑t = ∑c + ∑s = 0,39 + 0,29 = 0,68 m
The total sum of the pressure drops ∑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 54).
Hc pressure drops for suction set branch must be assessed on the B curve (page 117, scheme A0655_A_CH); at the flow value of each pump equal to 20 m^3/h, a value of Hc = 0,0035 m is obtained.

Calculation of suction drops ∑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) ∑t = (4,3 + 1,224) x 7,79 x 0,54 / 100 = 0,23 m
Pressure drops ∑a = Hc + ∑s = 0,0035 + 0,23 = 0,24
The total sum of the pressure drops ∑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 54).
Hc pressure drops for delivery set branch must be assessed on the A curve (page 117, scheme A0655_A_CH); at the flow value of each pump equal to 20 m^3/h, a value of Hc = 2,9 m is obtained.

Calculation of delivery drops ∑s for stainless steel components
Equivalent piping length for DN100 manifold TEE fitting = 4,3 m
Delivery manifold length = 1,224 m
Pressure drops in the delivery manifold (steel) ∑s = (4,3 + 1,224) x 7,79 x 0,54 / 100 = 0,23 m

Pressure drops in delivery manifold ∑m = Hc + ∑s = 2,9 + 0,23 = 3,13 m
If we analyze the performance of the set at the flow value of 60 m^3/h, the head value H is 142 m.
The net pressure at the delivery manifold will be P net available= H – (Hg + ∑t + ∑a + ∑m)
Substituting the values we get that P net available = 142 – (5 + 0,68 + 0,24 + 3,13) = 133 m
When comparing this value with the design value (not taking into account the dynamic energy)
we see that 133 m > 105 m [P net available > P Required], with three pumps run.

The set is therefore capable of meeting system requirements with three pumps run.

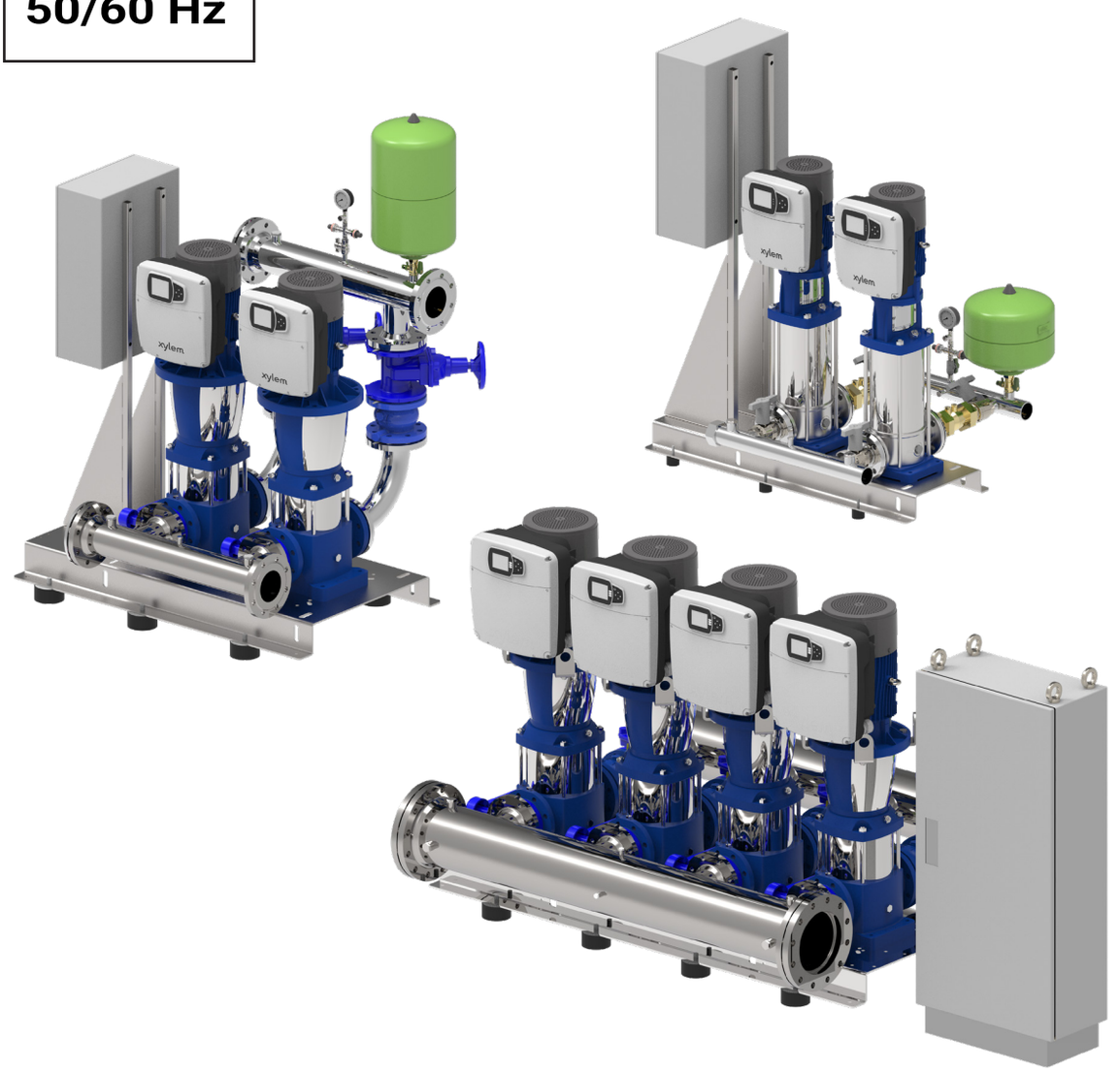
GHV.../SVX Series

GHV10, GHV20, GHV30, GHV40 SERIES
/CB AND /CX VERSIONS

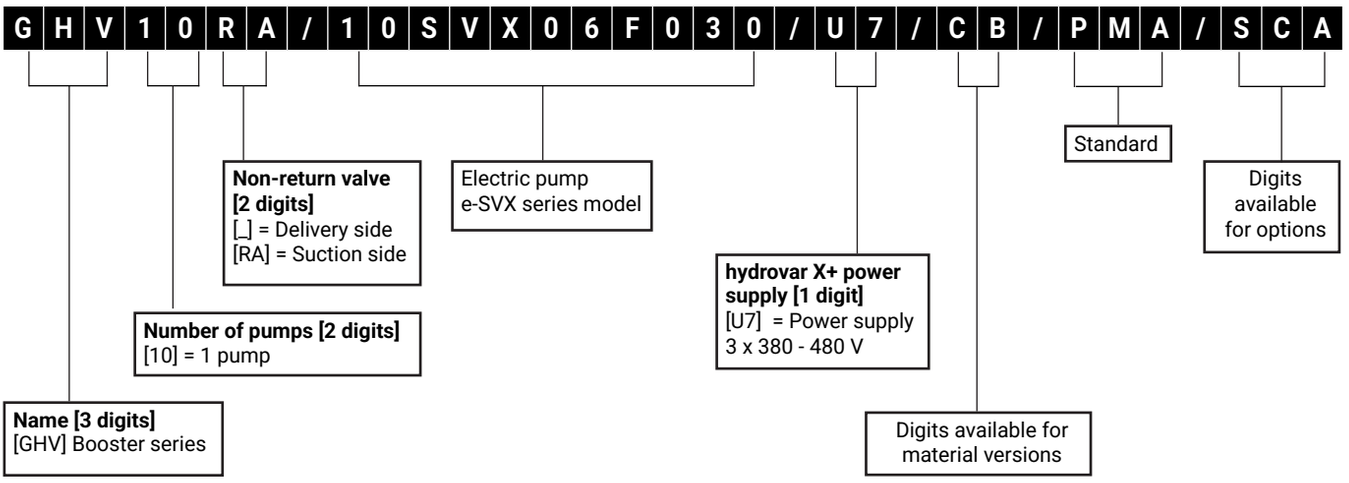
Variable speed booster sets
with e-SVX vertical multistage electric pump series
equipped with hydrovar X+

Flow rate up to 640 m^3/h, pressure up to 16 bar.

50/60 Hz



GHV SINGLE PUMP BOOSTER SET SERIES
IDENTIFICATION CODE



MATERIAL VERSIONS

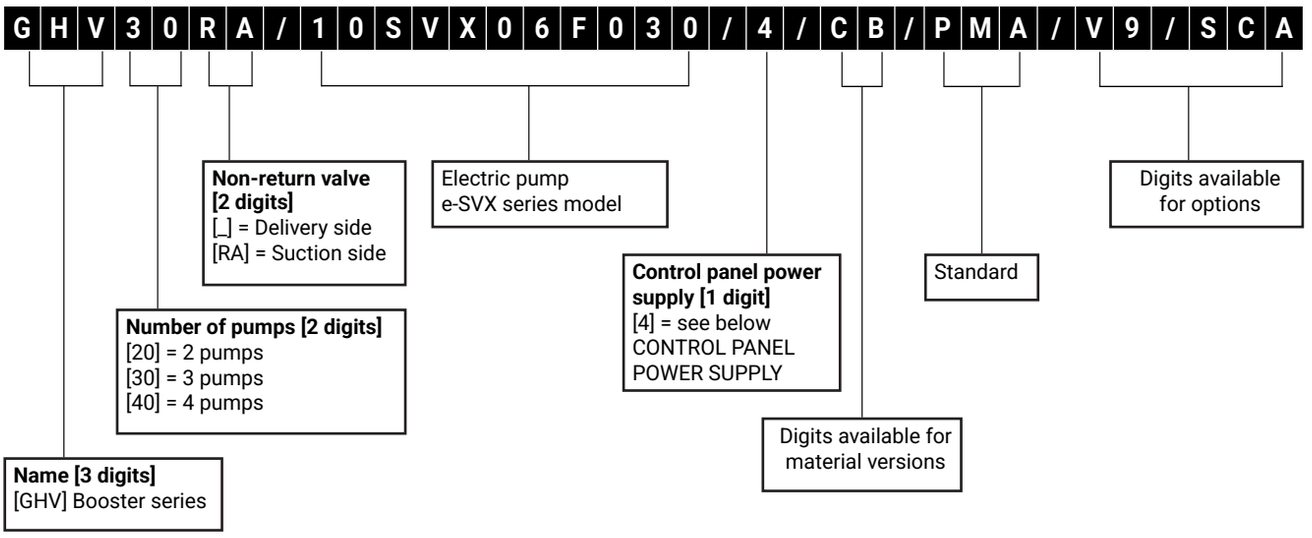
Available CB, CX, for detail see table on page 24.

OPTIONS

2S	Inverter equipped with double sensor for each pump, one in stand-by (both in delivery side).
BAP	High pressure switch on the delivery manifold.
G3	Booster set with hydrovar X+ for IT neutral systems.
SCA	Without suction manifold (suction valves are mounted).

Some options are not available together.
Please contact the your usual Sales and Technical Assistance Service for further information.

GHV MULTIPUMP BOOSTER SET SERIES
IDENTIFICATION CODE



MATERIAL VERSIONS

Available CB, CX, for detail see tables on page 24.

OPTIONS

BAP	High pressure switch on the delivery manifold.
G3	Booster set with hydrovar X+ for IT neutral systems.
SCA	Without suction manifold (suction valves are mounted).
SQ	Set without control panel and without panel frame; for inverter sets, transmitters and inverter are present.
V9	Delivery side turned upwards by 90° using elbow. It's possible to install expansion vessels directly on the manifold.
XA	Control panel ready for a cloud connect device CCD401 (not included).

CONTROL PANEL POWER SUPPLY

/4	Control panel 3x400 V

Some options are not available together.
Please contact the your usual Sales and Technical Assistance Service for further information.

e-SVX SERIES
e-SV with hydrovar X+

Background and context

Xylem is a leading global water technology company committed to solving critical water and infrastructure challenges with innovation.
By providing smart and cutting-edge technology, we are reducing energy consumption to minimum possible levels and increasing sustainability.
There is one thing that Xylem shares with the greatest engineering innovators, that's the continuous investment into new products that reflects into outstanding solutions.
You can find all these features in **hydrovar X+**, the answer to innovation, sustainability and easiness all-in-one.

hydrovar X+ also brings the best energy efficiency performances with its frequency converter coupled with the ultimate synchronous motor, manufactured by Xylem integrating decades of expertise and know-how in pumping solutions.

It's the right combination of motors, variable speed drive and pump ensuring great performance, maximum savings and a rapid return on investment.

Sustainability

hydrovar X+ brings green technology solution by providing best-in-class performance achievement.
Rare earths? No thanks! Xylem accepted the challenge to fight price, availability and environmental concerns with a smarter technology that provides the best-in-class performance with a green heart.

Ease of use and commissioning

The built-in application software makes it the easiest drive to commission, program and operate, enabling virtually any configuration of pumps. Backward compatibility assures the **hydrovar X+** will work seamlessly with existing systems.

Pump solution

Integrated pump functions provide protection for the pump solution and improve the quality of energy from the grid.
All of this means terrific energy savings from a compact, easy-to-use solution suited for nearly any application.

Application sectors

- Industrial installations
- Air conditioning
- Water supply systems in residential buildings
- Water treatment plants

hydrovar X+

- IES2 efficiency level (IEC 61800-9-2:2017)
- Three-phase power supply:
  from 3 kW to 22 kW: 380-480 V +/- 10%, 50/60 Hz
- Power up to 22 kW
- Protection class IP 55
- Overload and locked rotor protection with automatic reset incorporated
- Can be linked up to 8 e-SV hydrovar X+pumps (e-SVX)



Pump

- Flow rate: up to 160 m3/h
- Head: up to 260 m
- Temperature of pumped liquid: up to +120°C
- Maximum operating pressure 25 bar (PN 25)
- The hydraulic performances meet the tolerances specified in ISO 9906:2012.

Motor

- IE5 efficiency level (IEC TS 60034-30-2:2016)
- Synchronous electric motor with permanent magnet assisted reluctance technology, closed structure, aircooled (TEFC)
- Insulation class 155 (F)
- Environment temperature: -20° C to +50° C with no performance derating

Regulations (EU) 2019/1781 e 2021/341 Annex I – point 4

(Product information)

The requirements shall not apply to these variable speed drives, as they are integrated to permanent magnet motors, that aren't covered by the same regulations.

e-SVX SERIES
e-SV with hydrovar X+

hydrovar X+ offers a LED display and graphical colored, like in the below picture:



GHV hydrovar X+ Drive position



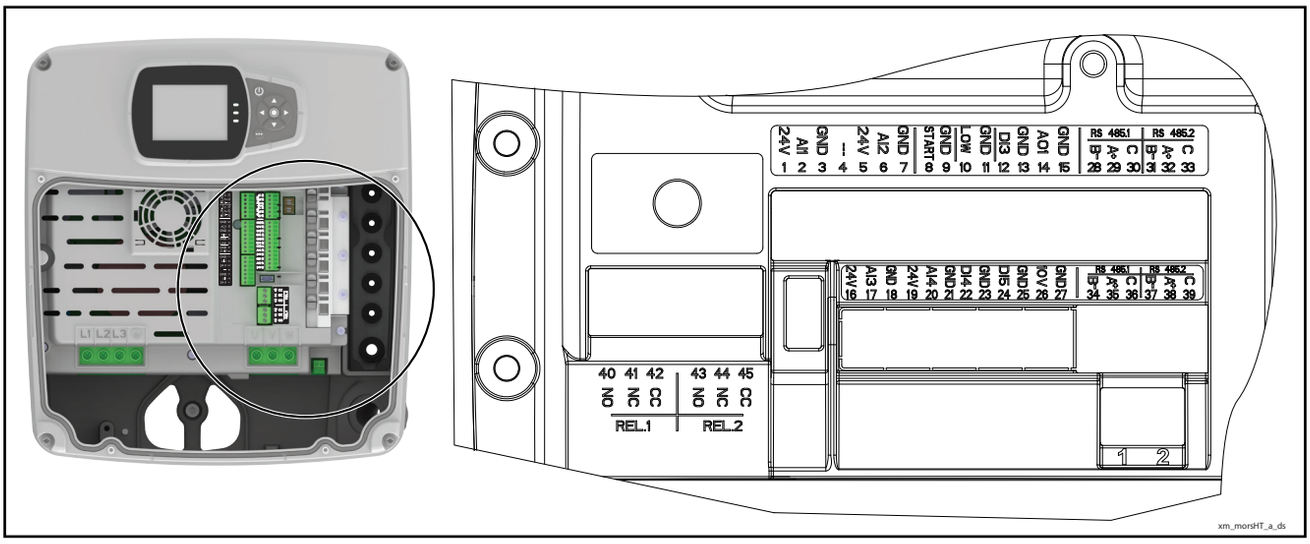
STANDARD POSITION
GHV../SVX..F
GHV../SVX..G



STANDARD POSITION
GHV../SVX..R
GHV../SVX..Z..R

Other drive positions are available on request.

TERMINAL BLOCK
hydrovar X+



REF.	ITEM	DESCRIPTION	DEFAULT
1	Analog Input 1	Power supply +24 VDC, max. 60mA (total, terminals 1 + 5)	Pressure Sensor 1
2		Configurable Analog Input 1	
3		Electronic GND	
4	Not used	Internal use - Do not connect	
5	Analog Input 2	Power supply +24 VDC, max. 60mA (total, terminals 1 + 5)	Not used
6		Configurable Analog Input 2	
7		Electronic GND	
8	External Start/Stop	Start/Stop digital input, +24 VDC internal pull-up, 6mA contact current	-
9		Electronic GND	
10	External Lack of Water	Low water digital input, +24 VDC internal pull-up, 6mA contact current	-
11		Electronic GND	
12	Digital Input 3	Configurable Digital Input 3, +24 VDC internal pull-up, 6mA contact current	Solo Run
13		Electronic GND	
14	Analog Output	Configurable Analog Output	Motor Speed
15		Electronic GND	
16	Analog Input 3	Power supply +24 VDC, max. 60mA (total, terminals 16 and 19)	Not used
17		Configurable Analog Input 3	
18		Electronic GND	
19	Analog Input 4	Power supply +24 VDC, max. 60mA (total, terminals 16 and 19)	Not used
20		Configurable Analog Input 4	
21		Electronic GND	
22	Digital Input 4	Configurable Digital Input 4, +24 VDC internal pull-up, 6mA contact current	Not used
23		Electronic GND	
24	Digital Input 5	Configurable Digital Input 5, +24 VDC internal pull-up, 6mA contact current	Not used
25		Electronic GND	
26	10 VDC supply	Power supply +10 VDC, max. 3mA	-
27		Electronic GND	
28	Communication bus 1	RS485 port 1: RS485-1B N (-)	Multipump
29		RS485 port 1: RS485-1A P (+)	
30		RS485 port 1: RS485-COM	
31	Communication bus 2	RS485 port 2: RS485-2B N (-)	Modbus
32		RS485 port 2: RS485-2A P (+)	
33		RS485 port 2: RS485-COM	
34	Communication bus 1	RS485 port 1: RS485-1B N (-)	Multipump
35		RS485 port 1: RS485-1A P (+)	
36		RS485 port 1: RS485-COM	
37	Communication bus 2	RS485 port 2: RS485-2B N (-)	Modbus
38		RS485 port 2: RS485-2A P (+)	
39		RS485 port 2: RS485-COM	
40	Relay 1	Configurable relay 1: Normally Open	Running
41		Configurable relay 1: Normally Closed	
42		Configurable relay 1: Common Contact	
43	Relay 2	Configurable relay 2: Normally Open	Error
44		Configurable relay 2: Normally Closed	
45		Configurable relay 2: Common Contact	

xm_morsHT-en_a_sc

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

- 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.
- **R** version: round flanges, delivery port above the suction port and adjustable in four positions, AISI 304 stainless steel.
- **Z** version: R version pump with additional empty stages. For example 15SVX02Z3: pump with two impellers and three additional empty stages.
- Further choice possibilities among the following versions:
  - **N**: round flanges, in-line delivery and suction ports, AISI 316 stainless steel.
  - **T**: oval flanges, in-line delivery and suction ports, AISI 304 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 (≤ of 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 (≥ of 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

- 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 **normalized 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).

For complete information see dedicated e-SV technical catalogue.

GHV10 BOOSTER SETS SERIES MAIN COMPONENTS

- **Main on-off valves** at the suction and delivery of pump; ball type up to 2" included. For higher diameters, butterfly valves flanged lug type in suction and gate valve flanged in delivery
- **Non return valve** on the delivery of pump; threaded spring type up to 2" included. Axial guided type for larger sizes, from DN65 to DN125
- **Suction manifolds** with threaded or flanged ends, depending on set type (see drawings)
  As standard minimum pressure switch, pressure gauge in suction
- **Delivery manifold** with threaded or flanged ends, depending on set type (see drawings). It has Rp3/4" threaded fittings for connection of expansion vessels and hydraulic connector
- **Pressure gauge and transmitters** for control, installed on the delivery side of the set.
- **Pressure tank** 25 l PN10 or 12 l PN16 depending on the pump model, including a special isolation device that avoids water stagnation and allows servicing.
- **Various fittings** for the connections.
- **Support base** for the pump set.
- **Anti-vibration feet** sized depending on the set. For some sets, the assembling is the responsibility of the customer.

For the material of components see table at page 134.

Optional components:

Sensors
The following sensors are available:
- Pressure-transducer
- Level-sensor

Versions available
As standard, available two version of materials, CB basic version and CX premium version. See table at page 25 for details.

Accessories on request:
- Devices for protection against dry running in one of the following versions:
  - float switch
  - level probes (electrodes) kit

- **QEXM10 control panel**

GHV20, GHV30, GHV40 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 flanged lug type in suction and gate valve flanged in delivery.
- **Non return valve** on the delivery of each pump; threaded spring type up to 2" included. Axial guided type for larger sizes from DN65 to DN125
- **Suction manifold** with threaded or fixed flanged ends, depending on set type (see drawings). Threaded fitting for water loading priming of booster. As standard minimum pressure switch, pressure gauge in suction.
- **Delivery manifold** with threaded or fixed flanged ends, depending on set type (see drawings). It has Rp3/4" threaded fittings for connection of expansion vessels and hydraulic connector.
- **Pressure gauge and transmitters** for control, installed on the delivery manifold of the set.
- **Pressure tank** 25 l PN10 or 12 l PN16 depending on the pump model, including a special isolation device that avoids water stagnation and allows servicing.
- **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
As standard, available two version of materials, CB basic version and CX premium version. See tables at page 25 for details.

Accessories on request:
- Devices **for protection against dry running** in one of the following versions:
  - float switch
  - pack of electronic module and probe electrodes
- **Expansion vessel kit**
  Including expansion membrane vessel with special isolation device that avoids water stagnation and allows servicing.
  Models available:
  - 25 l, 10 bar hydro tube kit
  - 12 l, 16 bar hydro tube kit

  The booster is already provided with one expansion vessel kit.

SPECIAL EQUIPMENT ON REQUEST
(Contact the Sales and Technical Assistance Service)
- Sets with special valves.
- Sets with 5 to 8 electric pumps.
- Sets with jockey pump.

Materials in contact with water are either certified or approved according to KTW

GHV BOOSTER SETS SERIES
CONTROL PANEL

Standard control panel for protecting up to four electric pumps with hydrovar X+ frequency converter:

- Standard power supply **voltage three-phase 3x400 V** +/-10%, 50/60Hz (GHV.../4)
- On request, power supply **voltage range extended, three-phase 3x380-480 V** +/-10%, 50/60Hz (GHV.../U7)

Cabinet of panel is made by metal and protected to **IP55**

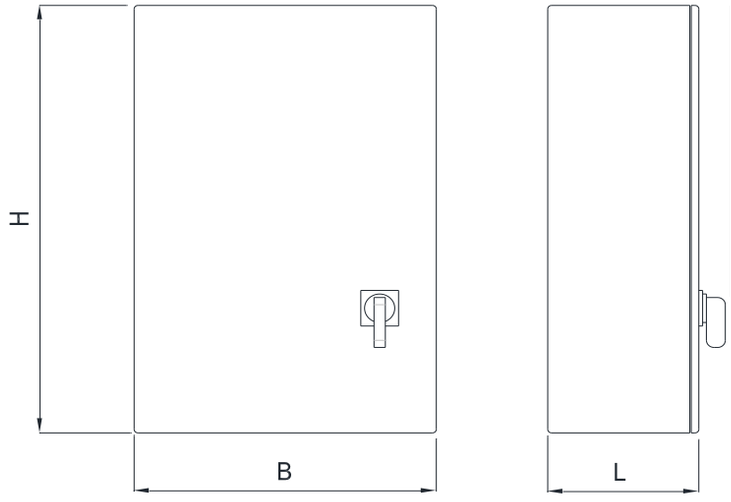


Main characteristics:
- Automatic switch with thermal magnetic protection for each hydrovar X+ frequency converter.
- Standard with “clean” potential-free contacts for signaling: pump running, frequency converter faulty. Configured for enable from external contact.
- Protection against dry running: protection 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 as standard, the control panel has inside the electronic module to connect the lack water’s control.

The execution of lack of water, external ON/OFF, BAP configuration (pages 16 and 17) is done by an additional relaise inside of the control panel. The signals are connected in the panel and not to the hydrovar X+ directly.
For booster sets requiring a wall mounted control panel (GHV.../WM) or separate control panel (GHV../QF) and the panel is supplied with 5 meter cables.

Single-pump unit has no electrical panel. The control panel is available as an accessory ,with standard power supply voltage three-phase 3x400 V +/-10%, 50/60Hz. Other on request.



TYPE	POWER N PUMPS X (kW)	SUPPLY	IP	DIMENSIONS B (mm)	H (mm)	L (mm)
QEXM10	1 x (3 ÷ 22)	3x400	55	400	400	200
QEXM20	2 x (3 ÷ 22)	3x400	55	400	600	200
QEXM30	3 x (3 ÷ 11)	3x400	55	400	600	200
QEXM30	3 x (15 ÷ 22)	3x400	55	500	700	200
QEXM40 *	4 x (3 ÷ 11)	3x400	55	400	600	200
QEXM40 *	4 x (15 ÷ 22)	3x400	55	500	700	200
QEXM40 *	4 x (11 ÷ 22)	3x400	55	600	1300	250

* More details see group dimensional tables

qexm_cn-en_b_td

GHV BOOSTER SETS SERIES
MATERIAL TABLE FOR SETS PUMPS, 10-15-22SV

DENOMINATION	G…/CB	G…/CX
Manifolds	AISI 304	AISI 304
Flanges of manifold	AISI 304	AISI 304
On-off valves, threaded	Nickel-plated brass	AISI 316
Non-return valves, threaded	Brass	AISI 316
Pressure switches	Steel nickel plated	Steel nickel plated
Pressure transmitters	AISI 304	AISI 304
Caps/plugs	AISI 304 / 316	AISI 304 / 316
Blind Flanges	AISI 304	AISI 304
Fittings	AISI 316	AISI 316
Bracket	AISI 304	AISI 304
Base	AISI 304	AISI 304
Antivibration dampers	Metallic part: AISI 304	Metallic part: AISI 304
Pressure gauge -Water connection -Cover -Fluid	- Brass - AISI 304 - Glycole	- AISI 316 - AISI 304 - Glycole
Screws, nuts, washers	AISI 304 / 316	AISI 304 / 316

Other materials on request

g_cn_3-22sv-en_b_tm

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

DENOMINATION	G…/CB
Manifolds	AISI 304
Flanges of manifold	AISI 304
On-off valves, threaded	AISI 316
On-off valves, flanged	Body: ductile iron Wedge: ductile iron, EPDM encapsulated
Non-return valves, axial guide	Body: cast iron Closing system: bronze (DN65), cast iron / epoxy (DN80÷DN125)
Pressure switches	Steel nickel plated
Pressure transmitters	AISI 304
Caps/plugs	AISI 304 / 316
Blind Flanges	AISI 304
Fittings	AISI 316
Bracket	AISI 304
Base	AISI 304
Antivibration dampers	Metallic part: AISI 304
Pressure gauge -Water connection -Cover -Fluid	- Brass - AISI 304 - Glycole
Screws, nuts, washers	AISI 304 / 316

Other materials on request

g_cn_33-125sv-en_b_tm

GHV BOOSTER SETS SERIES
MATERIAL VERSION

PUMP		GHV		PUMP		GHV	
		MATERIAL VERSION				MATERIAL VERSION	
TYPE	kW	CB	CX	TYPE	kW	CB	CX
10SVX06Z2	3	●	●	33SVX01	3	●	-
10SVX06	3	●	●	33SVX02	5,5	●	-
10SVX08	4	●	●	33SVX02	7,5	●	-
15SVX02Z4	3	●	●	33SVX03	11	●	-
15SVX02Z3	3	●	●	33SVX04	15	●	-
15SVX02	3	●	●	46SVX01	5,5	●	-
15SVX03Z3	4	●	●	46SVX02	7,5	●	-
15SVX03Z2	4	●	●	46SVX02	11	●	-
15SVX03	4	●	●	46SVX03	15	●	-
15SVX05Z1	5,5	●	●	46SVX04	18,5	●	-
15SVX05	5,5	●	●	66SVX01	5,5	●	-
15SVX07	7,5	●	●	66SVX02	7,5	●	-
22SVX02Z4	3	●	●	66SVX02	11	●	-
22SVX02Z3	3	●	●	66SVX03	18,5	●	-
22SVX02	3	●	●	92SVX01	7,5	●	-
22SVX03Z3	4	●	●	92SVX02	15	●	-
22SVX03Z2	4	●	●	92SVX03	22	●	-
22SVX03	4	●	●	125SVX01	7,5	●	-
22SVX04Z2	5,5	●	●	125SVX02	15	●	-
22SVX04Z1	5,5	●	●	125SVX02	22	●	-
22SVX04	5,5	●	●				
22SVX05Z1	7,5	●	●				
22SVX05	7,5	●	●				
22SVX07	11	●	●				

GHV-10_125SVX-en_cn_b_tm

GHV 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.

Permitted liquids	Water without gases and corrosive and/or aggressive substances.
Fluid temperature	5°C to + 60 °C, CB version
	5°C to + 65 °C, CX version
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. Max altitude 1000 a.s.l. Max humidity 50%, without condensation.

* Higher PN available on request depending on pump type

ghv_nex_2p_cn-en_a_ti

GHV10/..10-22SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	43,3	86,7	130,0	173,3	216,7	260,0	283,3
	P_N kW	TYPE	m3/h 0	2,6	5,2	7,8	10,4	13,0	15,6	17,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
10SVX06	1 x 3	EXM100B14..030B	105,9	104,9	102,5	93,2	75,8	60,0	44,0	34,9
10SVX08	1 x 4	EXM112B14..040B	141,3	139,7	136,7	120,3	97,9	77,5	57,0	45,3

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	70,0	140,0	210,0	280,0	350,0	420,0	483,3
	P_N kW	TYPE	m3/h 0	4,2	8,4	12,6	16,8	21,0	25,2	29,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
15SVX02	1 x 3	EXM100B14..030B	42,7	42,0	41,2	39,9	37,6	34,0	28,7	21,6
15SVX03	1 x 4	EXM112B14..040B	64,0	63,0	61,8	59,8	56,4	50,1	38,7	28,4
15SVX05	1 x 5,5	EXM132B5..055B	106,7	105,1	102,9	99,3	83,5	67,1	50,2	33,7
15SVX07	1 x 7,5	EXM132B5..075C	149,4	147,0	144,2	138,6	114,1	91,3	67,8	44,7

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	83,3	166,7	250,0	333,3	416,7	500,0	566,7
	P_N kW	TYPE	m3/h 0	5,0	10,0	15,0	20,0	25,0	30,0	34,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
22SVX02	1 x 3	EXM100B14..030B	45,2	44,6	43,6	42,2	38,5	31,0	22,9	15,2
22SVX03	1 x 4	EXM112B14..040B	67,8	67,0	65,4	63,2	51,8	40,9	28,8	17,2
22SVX04	1 x 5,5	EXM132B5..055B	90,1	90,1	88,7	85,6	71,6	57,2	41,3	26,6
22SVX05	1 x 7,5	EXM132B5..075C	112,7	112,7	110,8	107,7	97,0	78,5	58,5	40,2
22SVX07	1 x 11	EXM160B5..110C	157,8	157,6	155,3	150,5	141,1	115,5	87,4	61,8

Table refers to hydraulic performances with one pump running max rpm, friction lost not included

g10_10-22svx-exmT-2p50-en_b_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV10/..33-125SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	116,7	233,3	350,0	466,7	583,3	700,0	800,0
	P_N kW	TYPE	m3/h 0	7,0	14,0	21,0	28,0	35,0	42,0	48,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
33SVX01	1 x 3	EXM100B14..030B	35,0	34,7	34,3	32,8	28,3	23,9	19,4	15,0
33SVX02	1 x 5,5	EXM132B5..055B	70,1	69,5	68,7	61,2	52,4	44,0	35,0	26,3
33SVX02	1 x 7,5	EXM132B5..075C	70,1	69,5	68,6	67,1	65,0	59,2	49,6	40,8
33SVX03..L	1 x 11	EXM160B5..110C	99,4	98,4	97,2	95,0	91,5	85,7	72,7	59,5
33SVX03	1 x 11	EXM160B5..110C	105,1	104,2	102,9	100,7	97,5	86,9	72,7	59,5
33SVX04	1 x 15	EXM160B5..150D	140,1	138,9	137,2	134,4	129,8	118,4	99,3	81,6
33SVX05..L	1 x 18,5	EXM160B5..185D	156,2	154,8	152,7	149,1	143,1	133,5	119,0	100,3

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	173,3	346,7	520,0	693,3	866,7	1040,0	1200,0
	P_N kW	TYPE	m3/h 0	10,4	20,8	31,2	41,6	52,0	62,4	72,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
46SVX01	1 x 5,5	EXM132B5..055B	40,7	39,4	37,7	35,6	32,9	29,1	21,6	13,6
46SVX02	1 x 7,5	EXM132B5..075C	79,0	76,5	70,1	61,9	52,0	40,4	27,5	15,3
46SVX02	1 x 11	EXM160B5..110C	79,1	76,8	74,8	72,2	68,6	61,5	47,6	33,9
46SVX03	1 x 15	EXM160B5..150D	118,8	115,1	112,1	108,6	101,5	83,5	63,0	43,0
46SVX04	1 x 18,5	EXM160B5..185D	157,5	152,9	148,9	143,5	123,9	99,7	73,1	48,0

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	223,3	446,7	670,0	893,3	1116,7	1340,0	1550,0
	P_N kW	TYPE	m3/h 0	13,4	26,8	40,2	53,6	67,0	80,4	93,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
66SVX01	1 x 5,5	EXM132B5..055B	44,4	43,7	36,9	31,1	26,6	22,7	18,4	12,1
66SVX02	1 x 11	EXM160B5..110C	86,5	85,4	72,7	61,9	53,3	45,8	37,8	27,8
66SVX02	1 x 15	EXM160B5..150D	86,5	85,6	83,4	79,8	69,5	60,8	52,5	43,5
66SVX03..L	1 x 18,5	EXM160B5..185D	98,7	97,5	94,8	90,6	84,6	76,7	66,1	51,8
66SVX03	1 x 18,5	EXM160B5..185D	128,9	127,6	120,5	103,0	89,0	77,0	65,0	51,1
66SVX04..L	1 x 22	EXM180B5..220D	157,3	155,8	146,4	125,1	108,2	93,4	77,8	58,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	323,3	646,7	970,0	1293,3	1616,7	1940,0	2250,0
	P_N kW	TYPE	m3/h 0	19,4	38,8	58,2	77,6	97,0	116,4	135,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
92SVX01	1 x 7,5	EXM132B5..075C	42,7	39,7	35,6	31,0	26,2	21,1	15,1	7,2
92SVX02	1 x 15	EXM160B5..150D	85,4	79,4	71,6	62,8	53,7	44,2	33,2	19,4
92SVX03..L	1 x 22	EXM180B5..220D	98,3	96,8	89,5	80,5	71,8	62,3	47,9	26,8
92SVX03	1 x 22	EXM180B5..220D	120,6	112,9	101,9	89,6	76,8	63,4	47,9	28,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	383,3	766,7	1150,0	1533,3	1916,7	2300,0	2666,7
	P_N kW	TYPE	m3/h 0	23,0	46,0	69,0	92,0	115,0	138,0	160,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
125SVX01	1 x 7,5	EXM132B5..075C	31,6	29,1	26,2	23,1	19,7	15,9	11,5	6,7
125SVX02	1 x 15	EXM160B5..150D	62,9	59,0	54,3	48,9	43,1	36,8	30,1	23,2
125SVX02	1 x 22	EXM180B5..220D	78,8	73,9	69,7	65,7	59,3	52,4	45,2	37,8

Table refers to hydraulic performances with one pump running max rpm, friction lost not included

g10_33-125svx-exmT-2p50-en_c_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV20/..10-22SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	86,7	173,3	260,0	346,7	433,3	520,0	566,7
	P_N kW	TYPE	m3/h 0	5,2	10,4	15,6	20,8	26,0	31,2	34,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
10SVX06	2 x 3	EXM100B14..030B	105,9	104,9	102,5	93,2	75,8	60,0	44,0	34,9
10SVX08	2 x 4	EXM112B14..040B	141,3	139,7	136,7	120,3	97,9	77,5	57,0	45,3

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	140,0	280,0	420,0	560,0	700,0	840,0	966,7
	P_N kW	TYPE	m3/h 0	8,4	16,8	25,2	33,6	42,0	50,4	58,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
15SVX02Z3	2 x 3	EXM100B14..030B	42,6	41,8	40,8	39,2	36,5	32,5	26,5	18,7
15SVX02	2 x 3	EXM100B14..030B	42,7	42,0	41,2	39,9	37,6	34,0	28,7	21,6
15SVX03Z2	2 x 4	EXM112B14..040B	64,0	62,9	61,6	59,3	55,7	48,2	37,1	26,5
15SVX03	2 x 4	EXM112B14..040B	64,0	63,0	61,8	59,8	56,4	50,1	38,7	28,4
15SVX05	2 x 5,5	EXM132B5..055B	106,7	105,1	102,9	99,3	83,5	67,1	50,2	33,7
15SVX07	2 x 7,5	EXM132B5..075C	149,4	147,0	144,2	138,6	114,1	91,3	67,8	44,7

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	166,7	333,3	500,0	666,7	833,3	1000,0	1133,3
	P_N kW	TYPE	m3/h 0	10,0	20,0	30,0	40,0	50,0	60,0	68,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
22SVX02Z3	2 x 3	EXM100B14..030B	45,2	44,5	43,3	41,4	37,2	29,0	20,0	11,6
22SVX02	2 x 3	EXM100B14..030B	45,2	44,6	43,6	42,2	38,5	31,0	22,9	15,2
22SVX03Z2	2 x 4	EXM112B14..040B	67,8	66,9	65,2	62,7	51,0	39,6	26,9	14,8
22SVX03	2 x 4	EXM112B14..040B	67,8	67,0	65,4	63,2	51,8	40,9	28,8	17,2
22SVX04Z1	2 x 5,5	EXM132B5..055B	90,1	90,0	88,6	85,3	71,2	56,5	40,3	25,4
22SVX04	2 x 5,5	EXM132B5..055B	90,1	90,1	88,7	85,6	71,6	57,2	41,3	26,6
22SVX05	2 x 7,5	EXM132B5..075C	112,7	112,7	110,8	107,7	97,0	78,5	58,5	40,2
22SVX07	2 x 11	EXM160B5..110C	157,8	157,6	155,3	150,5	141,1	115,5	87,4	61,8

Table refers to hydraulic performances with two pumps running max rpm, friction lost not included
For technical deatils see technical catalogue of single SVX electric pump.

g20_10-22svx-exmT-2p50-en_a_th

GHV20/..33-125SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	233,3	466,7	700,0	933,3	1166,7	1400,0	1600,0
	P_N kW	TYPE	m3/h 0	14,0	28,0	42,0	56,0	70,0	84,0	96,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
33SVX01	2 x 3	EXM100B14..030B	35,0	34,7	34,3	32,8	28,3	23,9	19,4	15,0
33SVX02	2 x 5,5	EXM132B5..055B	70,1	69,5	68,7	61,2	52,4	44,0	35,0	26,3
33SVX02	2 x 7,5	EXM132B5..075C	70,1	69,5	68,6	67,1	65,0	59,2	49,6	40,8
33SVX03..L	2 x 11	EXM160B5..110C	99,4	98,4	97,2	95,0	91,5	85,7	72,7	59,5
33SVX03	2 x 11	EXM160B5..110C	105,1	104,2	102,9	100,7	97,5	86,9	72,7	59,5
33SVX04	2 x 15	EXM160B5..150D	140,1	138,9	137,2	134,4	129,8	118,4	99,3	81,6
33SVX05..L	2 x 18,5	EXM160B5..185D	156,2	154,8	152,7	149,1	143,1	133,5	119,0	100,3
33SVX05	2 x 18,5	EXM160B5..185D	175,2	173,7	171,5	167,9	162,4	146,1	122,4	100,3
33SVX06	2 x 22	EXM180B5..220D	210,3	208,4	205,8	201,5	194,8	173,9	145,4	118,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	346,7	693,3	1040,0	1386,7	1733,3	2080,0	2400,0
	P_N kW	TYPE	m3/h 0	20,8	41,6	62,4	83,2	104,0	124,8	144,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
46SVX01	2 x 5,5	EXM132B5..055B	40,7	39,4	37,7	35,6	32,9	29,1	21,6	13,6
46SVX02	2 x 7,5	EXM132B5..075C	79,0	76,5	70,1	61,9	52,0	40,4	27,5	15,3
46SVX02	2 x 11	EXM160B5..110C	79,1	76,8	74,8	72,2	68,6	61,5	47,6	33,9
46SVX03	2 x 15	EXM160B5..150D	118,8	115,1	112,1	108,6	101,5	83,5	63,0	43,0
46SVX04	2 x 18,5	EXM160B5..185D	157,5	152,9	148,9	143,5	123,9	99,7	73,1	48,0
46SVX05	2 x 22	EXM180B5..220D	196,9	191,0	186,2	173,5	147,9	117,9	85,1	54,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	446,7	893,3	1340,0	1786,7	2233,3	2680,0	3100,0
	P_N kW	TYPE	m3/h 0	26,8	53,6	80,4	107,2	134,0	160,8	186,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
66SVX01	2 x 5,5	EXM132B5..055B	44,4	43,7	36,9	31,1	26,6	22,7	18,4	12,1
66SVX02	2 x 11	EXM160B5..110C	86,5	85,4	72,7	61,9	53,3	45,8	37,8	27,8
66SVX02	2 x 15	EXM160B5..150D	86,5	85,6	83,4	79,8	69,5	60,8	52,5	43,5
66SVX03..L	2 x 18,5	EXM160B5..185D	98,7	97,5	94,8	90,6	84,6	76,7	66,1	51,8
66SVX03	2 x 18,5	EXM160B5..185D	128,9	127,6	120,5	103,0	89,0	77,0	65,0	51,1
66SVX04..L	2 x 22	EXM180B5..220D	157,3	155,8	146,4	125,1	108,2	93,4	77,8	58,9
66SVX04	2 x 22	EXM180B5..220D	171,3	171,5	146,3	125,2	108,1	93,4	77,8	58,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	646,7	1293,3	1940,0	2586,7	3233,3	3880,0	4500,0
	P_N kW	TYPE	m3/h 0	38,8	77,6	116,4	155,2	194,0	232,8	270,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
92SVX01	2 x 7,5	EXM132B5..075C	42,7	39,7	35,6	31,0	26,2	21,1	15,1	7,2
92SVX02	2 x 15	EXM160B5..150D	85,4	79,4	71,6	62,8	53,7	44,2	33,2	19,4
92SVX03..L	2 x 22	EXM180B5..220D	98,3	96,8	89,5	80,5	71,8	62,3	47,9	26,8
92SVX03	2 x 22	EXM180B5..220D	120,6	112,9	101,9	89,6	76,8	63,4	47,9	28,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	766,7	1533,3	2300,0	3066,7	3833,3	4600,0	5333,3
	P_N kW	TYPE	m3/h 0	46,0	92,0	138,0	184,0	230,0	276,0	320,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
125SVX01	2 x 7,5	EXM132B5..075C	31,6	29,1	26,2	23,1	19,7	15,9	11,5	6,7
125SVX02	2 x 15	EXM160B5..150D	62,9	59,0	54,3	48,9	43,1	36,8	30,1	23,2
125SVX02	2 x 22	EXM180B5..220D	78,8	73,9	69,7	65,7	59,3	52,4	45,2	37,8

Table refers to hydraulic performances with two pumps running max rpm, friction lost not included

g20_33-125svx-exmT-2p50-en_c_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV30/..10-22SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	130,0	260,0	390,0	520,0	650,0	780,0	850,0
	P_N kW	TYPE	m3/h 0	7,8	15,6	23,4	31,2	39,0	46,8	51,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
10SVX06	3 x 3	EXM100B14..030B	105,9	104,9	102,5	93,2	75,8	60,0	44,0	34,9
10SVX08	3 x 4	EXM112B14..040B	141,3	139,7	136,7	120,3	97,9	77,5	57,0	45,3

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	210,0	420,0	630,0	840,0	1050,0	1260,0	1450,0
	P_N kW	TYPE	m3/h 0	12,6	25,2	37,8	50,4	63,0	75,6	87,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
15SVX02Z3	3 x 3	EXM100B14..030B	42,6	41,8	40,8	39,2	36,5	32,5	26,5	18,7
15SVX02	3 x 3	EXM100B14..030B	42,7	42,0	41,2	39,9	37,6	34,0	28,7	21,6
15SVX03Z2	3 x 4	EXM112B14..040B	64,0	62,9	61,6	59,3	55,7	48,2	37,1	26,5
15SVX03	3 x 4	EXM112B14..040B	64,0	63,0	61,8	59,8	56,4	50,1	38,7	28,4
15SVX05	3 x 5,5	EXM132B5..055B	106,7	105,1	102,9	99,3	83,5	67,1	50,2	33,7
15SVX07	3 x 7,5	EXM132B5..075C	149,4	147,0	144,2	138,6	114,1	91,3	67,8	44,7

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	250,0	500,0	750,0	1000,0	1250,0	1500,0	1700,0
	P_N kW	TYPE	m3/h 0	15,0	30,0	45,0	60,0	75,0	90,0	102,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
22SVX02Z3	3 x 3	EXM100B14..030B	45,2	44,5	43,3	41,4	37,2	29,0	20,0	11,6
22SVX02	3 x 3	EXM100B14..030B	45,2	44,6	43,6	42,2	38,5	31,0	22,9	15,2
22SVX03Z2	3 x 4	EXM112B14..040B	67,8	66,9	65,2	62,7	51,0	39,6	26,9	14,8
22SVX03	3 x 4	EXM112B14..040B	67,8	67,0	65,4	63,2	51,8	40,9	28,8	17,2
22SVX04Z1	3 x 5,5	EXM132B5..055B	90,1	90,0	88,6	85,3	71,2	56,5	40,3	25,4
22SVX04	3 x 5,5	EXM132B5..055B	90,1	90,1	88,7	85,6	71,6	57,2	41,3	26,6
22SVX05	3 x 7,5	EXM132B5..075C	112,7	112,7	110,8	107,7	97,0	78,5	58,5	40,2
22SVX07	3 x 11	EXM160B5..110C	157,8	157,6	155,3	150,5	141,1	115,5	87,4	61,8

Table refers to hydraulic performances with three pumps running max rpm, friction lost not included

g30_10-22svx-exmT-2p50-en_a_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV30/..33-125SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	350,0	700,0	1050,0	1400,0	1750,0	2100,0	2400,0
	P_N kW	TYPE	m3/h 0	21,0	42,0	63,0	84,0	105,0	126,0	144,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
33SVX01	3 x 3	EXM100B14..030B	35,0	34,7	34,3	32,8	28,3	23,9	19,4	15,0
33SVX02	3 x 5,5	EXM132B5..055B	70,1	69,5	68,7	61,2	52,4	44,0	35,0	26,3
33SVX02	3 x 7,5	EXM132B5..075C	70,1	69,5	68,6	67,1	65,0	59,2	49,6	40,8
33SVX03..L	3 x 11	EXM160B5..110C	99,4	98,4	97,2	95,0	91,5	85,7	72,7	59,5
33SVX03	3 x 11	EXM160B5..110C	105,1	104,2	102,9	100,7	97,5	86,9	72,7	59,5
33SVX04	3 x 15	EXM160B5..150D	140,1	138,9	137,2	134,4	129,8	118,4	99,3	81,6
33SVX05..L	3 x 18,5	EXM160B5..185D	156,2	154,8	152,7	149,1	143,1	133,5	119,0	100,3
33SVX05	3 x 18,5	EXM160B5..185D	175,2	173,7	171,5	167,9	162,4	146,1	122,4	100,3
33SVX06	3 x 22	EXM180B5..220D	210,3	208,4	205,8	201,5	194,8	173,9	145,4	118,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	520,0	1040,0	1560,0	2080,0	2600,0	3120,0	3600,0
	P_N kW	TYPE	m3/h 0	31,2	62,4	93,6	124,8	156,0	187,2	216,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
46SVX01	3 x 5,5	EXM132B5..055B	40,7	39,4	37,7	35,6	32,9	29,1	21,6	13,6
46SVX02	3 x 7,5	EXM132B5..075C	79,0	76,5	70,1	61,9	52,0	40,4	27,5	15,3
46SVX02	3 x 11	EXM160B5..110C	79,1	76,8	74,8	72,2	68,6	61,5	47,6	33,9
46SVX03	3 x 15	EXM160B5..150D	118,8	115,1	112,1	108,6	101,5	83,5	63,0	43,0
46SVX04	3 x 18,5	EXM160B5..185D	157,5	152,9	148,9	143,5	123,9	99,7	73,1	48,0
46SVX05	3 x 22	EXM180B5..220D	196,9	191,0	186,2	173,5	147,9	117,9	85,1	54,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	670,0	1340,0	2010,0	2680,0	3350,0	4020,0	4650,0
	P_N kW	TYPE	m3/h 0	40,2	80,4	120,6	160,8	201,0	241,2	279,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
66SVX01	3 x 5,5	EXM132B5..055B	44,4	43,7	36,9	31,1	26,6	22,7	18,4	12,1
66SVX02	3 x 11	EXM160B5..110C	86,5	85,4	72,7	61,9	53,3	45,8	37,8	27,8
66SVX02	3 x 15	EXM160B5..150D	86,5	85,6	83,4	79,8	69,5	60,8	52,5	43,5
66SVX03..L	3 x 18,5	EXM160B5..185D	98,7	97,5	94,8	90,6	84,6	76,7	66,1	51,8
66SVX03	3 x 18,5	EXM160B5..185D	128,9	127,6	120,5	103,0	89,0	77,0	65,0	51,1
66SVX04..L	3 x 22	EXM180B5..220D	157,3	155,8	146,4	125,1	108,2	93,4	77,8	58,9
66SVX04	3 x 22	EXM180B5..220D	171,3	171,5	146,3	125,2	108,1	93,4	77,8	58,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	970,0	1940,0	2910,0	3880,0	4850,0	5820,0	6750,0
	P_N kW	TYPE	m3/h 0	58,2	116,4	174,6	232,8	291,0	349,2	405,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
92SVX01	3 x 7,5	EXM132B5..075C	42,7	39,7	35,6	31,0	26,2	21,1	15,1	7,2
92SVX02	3 x 15	EXM160B5..150D	85,4	79,4	71,6	62,8	53,7	44,2	33,2	19,4
92SVX03..L	3 x 22	EXM180B5..220D	98,3	96,8	89,5	80,5	71,8	62,3	47,9	26,8
92SVX03	3 x 22	EXM180B5..220D	120,6	112,9	101,9	89,6	76,8	63,4	47,9	28,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	1150,0	2300,0	3450,0	4600,0	5750,0	6900,0	8000,0
	P_N kW	TYPE	m3/h 0	69,0	138,0	207,0	276,0	345,0	414,0	480,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
125SVX01	3 x 7,5	EXM132B5..075C	31,6	29,1	26,2	23,1	19,7	15,9	11,5	6,7
125SVX02	3 x 15	EXM160B5..150D	62,9	59,0	54,3	48,9	43,1	36,8	30,1	23,2
125SVX02	3 x 22	EXM180B5..220D	78,8	73,9	69,7	65,7	59,3	52,4	45,2	37,8

Table refers to hydraulic performances with three pumps running max rpm, friction lost not included

g30_33-125svx-exmT-2p50-en_c_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV40/..10-22SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	173,3	346,7	520,0	693,3	866,7	1040,0	1133,3
	P_N kW	TYPE	m3/h 0	10,4	20,8	31,2	41,6	52,0	62,4	68,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
10SVX06	4 x 3	EXM100B14..030B	105,9	104,9	102,5	93,2	75,8	60,0	44,0	34,9
10SVX06Z2	4 x 3	EXM100B14..030B	105,9	104,8	102,4	93,1	75,5	59,5	43,2	34,0
10SVX08	4 x 4	EXM112B14..040B	141,3	139,7	136,7	120,3	97,9	77,5	57,0	45,3

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	280,0	560,0	840,0	1120,0	1400,0	1680,0	1933,3
	P_N kW	TYPE	m3/h 0	16,8	33,6	50,4	67,2	84,0	100,8	116,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
15SVX02Z4	4 x 3	EXM100B14..030B	42,6	41,8	40,7	39,0	36,2	31,9	25,8	17,8
15SVX02	4 x 3	EXM100B14..030B	42,7	42,0	41,2	39,9	37,6	34,0	28,7	21,6
15SVX03Z3	4 x 4	EXM112B14..040B	64,0	62,8	61,4	59,1	55,4	47,7	36,4	25,6
15SVX03	4 x 4	EXM112B14..040B	64,0	63,0	61,8	59,8	56,4	50,1	38,7	28,4
15SVX05Z1	4 x 5,5	EXM132B5..055B	106,7	105,0	102,7	99,1	83,2	66,5	49,4	32,7
15SVX05	4 x 5,5	EXM132B5..055B	106,7	105,1	102,9	99,3	83,5	67,1	50,2	33,7
15SVX07	4 x 7,5	EXM132B5..075C	149,4	147,0	144,2	138,6	114,1	91,3	67,8	44,7

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	333,3	666,7	1000,0	1333,3	1666,7	2000,0	2266,7
	P_N kW	TYPE	m3/h 0	20,0	40,0	60,0	80,0	100,0	120,0	136,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
22SVX02Z4	4 x 3	EXM100B14..030B	45,2	44,5	43,1	41,2	36,8	28,3	19,1	10,4
22SVX02	4 x 3	EXM100B14..030B	45,2	44,6	43,6	42,2	38,5	31,0	22,9	15,2
22SVX03Z3	4 x 4	EXM112B14..040B	67,8	66,9	65,1	62,4	50,5	38,9	25,9	13,6
22SVX03	4 x 4	EXM112B14..040B	67,8	67,0	65,4	63,2	51,8	40,9	28,8	17,2
22SVX04Z2	4 x 5,5	EXM132B5..055B	90,1	90,0	88,5	85,0	70,7	55,8	39,4	24,2
22SVX04	4 x 5,5	EXM132B5..055B	90,1	90,1	88,7	85,6	71,6	57,2	41,3	26,6
22SVX05Z1	4 x 7,5	EXM132B5..075C	112,7	112,5	110,8	107,2	96,6	77,9	57,6	39,0
22SVX05	4 x 7,5	EXM132B5..075C	112,7	112,7	110,8	107,7	97,0	78,5	58,5	40,2
22SVX07	4 x 11	EXM160B5..110C	157,8	157,6	155,3	150,5	141,1	115,5	87,4	61,8

Table refers to hydraulic performances with four pumps running max rpm, friction lost not included

g40_10-22svx-exmT-cn-en_a_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV40/..33-125SVX BOOSTER SETS SERIES THREE-PHASE
TABLE OF HYDRAULIC PERFORMANCE

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	466,7	933,3	1400,0	1866,7	2333,3	2800,0	3200,0
	P_N kW	TYPE	m3/h 0	28,0	56,0	84,0	112,0	140,0	168,0	192,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
33SVX01	4 x 3	EXM100B14..030B	35,0	34,7	34,3	32,8	28,3	23,9	19,4	15,0
33SVX02	4 x 5,5	EXM132B5..055B	70,1	69,5	68,7	61,2	52,4	44,0	35,0	26,3
33SVX02	4 x 7,5	EXM132B5..075C	70,1	69,5	68,6	67,1	65,0	59,2	49,6	40,8
33SVX03..L	4 x 11	EXM160B5..110C	99,4	98,4	97,2	95,0	91,5	85,7	72,7	59,5
33SVX03	4 x 11	EXM160B5..110C	105,1	104,2	102,9	100,7	97,5	86,9	72,7	59,5
33SVX04	4 x 15	EXM160B5..150D	140,1	138,9	137,2	134,4	129,8	118,4	99,3	81,6
33SVX05..L	4 x 18,5	EXM160B5..185D	156,2	154,8	152,7	149,1	143,1	133,5	119,0	100,3
33SVX05	4 x 18,5	EXM160B5..185D	175,2	173,7	171,5	167,9	162,4	146,1	122,4	100,3
33SVX06	4 x 22	EXM180B5..220D	210,3	208,4	205,8	201,5	194,8	173,9	145,4	118,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	693,3	1386,7	2080,0	2773,3	3466,7	4160,0	4800,0
	P_N kW	TYPE	m3/h 0	41,6	83,2	124,8	166,4	208,0	249,6	288,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
46SVX01	4 x 5,5	EXM132B5..055B	40,7	39,4	37,7	35,6	32,9	29,1	21,6	13,6
46SVX02	4 x 7,5	EXM132B5..075C	79,0	76,5	70,1	61,9	52,0	40,4	27,5	15,3
46SVX02	4 x 11	EXM160B5..110C	79,1	76,8	74,8	72,2	68,6	61,5	47,6	33,9
46SVX03	4 x 15	EXM160B5..150D	118,8	115,1	112,1	108,6	101,5	83,5	63,0	43,0
46SVX04	4 x 18,5	EXM160B5..185D	157,5	152,9	148,9	143,5	123,9	99,7	73,1	48,0
46SVX05	4 x 22	EXM180B5..220D	196,9	191,0	186,2	173,5	147,9	117,9	85,1	54,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	893,3	1786,7	2680,0	3573,3	4466,7	5360,0	6200,0
	P_N kW	TYPE	m3/h 0	53,6	107,2	160,8	214,4	268,0	321,6	372,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
66SVX01	4 x 5,5	EXM132B5..055B	44,4	43,7	36,9	31,1	26,6	22,7	18,4	12,1
66SVX02	4 x 11	EXM160B5..110C	86,5	85,4	72,7	61,9	53,3	45,8	37,8	27,8
66SVX02	4 x 15	EXM160B5..150D	86,5	85,6	83,4	79,8	69,5	60,8	52,5	43,5
66SVX03..L	4 x 18,5	EXM160B5..185D	98,7	97,5	94,8	90,6	84,6	76,7	66,1	51,8
66SVX03	4 x 18,5	EXM160B5..185D	128,9	127,6	120,5	103,0	89,0	77,0	65,0	51,1
66SVX04..L	4 x 22	EXM180B5..220D	157,3	155,8	146,4	125,1	108,2	93,4	77,8	58,9
66SVX04	4 x 22	EXM180B5..220D	171,3	171,5	146,3	125,2	108,1	93,4	77,8	58,9

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	1293,3	2586,7	3880,0	5173,3	6466,7	7760,0	9000,0
	P_N kW	TYPE	m3/h 0	77,6	155,2	232,8	310,4	388,0	465,6	540,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
92SVX01	4 x 7,5	EXM132B5..075C	42,7	39,7	35,6	31,0	26,2	21,1	15,1	7,2
92SVX02	4 x 15	EXM160B5..150D	85,4	79,4	71,6	62,8	53,7	44,2	33,2	19,4
92SVX03..L	4 x 22	EXM180B5..220D	98,3	96,8	89,5	80,5	71,8	62,3	47,9	26,8
92SVX03	4 x 22	EXM180B5..220D	120,6	112,9	101,9	89,6	76,8	63,4	47,9	28,2

PUMP TYPE	MOTOR		Q = DELIVERY							
			l/min 0	1533,3	3066,7	4600,0	6133,3	7666,7	9200,0	10666,7
	P_N kW	TYPE	m3/h 0	92,0	184,0	276,0	368,0	460,0	552,0	640,0
			H = TOTAL HEAD IN METRES OF COLUMN OF WATER							
125SVX01	4 x 7,5	EXM132B5..075C	31,6	29,1	26,2	23,1	19,7	15,9	11,5	6,7
125SVX02	4 x 15	EXM160B5..150D	62,9	59,0	54,3	48,9	43,1	36,8	30,1	23,2
125SVX02	4 x 22	EXM180B5..220D	78,8	73,9	69,7	65,7	59,3	52,4	45,2	37,8

Table refers to hydraulic performances with three pumps running max rpm, friction lost not included

g40_33-125svx-exmT-2p50-en_c_th

For technical deatils see technical catalogue of single SVX electric pump.

GHV BOOSTER SETS SERIES - THREE-PHASE ELECTRICAL DATA TABLE

In the range 3000-3600 rpm the nominal motor power is guaranteed. Above 3600 rpm it isn't possible to work and the motor is automatically limited; below 3000 rpm it works at partial load.

P_N	MOTOR TYPE	IEC SIZE*	Construction Design	SPEED	INPUT CURRENT	DATA RELATED TO THE VOLTAGE OF 400V						
				(RPM)**	I (A)	In *	cosφ	Tn	η %			IES
kW				min^{-1}	380-480 V	A		Nm	4/4	3/4	2/4	
3	EXM100B14SV/4.030B	100	B14	3000	6,74-5,18	5,79	0,86	9,55	87,5	87,3	86,2	2
				3600		5,71		7,96	87,8	87,6	85,8	
				4000		5,72		7,16	87,7	87,4	85,5	
4	EXM112B14SV/4.040B	112		3000	7,73-6,42	7,34	0,90	12,7	87,5	88,0	87,5	2
				3600		7,23		10,6	88,5	88,6	87,3	
				4000		7,30		9,55	88,0	88,2	86,6	
5,5	EXM132B5SV/4.055B	132	B5	3000	10,1-8,22	9,51	0,92	17,5	90,0	89,7	88,9	2
				3600		9,63		14,6	89,4	89,5	88,7	
				4000		9,58		13,1	89,5	89,0	87,6	
7,5	EXM132B5SV/4.075C	132		3000	13,7-11,8	13,40	0,85	23,9	90,6	89,7	87,9	2
				3600		14,00		19,9	90,8	90,1	88,4	
				4000		13,50		17,9	89,5	88,6	88,4	
11	EXM160B5SV/4.110C	160		3000	19,8-16,5	18,90	0,93	35	91,0	90,9	90,0	2
				3600		19,10		29,2	89,7	89,7	88,2	
				4000		19,30		26,3	89,7	89,7	88,7	
15	EXM160B5SV/4.150D	160		3000	27,5-26,6	26,40	0,81	47,8	91,5	91,4	90,5	2
				3600		29,10		39,8	91,7	91,4	90,5	
				4000		29,10		35,8	91,2	91,1	89,7	
18,5	EXM160B5SV/4.185D	160		3000	33,4-28,0	32,20	0,90	58,9	91,7	91,7	91,2	2
				3600		32,10		49,1	91,9	91,7	90,9	
				4000		32,10		44,2	91,9	91,7	90,8	
22	EXM180B5SV/4.220D	180		3000	38,8-32,0	37,30	0,93	70	92,4	92,0	91,2	2
				3600		36,80		58,4	92,6	92,1	91,0	
				4000		36,90		52,7	92,5	91,9	90,5	

* Rated current absorbed by the group, multiply the value by the total number of pumps

GHV_SV-XM_mott-en_a_te

** The indicated rotational speed are representing the upper and lower limits of the rated power operational speed range.

Note. **IES** refers to the efficiency class for frequency converter + motor systems (known as power transmission systems-PDS) with power between 0.12 kW and 1000 kW and between 100 V and 1000 V, according to the standard **EN 50598-2:2014**.

GHV BOOSTER SETS SERIES
10-22SVX, BOOSTER AVAILABLE VERSIONS

PUMP		BOOSTER SET							
		GHV10		GHV20		GHV30		GHV40	
		PUMP VERSION							
TYPE	kW	F	R	F	R	F	R	F	R
10SVX06Z2	3	-	-	-	-	-	-	-	●
10SVX06	3	●	-	●	●	●	●	●	-
10SVX08	4	●	-	●	●	●	●	●	●
15SVX02Z4	3	-	-	-	-	-	-	-	●
15SVX02Z3	3	-	-	-	●	-	●	-	-
15SVX02	3	●	-	●	-	●	-	●	-
15SVX03Z3	4	-	-	-	-	-	-	-	●
15SVX03Z2	4	-	-	-	●	-	●	-	-
15SVX03	4	●	-	●	-	●	-	●	-
15SVX05Z1	5,5	-	-	-	-	-	-	-	●
15SVX05	5,5	●	-	●	●	●	●	●	-
15SVX07	7,5	●	-	●	●	●	●	●	●
22SVX02Z4	3	-	-	-	-	-	-	-	●
22SVX02Z3	3	-	-	-	●	-	●	-	-
22SVX02	3	●	-	●	-	●	-	●	-
22SVX03Z3	4	-	-	-	-	-	-	-	●
22SVX03Z2	4	-	-	-	●	-	●	-	-
22SVX03	4	●	-	●	-	●	-	●	-
22SVX04Z2	5,5	-	-	-	-	-	-	-	●
22SVX04Z1	5,5	-	-	-	●	-	●	-	-
22SVX04	5,5	●	-	●	-	●	-	●	-
22SVX05Z1	7,5	-	-	-	-	-	-	-	●
22SVX05	7,5	●	-	●	●	●	●	●	-
22SVX07	11	●	-	●	●	●	●	●	●

GHV-10_22SVX-2p50-en_cn_b_tm

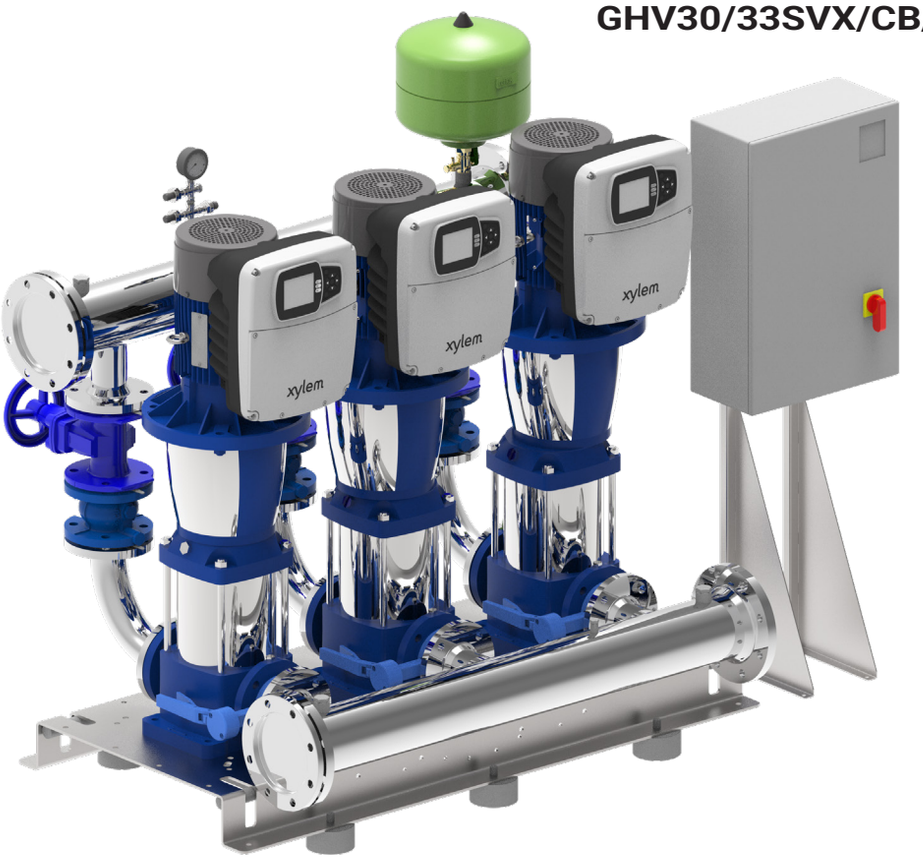
GHV BOOSTER SETS SERIES
33-125SVX, BOOSTER AVAILABLE VERSIONS

PUMP(*)		BOOSTER SET							
		GHV10		GHV20		GHV30		GHV40	
TIPO	kW	STANDARD	../V9	STANDARD	../V9	STANDARD	../V9	STANDARD	../V9
33SVX01	3	●	-	●	●	●	●	●	●
33SVX02	5,5	●	-	●	●	●	●	●	●
33SVX02	7,5	●	-	●	●	●	●	●	●
33SVX03..L	11	●	-	●	●	●	●	●	●
33SVX03	11	●	-	●	●	●	●	●	●
33SVX04	15	●	-	●	●	●	●	●	●
33SVX05..L	18,5	●	-	●	●	●	●	●	●
33SVX05	18,5	-	-	●	●	●	●	●	●
33SVX06	22	-	-	●	●	●	●	●	●
46SVX01	5,5	●	-	●	●	●	●	●	●
46SVX02	7,5	●	-	●	●	●	●	●	●
46SVX02	11	●	-	●	●	●	●	●	●
46SVX03	15	●	-	●	●	●	●	●	●
46SVX04	18,5	●	-	●	●	●	●	●	●
46SVX05	22	-	-	●	●	●	●	●	●
66SVX01	5,5	●	-	●	●	●	●	●	●
66SVX02	7,5	●	-	●	●	●	●	●	●
66SVX02	11	●	-	●	●	●	●	●	●
66SVX03..L	18,5	●	-	●	●	●	●	●	●
66SVX03	18,5	●	-	●	●	●	●	●	●
66SVX04..L	22	●	-	●	●	●	●	●	●
66SVX04	22	-	-	●	●	●	●	●	●
92SVX01	7,5	●	-	●	●	●	●	●	●
92SVX02	15	●	-	●	●	●	●	●	●
92SVX03..L	22	●	-	●	●	●	●	●	●
92SVX03	22	●	-	●	●	●	●	●	●
125SVX01	7,5	●	-	●	●	●	●	●	●
125SVX02	15	●	-	●	●	●	●	●	●
125SVX02	22	●	-	●	●	●	●	●	●

* G, Standard pump version

GHV BOOSTER SETS SERIES
SPECIAL SETS

GHV30/33SVX/CB/SPECIAL



GHV60/92SVX/CB/SPECIAL



GHV BOOSTER SETS SERIES
ELECTRIC PUMP RANGE AND CHARACTERISTICS

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



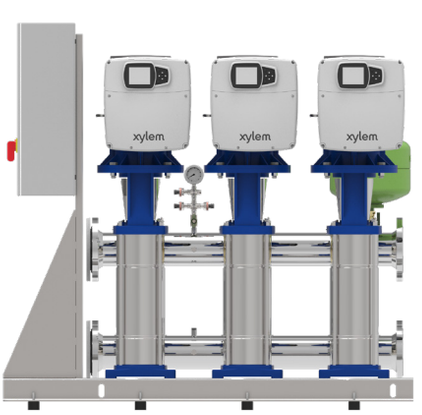
GHV10 SERIES
Variable speed sets with hydrovar X+ frequency converter and one multistage vertical pump with power up to 22 kW.

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



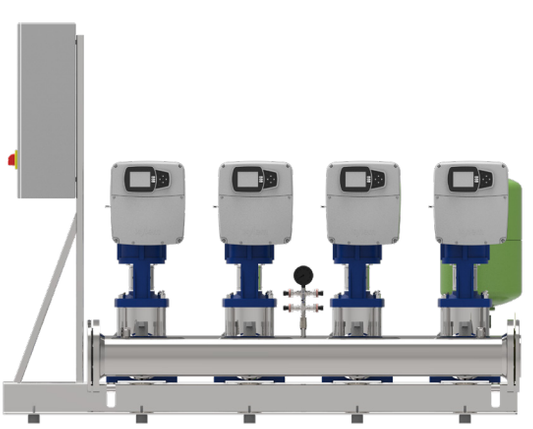
GHV20 SERIES
Variable speed sets with hydrovar X+ frequency converter and two multistage vertical pumps with power up to 22 kW.

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



GHV30 SERIES
Variable speed sets with hydrovar X+ frequency converter and three multistage vertical pumps with power up to 22 kW.

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



GHV40 SERIES
Variable speed sets with hydrovar X+ frequency converter and four multistage vertical pumps with power up to 22 kW.

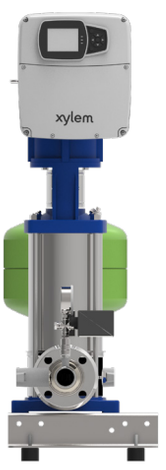
Head up to 160 m.
Flow rate up to 640 m³/h.

Booster sets

MARKET SECTORS
RESIDENTIAL-CIVIL, INDUSTRIAL

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

GHV10 SERIES



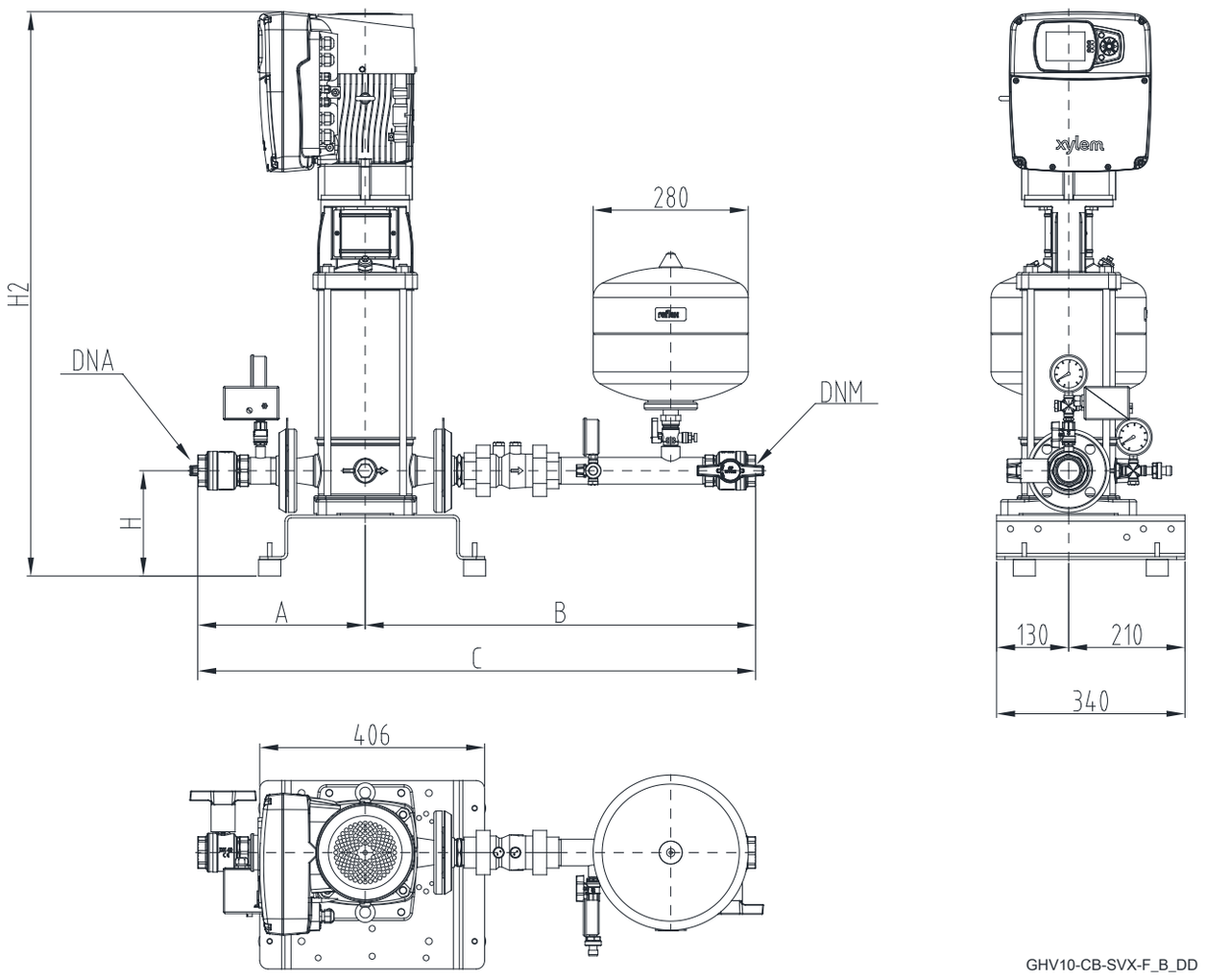
SPECIFICATIONS

- **Flow rate**
  up to 160 m^3/h.
- **Head**
  up to 160 m.
- **Frequency** 50/60 Hz
- **e-SVX** vertical axis electric pump
- **hydrovar X+** frequency converter coupled with synchronous motor
- **Material combinations**
  GHV10 with 3SV to 22SV:
  CB and CX versions available
  GHV10 with 33SV to 125SV:
  CB version available
- **Protection class IP55** for:
  e-SVX electrical pump
- Maximum operating **pressure**:
  16 bar.
- Maximum liquid **temperature**:
  max 60°C, CB version
  max 65°C, CX version
- Maximum electric pump **power**:
  1 x 22 kW.
- **Progressive** motor start.

Hydraulics components of single pump booster set are also available as kit (KIT IDR G/SVX../CB, KIT IDR G/SVX../CX)

Materials in contact with water are either certified or approved according to KTW

SET OF 1 PUMP SV..F SERIES
THREE-PHASE POWER SUPPLY GHV10.../U7

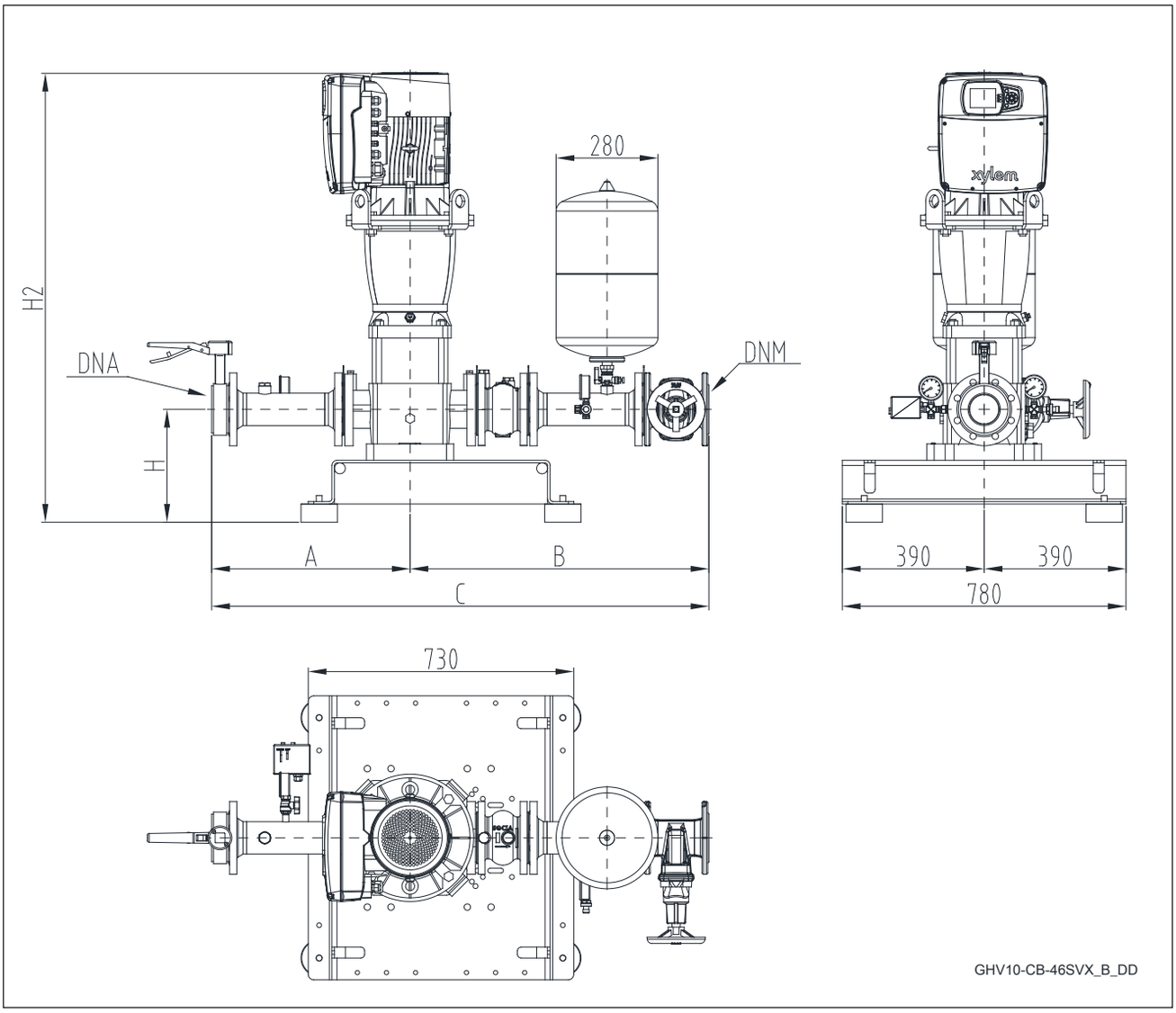


GHV 10	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
10SVX06F030	Rp1"1/2	Rp1"1/2	302	316	705	683	1007	999	190	954
10SVX08F040	Rp1"1/2	Rp1"1/2	302	316	705	683	1007	999	190	1018
15SVX02F030	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	868
15SVX03F040	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	916
15SVX05F055	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	1089
15SVX07F075	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	1227
22SVX02F030	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	868
22SVX03F040	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	916
22SVX04F055	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	1041
22SVX05F075	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	1131
22SVX07F110	Rp 2"	Rp 2"	339	349	754	729	1092	1078	200	1270

Dimensions in mm. Tolerance ± 10 mm.

ghv10_svx-f_c_td

SET OF 1 PUMP SV..G SERIES
THREE-PHASE POWER SUPPLY GHV10.../U7



GHV 10	DNA	DNM	A	B	C	H	H2
33SVX01G030	DN65	DN65	558	804	1362	275	998
33SVX02G055	DN65	DN65	558	804	1362	275	1103
33SVX02G075	DN65	DN65	558	804	1362	275	1145
33SVX03G110	DN65	DN65	558	804	1362	275	1268
33SVX04G150	DN65	DN65	558	804	1362	275	1419
46SVX01G055	DN80	DN80	546	822	1367	310	1068
46SVX02G075	DN80	DN80	546	822	1367	310	1220
46SVX02G110	DN80	DN80	546	822	1367	310	1233
46SVX03G150	DN80	DN80	546	822	1367	310	1384
46SVX04G185	DN80	DN80	546	822	1367	310	1459
66SVX01G055	DN100	DN100	597	907	1503	310	1093
66SVX02G110	DN100	DN100	597	907	1503	310	1273
66SVX02G150	DN100	DN100	597	907	1503	310	1349
66SVX03G185	DN100	DN100	597	907	1503	310	1439
92SVX01G075	DN100	DN100	597	907	1503	310	1135
92SVX02G150	DN100	DN100	597	907	1503	310	1349
92SVX03G220	DN100	DN100	597	907	1503	310	1439
125SVX01G075	DN125	DN125	578	924	1502	330	1254
125SVX02G150	DN125	DN125	578	924	1502	330	1528
125SVX02G220	DN125	DN125	578	924	1502	330	1528

Dimensions in mm. Tolerance ± 10 mm.

ghv10_46svx-f_c_td

Booster sets

MARKET SECTORS
RESIDENTIAL-CIVIL, INDUSTRIAL

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

GHV20 SERIES

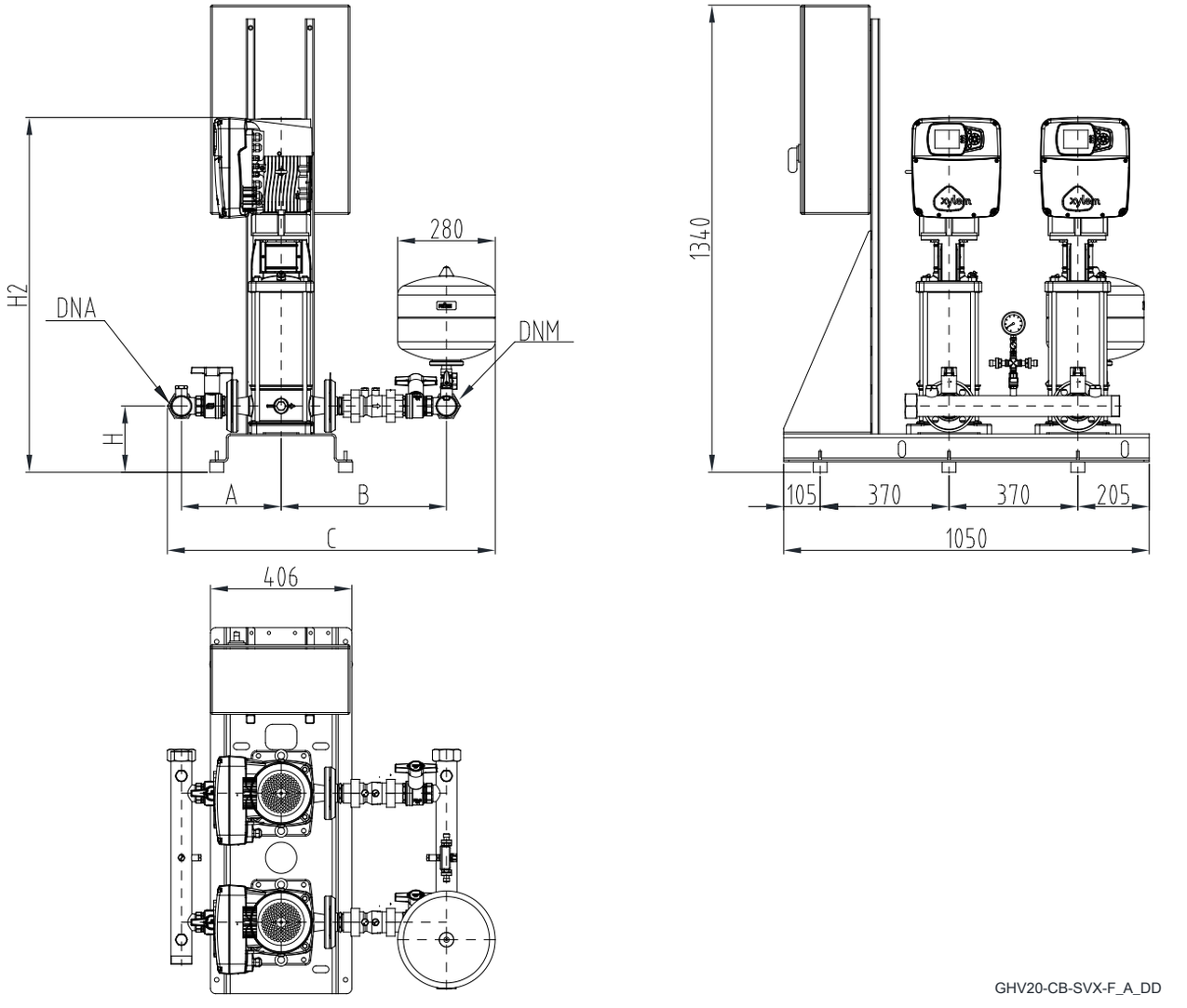


SPECIFICATIONS

- **Flow rate**
  up to 320 m^3/h.
- **Head**
  up to 160 m.
- **Frequency** 50/60 Hz
- **e-SVX** vertical axis electric pump
- **hydrovar X+** frequency converter coupled with synchronous motor
- **Material combinations**
  GHV20/ 3 to 22SV pump available CB and CX version
  GHV20/ 33 to 125SV pump available CB version
- **Protection class IP55** for:
  - electrical control panel
  - e-SVX vertical axis electric pump
- Maximum operating **pressure**:
  16 bar.
- Maximum liquid **temperature**:
  max 60°C, CB version
  max 65°C, CX version
- Maximum electric pump **power**:
  2 x 22 kW.
- **Progressive** motor start.

Materials in contact with water are either certified or approved according to KTW

SET OF 2 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)



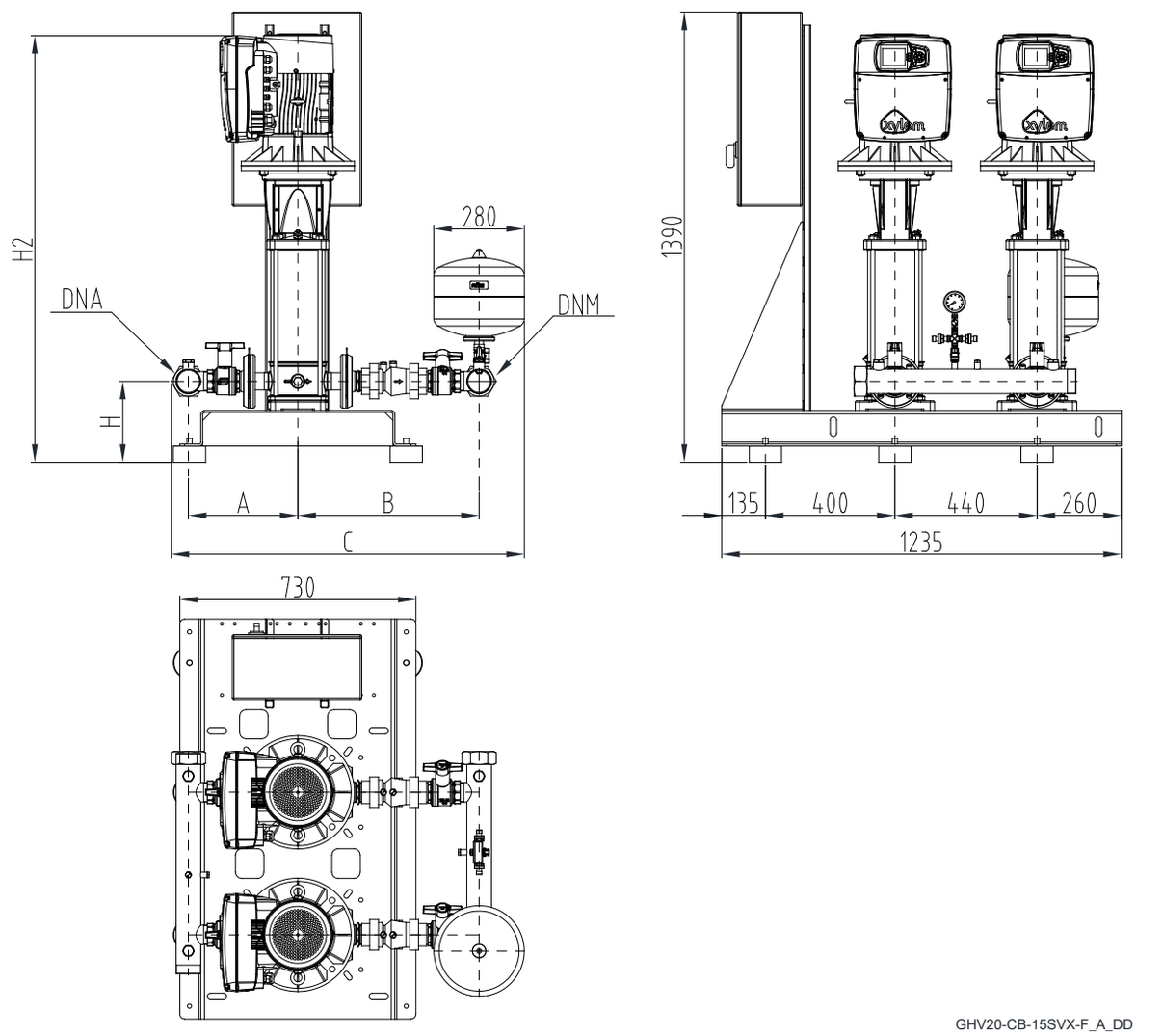
GHV20-CB-SVX-F_A_DD

GHV 20	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
10SVX06F030	R 2"	R 2"	286	306	475	446	931	922	190	954
10SVX08F040	R 2"	R 2"	286	306	475	446	931	922	190	1018
15SVX02F030	R 2"1/2	R 2"1/2	338	361	560	510	1076	1049	200	868
15SVX03F040	R 2"1/2	R 2"1/2	338	361	560	510	1076	1049	200	916
15SVX05F055	R 2"1/2	R 2"1/2	338	361	560	510	1076	1049	200	1089
15SVX07F075	R 2"1/2	R 2"1/2	338	361	560	510	1076	1049	200	1227
22SVX02F030	R 3"	R 3"	345	368	560	510	1076	1049	200	868
22SVX03F040	R 3"	R 3"	345	368	560	510	1076	1049	200	916
22SVX04F055	R 3"	R 3"	345	368	560	510	1076	1049	200	1041
22SVX05F075	R 3"	R 3"	345	368	560	510	1076	1049	200	1131

Dimensions in mm. Tolerance ± 10 mm.

ghv20_svx-f_a_td

SET OF 2 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)

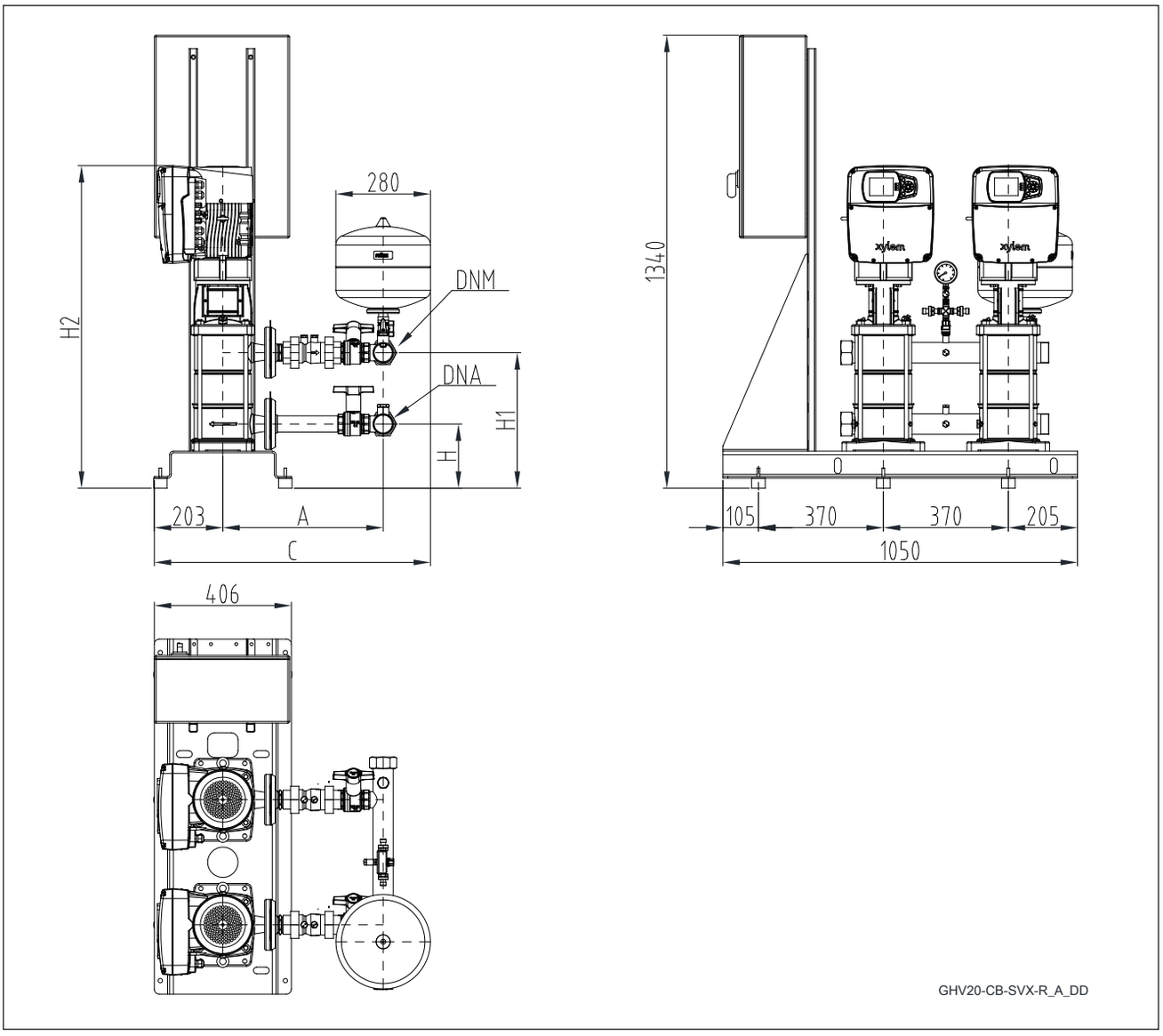


GHV 20	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
22SVX07F110	R 3"	R 3"	345	368	560	510	1076	1049	250	1320

Dimensions in mm. Tolerance ± 10 mm.

ghv20_15svx-f_a_td

SET OF 2 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)

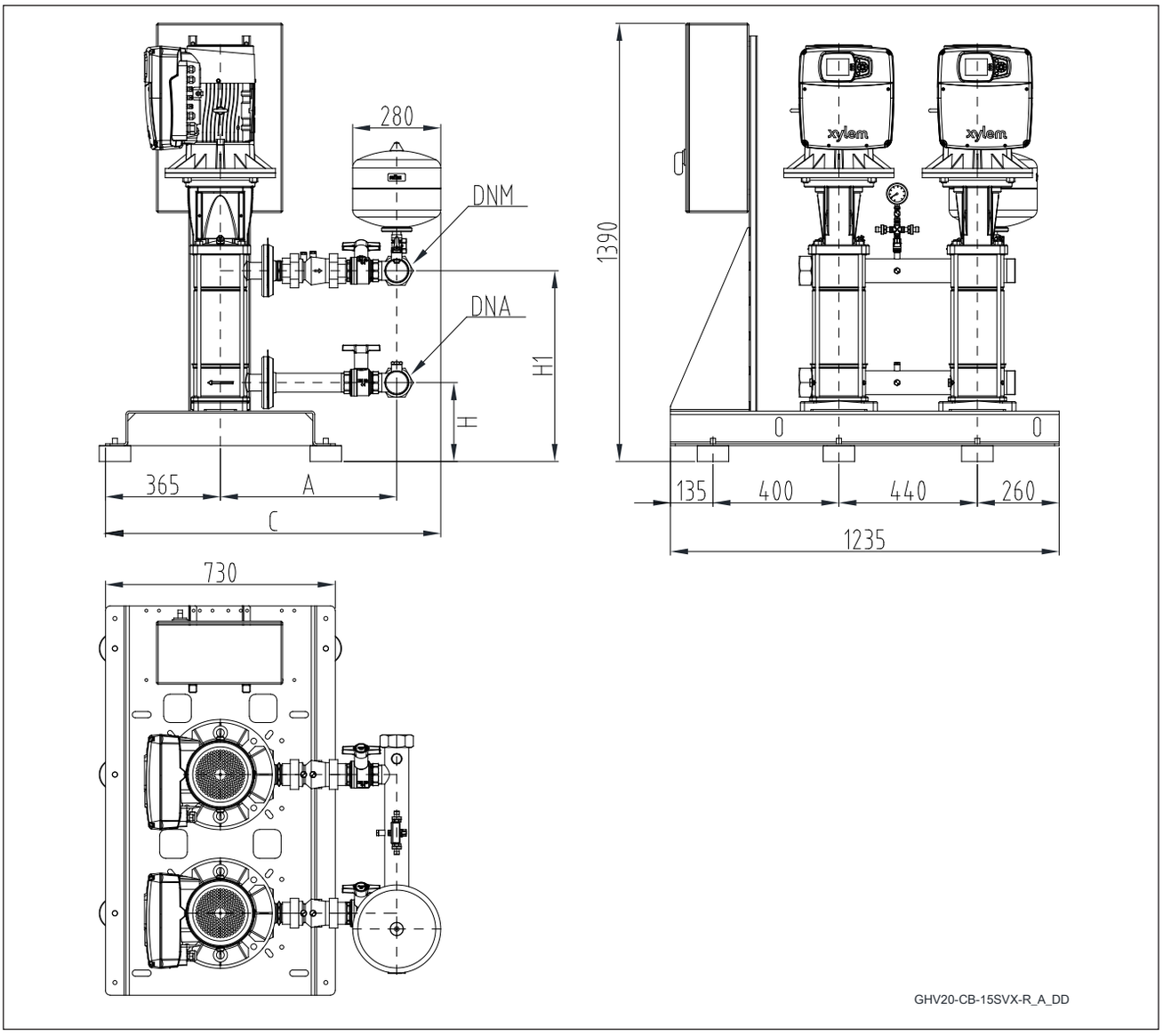


GHV 20	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
10SVX06R030	R 2"	R 2"	475	446	818	789	190	401	954
10SVX08R040	R 2"	R 2"	475	446	818	789	190	465	1018
15SVX02Z3R030	R 2"1/2	R 2"1/2	560	510	903	853	200	459	1089
15SVX03Z2R040	R 2"1/2	R 2"1/2	560	510	903	853	200	459	1089
15SVX05R055	R 2"1/2	R 2"1/2	560	510	903	853	200	459	1089
15SVX07R075	R 2"1/2	R 2"1/2	560	510	903	853	200	555	1227
22SVX02Z3R030	R 3"	R 3"	560	510	903	853	200	459	1131
22SVX03Z2R040	R 3"	R 3"	560	510	903	853	200	459	1131
22SVX04Z1R055	R 3"	R 3"	560	510	903	853	200	459	1131
22SVX05R075	R 3"	R 3"	560	510	903	853	200	459	1131

Dimensions in mm. Tolerance ± 10 mm.

ghv20_svx-r_a_td

SET OF 2 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)

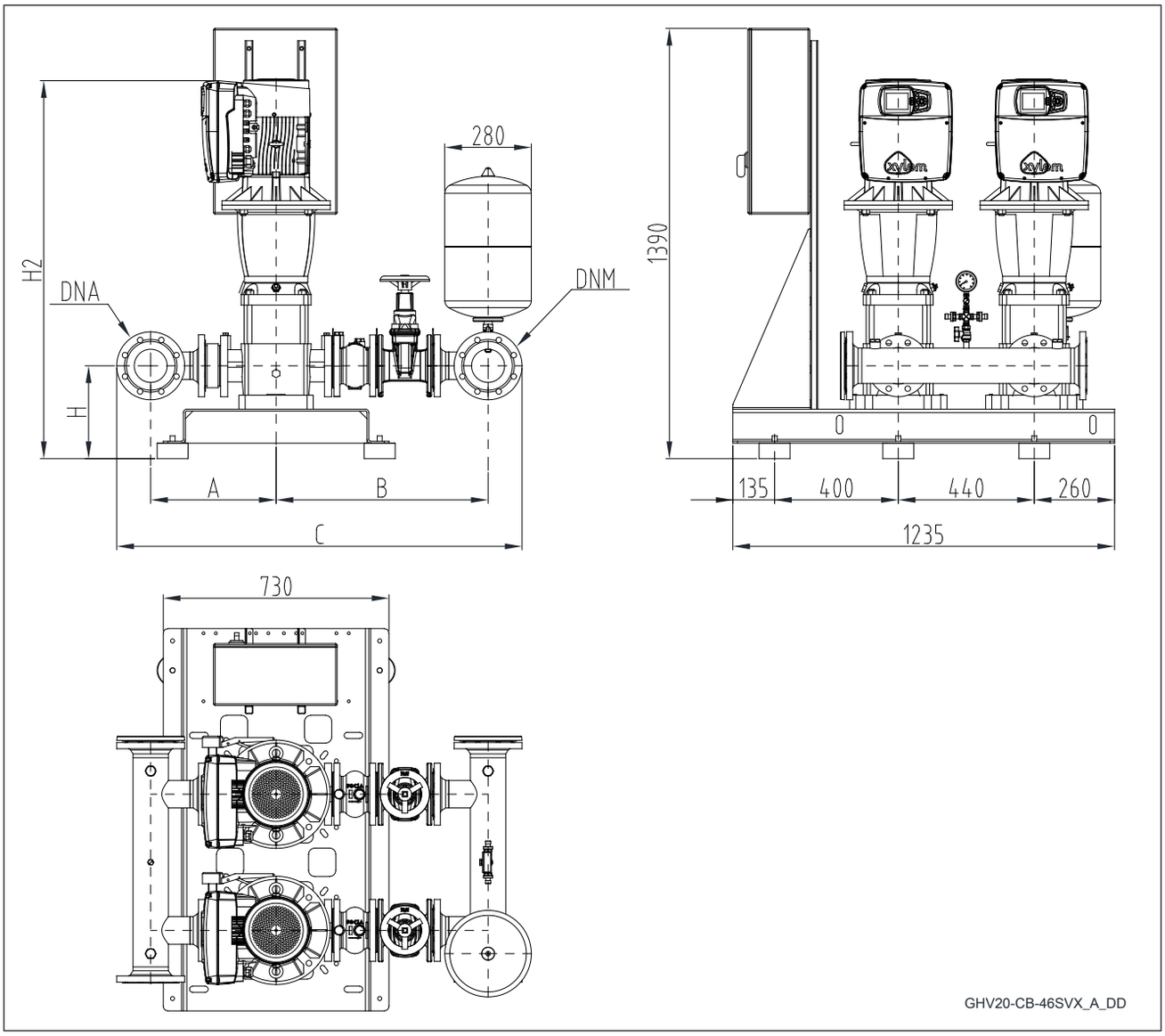


GHV 20	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
22SVX07R110	R 3"	R 3"	560	510	903	853	250	605	1320

Dimensions in mm. Tolerance ± 10 mm.

ghv20_15svx-r_a_td

SET OF 2 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)

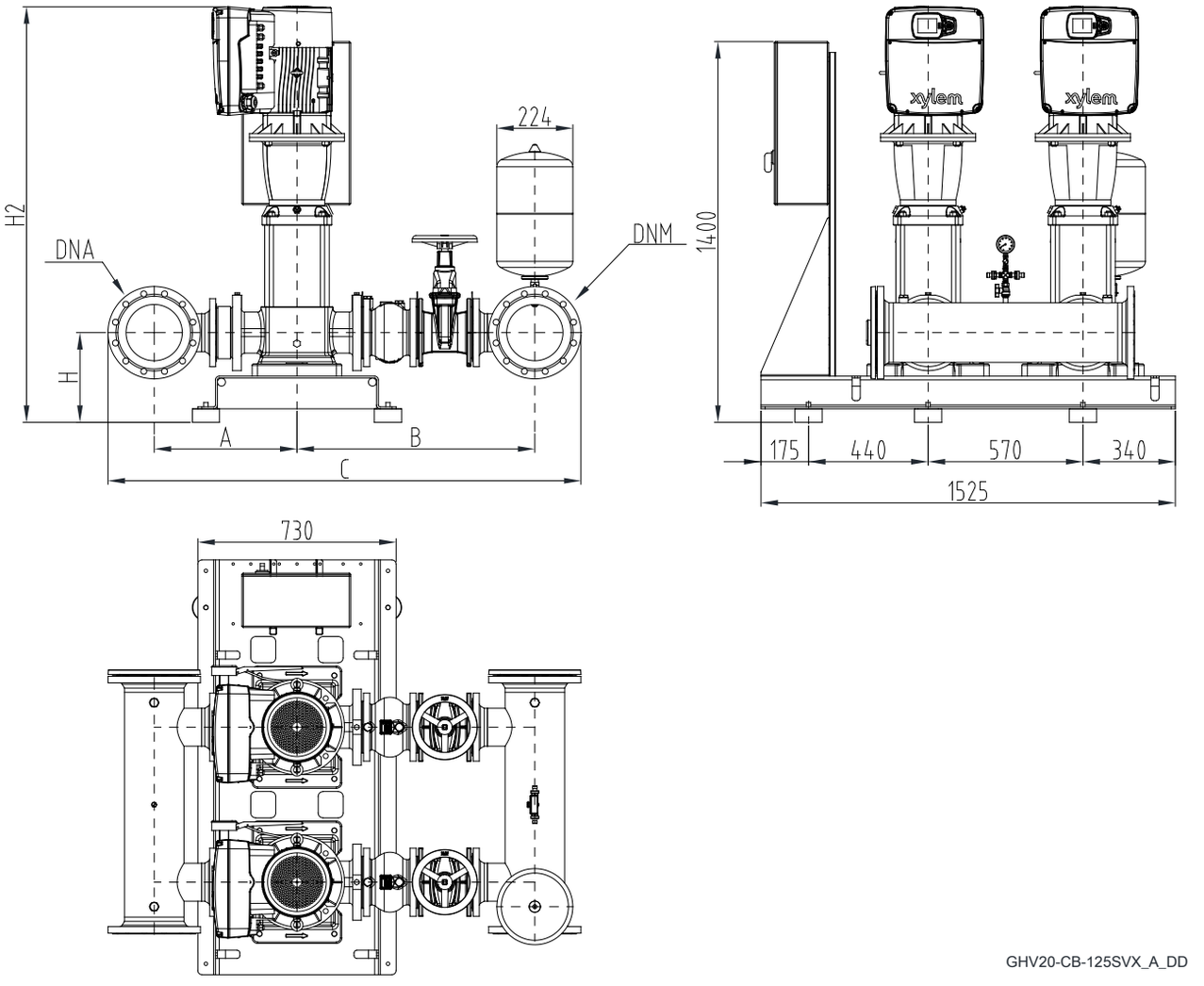


GHV 20	DNA	DNM	A	B	C	H	H2
33SVX01G030	DN100	DN100	383	633	1236	265	988
33SVX02G055	DN100	DN100	383	633	1236	265	1093
33SVX02G075	DN100	DN100	383	633	1236	265	1135
33SVX03G110	DN100	DN100	383	633	1236	265	1258
33SVX04G150	DN100	DN100	383	633	1236	265	1409
46SVX01G055	DN100	DN100	406	686	1311	300	1058
46SVX02G075	DN100	DN100	406	686	1311	300	1210
46SVX02G110	DN100	DN100	406	686	1311	300	1223
46SVX03G150	DN100	DN100	406	686	1311	300	1374
46SVX04G185	DN100	DN100	406	686	1311	300	1449
66SVX01G055	DN125	DN125	425	739	1413	300	1083
66SVX02G110	DN125	DN125	425	739	1413	300	1263
66SVX02G150	DN125	DN125	425	739	1413	300	1339
66SVX03G185	DN125	DN125	425	739	1413	300	1429
92SVX01G075	DN150	DN150	439	753	1476	300	1125
92SVX02G150	DN150	DN150	439	753	1476	300	1339
92SVX03G220	DN150	DN150	439	753	1476	300	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv20_46svx_b_td

SET OF 2 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV20.../4)

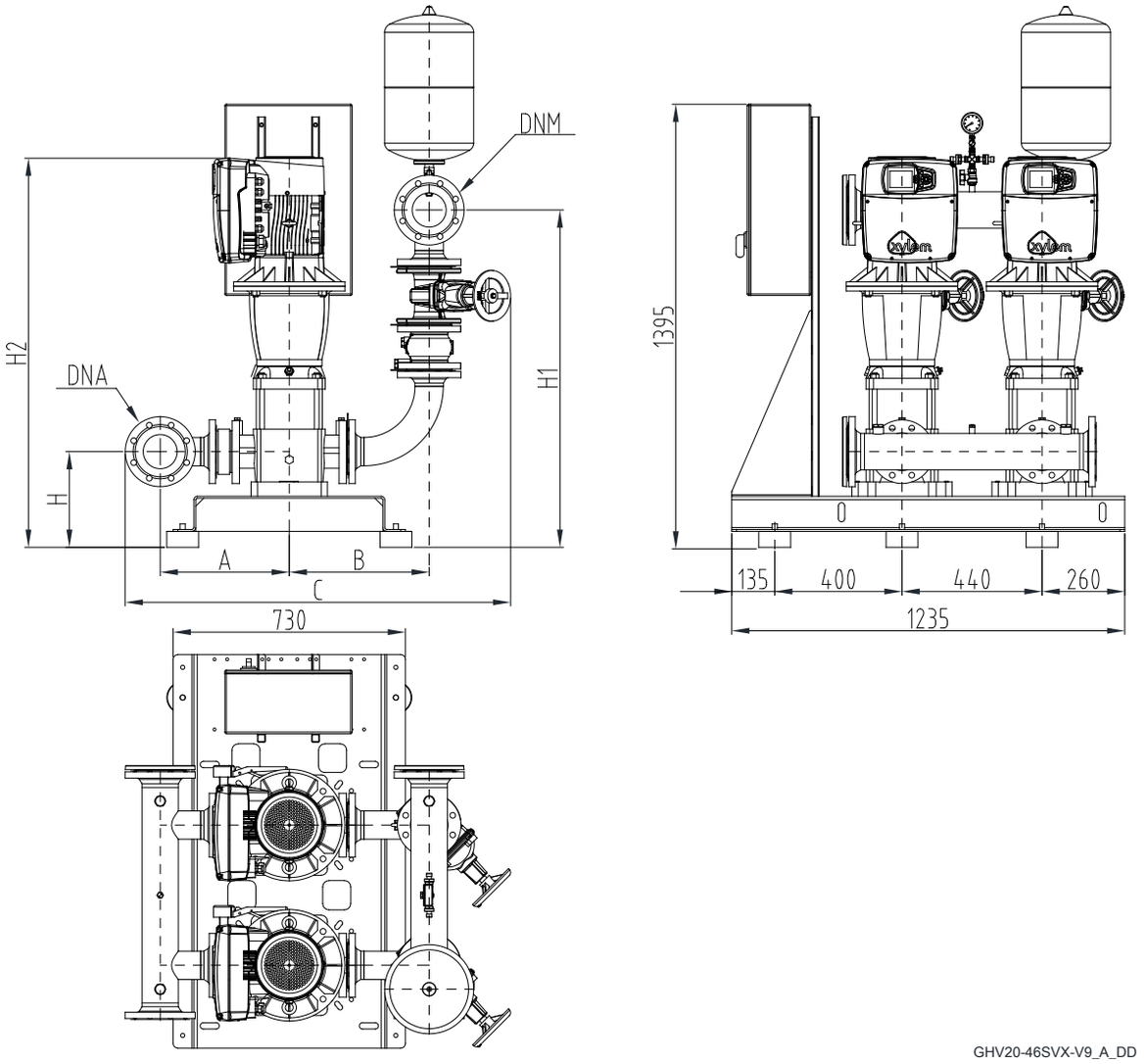


GHV 20	DNA	DNM	A	B	C	H	H2
125SVX01G075	DN200	DN200	526	876	1741	330	1254
125SVX02G150	DN200	DN200	526	876	1741	330	1528
125SVX02G220	DN200	DN200	526	876	1741	330	1528

Dimensions in mm. Tolerance ± 10 mm.

ghv20_125svx_a_td

SET OF 2 PUMPS SV..G SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV20.../4)

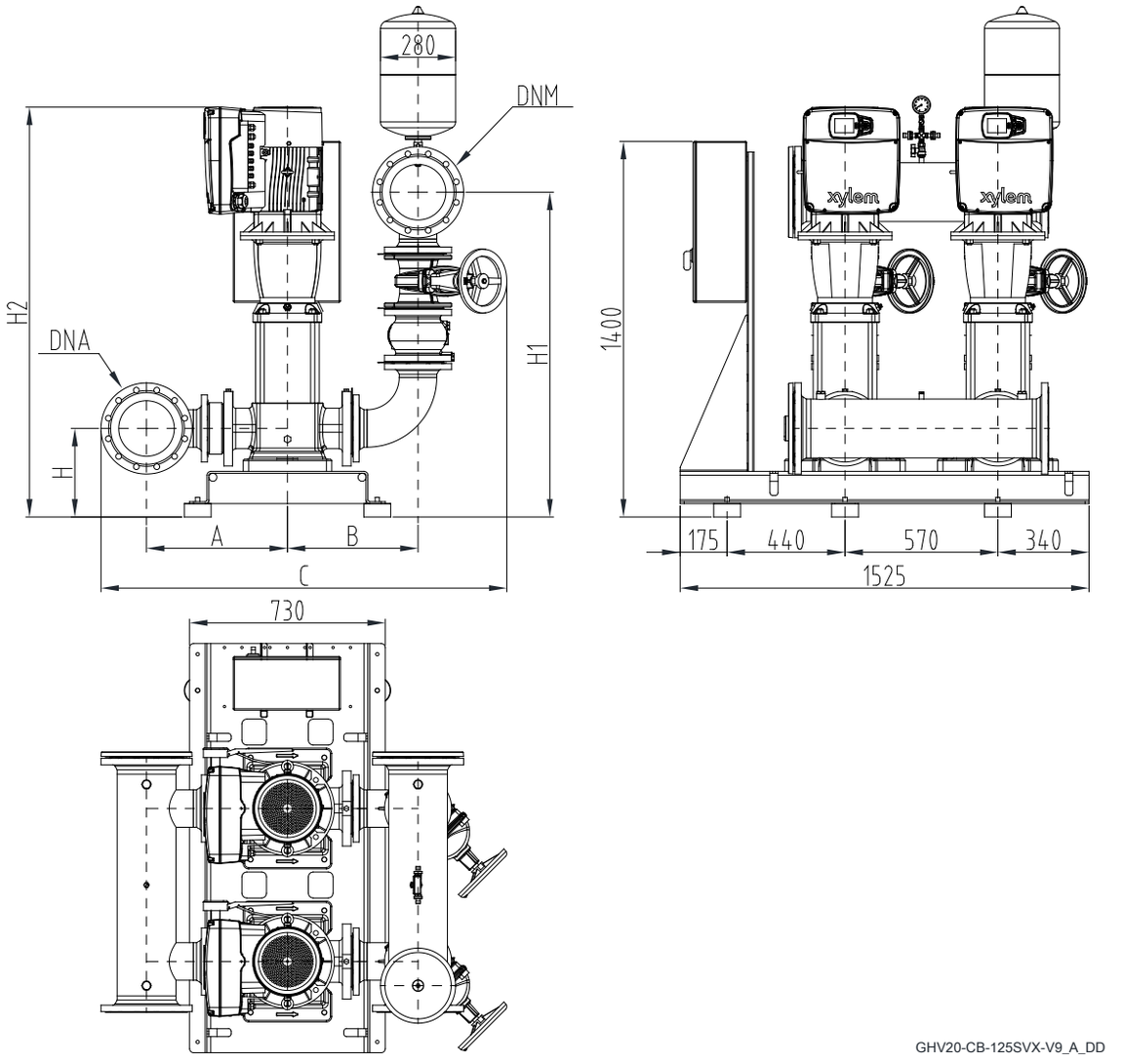


GHV 20	DNA	DNM	A	B	C	H	H1	H2
33SVX01G030	DN100	DN100	383	382	1127	265	958	988
33SVX02G055	DN100	DN100	383	382	1127	265	958	1093
33SVX02G075	DN100	DN100	383	382	1127	265	958	1135
33SVX03G110	DN100	DN100	383	382	1127	265	958	1258
33SVX04G150	DN100	DN100	383	382	1127	265	958	1409
46SVX01G055	DN100	DN100	406	440	1211	300	1058	1058
46SVX02G075	DN100	DN100	406	440	1211	300	1058	1210
46SVX02G110	DN100	DN100	406	440	1211	300	1058	1223
46SVX03G150	DN100	DN100	406	440	1211	300	1058	1374
46SVX04G185	DN100	DN100	406	440	1211	300	1058	1449
66SVX01G055	DN125	DN125	425	389	1226	300	1060	1083
66SVX02G110	DN125	DN125	425	389	1226	300	1060	1263
66SVX02G150	DN125	DN125	425	389	1226	300	1060	1339
66SVX03G185	DN125	DN125	425	389	1226	300	1060	1429
92SVX01G075	DN150	DN150	439	389	1258	300	1074	1125
92SVX02G150	DN150	DN150	439	389	1258	300	1074	1339
92SVX03G220	DN150	DN150	439	389	1258	300	1074	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv20_46svx-v9_b_td

SET OF 2 PUMPS SV..G SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV20.../4)



GHV 20	DNA	DNM	A	B	C	H	H1	H2
125SVX01G075	DN200	DN200	526	487	1514	330	1211	1254
125SVX02G150	DN200	DN200	526	487	1514	330	1211	1528
125SVX02G220	DN200	DN200	526	487	1514	330	1211	1528

Dimensions in mm. Tolerance ± 10 mm.

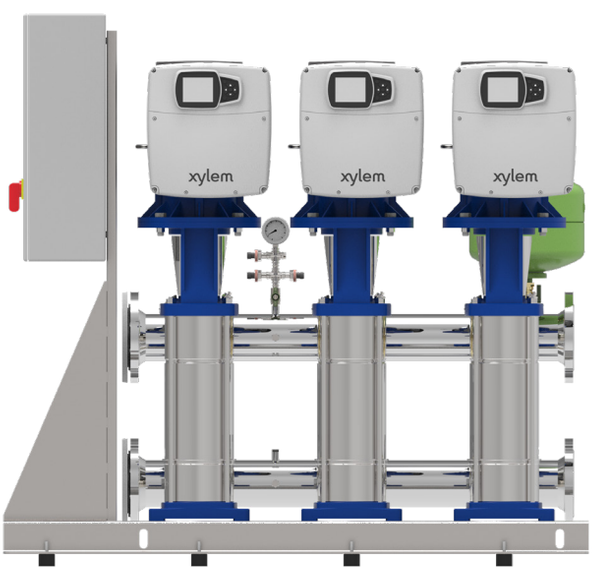
ghv20_125svx-v9_a_td

Booster sets

MARKET SECTORS
RESIDENTIAL-CIVIL, INDUSTRIAL

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

GHV30 SERIES

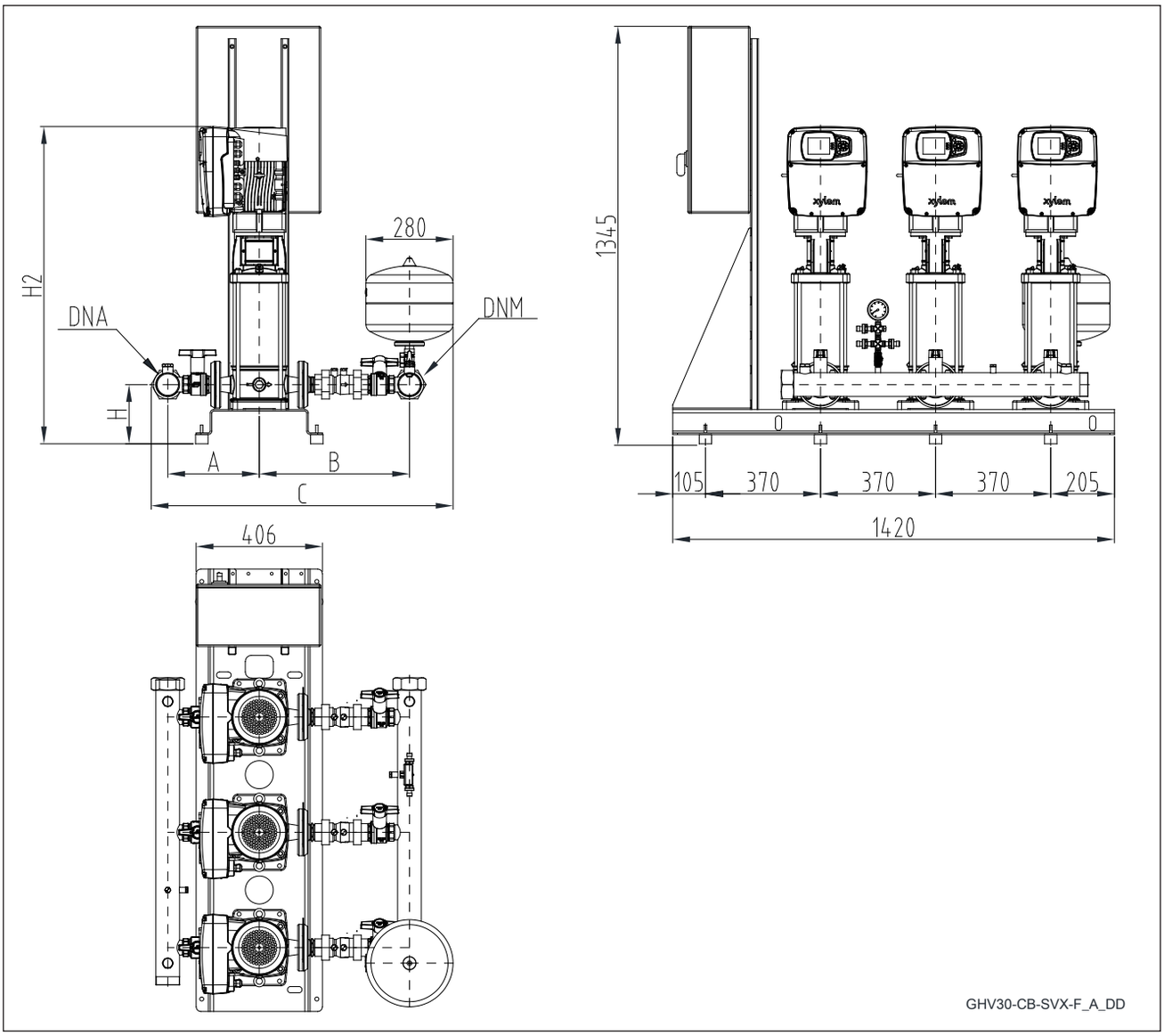


SPECIFICATIONS

- **Flow rate**
  up to 480 m^3/h.
- **Head**
  up to 160 m.
- **Frequency** 50/60 Hz
- **e-SVX** vertical axis electric pump
- **hydrovar X+** frequency converter coupled with synchronous motor
- **Material combinations**
  GHV30/ 3 to 22SV pump available CB and CX version
  GHV30/ 33 to 125SV pump available CB version
- **Protection class IP55** for:
  - electrical control panel
  - e-SVX vertical axis electric pump
- Maximum operating **pressure**:
  16 bar.
- Maximum liquid **temperature**:
  max 60°C, CB version
  max 65°C, CX version
- Maximum electric pump **power**:
  3 x 22 kW.
- **Progressive** motor start.

Materials in contact with water are either certified or approved according to KTW

SET OF 3 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV30.../3, GHV30.../4)

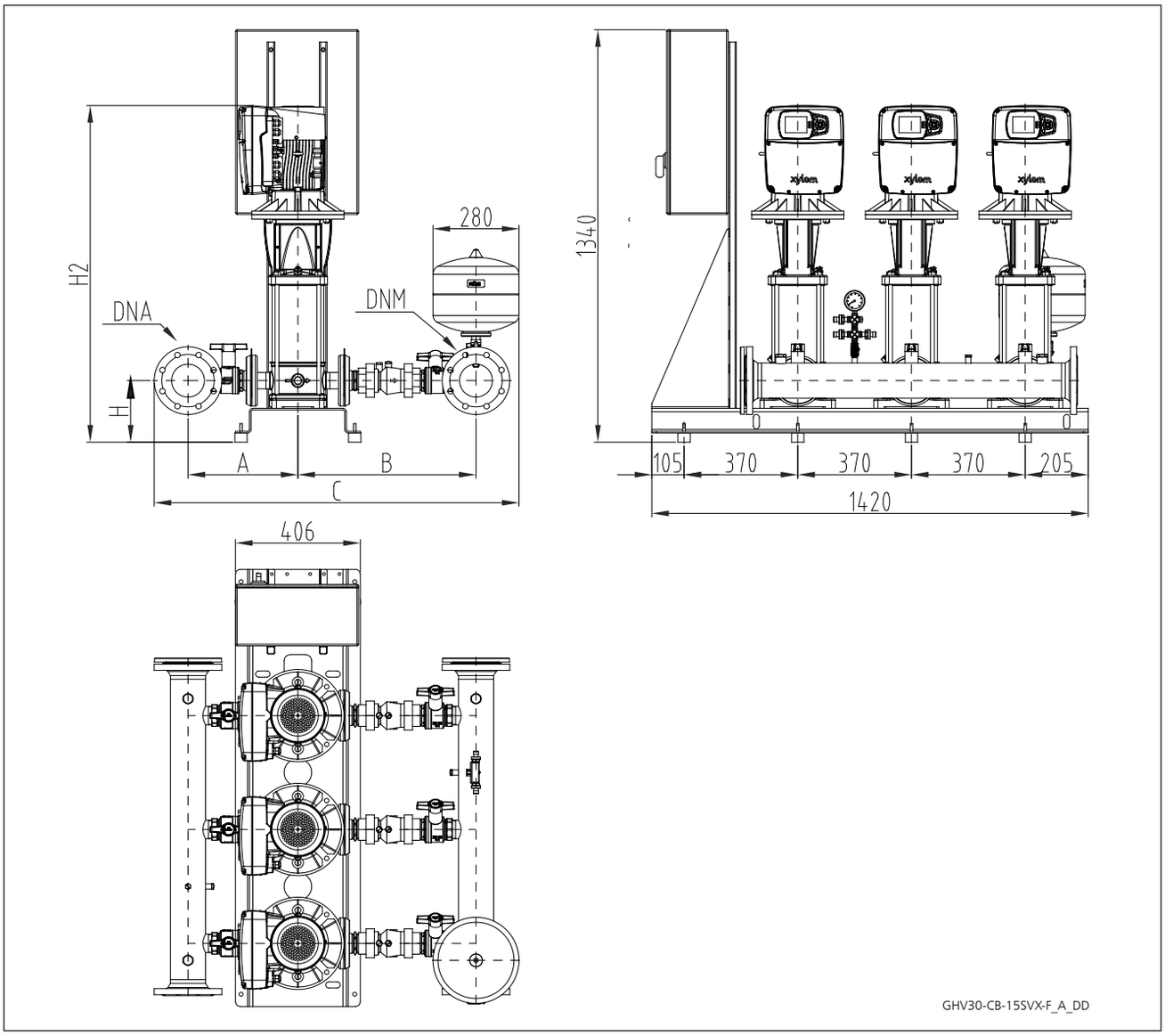


GHV 30	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
10SVX06F030	R 3"	R 3"	301	321	490	461	975	966	190	954
10SVX08F040	R 3"	R 3"	301	321	490	461	975	966	190	1018

Dimensions in mm. Tolerance ± 10 mm.

ghv30_svx-f_a_td

SET OF 3 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

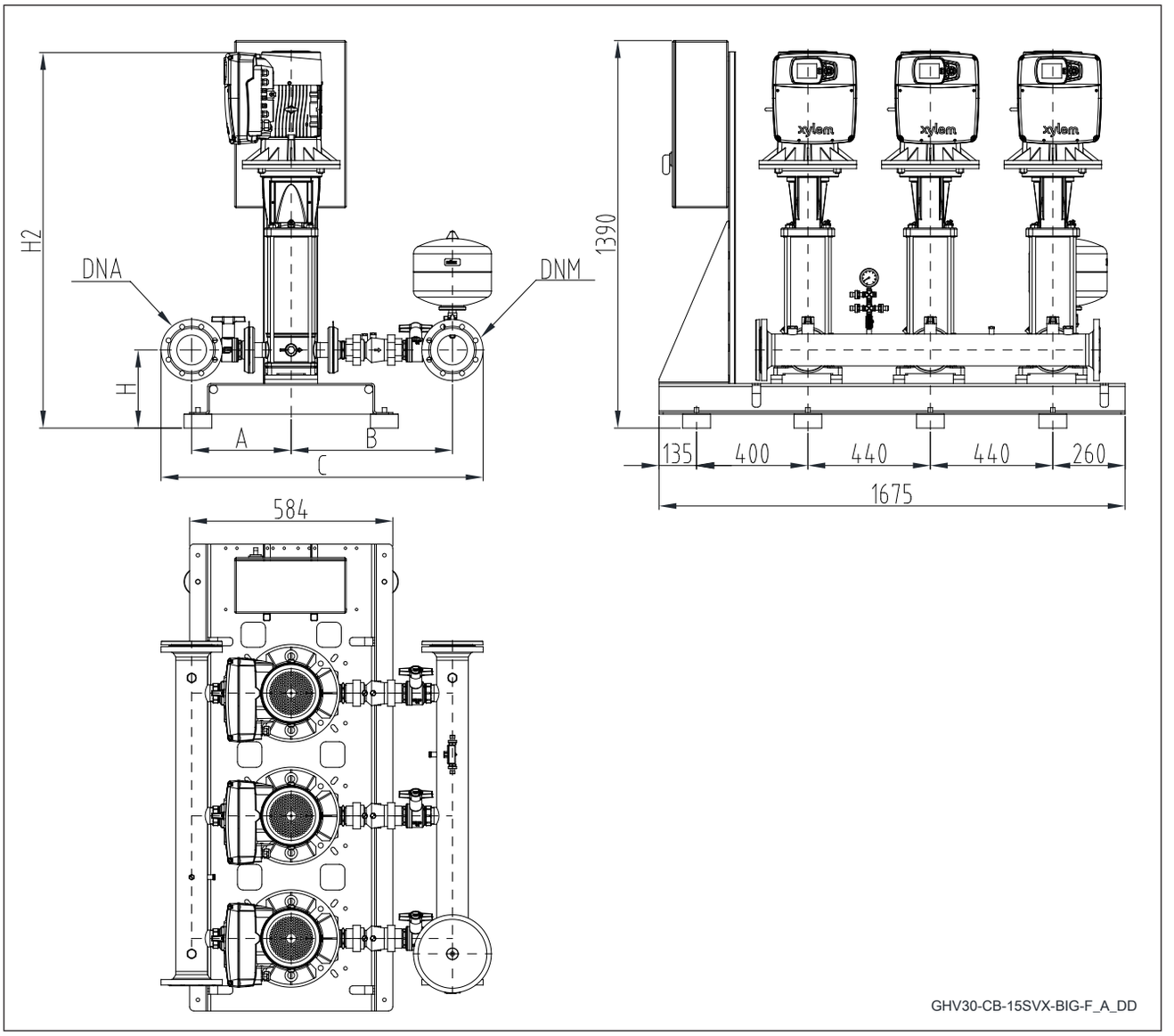


GHV 30	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
15SVX02F030	DN100	DN100	357	380	579	529	1186	1159	200	868
15SVX03F040	DN100	DN100	357	380	579	529	1186	1159	200	916
15SVX05F055	DN100	DN100	357	380	579	529	1186	1159	200	1089
15SVX07F075	DN100	DN100	357	380	579	529	1186	1159	200	1227
22SVX02F030	DN100	DN100	357	380	579	529	1186	1159	200	868
22SVX03F040	DN100	DN100	357	380	579	529	1186	1159	200	916
22SVX04F055	DN100	DN100	357	380	579	529	1186	1159	200	1041
22SVX05F075	DN100	DN100	357	380	579	529	1186	1159	200	1131

Dimensions in mm. Tolerance ± 10 mm.

ghv30_15svx-f_a_td

SET OF 3 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

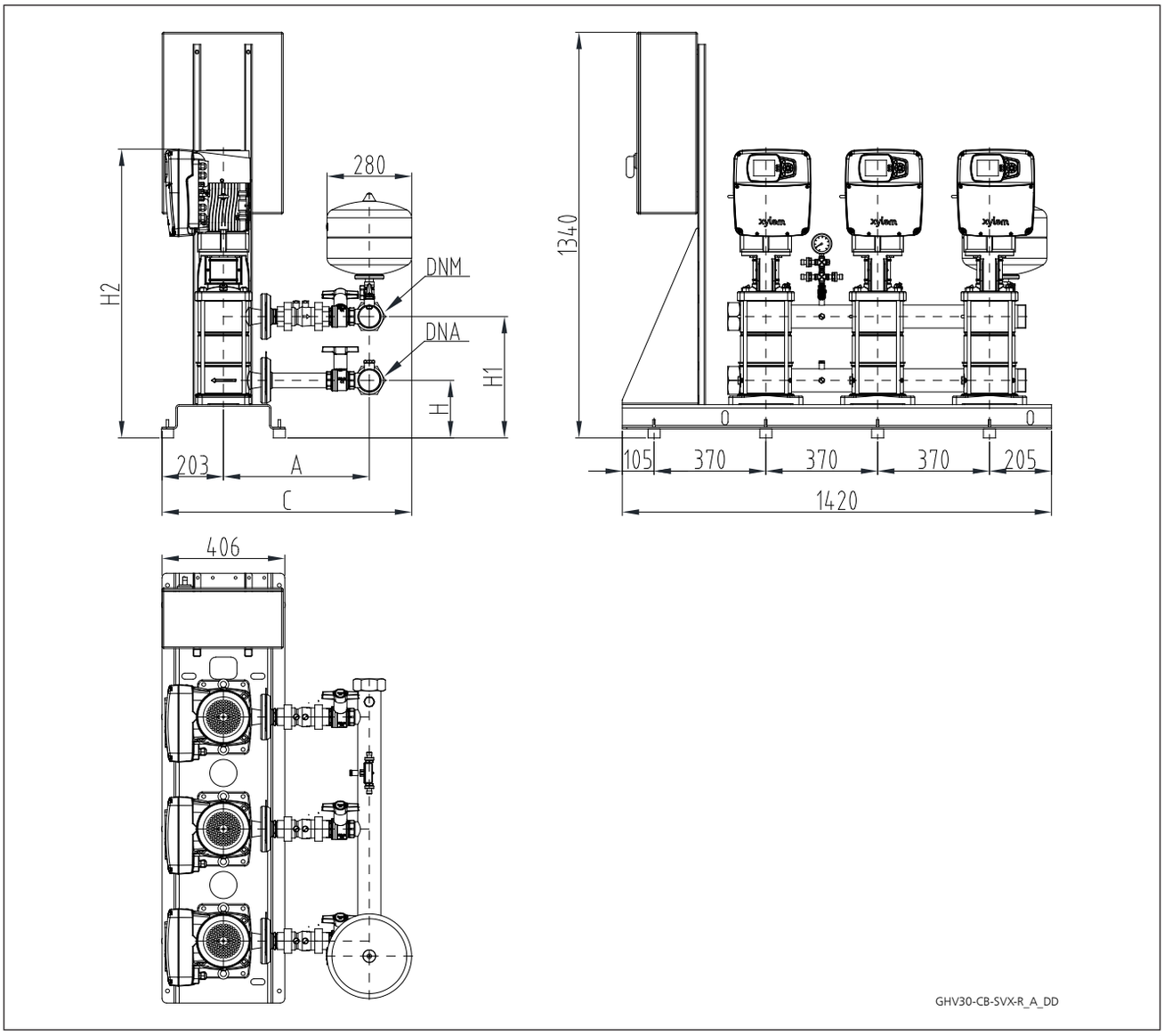


GHV 30	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
22SVX07F110	DN100	DN100	357	380	579	529	1186	1159	280	1350

Dimensions in mm. Tolerance ± 10 mm.

ghv30_15svx-big-f_a_td

SET OF 3 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

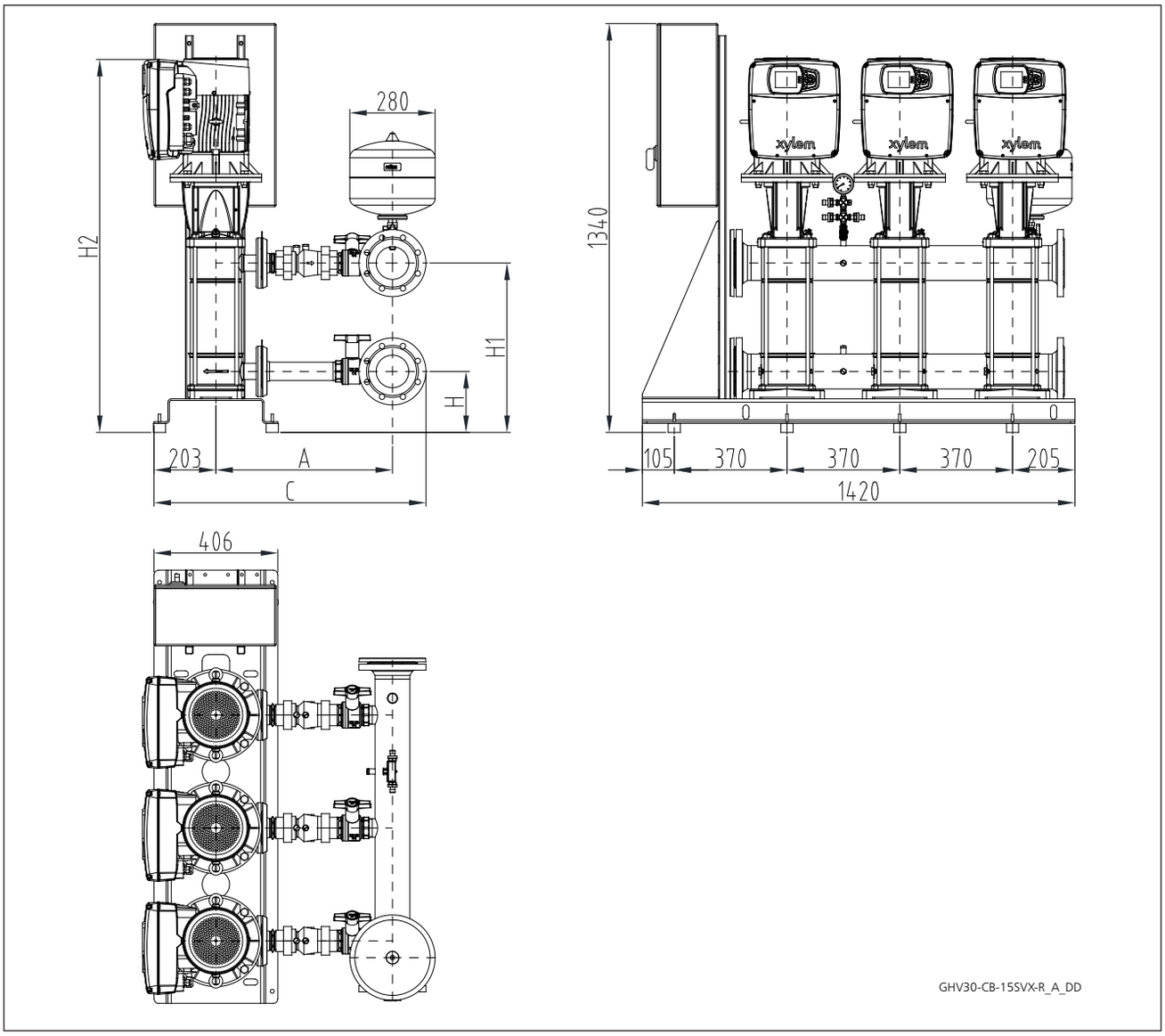


GHV 30	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
10SVX06R030	R 3"	R 3"	490	461	833	804	190	401	954
10SVX08R040	R 3"	R 3"	490	461	833	804	190	465	1018

Dimensions in mm. Tolerance ± 10 mm.

ghv30_svx-r_a_td

SET OF 3 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

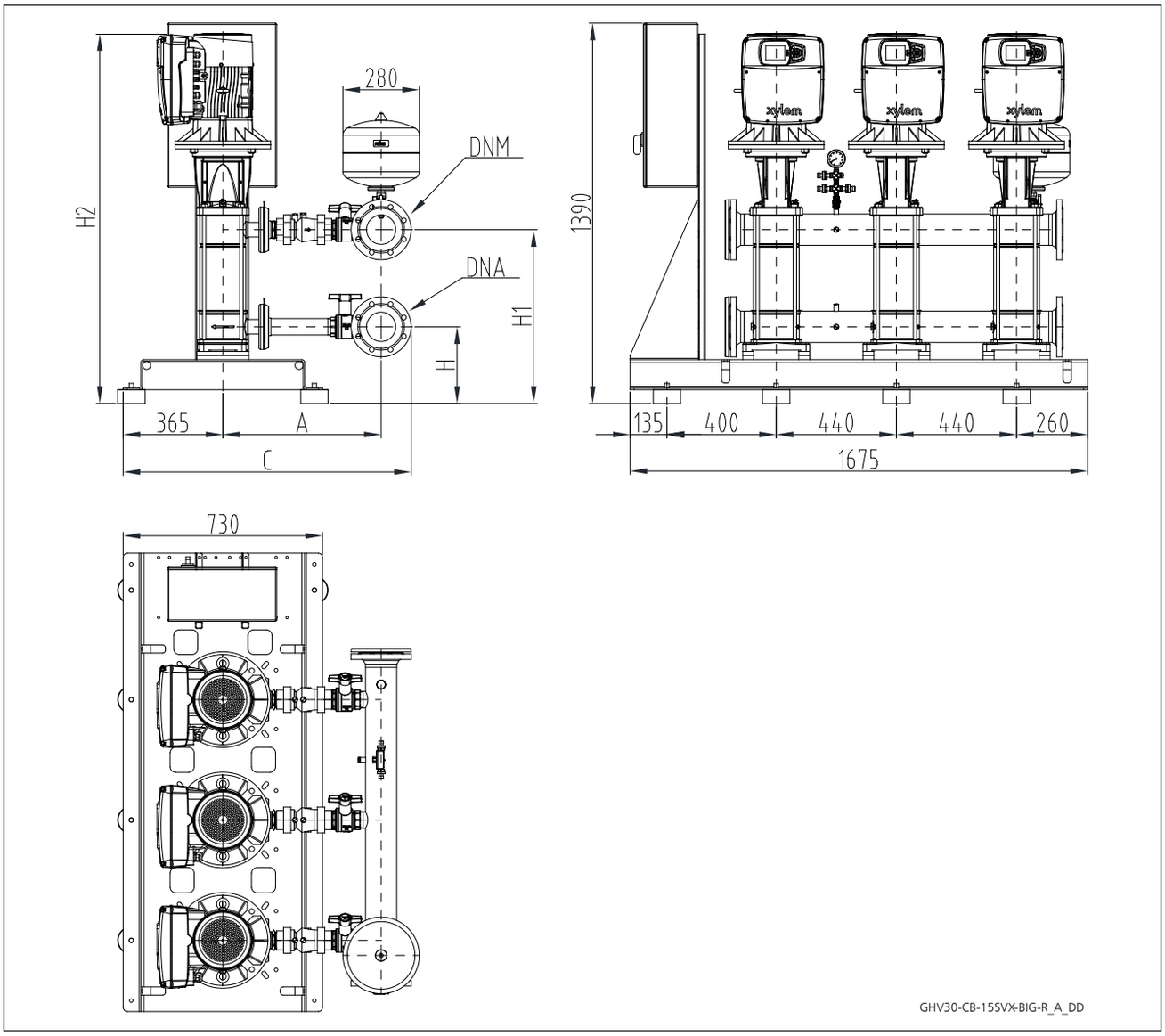


GHV 30	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
15SVX02Z3R030	DN100	DN100	579	529	922	872	200	459	1089
15SVX03Z2R040	DN100	DN100	579	529	922	872	200	459	1089
15SVX05R055	DN100	DN100	579	529	922	872	200	459	1089
15SVX07R075	DN100	DN100	579	529	922	872	200	555	1227
22SVX02Z3R030	DN100	DN100	579	529	922	872	200	459	1131
22SVX03Z2R040	DN100	DN100	579	529	922	872	200	459	1131
22SVX04Z1R055	DN100	DN100	579	529	922	872	200	459	1131
22SVX05R075	DN100	DN100	579	529	922	872	200	459	1131

Dimensions in mm. Tolerance ± 10 mm.

ghv30_15svx-r_a_td

SET OF 3 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

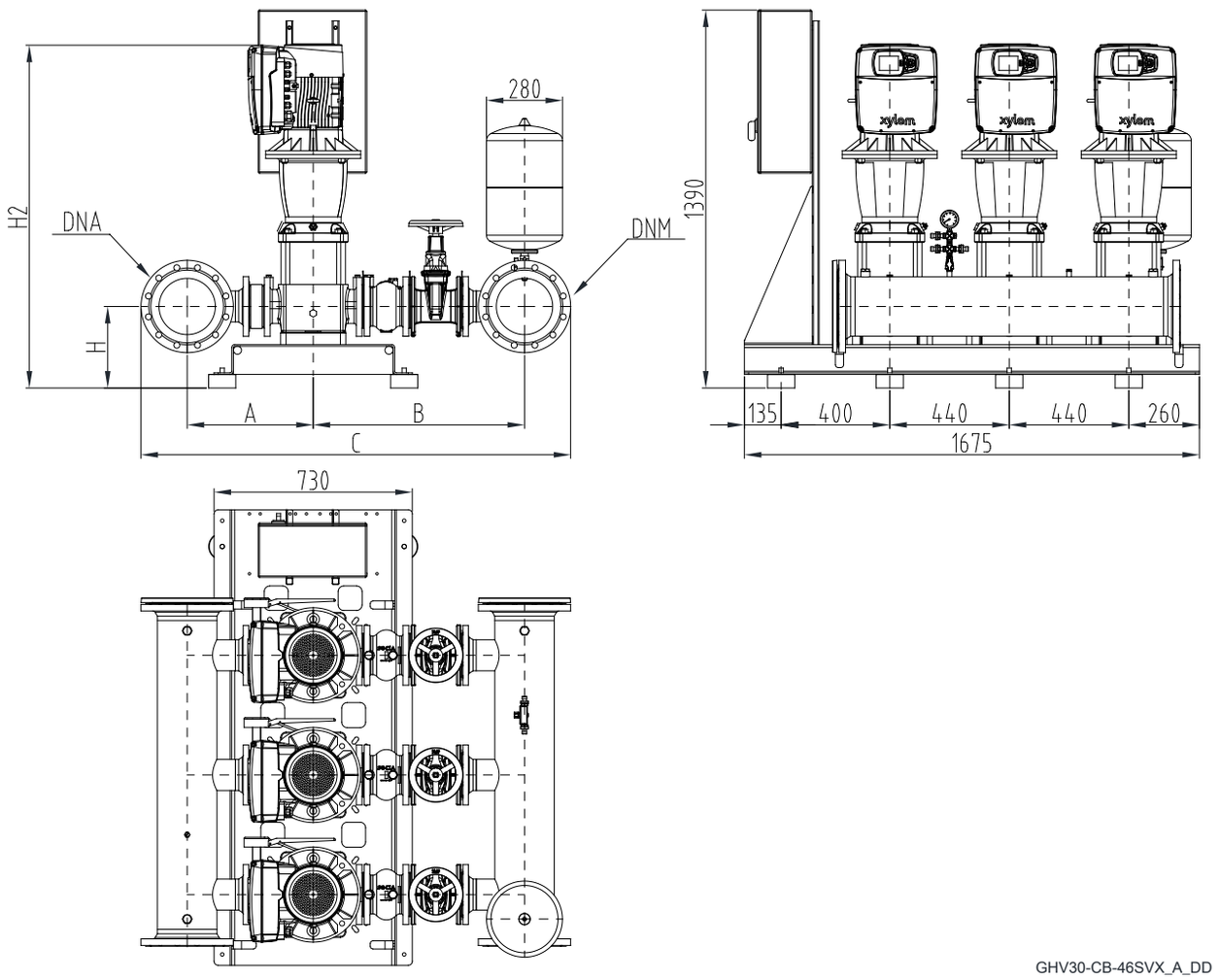


GHV 30	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
22SVX07R110	DN100	DN100	579	529	922	872	280	635	1350

Dimensions in mm. Tolerance ± 10 mm.

ghv30_15svx-big-r_a_td

SET OF 3 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

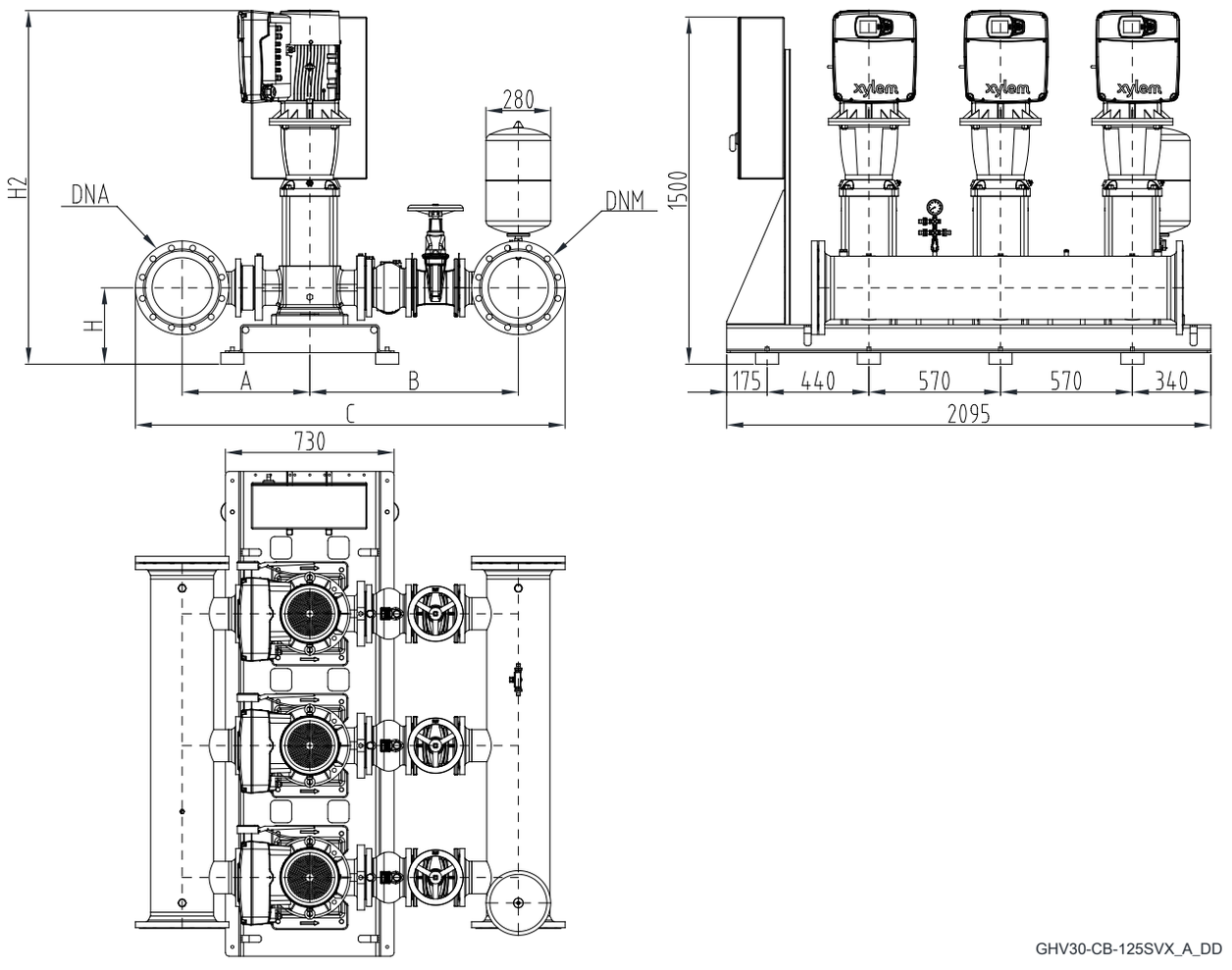


GHV 30	DNA	DNM	A	B	C	H	H2
33SVX01G030	DN125	DN125	396	646	1292	265	988
33SVX02G055	DN125	DN125	396	646	1292	265	1093
33SVX02G075	DN125	DN125	396	646	1292	265	1135
33SVX03G110	DN125	DN125	396	646	1292	265	1258
33SVX04G150	DN125	DN125	396	646	1292	265	1409
46SVX01G055	DN150	DN150	433	713	1430	300	1058
46SVX02G075	DN150	DN150	433	713	1430	300	1210
46SVX02G110	DN150	DN150	433	713	1430	300	1223
46SVX03G150	DN150	DN150	433	713	1430	300	1374
46SVX04G185	DN150	DN150	433	713	1430	300	1449
66SVX01G055	DN200	DN200	464	778	1582	300	1083
66SVX02G110	DN200	DN200	464	778	1582	300	1263
66SVX02G150	DN200	DN200	464	778	1582	300	1339
66SVX03G185	DN200	DN200	464	778	1582	300	1429
92SVX01G075	DN200	DN200	464	778	1582	300	1125
92SVX02G150	DN200	DN200	464	778	1582	300	1339
92SVX03G220	DN200	DN200	464	778	1582	300	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv30_46svx_b_td

SET OF 3 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV30.../4)

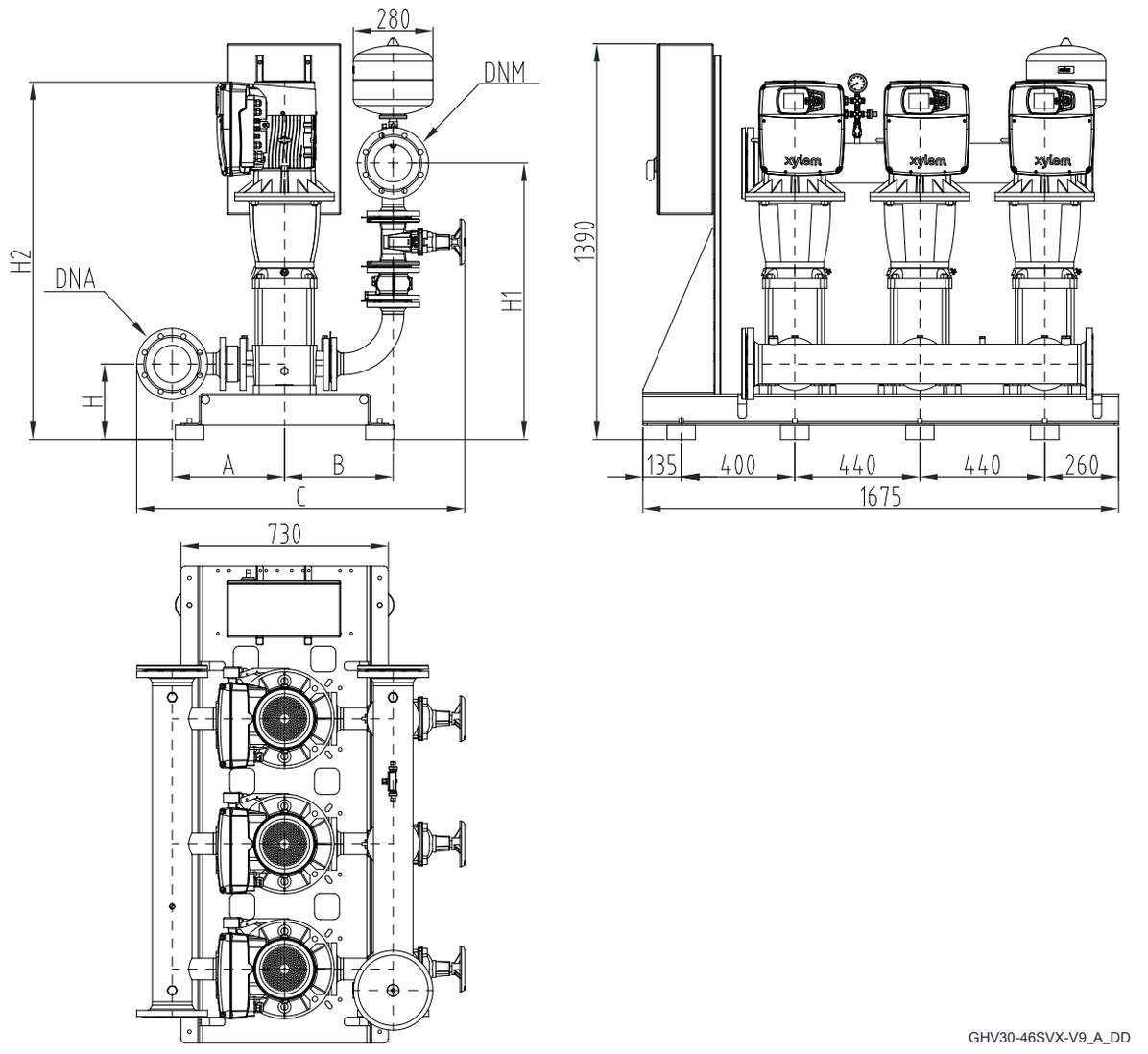


GHV 30	DNA	DNM	A	B	C	H	H2
125SVX01G075	DN250	DN250	553	903	1860	330	1254
125SVX02G150	DN250	DN250	553	903	1860	330	1528
125SVX02G220	DN250	DN250	553	903	1860	330	1528

Dimensions in mm. Tolerance ± 10 mm.

ghv30_125svx_a_td

SET OF 3 PUMPS SV..R SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV30.../4)

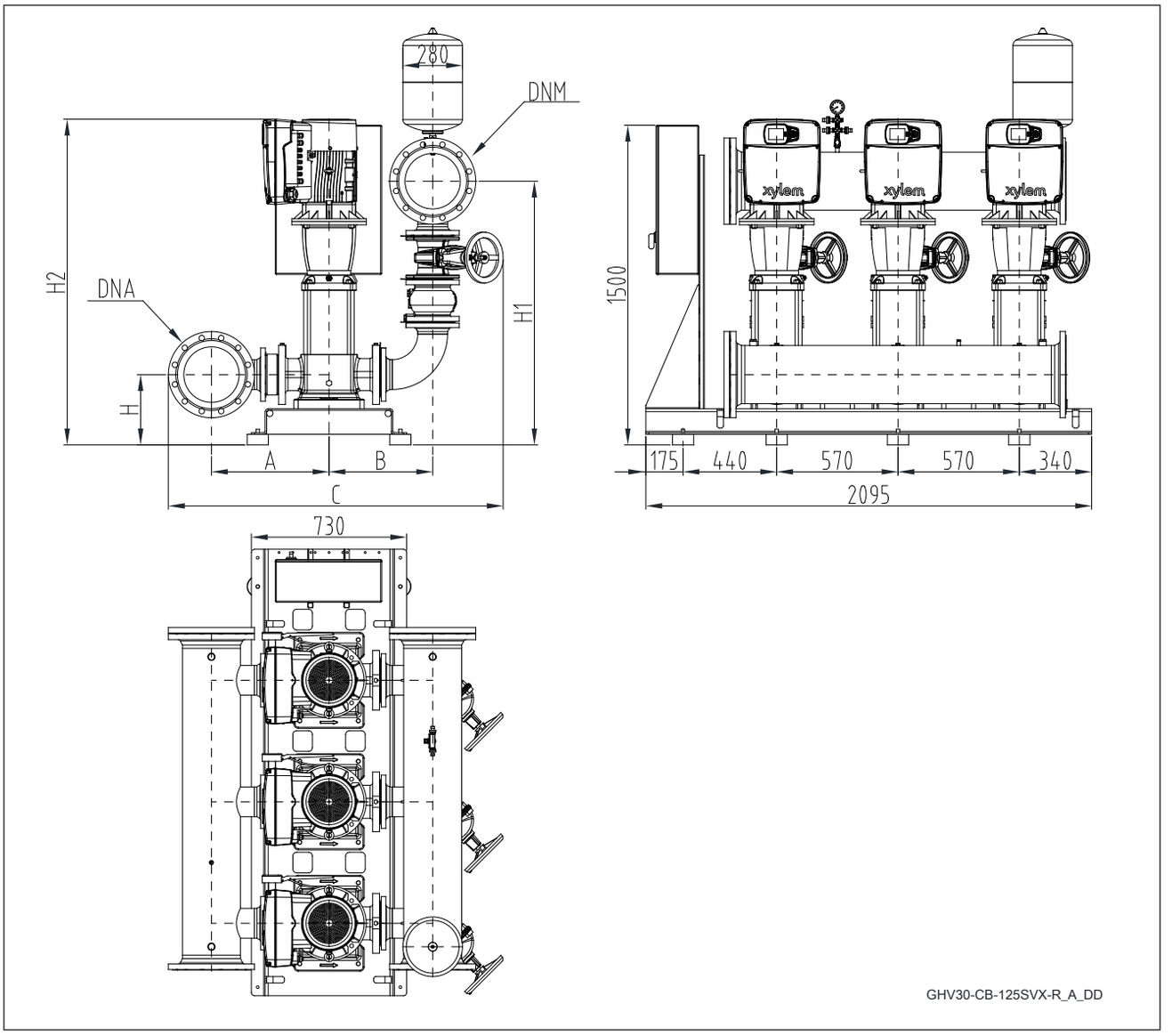


GHV 30	DNA	DNM	A	B	C	H	H1	H2
33SVX01G030	DN125	DN125	396	382	1155	265	971	988
33SVX02G055	DN125	DN125	396	382	1155	265	971	1093
33SVX02G075	DN125	DN125	396	382	1155	265	971	1135
33SVX03G110	DN125	DN125	396	382	1155	265	971	1258
33SVX04G150	DN125	DN125	396	382	1155	265	971	1409
46SVX01G055	DN150	DN150	433	440	1271	300	1083	1058
46SVX02G075	DN150	DN150	433	440	1271	300	1083	1210
46SVX02G110	DN150	DN150	433	440	1271	300	1083	1223
46SVX03G150	DN150	DN150	433	440	1271	300	1083	1374
46SVX04G185	DN150	DN150	433	440	1271	300	1083	1449
66SVX01G055	DN200	DN200	464	389	1311	300	1100	1083
66SVX02G110	DN200	DN200	464	389	1311	300	1100	1263
66SVX02G150	DN200	DN200	464	389	1311	300	1100	1339
66SVX03G185	DN200	DN200	464	389	1311	300	1100	1429
92SVX01G075	DN200	DN200	464	389	1311	300	1100	1125
92SVX02G150	DN200	DN200	464	389	1311	300	1100	1339
92SVX03G220	DN200	DN200	464	389	1311	300	1100	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv30_46svx-v9_b_td

SET OF 3 PUMPS SV..G SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV30.../4)



GHV 30	DNA	DNM	A	B	C	H	H1	H2
125SVX01G075	DN250	DN250	553	487	1573	330	1238	1254
125SVX02G150	DN250	DN250	553	487	1573	330	1238	1528
125SVX02G220	DN250	DN250	553	487	1573	330	1238	1528

Dimensions in mm. Tolerance ± 10 mm.

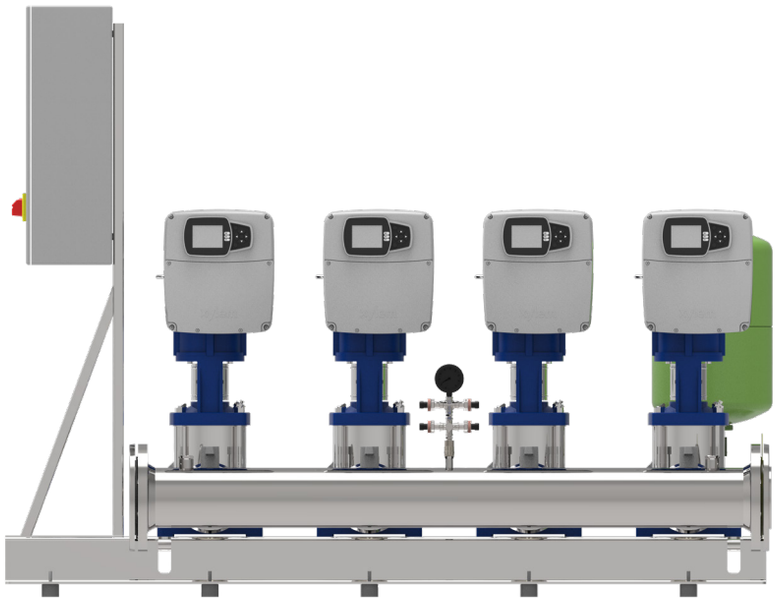
ghv30_125svx-v9_a_td

Booster sets

MARKET SECTORS
RESIDENTIAL-CIVIL, INDUSTRIAL

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

GHV40 SERIES

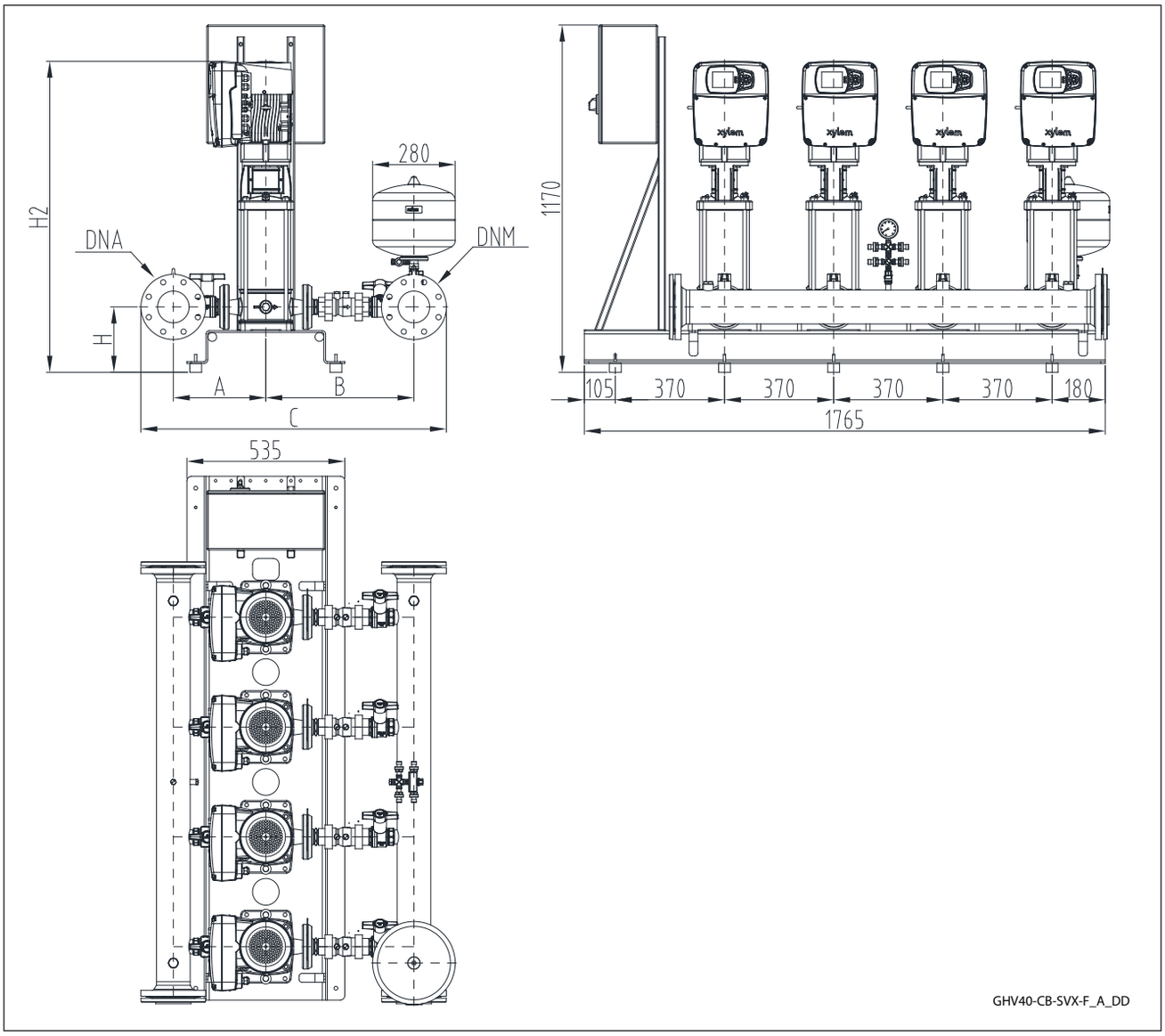


SPECIFICATIONS

- **Flow rate**
  up to 640 m^3/h.
- **Head**
  up to 160 m.
- **Frequency** 50/60 Hz
- **e-SVX** vertical axis electric pump
- **hydrovar X+** frequency converter coupled with synchronous motor
- **Material combinations**
  GHV40/ 3 to 22SV pump available CB and CX version
  GHV40/ 33 to 125SV pump available CB version
- **Protection class IP55** for:
  - electrical control panel
  - e-SVX vertical axis electric pump
- Maximum operating **pressure**:
  16 bar.
- Maximum liquid **temperature**:
  max 60°C, CB version
  max 65°C, CX version
- Maximum electric pump **power**:
  4 x 22 kW.
- **Progressive** motor start.

Materials in contact with water are either certified or approved according to KTW

SET OF 4 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

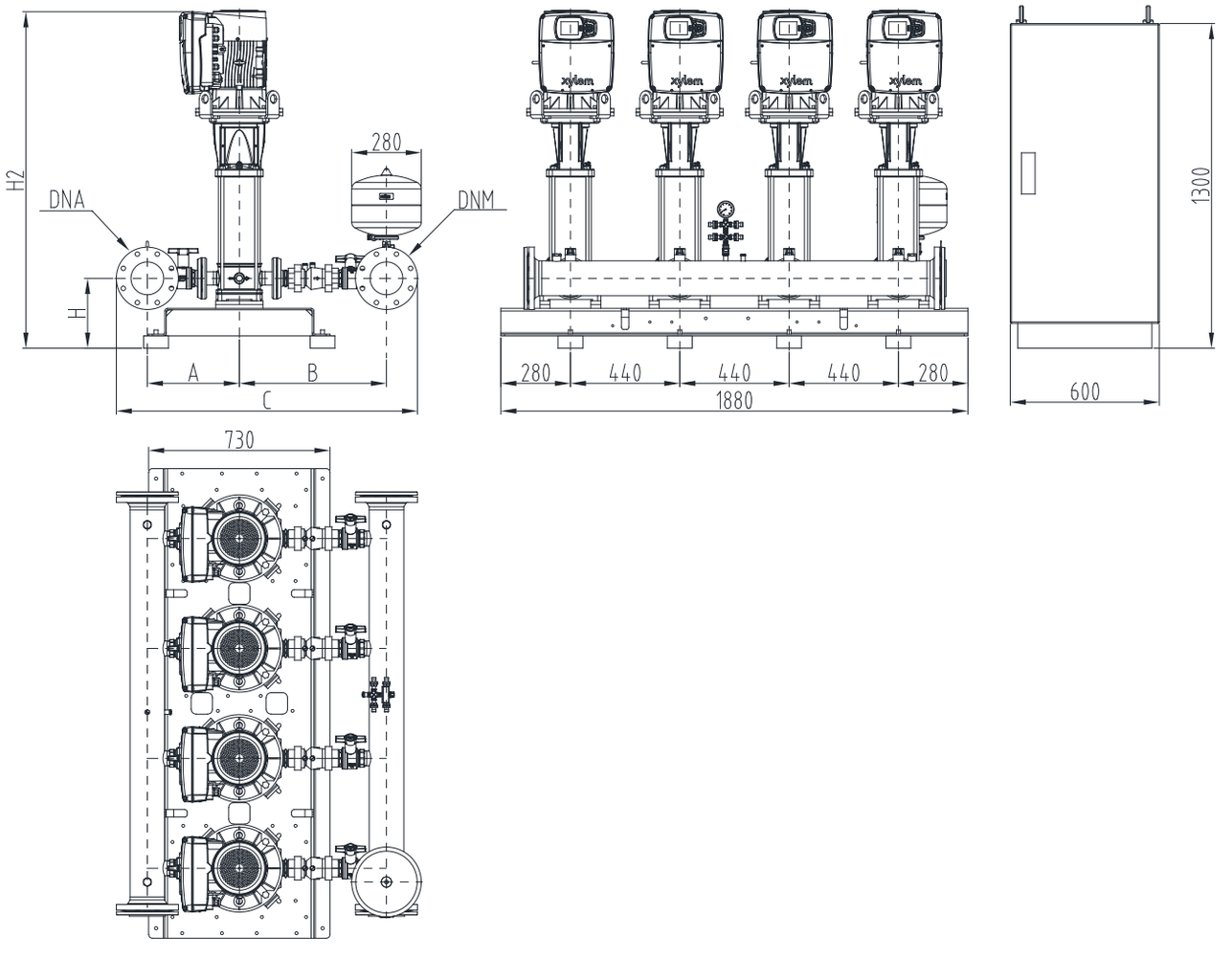


GHV 40	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
10SVX06F030	DN100	DN100	313	333	502	473	1035	1026	220	984
10SVX08F040	DN100	DN100	313	333	502	473	1035	1026	220	1048
15SVX02F030	DN125	DN125	370	393	592	542	1212	1184	230	898
15SVX03F040	DN125	DN125	370	393	592	542	1212	1184	230	946
15SVX05F055	DN125	DN125	370	393	592	542	1212	1184	230	1119
15SVX07F075	DN125	DN125	370	393	592	542	1212	1184	230	1257
22SVX02F030	DN125	DN125	370	393	592	542	1212	1184	230	898
22SVX03F040	DN125	DN125	370	393	592	542	1212	1184	230	946
22SVX04F055	DN125	DN125	370	393	592	542	1212	1184	230	1071
22SVX05F075	DN125	DN125	370	393	592	542	1212	1184	230	1161

Dimensions in mm. Tolerance ± 10 mm.

ghv40_svx-f_a_td

SET OF 4 PUMPS SV..F SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

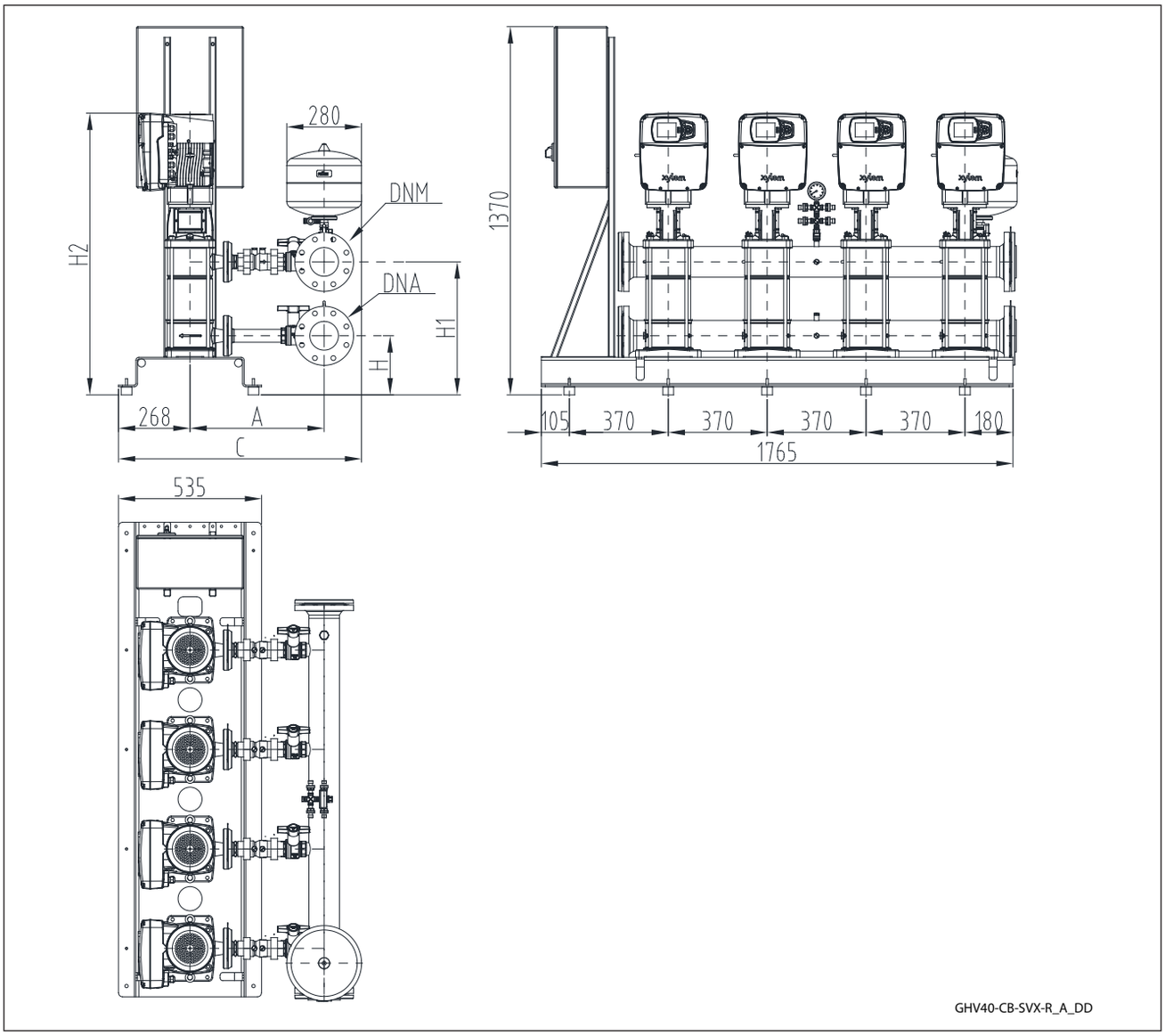


GHV 40	DNA	DNM	A		B		C		H	H2
			CB	CX	CB	CX	CB	CX		
22SVX07F110	DN125	DN125	370	393	592	542	1212	1184	280	1350

Dimensions in mm. Tolerance ± 10 mm.

ghv40_15svx-big-f_a_td

SET OF 4 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

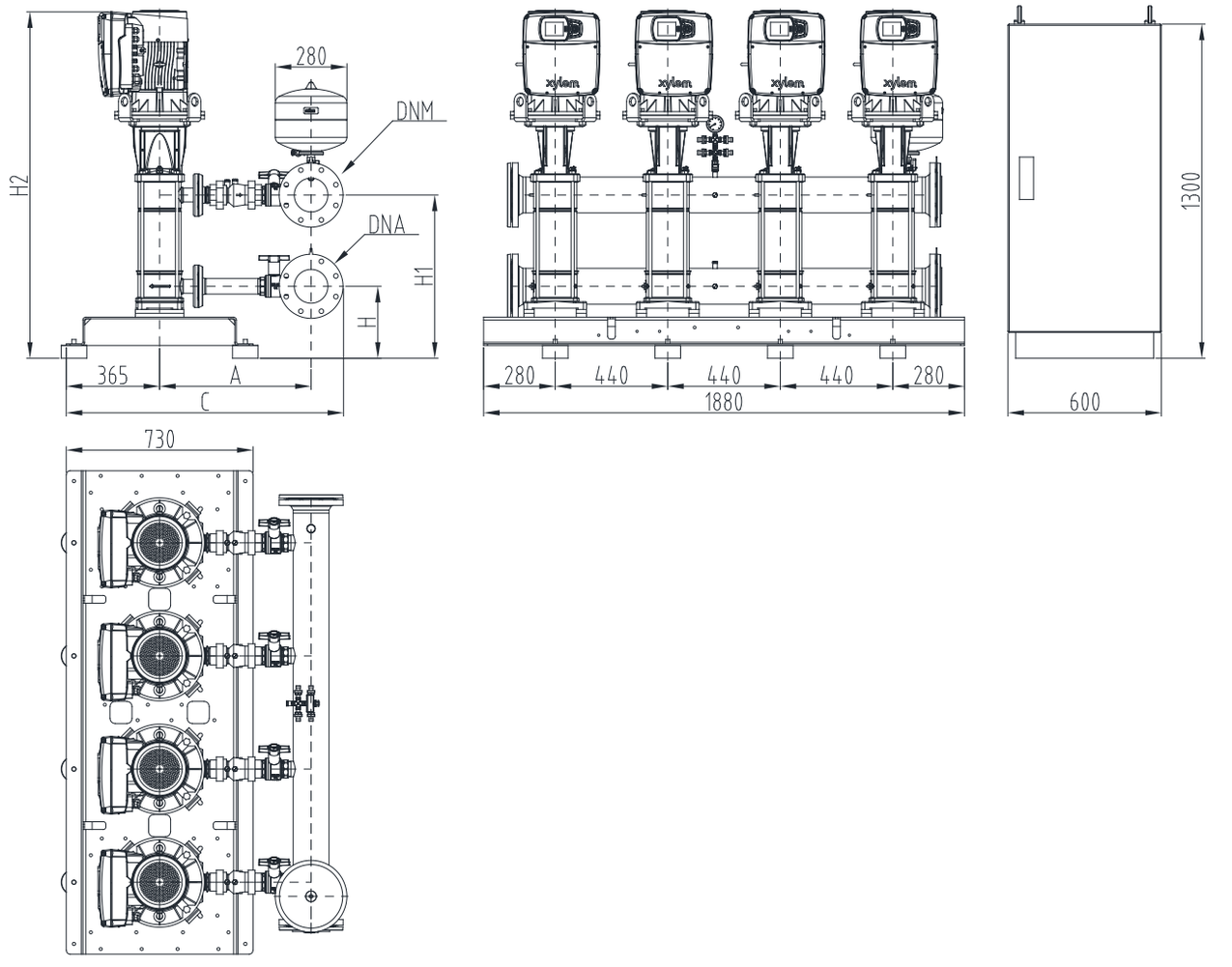


GHV 40	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
10SVX06Z2R030	DN100	DN100	502	473	869	840	220	495	1078
10SVX08R040	DN100	DN100	502	473	869	840	220	495	1078
15SVX02Z4R030	DN125	DN125	592	542	975	924	230	567	1119
15SVX03Z3R040	DN125	DN125	592	542	975	924	230	567	1119
15SVX05Z1R055	DN125	DN125	592	542	975	924	230	567	1119
15SVX07R075	DN125	DN125	592	542	975	924	230	585	1257
22SVX02Z4R030	DN125	DN125	592	542	975	924	230	567	1119
22SVX03Z3R040	DN125	DN125	592	542	975	924	230	567	1119
22SVX04Z2R05	DN125	DN125	592	542	975	924	230	567	1119
22SVX05Z1R075	DN125	DN125	592	542	975	924	230	567	1119

Dimensions in mm. Tolerance ± 10 mm.

ghv40_svx-r_a_td

SET OF 4 PUMPS SV..R SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

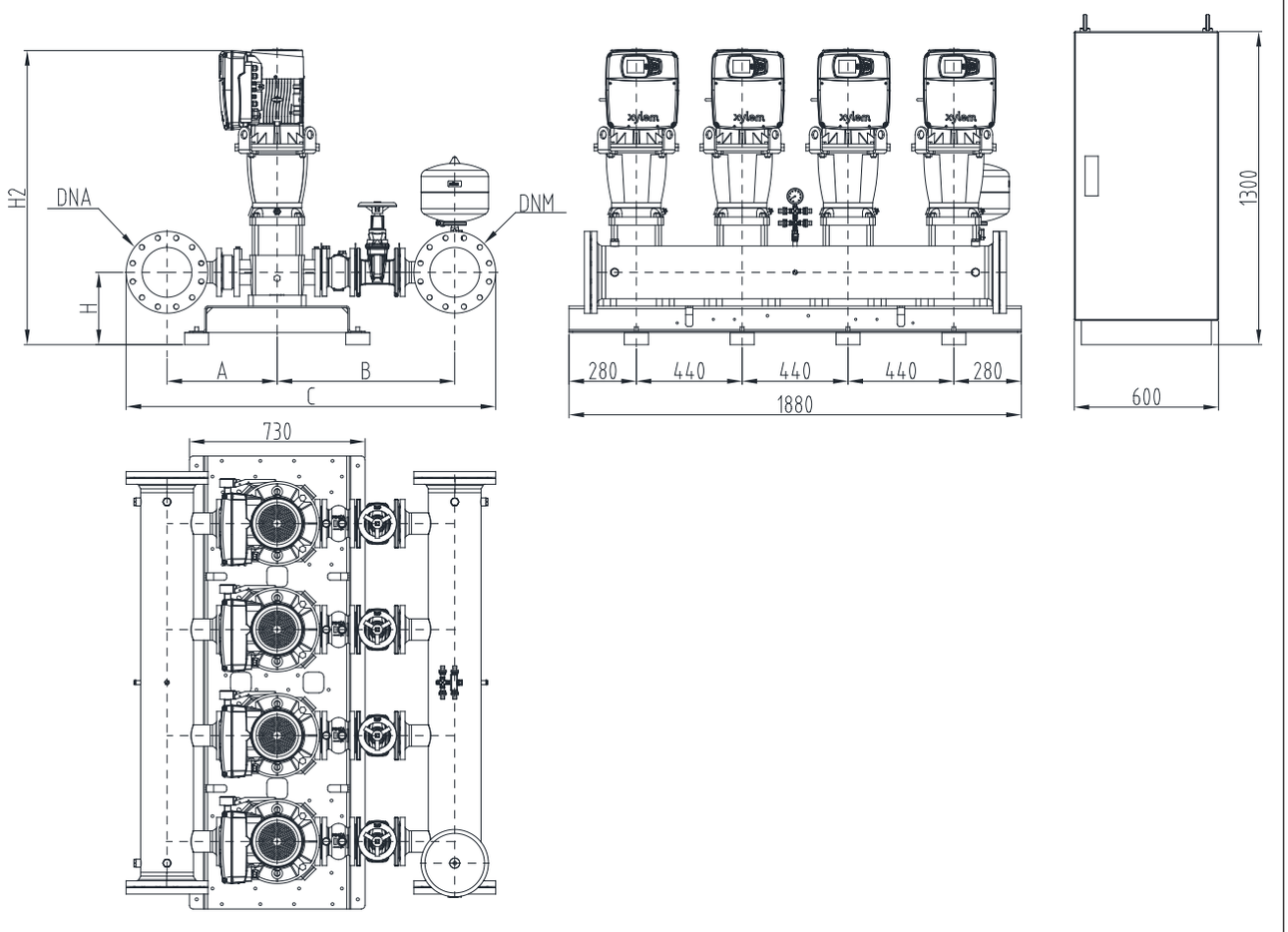


GHV 40	DNA	DNM	A		C		H	H1	H2
			CB	CX	CB	CX			
22SVX07R110	DN100	DN100	592	542	1102	1052	280	635	1350

Dimensions in mm. Tolerance ± 10 mm.

ghv40_15svx-big-r_a_td

SET OF 4 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

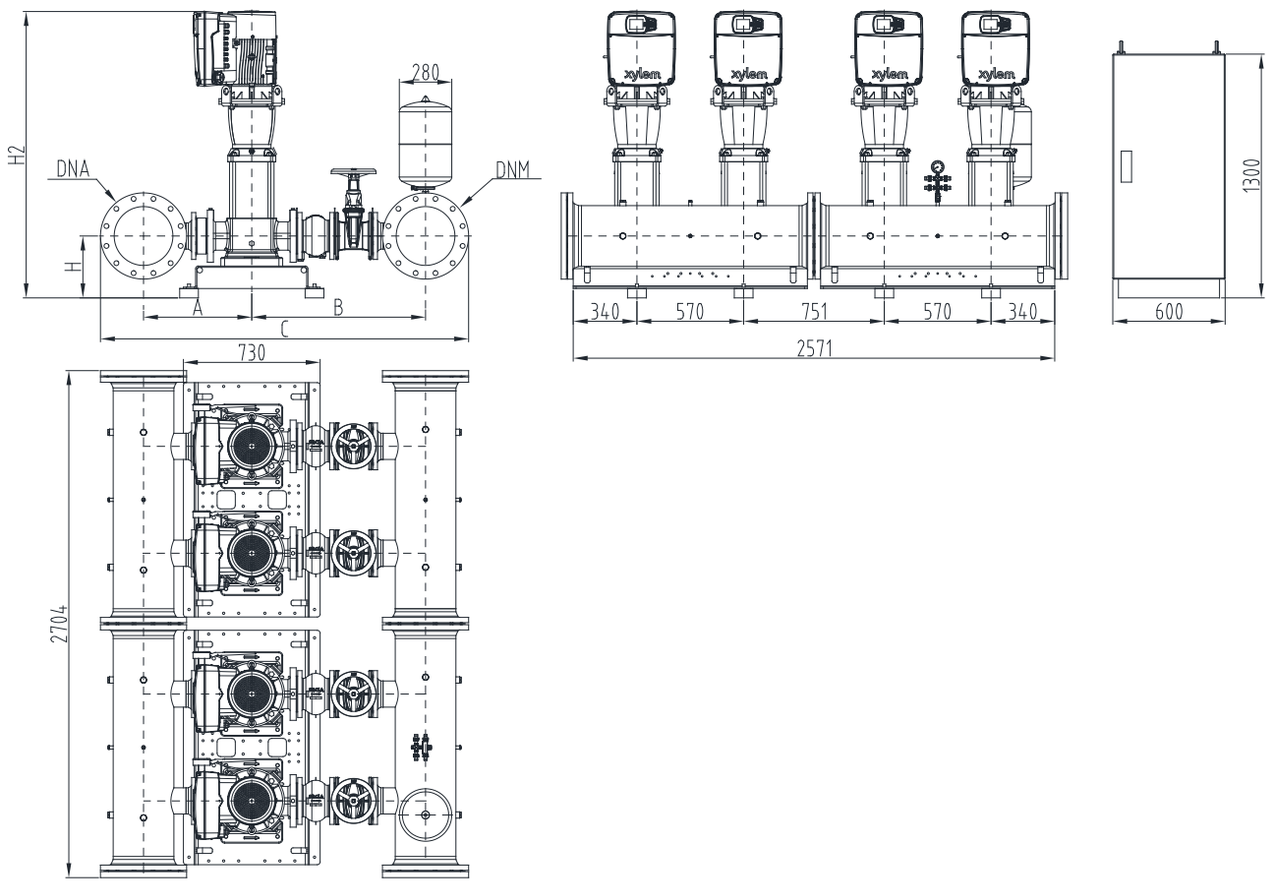


GHV 40	DNA	DNM	A	B	C	H	H2
33SVX01G030	DN150	DN150	410	660	1355	265	988
33SVX02G055	DN150	DN150	410	660	1355	265	1093
33SVX02G075	DN150	DN150	410	660	1355	265	1135
33SVX03G110	DN150	DN150	410	660	1355	265	1258
33SVX04G150	DN150	DN150	410	660	1355	265	1409
46SVX01G055	DN200	DN200	458	738	1536	300	1058
46SVX02G075	DN200	DN200	458	738	1536	300	1210
46SVX02G110	DN200	DN200	458	738	1536	300	1223
46SVX03G150	DN200	DN200	458	738	1536	300	1374
46SVX04G185	DN200	DN200	458	738	1536	300	1449
66SVX01G055	DN200	DN200	464	778	1582	300	1083
66SVX02G110	DN200	DN200	464	778	1582	300	1263
66SVX02G150	DN200	DN200	464	778	1582	300	1339
66SVX03G185	DN200	DN200	464	778	1582	300	1429
92SVX01G075	DN250	DN250	491	805	1701	300	1125
92SVX02G150	DN250	DN250	491	805	1701	300	1339
92SVX03G220	DN250	DN250	491	805	1701	300	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv40_46svx_a_td

SET OF 4 PUMPS SV..G SERIES
THREE-PHASE POWER SUPPLY (GHV40.../4)

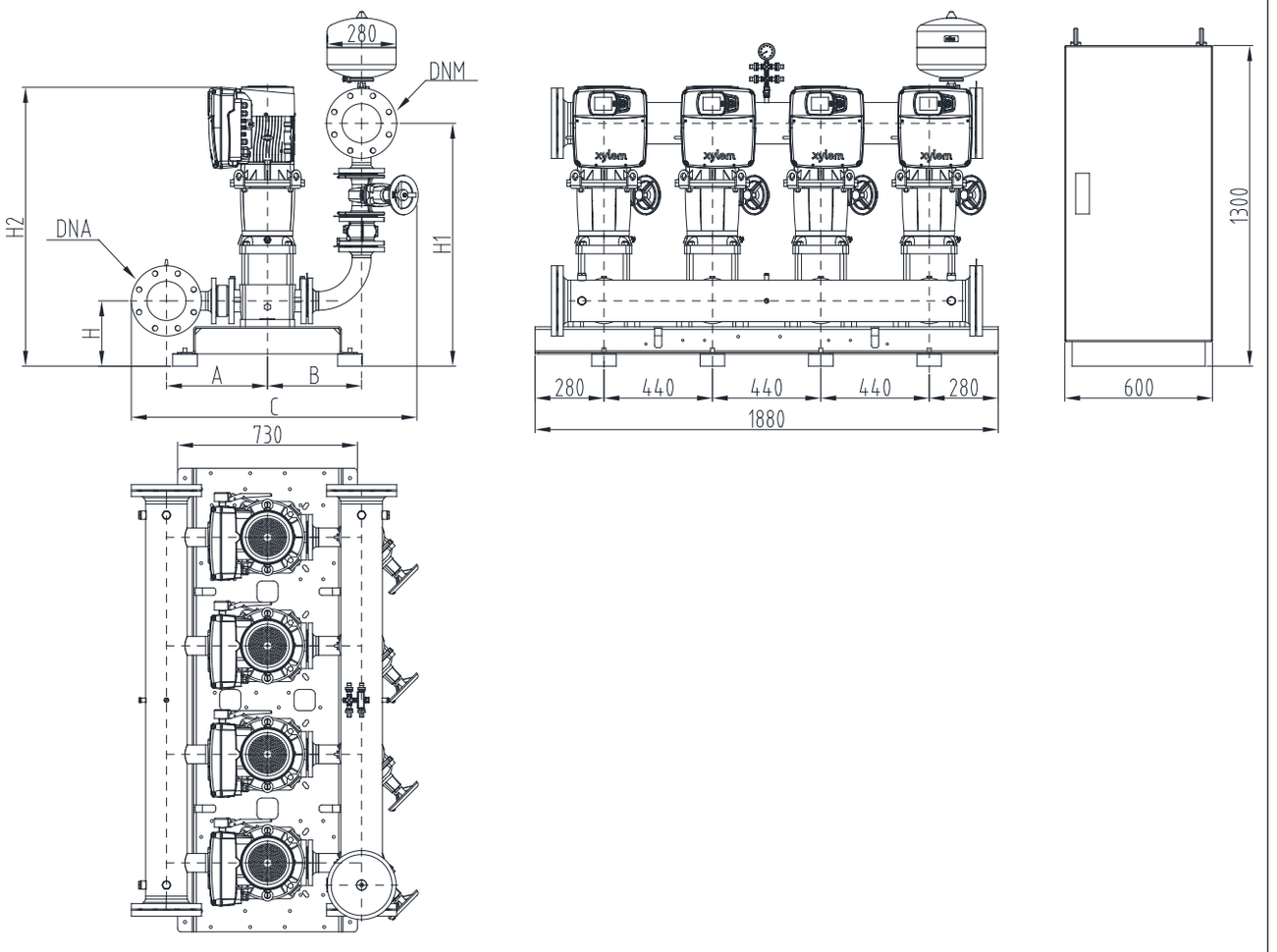


GHV 40	DNA	DNM	A	B	C	H	H2
125SVX01G075	DN300	DN300	578	928	1966	330	1254
125SVX02G150	DN300	DN300	578	928	1966	330	1528
125SVX02G220	DN300	DN300	578	928	1966	330	1528

Dimensions in mm. Tolerance ± 10 mm.

ghv40_125svx_a_td

SET OF 4 PUMPS SV..R SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV40.../4)

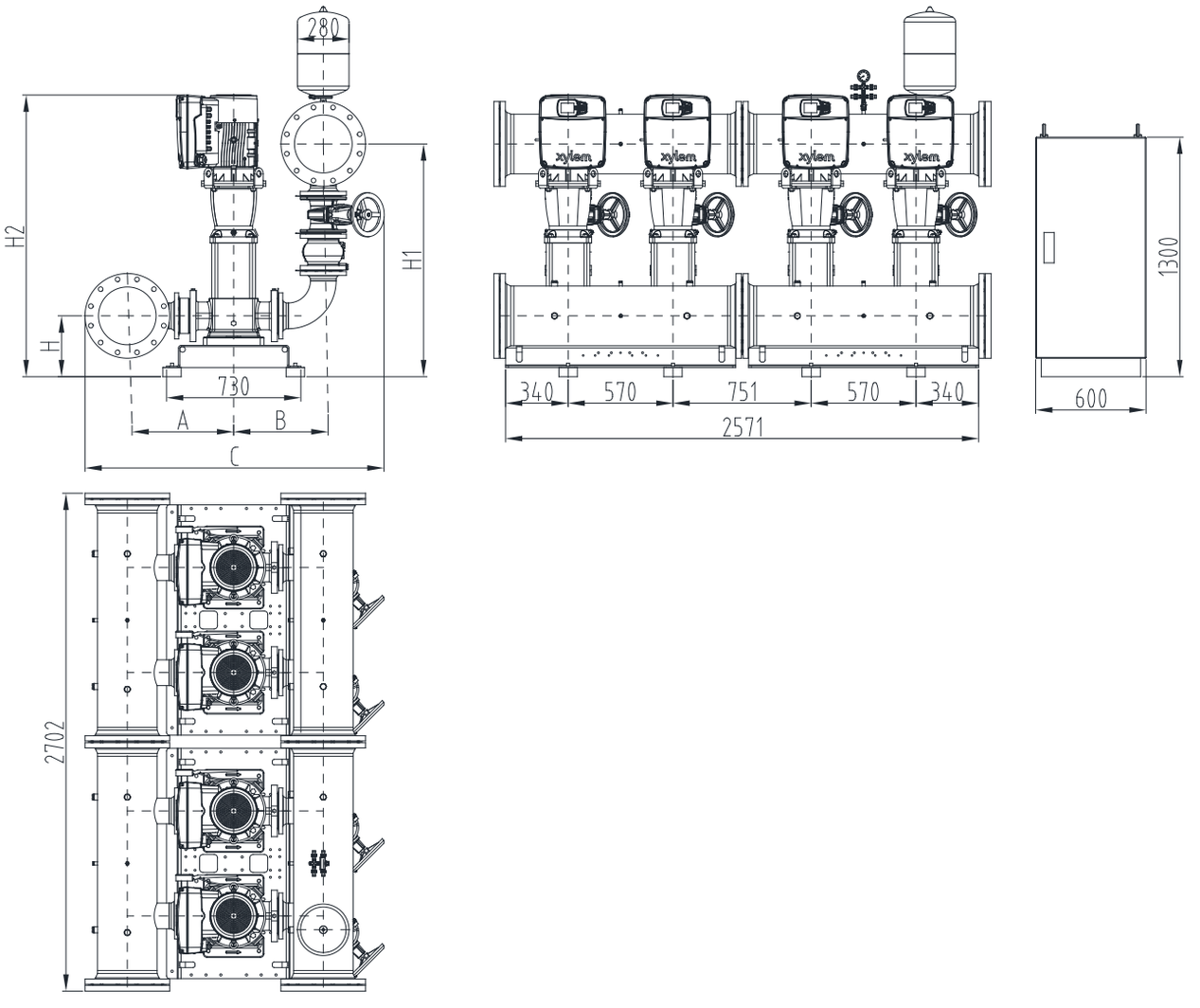


GHV 40	DNA	DNM	A	B	C	H	H1	H2
33SVX01G030	DN150	DN150	410	382	1164	265	985	988
33SVX02G055	DN150	DN150	410	382	1164	265	985	1093
33SVX02G075	DN150	DN150	410	382	1164	265	985	1135
33SVX03G110	DN150	DN150	410	382	1164	265	985	1258
33SVX04G150	DN150	DN150	410	382	1164	265	985	1409
46SVX01G055	DN200	DN200	458	440	1324	300	1111	1058
46SVX02G075	DN200	DN200	458	440	1324	300	1111	1210
46SVX02G110	DN200	DN200	458	440	1324	300	1111	1223
46SVX03G150	DN200	DN200	458	440	1324	300	1111	1374
46SVX04G185	DN200	DN200	458	440	1324	300	1111	1449
66SVX01G055	DN200	DN200	464	389	1312	300	1100	1083
66SVX02G110	DN200	DN200	464	389	1312	300	1100	1263
66SVX02G150	DN200	DN200	464	389	1312	300	1100	1339
66SVX03G185	DN200	DN200	464	389	1312	300	1100	1429
92SVX01G075	DN250	DN250	491	389	1371	300	1127	1125
92SVX02G150	DN250	DN250	491	389	1371	300	1127	1339
92SVX03G220	DN250	DN250	491	389	1371	300	1127	1429

Dimensions in mm. Tolerance ± 10 mm.

ghv40_46svx-v9_a_td

SET OF 4 PUMPS SV..G SERIES - V9 OPTION
THREE-PHASE POWER SUPPLY (GHV40.../4)



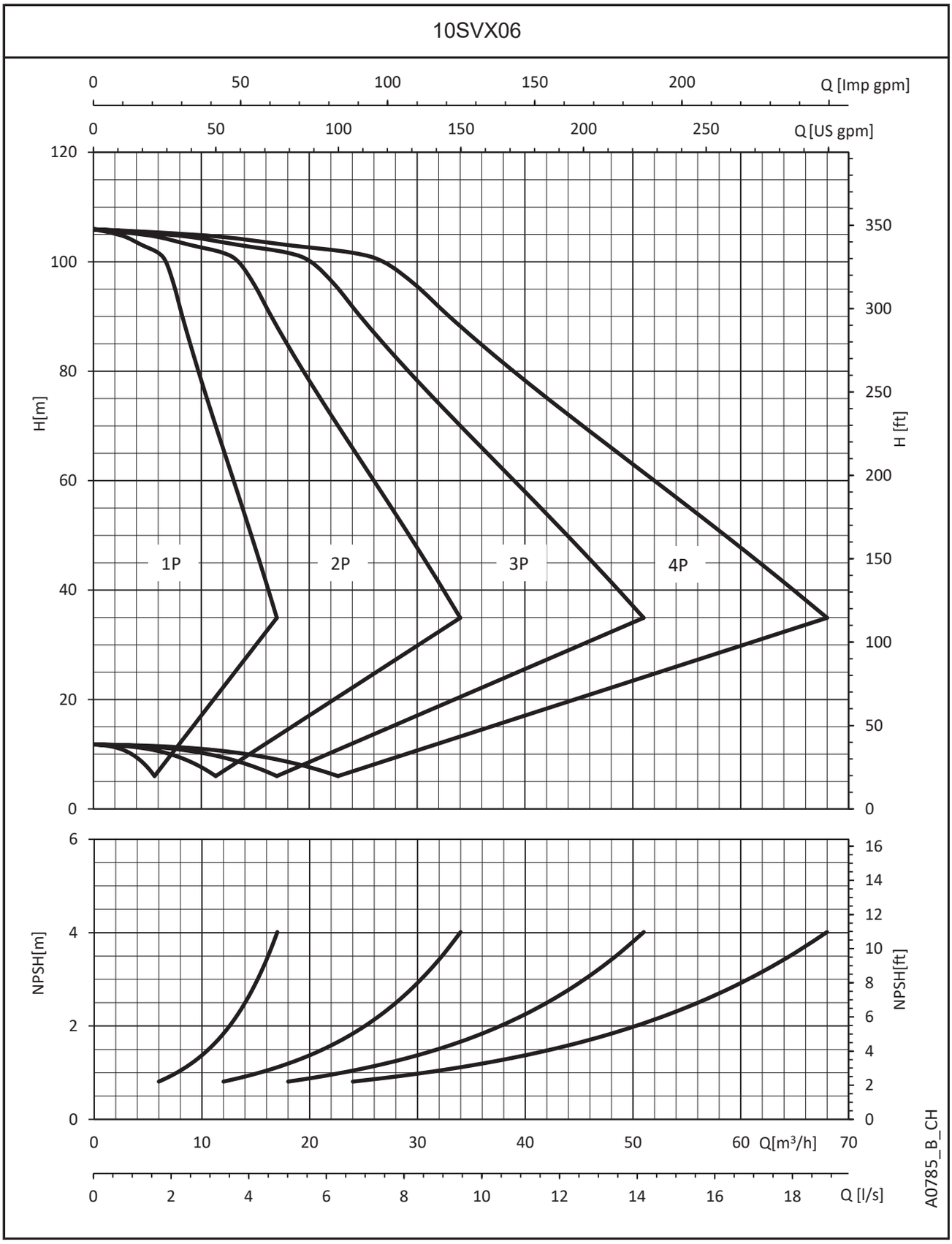
GHV 40	DNA	DNM	A	B	C	H	H1	H2
125SVX01G075	DN300	DN300	578	487	1628	330	1263	1254
125SVX02G150	DN300	DN300	578	487	1628	330	1263	1528
125SVX02G220	DN300	DN300	578	487	1628	330	1263	1528

Dimensions in mm. Tolerance ± 10 mm.

ghv40_125svx-v9_a_td

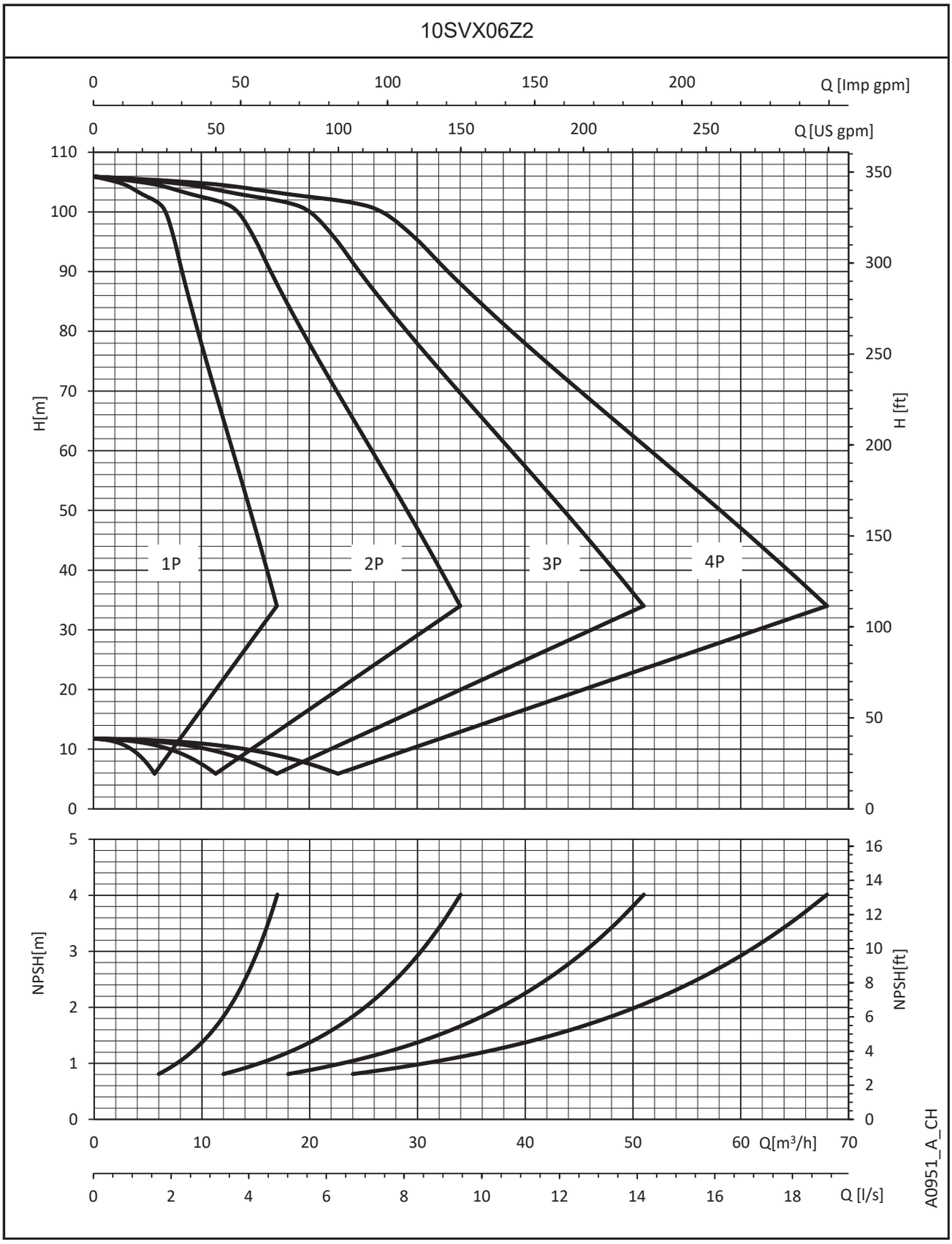
PERFORMANCE CURVES

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



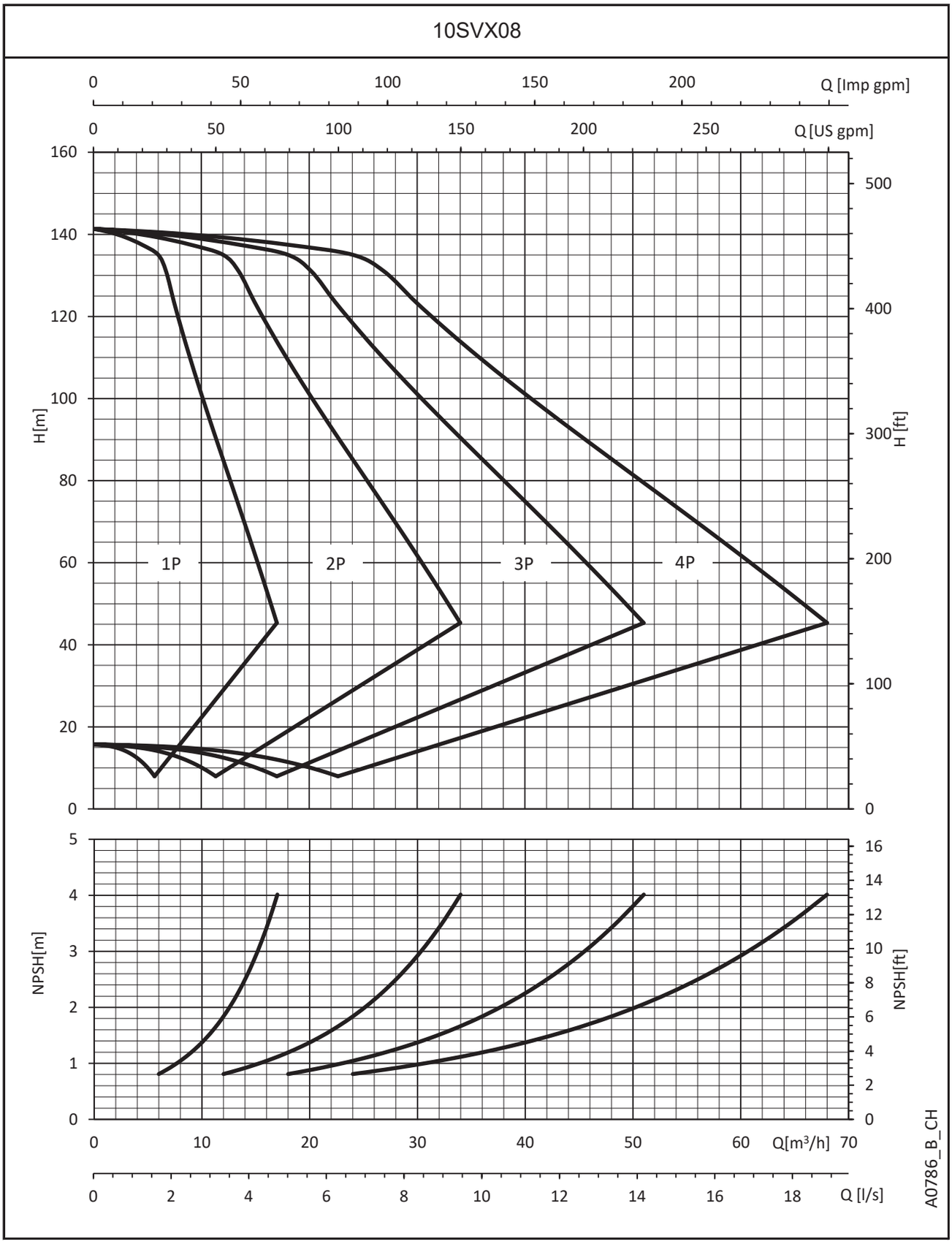
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



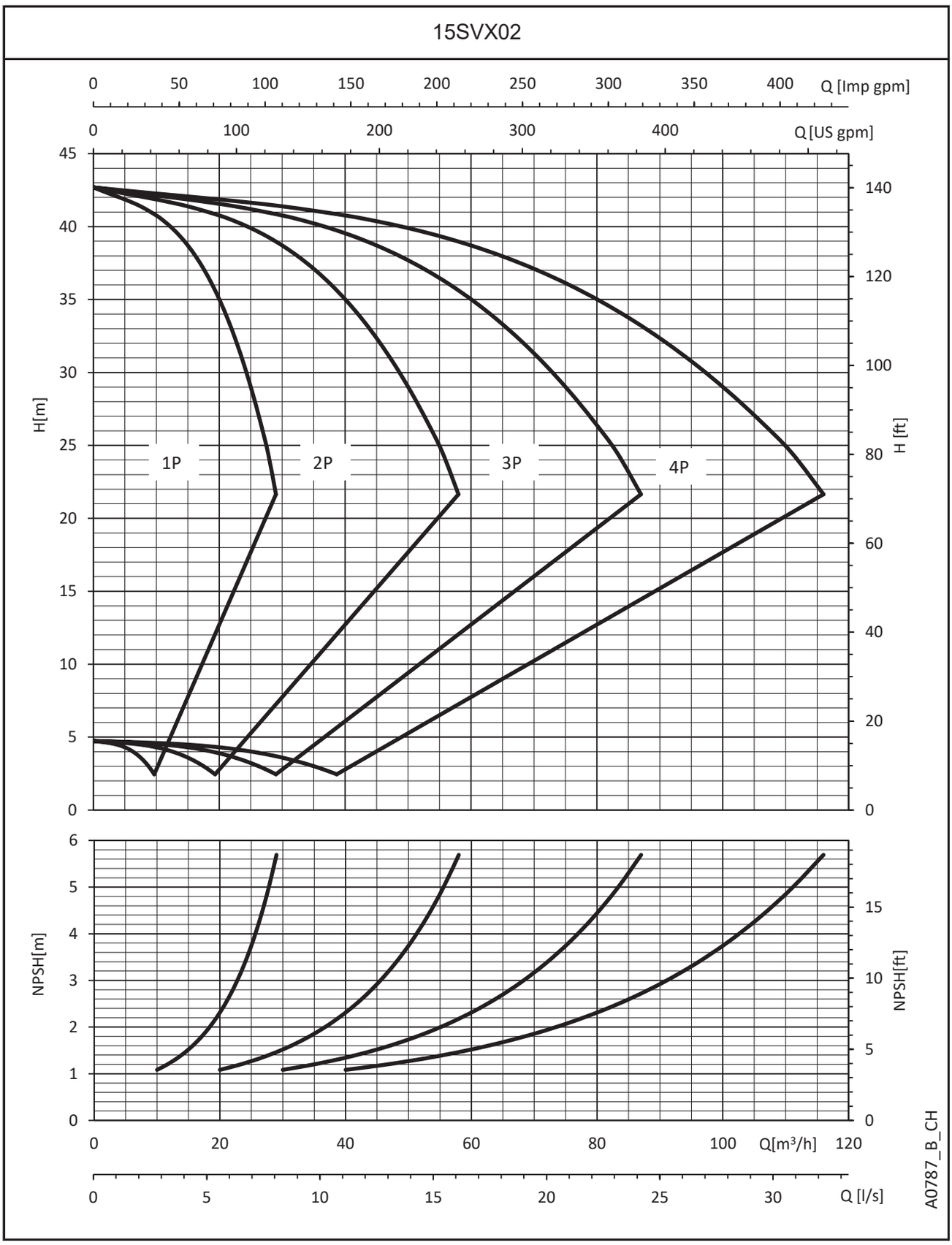
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



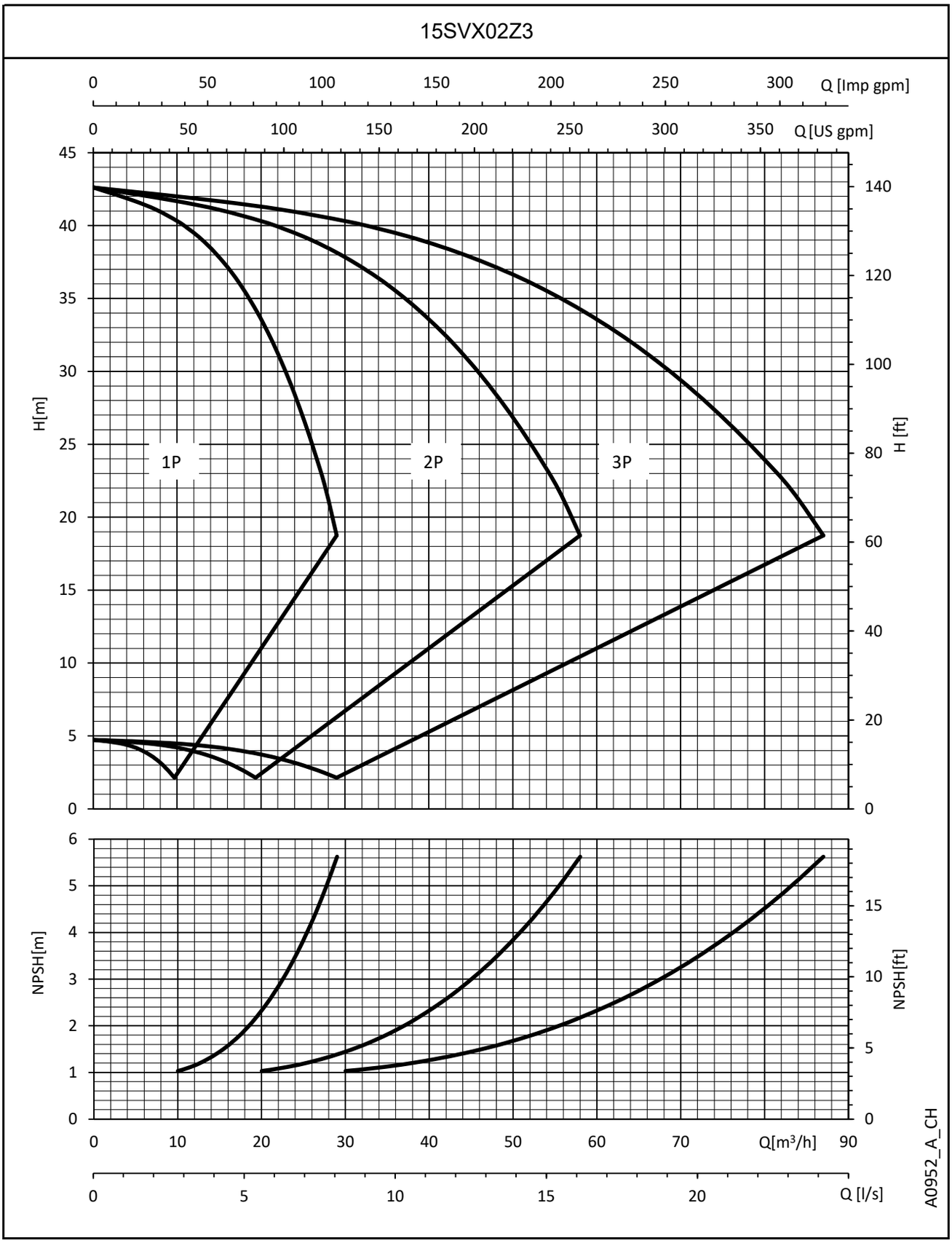
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



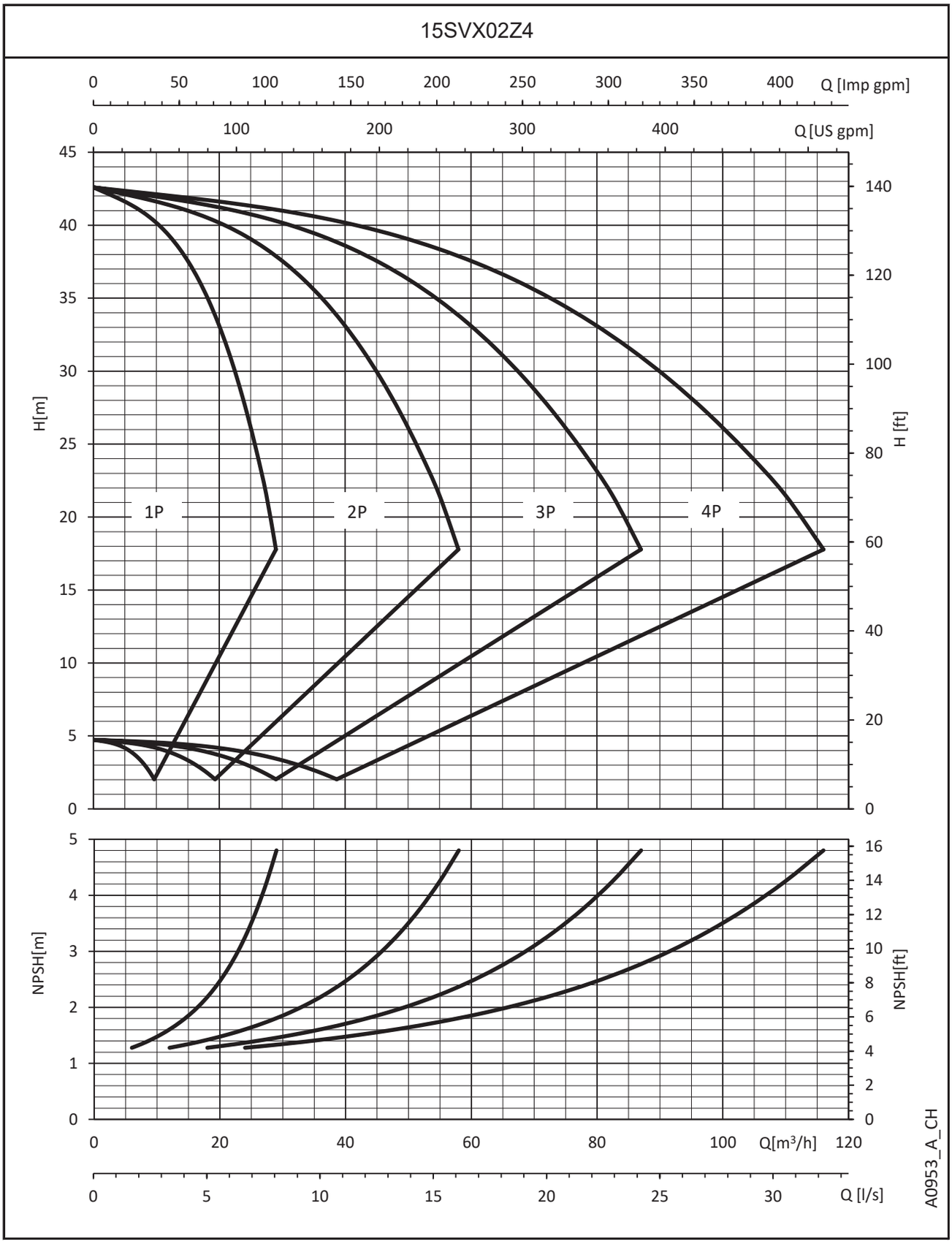
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



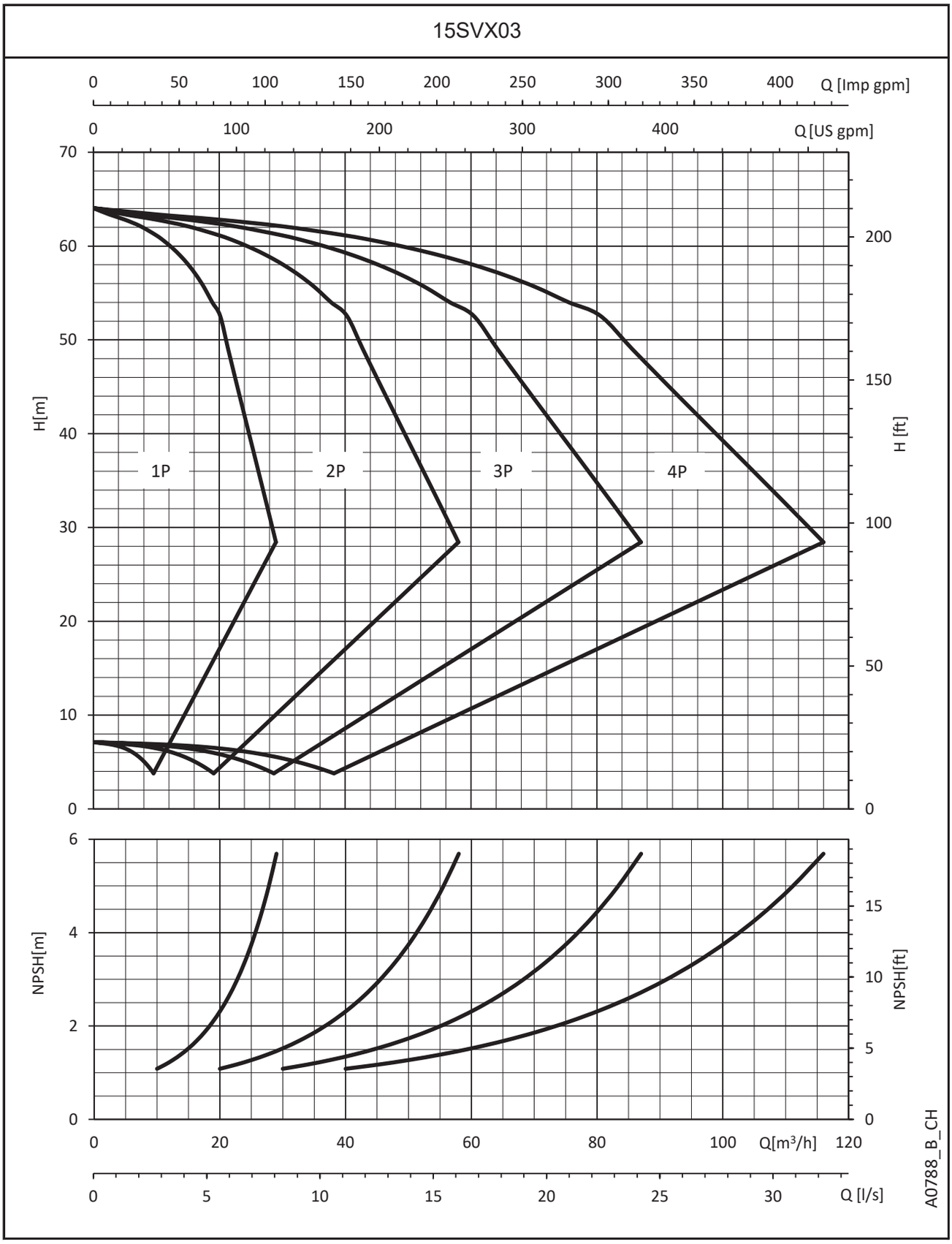
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



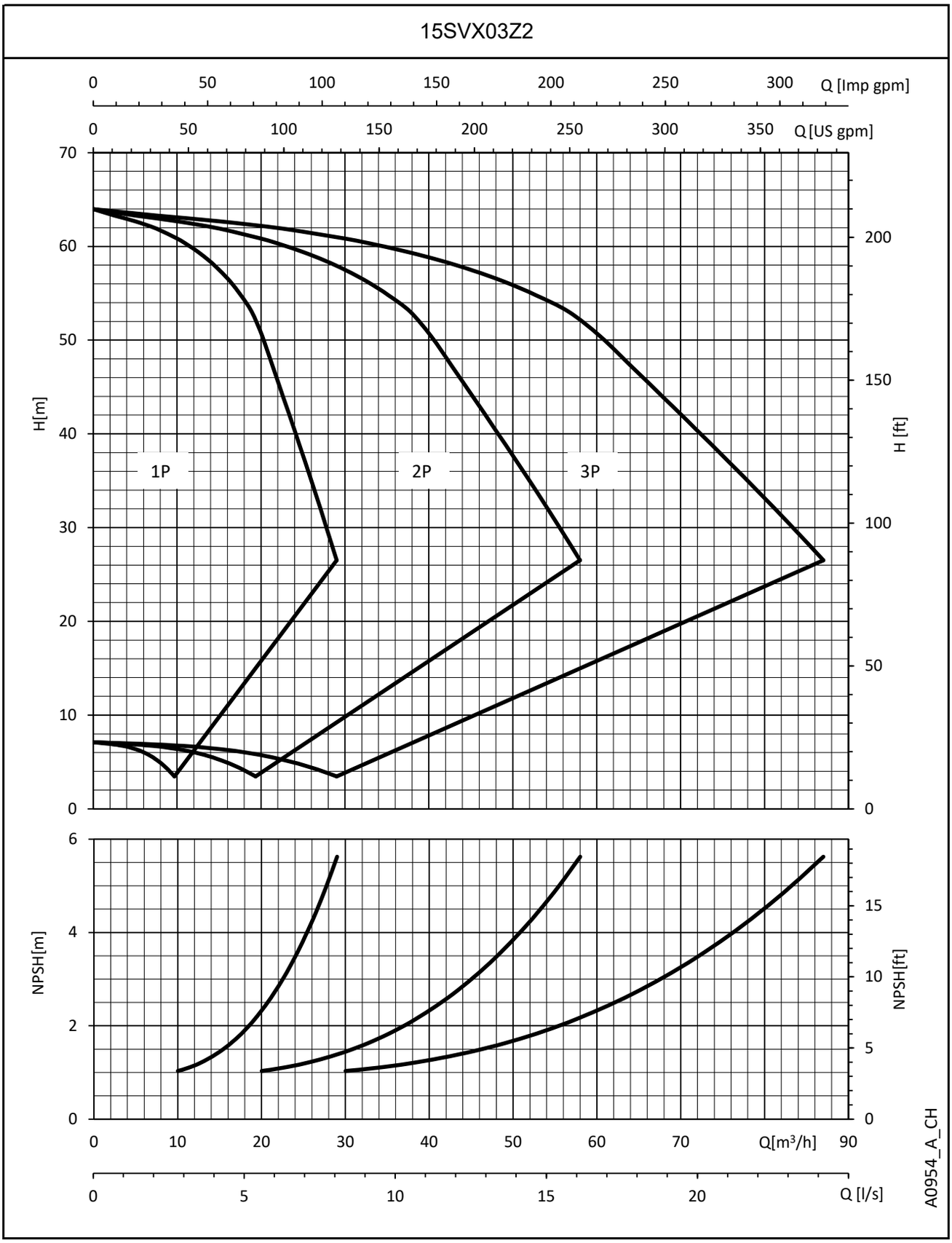
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



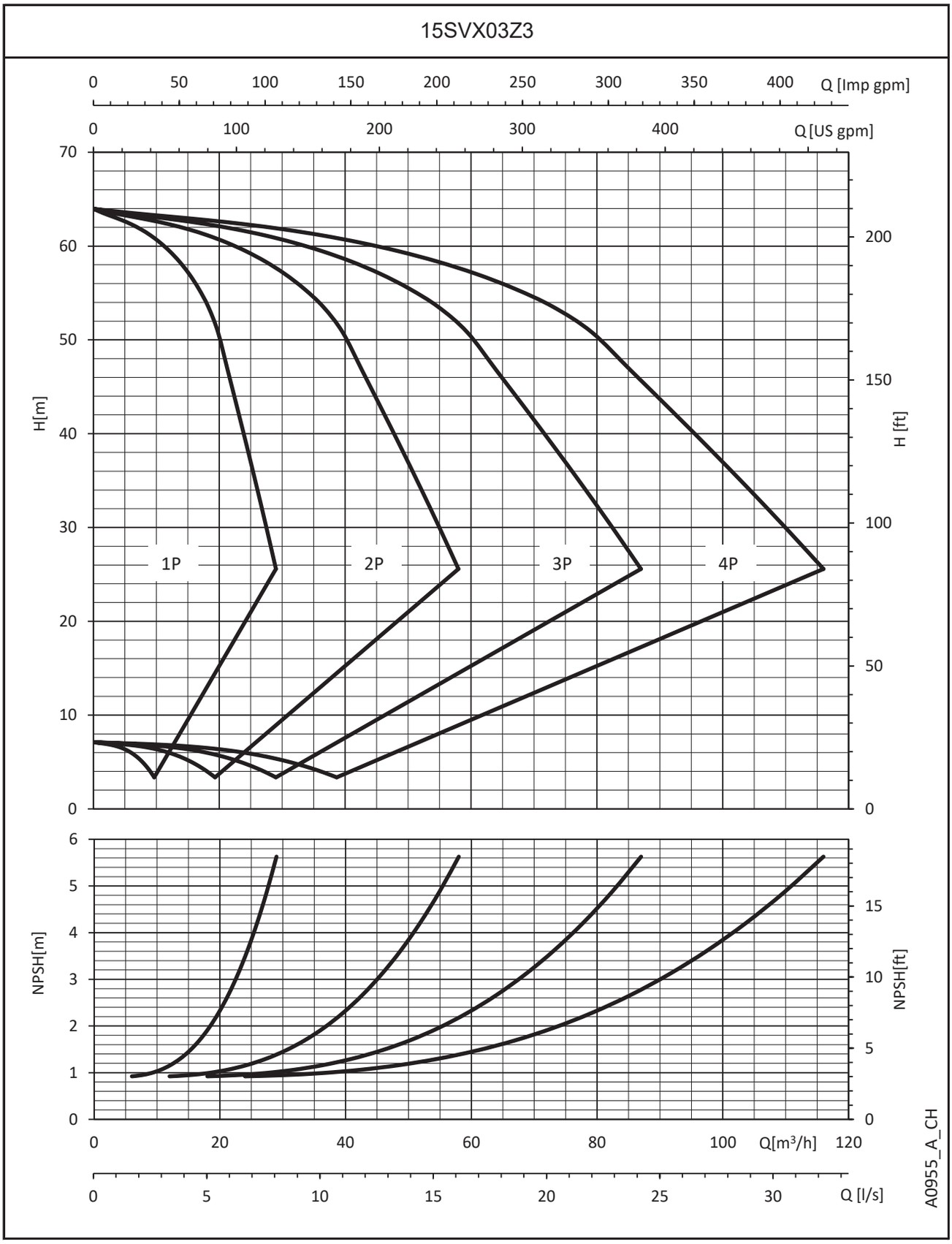
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



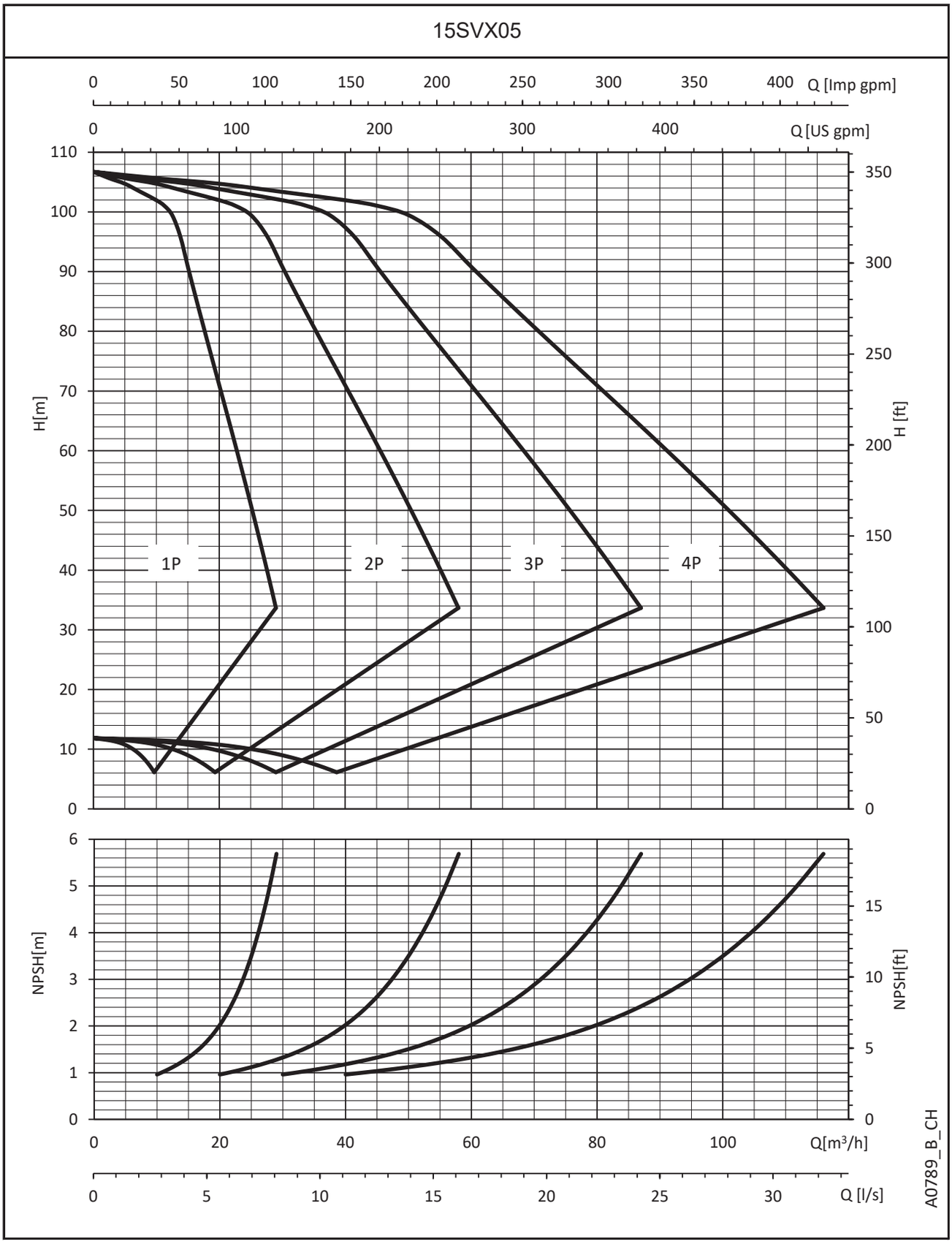
The performance curves do not take into account flow resistance in the valves and piping. The curves show the performance with one, two, three and four pumps running.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



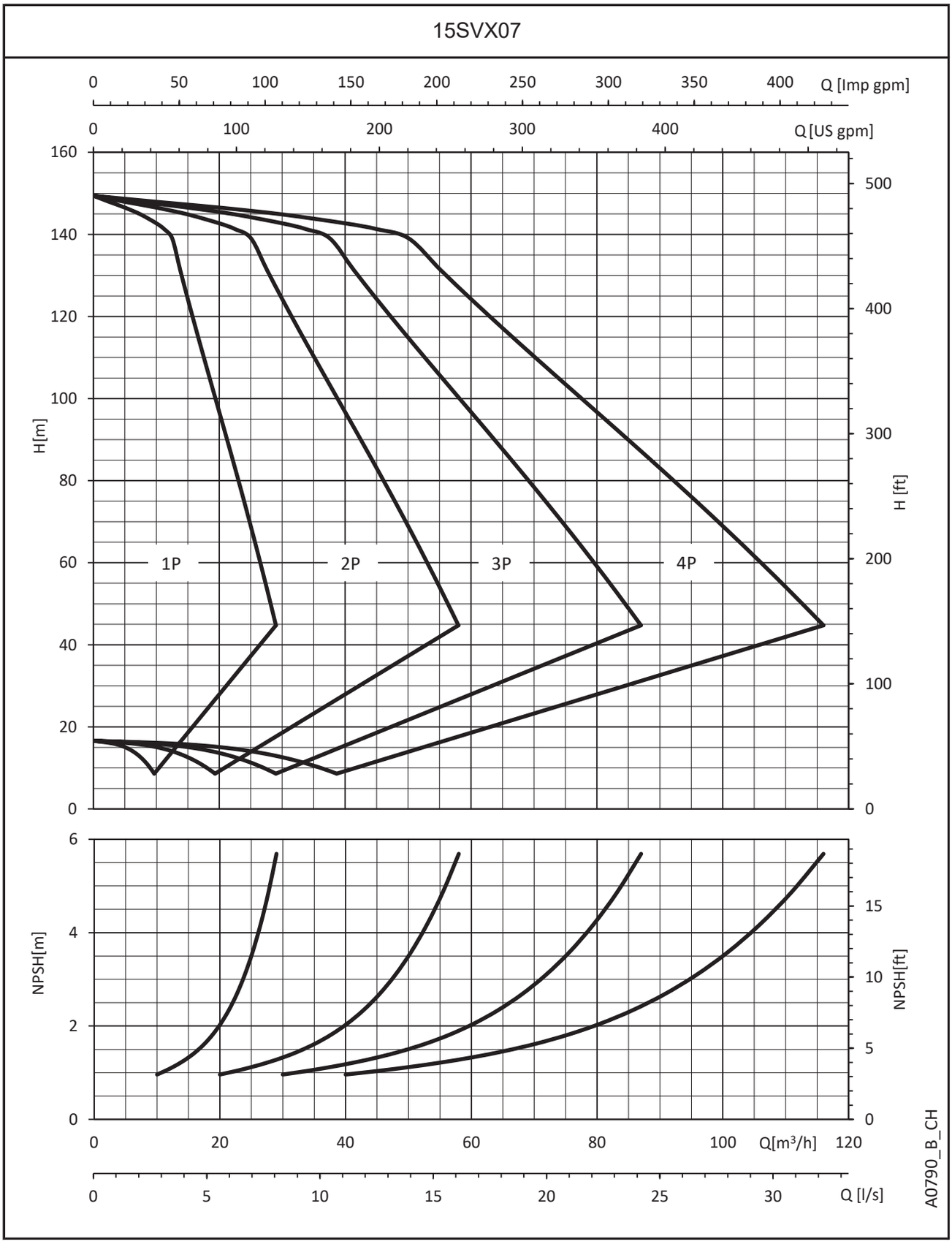
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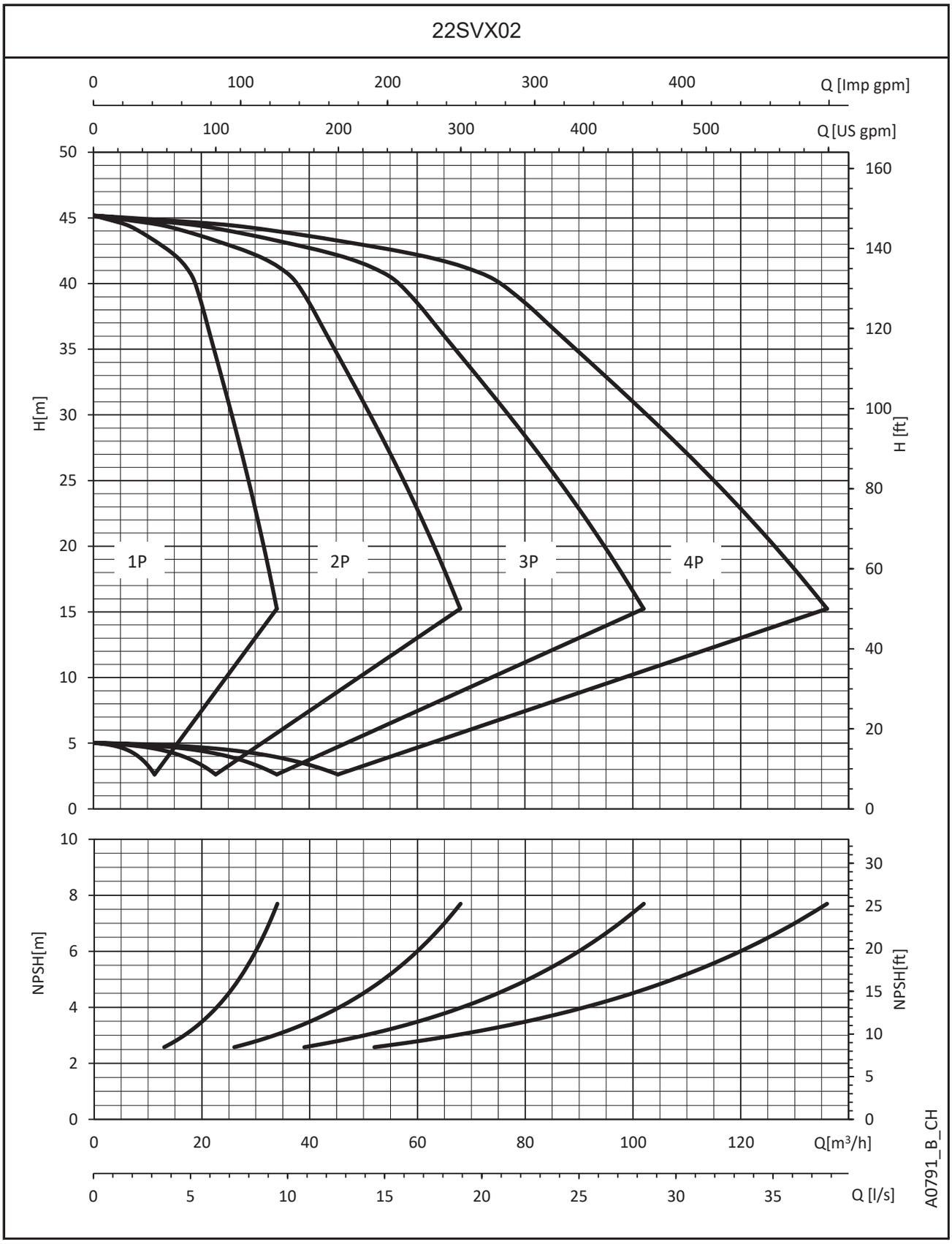
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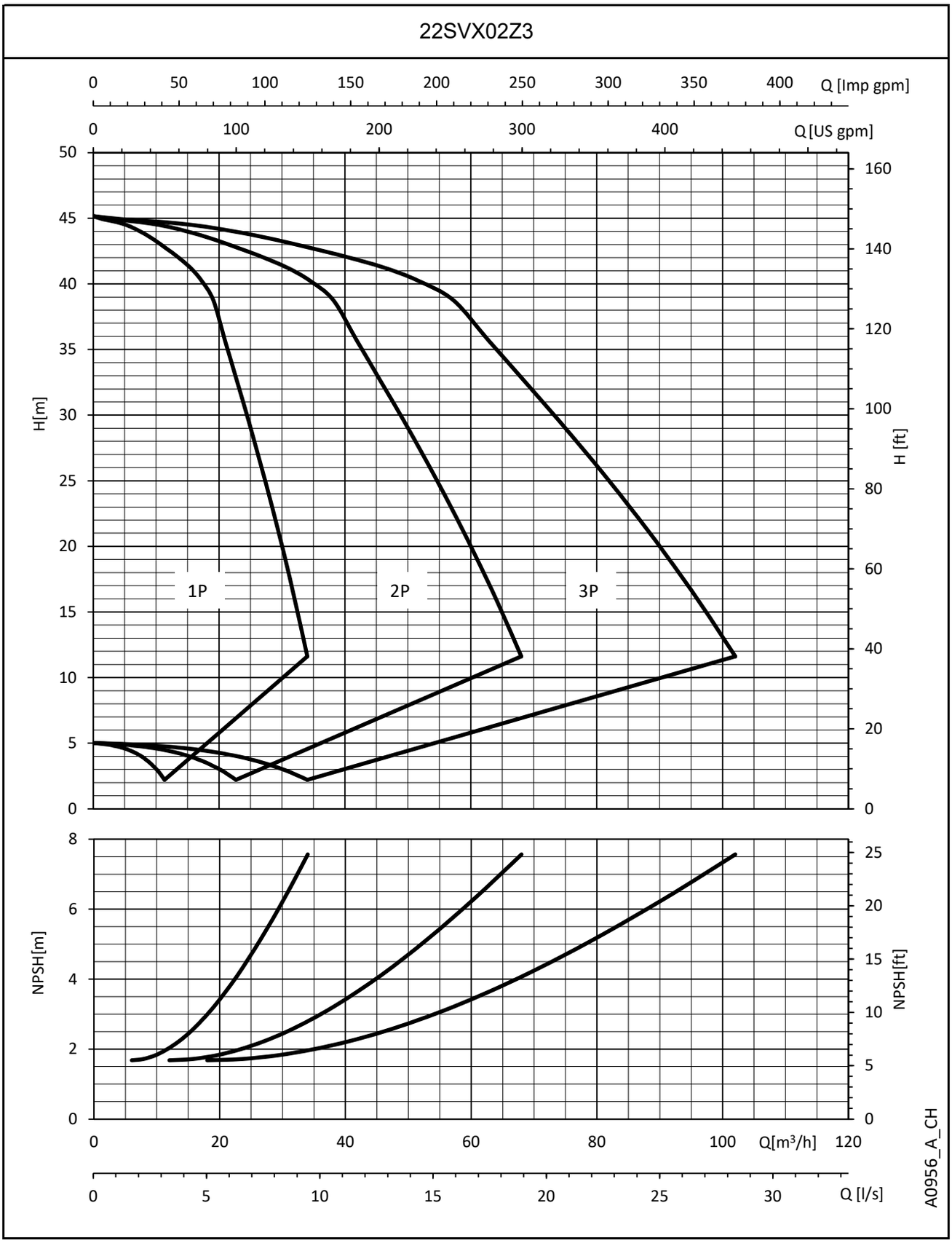
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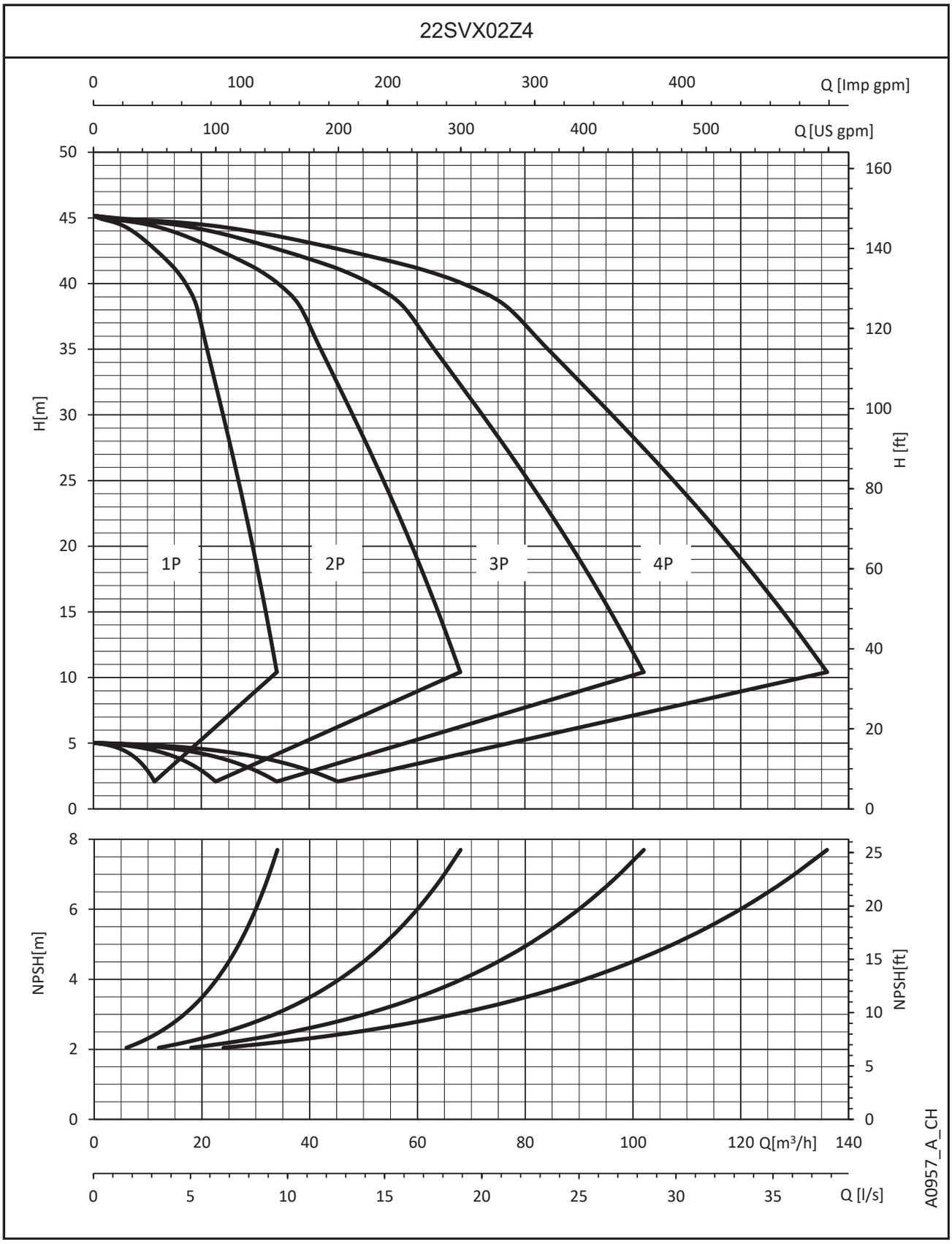
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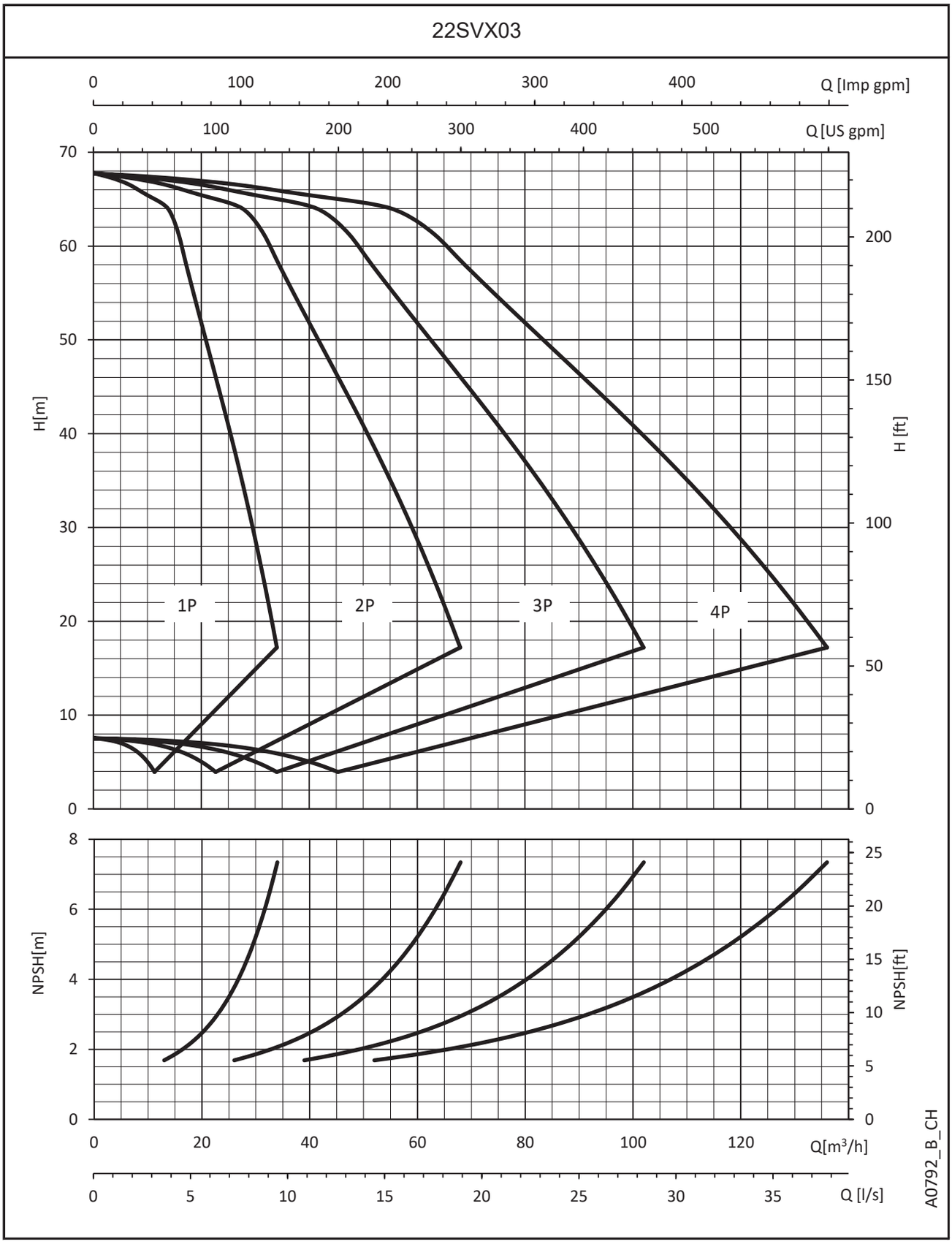
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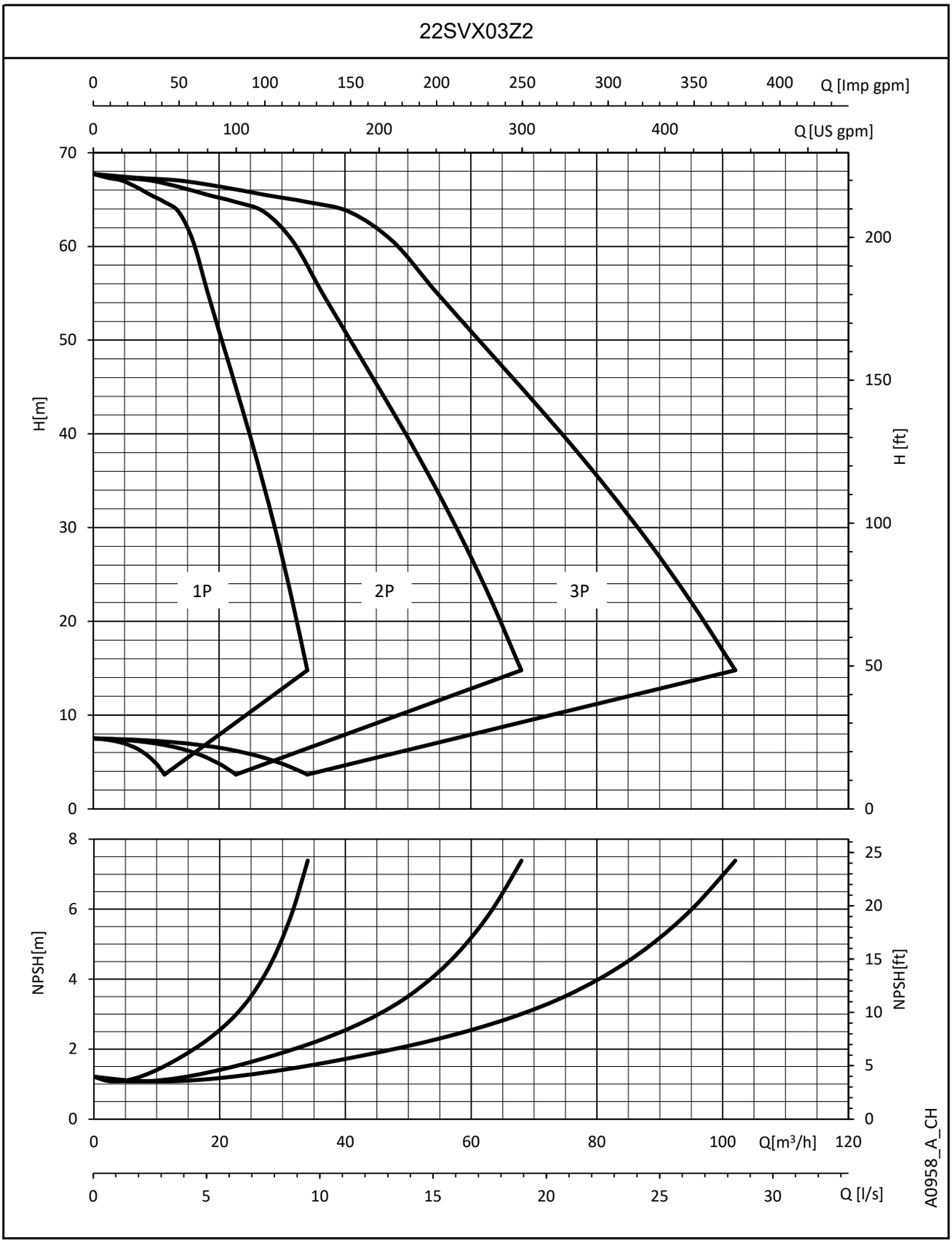
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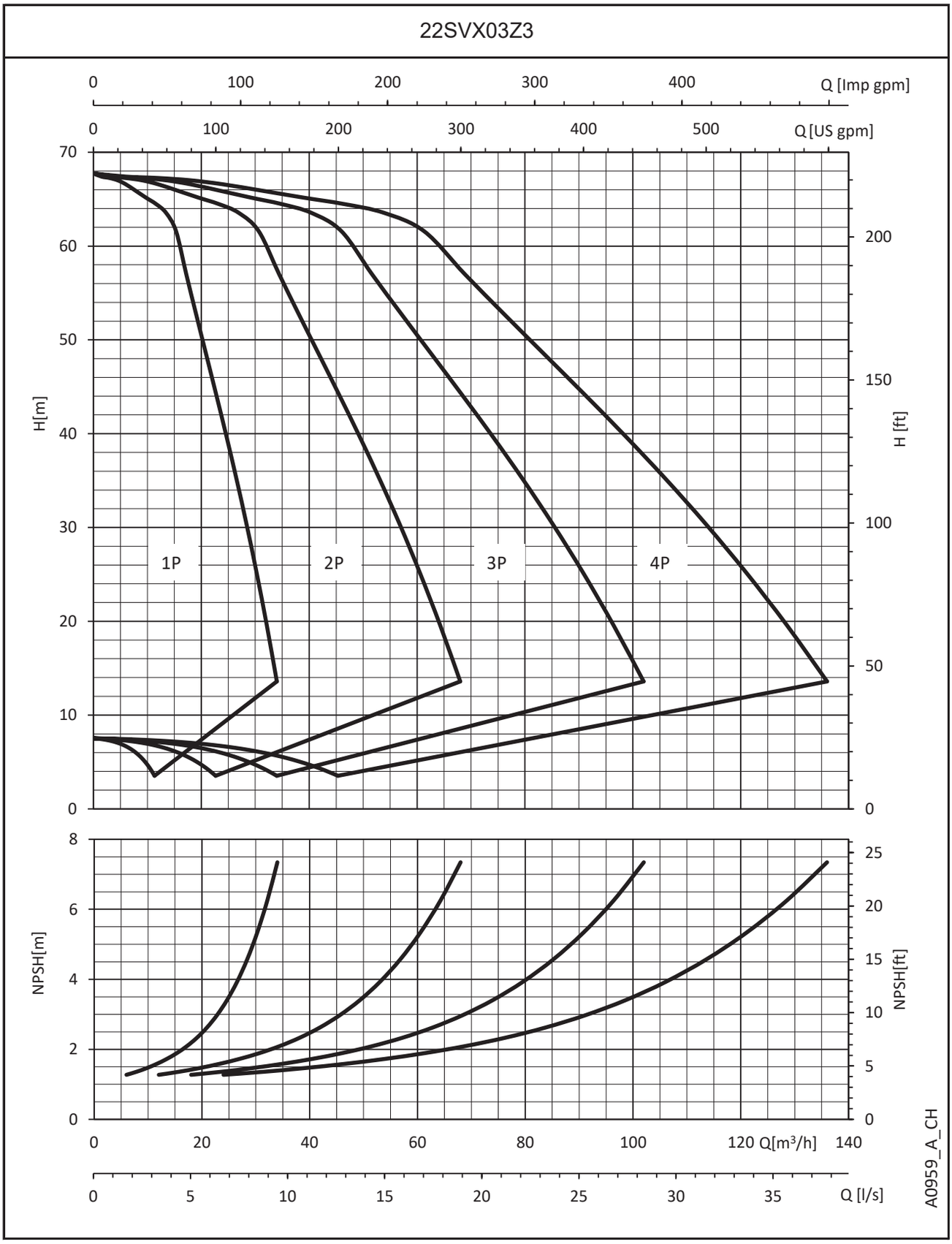
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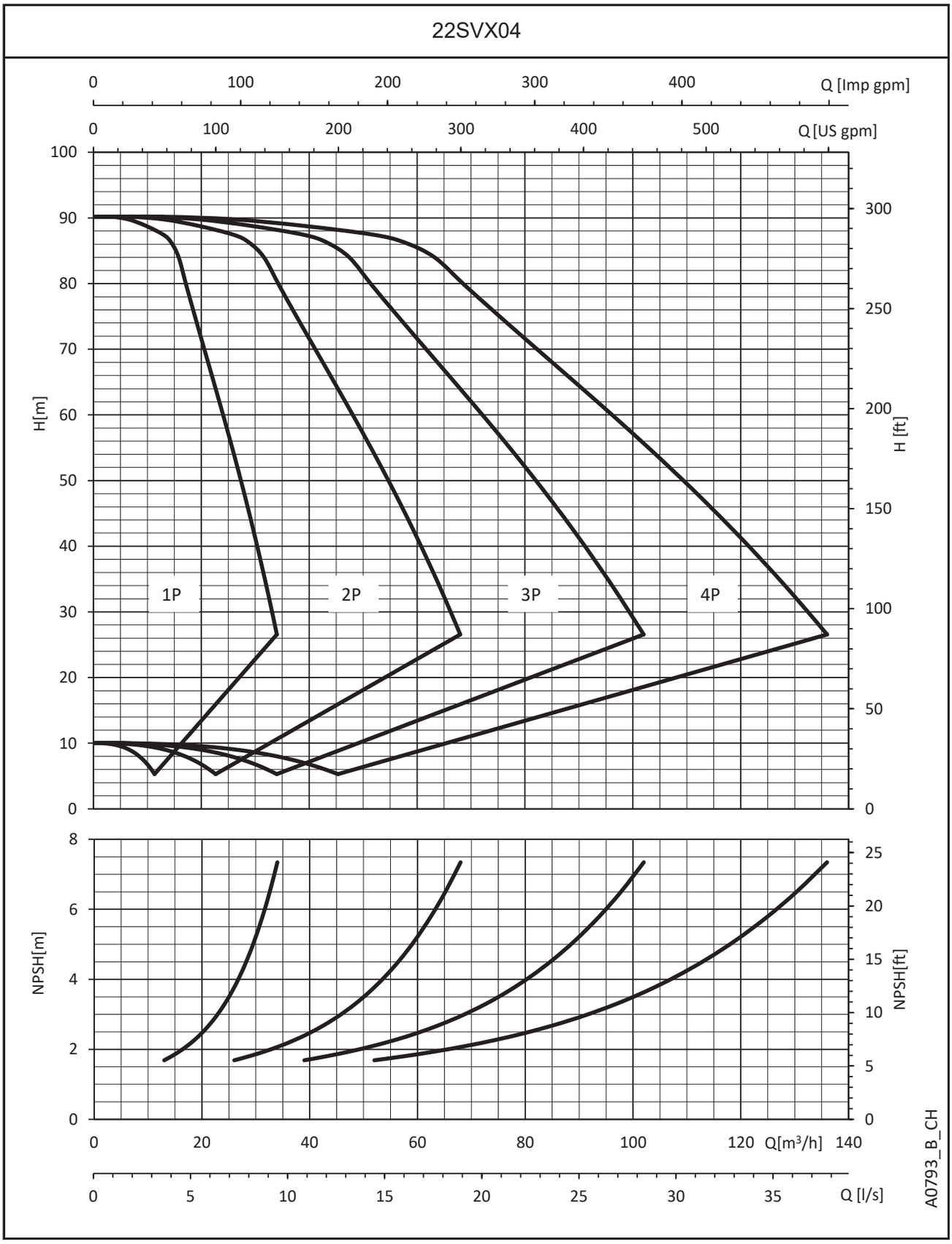
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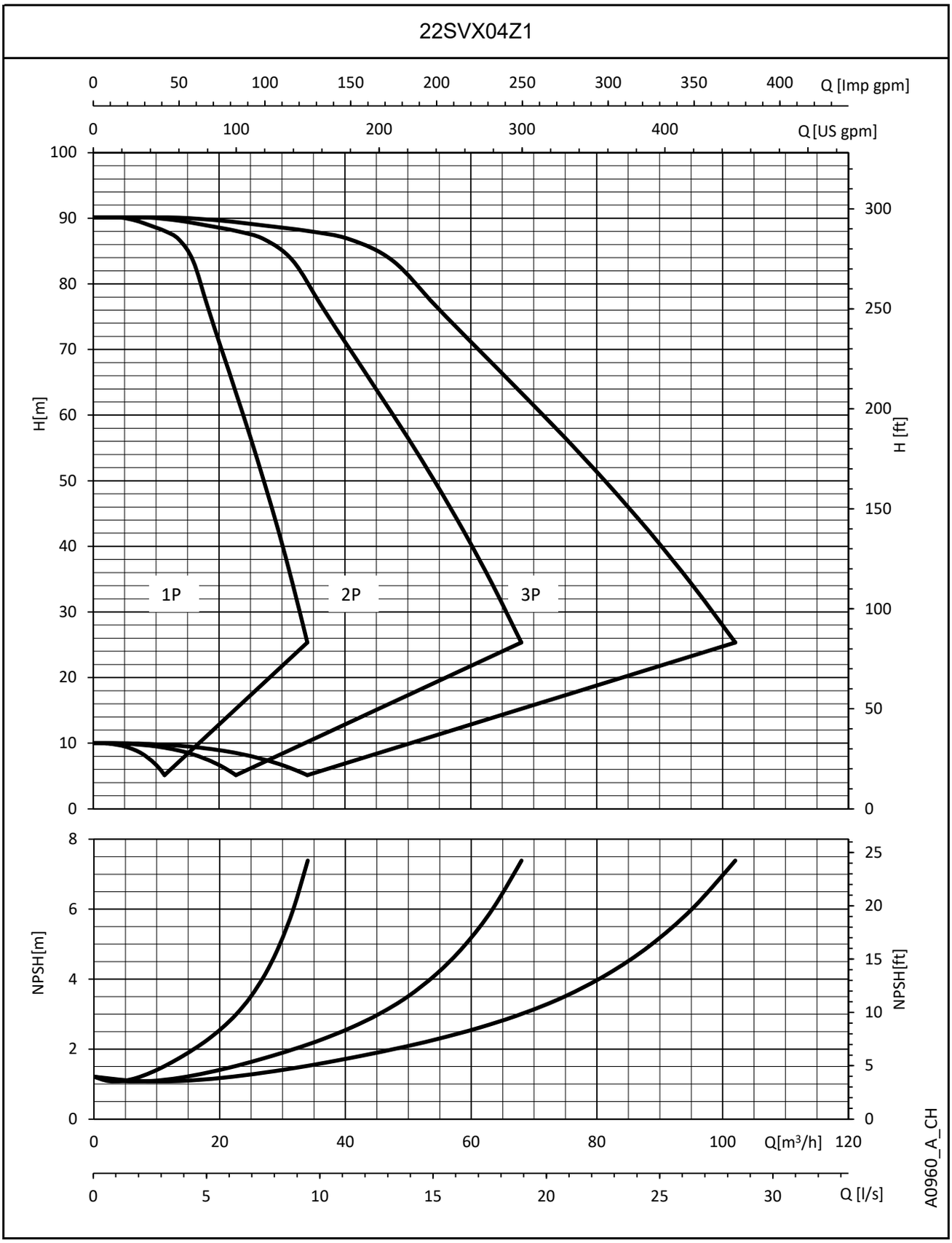
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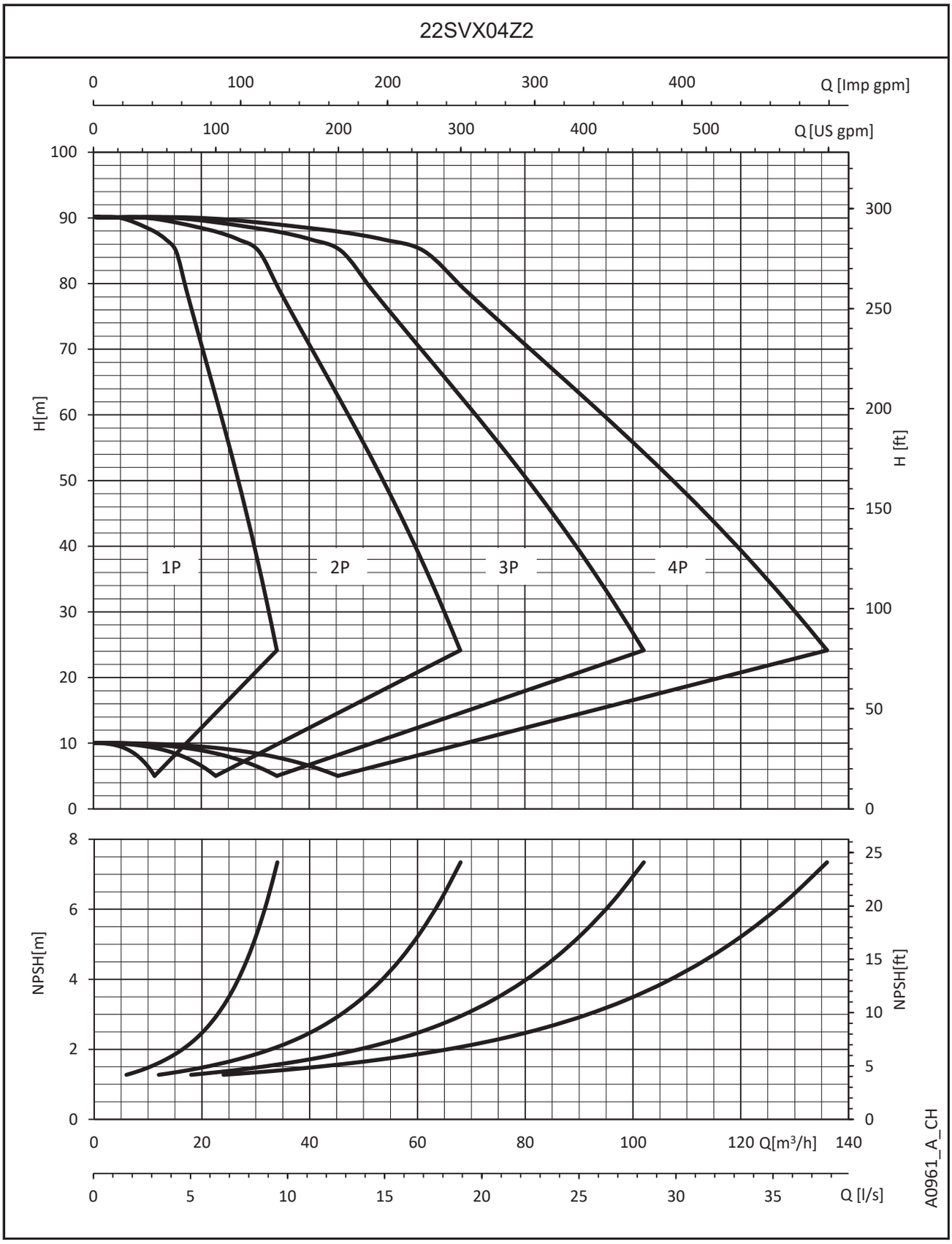
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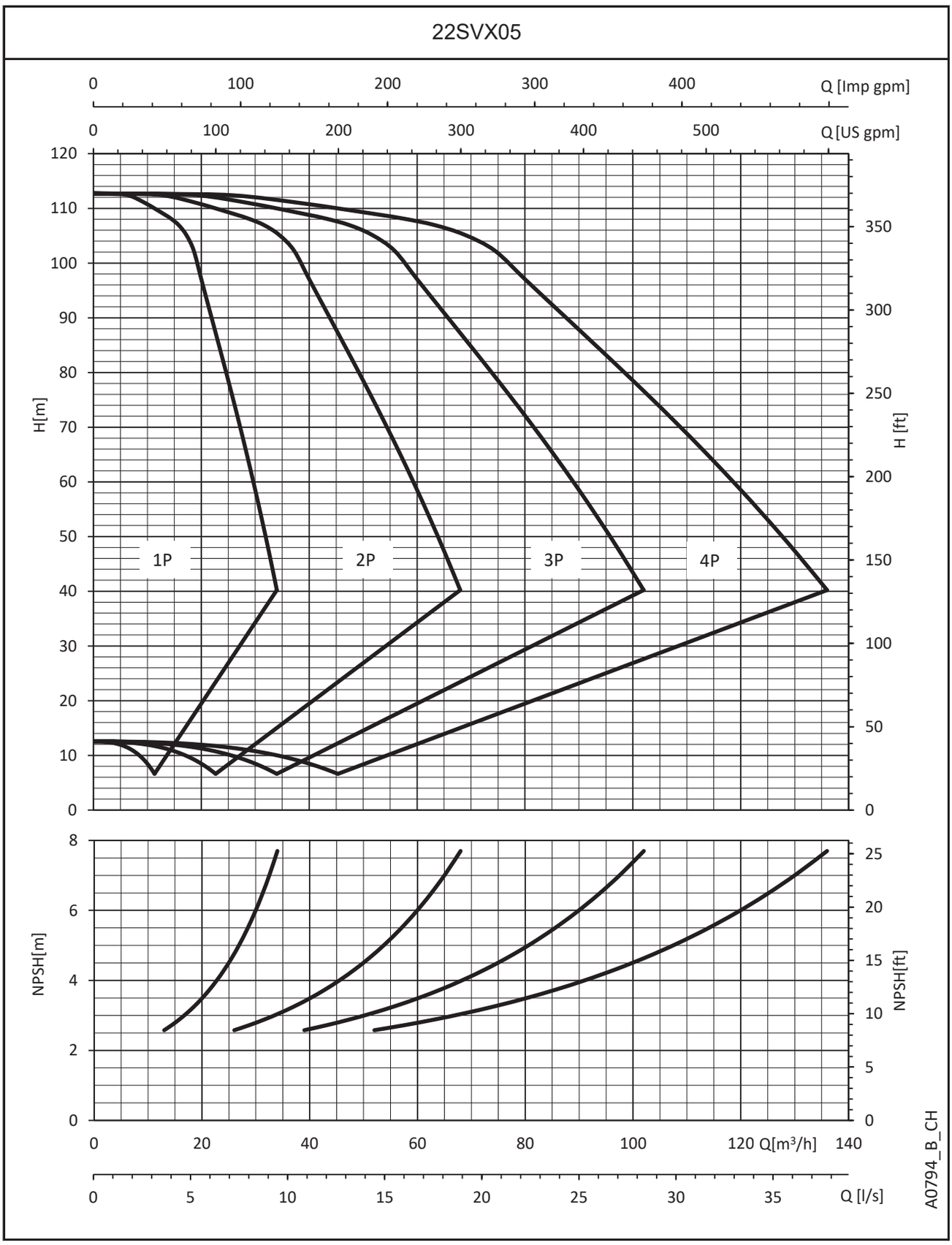
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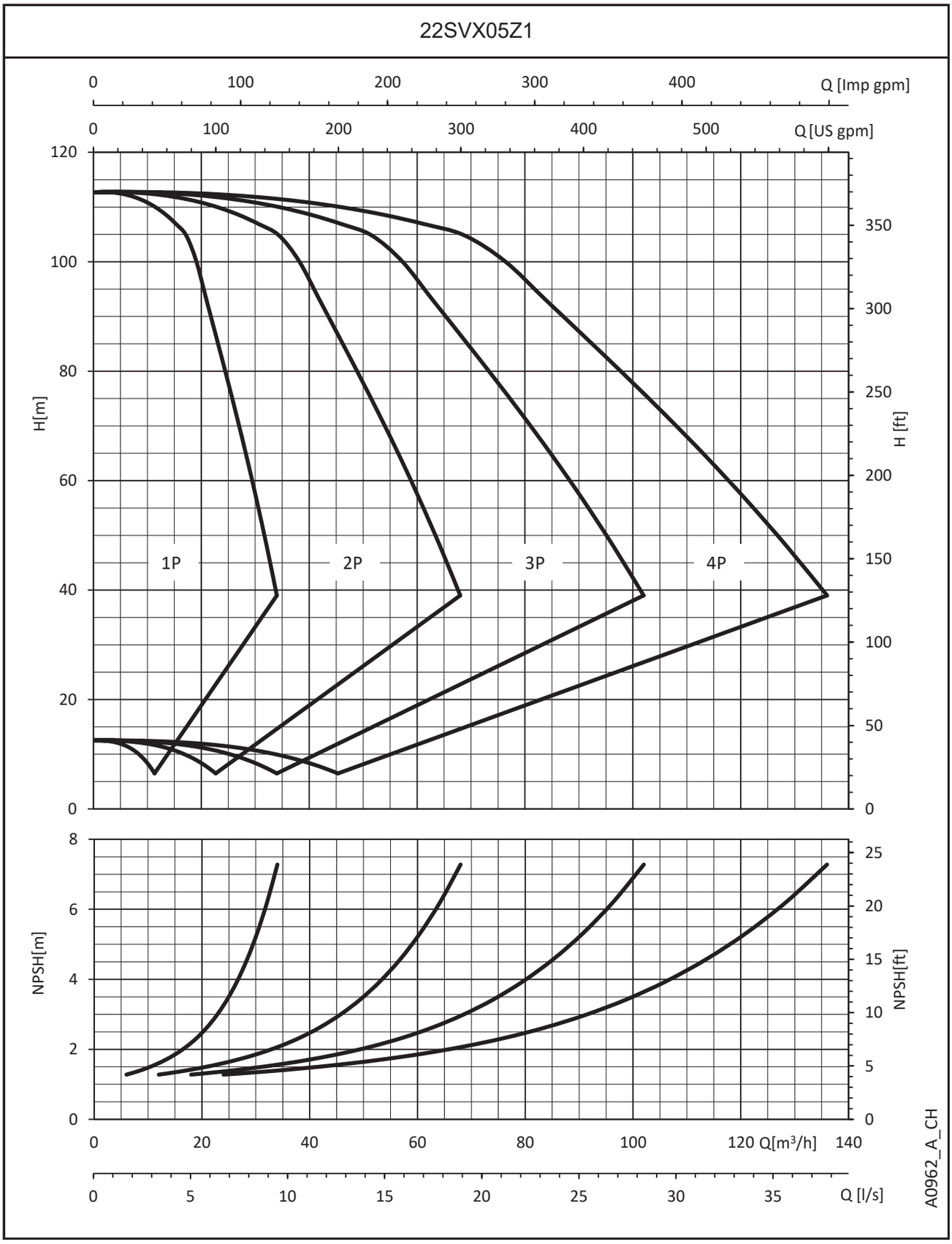
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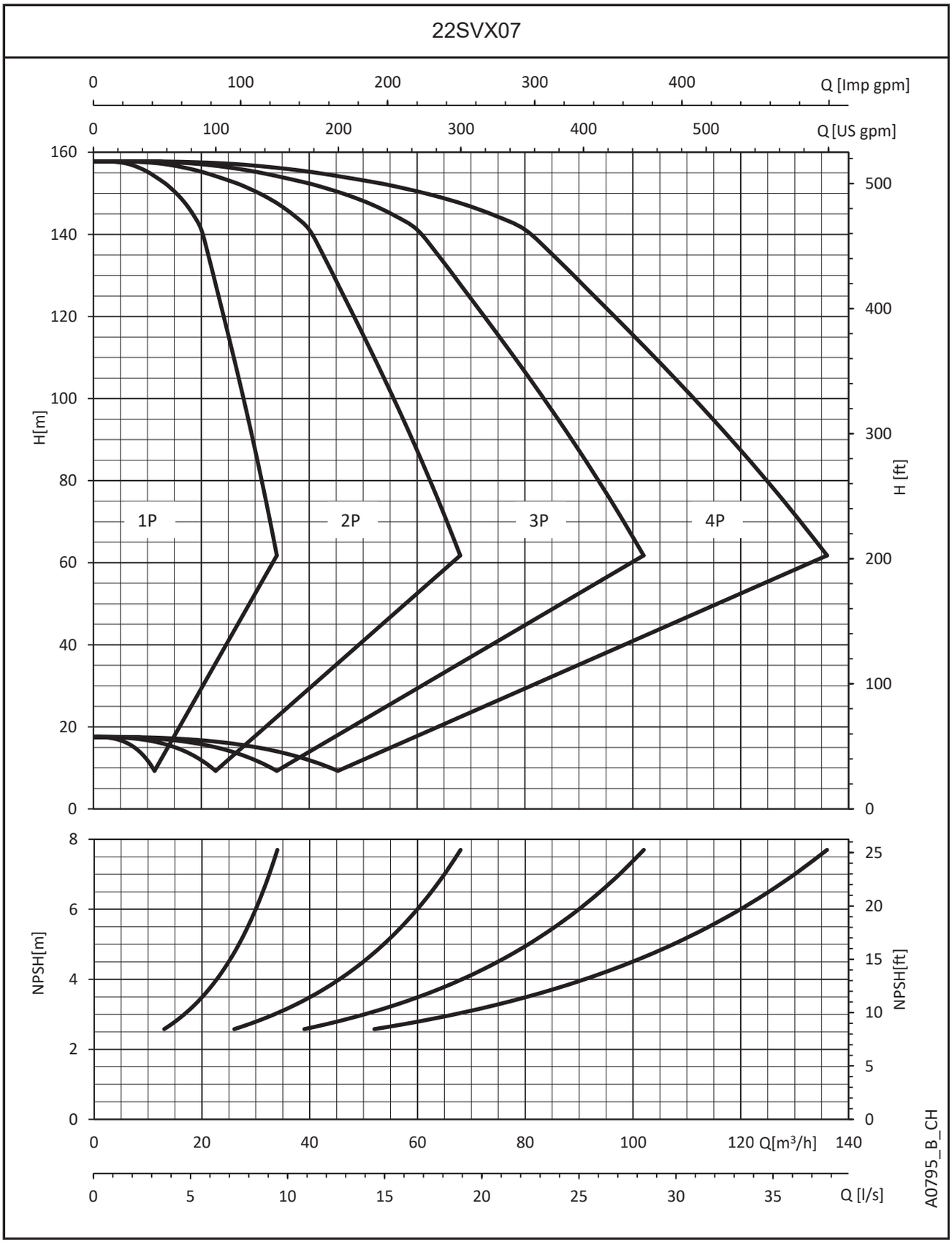
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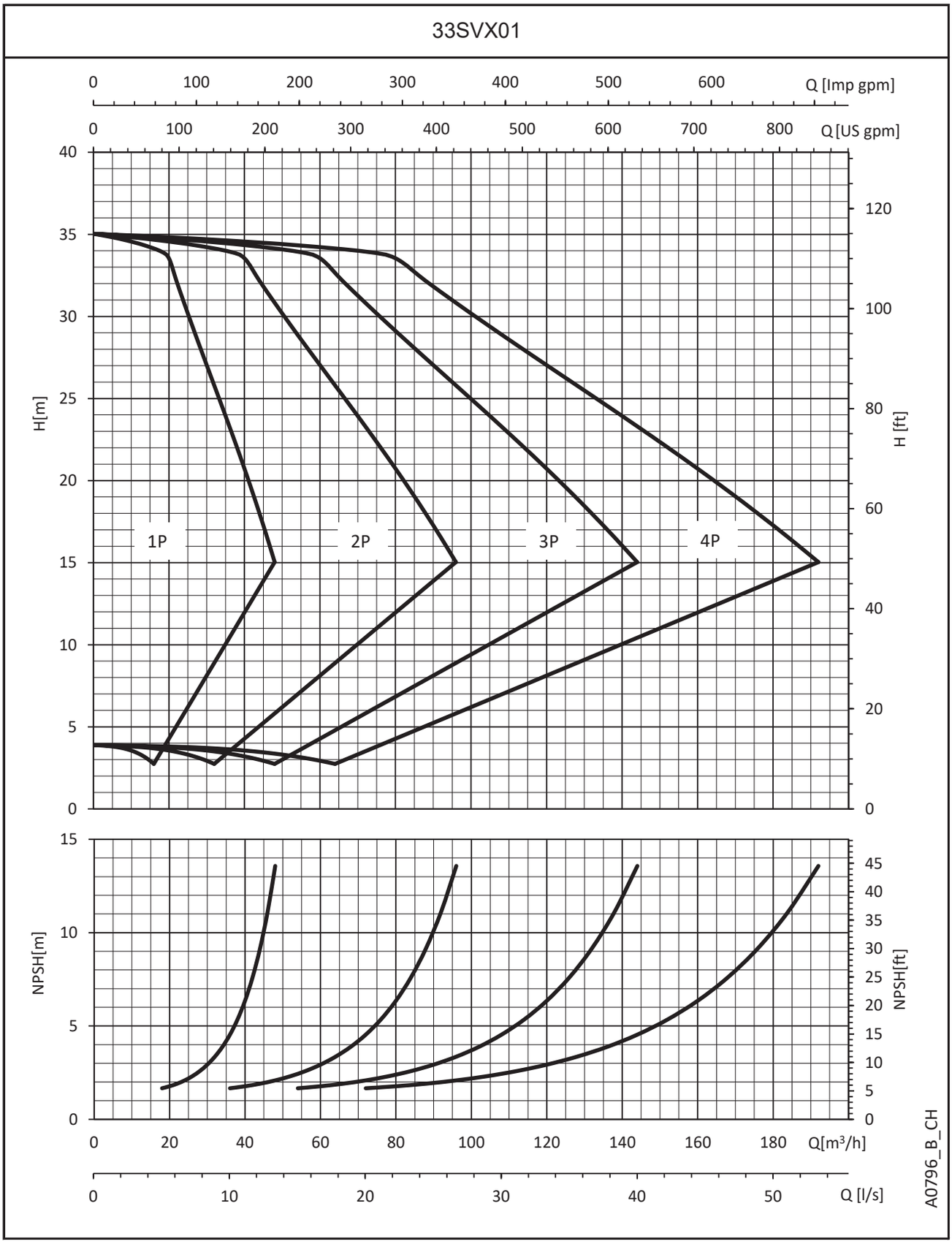
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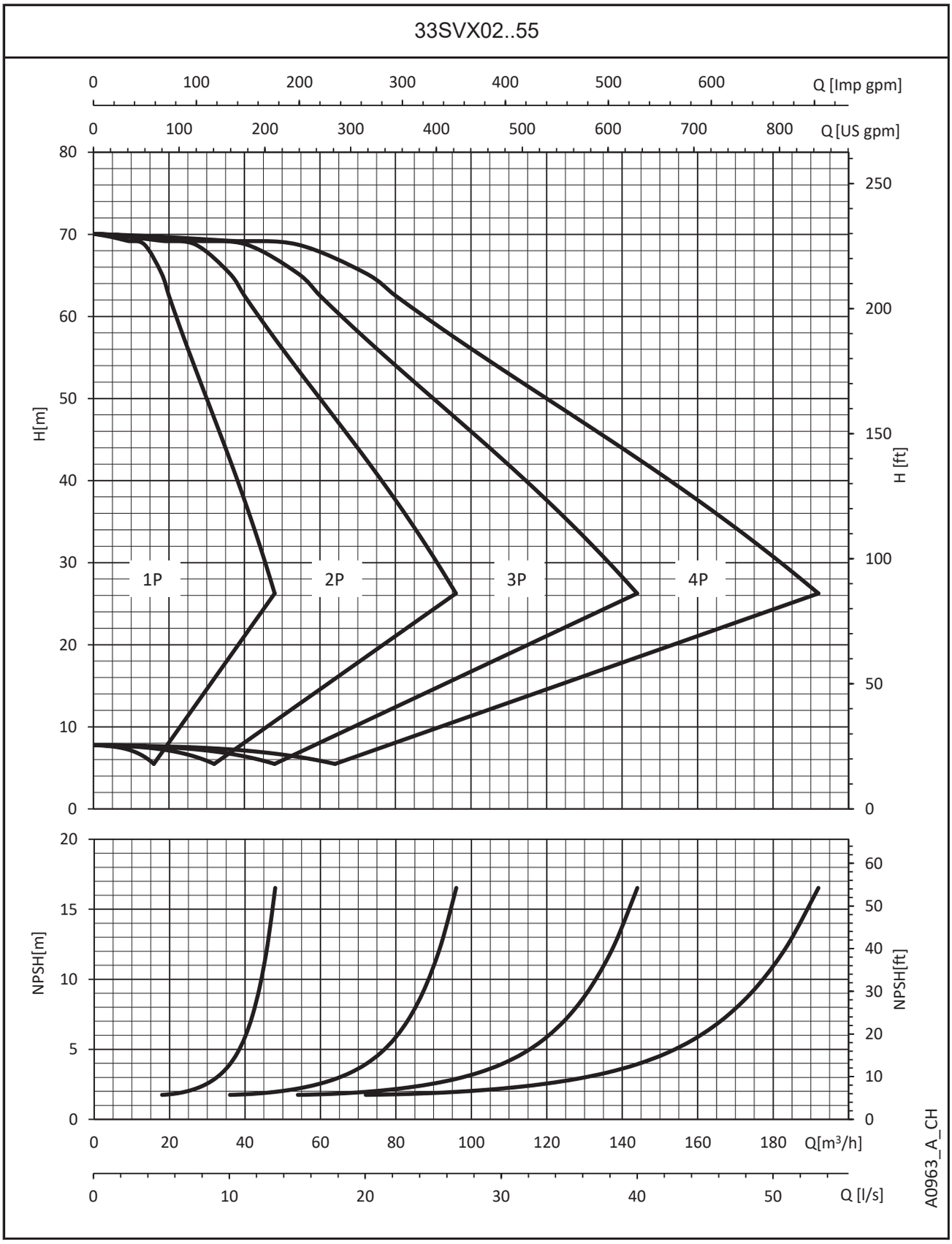
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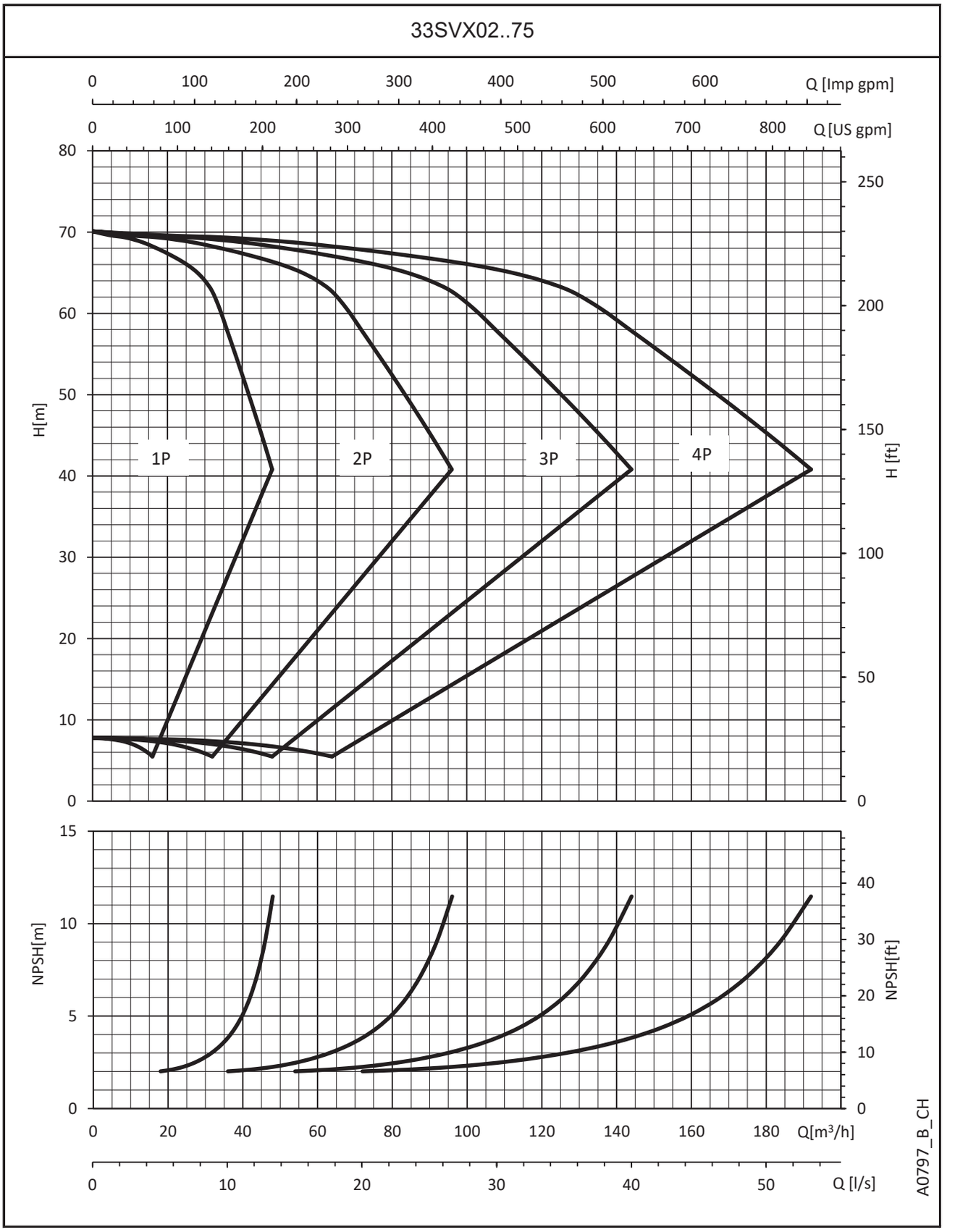
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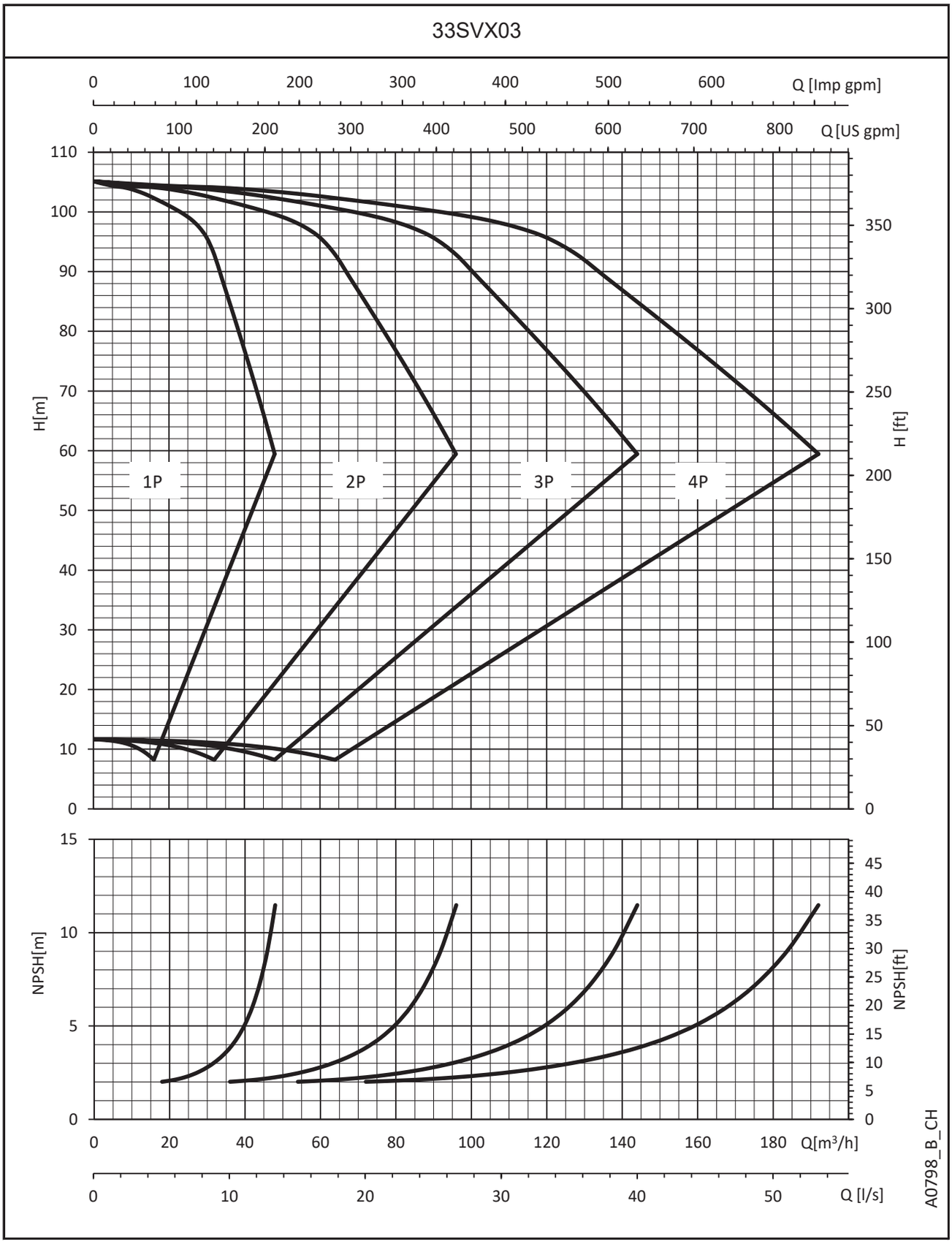
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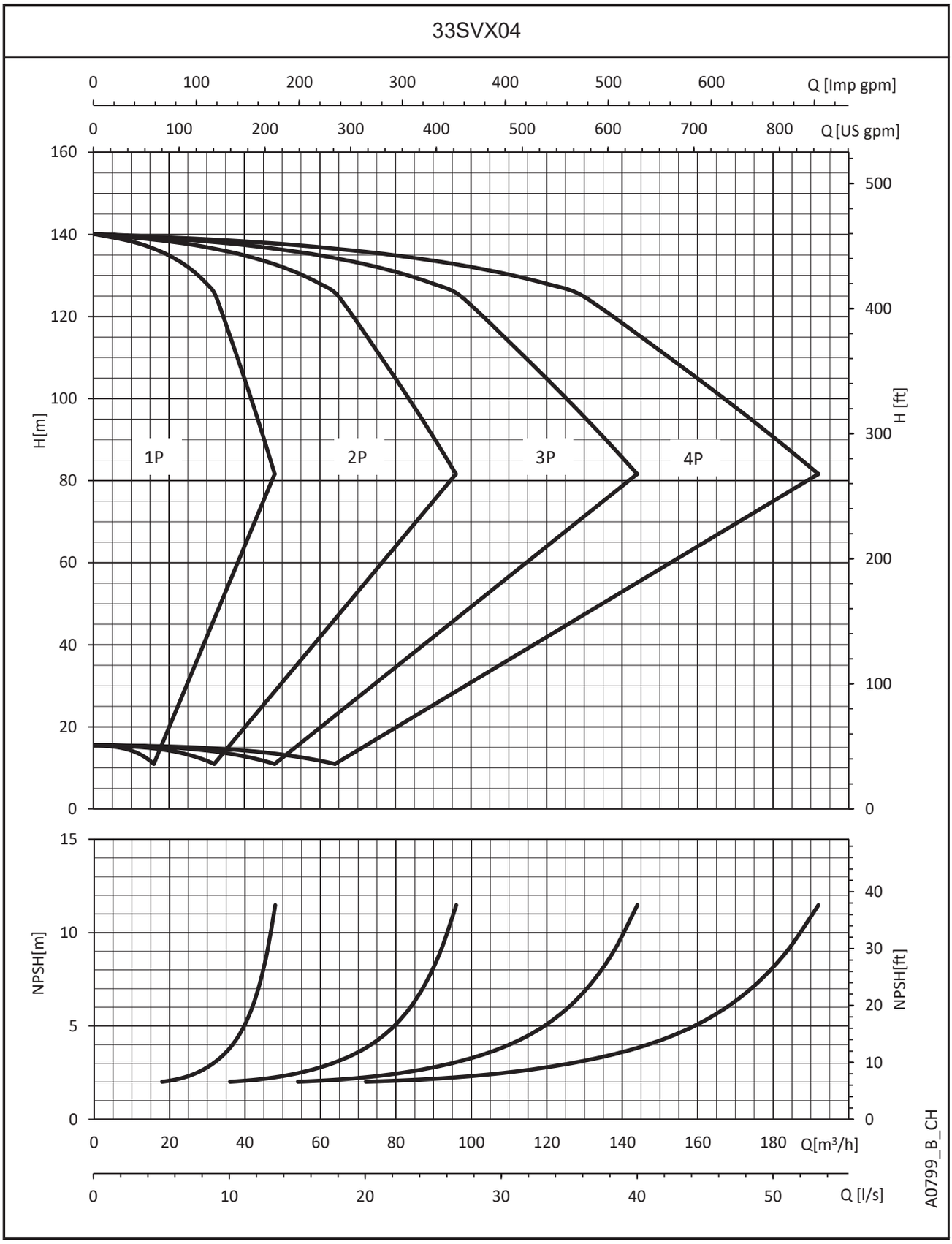
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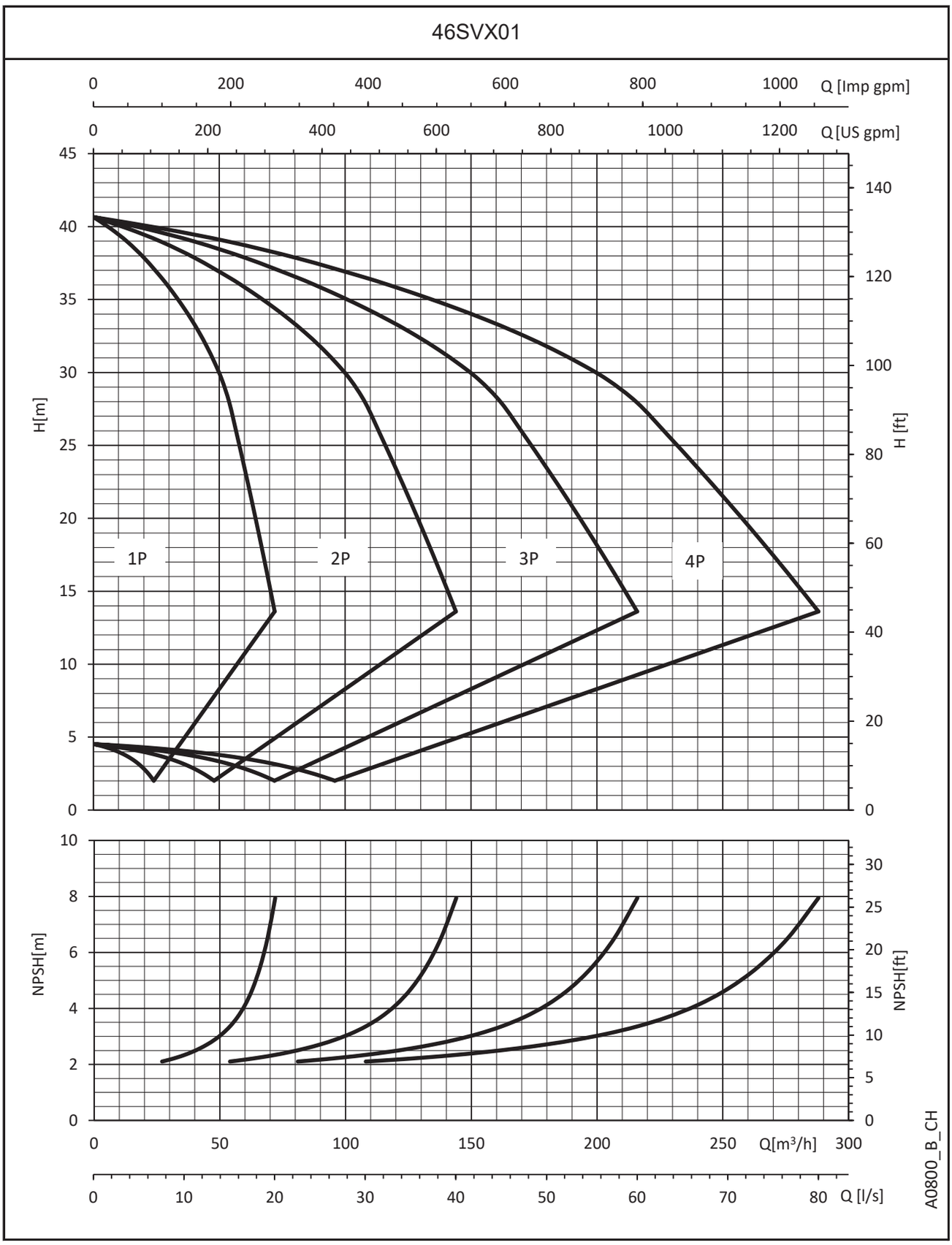
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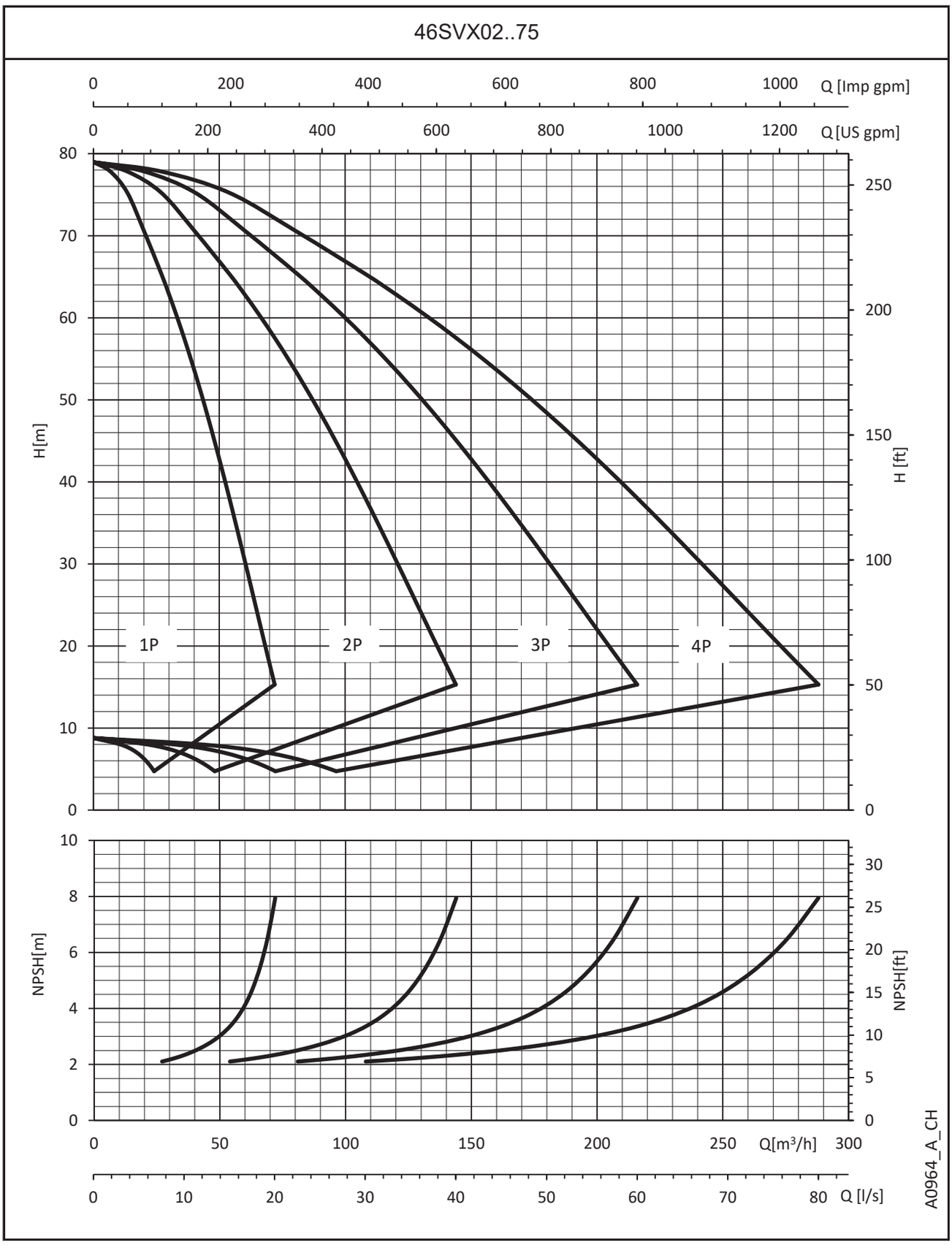
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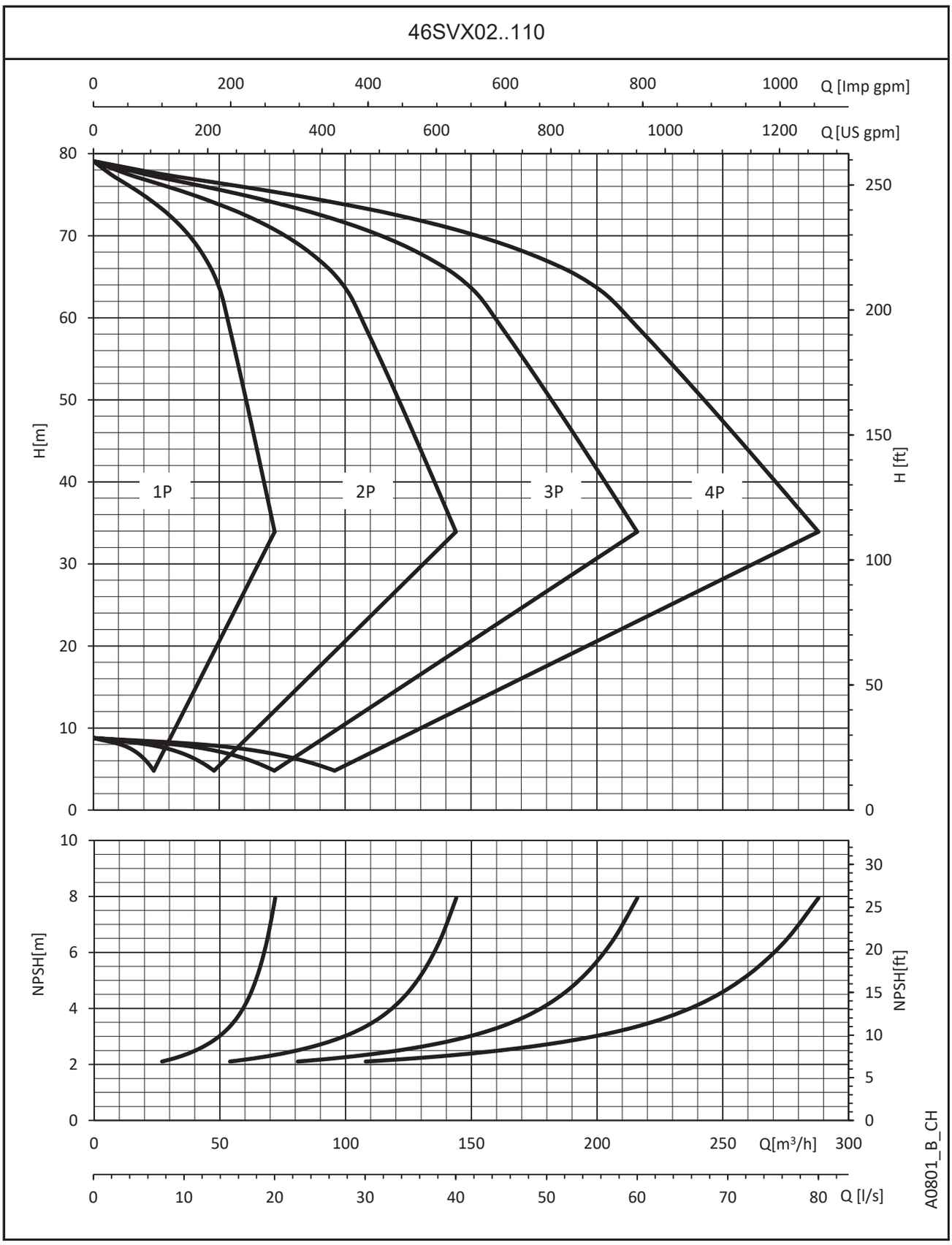
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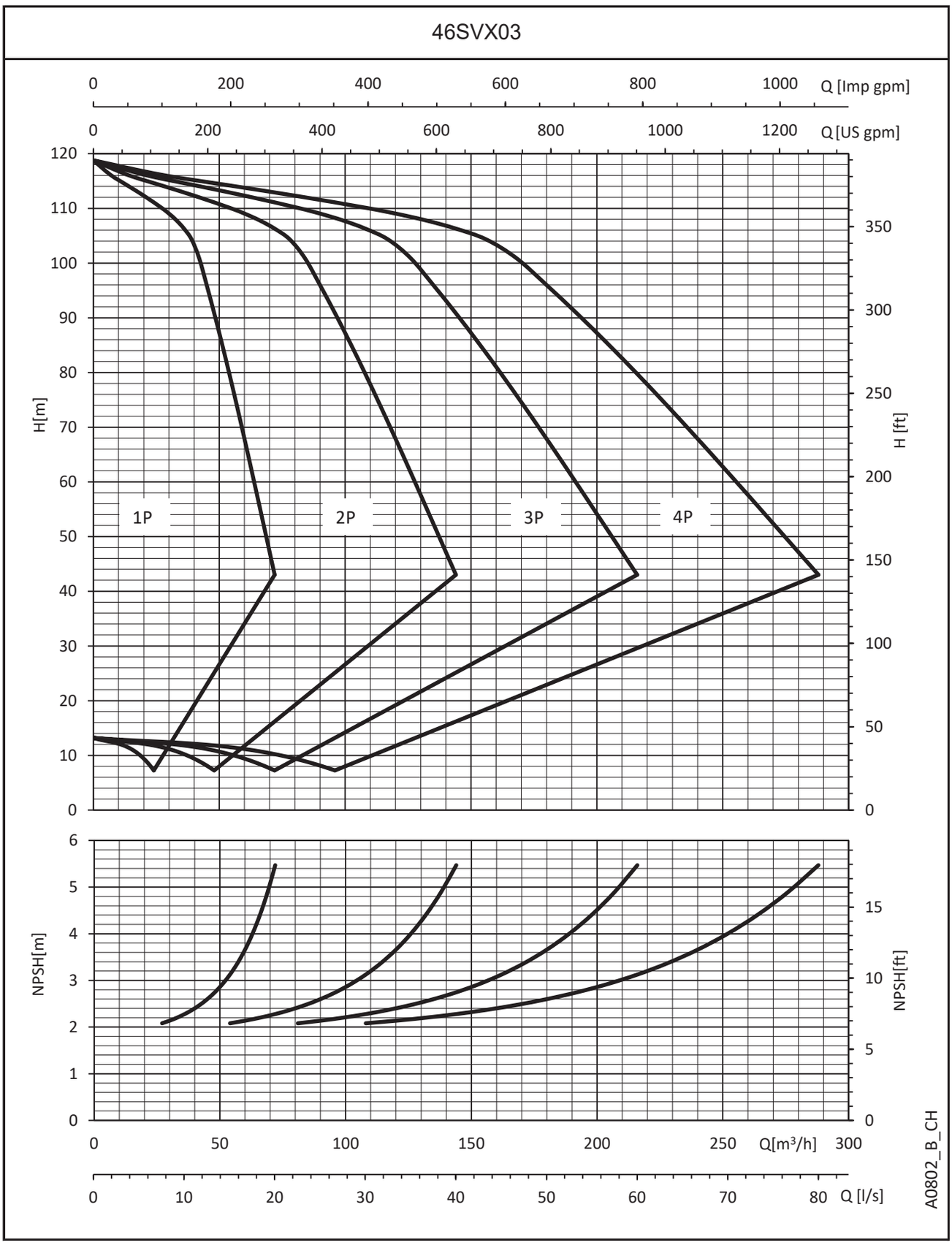
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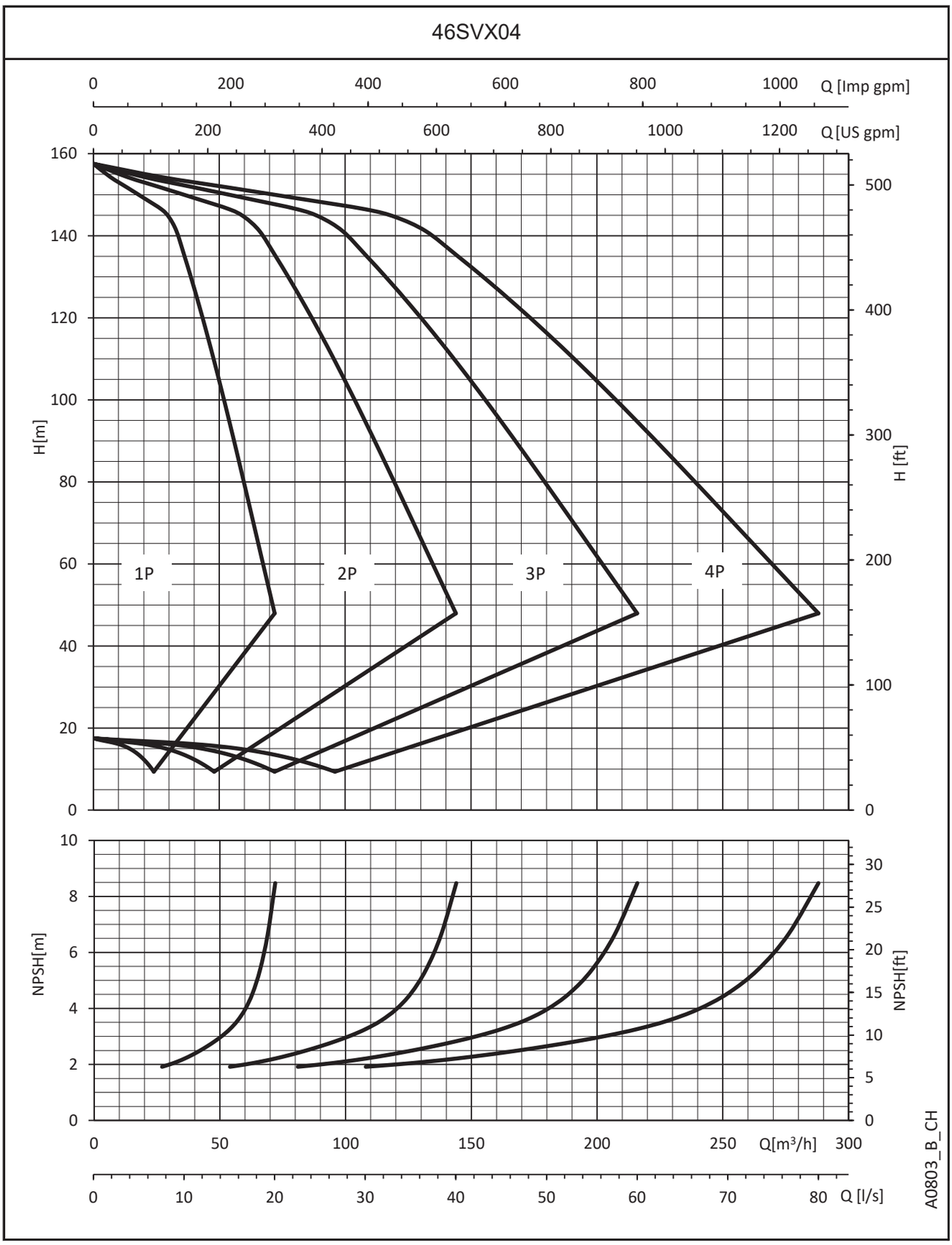
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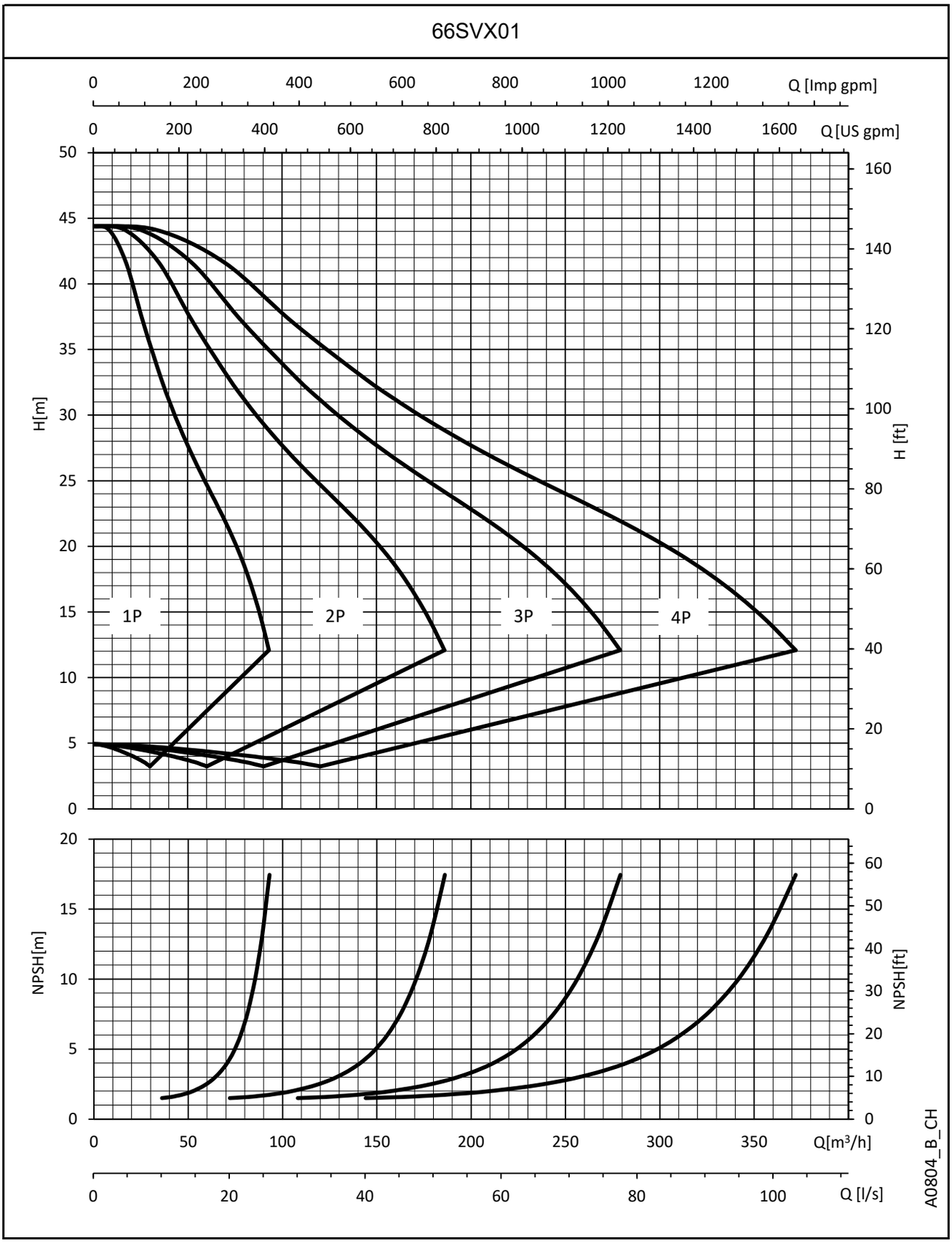
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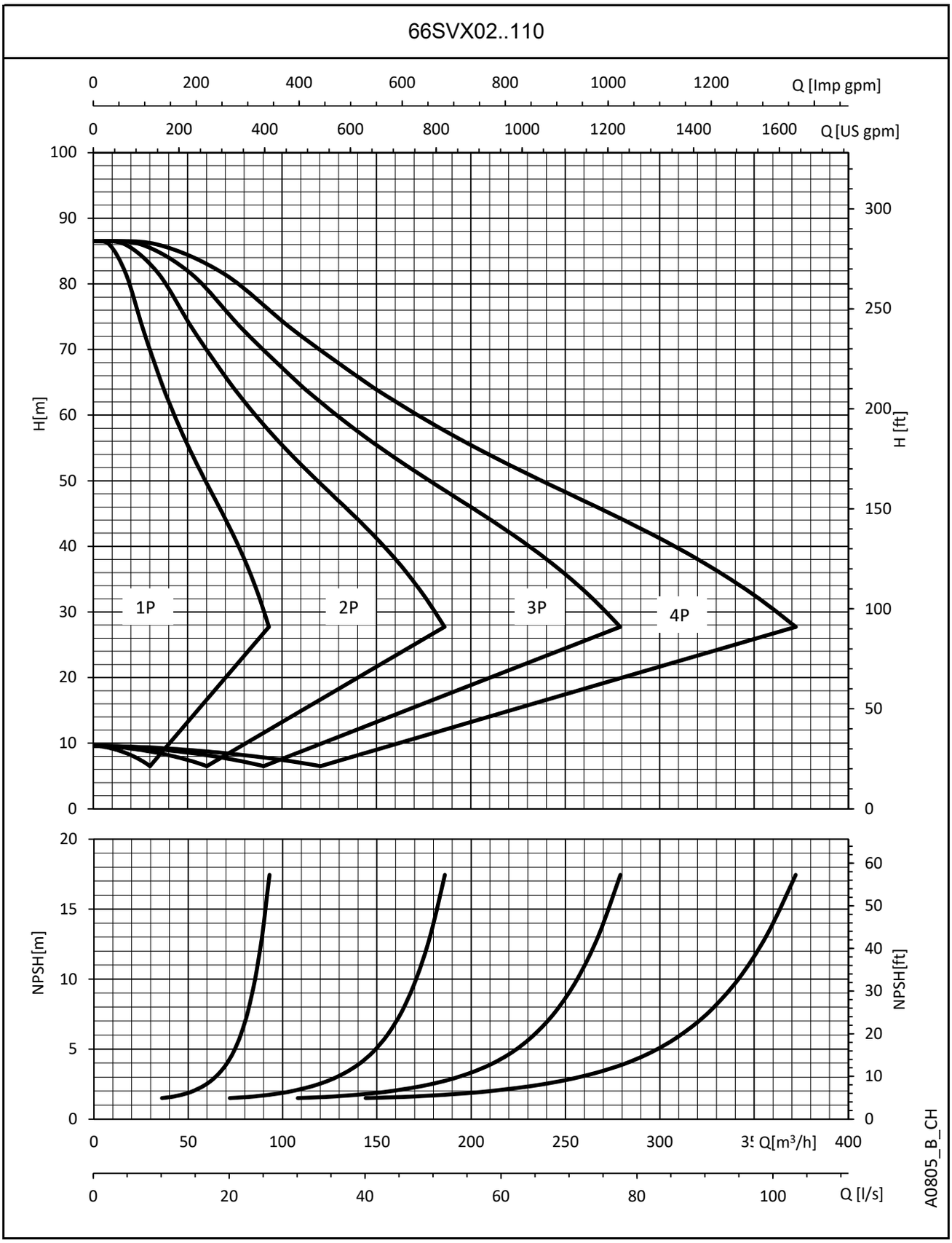
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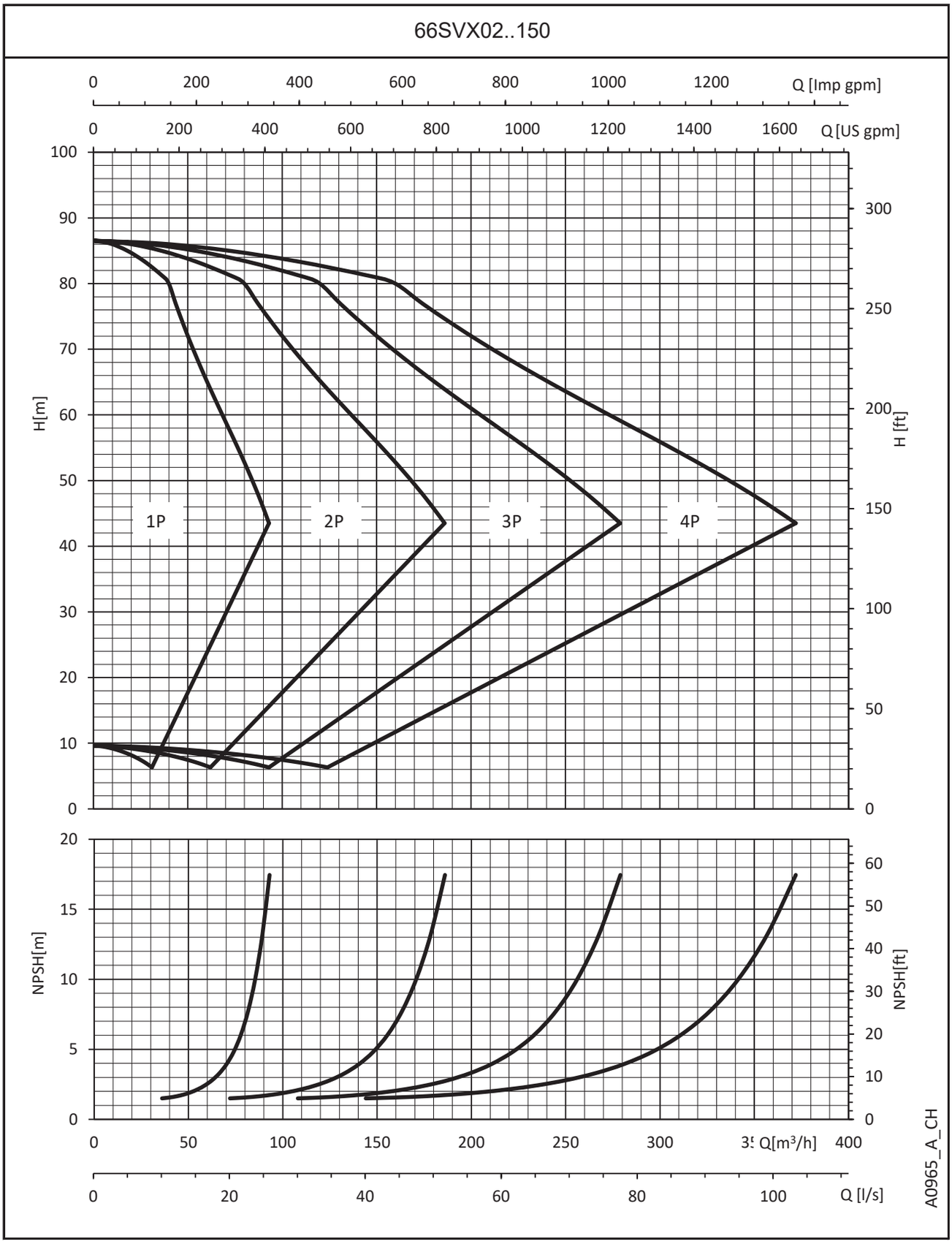
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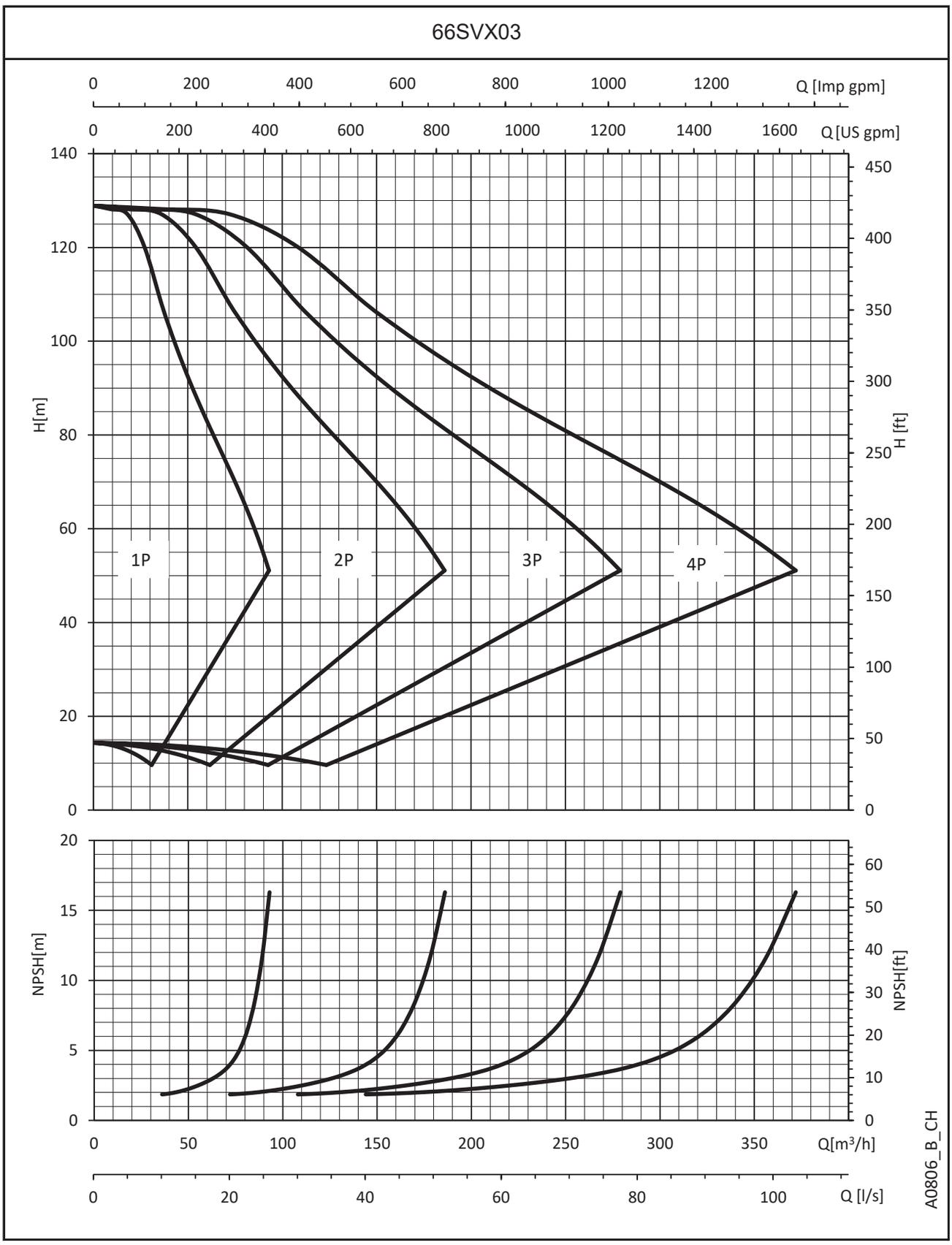
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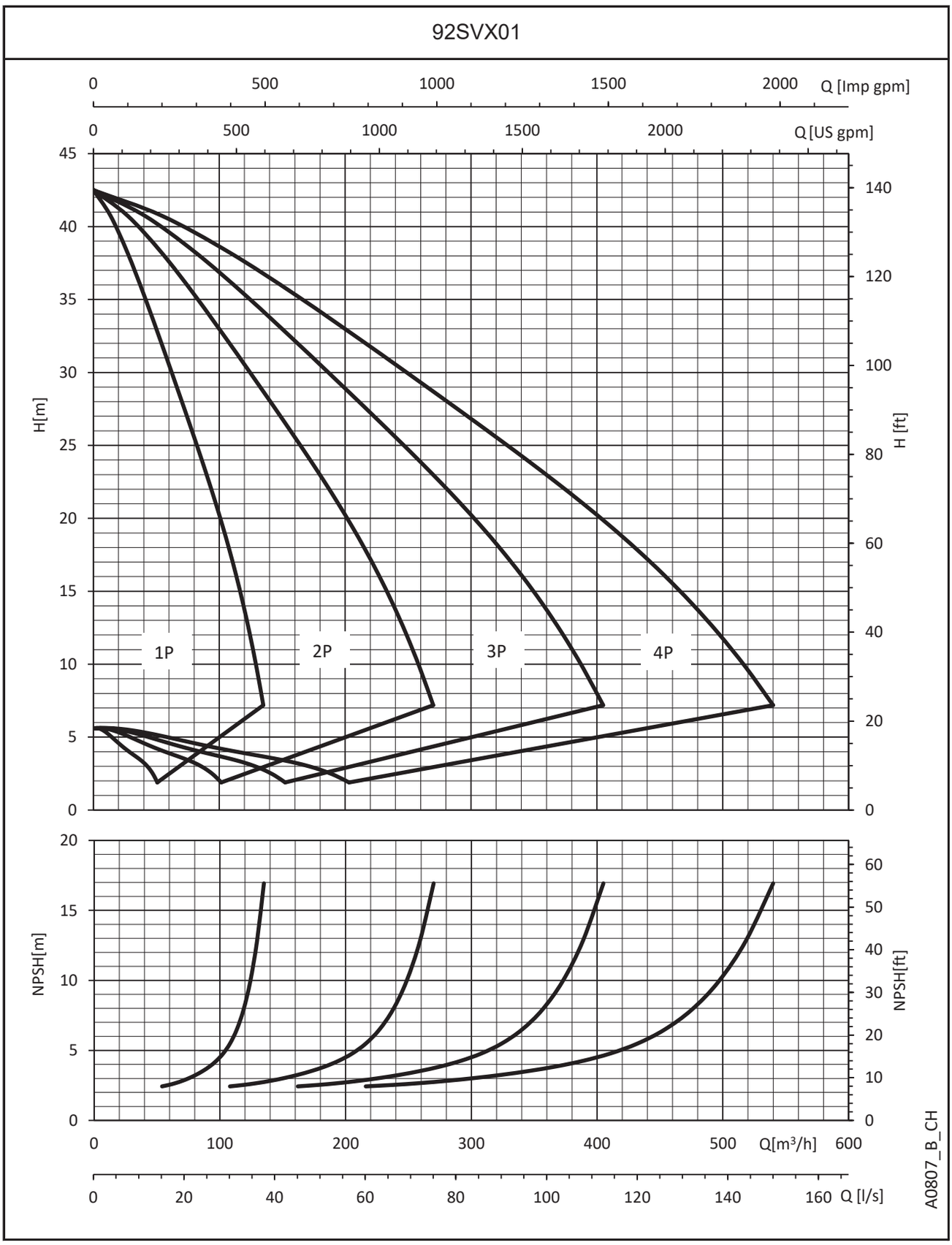
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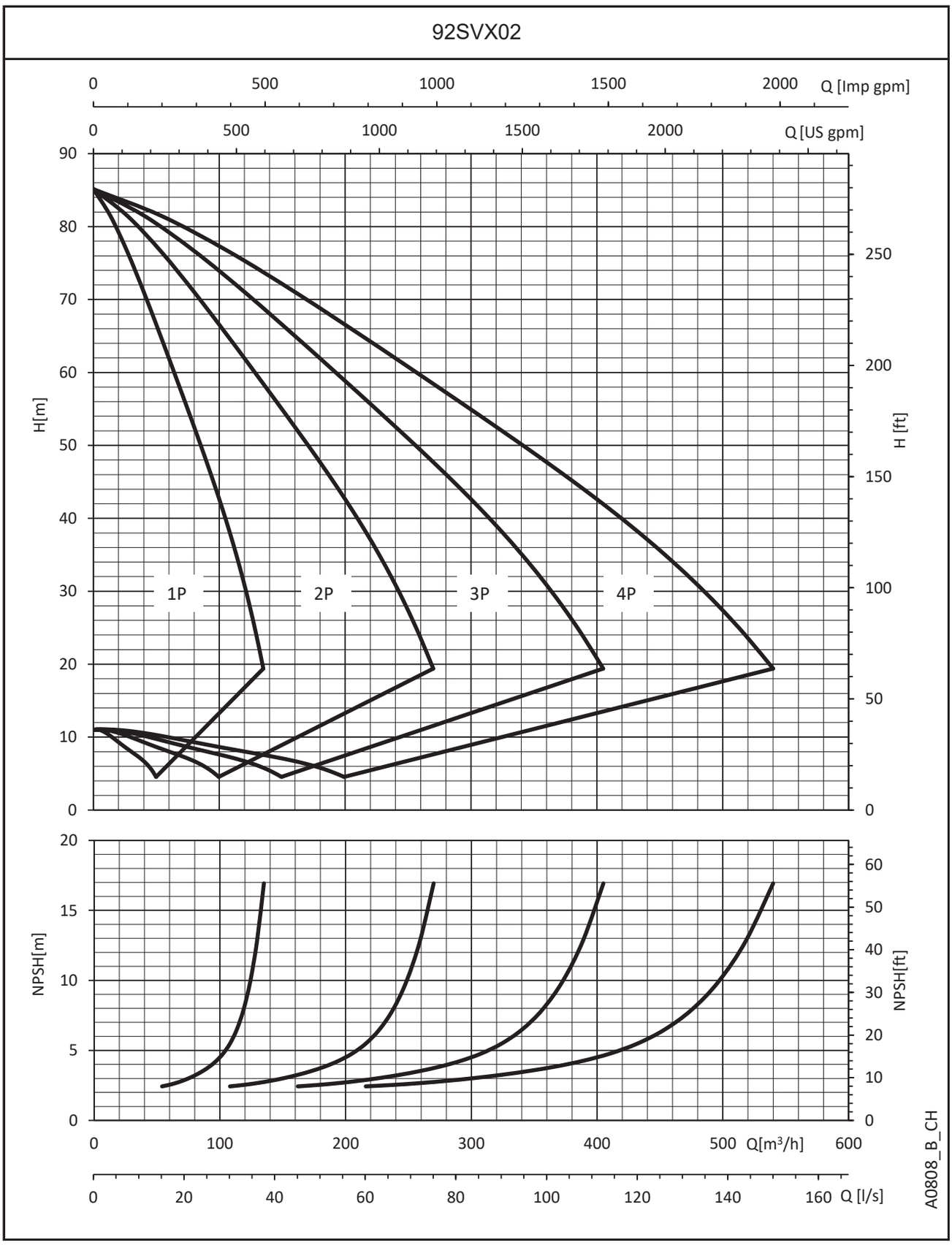
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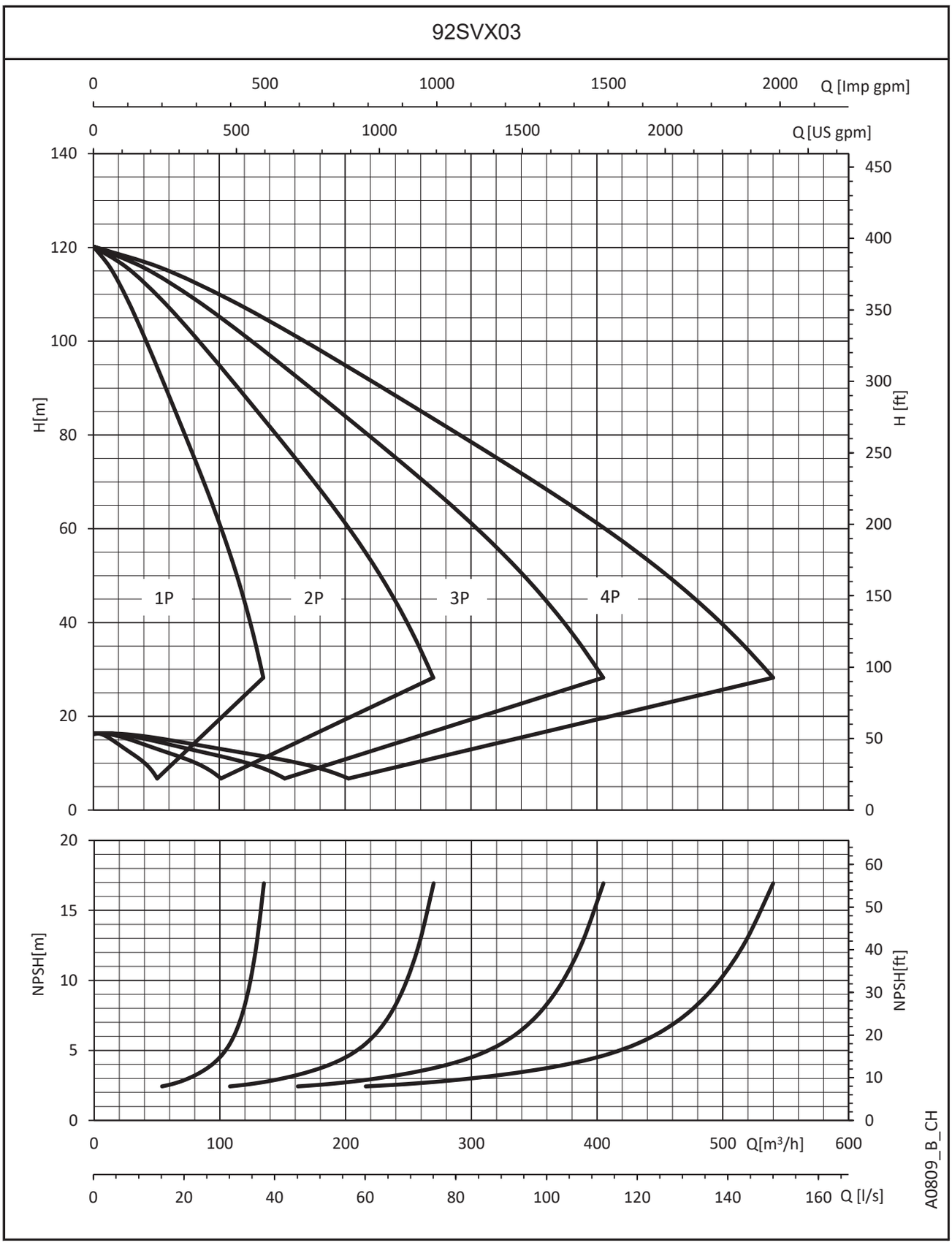
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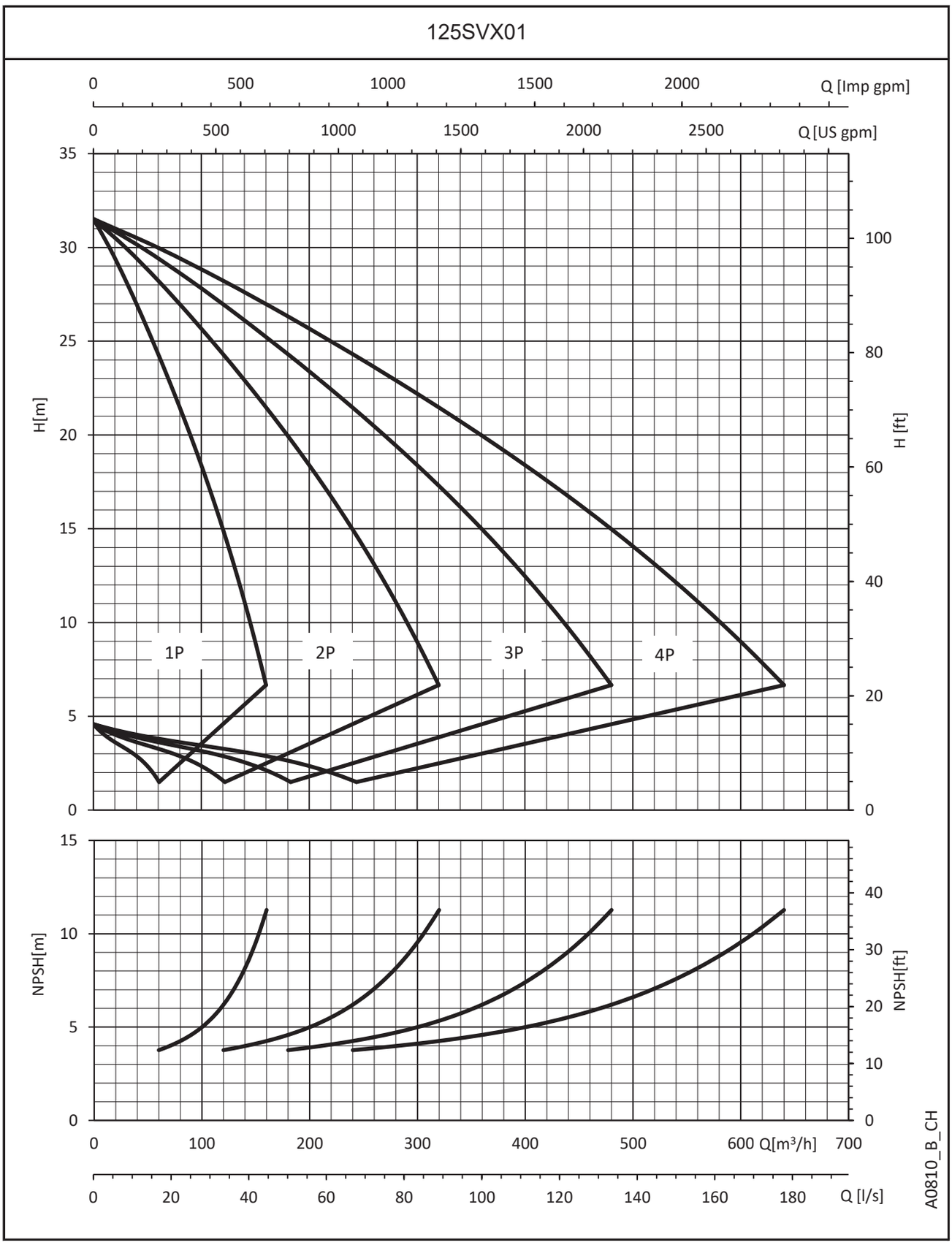
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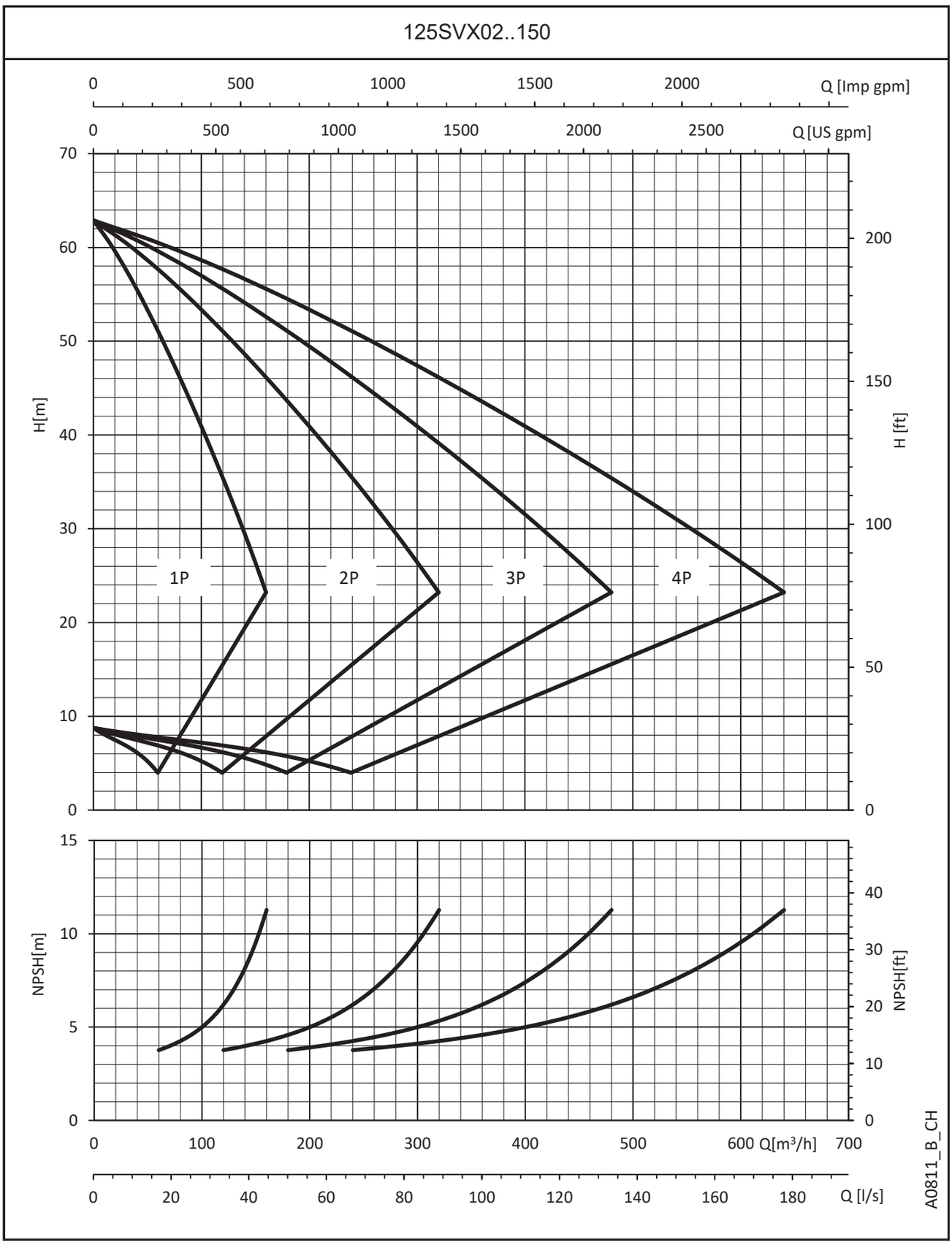
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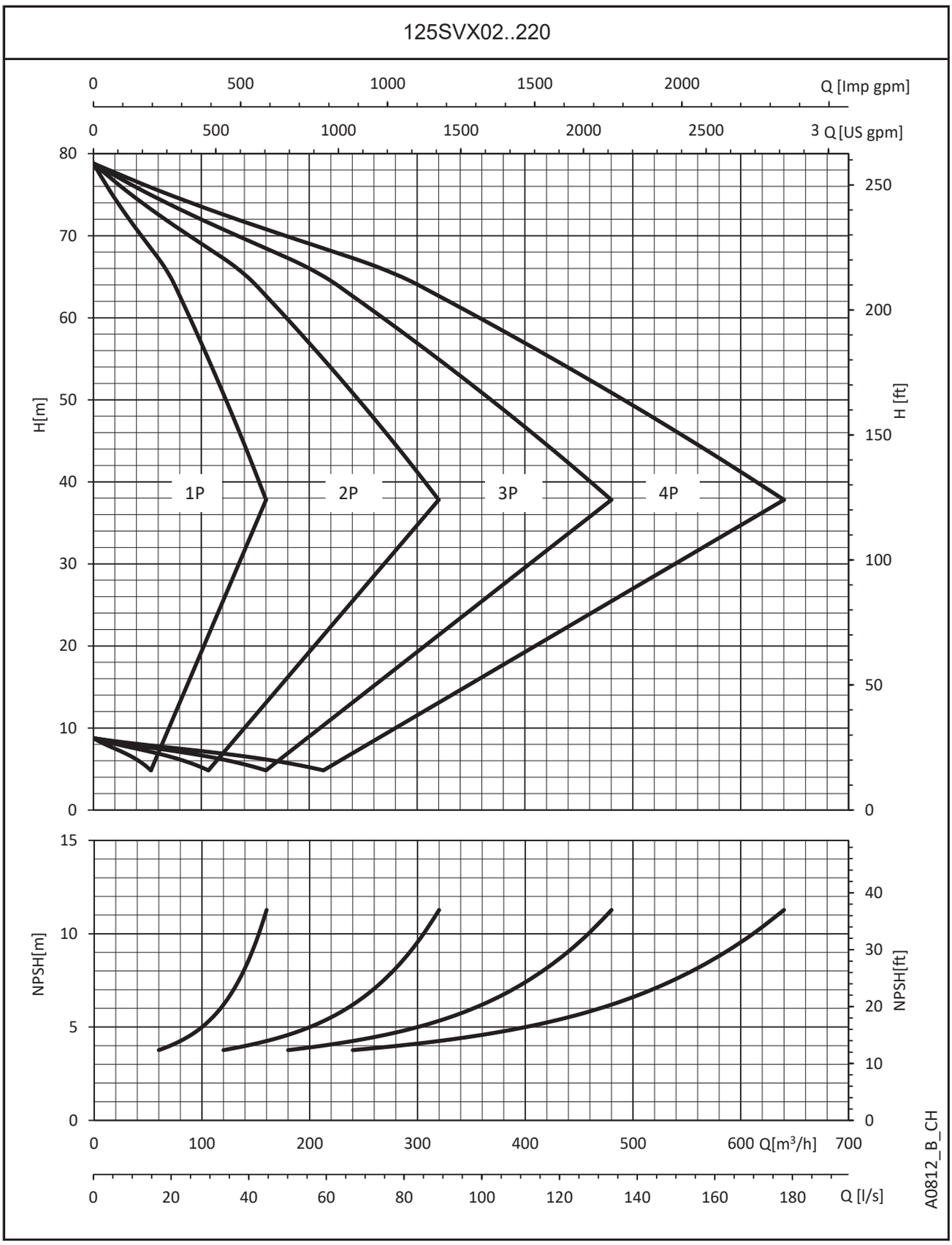
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These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

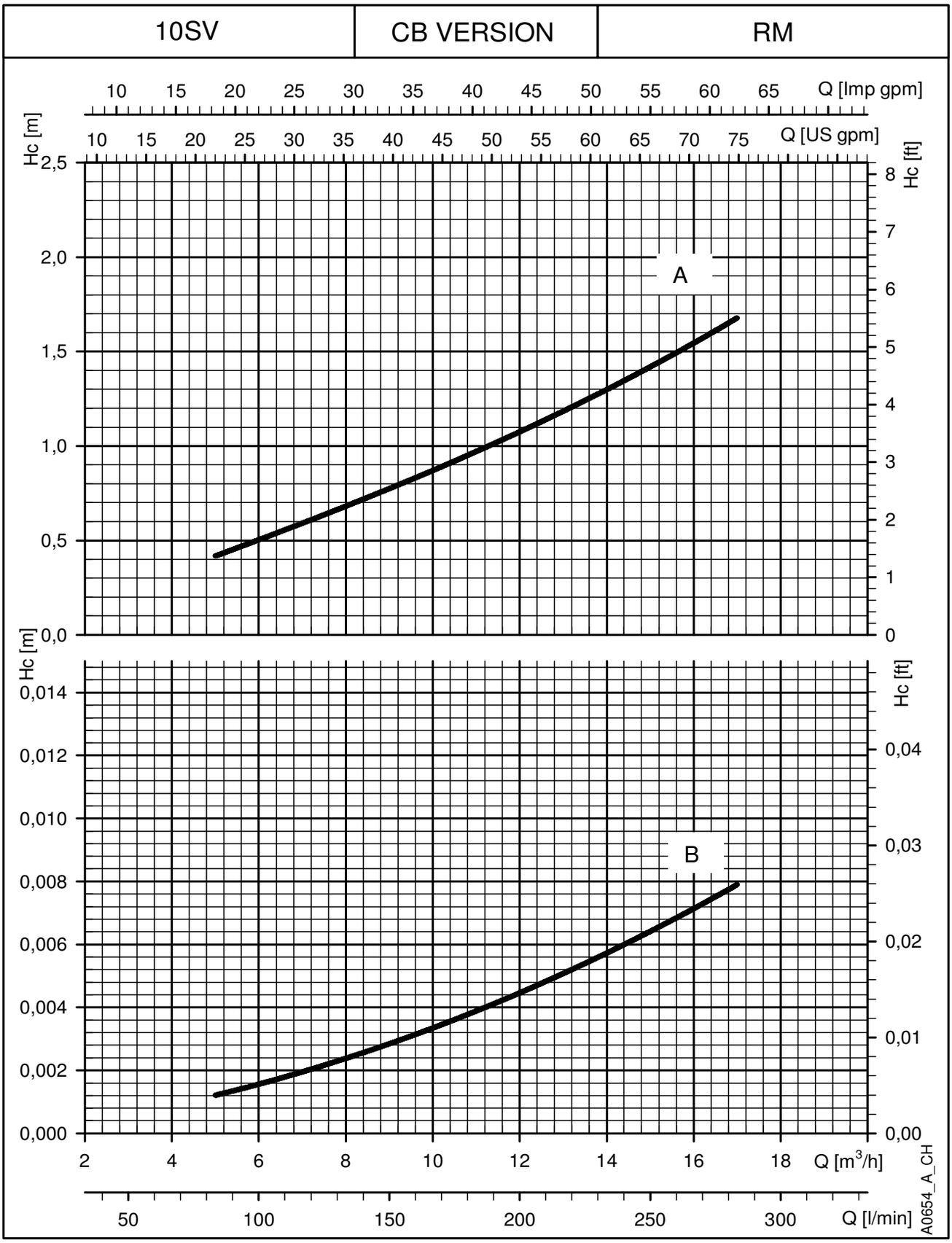
GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS



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 ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.
The declared NPSH values are laboratory values; for practical use we recommend increasing these values by 0,5 m.

GHV.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS

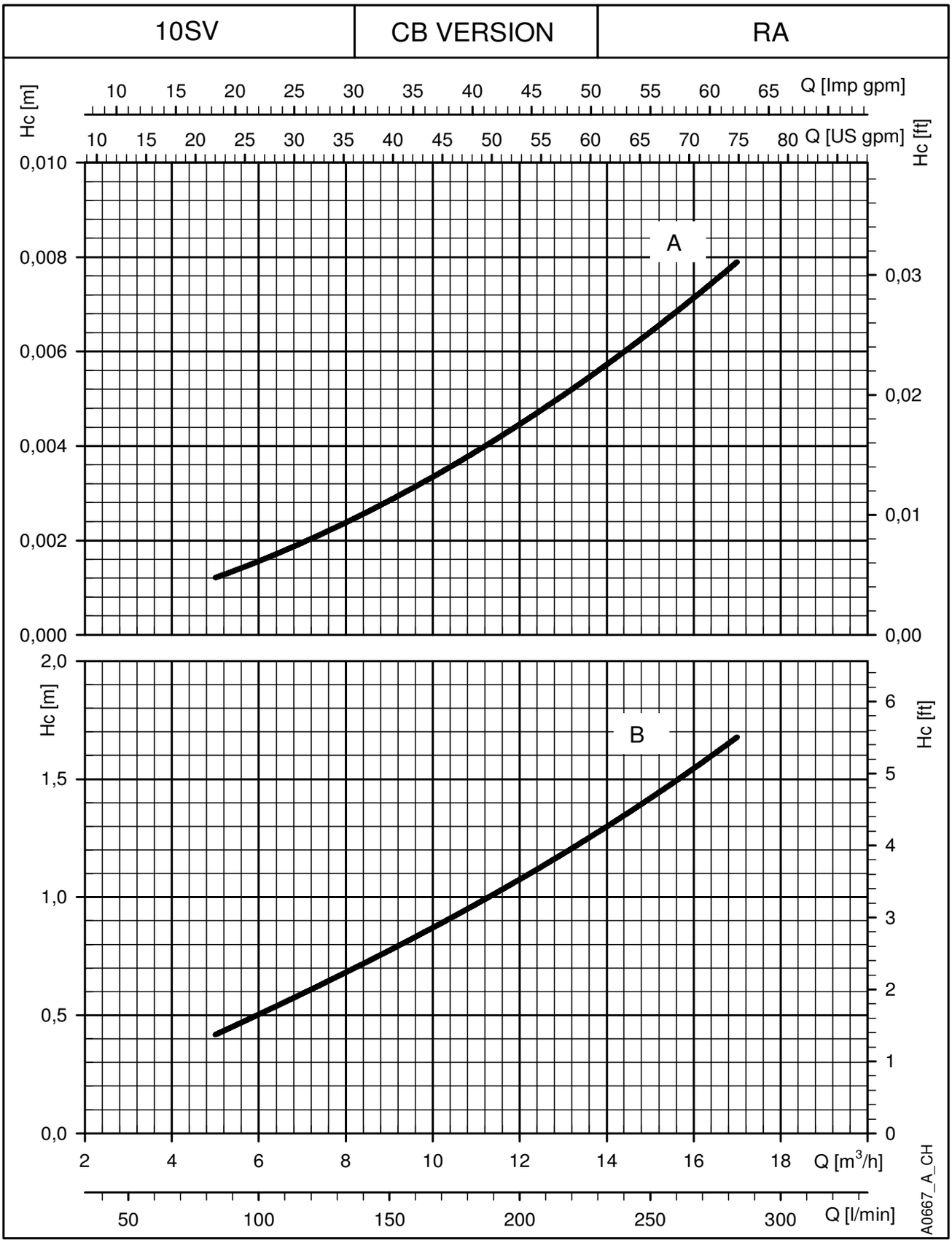
10SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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.../SVX BOOSTER SETS SERIES
OPERATING CHARACTERISTICS

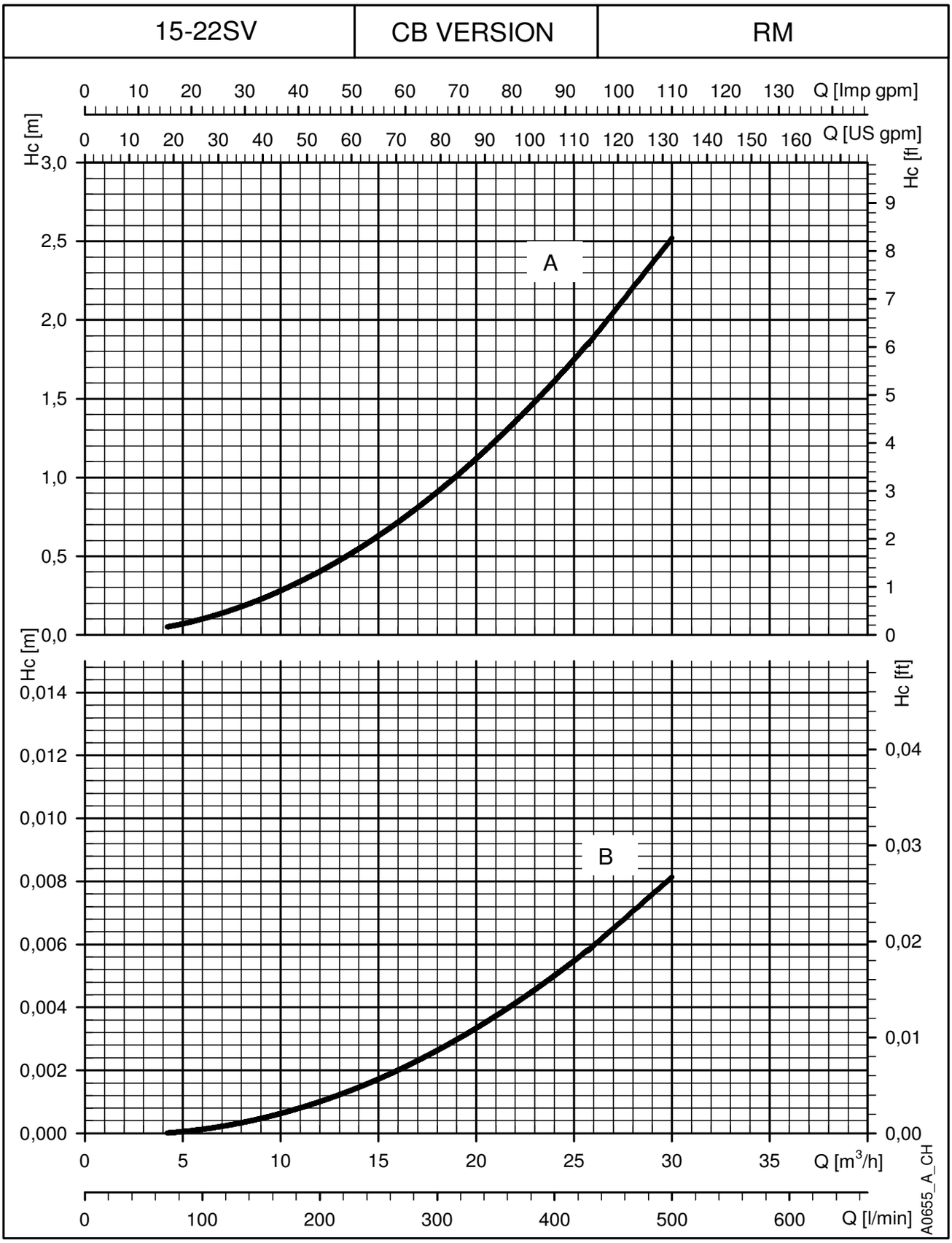
10SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

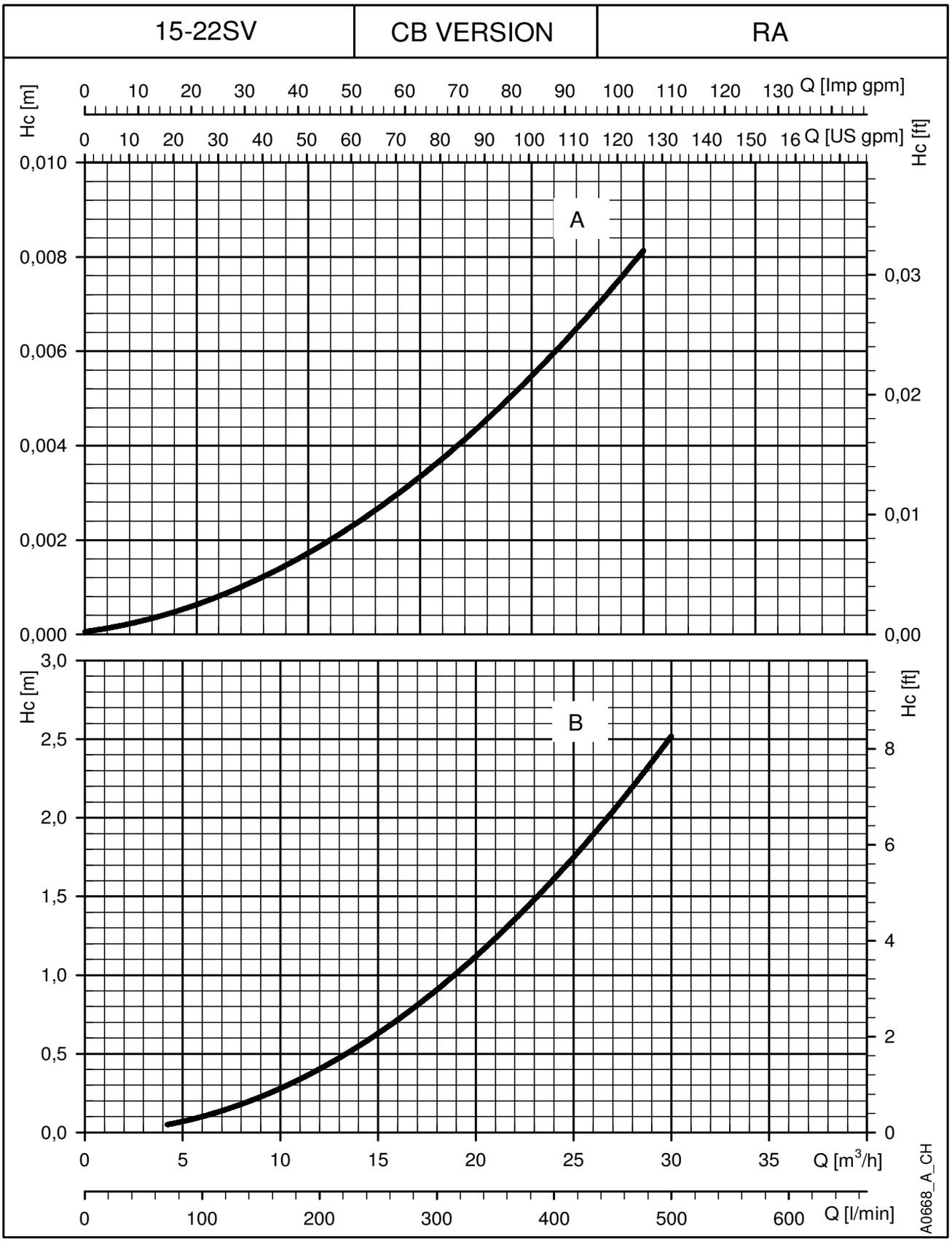
15-22SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

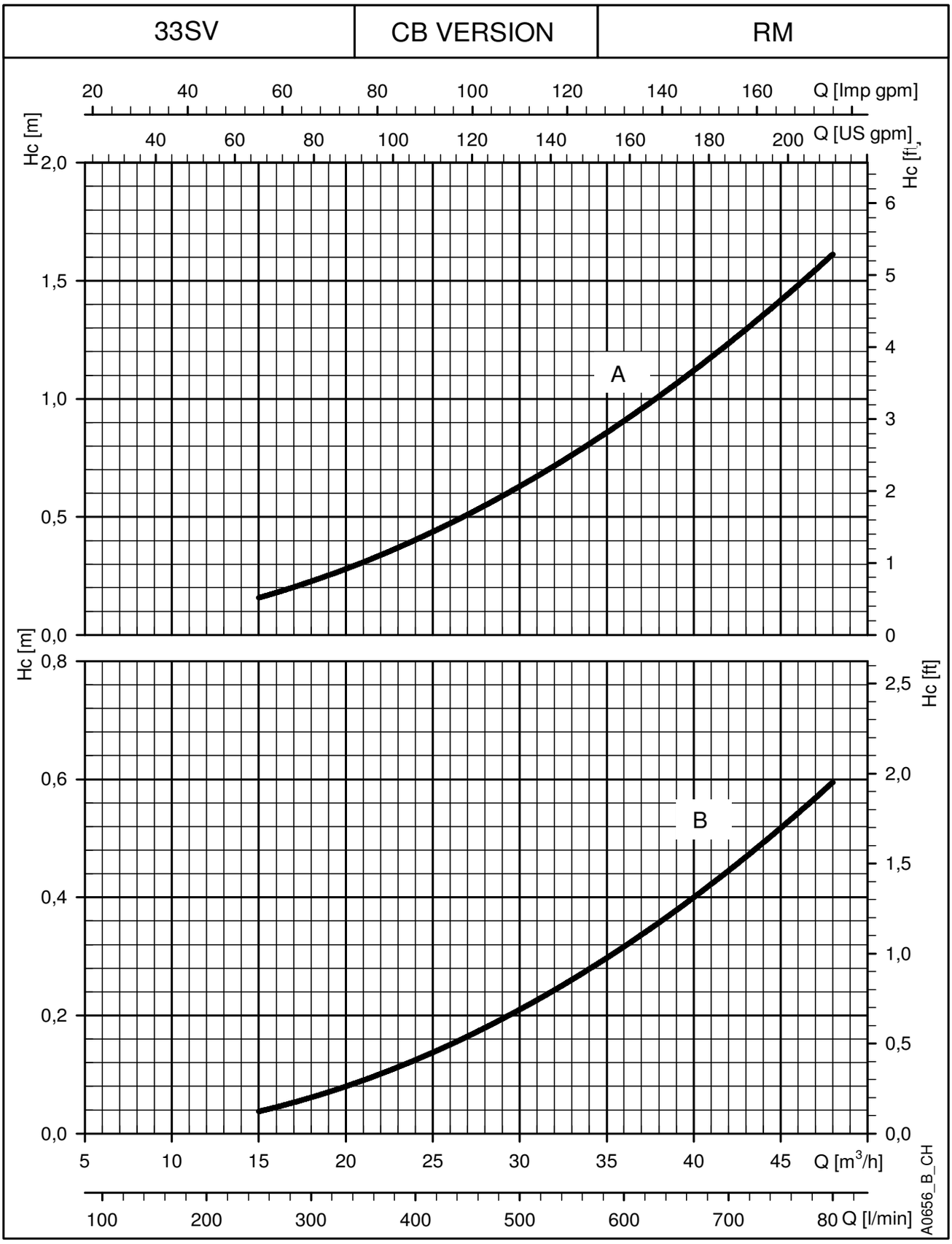
15-22SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm³ and kinematic viscosity ν = 1 mm²/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

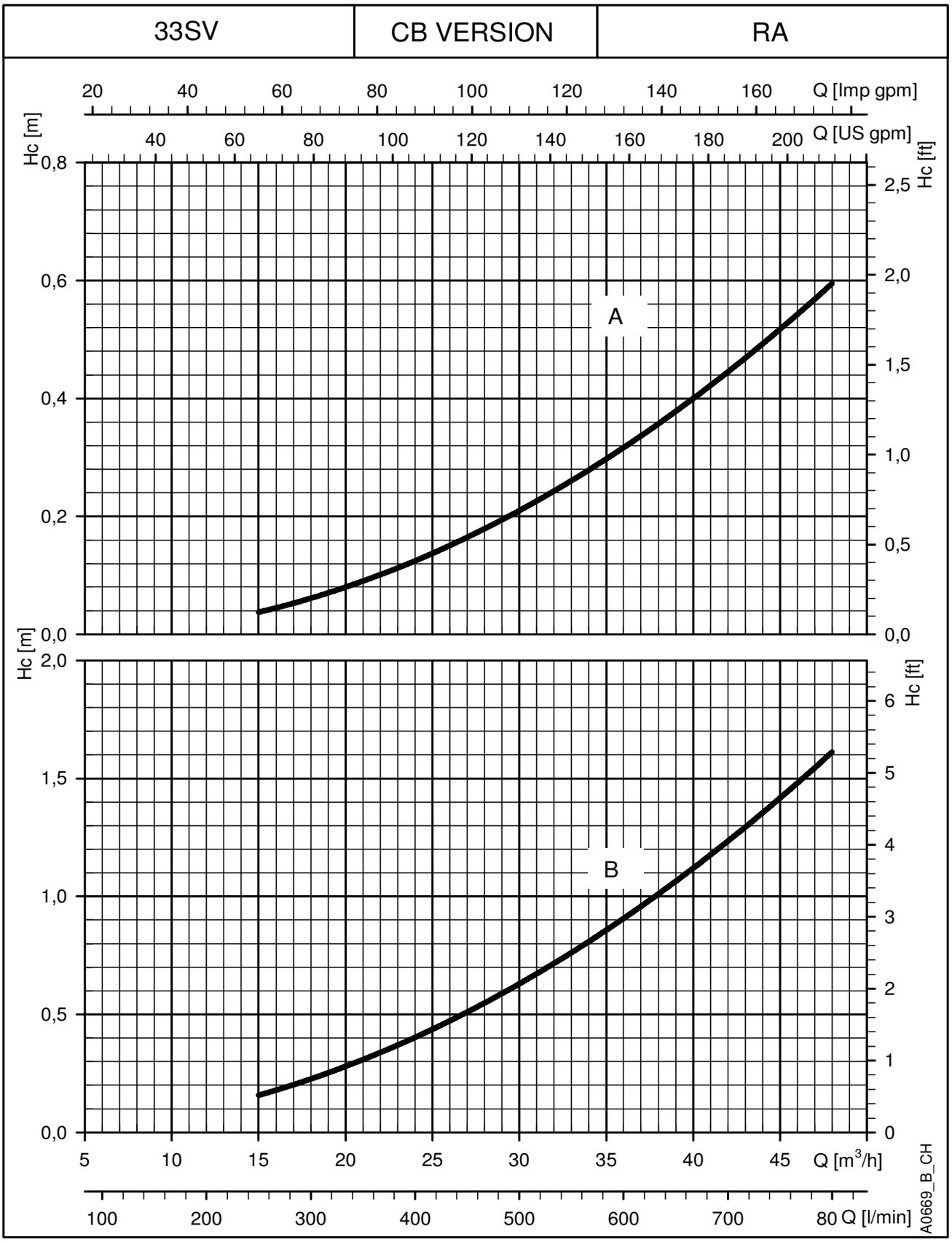
33SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

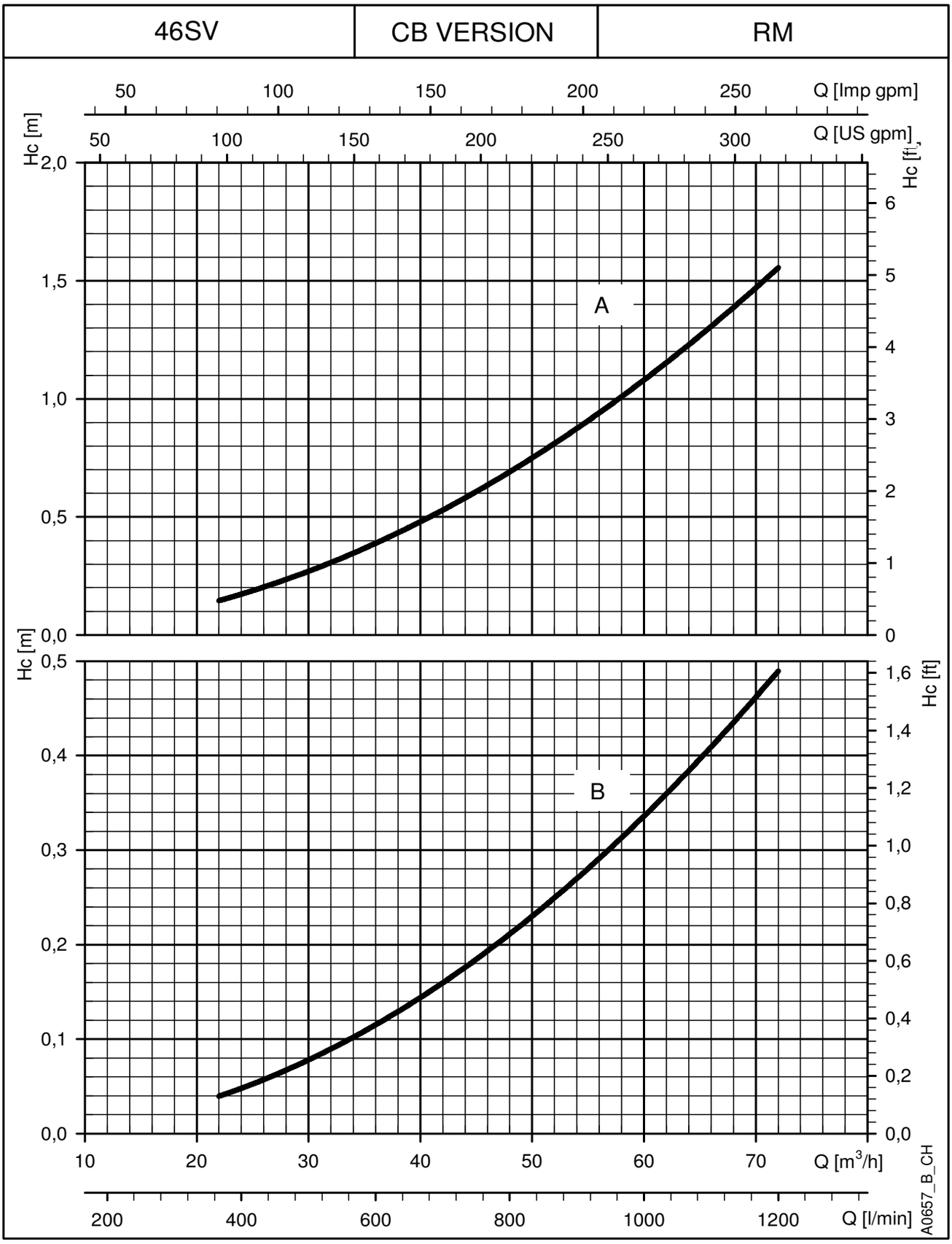
33SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

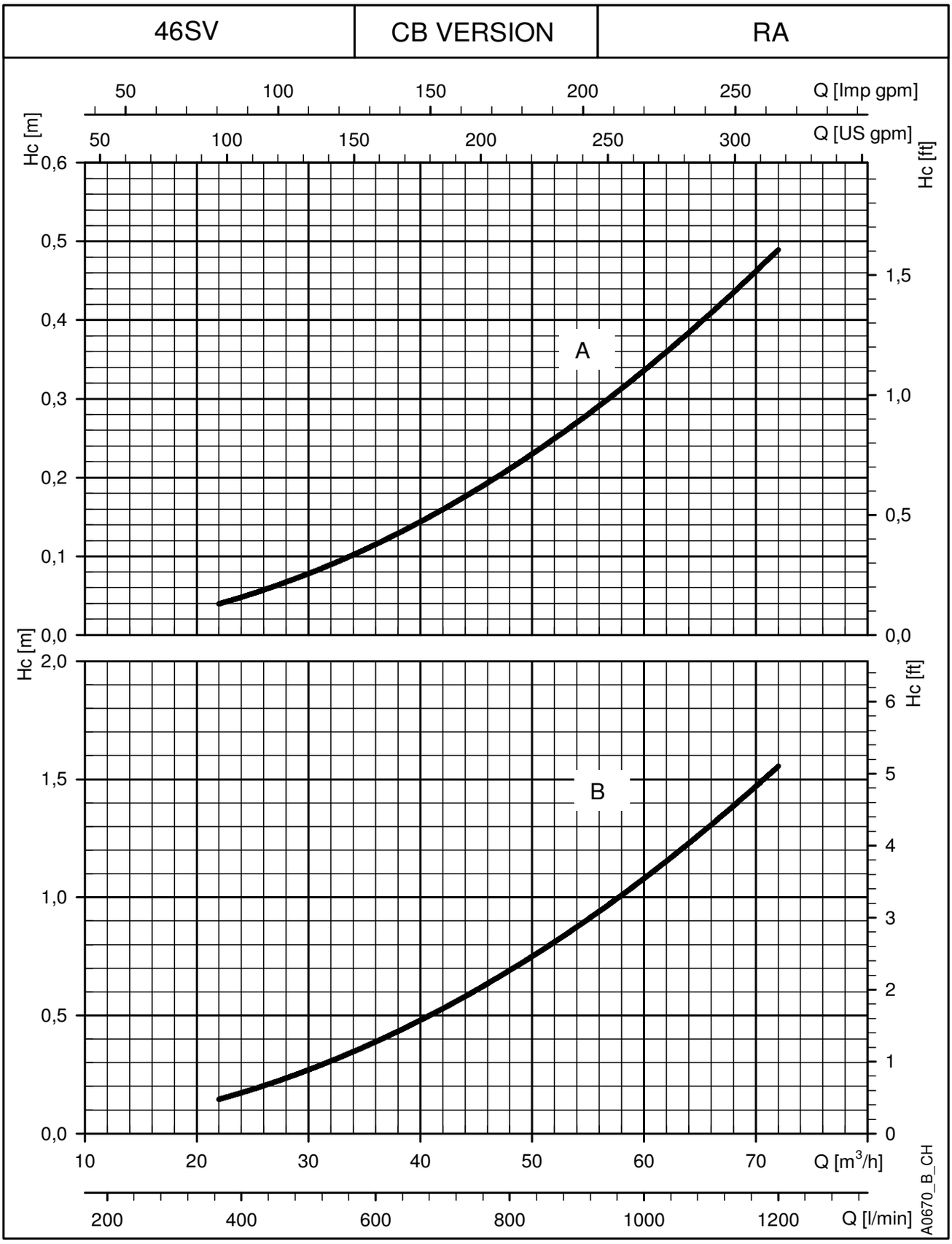
46SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

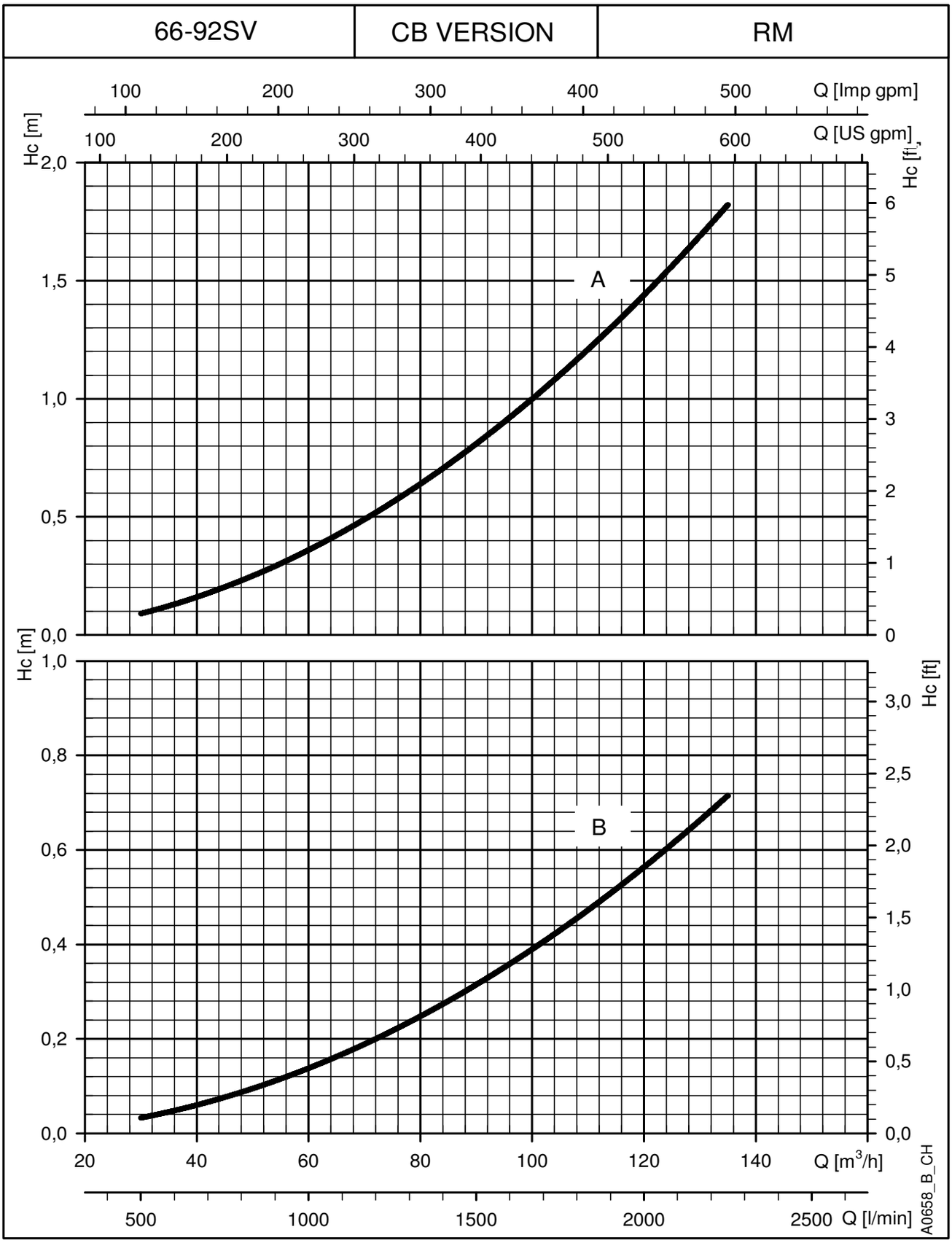
46SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

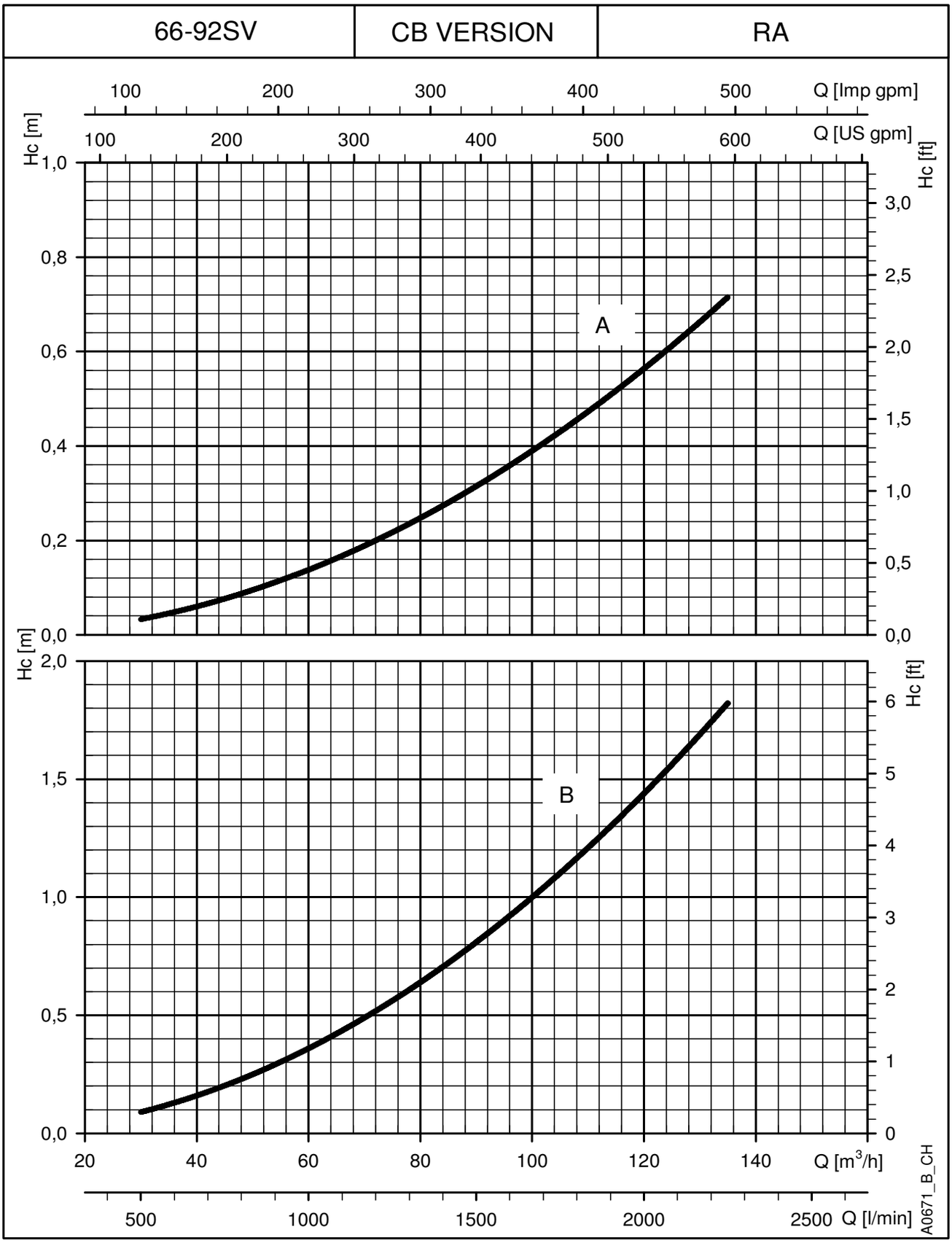
66-92SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

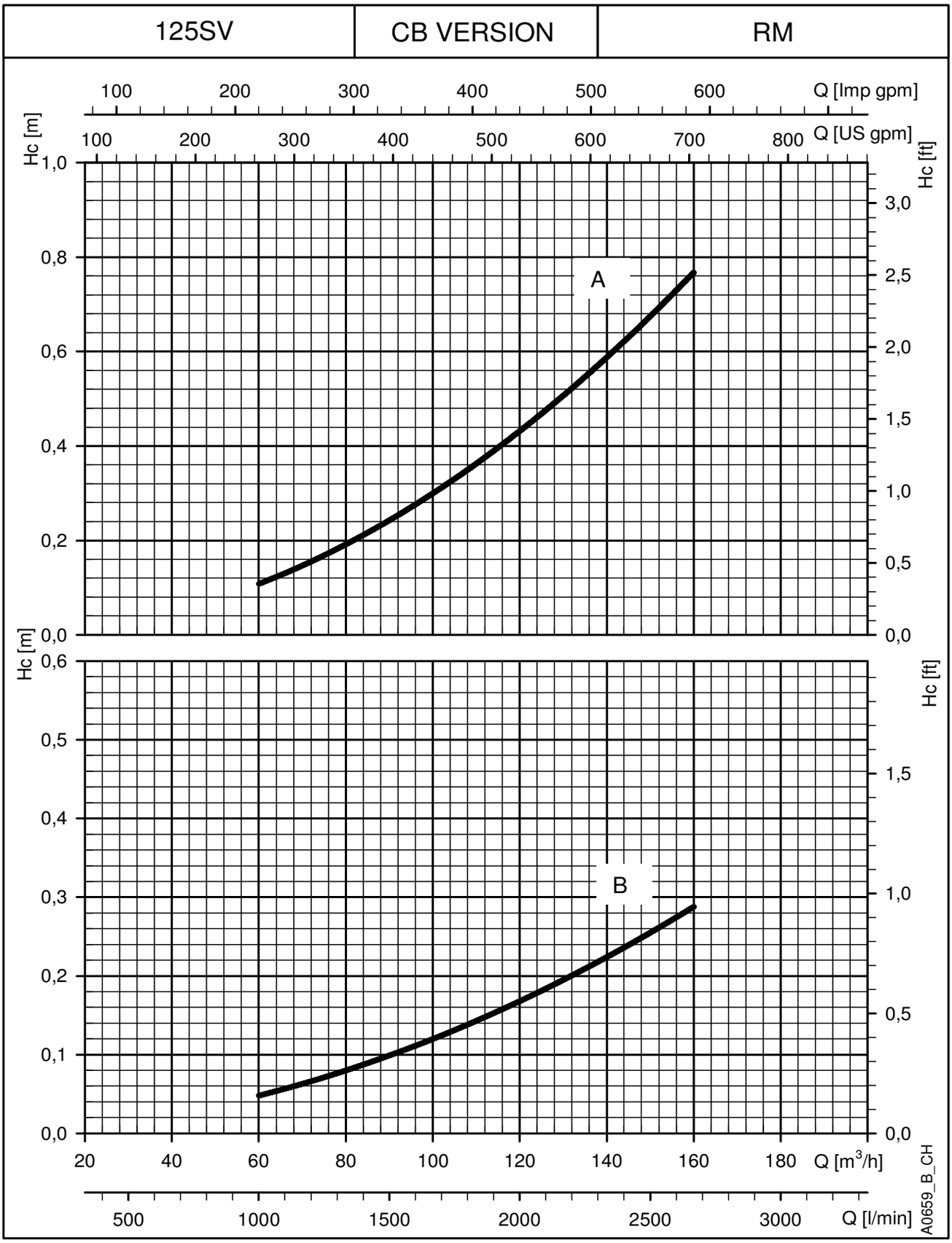
66-92SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

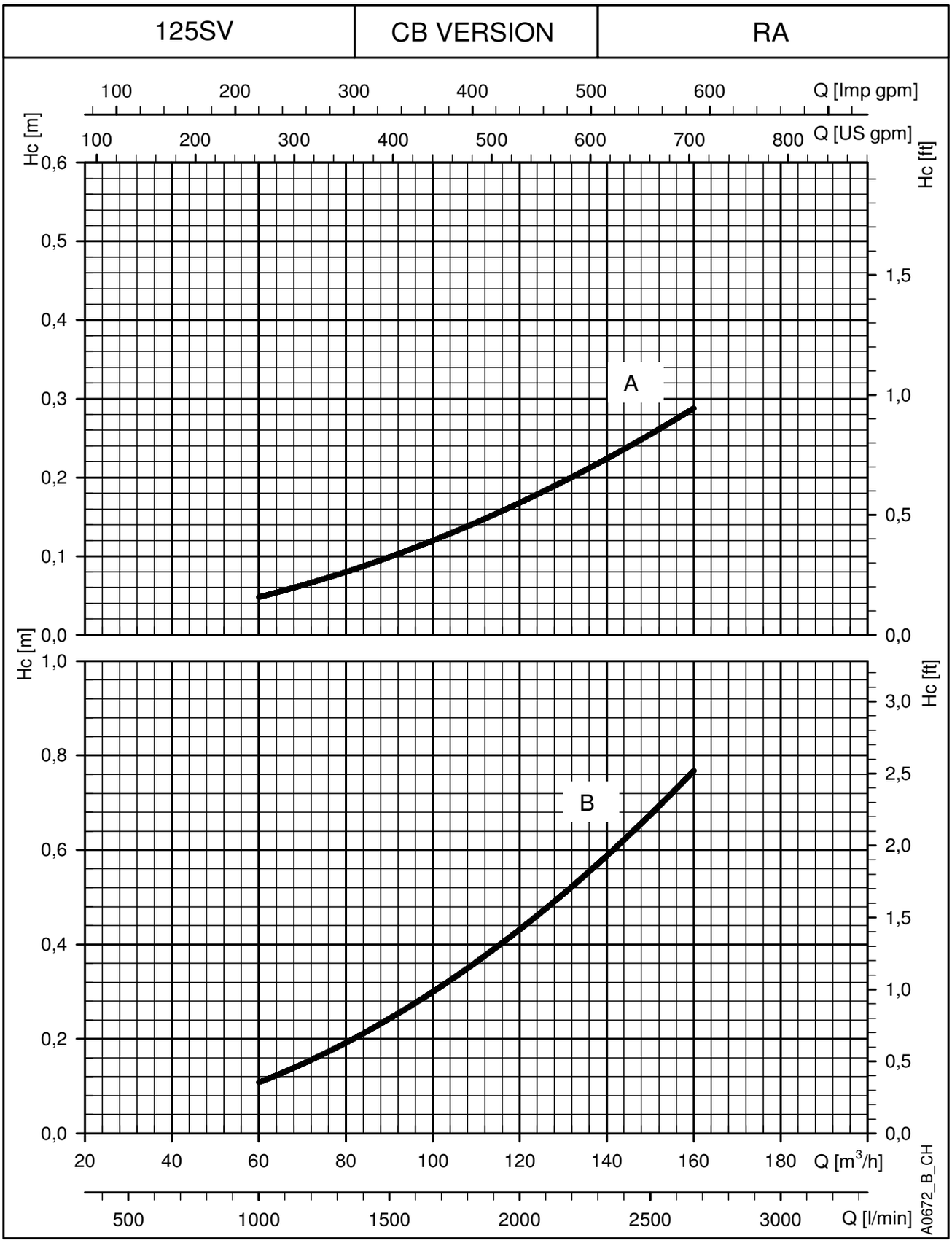
125SV	CB VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

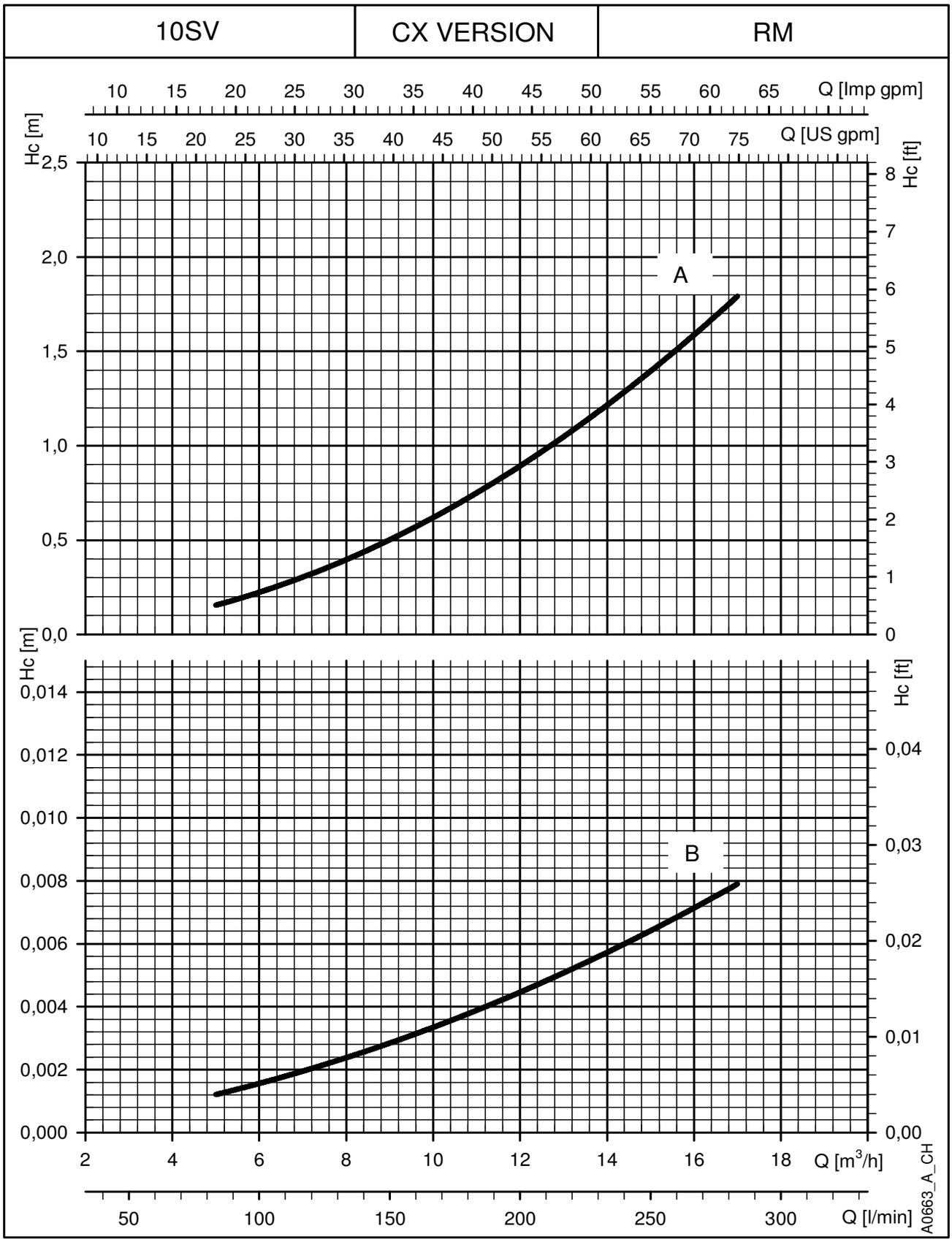
125SV	CB VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

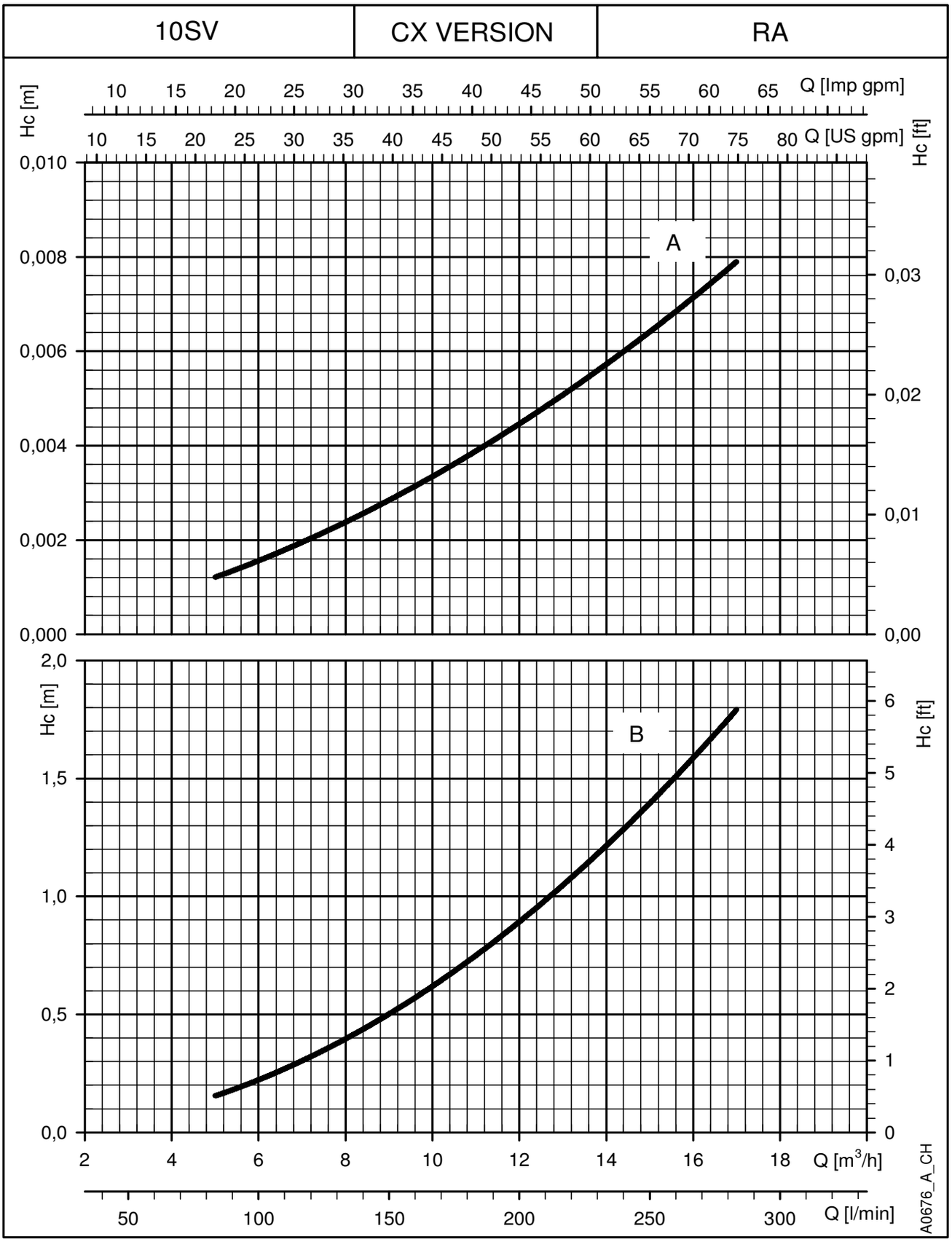
10SV	CX VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

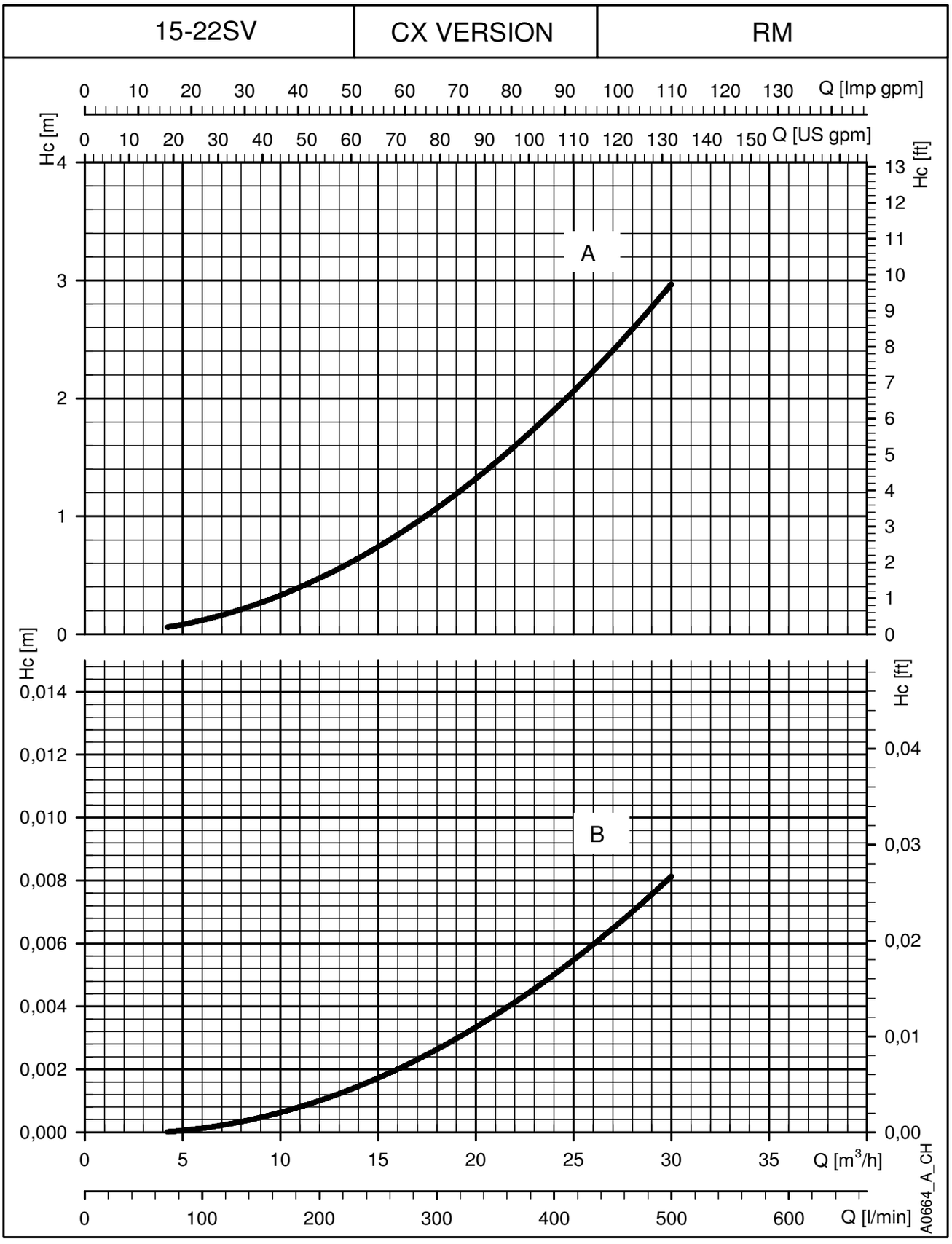
10SV	CX VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

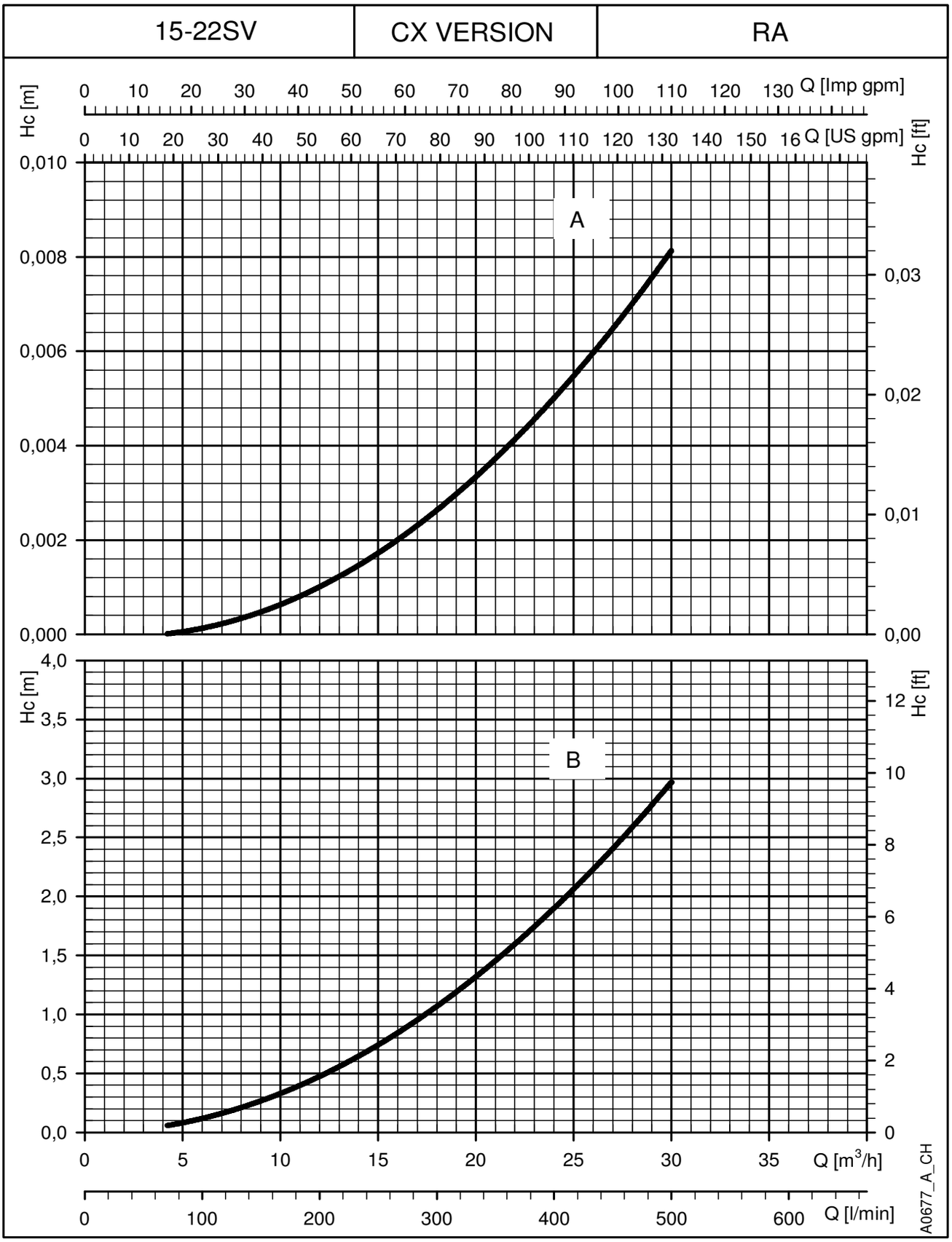
15-22SV	CX VERSION	RM



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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../SVX BOOSTER SETS SERIES
Hc PRESSURE DROP CURVES

15-22SV	CX VERSION	RA



The declared curves are valid for liquids with density ρ = 1 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/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.

ACCESSORIES

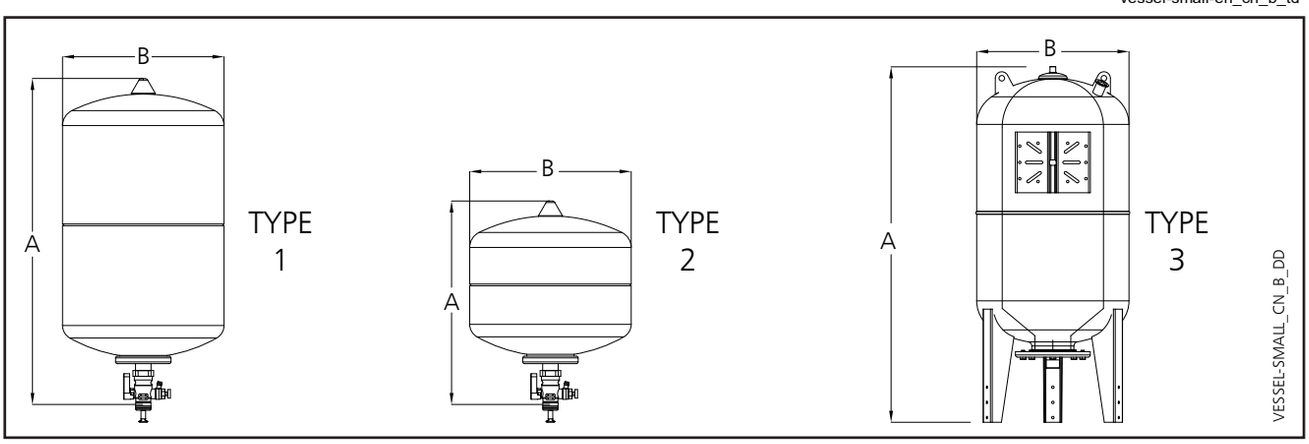
ACCESSORIES FOR BOOSTER SETS
EXPANSION VESSEL KITS

Any large size tanks can be connected to the unused end of the delivery manifold. For proper sizing of the tank, please refer to the technical appendix.
Kits including the following accessories **are available on request:**

- Expansion vessel
- Instructions sheet
- Packaging
- Special isolation device for tank that avoids water stagnation and allows servicing. Only for type 1 and type 2.

Volume	Type	PN	DIMENSIONS (mm)			Vessel material			Device material
Liters		bar	A	ø B	Connection	Bladder	Body	Connection	Connection
25	1	10	280	567	G 3/4"	BUTYL	Painted steel	AISI 304	Brass
12	2	16	280	354	G 3/4"	BUTYL	Painted steel	AISI 304	Brass
100	3	10	910	450	G 1"	BUTYL	Painted steel	AISI 304	-
100	3	16	910	450	G 1"	BUTYL	Painted steel	AISI 304	-
200	3	10	1235	550	G 1" 1/2	BUTYL	Painted steel	AISI 304	-
200	3	16	1235	550	G 1" 1/2	BUTYL	Painted steel	AISI 304	-
300	3	10	1365	630	G 1" 1/2	BUTYL	Painted steel	AISI 304	-
300	3	26	1365	630	G 1" 1/2	BUTYL	Painted steel	AISI 304	-

vessel-small-en_cn_b_td



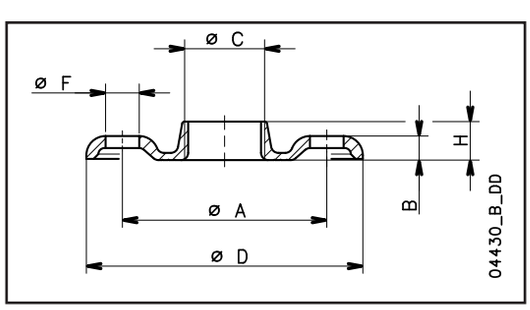
FLANGE KIT

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		DIMENSIONS (mm)						HOLES		
TYPE	DN	MODEL	ø C	ø A	B	ø D	H	ø F	N°	PN
2"	50	A	Rp 2	125	16	165	24	18	4	25
2" ½	65	A	Rp 2 ½	145	16	185	23	18	4	16
3"	80	A	Rp 3	160	17	200	27	18	8	16
2" ½	65	B	Rp 2 ½	145	22	185	38	18	8	25
3"	80	B	Rp 3	160	24	200	40	18	8	25

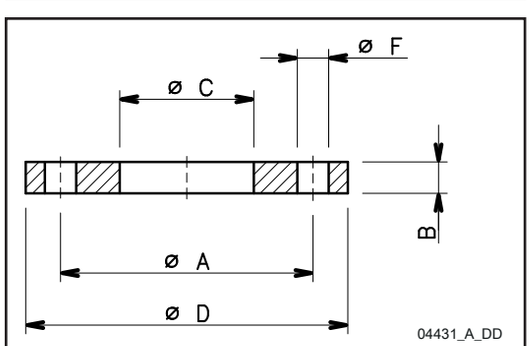
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WELD-ON COUNTERFLANGES

KIT		DIMENSIONS (mm)				HOLES		
TYPE	DN	ø C	ø A	B	ø D	ø F	N°	PN
2"	50	61,5	125	20	165	18	4	16
2"1/2	65	77,5	145	20	185	18	4	16
3"	80	90,5	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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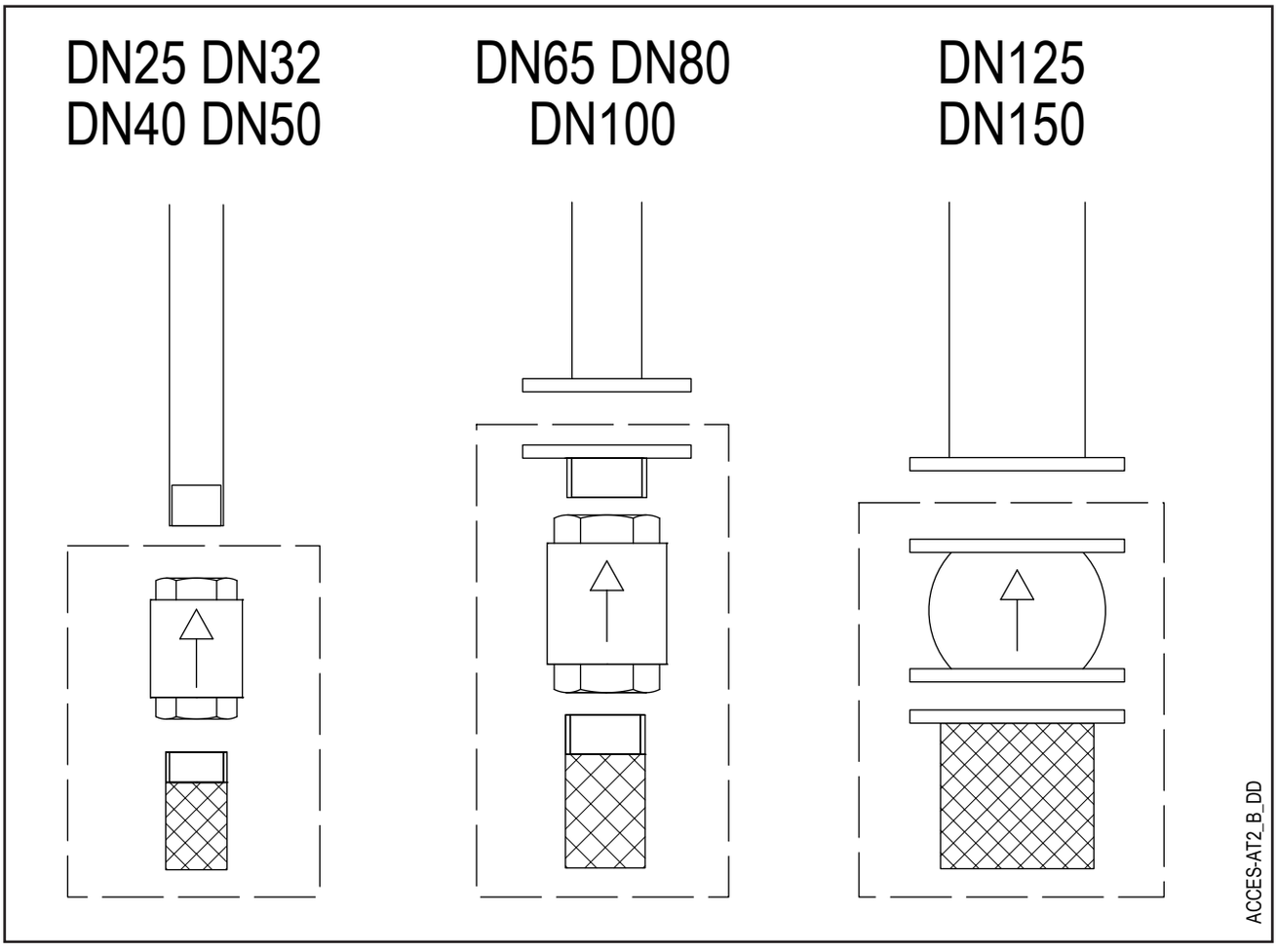


ACCESSORIES FOR BOOSTER SETS

SUCTION SIDE KIT

The GHV..SA booster sets are supplied without components on the suction side of the pumps and can be completed with piping, strainers and foot valves.

The following table summarizes the pump type and the components of the kit, such as strainer and foot valve. The pipe connection from foot valve and pump must be provided by the customers.



PUMP NAME	FOOT VALVE & STRAINER SIZE	FOOT VALVE & STRAINER MATERIAL
1SV	DN32	Aisi 304
3SV	DN32	Aisi 304
5SV	DN40	Aisi 304
10SV	DN50	Aisi 304
15SV	DN65	Aisi 304
22SV	DN65	Aisi 304
33SV	DN80	Aisi 304
46SV	DN100	Aisi 304
66SV	DN125	Aisi 304
92SV	DN125	Aisi 304
125SV	DN150	Aisi 304

acces-strainer_at2_mat-en_a_tm

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.

The drinking water certificates are valid for the standard booster configuration. Please check with your Sales representative the drinking water certifications applicable for boosters equipped with fitted joints.
For more information, please contact the sales network.

RUBBER EXPANSION JOINT

EPDM RUBBER (*) DN	Pmax bar (**)	L (mm)	A (mm)	B (mm)	C (mm)	D (°)
1"	10	203	22	6	22	25
1"1/4	10	203	22	6	22	25
1"1/2	10	203	22	6	22	20
2"	10	203	22	6	22	15
2"1/2	10	203	22	6	22	12
3	10	203	22	6	22	10
EPDM RUBBER (*) DN	Pmax bar (**)	L (mm)	A (mm)	B (mm)	C (mm)	D (°)
32	16	152	13	9	13	15
40	16	152	13	9	13	15
50	16	152	13	9	13	15
65	16	152	13	9	13	15
80	16	152	13	9	13	15
100	16	152	19	13	13	15
125	16	152	19	13	13	15
150	16	152	19	13	13	15
200	16	152	19	13	19	15
250	16	203	25	16	19	15
300	10	203	25	16	19	15
350	10	203	25	16	19	15
400	9	203	25	16	19	15
450	9	203	25	16	19	15
500	9	203	25	16	19	15

* Metallic part in SS316

** Maximum pressure permitted up to 80°C water

GD-316_JOINT-en_A_TD

LEGEND

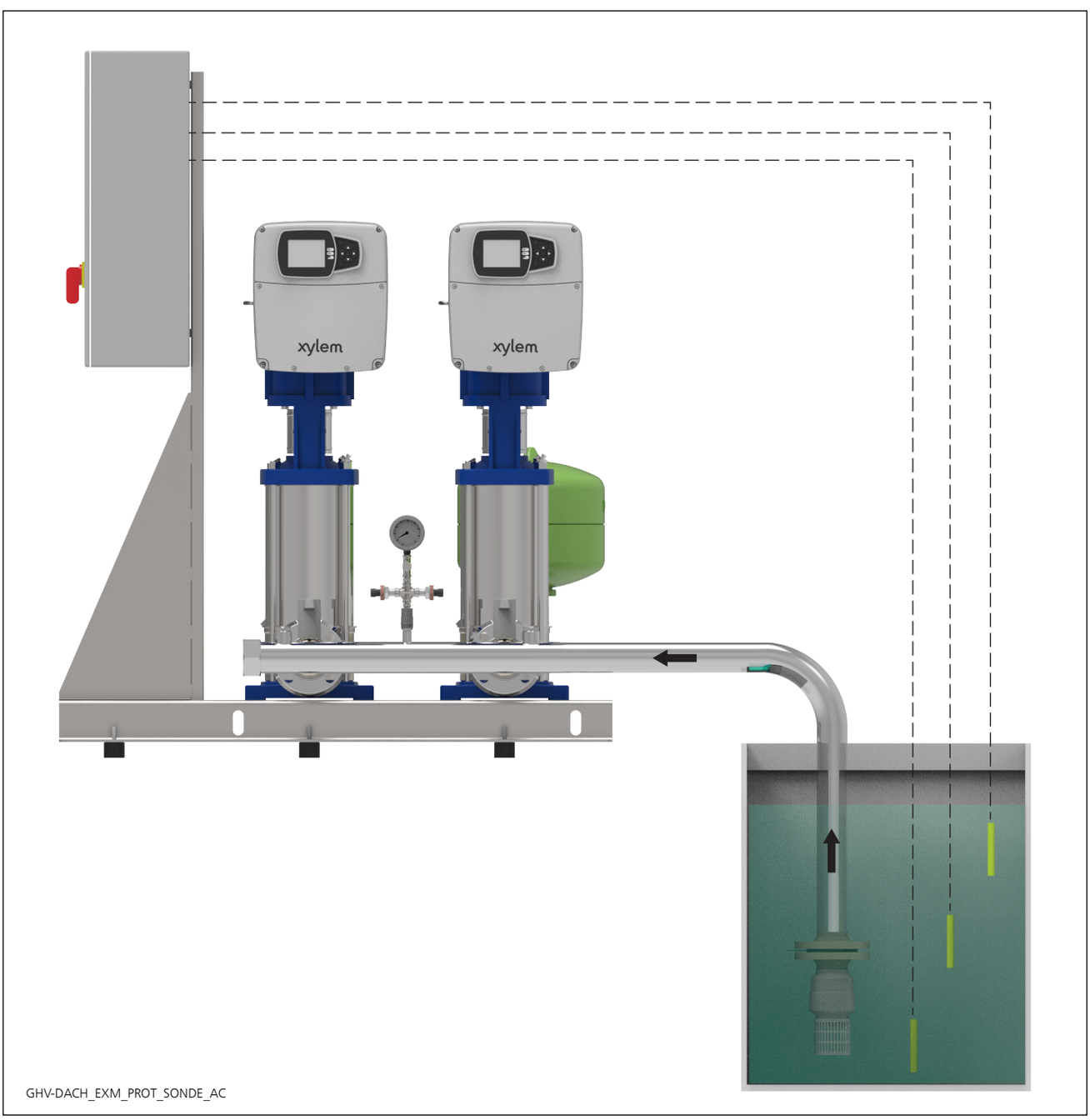
A = compression
B = extension
C = transverse
D = angular movement
NOTE. **A** - **B** - **C** - **D** can not be cumulative

PROTECTION SYSTEMS AGAINST DRY RUNNING

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

ELECTRODE PROBE PROTECTION

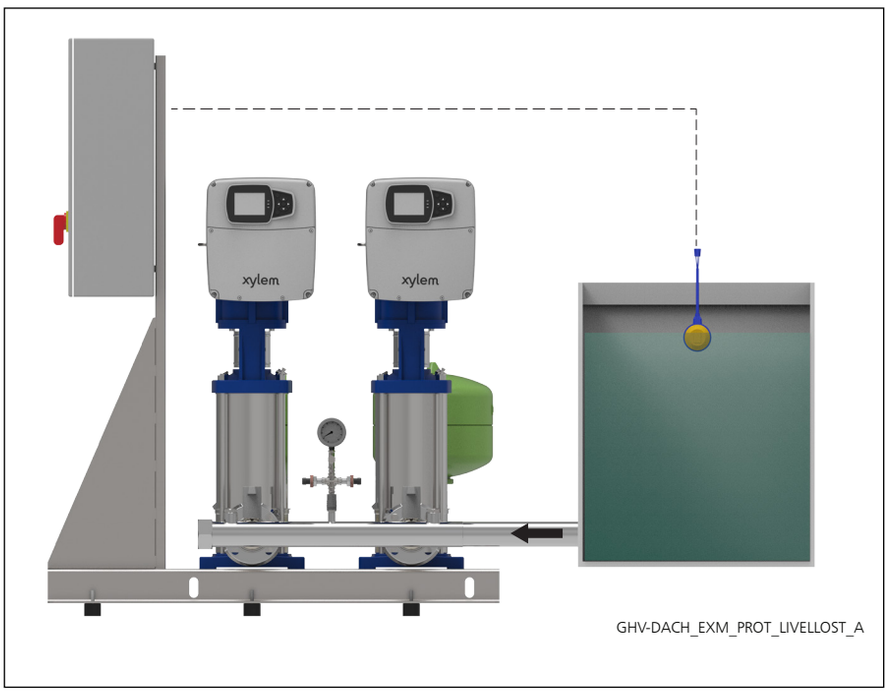
The system with electrode probes is used for supplies from open tanks or wells.
Three probes are directly connected to the electric module with adjustable sensitivity that can be installed in the control panel. If there is no water, the control circuit opens the electrical contact and the electric pumps stop.



GHV-DACH_EXM_PROT_SONDE_AC

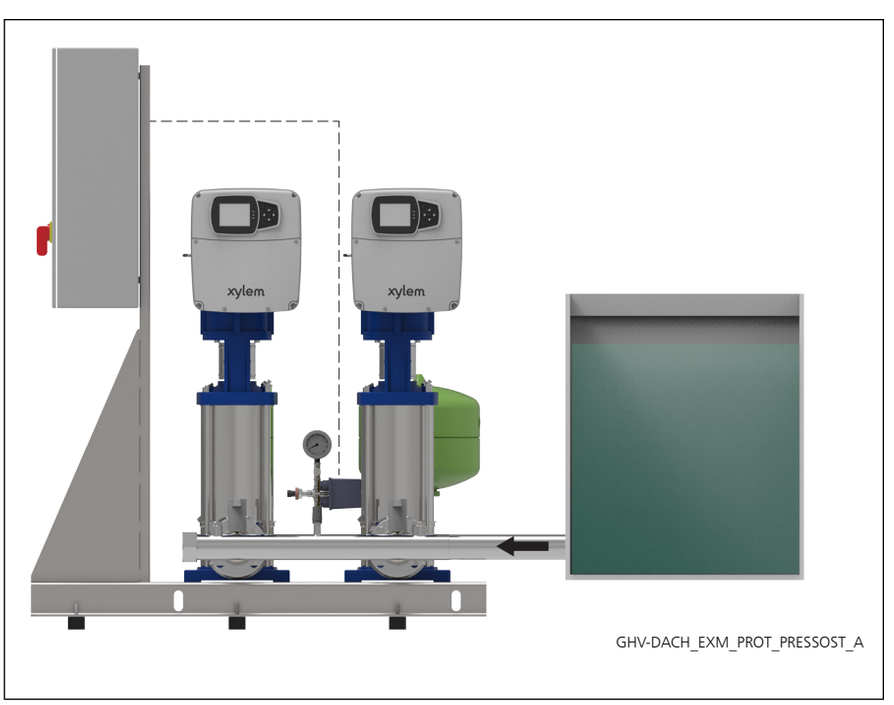
PROTECTION SYSTEMS AGAINST DRY RUNNING

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 pressurized 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 meters 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:

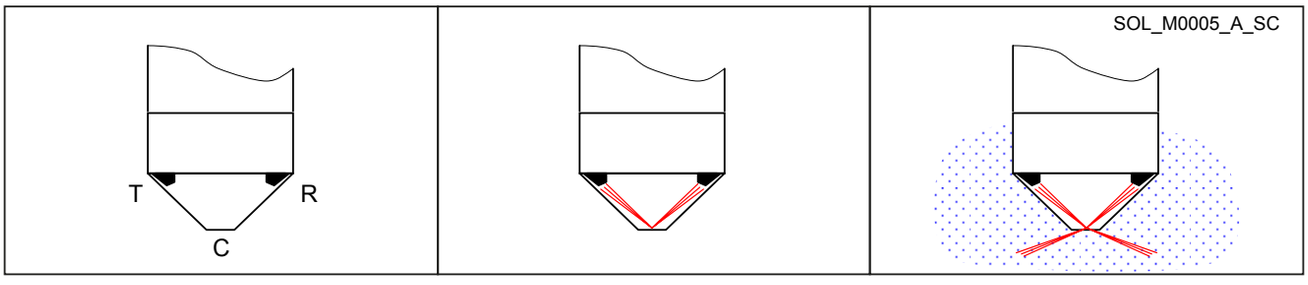
- 21÷27 Vac, universal solid state output for external relay at 24 Vac (21÷27 Vac, Max 50 mA).
- 15÷25 Vdc, NPN output at 25 V (10 mA) for HYDROVAR inverter.

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

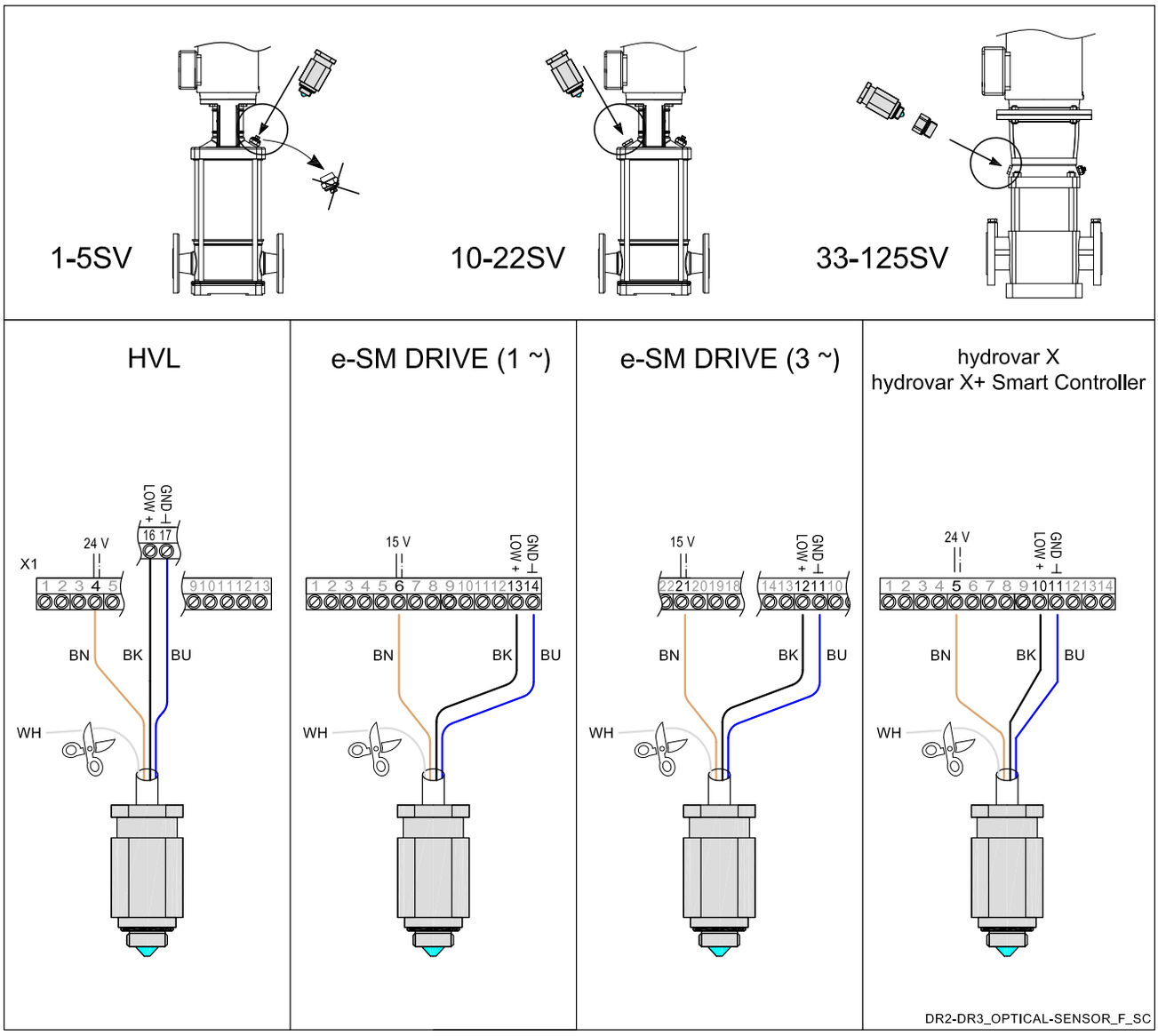
- Materials:
  - Body in AISI 316L stainless steel
  - Glass optic cap
  - EPDM gasket
- Liquids: clean water, demi water. Operation is not affected by the hardness and conductivity of the liquid. To check the suitably of other liquids, contact the Lowara technical assistance service providing the characteristics 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” adapter 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 meters long

PROTECTION SENSOR AGAINST DRY RUNNING
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” adapter ring included in the Kit must also be mounted.

KIT SENSOR DRP-HV (code 109394600)
GHV10../DR1, GHV20../DR2, GHV30../DR3



OPTIMYZE™
CONDITION MONITORING TO OPTIMIZE YOUR BOTTOM LINE

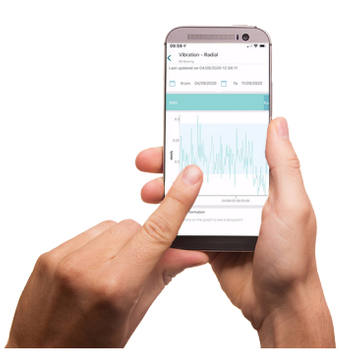
The optimyze™ modular condition monitoring solution provides health guidance and predictive maintenance advice for rotating and fixed assets such as pumps, motors, heat exchangers and steam traps. It periodically monitors system vibration and temperature and allows everyday users to access simple-to-use monitoring tools from iOS or Android mobile devices.



Using predictive analysis, optimyze identifies potential problems with your equipment before they occur, to help you manage system reliability and maintenance. Information is monitored, collected, stored and analyzed in the optimyze sensor. This allows you to understand the current health and historical trends of your assets, create maintenance reminders and generate detailed reports. As a result, you can perform preventative maintenance before issues become critical to uptime.

BENEFITS:

- Predictive maintenance to monitor the health of mechanical and electrical assets
- Asset management including asset location, size and manufacturing date
- System transparency to optimize reliability
- Optimized reporting that helps to simplify documentation, manage system maintenance and inform purchasing
- The ability to automatically share data with multiple local users
- Conveniently monitor system conditions on our simple-to-use mobile application



INDUSTRIES:

- Commercial Building Services
- Manufacturing
- Agriculture
- Water Utilities

APPLICATIONS:

- Monitoring the vibration of pumps and motors
- Monitoring the temperature of pump bearings
- Monitoring the temperature of motors to prevent overheating and winding damage
- Monitoring the performance of heat exchangers
- And more

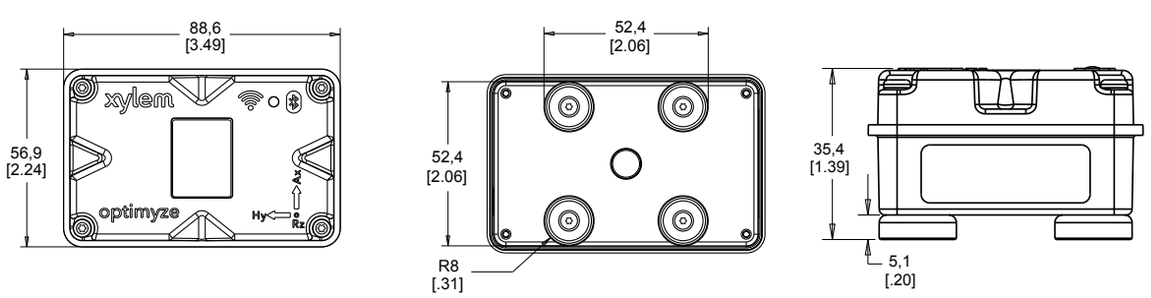
OPTIMYZE™
CONDITION MONITORING AND OPTIMIZATION SPECIFICATIONS

Surface Temperature Measurement	
Measurement range	-20°C to +135°C (-4°F to +275°F)
Measurement method	Non-contact infrared laser
Minor gradient accuracy (0°C to 25°C gradient)	+/- 1°C
Moderate gradient accuracy (25°C to 50°C gradient)	+/- 2°C
Large gradient accuracy (50°C to 100°C gradient)	+/- 4°C
Vibration Measurement	
Frequency range	5Hz to 1,100Hz
Measurement method	Independent 3-axis
Primary output (per axis)	Single value RMS
Other outputs	Kurtosis and FFT
Vibration limit (max acceleration)	16g
Threshold standard (Global)	ISO 10816-7
Threshold standard (North America)	ANSI/HI 9.6.4
Power	
Batteries (replaceable)	(2) 3.6V AA, 2400mAh, Lithium
Battery life (using default sampling rate at 25°C)	3 to 5 years
Default sampling rate	1 sample per 30 minutes
Available sampling rates (one sample per unit of time)	10 seconds to 12 hours
Wireless Communication	
Network type	Bluetooth® Low Energy 5.01
Connection range (without interference)	30 meters (100 feet)
Environmental	
Ambient operating range	-20°C to +50°C (-4°F to +122°F)
Storage temperature (5 to 95% humidity non-condensing)	-25°C to +65°C (-13°F to +149°F)
Protection rating	IP56, NEMA 4
Physical Properties	
Weight	145g (0.32 lbs.)
Status	LED
Mounting method (standard)	Magnetic (16mm potted magnets)
Mounting method (optional)	Drill and tap with plate
Certifications	
Certifications	CE, FCC, UL
Intended use (environments)	Non-hazardous, non-corrosive
Part Numbers	
optimyze (standard sensor)	P2007000
optimyze battery replacement kit	P2007030
optimyze optional flat plate mounting kit	P2007031

[1]Backwards compatible up to Bluetooth® Low Energy 4.2

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DIMENSIONS: mm [in]



TECHNICAL APPENDIX

VAPOUR PRESSURE
VAPOUR PRESSURE ps AND ρ DENSITY OF WATER TABLE

t	T	ps	ρ
°C	K	bar	kg/dm³
0	273,15	0,00611	0,9998
1	274,15	0,00657	0,9999
2	275,15	0,00706	0,9999
3	276,15	0,00758	0,9999
4	277,15	0,00813	1,0000
5	278,15	0,00872	1,0000
6	279,15	0,00935	1,0000
7	280,15	0,01001	0,9999
8	281,15	0,01072	0,9999
9	282,15	0,01147	0,9998
10	283,15	0,01227	0,9997
11	284,15	0,01312	0,9997
12	285,15	0,01401	0,9996
13	286,15	0,01497	0,9994
14	287,15	0,01597	0,9993
15	288,15	0,01704	0,9992
16	289,15	0,01817	0,9990
17	290,15	0,01936	0,9988
18	291,15	0,02062	0,9987
19	292,15	0,02196	0,9985
20	293,15	0,02337	0,9983
21	294,15	0,24850	0,9981
22	295,15	0,02642	0,9978
23	296,15	0,02808	0,9976
24	297,15	0,02982	0,9974
25	298,15	0,03166	0,9971
26	299,15	0,03360	0,9968
27	300,15	0,03564	0,9966
28	301,15	0,03778	0,9963
29	302,15	0,04004	0,9960
30	303,15	0,04241	0,9957
31	304,15	0,04491	0,9954
32	305,15	0,04753	0,9951
33	306,15	0,05029	0,9947
34	307,15	0,05318	0,9944
35	308,15	0,05622	0,9940
36	309,15	0,05940	0,9937
37	310,15	0,06274	0,9933
38	311,15	0,06624	0,9930
39	312,15	0,06991	0,9927
40	313,15	0,07375	0,9923
41	314,15	0,07777	0,9919
42	315,15	0,08198	0,9915
43	316,15	0,09639	0,9911
44	317,15	0,09100	0,9907
45	318,15	0,09582	0,9902
46	319,15	0,10086	0,9898
47	320,15	0,10612	0,9894
48	321,15	0,11162	0,9889
49	322,15	0,11736	0,9884
50	323,15	0,12335	0,9880
51	324,15	0,12961	0,9876
52	325,15	0,13613	0,9871
53	326,15	0,14293	0,9862
54	327,15	0,15002	0,9862

t	T	ps	ρ
°C	K	bar	kg/dm³
55	328,15	0,15741	0,9857
56	329,15	0,16511	0,9852
57	330,15	0,17313	0,9846
58	331,15	0,18147	0,9842
59	332,15	0,19016	0,9837
60	333,15	0,1992	0,9832
61	334,15	0,2086	0,9826
62	335,15	0,2184	0,9821
63	336,15	0,2286	0,9816
64	337,15	0,2391	0,9811
65	338,15	0,2501	0,9805
66	339,15	0,2615	0,9799
67	340,15	0,2733	0,9793
68	341,15	0,2856	0,9788
69	342,15	0,2984	0,9782
70	343,15	0,3116	0,9777
71	344,15	0,3253	0,9770
72	345,15	0,3396	0,9765
73	346,15	0,3543	0,9760
74	347,15	0,3696	0,9753
75	348,15	0,3855	0,9748
76	349,15	0,4019	0,9741
77	350,15	0,4189	0,9735
78	351,15	0,4365	0,9729
79	352,15	0,4547	0,9723
80	353,15	0,4736	0,9716
81	354,15	0,4931	0,9710
82	355,15	0,5133	0,9704
83	356,15	0,5342	0,9697
84	357,15	0,5557	0,9691
85	358,15	0,5780	0,9684
86	359,15	0,6011	0,9678
87	360,15	0,6249	0,9671
88	361,15	0,6495	0,9665
89	362,15	0,6749	0,9658
90	363,15	0,7011	0,9652
91	364,15	0,7281	0,9644
92	365,15	0,7561	0,9638
93	366,15	0,7849	0,9630
94	367,15	0,8146	0,9624
95	368,15	0,8453	0,9616
96	369,15	0,8769	0,9610
97	370,15	0,9094	0,9602
98	371,15	0,9430	0,9596
99	372,15	0,9776	0,9586
100	373,15	1,0133	0,9581
102	375,15	1,0878	0,9567
104	377,15	1,1668	0,9552
106	379,15	1,2504	0,9537
108	381,15	1,3390	0,9522
110	383,15	1,4327	0,9507
112	385,15	1,5316	0,9491
114	387,15	1,6362	0,9476
116	389,15	1,7465	0,9460
118	391,15	1,8628	0,9445

t	T	ps	ρ
°C	K	bar	kg/dm³
120	393,15	1,9854	0,9429
122	395,15	2,1145	0,9412
124	397,15	2,2504	0,9396
126	399,15	2,3933	0,9379
128	401,15	2,5435	0,9362
130	403,15	2,7013	0,9346
132	405,15	2,867	0,9328
134	407,15	3,041	0,9311
136	409,15	3,223	0,9294
138	411,15	3,414	0,9276
140	413,15	3,614	0,9258
145	418,15	4,155	0,9214
155	428,15	5,433	0,9121
160	433,15	6,181	0,9073
165	438,15	7,008	0,9024
170	433,15	7,920	0,8973
175	448,15	8,924	0,8921
180	453,15	10,027	0,8869
185	458,15	11,233	0,8815
190	463,15	12,551	0,8760
195	468,15	13,987	0,8704
200	473,15	15,550	0,8647
205	478,15	17,243	0,8588
210	483,15	19,077	0,8528
215	488,15	21,060	0,8467
220	493,15	23,198	0,8403
225	498,15	25,501	0,8339
230	503,15	27,976	0,8273
235	508,15	30,632	0,8205
240	513,15	33,478	0,8136
245	518,15	36,523	0,8065
250	523,15	39,776	0,7992
255	528,15	43,246	0,7916
260	533,15	46,943	0,7839
265	538,15	50,877	0,7759
270	543,15	55,058	0,7678
275	548,15	59,496	0,7593
280	553,15	64,202	0,7505
285	558,15	69,186	0,7415
290	563,15	74,461	0,7321
295	568,15	80,037	0,7223
300	573,15	85,927	0,7122
305	578,15	92,144	0,7017
310	583,15	98,70	0,6906
315	588,15	105,61	0,6791
320	593,15	112,89	0,6669
325	598,15	120,56	0,6541
330	603,15	128,63	0,6404
340	613,15	146,05	0,6102
350	623,15	165,35	0,5743
360	633,15	186,75	0,5275
370	643,15	210,54	0,4518
374,15	647,30	221,20	0,3154

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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 expansion vessel 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 expansion vessel version, neither air supply units nor compressor are needed, as contact between air and water is prevented by a flexible expansion vessel 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.

EXPANSION VESSEL

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

$$V_m = \frac{Qp}{4 \times Z} \times \frac{1}{1 - \frac{(Pmin - 2)}{Pmax}}$$

where:
Vm = Total volume of the air-cushion surge tank in m^3
Qp = Average pump flow rate in m^3/h
Pmax = Maximum pressure setting (wcm)
Pmin = Minimum pressure setting (wcm)
Z = Maximum number of starts per hour allowed by the motor
Example:
22SV10F110T electric pump
Pmax = 23 wcm
Pmin = 15 wcm
Qp = 20 m^3/h
Z =25

$$V_m = \frac{Qp}{4 \times Z} \times \frac{1}{1 - \frac{(Pmin - 2)}{Pmax}} = 0{,}46\ m^3$$

A 500-litre surge tank is therefore required.

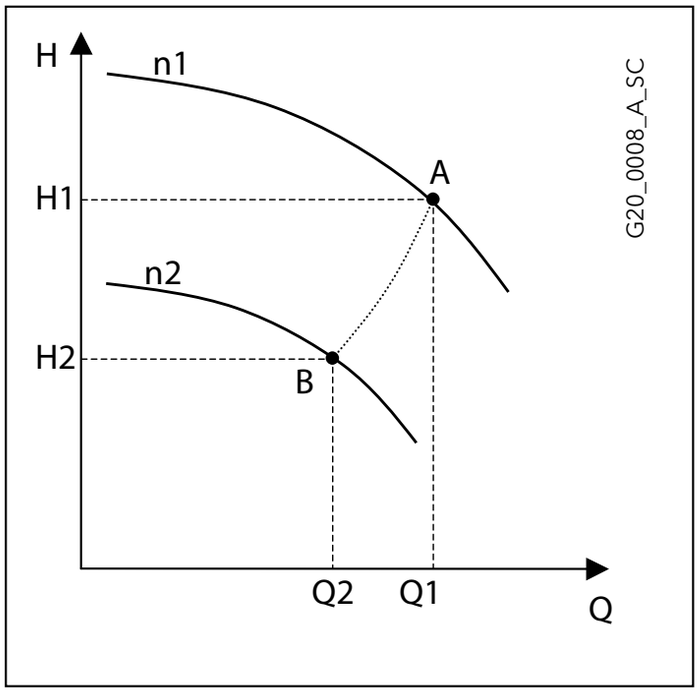
TANK
PERFORMANCE WITH VARYING SPEED: EQUIVALENCE RELATIONS

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.

Flow rate $\frac{Q1}{Q2} = \left[\frac{n1}{n2}\right]$

Head $\frac{H1}{H2} = \left[\frac{n1}{n2}\right]^2$

Power $\frac{P1}{P2} = \left[\frac{n1}{n2}\right]^3$



n1 = initial speed; n2= speed required.
Q1 = initial flow rate; Q2= flow rate required.
H1 = initial head; H2= head required.
P1 = initial power; 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 rpm (point A)
Flow rate (A) = 100 l/min; Head (A) = 50 m
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 EXPANSION VESSEL IN SYSTEMS WITH SPEED VARIATION

Variable speed booster sets need **smaller tanks** compared to traditional systems. Generally speaking, a tank with a liter capacity of just 10% of the nominal capacity of a single pump, expressed in liters 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 liters. 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^3/h	l/min		15 1/2"	20 3/4"	25 1"	32 1 1/4"	40 1 1/2"	50 2	65 2 1/2"	80 3"	100 4"	125 5"	150 6"	175 7"	200 8"	250 10"	300 12"	350 14"	400 16"
0,6	10	v	0,94	0,53	0,34	0,21	0,13												
		hr	16	3,94	1,33	0,40	0,13												
0,9	15	v	1,42	0,80	0,51	0,31	0,20												
		hr	33,9	8,35	2,82	0,85	0,29												
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17											
		hr	57,7	14,21	4,79	1,44	0,49	0,16											
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21											
		hr	87,2	21,5	7,24	2,18	0,73	0,25											
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25											
		hr	122	30,1	10,1	3,05	1,03	0,35											
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30											
		hr	162	40,0	13,5	4,06	1,37	0,46											
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20										
		hr		51,2	17,3	5,19	1,75	0,59	0,16										
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25										
		hr		77,4	26,1	7,85	2,65	0,89	0,25										
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30										
		hr		108	36,6	11,0	3,71	1,25	0,35										
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35										
		hr		144	48,7	14,6	4,93	1,66	0,46										
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40										
		hr		185	62,3	18,7	6,32	2,13	0,59										
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30									
		hr			77,5	23,3	7,85	2,65	0,74	0,27									
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33									
		hr			94,1	28,3	9,54	3,22	0,90	0,33									
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41									
		hr			142	42,8	14,4	4,86	1,36	0,49									
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32								
		hr				59,9	20,2	6,82	1,90	0,69	0,23								
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37								
		hr				79,7	26,9	9,07	2,53	0,92	0,31								
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42								
		hr				102	34,4	11,6	3,23	1,18	0,40								
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34							
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20							
18	300	v					3,98	2,55	1,51	1,00	0,64	0,41							
		hr					72,8	24,6	6,85	2,49	0,84	0,28							
24	400	v					5,31	3,40	2,01	1,33	0,85	0,54	0,38						
		hr					124	41,8	11,66	4,24	1,43	0,48	0,20						
30	500	v					6,63	4,25	2,51	1,66	1,06	0,68	0,47						
		hr					187	63,2	17,6	6,41	2,16	0,73	0,30						
36	600	v						5,10	3,02	1,99	1,27	0,82	0,57	0,42					
		hr						88,6	24,7	8,98	3,03	1,02	0,42	0,20					
42	700	v						5,94	3,52	2,32	1,49	0,95	0,66	0,49					
		hr						118	32,8	11,9	4,03	1,36	0,56	0,26					
48	800	v						6,79	4,02	2,65	1,70	1,09	0,75	0,55					
		hr						151	42,0	15,3	5,16	1,74	0,72	0,34					
54	900	v						7,64	4,52	2,99	1,91	1,22	0,85	0,62					
		hr						188	52,3	19,0	6,41	2,16	0,89	0,42					
60	1000	v							5,03	3,32	2,12	1,36	0,94	0,69	0,53				
		hr							63,5	23,1	7,79	2,63	1,08	0,51	0,27				
75	1250	v							6,28	4,15	2,65	1,70	1,18	0,87	0,66				
		hr							96,0	34,9	11,8	3,97	1,63	0,77	0,40				
90	1500	v							7,54	4,98	3,18	2,04	1,42	1,04	0,80				
		hr							134	48,9	16,5	5,57	2,29	1,08	0,56				
105	1750	v							8,79	5,81	3,72	2,38	1,65	1,21	0,93				
		hr							179	65,1	21,9	7,40	3,05	1,44	0,75				
120	2000	v								6,63	4,25	2,72	1,89	1,39	1,06	0,68			
		hr								83,3	28,1	9,48	3,90	1,84	0,96	0,32			
150	2500	v								8,29	5,31	3,40	2,36	1,73	1,33	0,85			
		hr								126	42,5	14,3	5,89	2,78	1,45	0,49			
180	3000	v									6,37	4,08	2,83	2,08	1,59	1,02	0,71		
		hr									59,5	20,1	8,26	3,90	2,03	0,69	0,28		
210	3500	v									7,43	4,76	3,30	2,43	1,86	1,19	0,83		
		hr									79,1	26,7	11,0	5,18	2,71	0,91	0,38		
240	4000	v									8,49	5,44	3,77	2,77	2,12	1,36	0,94		
		hr									101	34,2	14,1	6,64	3,46	1,17	0,48		
300	5000	v										6,79	4,72	3,47	2,65	1,70	1,18		
		hr										51,6	21,2	10,0	5,23	1,77	0,73		
360	6000	v										8,15	5,66	4,16	3,18	2,04	1,42		
		hr										72,3	29,8	14,1	7,33	2,47	1,02		
420	7000	v											6,61	4,85	3,72	2,38	1,65	1,21	
		hr											39,6	18,7	9,75	3,29	1,35	0,64	
480	8000	v											7,55	5,55	4,25	2,72	1,89	1,39	
		hr											50,7	23,9	12,49	4,21	1,73	0,82	
540	9000	v											8,49	6,24	4,78	3,06	2,12	1,56	1,19
		hr											63,0	29,8	15,5	5,24	2,16	1,02	0,53
600	10000	v												6,93	5,31	3,40	2,36	1,73	1,33
		hr												36,2	18,9	6,36	2,62	1,24	0,65

The hr values must be multiplied by:

0,71 for galvanized or painted steel pipes

0,54 for stainless steel or copper pipes

0,47 for PVC or PE pipes

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 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.

VOLUMETRIC CAPACITY

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

PRESSURE AND HEAD

Newton per square metre N/m^2	kilo Pascal kPa	bar bar	Pound force per square inch psi	Metre of water $m\ H_2O$	Millimetre of mercury mm Hg
1,0000	0,0010	1×10^{-5}	$1{,}45 \times 10^{-4}$	$1{,}02 \times 10^{-4}$	0,0075
1 000,0000	**1,0000**	0,0100	0,1450	0,1020	7,5006
1×10^5	100,0000	**1,0000**	14,5038	10,1972	750,0638
6 894,7570	6,8948	0,0689	**1,0000**	0,7031	51,7151
9 806,6500	9,8067	0,0981	1,4223	**1,0000**	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	**1,0000**

LENGTH

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

VOLUME

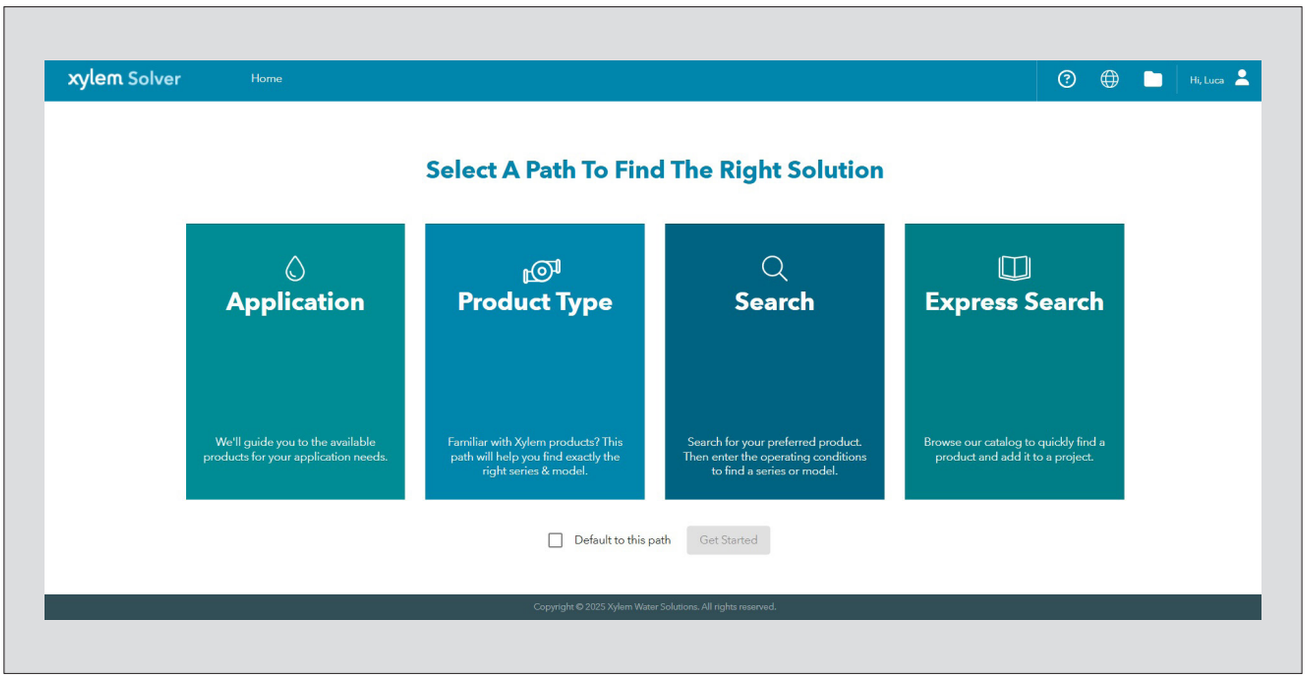
Cubic metre m^3	Litre L	Millilitre ml	Imperial gallon imp. gal.	U.S. gallon US gal.	Cubic foot ft^3
1,0000	1 000,0000	1×10^6	219,9694	264,1720	35,3147
0,0010	**1,0000**	1 000,0000	0,2200	0,2642	0,0353
1×10^{-6}	0,0010	**1,0000**	$2{,}2 \times 10^{-4}$	$2{,}642 \times 10^{-4}$	$3{,}53 \times 10^{-5}$
0,0045	4,5461	4 546,0870	**1,0000**	1,2009	0,1605
0,0038	3,7854	3 785,4120	0,8327	**1,0000**	0,1337
0,0283	28,3168	28 316,8466	6,2288	7,4805	**1,0000**

TEMPERATURE

Water	Kelvin K	Celsius °C	Fahrenheit °F	$°F = °C \times \frac{9}{5} + 32$ $°C = (°F - 32) \times \frac{5}{9}$
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
Xylem Solver



Xylem Solver is pump solution selection software with an extensive online database of product information across the entire Xylem 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.

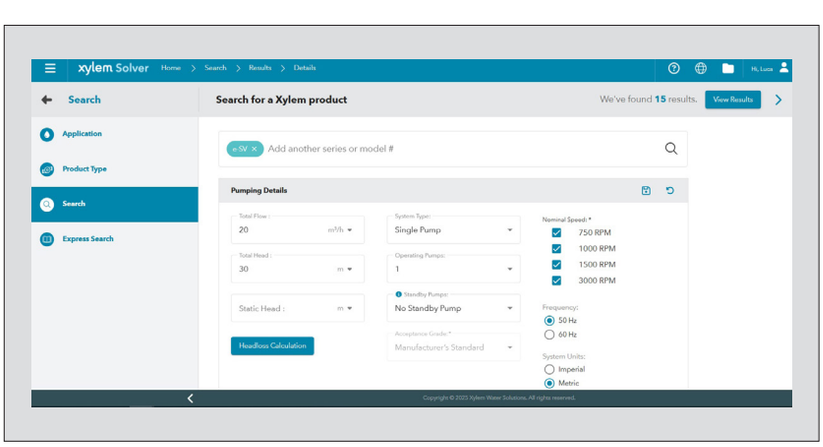
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Xylem products.

The search can be made by:

- Application
- Product type
- Duty point

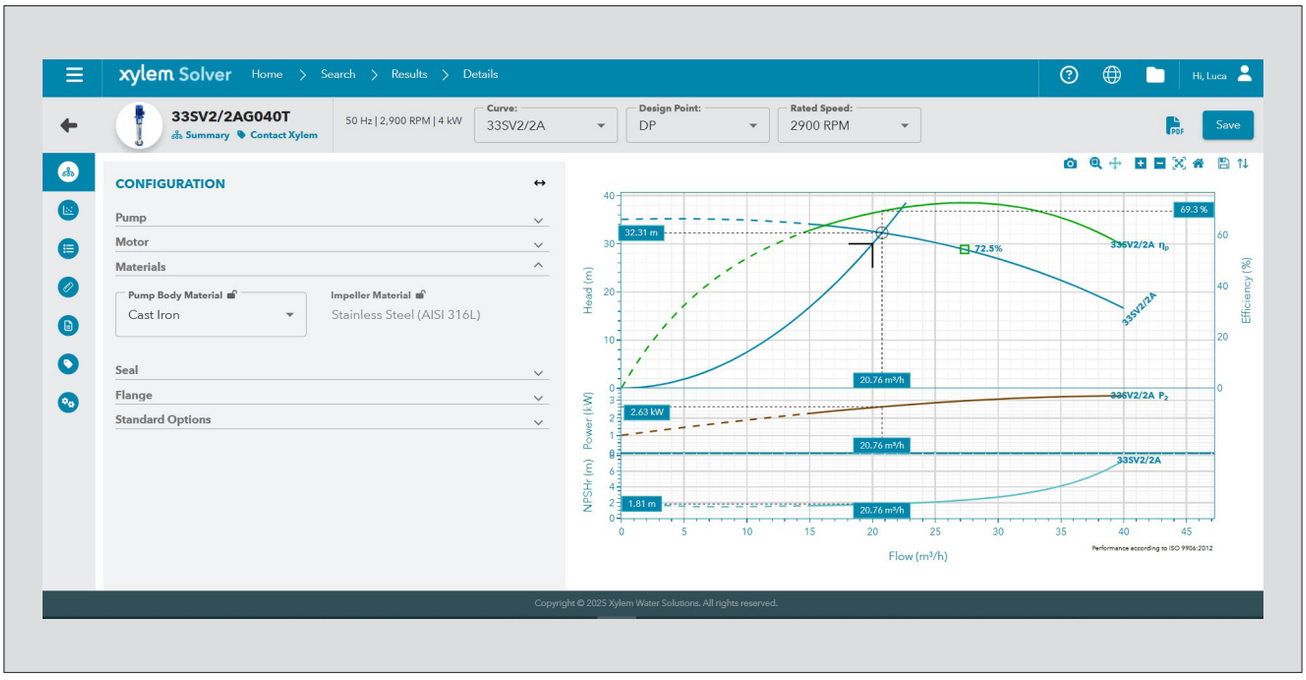
Xylem Solver gives a detailed output:

- List with search results in which you can compare up to four products
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf, stp and BIM files



Once a product series has been selected, input design criteria to select pumps that meet the design requirements.

FURTHER PRODUCT SELECTION AND DOCUMENTATION
Xylem Solver



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

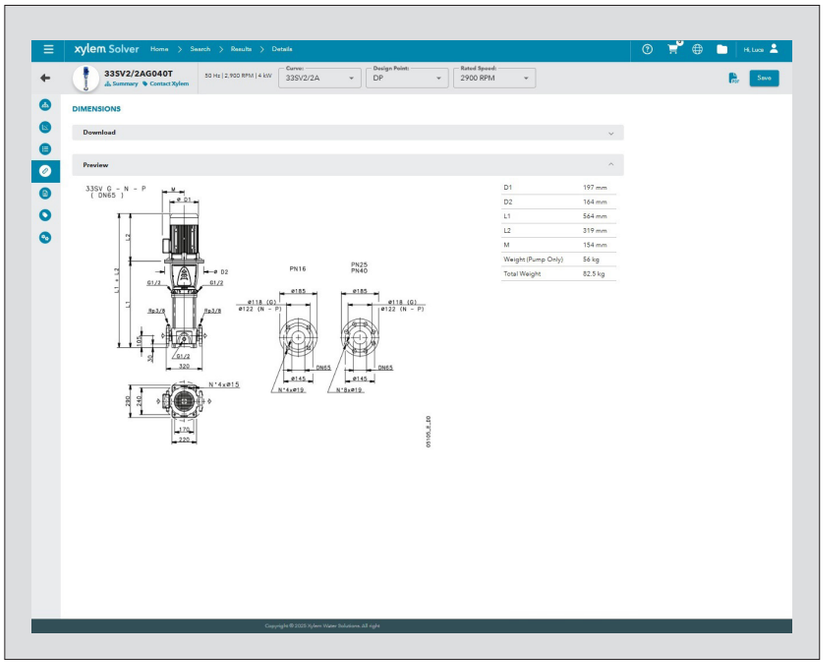
The best way to work with Xylem Solver is to create a personal account.

This makes it possible to:

- Set own standard units
- Create and save projects

Every registered user has a proper space, where all projects are saved.

For more information about Xylem Solver please contact our sales network or visit **https://solver.xylem.com.**



The dimensions tab shows technical drawings, dimensions, and CAD files when available.

Xylem |'zīləm|

1) the tissue in plants that brings water and nutrients upward from the roots.

2) a leading global water solutions company.

Xylem is the connective tissue and system in plants which cleanses and transports water from the root to where it is needed most to sustain life.

And this is the essence of Xylem as a company. We are committed to driving sustainable impact by ensuring our connected technologies and solutions support our customers and the communities they serve, to tackle the water challenges that matter most to them.

For more information on how Xylem can help you, visit xylem.com.

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Xylem Water Solutions Italia Srl si riserva il diritto di apportare modifiche senza l'obbligo di preavviso

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