GEA Hilge CONTRA

Single- and Multi-Stage Pumps
Catalog 2018

engineering for
a better world

gea.com

Legal notice

Publication date: December 2018

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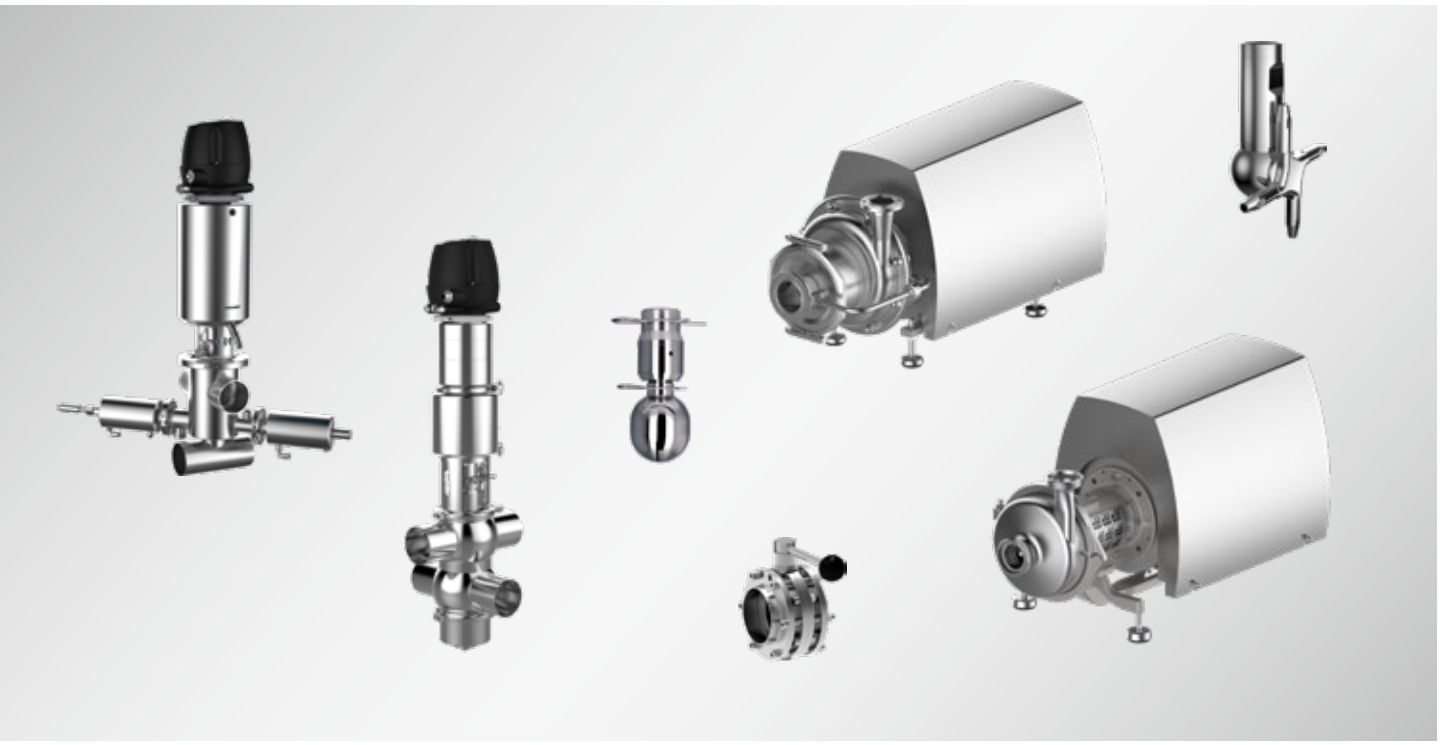
GEA Hilge CONTRA II

Performance Curves

Appendix



Regardless of the application – for our customers product quality and profitability are what matters. This is what GEA Flow Components is known for. Our engineers are specialists in everything that flows.

Around one quarter of the milk processed is handled by GEA equipment

Roughly every second liter of beer is brewed using GEA equipment and solutions

Every fourth liter of human blood is handled by GEA equipment

GEA Group Aktiengesellschaft

GEA is one of the largest suppliers of process technology for the food industry and for a wide range of other industries. As an international technology group, the company focuses on world-leading process solutions and components for sophisticated production processes.

GEA Flow Components

GEA offers well-engineered process components and services to ensure smooth production processes in the treatment of liquid products. We develop and produce a comprehensive product range that includes valve technology for all hygienic classes (Hygienic, UltraClean, Aseptic), hygienic pumps and cleaning technology.

GEA Flow Components products and services are available around the world through the international GEA network.

State-of-the-art hygienic design

GEA Flow Components meet the highest hygienic standards where required, such as EHEDG and 3-A standards.

Hygienic valves and components from GEA form the core component of matrix-piped process plants.

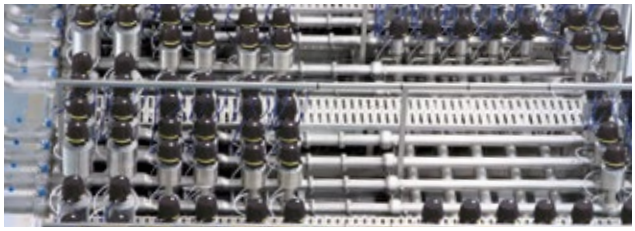
When it comes to sterile applications, GEA offers both UltraClean and Aseptic valves and systems. The hermetic sealing of the product area provides a maximum level of process line isolation and thus contributes to process and product safety.

The hygienic pump range from GEA includes centrifugal pumps (single-stage, multi-stage and self-priming), as well as rotary lobe pumps.

GEA cleaning devices – whether index, orbital, rotary or static – achieve optimum cleaning results in multiple industries. GEA product recovery systems help to recover valuable products and reduce both waste disposal costs as well as water and detergent consumption.

Applications

- Beverages
  - Beer, juice, smoothies, and more
- Dairy processing
  - Milk, yoghurt, cheese, and more
- Food
  - Sauces, pastes, ketchup, mayonnaise, and more
- Pharma/Biotech
  - Pharmaceuticals, biotech, cosmetics, health care, and more
- Chemicals
  - Fine chemicals, bulk chemicals, cleaning agents, and more



Hygienic Valve Technology

A complete range of economically designed Hygienic valves for complex tasks as well as basic functions, helping producers to achieve high product quality and efficiency.

Aseptic Valve Technology

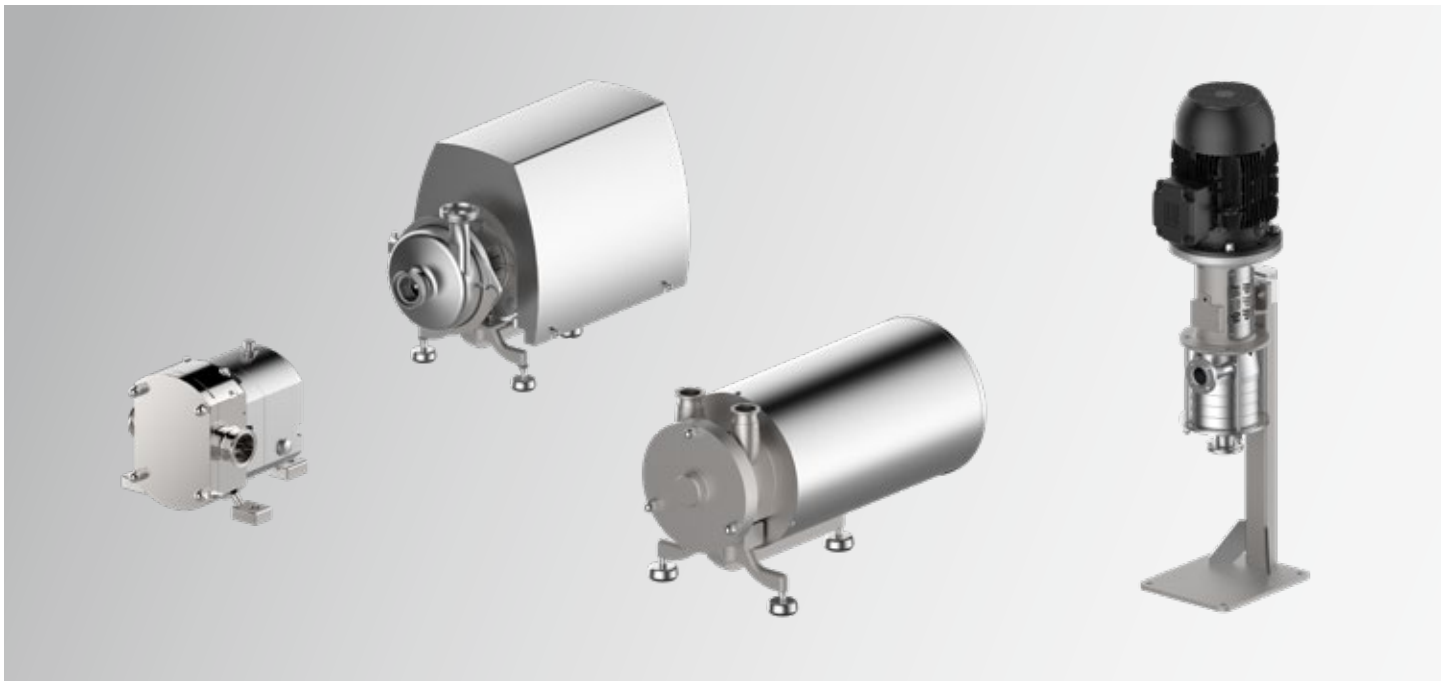
UltraClean and Aseptic valves are suitable for production processes which require a higher safety protection against contamination from the environment and thus warrant microbial stability of the product over the whole process.

Hygienic Pump Technology

A great variety of Hygienic pumps with sensibly rated high efficiency motors and carefully designed flow paths, driving economic efficiency and sustainable operation.

Cleaning Technology

Index, orbital, rotating and static cleaners in a complete range, developed with special emphasis on saving valuable resources in the cleaning process.



Gentle product handling, continued reliability and economic efficiency are key characteristics of the state-of-the-art hygienic pumps in the GEA Flow Components range.

Maximum reliability and cost control

Because GEA customers rely on the safe, continuous operation of their production systems, GEA pumps are optimized for uncompromising reliability in all applications. The great number of pumps currently in operation is proof of their robust design, long service life and ease of maintenance.

Applying GEA pumps to production processes can significantly reduce operational costs. Sensibly rated high-efficiency motors in all the required dimensions keep energy consumption as low as possible. The product is conveyed evenly and gently for higher product quality and improved processing and distribution options.

Economical
Higher product quality
Reduced consumption of energy, water and cleaning media
Reduced time and personnel costs for maintenance and cleaning

Hygienic and sustainable design

GEA pumps comply with all relevant hygiene standards and norms, with continuous documentation and up-to-date certifications safely ensuring judicial security.

Carefully designed flow paths free of dead zones ensure optimum cleaning and utilization of the conveying energy. Lower consumption of energy, water and chemicals helps to protect climate and environment, observe international regulations and promote the producer's standing with customers and authorities.

Long-term partnership

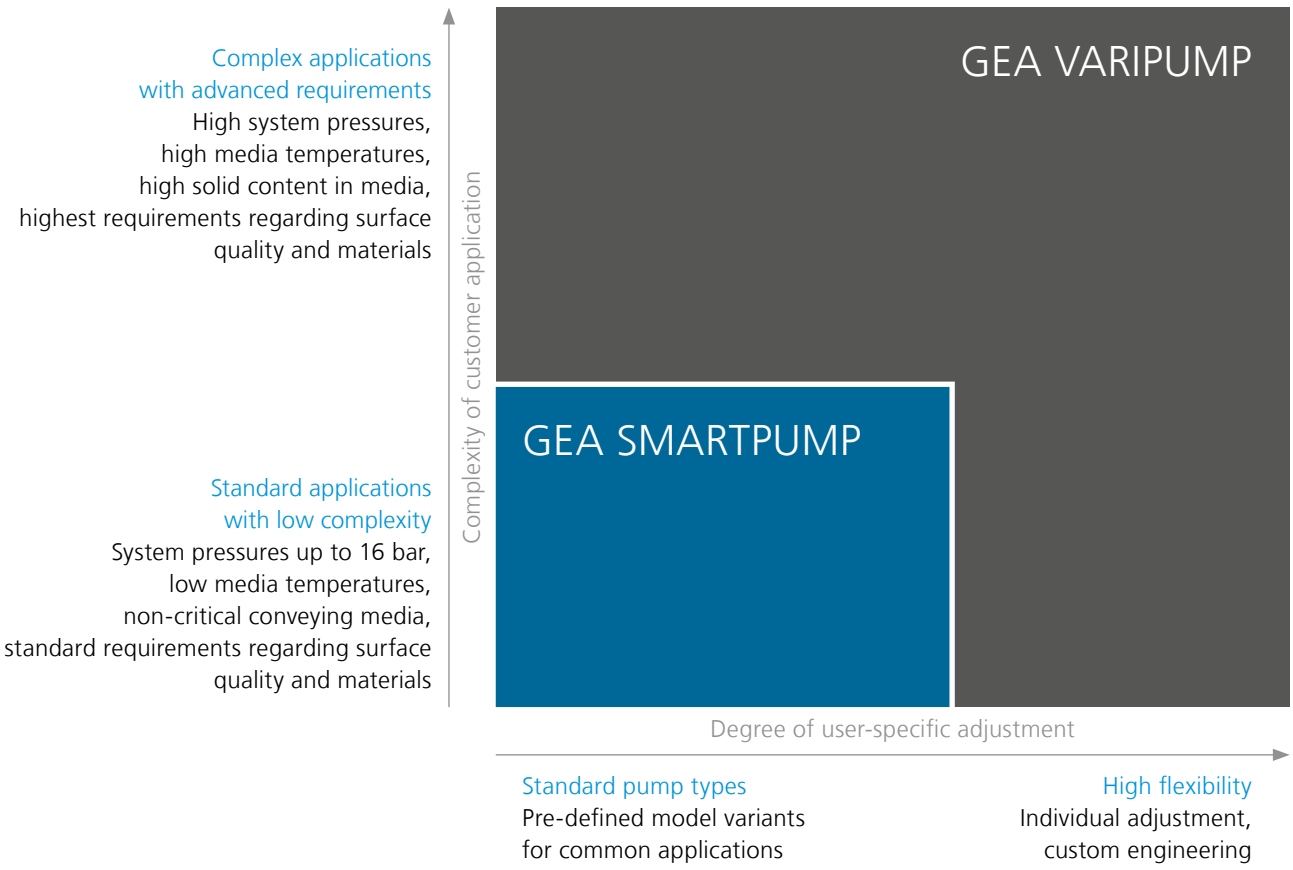
The GEA Hilge Hygienic Pumps Competence Center situated in Bodenheim, Germany, is the primary point of contact for GEA customers and partners to plan individual solutions. The worldwide GEA sales and service network provides further assistance with support offers covering the entire lifecycle of the pump.

Sustainable
Lower climate and environmental impact
Sustainable, environmentally friendly production processes
High standards for hygienic processing and care of products

Service-oriented
Individual engineering support
Shortest possible downtime of production
Individual service concept

Two modern pump lines for maximum efficiency

Two product lines, GEA VARIPUMP and GEA SMARTPUMP, form a highly versatile pump range with a multitude of adaption options to ensure simpler operation, higher-quality production, and reduced consumption of valuable resources.



GEA VARIPUMP

The pump series in the GEA VARIPUMP line have been conceived for extreme application demands. The pumps are individually optimized by GEA for each task.

GEA VARIPUMP models are made entirely without die-cast components, offering high-quality surfaces and materials that meet stringent demands even in the sensitive pharmaceutical industry, further ensured by complementing services, e.g. Witnessed Factory Acceptance Test (FAT).

With a great variety of set-up and customizing options the pumps can be adapted individually to any production process, for lower operational costs and maximum system efficiency.

- Developed for advanced application conditions
- Project-specific customization
- Surface roughness up to $R_a \leq 0.4$ µm
- Product-wetted materials according to specific requirements (e.g. no cast parts, $F_e \leq 1$ % optional)

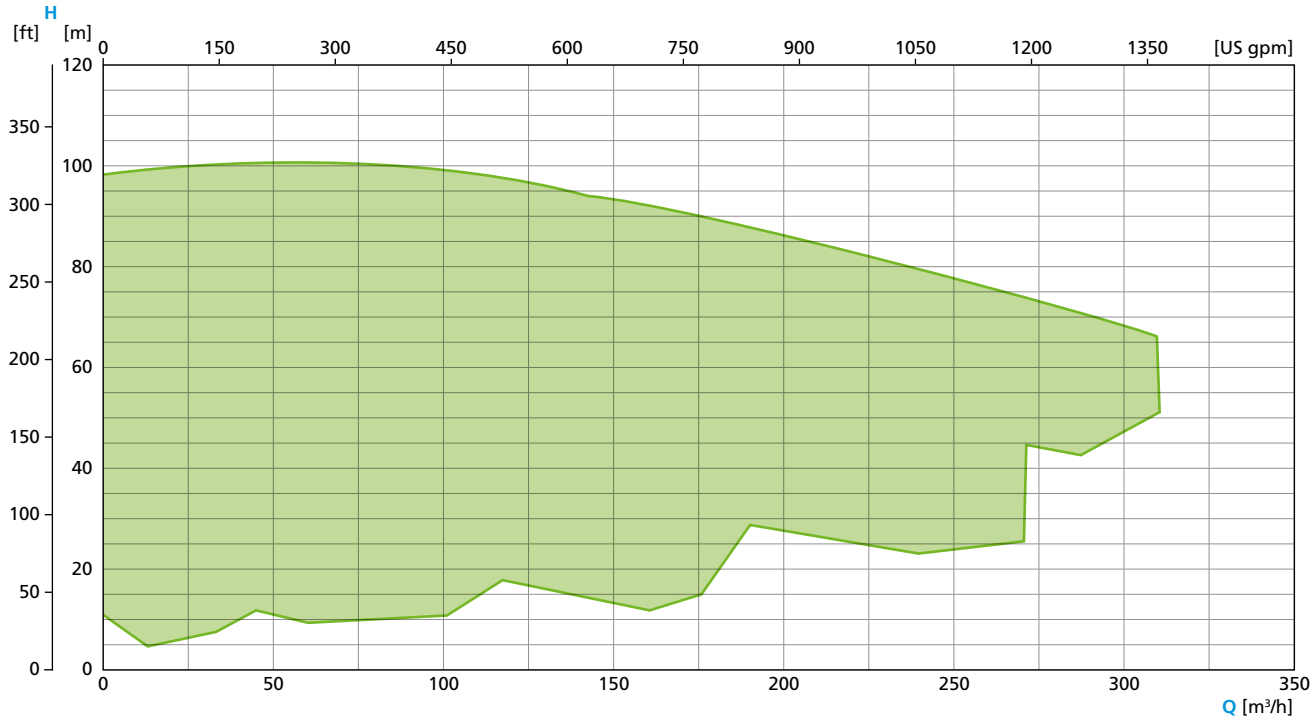
GEA SMARTPUMP

The GEA SMARTPUMP line comprises highly standardized and attractively priced pump series for common, often-used applications at standard conditions. The pumps are easy to select and ready for fast delivery. Within pre-defined parameters, the standard models can be configured to individual tasks.

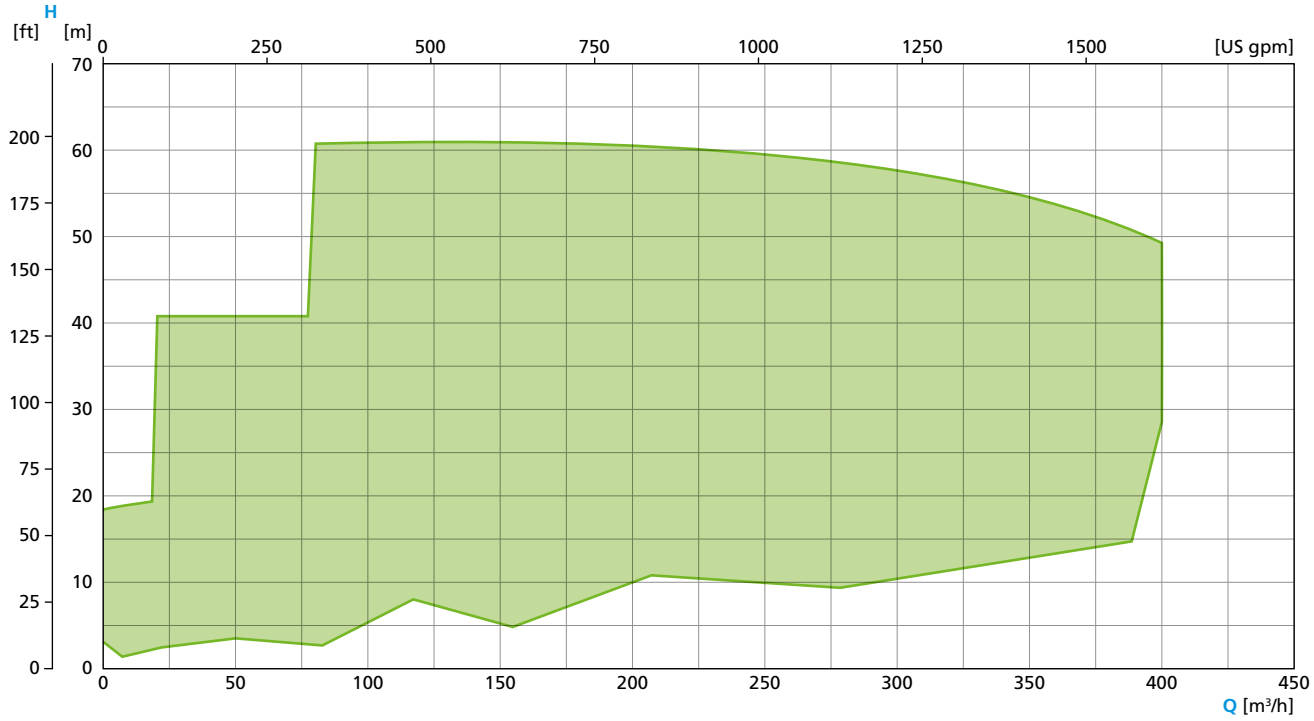
The modular construction using high-value materials, the proven “Hygienic Design” and easy-to-apply standardized spare parts all recommend GEA SMARTPUMP pumps for use in cost-critical production systems – at no compromise in terms of quality.

- Application for common and clearly defined “standard” process tasks
- Simple selection and configuration
- Fast delivery
- Standardized spare parts

Single-stage, VARIPUMP
2-pole, 50 Hz

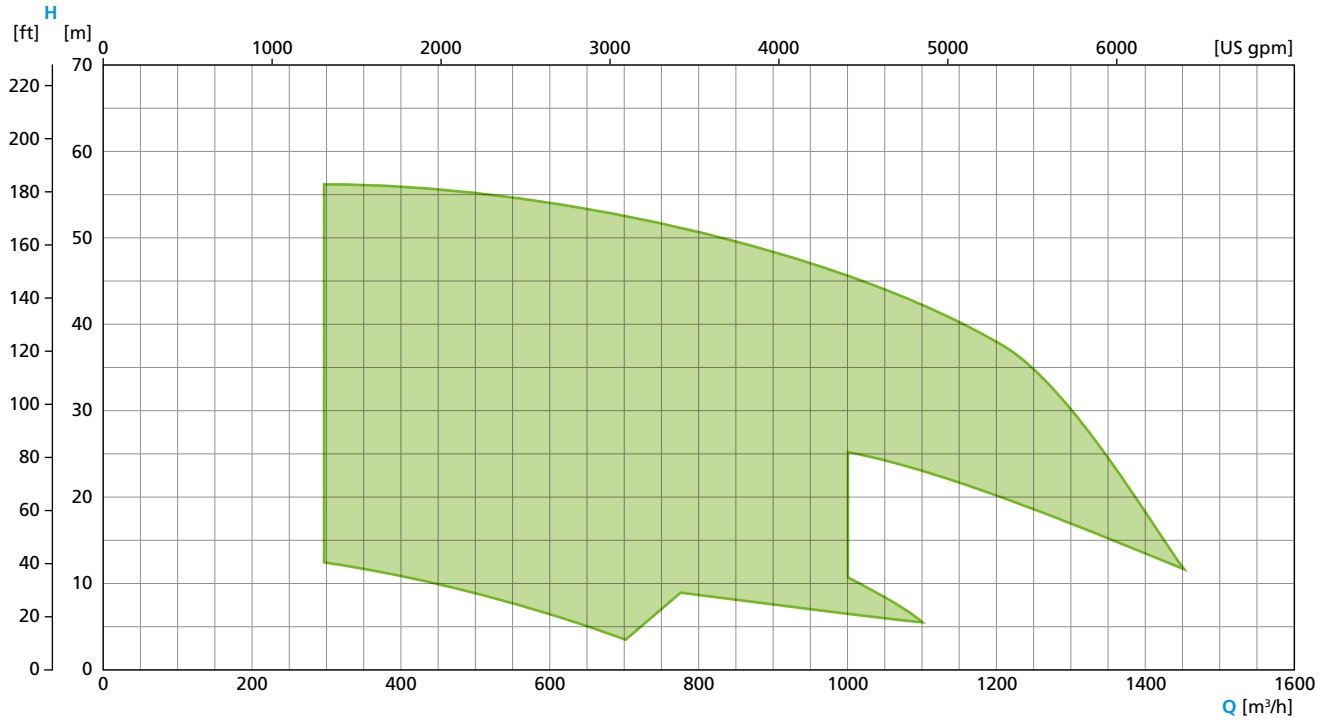


Single-stage, VARIPUMP*
4-pole, 50 Hz



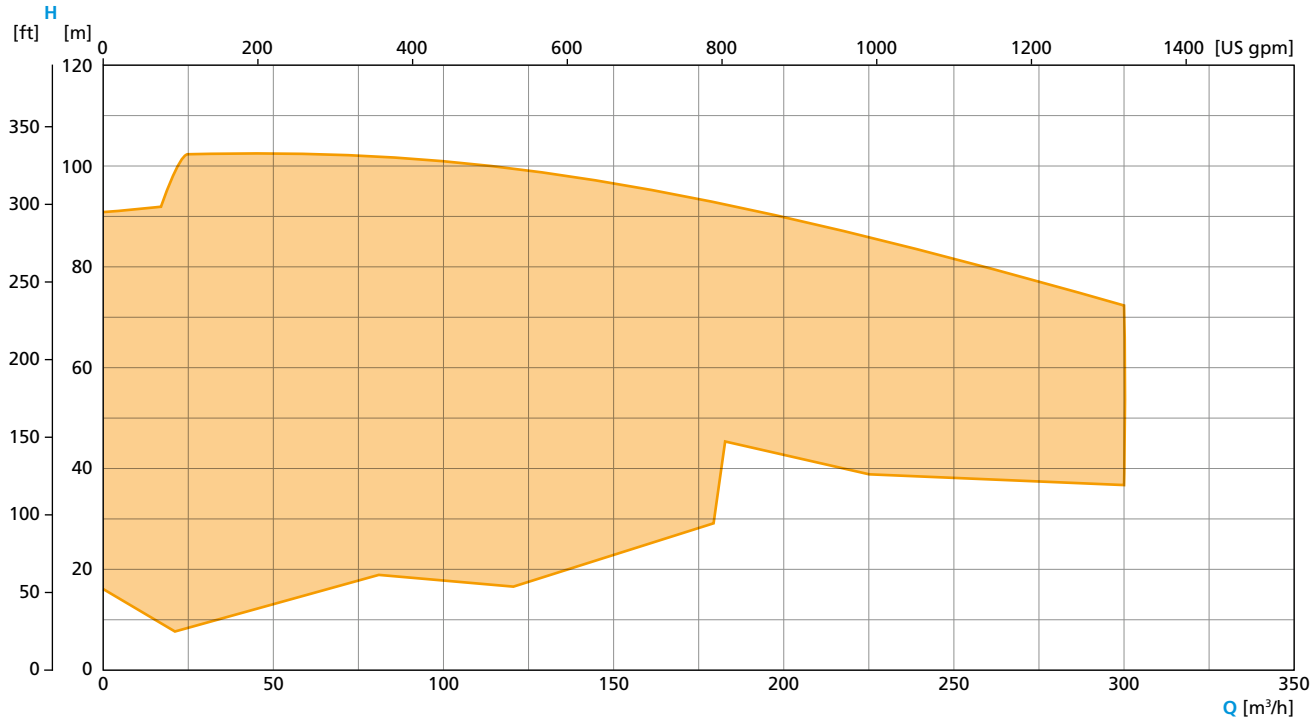
* GEA Hilge HYGIA & GEA Hilge MAXA (up to 150/400)

Single-stage, VARIPUMP*
4- and 6-pole, 50 Hz

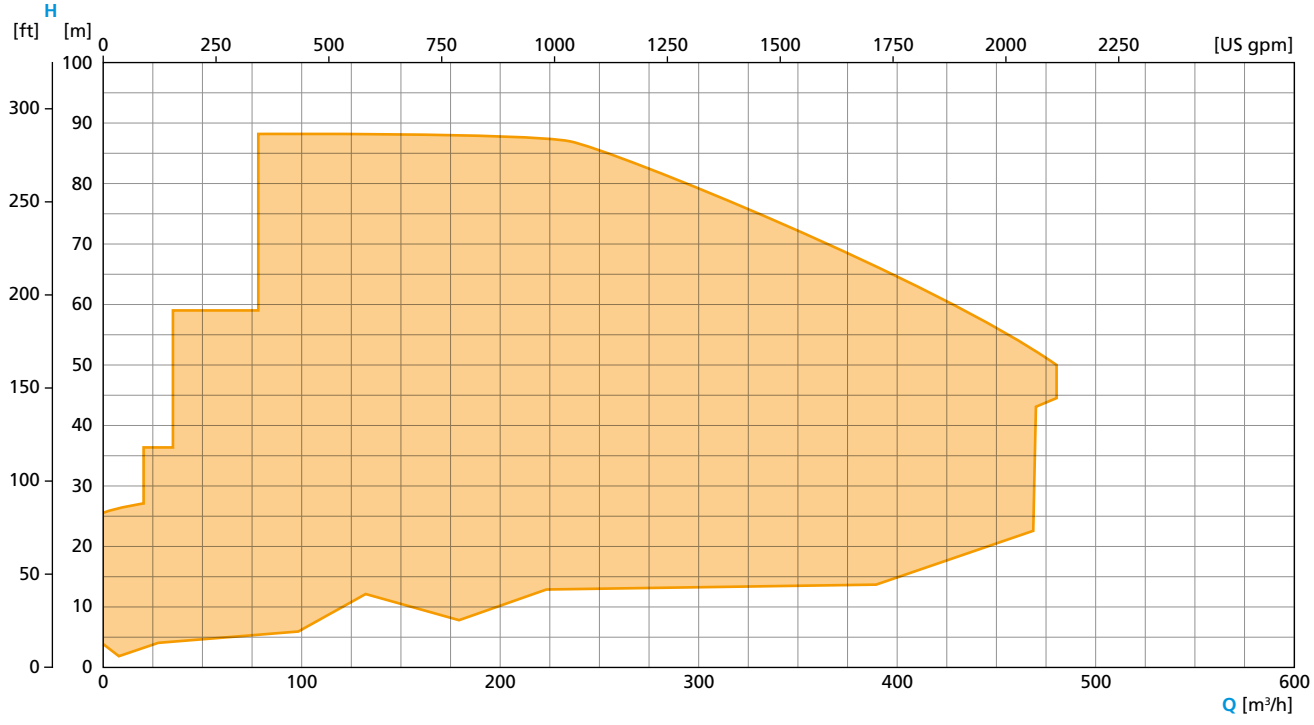


* GEA Hilge MAXA 200/400 and 250/400

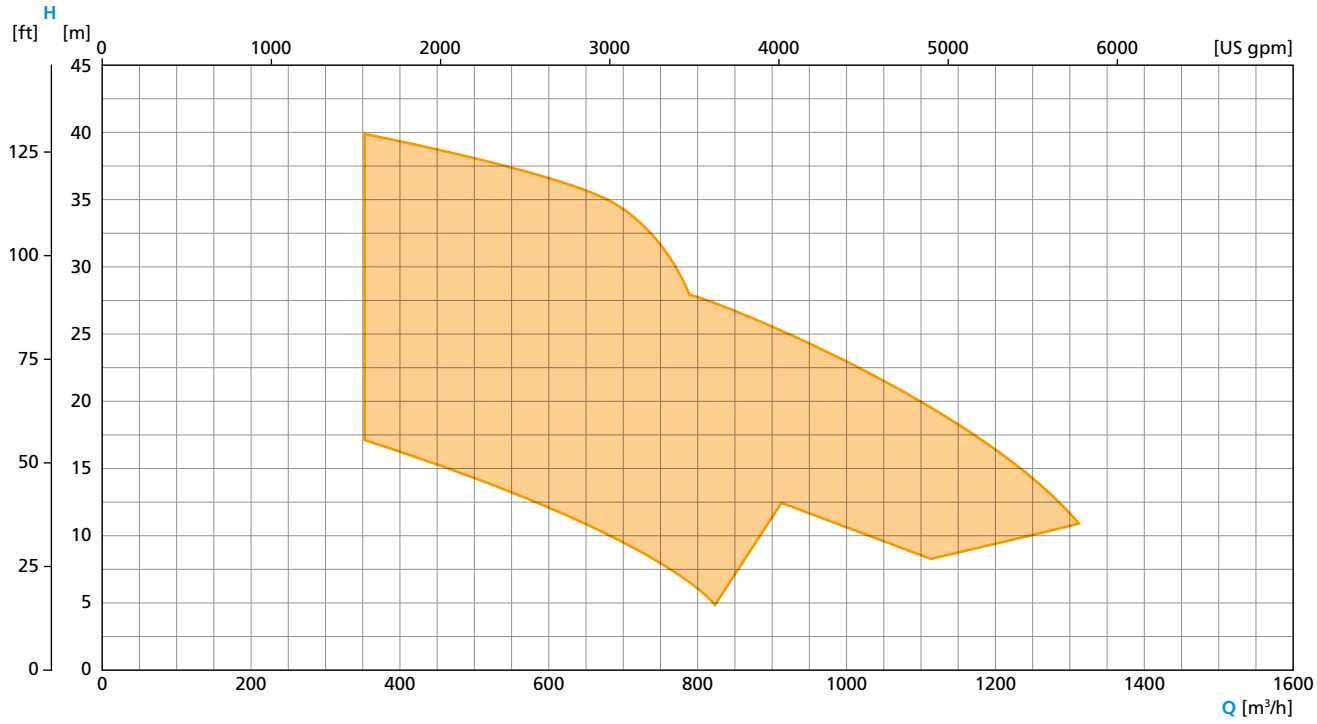
Single-stage, VARIPUMP
2-pole, 60 Hz



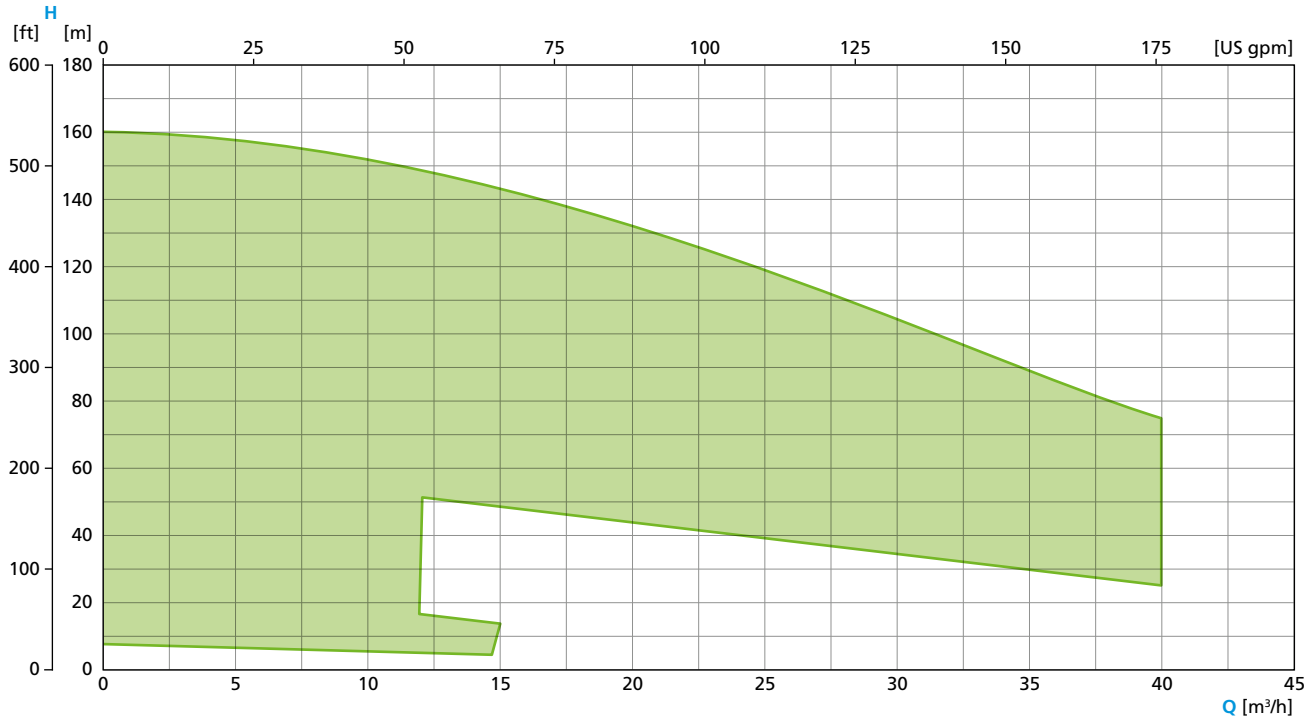
Single-stage, VARIPUMP
4-pole, 60 Hz



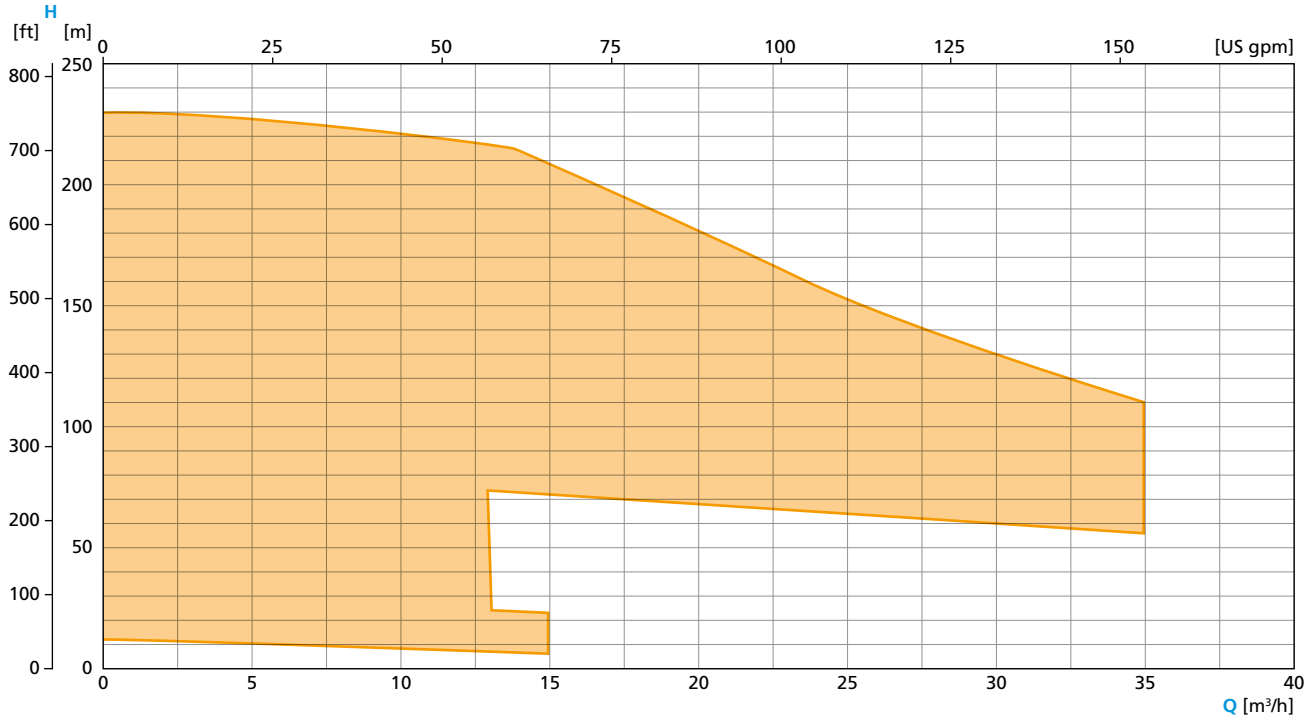
Single-stage, VARIPUMP
6-pole, 60 Hz



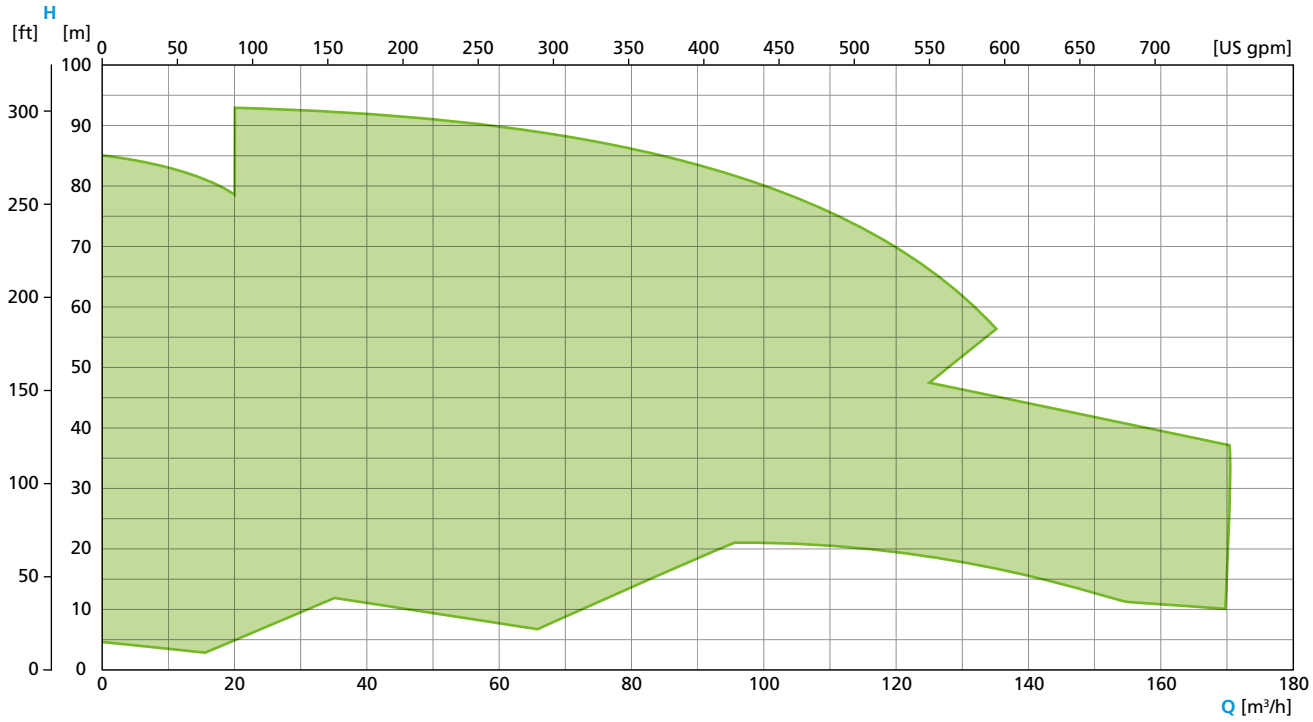
Multi-stage, VARIPUMP
2-pole, 50 Hz



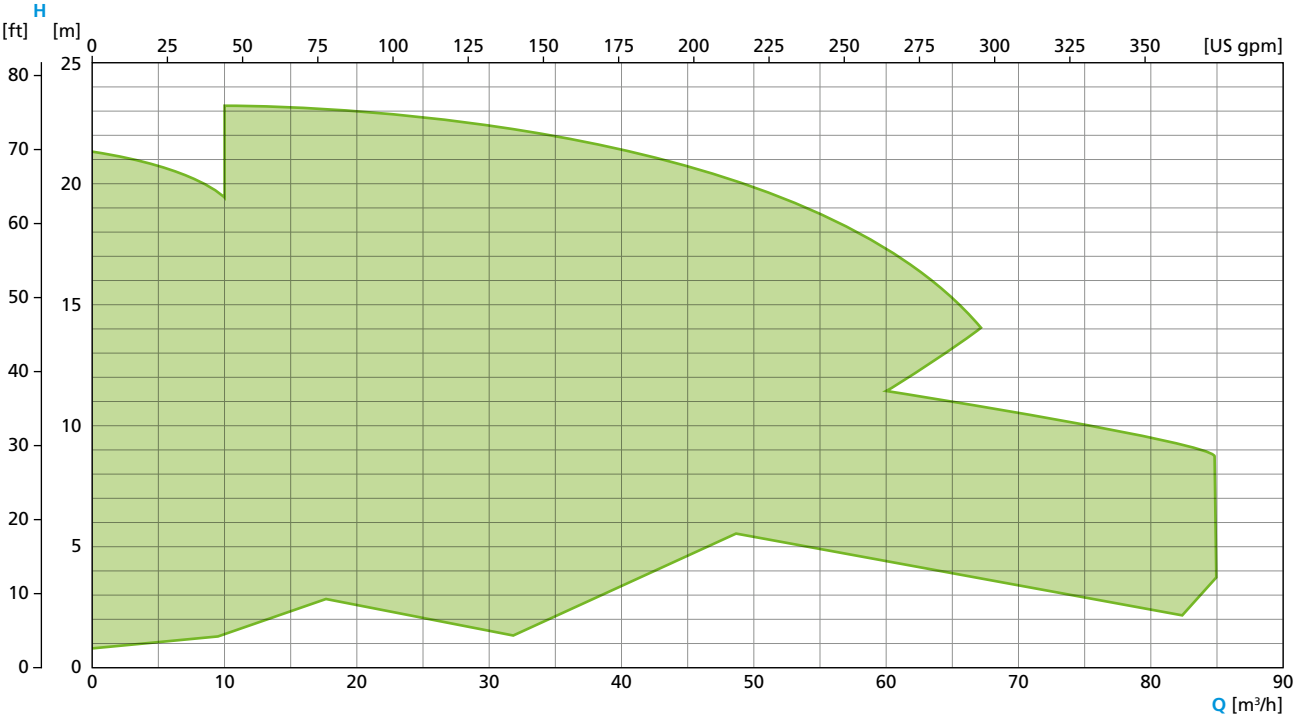
Multi-stage, VARIPUMP
2-pole, 60 Hz



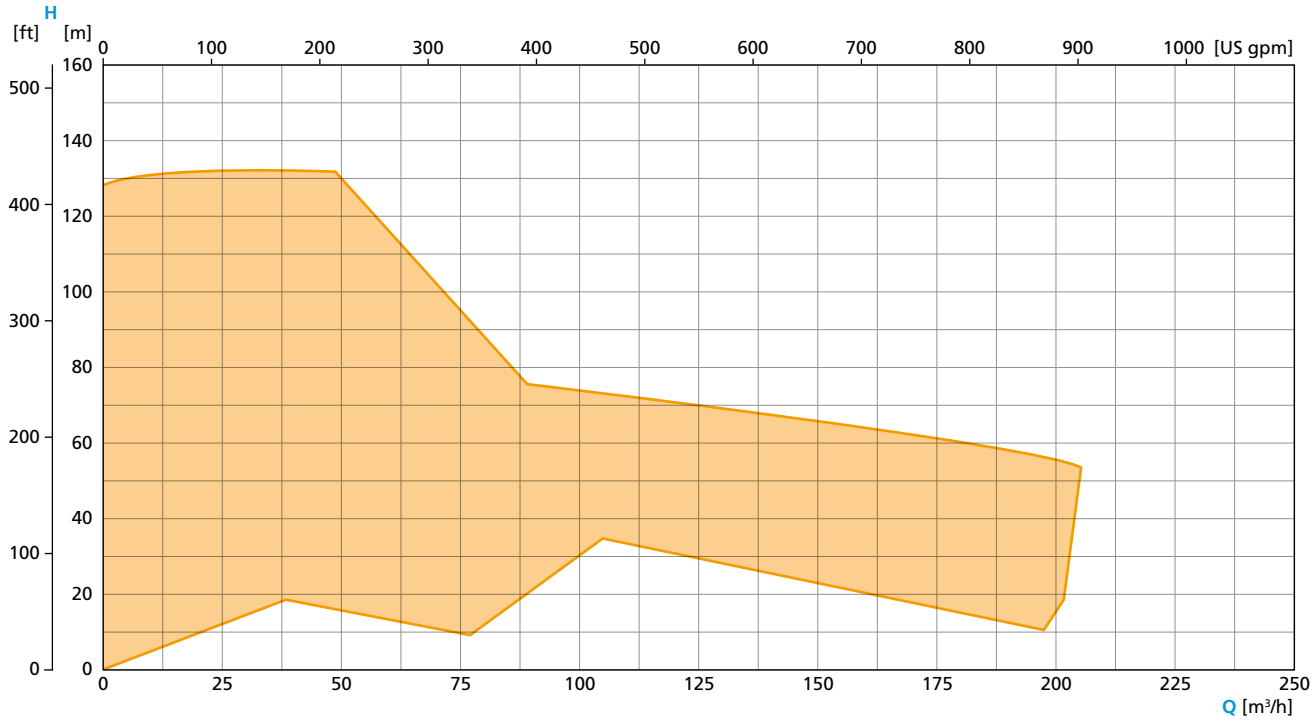
Single-stage, SMARTPUMP
2-pole, 50 Hz



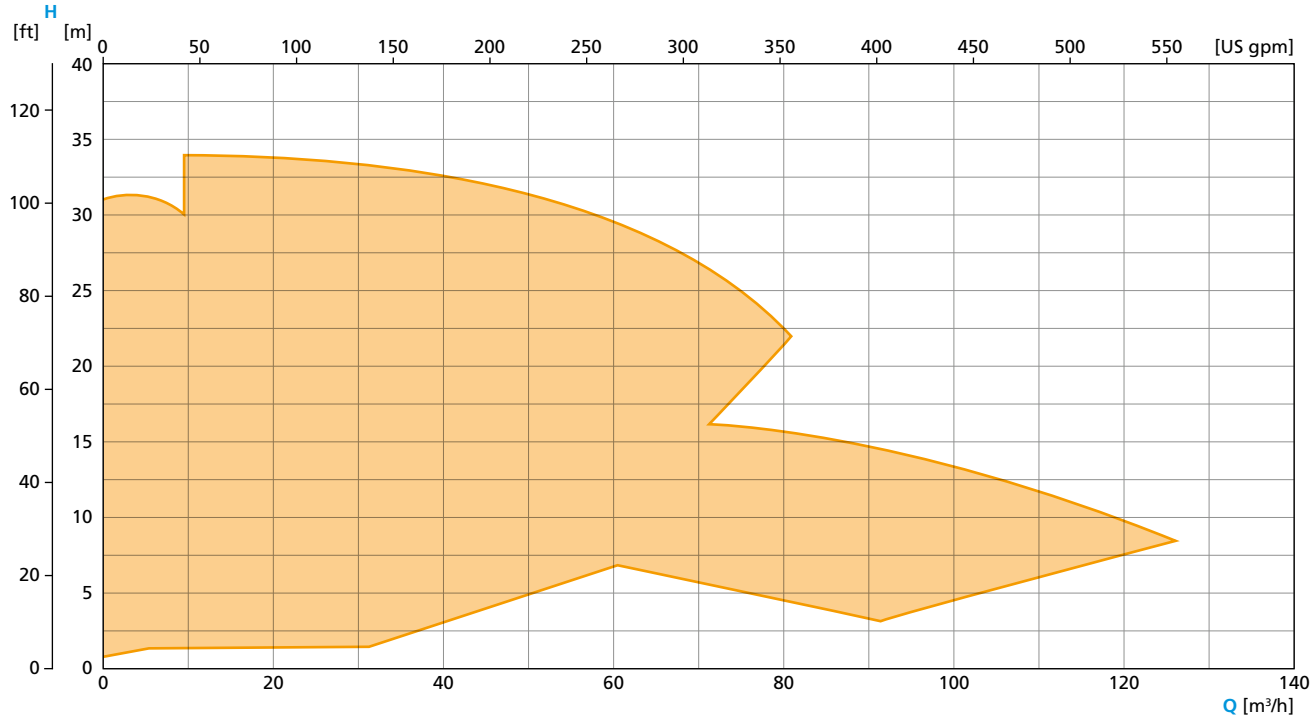
Single-stage, SMARTPUMP
4-pole, 50 Hz



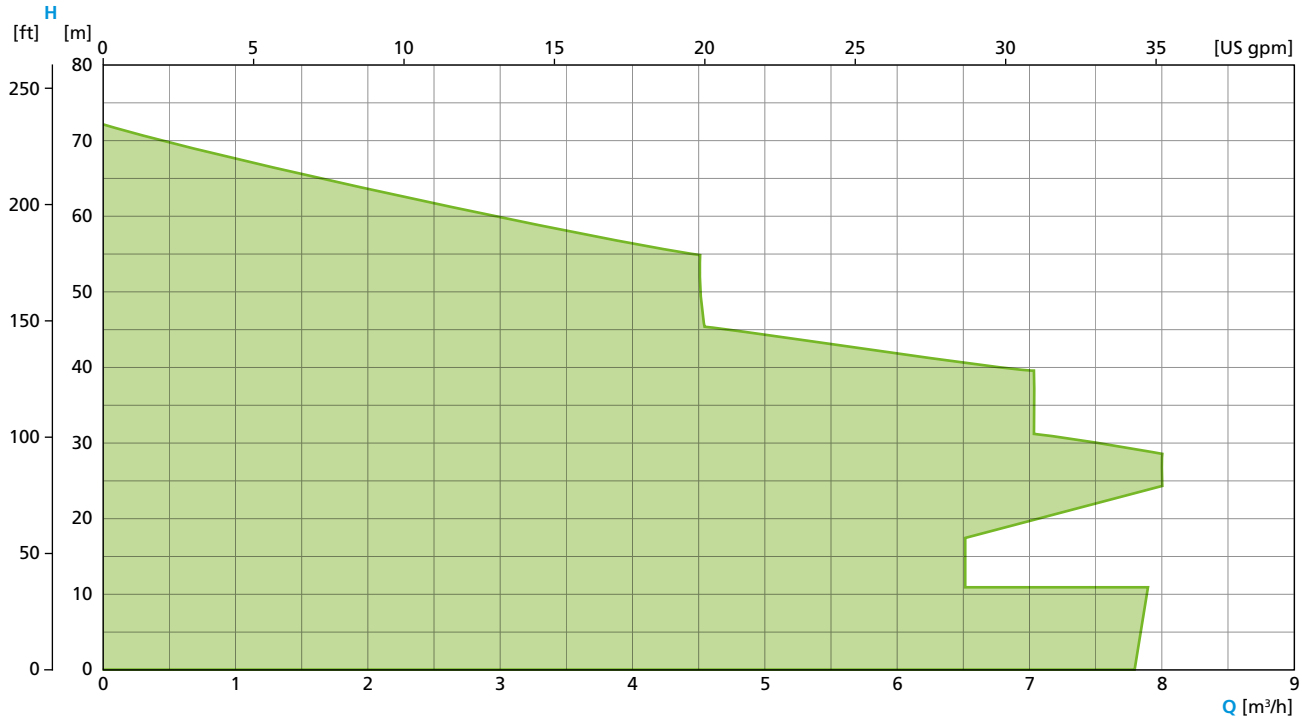
Single-stage, SMARTPUMP
2-pole, 60 Hz



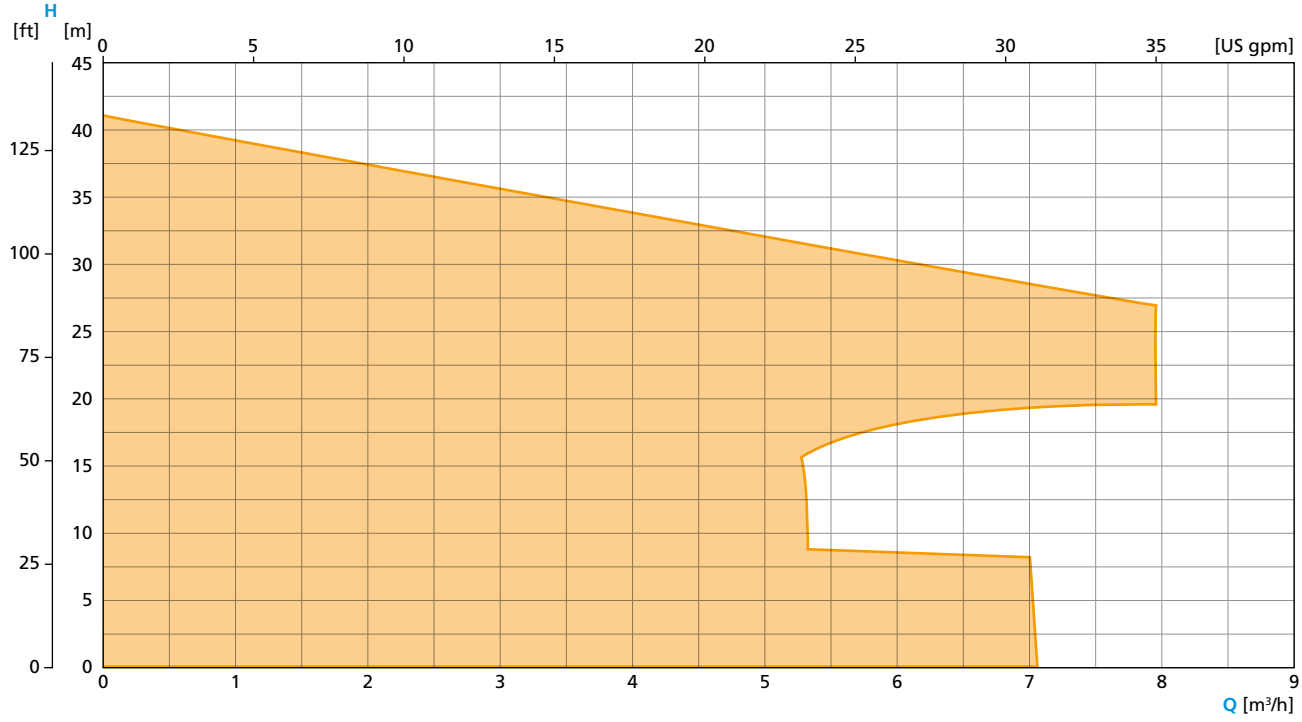
Single-stage, SMARTPUMP
4-pole, 60 Hz



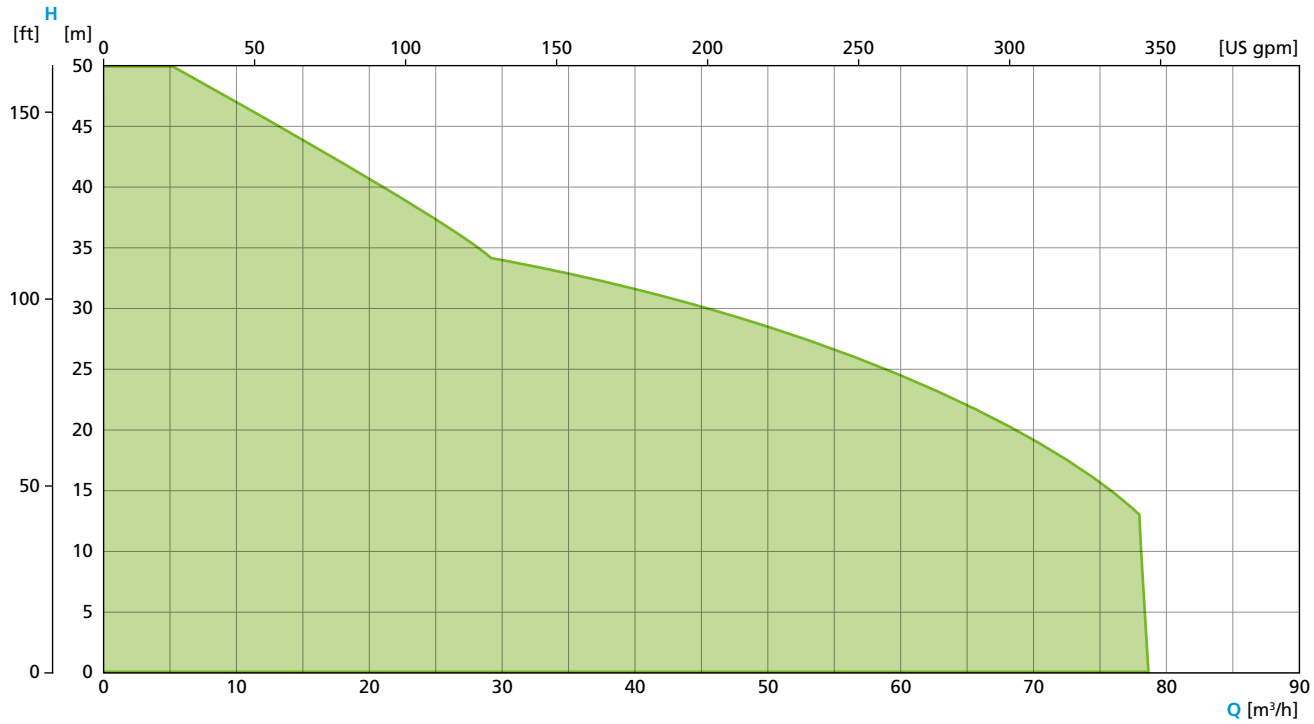
Multi-stage, SMARTPUMP
2-pole, 50 Hz



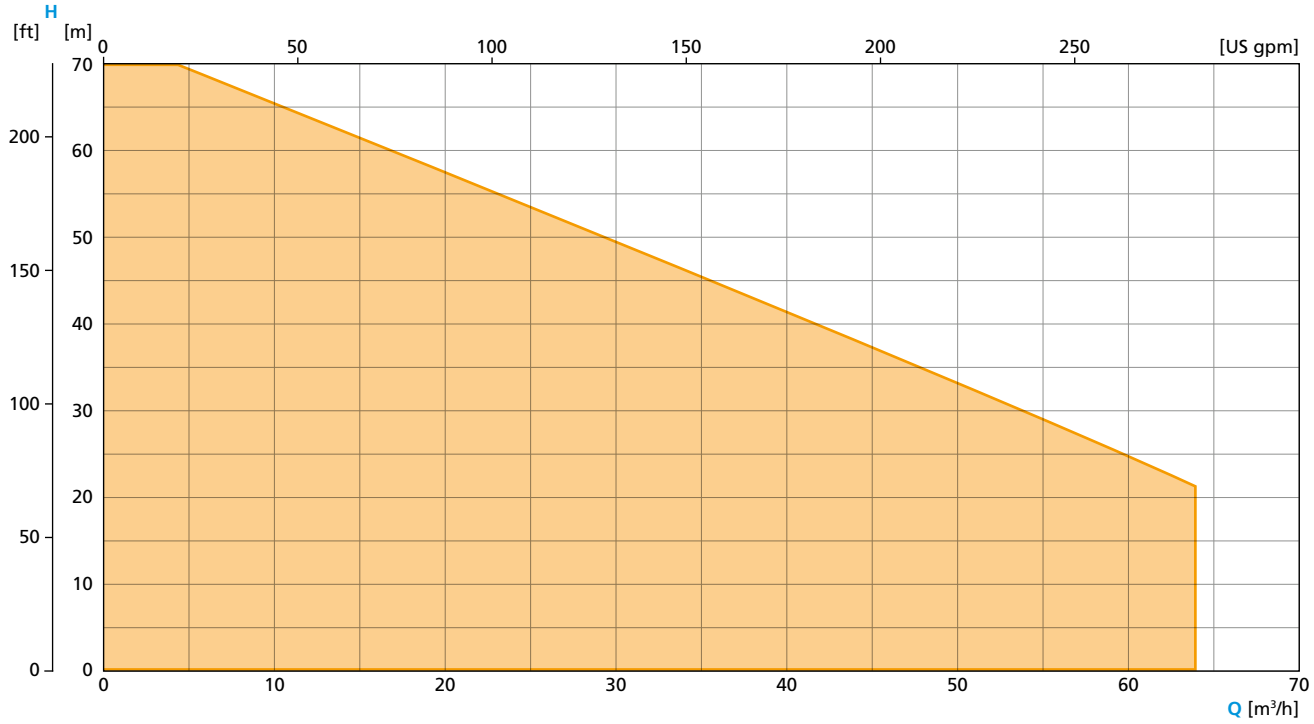
Multi-stage, SMARTPUMP
2-pole, 60 Hz



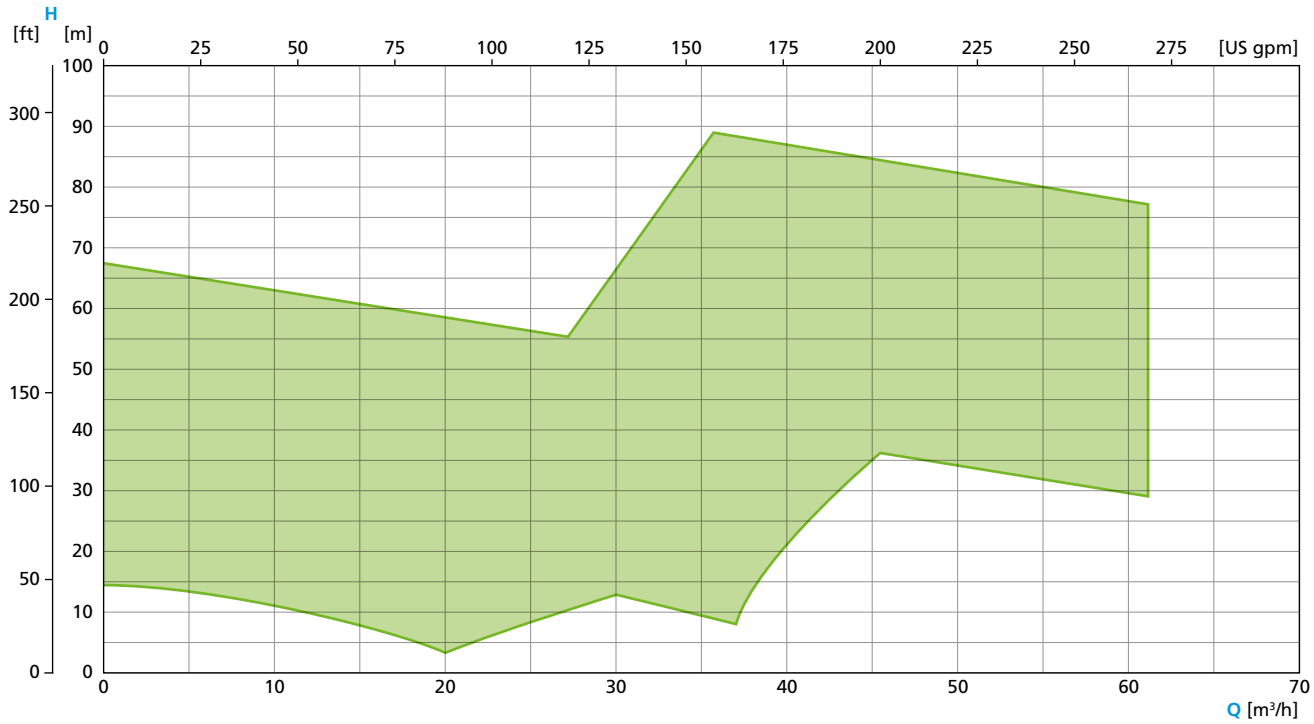
Single-stage, self-priming, VARIPUMP
4-pole, 50 Hz



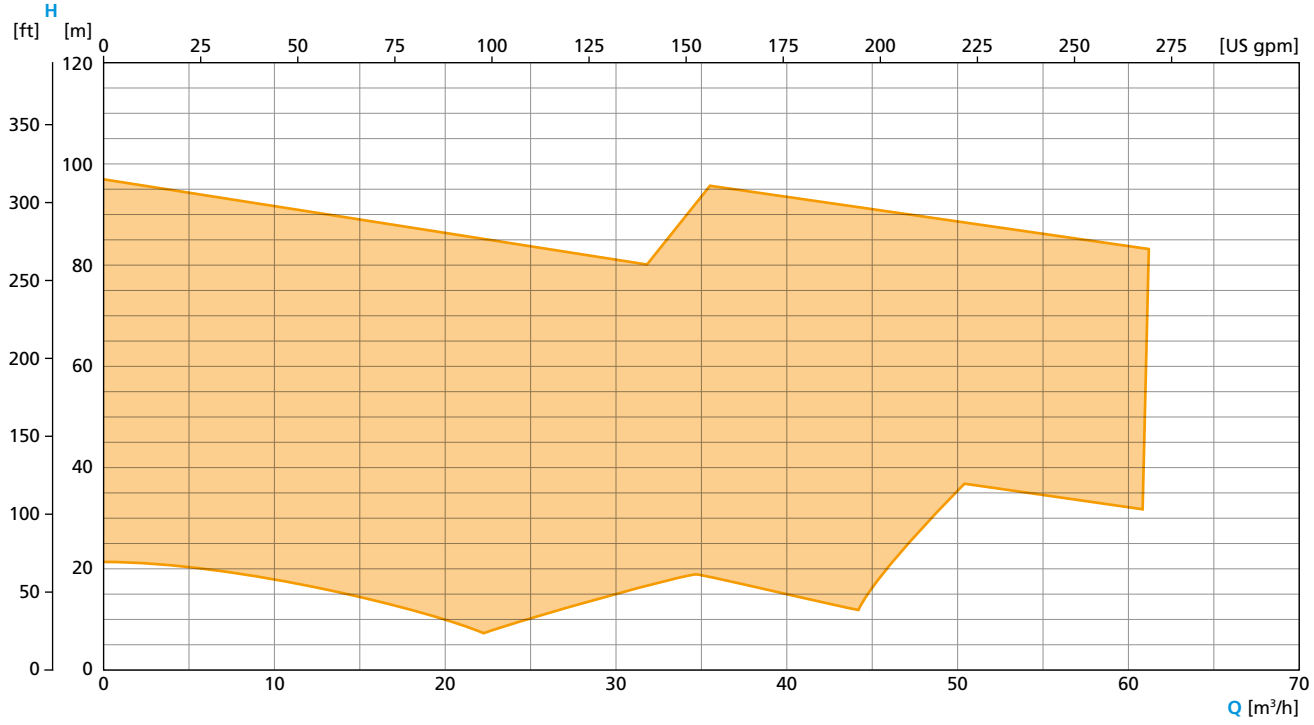
Single-stage, self-priming, VARIPUMP
4-pole, 60 Hz



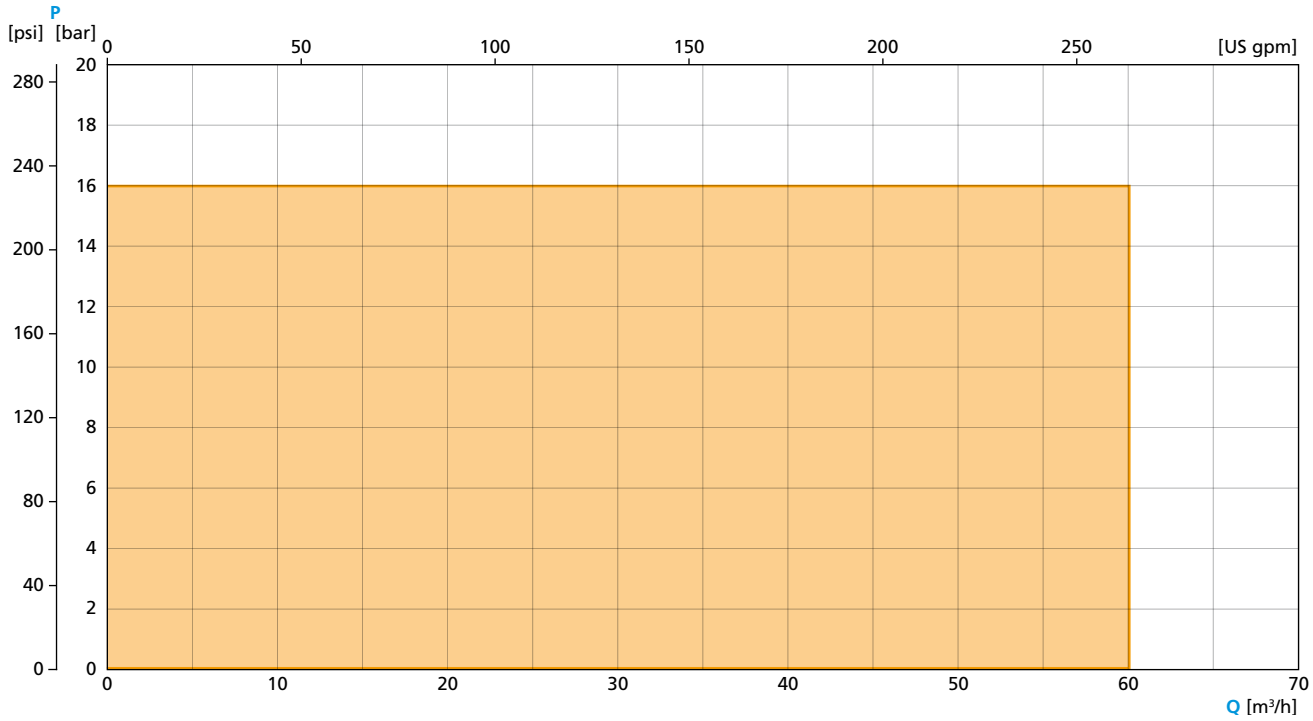
Single-stage, self-priming, SMARTPUMP
2-pole, 50 Hz



Single-stage, self-priming, SMARTPUMP
2-pole, 60 Hz



Rotary Lobe Pump, VARIPUMP



GEA VARIPUMP

Wide model range with numerous variants. Customization to specific customer requirements

GEA SMARTPUMP

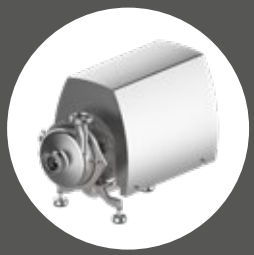
Clearly defined list of models, limited to standard requirements, no other variants

GEA Hilge HYGIA/HYGIA H

The "Swiss Knife" among the hygienic pumps. Premium quality and highest flexibility of customization ensure successful application in the food, beverage, and pharma industries. Also available as high-pressure execution.

Technical data	50 Hz	60 Hz
Flow rate	200 m³/h	175 m³/h
Flow head	72 m	105 m
System pressure	16/25/64 bar	

GEA Hilge HYGIA



GEA Hilge MAXA

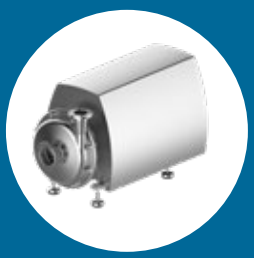
A single-stage centrifugal pump designed for heavy-duty operation in industrial processes. The major dimensions and characteristics of these pumps correspond to DIN EN 733 and DIN EN 22858.

Technical data	50 Hz	60 Hz
Flow rate	1,450 m³/h	1,320 m³/h
Flow head	100 m	100 m
System pressure	10 bar	

GEA Hilge MAXA

Single-stage end-suction centrifugal pumps

GEA Hilge TP



GEA Hilge TP

The GEA Hilge TP is the smart solution for standard applications. The single-stage centrifugal pump suits a wide range of applications and offers uncompromising hygiene and quality.

Technical data	50 Hz	60 Hz
Flow rate	210 m³/h	240 m³/h
Flow head	90 m	130 m
System pressure	16 bar	

GEA Hilge SIPLA

A single-stage self-priming side channel pump, especially suited for SIP/CIP return systems and applications with high gas content. Right- and left-hand rotation can be freely adjusted for additional application options.

Technical data	50 Hz	60 Hz
Flow rate	78 m³/h	64 m³/h
Flow head	47 m	60 m
System pressure	10 bar	

Single-stage self-priming centrifugal pumps

GEA Hilge CONTRA

Single- and multi-stage centrifugal pumps are available in this series. The hygienic design in every detail provides perfect solutions to numerous tasks in sterile and hygienic processes.

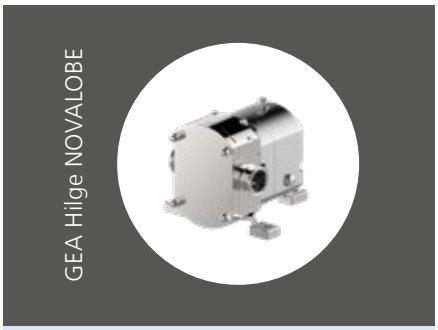
Technical data	50 Hz	60 Hz
Flow rate	40 m³/h	35 m³/h
Flow head	160 m	230 m
System pressure	25 bar	

Multi-stage centrifugal pumps

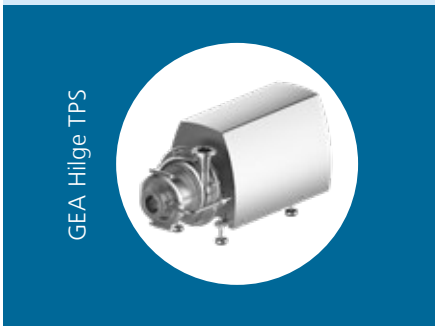
GEA Hilge NOVALOBE

This rotary lobe pump has been specifically designed for highly viscous media – and for applications where gentle pumping or dosing is required. The pump is fully drainable and EHEDG certified.

Technical data	50 / 60 Hz
Cavity volume	2.1 rev
System pressure	10/16 bar



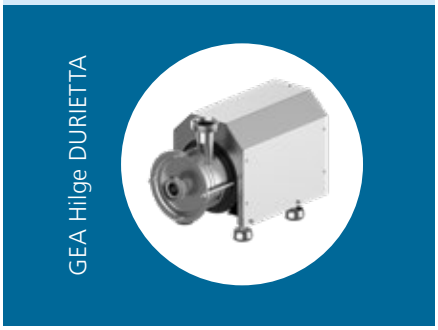
Rotary lobe pumps



GEA Hilge TPS

This self-priming centrifugal pump is the solution of choice especially for emptying tanks as well as for conveying products containing gas, e.g. CIP return systems.

Technical data	50 Hz	60 Hz
Flow rate	125 m³/h	155 m³/h
Flow head	95 m	138 m
System pressure	16 bar	



GEA Hilge DURIETTA

This end-suction single- or multi-stage centrifugal pump in a very compact design has been created for applications with low flow rates at high flow heads.

Technical data	50 Hz	60 Hz
Flow rate	8 m³/h	8 m³/h
Flow head	72 m	41 m
System pressure	8 bar	

The certificates listed here are valid for corresponding GEA pump models. Pumps conforming to the requirements of the European Hygienic Engineering and Design Group (EHEDG) as well as 3-A Sanitary Standards, Inc. (3-A SSI) are available for numerous fields of application.

EHEDG certificates apply only to the specific pump type as listed. However, they may be transferred to specific other pump types, owing to identical housing designs and flow path geometries.

Moreover, independent, standardized tests have confirmed the efficient, problem-free cleaning ability of numerous pumps – for optimum safety and economic gain.

Document	GEA Hilge HYGIA / HYGIA H	GEA Hilge TP / TPS	GEA Hilge CONTRA	GEA Hilge MAXA	GEA Hilge DURIETTA	GEA Hilge SIPLA	GEA Hilge NOVALOBE
3-A Sanitary Standard	•	•					
EHEDG certificate	•*	•	•*				•*
FDA declaration of conformity	•	•	•	•	•	•	•
Declaration of compliance with the order 2.1 acc. to EN 10204	•		•	•	•	•	•
Test report 2.2 acc. to EN 10204	•	•	•	•	•	•	•
Inspection certificate 3.1 acc. to EN 10204	•	•	•	•		•	•
EAC-Certificate	•	•	•	•	•	•	•
Surface roughness test report	•	•	•	•			•
Delta ferrite test report	•		•				•
Acoustic measurement test report	•	•	•	•	•	•	•
USP Class VI – declaration of conformity	•	•	•			•	•
Certificate in acc. with the regulation (EG) No. 1935/2004	•	•	•	•	•	•	•
Certificate DIN EN ISO 9001:2015	•	•	•	•	•	•	•

Many more certificates on request
Subject to change without notice.
* registered for certification/recertification

GEA Hilge CONTRA on Stainless Steel Adjustable Feet

Technical Data

	GEA Hilge CONTRA I		GEA Hilge CONTRA II	
	50 Hz	60 HZ	50 Hz	60 Hz
Flow head	100 m	100 m	160 m	230 m
Flow rate	12 m³/h	15 m³/h	40 m³/h	35 m³/h
System pressure	up to 25 bar			
Operating temperature	95 °C			
Sterilisation temperature	150 °C (SIP)			
Max. pump efficiency	58 %			

Applications

The GEA Hilge CONTRA pump range is suitable for the following application areas and products due to the hygienic design and material selection:

Food and beverage industry
- Breweries (beer, wort, mash, yeast, etc.)
- Dairies (milk, milk-based mixed beverages, cheese manufacturing, etc.)
- Soft drinks (fruit juice, lemonade, mineral water, etc.)
- Wine and champagne cellars
- Distilleries (mash, distillates, etc.)
- Food manufacturing (marinades, brine, cooking oil, etc.)
- Cleaning In Place systems (CIP)

Pharmaceutical and biotechnology
- Pure-water systems (WFI)
- Infusion
- Culture medium
- Blood plasma
- Lotions
- Perfumes

Design

GEA Hilge CONTRA pumps are single- and multi-stage, end-suction centrifugal pumps, designed to meet the hygienic requirements of sterile process technology.

The pump casing is made of heavy-duty, rolled and deep-drawn and forged CrNiMo steel 1.4404/1.4435, the equivalent of AISI 316L. The GEA Hilge CONTRA pumps are equipped with open diffusor casings. The O-ring seal loctions for the casing and impellers meet hygienic design criteria. The vertical versions of GEA Hilge CONTRA pumps are fully self-draining through the suction port.

The special groove ensures that the seal is kept reliably in place at all times. The metallic stop allows a defined compression of the seal, ensuring gap-free sealing against the product chamber without dead legs. The pumps have a mechanical seal and a fan-cooled asynchronous motor to enclosure class IP55.

Pump connections

GEA Hilge offers the following standard connections for the GEA Hilge CONTRA pump range:
- Thread according to DIN 11851
- Flanges according to DIN 11864-2

You can find additional information in the connection selection guide on page 37.

The pumps are available in two sizes with a variety of flexible versions. The pumps are CIP- and SIP-capable in compliance with the DIN EN 12462 performance criteria. The design fulfills the following requirements:
- QHD criteria
- EHEDG (registered for recertification)
- EAC
- GMP regulations

Certification

ATEX

For use in potentially explosive areas, Adapta pumps are available. These pumps, which possess an EC declaration of conformity in accordance with the ATEX guideline 2014/34/EU, correspond to device categories 2 or 3, and can be used in zone 1 or 2.

ATEX-Symbol

Impeller

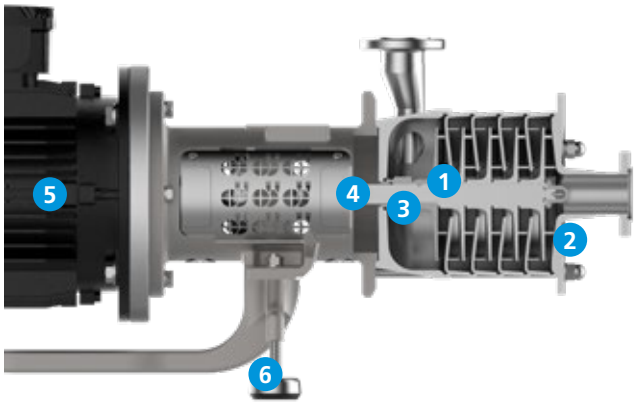
Semi-open impeller

The electro-polished, stainless steel, semi-open impeller is available in two versions, according to the application.

Impeller version	Surface finish
Cast	$R_a \leq 3.2$ µm
Milled	$R_a \leq 0.8–0.4$ µm

The impeller is suitable for low-viscosity liquids and liquids containing low content of particles.

Materials



Materials overview GEA Hilge CONTRA

Item	Component	Material	No.
1	Impeller	CrNiMo steel	316L (1.4404/1.4435)
2	Pump casing	CrNiMo steel	316L (1.4404/1.4435)
3	Seal	Single mechanical seal carbon/stainless steel or SiC/SiC, other versions available on request	
4	Pump shaft	CrNiMo steel	316Ti (1.4571)
5	Motor	Aluminum	
6	Foot	Iron/stainless steel	
	Shroud	Stainless steel	

Coating

Components not made of stainless steel are provided with one of the following coatings, depending on the design:

Version	Paint/coating	Coating thickness
Primer	2K epoxy resin	30–60 µm
	KTL coating	15–20 µm
Top coating	2K epoxy resin	50–70 µm
	2K polyurethane color	60 µm
	KTL coating	15–20 µm

Surface design

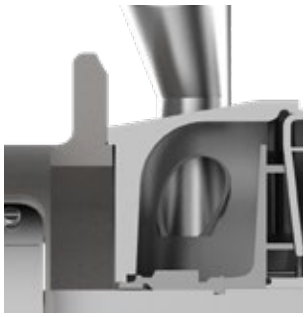
Selected components are electro-polished in order to improve the surface and protect it against corrosion.

Surface	Electro-polished components
$R_a \leq 3.2$ µm	Casing and Impeller optional
$R_a \leq 0.8$ µm	Casing and Impeller
$R_a \leq 0.8$ µm	All components that come into contact with the pumped fluid
$R_a \leq 0.4$ µm	All components that come into contact with the pumped fluid

Lantern (motor stool) and cast impeller not electro-polished.

Casing design

The special groove ensures that the seal is kept reliably in place at all times. The metallic stop allows a defined compression of the seal, ensuring gap-free sealing against the product chamber without dead legs.



Clamp ring

Mechanical seal

GEA Hilge offers the following seal designs:
- Single mechanical seal
- Single mechanical seal, flushed (Quench)
- Double mechanical seal, tandem
- Double mechanical seal, back-to-back

The pumps of the GEA Hilge CONTRA range are equipped with single internal mechanical seals optimally arranged in the pump.

This ensures efficient lubrication and cooling of the mechanical seal. CIP and SIP-capability is fulfilled according to hygienic design criteria.

The standard material for the mechanical seals is carbon/stainless steel with EPDM elastomers. Other executions and materials are available on request.

For further information on mechanical seals, see page 40.

Design variants

Standard version	Description
GEA Hilge CONTRA Bloc	Horizontal installation, close-coupled pump, motor with extended stainless steel shaft
GEA Hilge CONTRA Bloc-SUPER	Horizontal installation, close-coupled pump, motor with extended stainless steel shaft and stainless steel shroud
GEA Hilge CONTRA Bloc-V	Vertical installation, close-coupled pump, motor with extended stainless steel shaft

Bloc Design
GEA Hilge sterile and process pumps in compact Bloc design require small installation space. The motor is equipped with an extended stainless steel pump shaft.

The modular design enables numerous installation designs. Pumps in the Bloc-SUPER design are equipped with stainless steel shrouds.

GEA Hilge CONTRA Bloc on Cast Iron Foot

GEA Hilge CONTRA Bloc on Combi Foot

GEA Hilge CONTRA Bloc-SUPER
on Combi Foot

Standard version	Description
GEA Hilge CONTRA Adapta	Horizontal installation, mounted pump shaft, standard motor
GEA Hilge CONTRA Adapta-SUPER	Horizontal installation, mounted pump shaft, standard motor with stainless steel shroud
GEA Hilge CONTRA Adapta-V	Vertical installation, mounted pump shaft, standard motor
GEA Hilge CONTRA Adapta-tronic	Horizontal installation, mounted pump shaft, standard motor with integrated frequency converter
GEA Hilge CONTRA Adapta V tronic	Vertical installation, mounted pump shaft, standard motor with integrated frequency converter

Adapta design
Pumps in Adapta design have a bearing bracket with a double supported shaft. The connection between the pump shaft and the motor shaft is coupled with an elastic coupling. This design enables the use of various standard motors. The pump can remain in the system during engine demounting/mounting.

Adapta-tronic pumps are equipped with an integrated frequency converter. Pumps in Adapta-SUPER design have a stainless steel motor shroud.

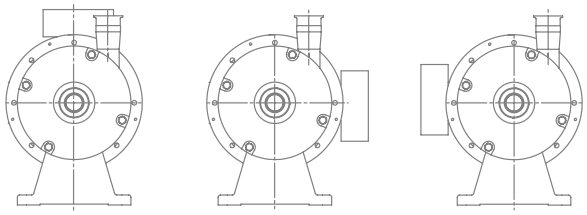
GEA Hilge CONTRA Adapta on Cast Iron Foot

GEA Hilge CONTRA Adapta on Combi Foot

GEA Hilge CONTRA on Vertical Stand with Elbow

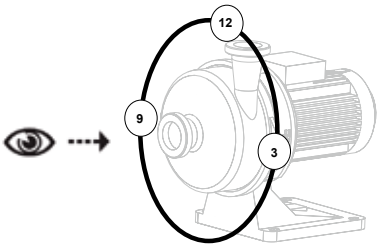
GEA Hilge CONTRA Adapta on Combi Foot

Terminal box position
This terminal box positions are possible for all pumps without shroud.

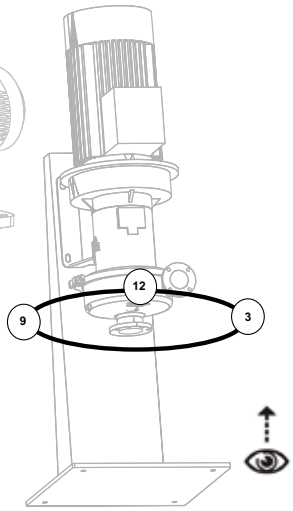


Possible terminal box positions

Positioning of discharge port and terminal box



Positioning of discharge port and terminal box for horizontal pumps



Positioning of discharge port and terminal box for vertical pumps

Noise emissions

Measured values according to DIN EN ISO 3746 for pump units, measurement uncertainty 3 dB (A).

GEA Hilge CONTRA I

Motor power [kW]	Poles	Lpfa [dB (A)] Stages					
		1	2	3	4	5	6
0.75	2	61					
1.1		61					
1.5		61	62	63			
2.2			62	62	64		
3.0			64	65	66	72	74
4.0				70	74	76	76
5.5					73	75	76

GEA Hilge CONTRA II

Motor power [kW]	Poles	Lpfa [dB (A)] Stages			
		2	3	4	5
4.0	2	68			
5.5		70	72		
7.5		71	72	74	
11.0		75	76	76	78
15.0			77	77	79
18.5				78	80
5.5					82

The noise emissions of a pump are significantly affected by the given application. The values given here therefore serve only as a guide. Please contact GEA Hilge for more detailed information.

Features and benefits

Features	Benefits
EHEDG certified* and consistent implementation of hygienic design	Process safety and optimal cleaning ability
Pump casing made from rolled steel with thick walls	Durable and robust
Modular construction. Connections, mechanical seal, placements, etc. may be combined on an individual basis	High flexibility
Various combinations of impeller geometries and connection sizes	Duty-point-precise sizing, good NPSH value and high efficiency
Motors with special voltages and frequencies, special coatings, special connections and sizes, drain ports and much more	Optimal adaptation to customer requirements and variable duty points
Cover a large performance range with only two pump sizes	Low spare parts inventory
Easily interchangeable motors through the use of standard models. Service kits for all standard mechanical seals	Service-friendliness
Task-specific certificates for components	Extensive documentation and certificates

* registerd for recertification

Motors

GEA Hilge CONTRA I (2-pole)

P2 [kW]	Frame size
0.75	80
1.1	80
1.5	90S
2.2	90L
3.0	100L
4.0	112M
5.5	132S[1]

[1] 112M for Bloc Design

GEA Hilge CONTRA II (2-pole)

P2 [kW]	Frame size
4.0	112M
5.5	132S[1]
7.5	132S
11.0	160M[2]
15.0	160L
18.5	160L
22.0[3]	180M

[1] 112M for Bloc Design, [2] 132M for Bloc Design, [3] only for Adapta

Motor data	Motor approval		IE Class		
Power [kW]	CEL China Energy	INMETRO Brazil	50 Hz	60 Hz	PTC
0.75		•	3	2–3	
1.1		•	3	2–3	
1.5	•	•	3	2–3	
2.2	•	•	3	2–3	
3.0	•	•	3	2–3	•
4.0	•	•	3	2–3	•
5.5	•	•	3	3	•
7.5	•	•	3	2–3	•
11.0	•	•	3	2–3	•
15.0	•	•	3	2–3	•
18.5	•	•	3	2–3	•
22.0[3]	•	•	3	2–3	•

[3] only for Adapta

Motor protection
Three-phase motors should be connected to a motor-protective circuit breaker.

All three-phase mains-operated standard motors can be connected to an external frequency converter. When a frequency converter is connected, the motor isolation is often overloaded, making the motor louder than during normal operation. In addition, large motors will be exposed to bearing currents caused by the frequency converter.

The following should be taken into account when operating a frequency converter:
- In the event of special noise protection requirements, motor noise can be reduced by using a dU/dt filter between the motor and the frequency converter. For noise-sensitive environments, we recommend using a sinus filter.
- The length of the cable between motor and frequency converter affects the motor load. For this reason, check whether the cable length corresponds to the specifications issued by the supplier of the frequency converter.
- For supply voltages between 500 and 690 V, either fit a dU/dt filter to reduce voltage peaks, or use a motor with reinforced insulation.
- For supply voltages of 690 V, use a motor with reinforced insulation and fit a dU/dt filter.

Design
The motors are totally enclosed, fan-cooled standard motors with main dimensions according to IEC and DIN standards. Electrical tolerances according to IEC 34.

Pump range	Design – IEC 34-7 Horizontal installation
GEA Hilge CONTRA	IM 3001 (IM B5) IM 2001 (IM B35)

Relative air humidity: Max. 95 %
Enclosure class: IP55
Insulation class: F according to IEC 85
Ambient temperature: Max. 40 °C (standard motor)

In humid locations, the lowest drain hole in the motor must be opened. In such cases, the motor enclosure class is IP44.

Type code

GEA Hilge CONTRA	I/2	ADY	40	40	2.2	2
Pump Range						
Size/Stage						
Design						
Nominal diameter of suction port (DN)						
Nominal diameter of discharge port (DN)						
Motor power (kW)						
Number of poles						

Selecting according to the application

The table below is intended as a general guide. Selection of connection often depends on on-site conditions.

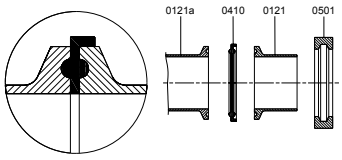
Connection		Application																				
		Beverages					Food				Life science and personal care			Industrial applications							Cleaning	
Type		Beer	Wine	Juice	Alcohol	Soft drinks	Confectionery	Dairy products	Frying oil	Syrup	Pure water	Biotechnology products	Perfumes and lotions	Glue and paint	Purification products	Chemical products	Industrial wastewater and efflux	Surface treatment products	Biofuel	CIP	SIP
Clamps	DIN 32676/ Tri-Clamp/ASME							•			•	•	•							•	•
Flanges	DIN 11864-2/ DIN 11853-2 flange	•	•	•	•	•	•	•	•	•	•	•	•							•	•
	APV-FN1/APV/FN1 flange	•	•	•	•	•	•	•	•	•										•	
	DIN EN 1092-1 flange	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	
Threads	DIN 11864-1/ 11853-1 thread	•	•	•	•	•	•	•	•	•	•	•	•							•	•
	DIN 11851 thread	•	•	•	•	•	•	•	•	•										•	•
	SMS thread	•	•	•	•	•	•	•	•	•										•	
	RJT thread	•	•	•	•	•	•	•	•	•										•	
	IDF thread	•	•	•	•	•	•	•	•	•										•	

• Commonly used connections

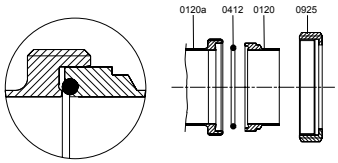
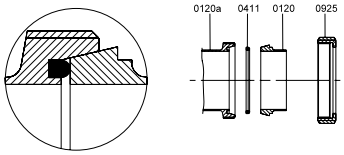
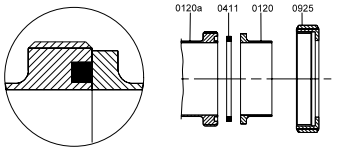
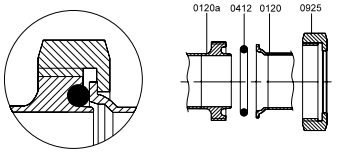
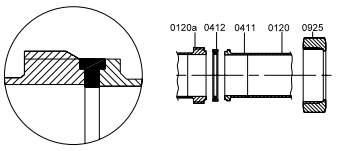
Design

The following tables show the design of the different connection types.

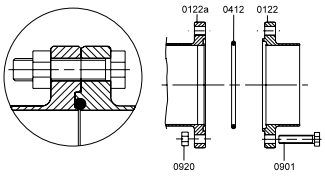
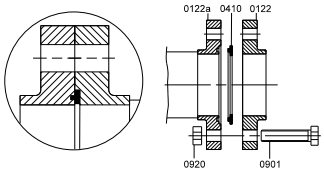
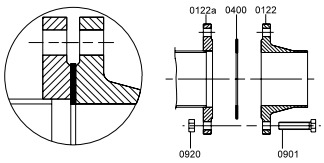
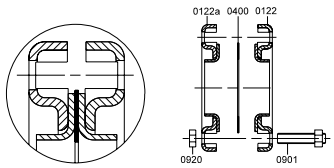
Clamps

Applications	Standard	Design	Description of the components
• Food Industry • Biotechnology / Pharmaceutical Industry	DIN 32676		0121a: Clamp connection at pump casing 0121: Clamp connection 0410: Profile gasket 0501: Clamp ring

Threads

Applications	Standard	Design	Description of the components
Aseptic Thread			
• Biotechnology / Pharmaceutical Industry	DIN 11864-1/ 11853-1		0120a: Threaded connection at pump casing 0120: Threaded connection 0412: O-ring 0925: Grooved union nut
Thread			
• Beverage Industry • Food Industry	DIN 11851		0120a: Threaded connection at pump casing 0120: Threaded connection 0411: Joint ring 0925: Grooved union nut
• Beverage Industry • Food Industry	SMS (ISO 2037)		0120a: Threaded connection at pump casing 0120: Threaded connection 0411: Joint ring 0925: Grooved union nut
• Beverage Industry • Food Industry	RJT (BS 4825-5)		0120a: Threaded connection at pump casing 0120: Threaded connection 0412: O-ring 0925: Grooved union nut
• Beverage Industry • Food Industry	IDF (BS 4825-4)		0120a: Threaded connection at pump casing 0120: Threaded connection 0411: Joint ring 0412: O-ring 0925: Grooved union nut

Flanges

Applications	Standard	Design	Description of the components
Aseptic Flange			
• Biotechnology / Pharmaceutical Industry • Beverage Industry	DIN 11864-2/ 11853-2 Form A		0122a: Flanged connection at pump casing 0122: Flanged connection 0412: O-ring 0901: Hexagon head screw 0920: Hexagon nut
Flange			
• Food Industry • Beverage Industry	APV-FN1/ APV-FG1		0122a: Flanged connection at pump casing 0122: Flanged connection 0410: Profile gasket 0901: Hexagon head screw 0920:Hexagon nut
• Industrial Applications	DIN EN 1092-1 (fixed)		0122a: Flanged connection at pump casing 0122: Flanged connection 0400: Gasket 0901: Hexagon head screw 0920: Hexagon nut
Kremo Flange			
• Industrial Applications	DIN EN 1092-1 (loose)		0122a: Flanged connection at pump casing 0122: Flanged connection 0400: Gasket 0901: Hexagon head screw 0920: Hexagon nut

In order to ensure correct operation (depending on the application and the medium), single or double mechanical seals can be supplied. The single mechanical seal is an inboard seal. Double mechanical seals are available as tandem or back-to-back execution. All seals are optimally placed inside the pump.

This ensures efficient lubrication and cooling of the mechanical seal, while also ensuring CIP (Cleaning In Place) and SIP (Sterilisation In Place) capability. The standard material for the mechanical seals are carbon/stainless steel or SiC/SiC with EPDM or FKM (Viton) elastomers.

Mechanical seals

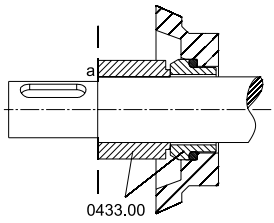
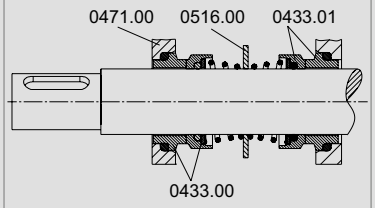
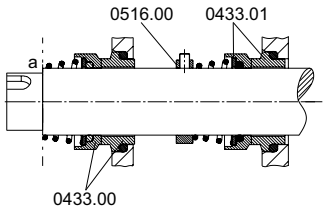
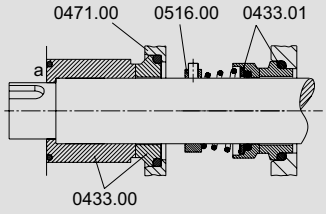
The operating range of the seal depends on the liquid, the type of seal, the operating pressure and the liquid temperature.

The seal types described below are standard seal types; other seals are available on request.

Version	Material pairs stationary seat/seal face/O-rings	Max. pressure	Max. temperature
Open spring	Carbon/stainless steel/EPDM Carbon/stainless steel/FKM Silicon carbide/silicon carbide/EPDM Silicon carbide/silicon carbide/FKM	10 bar	–20 to 80 °C
Encapsulated spring	Carbon/stainless steel/EPDM Silicon carbide/silicon carbide/EPDM Silicon carbide/silicon carbide/FFKM Silicon carbide/silicon carbide/FKM	25 bar	–20 to 100 °C

Special seals available in different materials up to 25 bar.

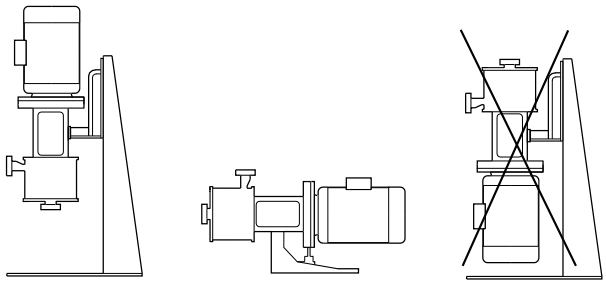
Mechanical seal arrangements

Arrangement	Design	Components	Seal characteristics
Single mechanical seal with encapsulated spring		0433.00: Mechanical seal a: Contact surface impeller side	• Encapsulated spring • Easy to clean • Optimal position inside the pump • Bidirectional
Double mechanical seal, back-to-back		0433.00: Mechanical seal, product side 0433.01: Mechanical seal, atmosphere side 0471.00: Seal cover 0516.00: Locating ring	• Back-to-back arrangement • Overpressure in barrier fluid space (seal cartridge) • No product leakage into the surrounding atmosphere • No dry running • Mechanical seals are lubricated and cooled
Double mechanical seal, tandem		0433.00: Mechanical seal, product side 0433.01: Mechanical seal, atmosphere side 0516.00: Locating ring a: Contact surface impeller side	• Tandem arrangement • Open conical spring • Pressure-less flushing (seal cartridge) • No dry running • Mechanical seals are lubricated and cooled
Double mechanical seal, tandem		0433.00: Mechanical seal, product side 0433.01: Mechanical seal, atmosphere side 0471.00: Seal cover 0516.00: Locating ring a: Contact surface impeller side	• Tandem arrangement • Product-side spring encapsulated • Pressure-less flushing (seal cartridge) • No dry running • Mechanical seals are lubricated and cooled

Mechanical installation

GEA Hilge CONTRA
The pumps of the GEA Hilge CONTRA Adapta series can be installed horizontally and vertically.

When installing vertically, always install the motor facing upwards.

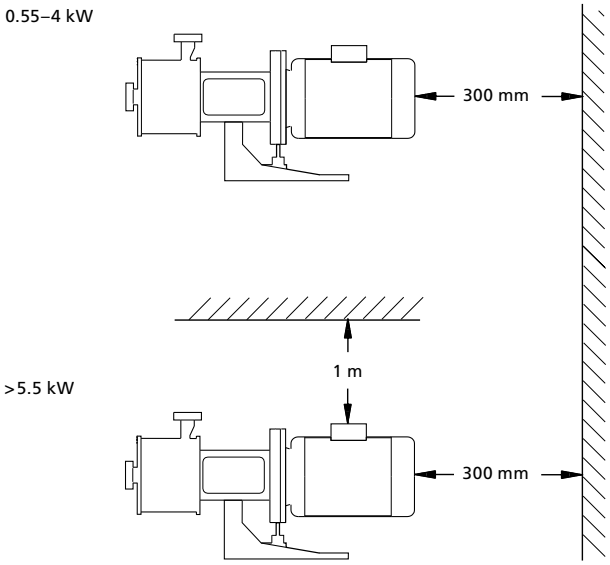


Installation GEA Hilge CONTRA Adapta

The pumps must be installed in such a way that strain from the pipework is not transferred to the pump casing. When installed outdoors, the motor must be provided with a suitable cover to avoid condensation on the electronic components and to protect pump and motor against the direct effects of the elements.

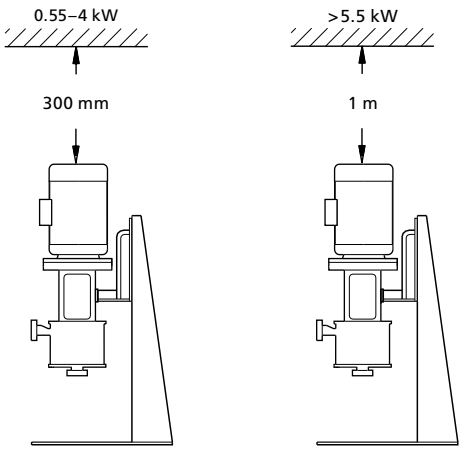
Space requirements

Horizontal installation
- Pumps fitted with motors up to and including 4 kW require a 300 mm clearance behind the motor.
- Pumps fitted with motors of 5.5 kW and up require at least a 1 meter clearance above the motor and 300 mm behind it to allow the use of lifting equipment.



Horizontal installation

Vertical installation
- Pumps fitted with motors up to and including 4 kW require a 300 mm clearance above the motor.
- Pumps fitted with motors of 5.5 kW and up require at least a 1 meter clearance above the motor to allow the use of lifting equipment.



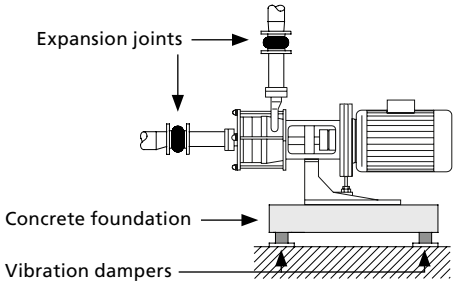
Vertical installation

Elimination of noise and vibrations

In order to achieve optimum operation and minimum noise and vibration, consider vibration dampening of the pump. Generally, always consider this for pumps with motors above 11 kW. Smaller motors, however, may also cause undesirable noise and vibration.

Noise and vibration are generated by the rotation in the motor and pump and by the flow in the pipework and fittings. The effect on the environment is subjective and depends on correct installation and the state of the remaining system.

Foundation
Vibration dampening is best achieved by installing the pumps on a plane and rigid concrete foundation.



Example of a pump foundation

As a guideline, the weight of the concrete foundation should be 1.5 times the pump weight.

Vibration dampers
To prevent vibrations from being transmitted to the building, we recommend that you isolate the pump foundation from buildings by means of vibration dampers.

The selection of the correct vibration dampers requires the following data:
- Forces that will be transmitted through the vibration dampers
- Motor speed, taking speed control into account as needed
- Required dampening in % (suggested value is 70 %)

The right damper varies from installation to installation, and the wrong damper may increase the vibration level. Vibration dampers should therefore be sized by the supplier.

Expansion joints

If the pump is installed on a pedestal with vibration dampers, expansion joints must always be fitted on the pipeline connections. This is important to prevent the pump from “hanging” in the connections.

Install expansion joints in order to:
- Absorb expansion/contractions in the pipework caused by variable liquid temperatures
- Reduce mechanical strains that occur in connection with pressure surges in the plant
- Isolate mechanical structure-borne noise in the pipework (only rubber bellows expansion joints)

Note: Do not install expansion joints to compensate for inaccuracies in the pipework such as center displacement of flanges.

Fit expansion joints at a distance of at least 1 to 1.5 times the nominal flange diameter away from the pump on the suction as well as on the discharge side. This will prevent the development of turbulence in the expansion joints, resulting in better suction conditions and a minimum pressure loss on the discharge side.

We always recommend expansion joints with limiting rods for flanges larger than DN 100.

The pipes should be anchored so that they do not stress the expansion joints and the pump. Follow the supplier’s instructions and pass them on to advisers or pipe installers.

The values for density and viscosity given here are ratios and can deviate in practice.

Application beer

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Altbier Beer Beer mix Berliner Weisse Bock beer Craft beer Export beer Full beer (Vollbier) Green beer Herb beer Lager Light beer Martzen (Märzen) Non-alcoholic beer Pils Pilsener Ringed (Kräusen) Wheat beer	< 100	1,000	1	aeE (up to 10 bar), aiH (from 10 bar)	–
Cold wort Original wort	< 40	< 1,050	< 5	aeE (up to 10 bar), aiH (from 10 bar)	–
Hop extract (dissolved) Lees Mash (beer)	< 100	< 1,050	< 5	–	kiE/aeE
Lauter wort	40–90	< 1,050	< 5	–	kiE/aeE
Hot wort	40–115	< 1,050	< 5	–	kiE/aeE
Crop yeast Pitching yeast Yeast	< 20	< 1,050	< 100	aeE	–
Enzymes (watery dissolution)	< 60	< 1,050	< 5	aeE	–
Lactic acid, con. < 50 % ($C_3H_6O_3$)	< 100	< 1,100	< 5	kiV (up to 16 bar), kiI (up to 25 bar)	–
Lactic acid, con. > 50 % ($C_3H_6O_3$)	< 100	< 1,210	< 5	kiV (up to 16 bar), kiI (up to 25 bar)	–

Application water

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Iced water	–4 to +3	< 1,000	1	kiE (up to 10 bar), kiH (from 10 bar)	–
Cold water Demineralised water (Not for sterile applications) Drinking water Flushing water Hot water Mineral water Process water Service water Water	< 110	< 1,000	1	aeE (up to 10 bar), aiH (from 10 bar)	–

Application wine/sparkling wine

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Champagne Cherry wine Cider Cidre Dry sparkling wine Fruit wine Prosecco Red wine Rosé wine Sparkling wine Strawberry wine White wine Wine Young wine	< 35	< 1,000	1	aeE (up to 10 bar), aiH (from 10 bar)	–
Dessert wine Dessert wine, late-harvest wine Drape must (w/o. particles) Ice wine	< 35	< 1,050	15	aeE (up to 10 bar), aiH (from 10 bar)	–
Wine lees Wine yeast	< 35	< 1,050	100	aeE (up to 10 bar), aiH (from 10 bar)	–
Mash (wine)	< 35	< 1,050	5	aeE (up to 10 bar), aiH (from 10 bar)	–

Application coffee/tea/cocoa

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem	Encapsulated seal for vacuum application
Coffee	< 125	1,000	1	aeE	–	
Coffee extract	< 80–100	< 1,200	< 250	–	kiV/aeV	x
Tea	< 125	1,000	1	aeE	–	
Fruit tea / flavored tea	< 125	1,000	1	aeE	–	
Cocoa drink	< 40	1,020	< 10	aeE	–	

* aeE: carbon/stainless steel/EPDM, aeV: carbon/stainless steel/Viton, aiH: carbon/SIC/EPDM (USP-Class VI), kiE: SIC/SIC/EPDM, kiH: SiC/SiC/EPDM (USP-Class VI), kil: SIC/SIC/Viton (USP Class VI), kiV: SIC/SIC/Viton, WDR: lip seal. The elastomer of the static seals equals the elastomer of the mechanical seals.

Application milk

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Buttermilk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
UHT milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Yoghurt milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Kefir	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Cheese milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Skimmed milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Skimmed milk concentrate	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Milk concentrate	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Lactic culture	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Milk mix	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Whey	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Raw milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Pre-stirred yoghurt	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Sour milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Sour cream with thickening agents	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Full cream milk	< 55	< 1,050	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	> 55 – < 100	< 1,050	< 5	–	aeE/aeE (up to 10 bar), aiH/aeE (from 10 bar)
Coffee cream	< 55	< 1,100	< 40	aeV (up to 10 bar), ail (from 10 bar)	–
	> 55 – < 100	< 1,100	< 20	–	aeV/aeV (up to 10 bar), ail/aeV (from 10 bar)
Whipping cream	< 55	< 1,100	< 40	aeV (up to 10 bar), ail (from 10 bar)	–
	> 55 – < 100	< 1,100	< 20	–	aeV/aeV (up to 10 bar), ail/aeV (from 10 bar)
Sour cream	< 55	< 1,100	< 40	aeV (up to 10 bar), ail (from 10 bar)	–
	> 55 – < 100	< 1,100	< 20	–	aeV/aeV (up to 10 bar), ail/aeV (from 10 bar)
Cream	< 55	< 1,100	< 40	aeV (up to 10 bar), ail (from 10 bar)	–
	> 55 – < 100	< 1,100	< 20	–	aeV/aeV (up to 10 bar), ail/aeV (from 10 bar)
Condensed milk	< 55	< 1,100	< 40	aeV (up to 10 bar), ail (from 10 bar)	–
	> 55 – < 100	< 1,100	< 20	–	aeV/aeV (up to 10 bar), ail/aeV (from 10 bar)

Application vinegar / sauces / marinade

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Soy sauce	5–95	1,250	25	kiE	–
	95.1–125	1,250	25	–	kiE/aeE
Cider vinegar Herb-flavoured vinegar Vinegar Wine vinegar	60	1,020	1	aeE	–
Vinegar essence	60	1,050	1	aeV	–

* aeE: carbon/stainless steel/EPDM, aeV: carbon/stainless steel/Viton, aiH: carbon/SIC/EPDM (USP-Class VI), aiI: carbon/SIC/Viton (USP-Class VI), kiE: SIC/SIC/EPDM, WDR: lip seal. The elastomer of the static seals equals the elastomer of the mechanical seals.

Application non-alcoholic drink

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem	Encapsulated seal
Apple juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Apricot-mango juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Cherry juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Cola	< 100	1,040	< 5	aeE	–	
	< 100	1,040	< 5	aeE	–	
Concentrated lemon juice, without pulp and granules	< 70	1,040	25	kiV	–	
Cranberry juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Multivitamin juice	< 70	1,040	< 50	kiE	–	x
Fruit juice, with granules	< 70	1,040	< 50	kiE	–	x
Fruit juice, with pulp		1,040	< 50	aeE	–	x
Fruit juice, with pulp and with granules	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Fruit juice, without pulp	< 70	1,040	< 50	aeE	–	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
Grape juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Iced tea	< 100	1,040	< 5	aeE	–	
Lemon juice, with pulp and granules	< 70	1,040	25	kiV	–	x
Lemon juice, without pulp and granules	< 70	1,040	25	aeV	–	
Lemonade	< 100	1,040	< 5	aeE	–	
	< 100	1,040	< 5	aeE	–	
Mineral water	< 100	1,040	< 5	aeE	–	
	< 100	1,040	< 5	aeE	–	
Multivitamin juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Orange juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Peach- / passion fruit juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem	Encapsulated seal
Raspberry- / Strawberry juice	< 70	1,040	< 50	aeE	–	
	< 70	1,040	< 50	aeE	–	x
	< 70	1,040	< 50	kiE	–	x
	> 70 – < 95	1,040	< 10	–	kiE/aeE	
	> 70 – < 95	1,040	< 10	–	kiE/aeE	x
Vegetable juice, with pulp and granules	< 70	1,050	< 50	kiV	–	x
	> 70 – < 95	1,050	< 10	–	kiV/aeV	x
Vegetable juice, without pulp and granules	< 70	1,050	< 50	aeV	–	
	> 70 – < 95	1,050	< 10	–	kiV/aeV	

Application concentrated fruit juice

					Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Concentration [Brix]	Single	Tandem
Concentrated fruit juice	5–90	1,150	related to temperature	to 25°	aeE (up to 10 bar), aiH (from 10 bar)	–
	5–40	1,200		26–49°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,200		26–49°	–	aeE/aeE
	15–40	1,230		50°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,230		50°	–	aeE/aeE
	15–40	1,260		55°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,260		55°	–	aeE/aeE
	15–40	1,290		60°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,290		60°	–	aeE/aeE
	15–40	1,320		65°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,320		65°	–	aeE/aeE
	20–40	1,350		70°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,350		70°	–	aeE/aeE

* aeE: carbon/stainless steel/EPDM, aeV: carbon/stainless steel/Viton, aiH: carbon/SIC/EPDM (USP-Class VI), kiE: SIC/SIC/EPDM, kiH: SiC/SiC/EPDM (USP-Class VI), kiV: SIC/SIC/Viton, WDR: lip sea. The elastomer of the static seals equals the elastomer of the mechanical seals.

Application oil

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Cocoa butter Coconut oil / copra oil Corn oil Cotton seed oil Linseed oil Olive oil Palm oil Peanut oil Pumpkin seed oil Rape oil / rapeseed oil Safflower oil Sesame oil Soy oil / soy bean oil Sunflower oil Walnut oil Wheat germ oil	10–30 30.1–125	940 920	< 80 < 40	aeV aeV	– –
Chip fat	< 170	900	10	aeV	–
Butter oil (liquid)	> 45–120	860	45	aeV	–
Lard (liquid)	> 45–120	860	45	aeV	–
Liquid butter	> 35–120	860	45	aeV	–
Fish oil	10–125	950	< 100	aeV	–
Whale oil	10–125	950	< 100	aeV	–
Cod liver (cod-liver oil)	10–125	950	< 100	aeV	–
Mineral oil Motor oil Petroleum	10–100			aeV	–
Derv Diesel oil	10–100	850	< 15	aeV	–
Oil-in-water emulsion	0–100	1,000	< 50	aeV	–

Application spirits

					Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Concentration [%]	Single	Tandem
Spirits	40	< 1,000	< 5		aeE (up to 10 bar), aiH (from 10 bar)	–
	< 50	< 1,150	< 150		–	kiE/aeE
	< 100	< 1,150	< 100		–	kiE/aeE
	< 78	< 1,000	1	< 10	aeE (up to 10 bar), aiH (from 10 bar)	–
	< 78	900	1	< 50	aeE (up to 10 bar), aiH (from 10 bar)	–
	< 78	800	1	< 98	aeE (up to 10 bar), aiH (from 10 bar)	–

Application cleaning in place CIP

					Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Concentration [%]	Single	Tandem
CIP liquid (concentration approx. 5 %)	< 100	1,050	< 5	< 5	aeE (up to 10 bar), aiH (from 10 bar)	–

Application sugar syrup

					Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Concentration [Brix]	Single	Tandem
Sugar syrup without crystals	5–90	1,150	related to temperature	to 25°	aeE (up to 10 bar), aiH (from 10 bar)	–
	5–40	1,200		26–49°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,200		26–49°	–	aeE/aeE
	15–40	1,230		50°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,230		50°	–	aeE/aeE
	15–40	1,260		55°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,260		55°	–	aeE/aeE
	15–40	1,290		60°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,290		60°	–	aeE/aeE
	15–40	1,320		65°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,320		65°	–	aeE/aeE
	20–40	1,350		70°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,350		70°	–	aeE/aeE
	20–40	1,360		72,7°	aeE (up to 10 bar), aiH (from 10 bar)	–
	40.1–90	1,360		72,7°	–	aeE/aeE
	5–90	1,150		to 25°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	5–40	1,200		26–49°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,200		26–49°	–	kiE/aeE
	15–40	1,230		50°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,230		50°	–	kiE/aeE
	15–40	1,260		55°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,260		55°	–	kiE/aeE
	15–40	1,290		60°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,290		60°	–	kiE/aeE
	15–40	1,320		65°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,320		65°	–	kiE/aeE
	20–40	1,350		70°	kiE (up to 10 bar), kiH (10 – 16 bar)	–
	40.1–90	1,350		70°	–	kiE/aeE

* aeE: carbon/stainless steel/EPDM, aeV: carbon/stainless steel/Viton, aiH: carbon/SIC/EPDM (USP-Class VI), kiE: SIC/SIC/EPDM, kiH: SiC/SiC/EPDM (USP-Class VI), WDR: lip seal. The elastomer of the static seals equals the elastomer of the mechanical seals.

Application chemicals

					Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Concentration [%]	Single	Tandem
Caustic soda (NaOH)	< 60	= Concentration		< 15	kiE	–
	< 60	= Concentration		> 15 – < 50	–	kiE/aeE
	> 60 – < 101	= Concentration		< 12	kiE	–
	> 60 – < 101	= Concentration		< 12 – < 50	–	kiE/aeE
Peracetic / peroxyacetic ($C_{24}O_3$)	< 60	< 1,020	< 1	< 5	kiV	–
	< 60	< 1,060	< 5	> 5.1 – < 15	kiK	–
Phosphoric acid (H_3PO_4)	< 40	1 % = 1,004 5 % = 1,026	< 5	< 15	kiV	–
	> 40 – < 85	10 % = 1,053 20 % = 1,114	< 5	< 15	–	kiV/aeV
	< 85	35 % = 1,216 45 % = 1,293	< 5	> 15 – < 45	–	kiV/aeV
Nitric acid (HNO_3)	0–20	1 % = 1,004 10 % = 1,055 20 % = 1,115 30 % = 1,180 40 % = 1,245	5	0–10	kiV	–
	20.1–40		5	0–10	–	kiV/aeV
	0–40		5	10.1–20	–	kiV/aeV
	40.1–85		5	0–20	–	kiV/aeV
	0–85		5	20.1–40	–	kiV/aeV
Sulfuric acid (H_2SO_4)	< 20	< 1,1	< 25	< 12	–	kiV/aeV
	< 70	< 1,08	< 20	< 12	–	kiK/aeV
High test peroxide (H_2O_2) Hydrogen peroxide	< 90	< 1,050	2	2–3	aeV	–
	< 90	< 1,150	2	< 40	kiV	–
	< 90	< 1,300	2	< 60	kiV	–
	< 60	< 1,450	2	< 100	–	kiV/aeV
Brine solution Common salt solution Sodium chloride (NaCl)	< 30	< 1,050	< 5	< 5	aeE	–
	30.1–40	< 1,050	< 5	< 5	kiE	–
	< 40	< 1,080	< 5	5.1–10	kiE	–
	< 40	< 1,200	< 25	10.1–25	–	kiE/aeE
Curing brine (butchery)	< 40	1,200	< 300	< 20	kiE	–
Salting brine (cheese dairy)	< 40	1,300	< 60	20–30	–	kiE/aeE
Ammonia/ammoniac (NH_3)	< 40	800	< 5		–	aeE/aeE
Caustic potash (KOH) Potassium hydroxide	< 60	< 1,100	< 5	< 10	kiE	–
	< 60	< 1,200	< 5	< 20	kiE	–
Glycerol Propanetriol	80	< 1,100	< 5	0–40	aeV	–
	80	< 1,160	< 20	40.1–60	aeV	–
	80	< 1,200	< 50	60.1–75	aeV	–
	80	< 1,220	< 100	75.1–85	aeV	–
Propylene-glycol ($C_3H_8O_2$)	0–80	1,010	< 5	1–20	kiV	–
	–5–80	1,020	< 20	20.1–50	kiV	–
	–10–80	1,040	< 150	50.1–75	kiV	–
	–10–0	1,060	< 255	75.1–100	kiV	–
	0.1–80	1,050	< 150	75.1–100	kiV	–
Ethanediol Ethylene-glycol ($C_2H_6O_2$)	0–80	1,030	< 5	1–20	kiE	–
	–5–80	1,060	< 20	20.1–50	kiE	
	–10–80	1,090	< 40	50.1–75	kiE	–
	–10–0	1,120	< 100	75.1–100	kiE	
	0.1–80	1,110	< 65	75.1–100	kiE	–
Citric acid ($C_6H_8O_7$) Natural citric acid	5–80	1 % = 1,005 10 % = 1,020	< 15	<10	kiV	–
	5–80	10.1 % = 1,020 20 % = 1,050 30 % = 1,100 50 % = 1,260	< 15	10.1–50	kiV	–
Acetic acid ($C_2H_4O_2$)	5–80	1,010	1	< 10	aeE	–
	5–100	1,050	1	10.1–100	–	aeK/aeE

Application waste water

				Mechanical seal* material product side / atmospheric side	
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem
Dirty water Laboratory waste water Sewage Waste water, without solids (not abrasive), pH < 7	< 80	1,000	1	kiV	–
Dirty water Laboratory waste water Sewage Waste water, without solids (not abrasive), pH < 7	< 80	1,000	1	kiE	–
Landfill seepage water, not ozoniferous, chloride content max. 350mg/l	< 50	1,000	1	kiV	–
Landfill seepage water, not ozoniferous, no chloride content	< 50	1,000	1	kiV	–
Landfill seepage water, ozoniferous, max. 300 ppB, chloride content max. 350mg/l	< 50	1,000	1	kiK	–
Landfill seepage water, ozoniferous, max. 300 ppB, no chloride content	< 50	1,000	1	kiK	–
Activated sludge	< 60	1,000	1	kiV	–

Application pharma

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°C]	Density [kg/m³]	Viscosity [mPas]	Single	Tandem	Encapsulated seal
Purified water (PW)	0–125	1,000	1	kiH	–	
Highly purified water (HPW) Ultra purified water (UPW) Water for injection (WFI)	0–125	1,000	1	kiH-C1/ooH-C1	–	

* aeE: carbon/stainless steel/EPDM, aeK: carbon/stainless steel/FFKM, aeV: carbon/stainless steel/Viton, kiE: SIC/SIC/EPDM, kiH: SiC/SiC/EPDM (USP-Class VI), kiV: SIC/SIC/Viton, ooH: SIC/SIC/EPDM (USP-Class VI). The elastomer of the static seals equals the elastomer of the mechanical seals.

Catalogs
Hygienic Valve Technology

Catalogs
Hygienic Pump Technology

Catalog
Aseptic Valve Technology

Catalog
Cleaning Technology

GEA VARIPUMPS

GEA Hilge HYGIA

GEA Hilge MAXA

GEA Hilge SIPLA

GEA Hilge CONTRA

GEA Hilge NOVALOBE

GEA SMARTPUMPS

GEA Hilge TP

GEA Hilge TPS

GEA Hilge DURIETTA

GEA Hilge CONTRA Single- and Multi-Stage pumps

Nominal width / Connection type		1-stage						2-stage					
	DIN	25/25	32/25	32/32	40/25	40/32	40/40	25/25	32/25	32/32	40/25	40/32	40/40
	ISO	33.7/ 33.7	42.4/ 33.7	42.4/ 42.4	48.3/ 33.7	48.3/ 42.4	48.3/ 48.3	33.7/ 33.7	42.4/ 33.7	42.4/ 42.4	48.3/ 33.7	48.3/ 42.4	48.3/ 48.3
	OD	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"
Threaded connection DIN 11851 (DIN)	a_1	117.0	120.0	123.0	121.0	124.0	127.0	143.0	146.0	149.0	147.0	150.0	153.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0
	e_5	106.0	114.0	114.0	120.0	120.0	120.0	106.0	114.0	114.0	120.0	120.0	120.0
	h_3	119.0	127.0	127.0	133.0	133.0	133.0	119.0	127.0	127.0	133.0	133.0	133.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range A (DIN)*	a_1	114.0	118.0	121.0	119.0	122.0	125.0	140.0	144.0	147.0	145.0	148.0	151.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	157.0	157.0	158.0	157.0	158.0	158.0	157.0	157.0	158.0	157.0	158.0	158.0
	e_5	106.0	113.0	113.0	119.0	119.0	119.0	106.0	113.0	113.0	119.0	119.0	119.0
	h_3	116.0	125.0	125.0	131.0	131.0	131.0	116.0	125.0	125.0	131.0	131.0	131.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range B (ISO)**	a_1	121.0	122.0	125.0	122.0	125.0		147.0	148.0	151.0	148.0	151.0	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	157.0	157.0	159.0	157.0	159.0	(E)	157.0	157.0	159.0	157.0	159.0	(E)
	e_5	97.0	106.5	106.5	120.0	120.0		97.0	106.5	106.5	120.0	120.0	
	h_3	108.0	118.5	118.5	128.0	128.0		108.0	118.5	118.5	128.0	128.0	
Threaded connection SMS International (OD)	a_1	103.0	106.0	109.0	108.0	111.0	114.0	129.0	106.0	109.0	134.0	137.0	140.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	150.0	150.0	146.0	150.0	146.0	147.0	150.0	150.0	146.0	150.0	146.0	147.0
	e_5	(A)						(A)					
	h_3												
Threaded connection BS4825-RJT (OD)	a_1	109.5	(N/A)	(N/A)	109.5	(N/A)	115.5	135.5	(N/A)	(N/A)	135.5	(N/A)	141.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5
	e_5	(A)						(A)					
	h_3												
Threaded connection ISO2853-IDF (OD)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	112.5	(A)	(N/A)	(N/A)	(A)	(N/A)	138.5
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5
	e_5	(A)						(A)					
	h_3												
Clamp DIN 32676 Pipe range A (DIN)*	a_1	109.5	109.5	112.5	109.5	112.5	115.5	135.5	135.5	138.5	135.5	138.5	141.5
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	152.5	152.5	149.5	152.5	149.5	148.5	152.5	152.5	149.5	152.5	149.5	148.5
	e_5	113.5	118.5	118.5	123.5	123.5	123.5	113.5	118.5	118.5	123.5	123.5	123.5
	h_3	111.5	116.5	116.5	121.5	121.5	121.5	111.5	116.5	116.5	121.5	121.5	121.5
Clamp DIN 32676 Pipe range B (ISO)**	a_1	112.5	112.5	115.5	112.5	115.5		138.5	138.5	141.5	138.5	141.5	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	149.5	149.5	148.5	149.5	148.5	(E)	149.5	149.5	148.5	149.5	148.5	(E)
	e_5	101.5	111.0	111.0	120.5	120.5		101.5	111.0	111.0	120.5	120.5	
	h_3	99.5	109.0	109.0	118.5	118.5		99.5	109.0	109.0	118.5	118.5	
Clamp DIN 32676 Pipe range C (OD)***	a_1	109.5	(N/A)	(N/A)	109.5	(N/A)	115.5	135.5	(N/A)	(N/A)	135.5	(N/A)	141.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	163.0	152.5	(N/A)	(N/A)	152.5	(N/A)	163.0
	e_5	99.7	(N/A)	(N/A)	118.8	(N/A)	118.8	99.7	(N/A)	(N/A)	118.8	(N/A)	118.8
	h_3	97.7	(N/A)	(N/A)	116.8	(N/A)	116.8	97.7	(N/A)	(N/A)	116.8	(N/A)	116.8
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	111.7	111.7	114.7	111.7	114.7	117.7	137.7	137.7	140.7	137.7	140.7	143.7
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	154.7	154.7	151.7	154.7	151.7	150.7	154.7	154.7	151.7	154.7	151.7	150.7
	e_5	112.5	117.5	117.5	122.5	122.5	122.5	112.5	117.5	117.5	122.5	122.5	122.5
	h_3	113.7	118.7	118.7	123.7	123.7	123.7	113.7	118.7	118.7	123.7	123.7	123.7
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	114.7	114.7	117.7	114.7	117.7		140.7	140.7	143.7	140.7	143.7	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	150.7	150.7	150.7	150.7	150.7	(E)	150.7	150.7	150.7	150.7	150.7	(E)
	e_5	100.5	110.0	110.0	119.5	119.5		100.5	110.0	110.0	119.5	119.5	
	h_3	101.7	111.2	111.2	120.7	120.7		101.7	111.2	111.2	120.7	120.7	
Flange EN1092-1 PN10 Kremo (ISO)	a_1	101.0	101.0	104.0	101.0	104.0	107.0	127.0	127.0	130.0	127.0	130.0	133.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	144.0	144.0	141.0	144.0	141.0	140.0	144.0	144.0	141.0	144.0	141.0	140.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN10 (DIN)	a_1	112.0	(N/A)	(N/A)	112.0	(N/A)	118.0	138.0	(N/A)	(N/A)	138.0	(N/A)	144.0
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN25 (DIN)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	110.0	(A)	(N/A)	(N/A)	(A)	(N/A)	136.0
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0
	e_5	(A)						(A)					
	h_3												

Tolerances according to DIN EN 735 Connection dimensions for centrifugal pumps.

* For pipes according to DIN 11866 series A
** For pipes according to DIN 11866 series B
*** For pipes according to DIN 11866 series C (pipe dimensions according to ASME BPE)
(A) On request
(E) On request. Not fully drainable in vertical position
(N/A) Not Available

Nominal width / Connection type		3-stage						4-stage					
	DIN	25/25	32/25	32/32	40/25	40/32	40/40	25/25	32/25	32/32	40/25	40/32	40/40
	ISO	33.7/33.7	42.4/33.7	42.4/42.4	48.3/33.7	48.3/42.4	48.3/48.3	33.7/33.7	42.4/33.7	42.4/42.4	48.3/33.7	48.3/42.4	48.3/48.3
	OD	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"
Threaded connection DIN 11851 (DIN)	a_1	169.0	172.0	175.0	173.0	176.0	179.0	195.0	198.0	201.0	199.0	202.0	205.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0
	e_5	106.0	114.0	114.0	120.0	120.0	120.0	106.0	114.0	114.0	120.0	120.0	120.0
	h_3	119.0	127.0	127.0	133.0	133.0	133.0	119.0	127.0	127.0	133.0	133.0	133.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range A (DIN)*	a_1	166.0	170.0	173.0	171.0	174.0	177.0	192.0	196.0	199.0	197.0	200.0	203.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	157.0	157.0	158.0	157.0	158.0	158.0	157.0	157.0	158.0	157.0	158.0	158.0
	e_5	106.0	113.0	113.0	119.0	119.0	119.0	106.0	113.0	113.0	119.0	119.0	119.0
	h_3	116.0	125.0	125.0	131.0	131.0	131.0	116.0	125.0	125.0	131.0	131.0	131.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range B (ISO)**	a_1	173.0	174.0	177.0	174.0	177.0		199.0	200.0	203.0	200.0	203.0	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	157.0	157.0	159.0	157.0	159.0	(E)	157.0	157.0	159.0	157.0	159.0	(E)
	e_5	97.0	106.5	106.5	120.0	120.0		97.0	106.5	106.5	120.0	120.0	
	h_3	108.0	118.5	118.5	128.0	128.0		108.0	118.5	118.5	128.0	128.0	
Threaded connection SMS International (OD)	a_1	155.0	106.0	109.0	160.0	163.0	166.0	181.0	106.0	109.0	186.0	189.0	192.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	150.0	150.0	146.0	150.0	146.0	147.0	150.0	150.0	146.0	150.0	146.0	147.0
	e_5	(A)						(A)					
	h_3												
Threaded connection BS4825-RJT (OD)	a_1	161.5	(N/A)	(N/A)	161.5	(N/A)	167.5	187.5	(N/A)	(N/A)	187.5	(N/A)	193.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5
	e_5	(A)						(A)					
	h_3												
Threaded connection ISO2853-IDF (OD)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	164.5	(A)	(N/A)	(N/A)	(A)	(N/A)	190.5
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5
	e_5	(A)						(A)					
	h_3												
Clamp DIN 32676 Pipe range A (DIN)*	a_1	161.5	161.5	164.5	161.5	164.5	167.5	187.5	187.5	190.5	187.5	190.5	193.5
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	152.5	152.5	149.5	152.5	149.5	148.5	152.5	152.5	149.5	152.5	149.5	148.5
	e_5	113.5	118.5	118.5	123.5	123.5	123.5	113.5	118.5	118.5	123.5	123.5	123.5
	h_3	111.5	116.5	116.5	121.5	121.5	121.5	111.5	116.5	116.5	121.5	121.5	121.5
Clamp DIN 32676 Pipe range B (ISO)**	a_1	164.5	164.5	167.5	164.5	167.5		190.5	190.5	193.5	190.5	193.5	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	149.5	149.5	148.5	149.5	148.5	(E)	149.5	149.5	148.5	149.5	148.5	(E)
	e_5	101.5	111.0	111.0	120.5	120.5		101.5	111.0	111.0	120.5	120.5	
	h_3	99.5	109.0	109.0	118.5	118.5		99.5	109.0	109.0	118.5	118.5	
Clamp DIN 32676 Pipe range C (OD)***	a_1	161.5	(N/A)	(N/A)	161.5	(N/A)	167.5	167.5	(N/A)	(N/A)	187.5	(N/A)	193.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	7.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	163.0	163.0	(N/A)	(N/A)	152.5	(N/A)	163.0
	e_5	99.7	(N/A)	(N/A)	118.8	(N/A)	118.8	118.8	(N/A)	(N/A)	118.8	(N/A)	118.8
	h_3	97.7	(N/A)	(N/A)	116.8	(N/A)	116.8	116.8	(N/A)	(N/A)	116.8	(N/A)	116.8
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	163.7	163.7	166.7	163.7	166.7	169.7	189.7	189.7	192.7	189.7	192.7	195.7
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	154.7	154.7	151.7	154.7	151.7	150.7	154.7	154.7	151.7	154.7	151.7	150.7
	e_5	112.5	117.5	117.5	122.5	122.5	122.5	112.5	117.5	117.5	122.5	122.5	122.5
	h_3	113.7	118.7	118.7	123.7	123.7	123.7	113.7	118.7	118.7	123.7	123.7	123.7
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	166.7	166.7	169.7	166.7	169.7		192.7	192.7	195.7	192.7	195.7	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	150.7	150.7	150.7	150.7	150.7	(E)	150.7	150.7	150.7	150.7	150.7	(E)
	e_5	100.5	110.0	110.0	119.5	119.5		100.5	110.0	110.0	119.5	119.5	
	h_3	101.7	111.2	111.2	120.7	120.7		101.7	111.2	111.2	120.7	120.7	
Flange EN1092-1 PN10 Kremo (ISO)	a_1	153.0	153.0	156.0	153.0	156.0	159.0	179.0	179.0	182.0	179.0	182.0	185.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	144.0	144.0	141.0	144.0	141.0	140.0	144.0	144.0	141.0	144.0	141.0	140.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN10 (DIN)	a_1	164.0	(N/A)	(N/A)	164.0	(N/A)	170.0	190.0	(N/A)	(N/A)	190.0	(N/A)	196.0
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN25 (DIN)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	162.0	(A)	(N/A)	(N/A)	(A)	(N/A)	188.0
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0
	e_5	(A)						(A)					
	h_3												

Tolerances according to DIN EN 735 Connection dimensions for centrifugal pumps.

* For pipes according to DIN 11866 series A
** For pipes according to DIN 11866 series B
*** For pipes according to DIN 11866 series C (pipe dimensions according to ASME BPE)
(A) On request
(E) On request. Not fully drainable in vertical position
(N/A) Not Available

Nominal width / Connection type		5-stage						6-stage					
	DIN	25/25	32/25	32/32	40/25	40/32	40/40	25/25	32/25	32/32	40/25	40/32	40/40
	ISO	33.7/ 33.7	42.4/ 33.7	42.4/ 42.4	48.3/ 33.7	48.3/ 42.4	48.3/ 48.3	33.7/ 33.7	42.4/ 33.7	42.4/ 42.4	48.3/ 33.7	48.3/ 42.4	48.3/ 48.3
	OD	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"	1"/1"	1¼"/1"	1¼"/1¼"	1½"/1"	1½"/1¼"	1½"/1½"
Threaded connection DIN 11851 (DIN)	a_1	221.0	224.0	227.0	225.0	228.0	231.0	247.0	250.0	253.0	251.0	254.0	257.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0
	e_5	106.0	114.0	114.0	120.0	120.0	120.0	106.0	114.0	114.0	120.0	120.0	120.0
	h_3	119.0	127.0	127.0	133.0	133.0	133.0	119.0	127.0	127.0	133.0	133.0	133.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range A (DIN)*	a_1	218.0	222.0	225.0	223.0	226.0	229.0	244.0	248.0	251.0	249.0	252.0	255.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	157.0	157.0	158.0	157.0	158.0	158.0	157.0	157.0	158.0	157.0	158.0	158.0
	e_5	106.0	113.0	113.0	119.0	119.0	119.0	106.0	113.0	113.0	119.0	119.0	119.0
	h_3	116.0	125.0	125.0	131.0	131.0	131.0	116.0	125.0	125.0	131.0	131.0	131.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range B (ISO)**	a_1	225.0	226.0	229.0	226.0	229.0		251.0	252.0	255.0	252.0	255.0	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	157.0	157.0	159.0	157.0	159.0	(E)	157.0	157.0	159.0	157.0	159.0	(E)
	e_5	97.0	106.5	106.5	120.0	120.0		97.0	106.5	106.5	120.0	120.0	
	h_3	108.0	118.5	118.5	128.0	128.0		108.0	118.5	118.5	128.0	128.0	
Threaded connection SMS International (OD)	a_1	207.0	106.0	109.0	212.0	215.0	218.0	233.0	106.0	109.0	238.0	241.0	244.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	150.0	150.0	146.0	150.0	146.0	147.0	150.0	150.0	146.0	150.0	146.0	147.0
	e_5	(A)						(A)					
	h_3												
Threaded connection BS4825-RJT (OD)	a_1	213.5	(N/A)	(N/A)	213.5	(N/A)	219.5	239.5	(N/A)	(N/A)	239.5	(N/A)	245.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5	152.5	(N/A)	(N/A)	152.5	(N/A)	148.5
	e_5	(A)						(A)					
	h_3												
Threaded connection ISO2853-IDF (OD)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	216.5	(A)	(N/A)	(N/A)	(A)	(N/A)	242.5
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5	(A)	(N/A)	(N/A)	(A)	(N/A)	145.5
	e_5	(A)						(A)					
	h_3												
Clamp DIN 32676 Pipe range A (DIN)*	a_1	213.5	213.5	216.5	213.5	216.5	219.5	239.5	239.5	242.5	239.5	242.5	245.5
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	152.5	152.5	149.5	152.5	149.5	148.5	152.5	152.5	149.5	152.5	149.5	148.5
	e_5	113.5	118.5	118.5	123.5	123.5	123.5	113.5	118.5	118.5	123.5	123.5	123.5
	h_3	111.5	116.5	116.5	121.5	121.5	121.5	111.5	116.5	116.5	121.5	121.5	121.5
Clamp DIN 32676 Pipe range B (ISO)**	a_1	216.5	216.5	219.5	216.5	219.5		242.5	242.5	245.5	242.5	245.5	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	149.5	149.5	148.5	149.5	148.5	(E)	149.5	149.5	148.5	149.5	148.5	(E)
	e_5	101.5	111.0	111.0	120.5	120.5		101.5	111.0	111.0	120.5	120.5	
	h_3	99.5	109.0	109.0	118.5	118.5		99.5	109.0	109.0	118.5	118.5	
Clamp DIN 32676 Pipe range C (OD)***	a_1	213.5	(N/A)	(N/A)	213.5	(N/A)	219.5	239.5	(N/A)	(N/A)	239.5	(N/A)	245.5
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	152.5	(N/A)	(N/A)	152.5	(N/A)	163.0	152.5	(N/A)	(N/A)	152.5	(N/A)	163.0
	e_5	99.7	(N/A)	(N/A)	118.8	(N/A)	118.8	99.7	(N/A)	(N/A)	118.8	(N/A)	118.8
	h_3	97.7	(N/A)	(N/A)	116.8	(N/A)	116.8	97.7	(N/A)	(N/A)	116.8	(N/A)	116.8
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	215.7	215.7	218.7	215.7	218.7	221.7	241.7	241.7	244.7	241.7	244.7	247.7
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	154.7	154.7	151.7	154.7	151.7	150.7	154.7	154.7	151.7	154.7	151.7	150.7
	e_5	112.5	117.5	117.5	122.5	122.5	122.5	112.5	117.5	117.5	122.5	122.5	122.5
	h_3	113.7	118.7	118.7	123.7	123.7	123.7	113.7	118.7	118.7	123.7	123.7	123.7
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	218.7	218.7	221.7	218.7	221.7		244.7	244.7	247.7	244.7	247.7	
	f_2	4.0	4.0	7.0	4.0	7.0		4.0	4.0	7.0	4.0	7.0	
	h_2	150.7	150.7	150.7	150.7	150.7	(E)	150.7	150.7	150.7	150.7	150.7	(E)
	e_5	100.5	110.0	110.0	119.5	119.5		100.5	110.0	110.0	119.5	119.5	
	h_3	101.7	111.2	111.2	120.7	120.7		101.7	111.2	111.2	120.7	120.7	
Flange EN1092-1 PN10 Kremo (ISO)	a_1	205.0	205.0	208.0	205.0	208.0	211.0	231.0	231.0	234.0	231.0	234.0	237.0
	f_2	1.0	1.0	4.0	1.0	4.0	7.0	1.0	1.0	4.0	1.0	4.0	7.0
	h_2	144.0	144.0	141.0	144.0	141.0	140.0	144.0	144.0	141.0	144.0	141.0	140.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN10 (DIN)	a_1	216.0	(N/A)	(N/A)	216.0	(N/A)	222.0	242.0	(N/A)	(N/A)	242.0	(N/A)	248.0
	f_2	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0	1.0	(N/A)	(N/A)	1.0	(N/A)	7.0
	h_2	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0	155.0	(N/A)	(N/A)	155.0	(N/A)	151.0
	e_5	(A)						(A)					
	h_3												
Flange connection APV-FG / 3.1-PN25 (DIN)	a_1	(A)	(N/A)	(N/A)	(A)	(N/A)	214.0	(A)	(N/A)	(N/A)	(A)	(N/A)	240.0
	f_2	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0	(A)	(N/A)	(N/A)	(A)	(N/A)	7.0
	h_2	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0	(A)	(N/A)	(N/A)	(A)	(N/A)	143.0
	e_5	(A)						(A)					
	h_3												

Tolerances according to DIN EN 735 Connection dimensions for centrifugal pumps.

* For pipes according to DIN 11866 series A

** For pipes according to DIN 11866 series B

*** For pipes according to DIN 11866 series C (pipe dimensions according to ASME BPE)

(A) On request

(E) On request. Not fully drainable in vertical position

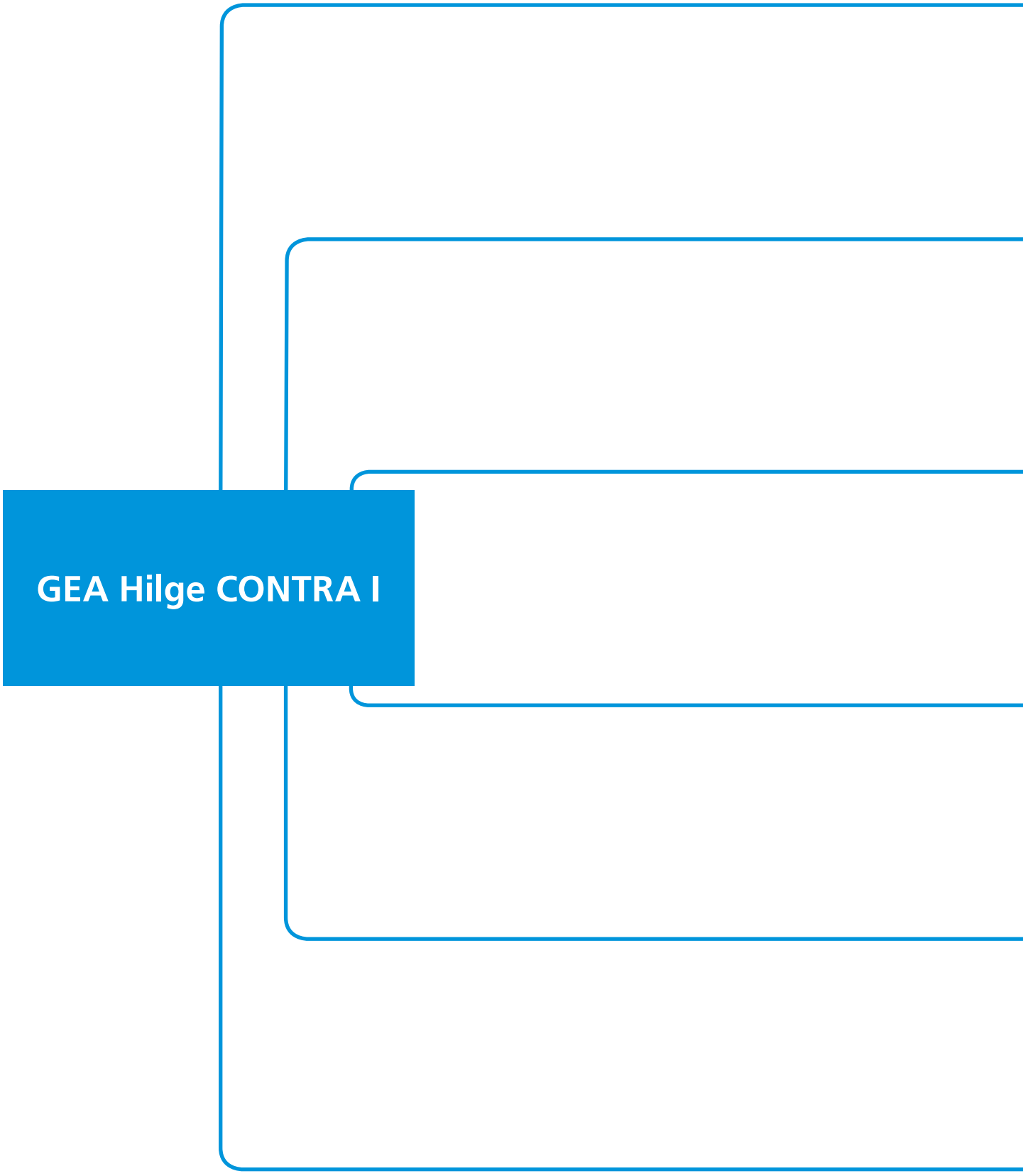
(N/A) Not Available

Nominal width / Connection type		2-stage					3-stage				
	DIN	50/40	50/50	65/50	65/65	80/65	50/40	50/50	65/50	65/65	65/80
	ISO	60.3/ 48.3	60.3/ 60.3	76.1/ 60.3	76.1/ 76.1	88.9/ 76.1	60.3/ 48.3	60.3/ 60.3	76.1/ 60.3	76.1/ 76.1	88.9/ 76.1
	OD	2"/1½"	2"/2"	2½"/2"	2½"/2½"	3"/2½"	2"/1½"	2"/2"	2½"/2"	2½"/2½"	3"/2½"
Threaded connection DIN 11851 (DIN)	a_1	156.0	159.0	164.0	172.0	177.0	188.0	191.0	196.0	204.0	209.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0
	e_5	132.0	132.0	145.0	145.0	175.0	132.0	132.0	145.0	145.0	175.0
	h_3	142.0	142.0	160.0	160.0	190.0	142.0	142.0	160.0	160.0	190.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range A (DIN)*	a_1	152.0	155.0	160.0	168.0	174.0	184.0	187.0	192.0	200.0	206.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	203.0	201.0	201.0	201.0	201.0	203.0	201.0	201.0	201.0	201.0
	e_5	133.0	133.0	146.0	146.0	175.0	133.0	133.0	146.0	146.0	175.0
	h_3	141.0	141.0	156.0	156.0	187.0	141.0	141.0	156.0	156.0	187.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range B (ISO)**	a_1	157.0	168.0				189.0	200.0			
	f_2	0.0	11.0				0.0	11.0			
	h_2	203.0	201.0	(A)	(E)	(E)	203.0	201.0	(A)	(E)	(E)
	e_5	142.0	142.0				142.0	142.0			
	h_3	152.0	152.0				152.0	152.0			
Threaded connection SMS International (OD)	a_1	(A)	144.0	148.0	156.0	156.0	(A)	176.0	180.0	188.0	188.0
	f_2	(A)	3.0	3.0	11.0	11.0	(A)	3.0	3.0	11.0	11.0
	h_2	(A)	190.0	190.0	189.0	189.0	(A)	190.0	190.0	189.0	189.0
	e_5			(A)					(A)		
	h_3										
Threaded connection BS4825-RJT (OD)	a_1	(A)	145.0	145.0	(A)	(A)	(A)	177.0	177.0	(A)	(A)
	f_2	(A)	3.0	3.0	(A)	(A)	(A)	3.0	3.0	(A)	(A)
	h_2	(A)	191.5	191.5	(A)	(A)	(A)	191.5	191.5	(A)	(A)
	e_5			(A)					(A)		
	h_3										
Threaded connection ISO2853-IDF (OD)	a_1	(A)	170.5	(A)	(A)	(A)	(A)	202.5	(A)	(A)	(A)
	f_2	(A)	3.0	(A)	(A)	(A)	(A)	3.0	(A)	(A)	(A)
	h_2	(A)	191.5	(A)	(A)	(A)	(A)	191.5	(A)	(A)	(A)
	e_5			(A)					(A)		
	h_3										
Clamp DIN 32676 Pipe range A (DIN)*	a_1	142.0	145.0	152.0	160.0	160.0	174.0	177.0	184.0	192.0	192.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	193.5	191.5	191.5	193.0	193.0	193.5	191.5	191.5	193.0	193.0
	e_5	133.5	133.5	150.0	150.0	175.0	133.5	133.5	150.0	150.0	175.0
	h_3	131.5	131.5	148.0	148.0	173.0	131.5	131.5	148.0	148.0	173.0
Clamp DIN 32676 Pipe range B (ISO)**	a_1	149.0	160.0	160.0			181.0	192.0	192.0		
	f_2	0.0	11.0	11.0			0.0	11.0	11.0		
	h_2	193.5	201.0	201.0	(E)	(E)	193.5	201.0	201.0	(E)	(E)
	e_5	146.0	146.0	180.0			146.0	146.0	180.0		
	h_3	144.0	144.0	178.0			144.0	144.0	178.0		
Clamp DIN 32676 Pipe range C (OD)***	a_1	142.0	145.0	152.0	160.0	160.0	174.0	177.0	184.0	192.0	192.0
	f_2	0.0	3.0	8.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	208.0	191.5	191.5	201.0	201.0	208.0	191.5	191.5	201.0	201.0
	e_5	144.2	144.2	169.7	169.7	199.5	144.2	144.2	169.7	169.7	199.5
	h_3	142.2	142.2	167.7	167.7	197.5	142.2	142.2	167.7	167.7	197.5
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	145.4	148.4	148.4	156.4	158.4	177.4	180.4	180.4	188.4	190.4
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	196.7	194.7	194.7	189.7	189.7	196.7	194.7	194.7	189.7	189.7
	e_5	132.5	132.5	142.5	142.5	169.5	132.5	132.5	142.5	142.5	169.5
	h_3	133.7	133.7	143.7	143.7	170.7	133.7	133.7	143.7	143.7	170.7
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	173.0	184.0	186.0			205.0	216.0	218.0		
	f_2	0.0	11.0	11.0			0.0	11.0	11.0		
	h_2	195.7	217.0	217.0	(E)	(E)	195.7	217.0	217.0	(E)	(E)
	e_5	138.5	138.5	172.5			138.5	138.5	172.5		
	h_3	139.7	139.7	173.7			139.7	139.7	173.7		
Flange EN1092-1 PN10 Kremo (ISO)	a_1	133.5	136.5	146.5	154.5	153.5	165.5	168.5	178.5	186.5	185.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	185.0	183.0	183.0	188.0	188.0	185.0	183.0	183.0	188.0	188.0
	e_5			(A)					(A)		
	h_3										
Flange connection APV-FG / 3.1-PN10 (DIN)	a_1	144.5	147.5	147.5	155.5	155.5	176.5	179.5	179.5	187.5	187.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	196.0	194.0	194.0	189.0	189.0	196.0	194.0	194.0	189.0	189.0
	e_5			(A)					(A)		
	h_3										
Flange connection APV-FG / 3.1-PN25 (DIN)	a_1	140.5	143.5	143.5	151.5	155.5	172.5	175.5	175.5	183.5	187.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	0.0
	h_2	192.0	190.0	190.0	185.0	185.0	192.0	190.0	190.0	185.0	185.0
	e_5			(A)					(A)		
	h_3										

Tolerances according to DIN EN 735 Connection dimensions for centrifugal pumps.
* For pipes according to DIN 11866 series A
** For pipes according to DIN 11866 series B
*** For pipes according to DIN 11866 series C (pipe dimensions according to ASME BPE)
(A) On request
(E) On request. Not fully drainable in vertical position
(N/A) Not Available

Nominal width / Connection type		4-stage					5-stage				
	DIN	50/40	50/50	65/50	65/65	80/65	50/40	50/50	65/50	65/65	65/80
	ISO	60.3/48.3	60.3/60.3	76.1/60.3	76.1/76.1	88.9/76.1	60.3/48.3	60.3/60.3	76.1/60.3	76.1/76.1	88.9/76.1
	OD	2"/1½"	2"/2"	2½"/2"	2½"/2½"	3"/2½"	2"/1½"	2"/2"	2½"/2"	2½"/2½"	3"/2½"
Threaded connection DIN 11851 (DIN)	a_1	220.0	223.0	228.0	236.0	241.0	252.0	255.0	260.0	268.0	273.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0
	e_5	132.0	132.0	145.0	145.0	175.0	132.0	132.0	145.0	145.0	175.0
	h_3	142.0	142.0	160.0	160.0	190.0	142.0	142.0	160.0	160.0	190.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range A (DIN)*	a_1	216.0	219.0	224.0	232.0	238.0	248.0	251.0	256.0	264.0	270.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	203.0	201.0	201.0	201.0	201.0	203.0	201.0	201.0	201.0	201.0
	e_5	133.0	133.0	146.0	146.0	175.0	133.0	133.0	146.0	146.0	175.0
	h_3	141.0	141.0	156.0	156.0	187.0	141.0	141.0	156.0	156.0	187.0
Threaded connection DIN 11864-1 / DIN 11853-1 Pipe range B (ISO)**	a_1	221.0	232.0				253.0	264.0			
	f_2	0.0	11.0				0.0	11.0			
	h_2	203.0	201.0	(A)	(E)	(E)	203.0	201.0	(A)	(E)	(E)
	e_5	142.0	142.0				142.0	142.0			
	h_3	152.0	152.0				152.0	152.0			
Threaded connection SMS International (OD)	a_1	(A)	208.0	212.0	220.0	220.0	(A)	240.0	244.0	252.0	252.0
	f_2	(A)	3.0	3.0	11.0	11.0	(A)	3.0	3.0	11.0	11.0
	h_2	(A)	190.0	190.0	189.0	189.0	(A)	190.0	190.0	189.0	189.0
	e_5			(A)					(A)		
	h_3										
Threaded connection BS4825-RJT (OD)	a_1	(A)	209.0	209.0	(A)	(A)	(A)	241.0	241.0	(A)	(A)
	f_2	(A)	3.0	3.0	(A)	(A)	(A)	3.0	3.0	(A)	(A)
	h_2	(A)	191.5	191.5	(A)	(A)	(A)	191.5	191.5	(A)	(A)
	e_5			(A)					(A)		
	h_3										
Threaded connection ISO2853-IDF (OD)	a_1	(A)	234.5	(A)	(A)	(A)	(A)	266.5	(A)	(A)	(A)
	f_2	(A)	3.0	(A)	(A)	(A)	(A)	3.0	(A)	(A)	(A)
	h_2	(A)	191.5	(A)	(A)	(A)	(A)	191.5	(A)	(A)	(A)
	e_5			(A)					(A)		
	h_3										
Clamp DIN 32676 Pipe range A (DIN)*	a_1	206.0	209.0	216.0	224.0	224.0	238.0	241.0	248.0	256.0	256.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	193.5	191.5	191.5	193.0	193.0	193.5	191.5	191.5	193.0	193.0
	e_5	133.5	133.5	150.0	150.0	175.0	133.5	133.5	150.0	150.0	175.0
	h_3	131.5	131.5	148.0	148.0	173.0	131.5	131.5	148.0	148.0	173.0
Clamp DIN 32676 Pipe range B (ISO)**	a_1	213.0	224.0	224.0			245.0	256.0	256.0		
	f_2	0.0	11.0	11.0			0.0	11.0	11.0		
	h_2	193.5	201.0	201.0	(E)	(E)	193.5	201.0	201.0	(E)	(E)
	e_5	146.0	146.0	180.0			146.0	146.0	180.0		
	h_3	144.0	144.0	178.0			144.0	144.0	178.0		
Clamp DIN 32676 Pipe range C (OD)***	a_1	206.0	209.0	216.0	224.0	224.0	238.0	241.0	248.0	256.0	256.0
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	208.0	191.5	191.5	201.0	201.0	208.0	191.5	191.5	201.0	201.0
	e_5	144.2	144.2	169.7	169.7	199.5	144.2	144.2	169.7	169.7	199.5
	h_3	142.2	142.2	167.7	167.7	197.5	142.2	142.2	167.7	167.7	197.5
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	209.4	212.4	212.4	220.4	222.4	241.4	244.4	244.4	252.4	254.4
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	196.7	194.7	194.7	189.7	189.7	196.7	194.7	194.7	189.7	189.7
	e_5	132.5	132.5	142.5	142.5	169.5	132.5	132.5	142.5	142.5	169.5
	h_3	133.7	133.7	143.7	143.7	170.7	133.7	133.7	143.7	143.7	170.7
Grooved flange DIN 11864-2 / DIN 11853-1 Pipe range A (DIN)*	a_1	237.0	248.0	250.0			269.0	280.0	282.0		
	f_2	0.0	11.0	11.0			0.0	11.0	11.0		
	h_2	195.7	217.0	217.0	(E)	(E)	195.7	217.0	217.0	(E)	(E)
	e_5	138.5	138.5	172.5			138.5	138.5	172.5		
	h_3	139.7	139.7	173.7			139.7	139.7	173.7		
Flange EN1092-1 PN10 Kremo (ISO)	a_1	197.5	200.5	210.5	218.5	217.5	229.5	232.5	242.5	250.5	249.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	185.0	183.0	183.0	188.0	188.0	185.0	183.0	183.0	188.0	188.0
	e_5			(A)					(A)		
	h_3										
Flange connection APV-FG / 3.1-PN10 (DIN)	a_1	208.5	211.5	211.5	219.5	219.5	240.5	243.5	243.5	251.5	251.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	196.0	194.0	194.0	189.0	189.0	196.0	194.0	194.0	189.0	189.0
	e_5			(A)					(A)		
	h_3										
Flange connection APV-FG / 3.1-PN25 (DIN)	a_1	204.5	207.5	207.5	215.5	219.5	236.5	239.5	239.5	247.5	252.5
	f_2	0.0	3.0	3.0	11.0	11.0	0.0	3.0	3.0	11.0	11.0
	h_2	192.0	190.0	190.0	185.0	185.0	192.0	190.0	190.0	185.0	185.0
	e_5			(A)					(A)		
	h_3										

Tolerances according to DIN EN 735 Connection dimensions for centrifugal pumps.
* For pipes according to DIN 11866 series A
** For pipes according to DIN 11866 series B
*** For pipes according to DIN 11866 series C (pipe dimensions according to ASME BPE)
(A) On request
(E) On request. Not fully drainable in vertical position
(N/A) Not Available


GEA Hilge CONTRA I

GEA Hilge CONTRA I Bloc

GEA Hilge CONTRA I Bloc-SUPER

GEA Hilge CONTRA I Bloc-V

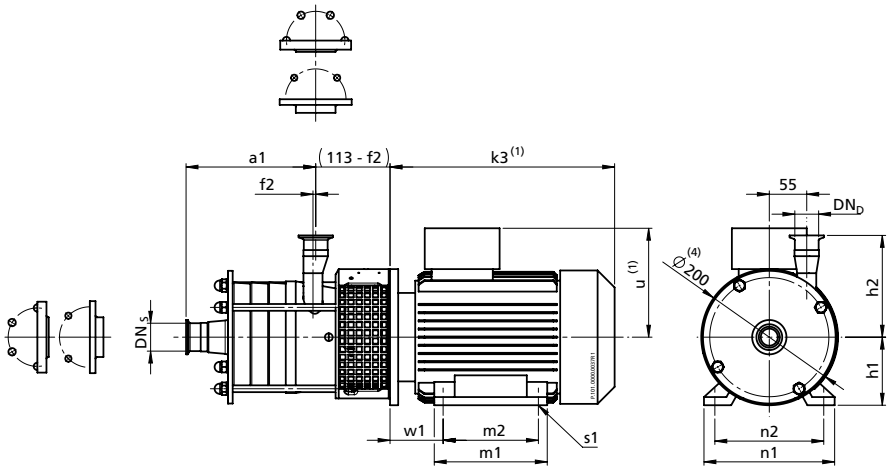
GEA Hilge CONTRA I Adapta

GEA Hilge CONTRA I Adapta-SUPER

GEA Hilge CONTRA I Adapta-V

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



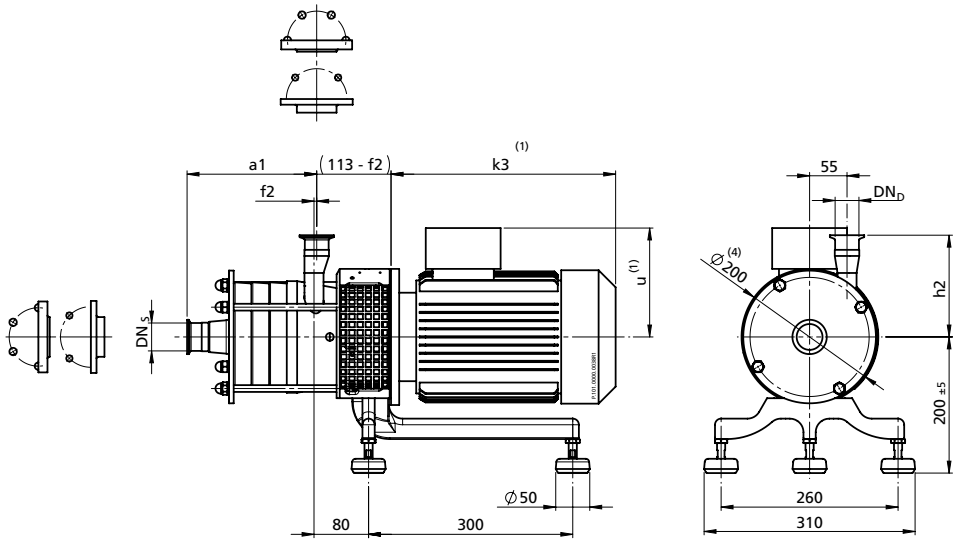
2-pole

P2 [kW]	IEC-size	h_1 [mm]	k_3 (1) [mm]	u (1) [mm]	w_1 [mm]	m_1 [mm]	m_2 [mm]	n_1 [mm]	n_2 [mm]	s_1 [mm]	Weight [kg]
0.75	80	80	240	140	50	125	100	160	125	9×13	21
1.1	80	80	240	140	50	125	100	160	125	9×13	24
1.5	90S	90	275	150	56	150	100	170	140	10×14	27
2.2	90L	90	275	150	56	150	125	170	140	10×14	33
3.0	100L	100	330	160	78	170	140	200	160	12×16	37
4.0	112M	112	360	175	90	175	140	220	190	12×16	42
5.5	112M	112	360	175	90	175	140	220	190	12×16	47

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



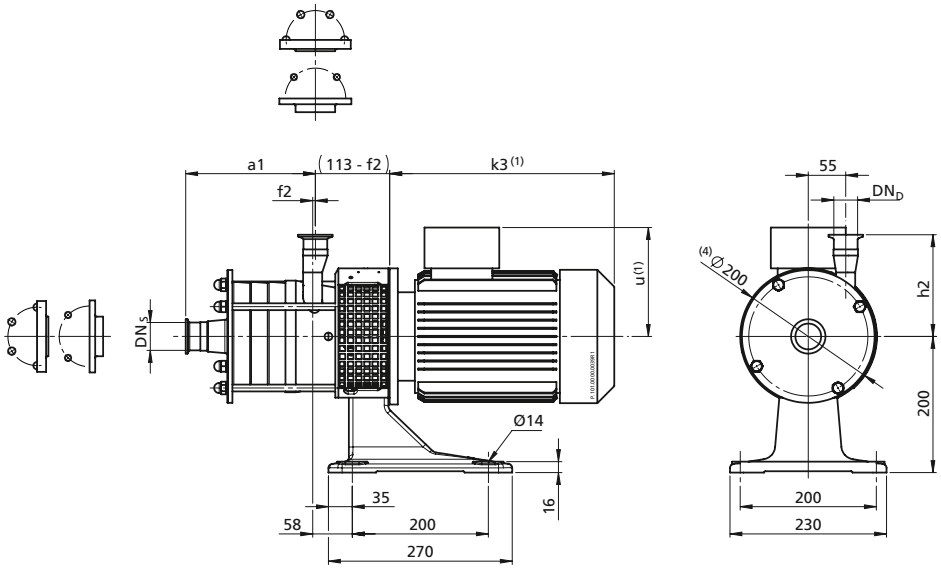
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	240	140	25
1.1	80	240	140	28
1.5	90S	275	150	31
2.2	90L	275	150	36
3.0	100L	330	160	43
4.0	112M	360	175	48
5.5	112M	360	175	53

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



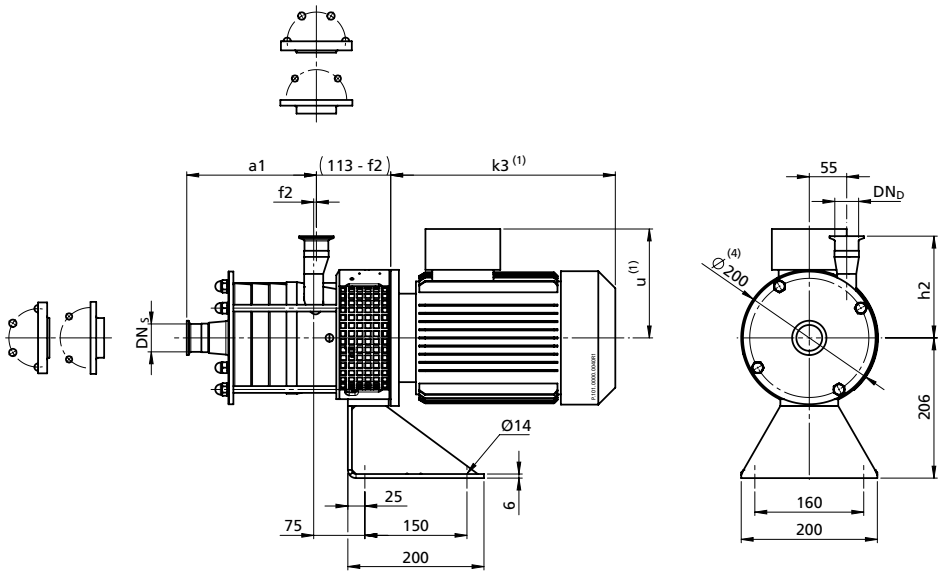
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	240	140	26
1.1	80	240	140	29
1.5	90S	275	150	33
2.2	90L	275	150	38
3.0	100L	330	160	42
4.0	112M	360	175	47
5.5	112M	360	175	52

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



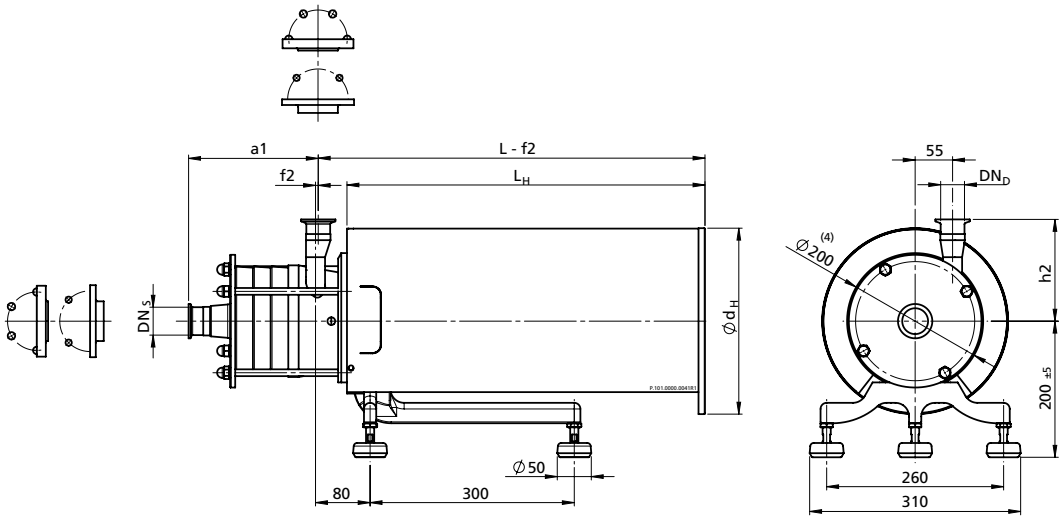
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	240	140	24
1.1	80	240	140	27
1.5	90S	275	150	31
2.2	90L	275	150	36
3.0	100L	330	160	41
4.0	112M	360	175	46
5.5	112M	360	175	51

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



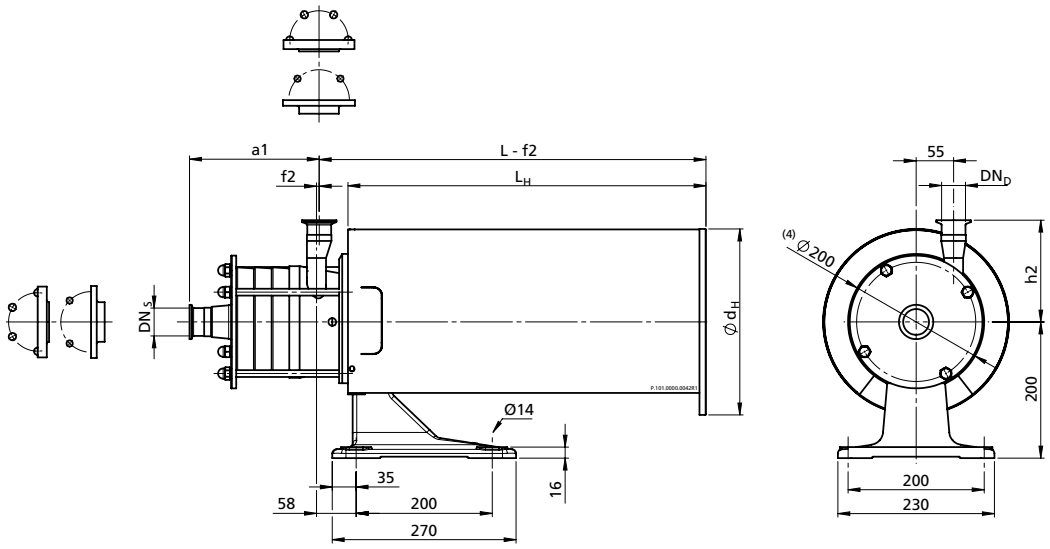
2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	496	450	220	27
1.1	80	496	450	220	30
1.5	90S	496	450	220	33
2.2	90L	496	450	220	39
3.0	100L	566	520	270	46
4.0	112M	566	520	270	52
5.5	112M	566	520	270	57

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



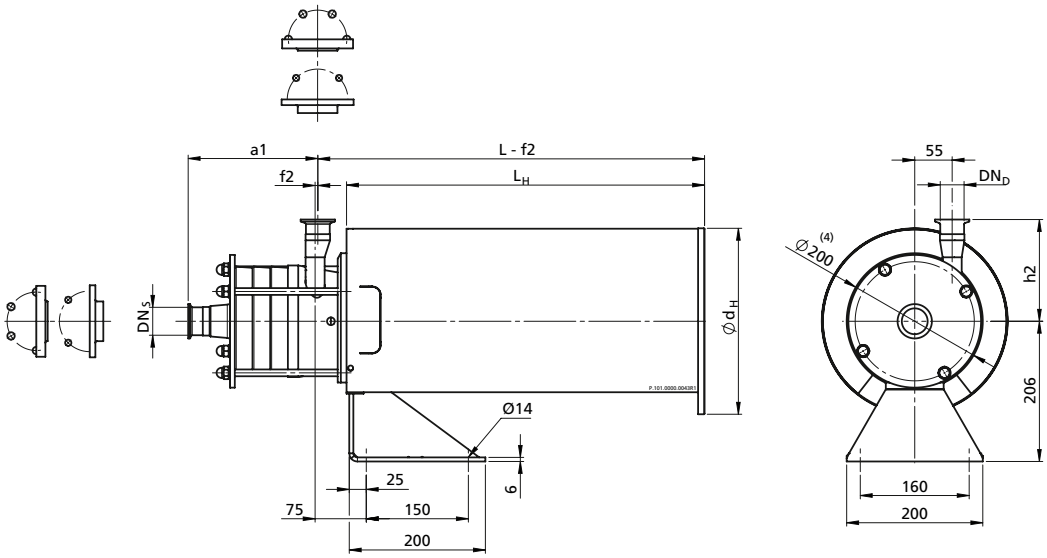
2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	496	450	220	28
1.1	80	496	450	220	31
1.5	90S	496	450	220	35
2.2	90L	496	450	220	40
3.0	100L	566	520	270	46
4.0	112M	566	520	270	51
5.5	112M	566	520	270	56

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



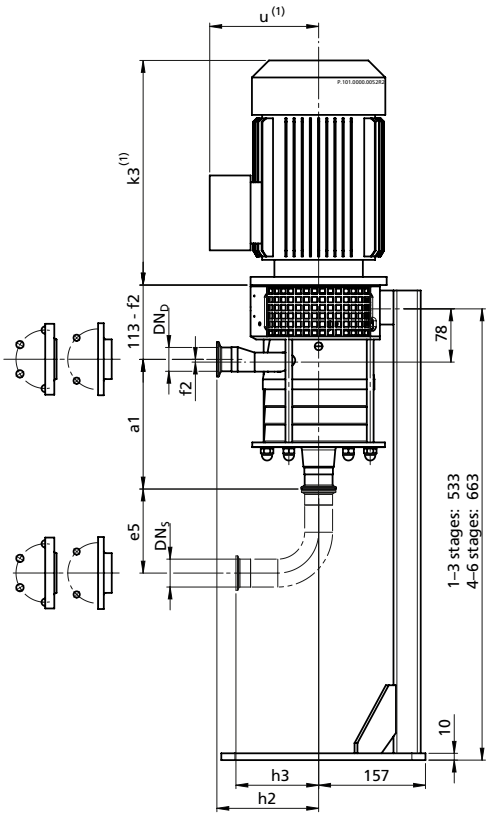
2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	496	450	220	27
1.1	80	496	450	220	30
1.5	90S	496	450	220	33
2.2	90L	496	450	220	39
3.0	100L	566	520	270	44
4.0	112M	566	520	270	50
5.5	112M	566	520	270	55

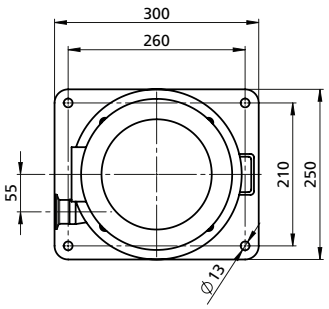
Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED EHEDG TYPE EL – CLASS I* FDA

* registered for recertification



Top view
(w/o terminal box)



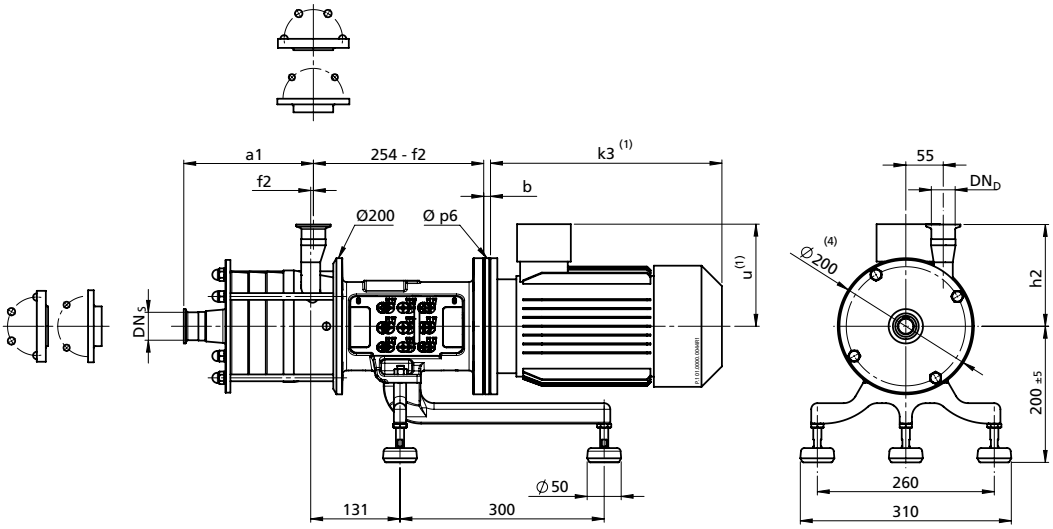
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	240	140	36
1.1	80	240	140	37
1.5	90S	275	150	46
2.2	90L	275	150	48
3.0	100L	330	160	59
4.0	112M	360	175	70
5.5	112M	360	175	94

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, h3, e1, e5). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



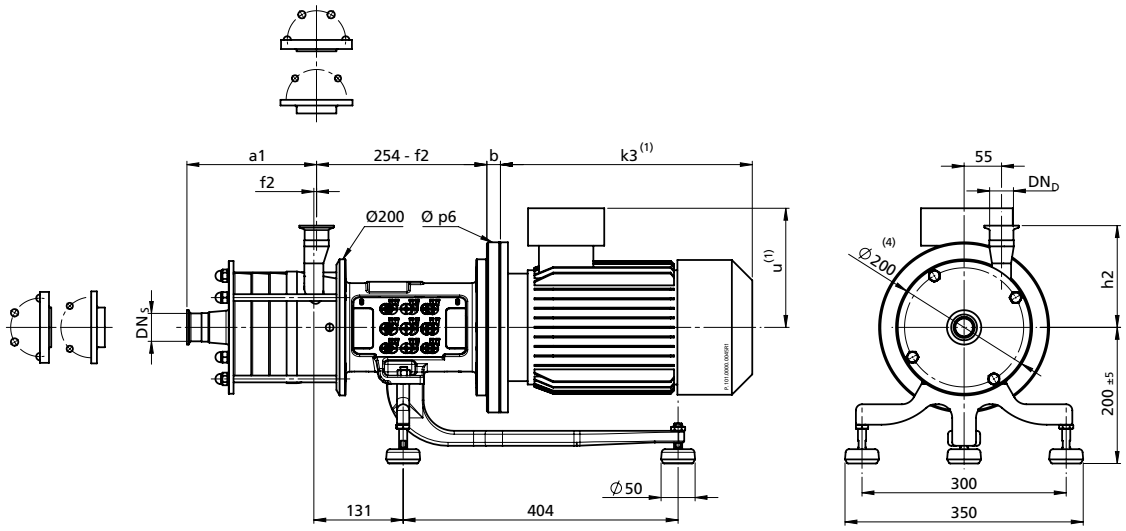
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	0	200	320	130	–	–	40
1.1	80	0	200	320	130	–	–	41
1.5	90S	10	200	340	150	274	158	51
2.2	90L	10	200	340	150	274	158	52

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
3.0	100L	20	250	370	175	334	201	65
4.0	112M	20	250	380	185	334	201	75
5.5	132S	40	300	450	205	365	201	99

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

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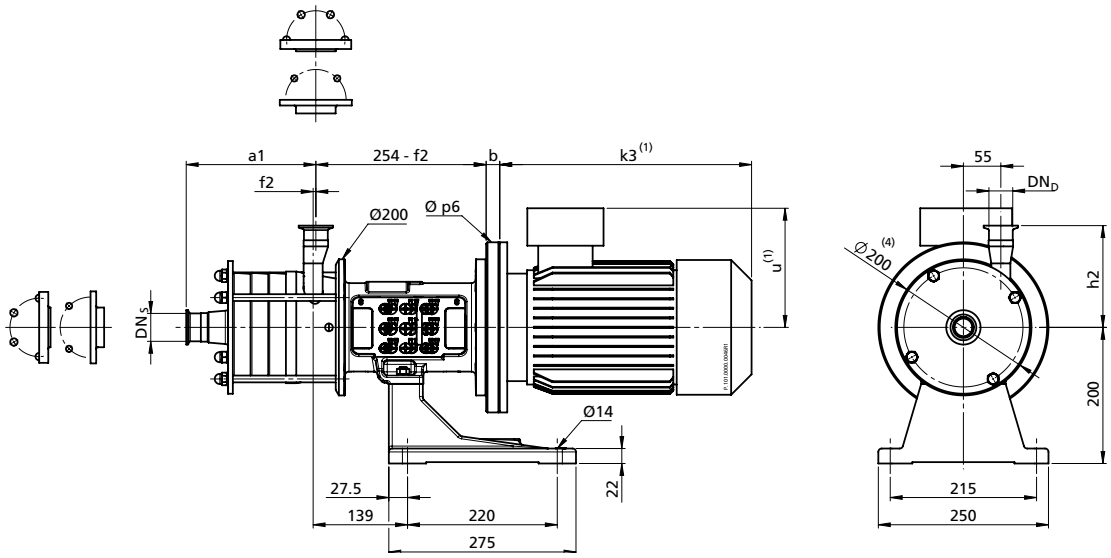


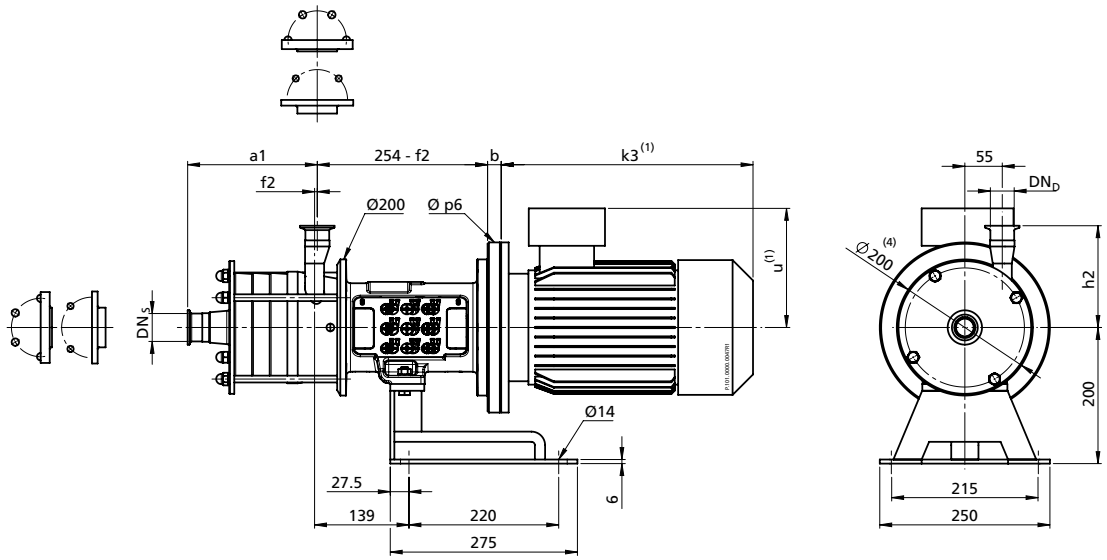
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3(1) [mm]	u(1) [mm]	k_3(1) [mm]	u(1) [mm]	Weight [kg]
0.75	80	0	200	320	130	–	–	45
1.1	80	0	200	320	130	–	–	46
1.5	90S	10	200	340	150	274	158	55
2.2	90L	10	200	340	150	274	158	56
3.0	100L	20	250	370	175	334	201	68
4.0	112M	20	250	380	185	334	201	78
5.5	132S	40	300	450	205	365	201	102

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging for standard motor

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



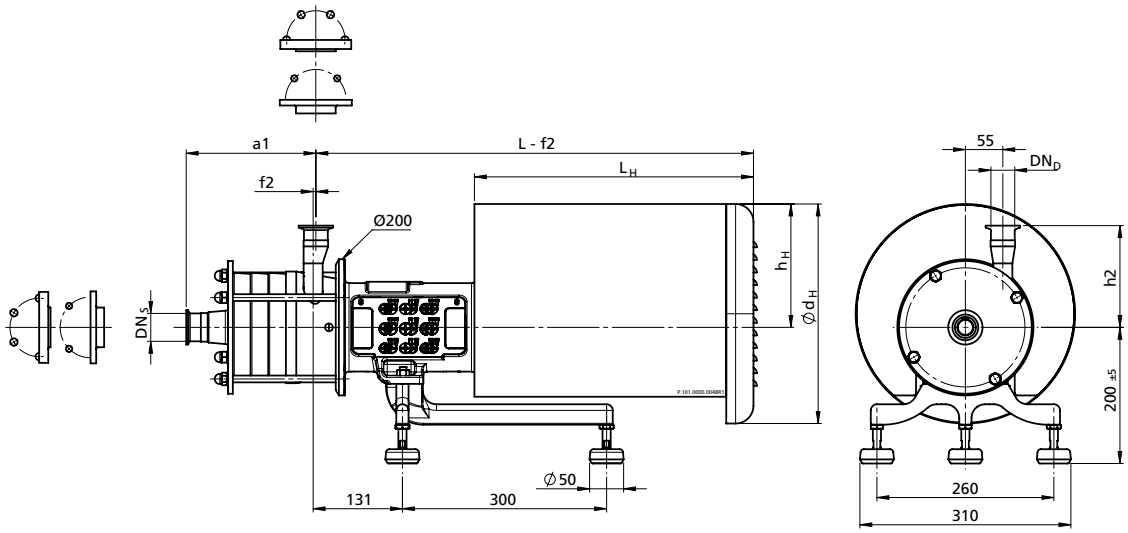
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	0	200	320	130	–	–	41
1.1	80	0	200	320	130	–	–	42
1.5	90S	10	200	340	150	274	158	51
2.2	90L	10	200	340	150	274	158	53
3.0	100L	20	250	370	175	334	201	64
4.0	112M	20	250	380	185	334	201	74
5.5	132S	40	300	450	205	365	201	98

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



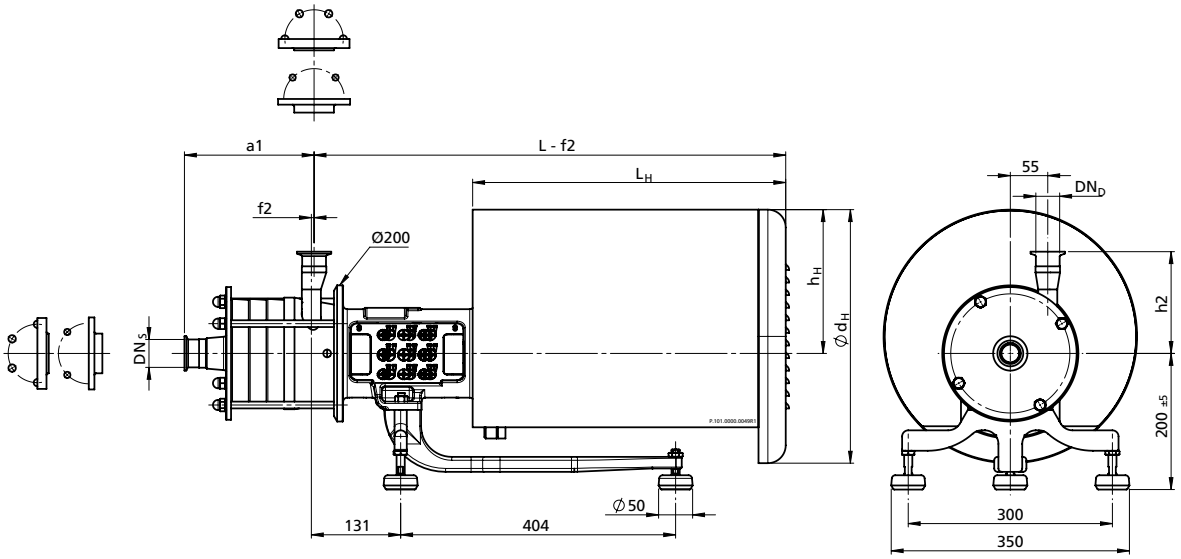
2-pole

P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	410	180	320	45
1.1	80	410	180	320	46
1.5	90S	410	180	320	56
2.2	90L	410	180	320	57

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



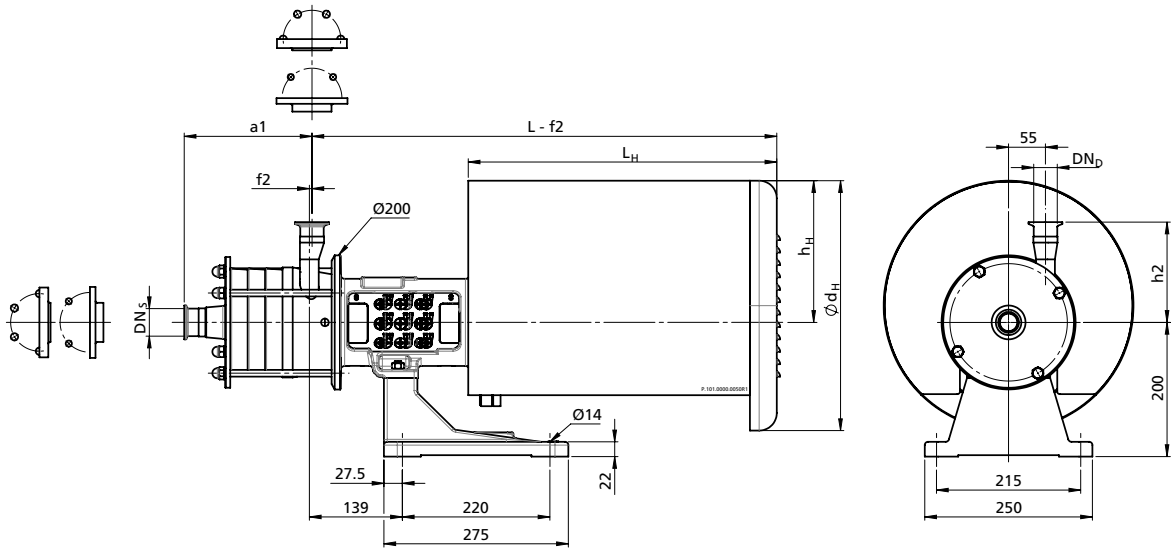
2-pole

P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
3.0	100L	460	210	370	71
4.0	112M	460	210	370	82
5.5	132S	570	240	420	107

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



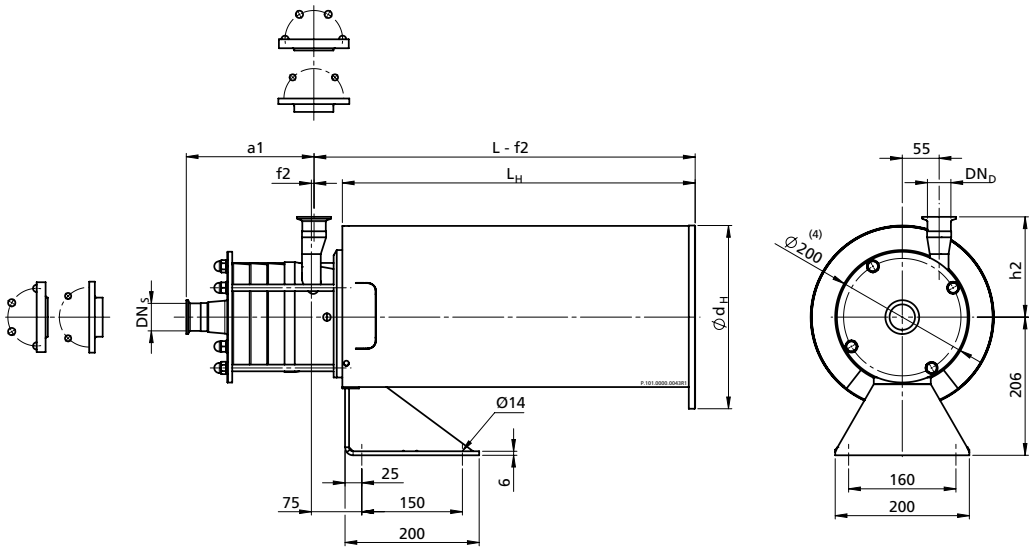
2-pole

P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	410	180	320	49
1.1	80	410	180	320	50
1.5	90S	410	180	320	60
2.2	90L	410	180	320	61
3.0	100L	460	210	370	74
4.0	112M	460	210	370	84
5.5	132S	570	240	420	110

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3 × 380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



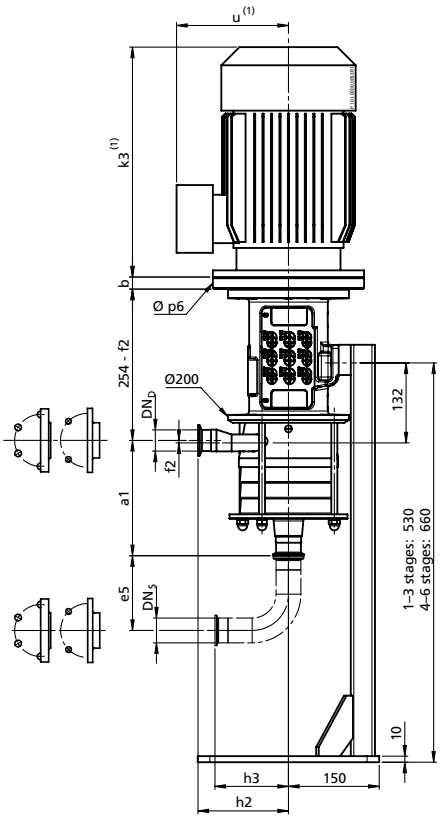
2-pole

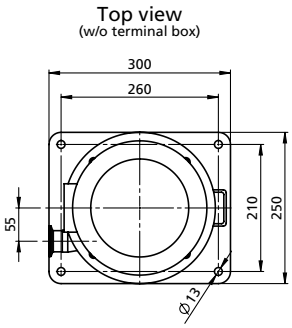
P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
0.75	80	410	180	320	46
1.1	80	410	180	320	47
1.5	90S	410	180	320	56
2.2	90L	410	180	320	58
3.0	100L	460	210	370	70
4.0	112M	460	210	370	81
5.5	132S	570	240	420	106

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 25–40, pressure side DN 25–40
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 15 m³/h
Flow rate 60 Hz	Max. 15 m³/h
Pump head 50 Hz	Max. 98 m
Pump head 60 Hz	Max. 98 m
Housing pressure	25 bar
Certificates	CERTIFIED EHEDG* FDA

* registered for recertification

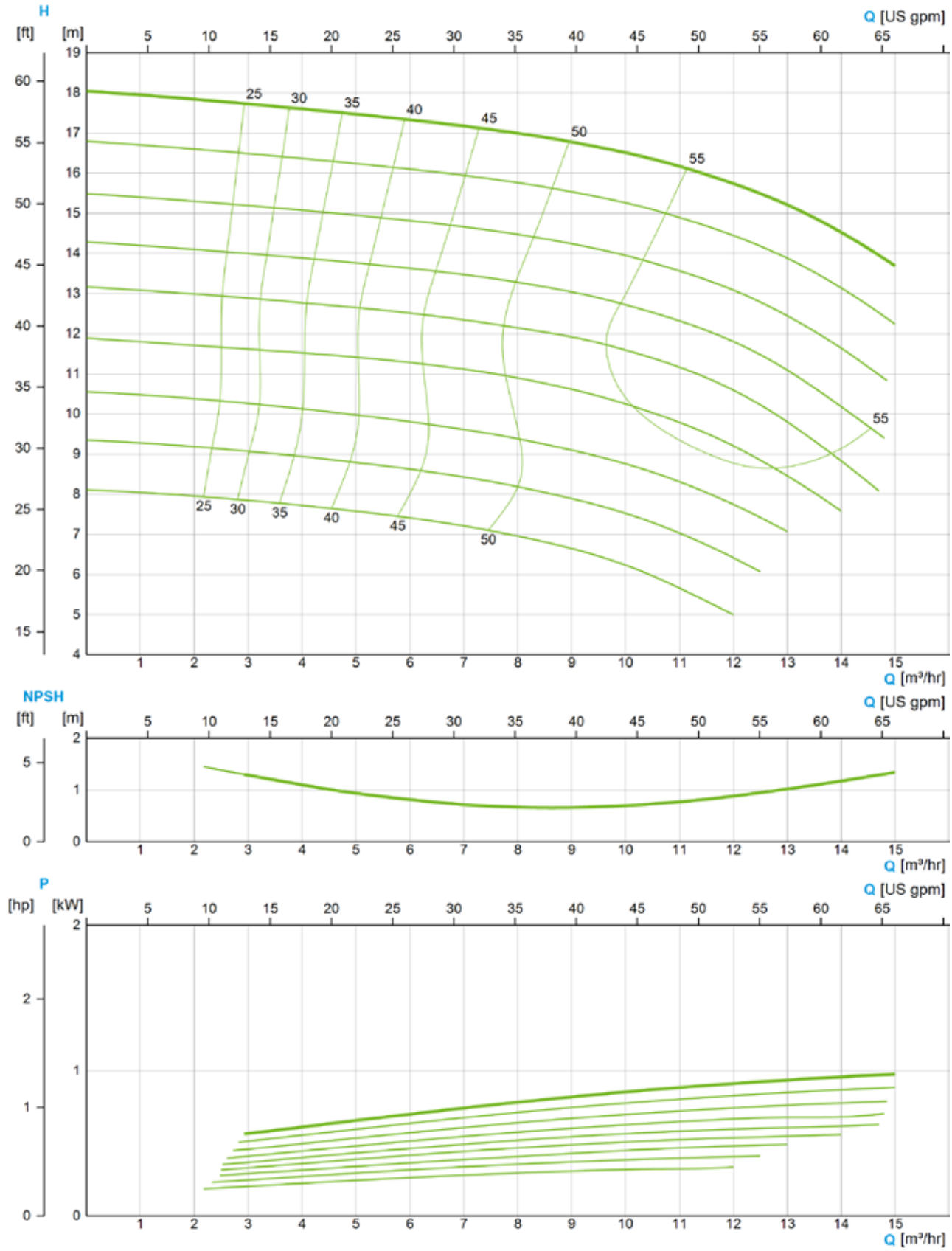




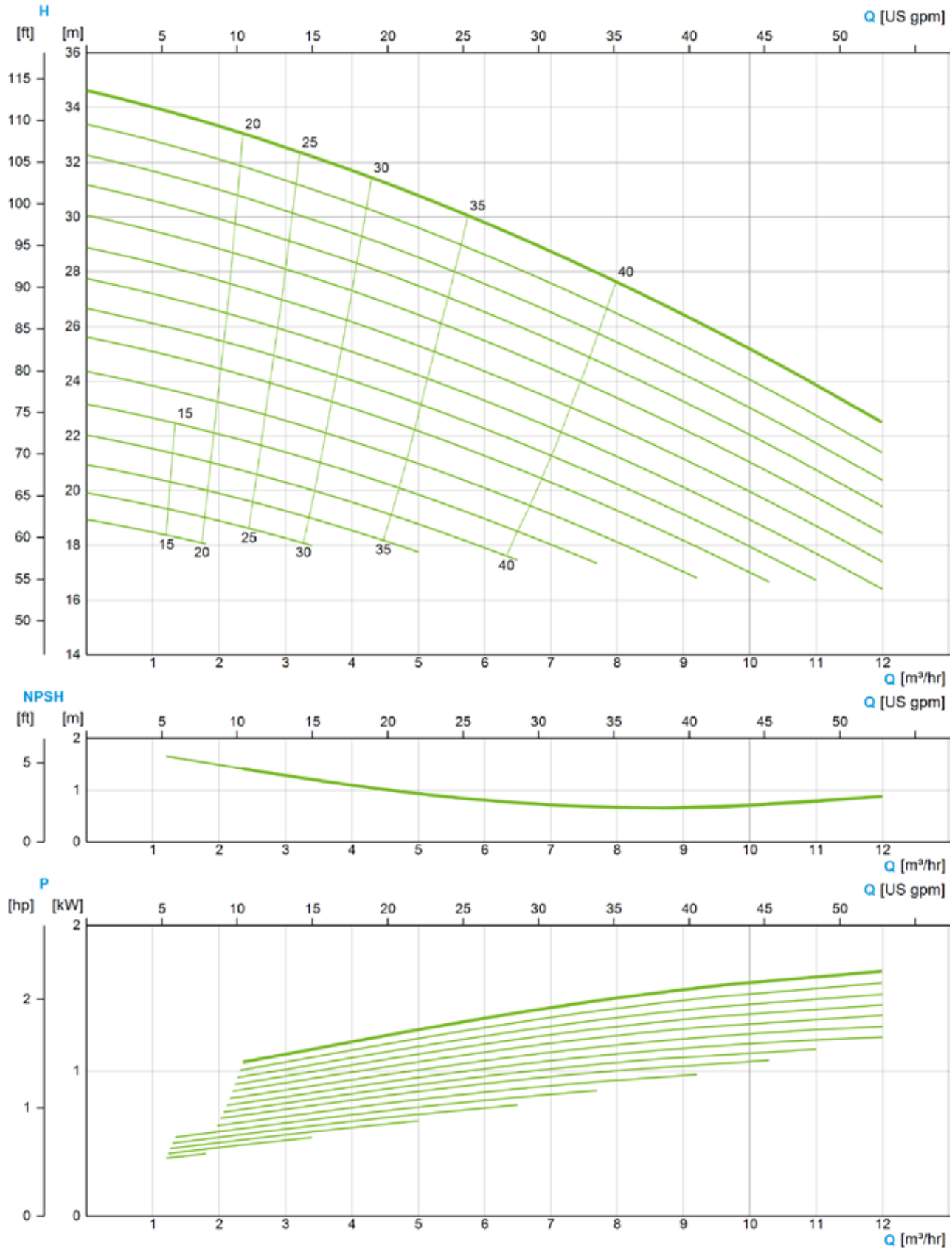
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
0.75	80	0	200	280	145	–	–	47
1.1	80	0	200	280	145	–	–	48
1.5	90S	10	200	320	150	274	158	58
2.2	90L	10	200	320	150	274	158	60
3.0	100L	20	250	340	175	334	201	71
4.0	112M	20	250	370	185	334	201	70
5.5	132S	40	300	450	205	365	201	105

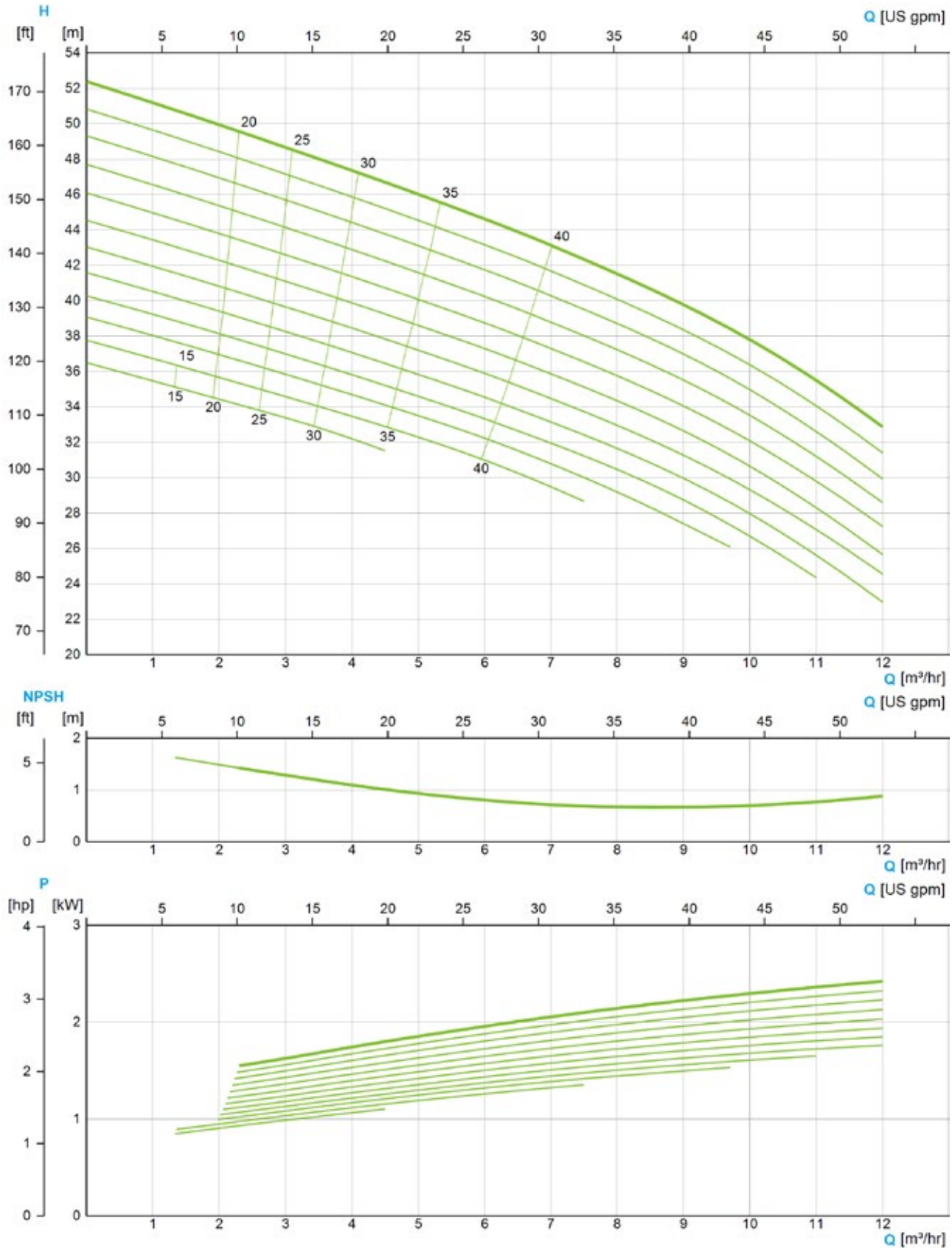
Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging



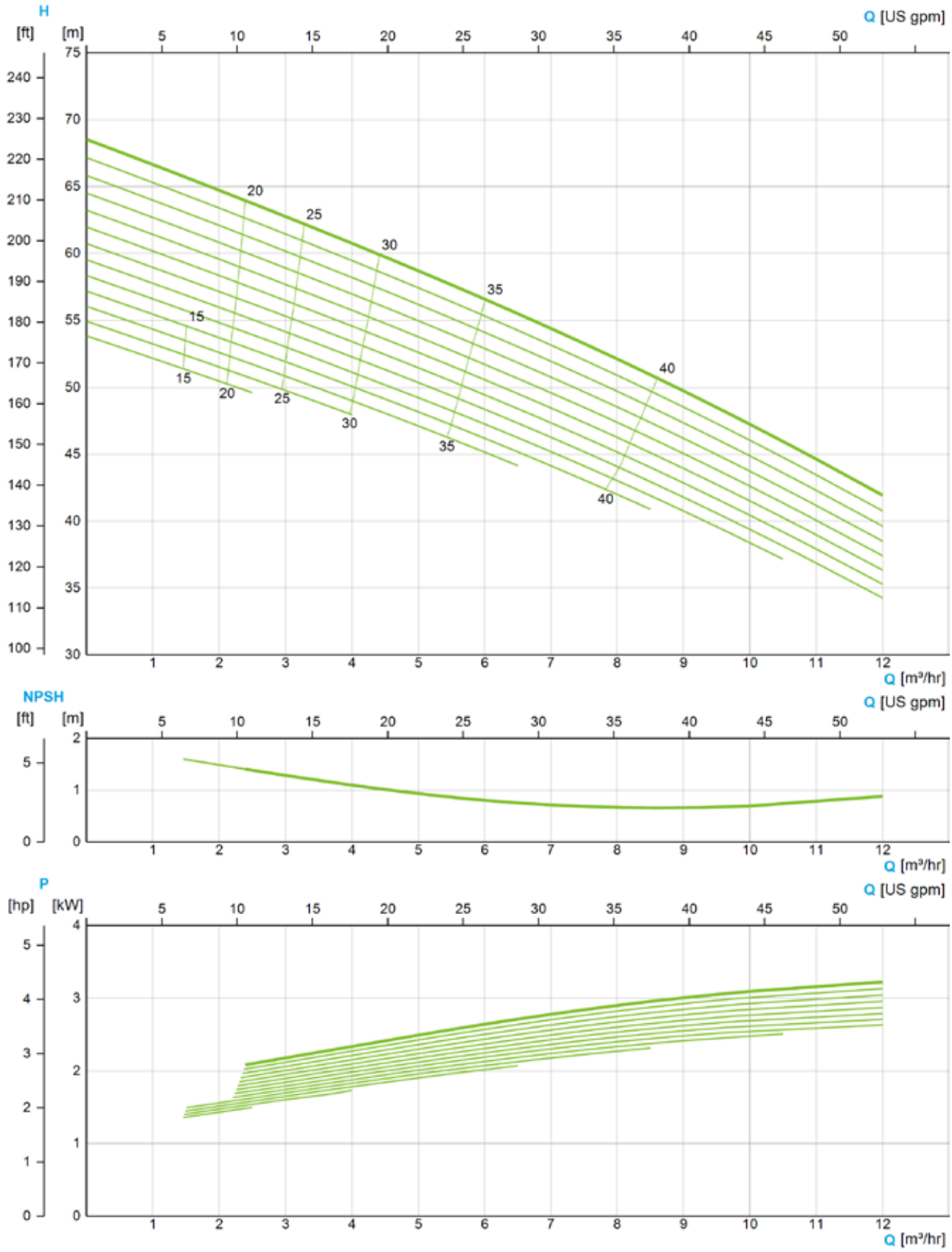
The flow charts are based on water, temperature 20 °C



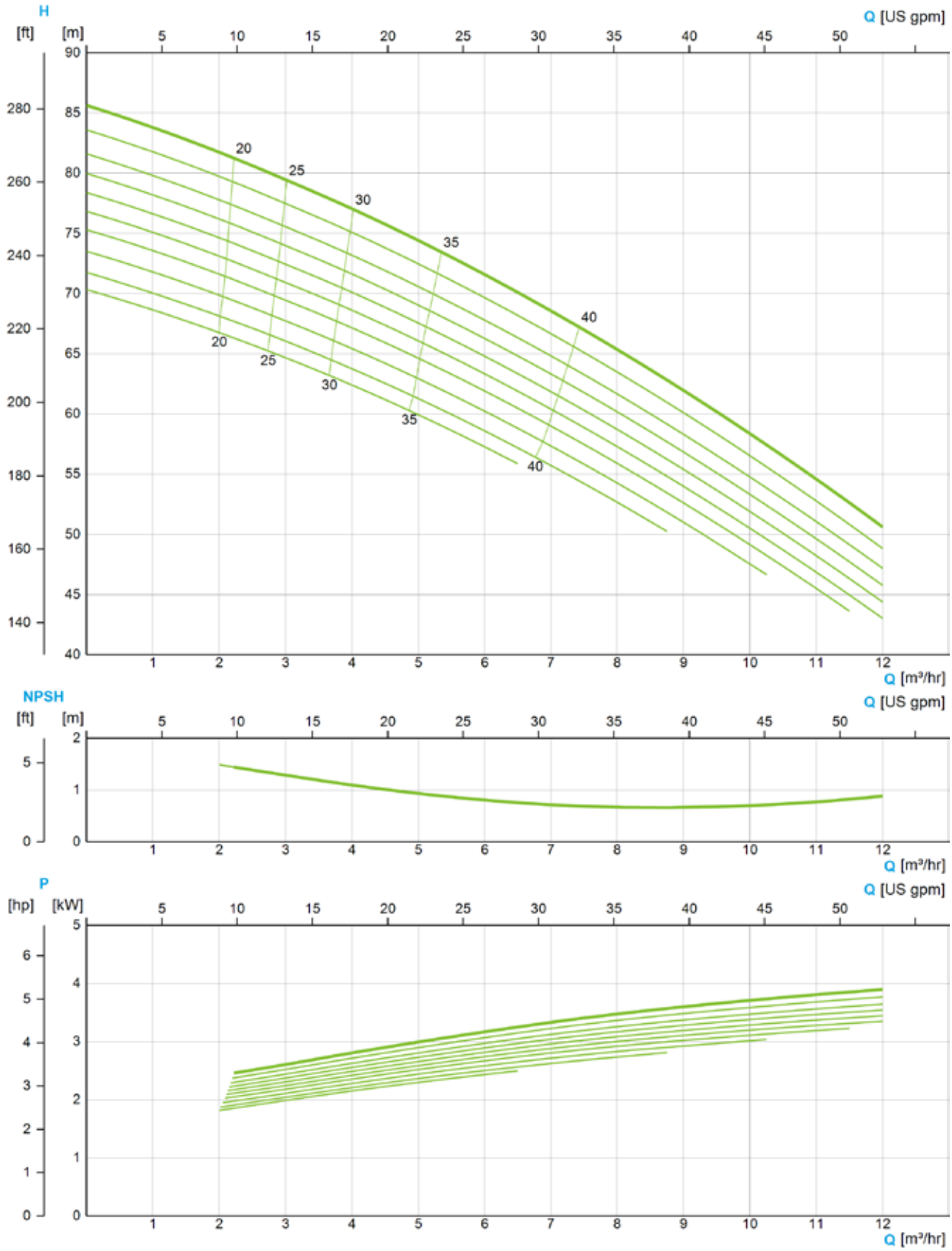
The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



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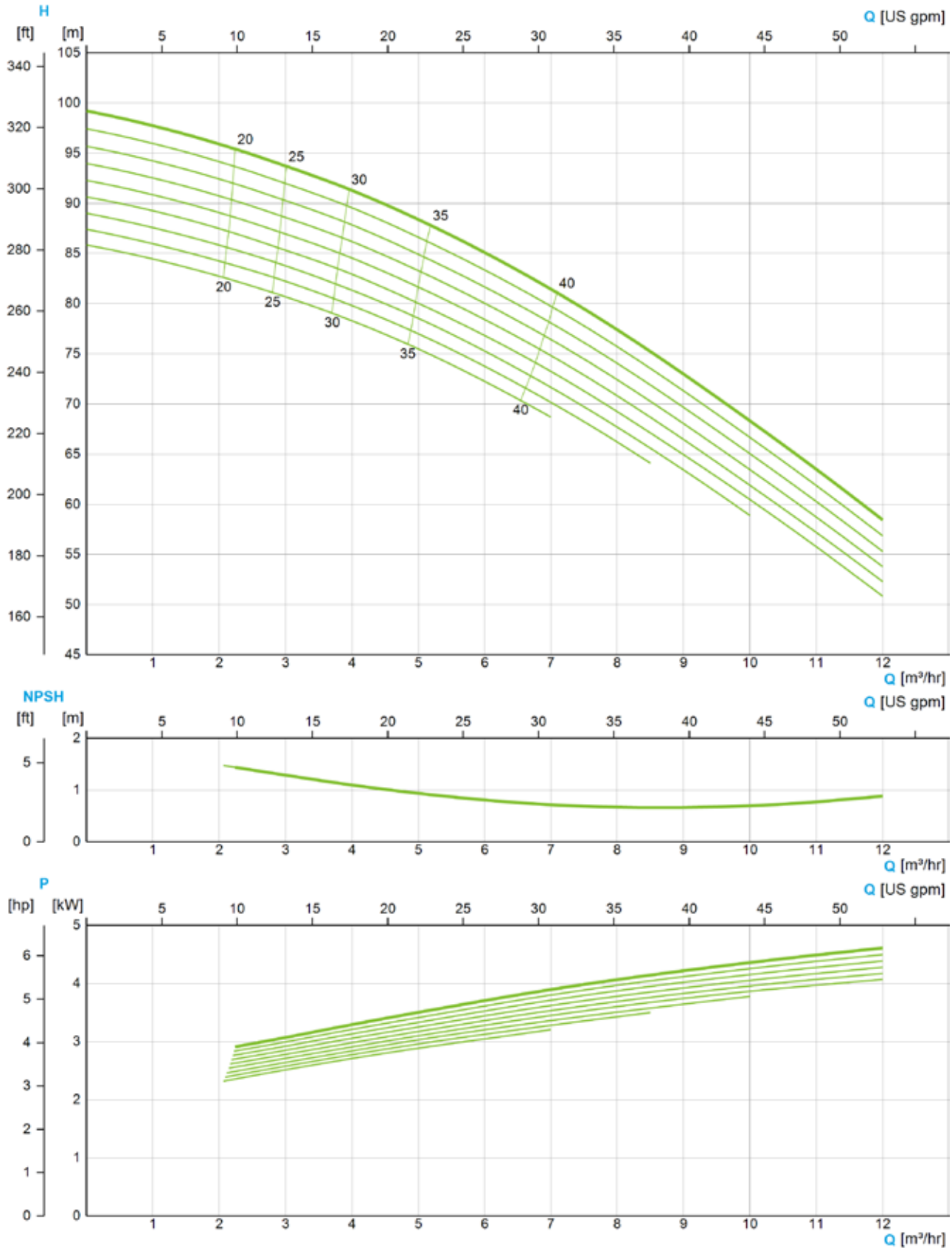
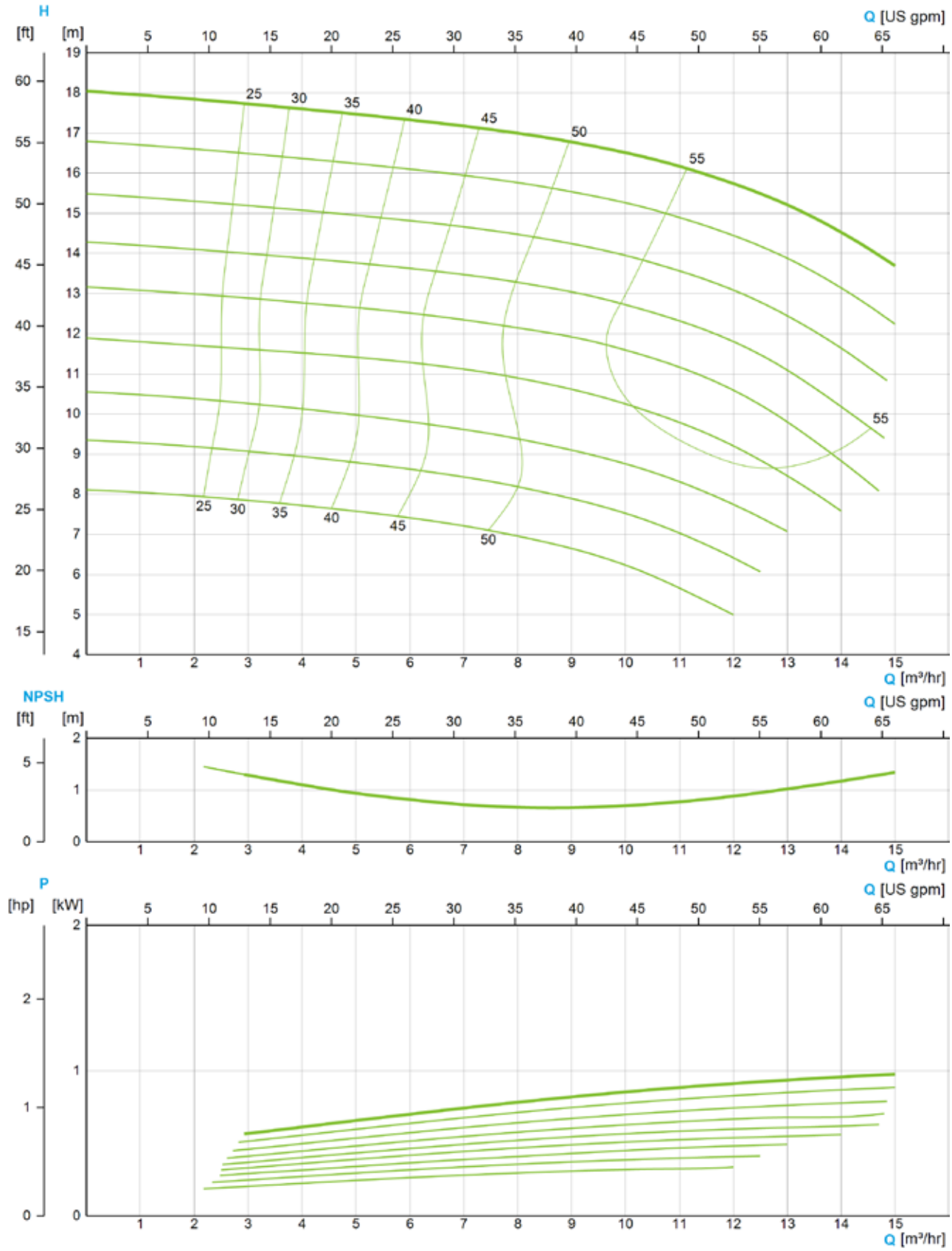
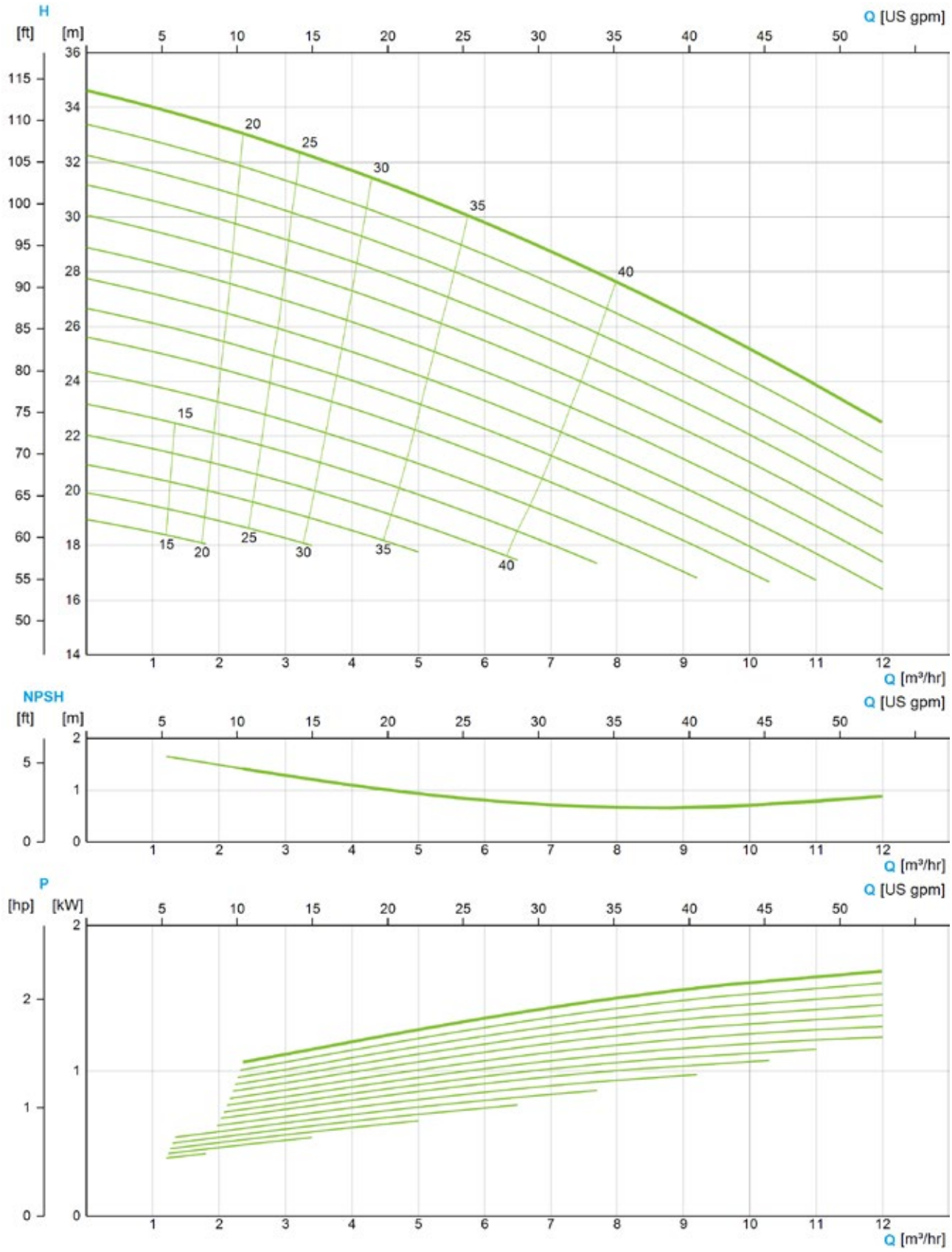


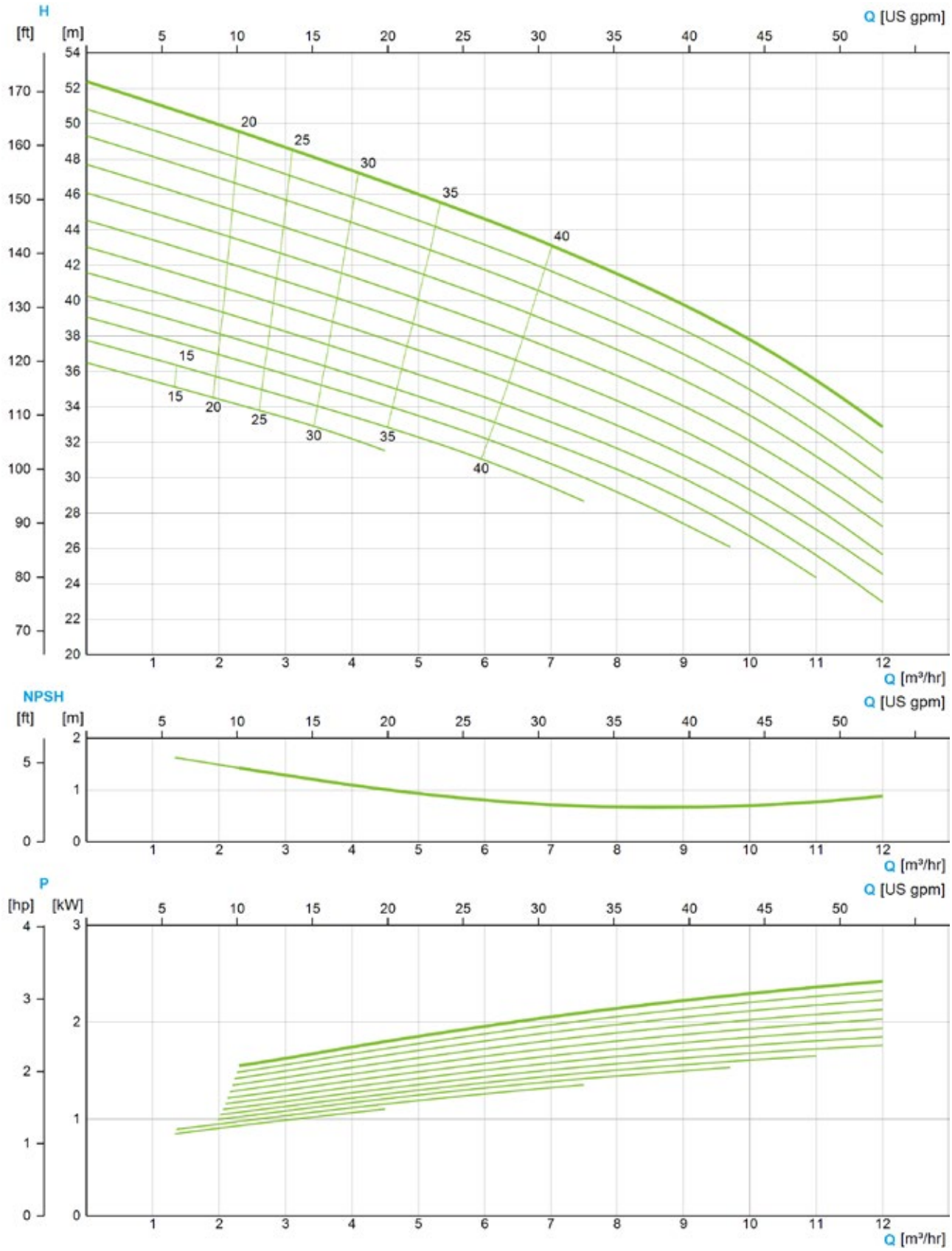
The flow charts are based on water, temperature 20 °C



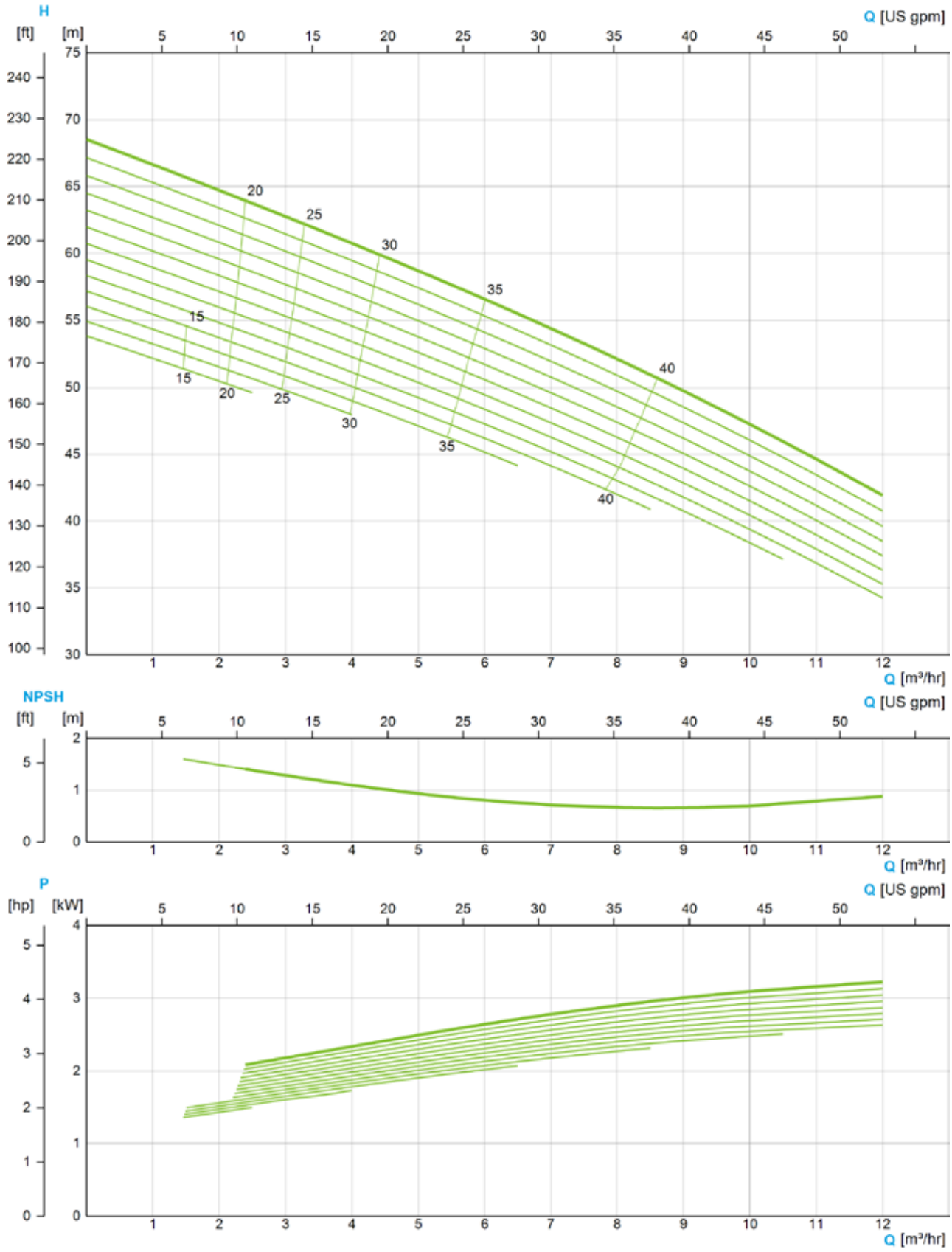
The flow charts are based on water, temperature 20 °C



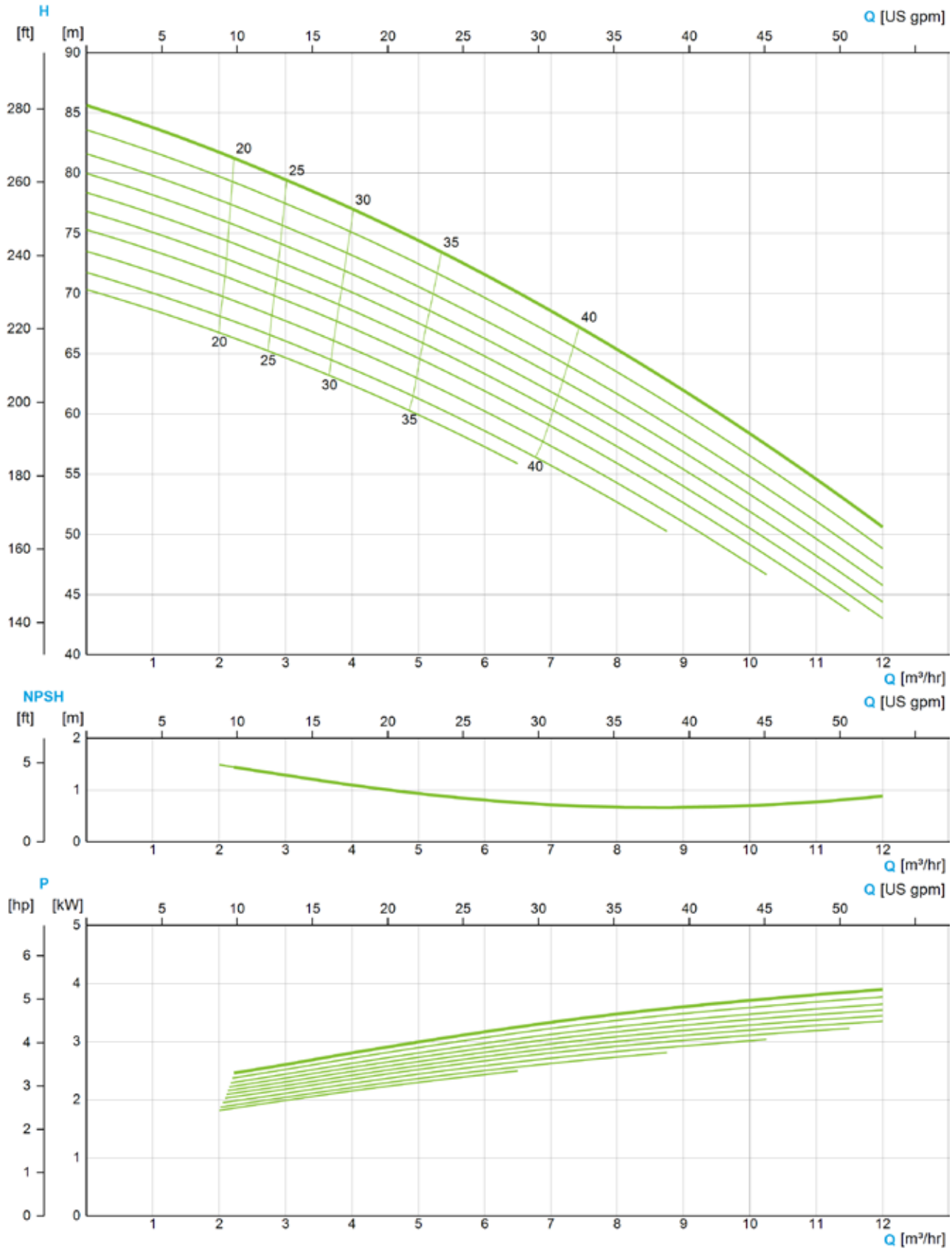
The flow charts are based on water, temperature 20 °C



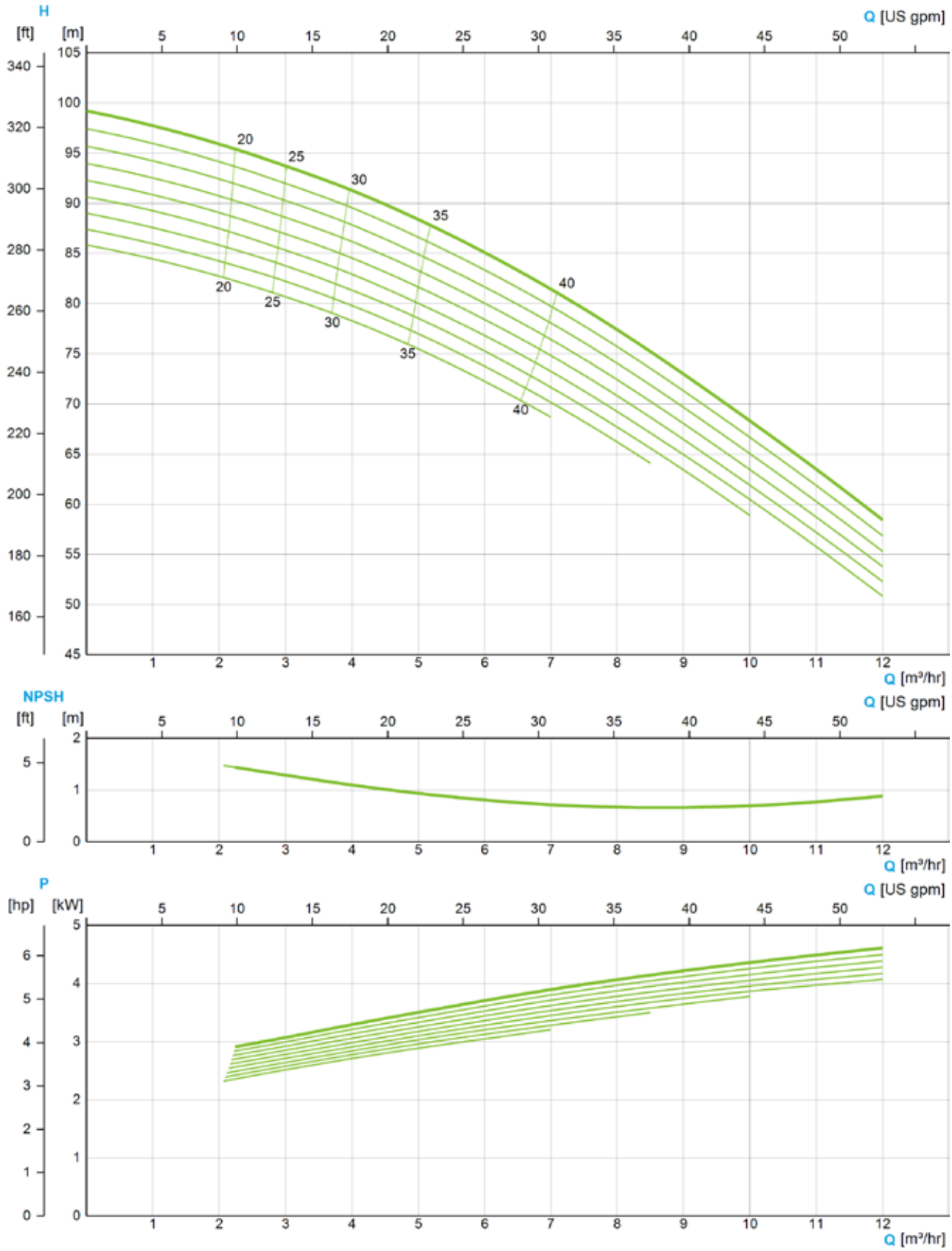
The flow charts are based on water, temperature 20 °C



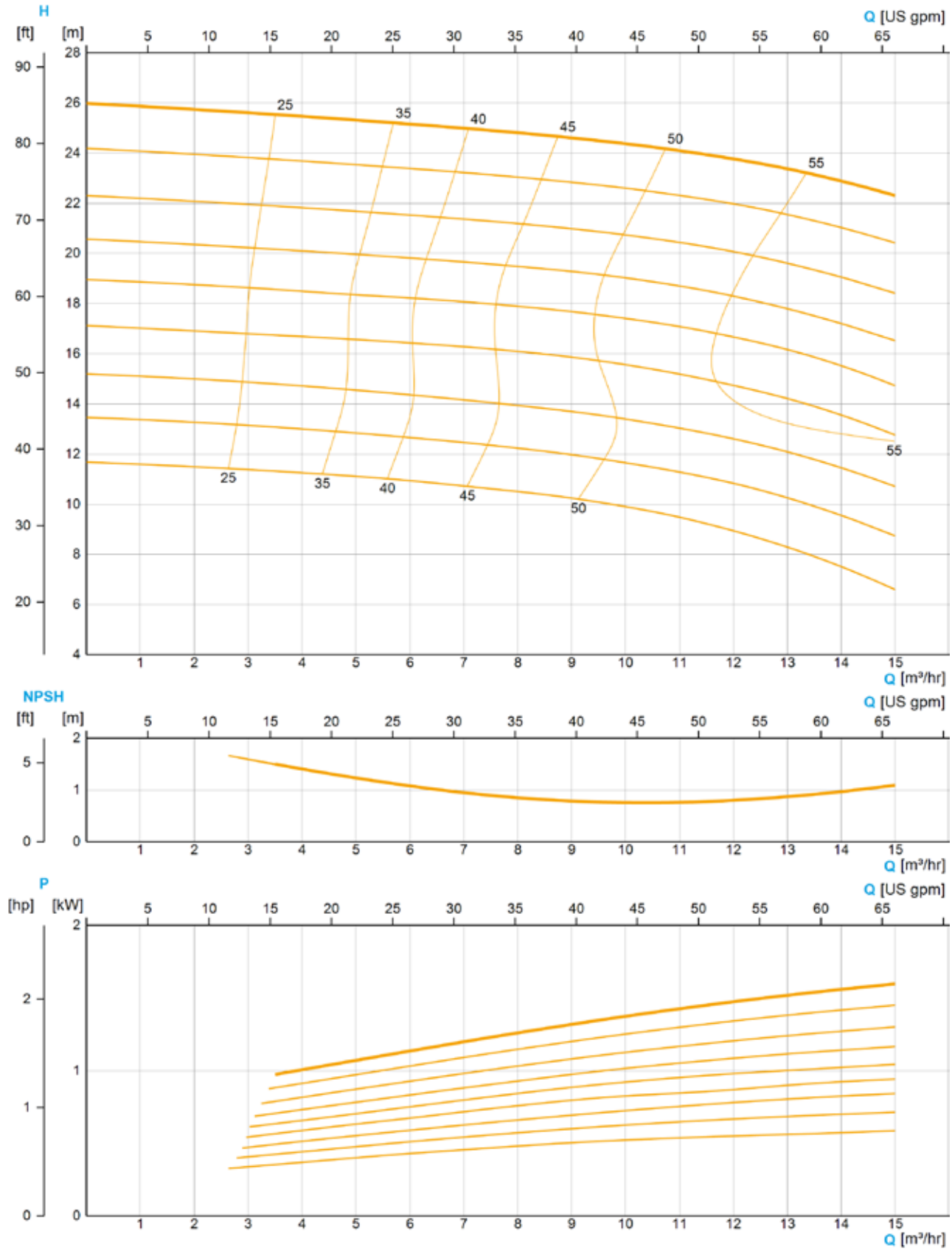
The flow charts are based on water, temperature 20 °C



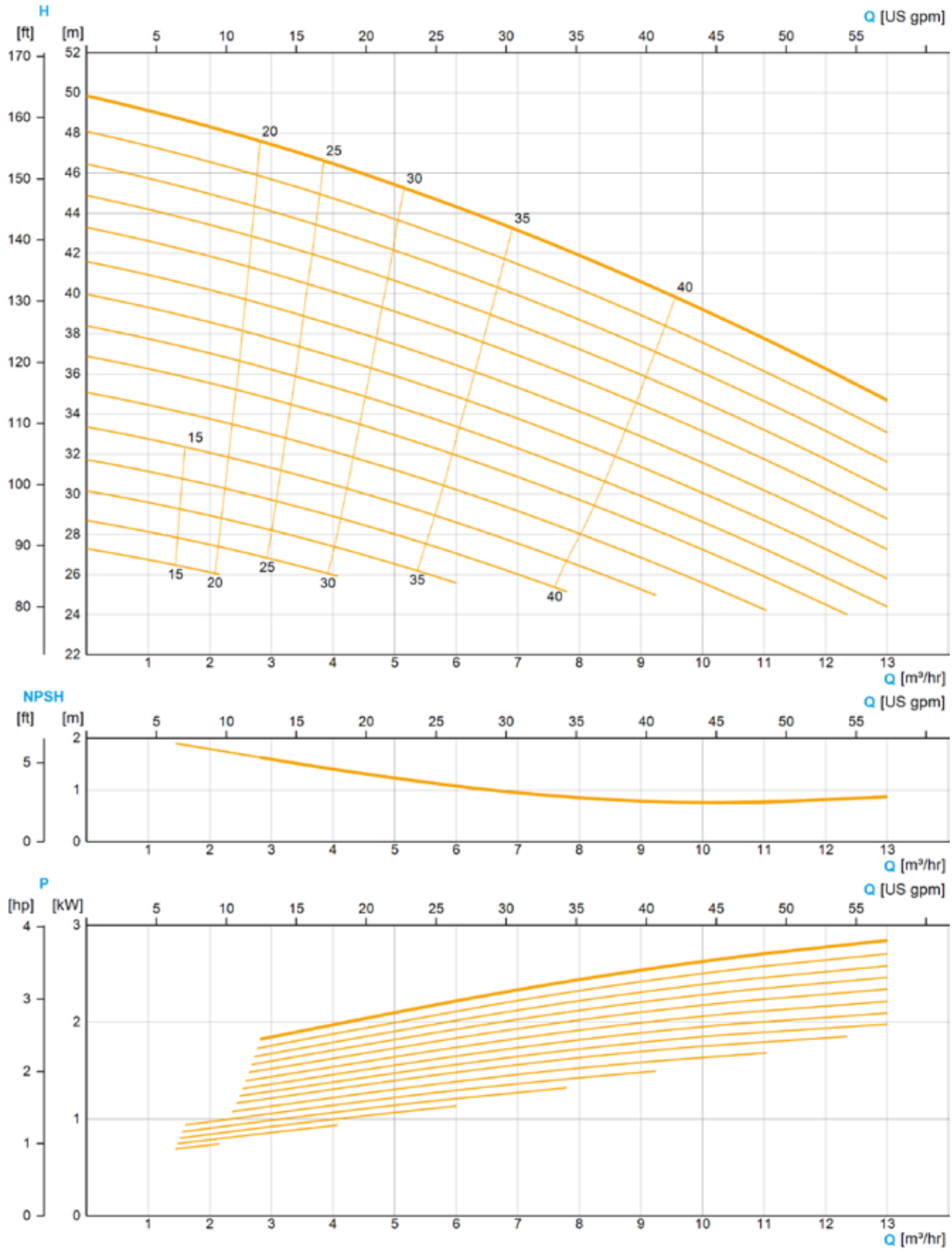
The flow charts are based on water, temperature 20 °C



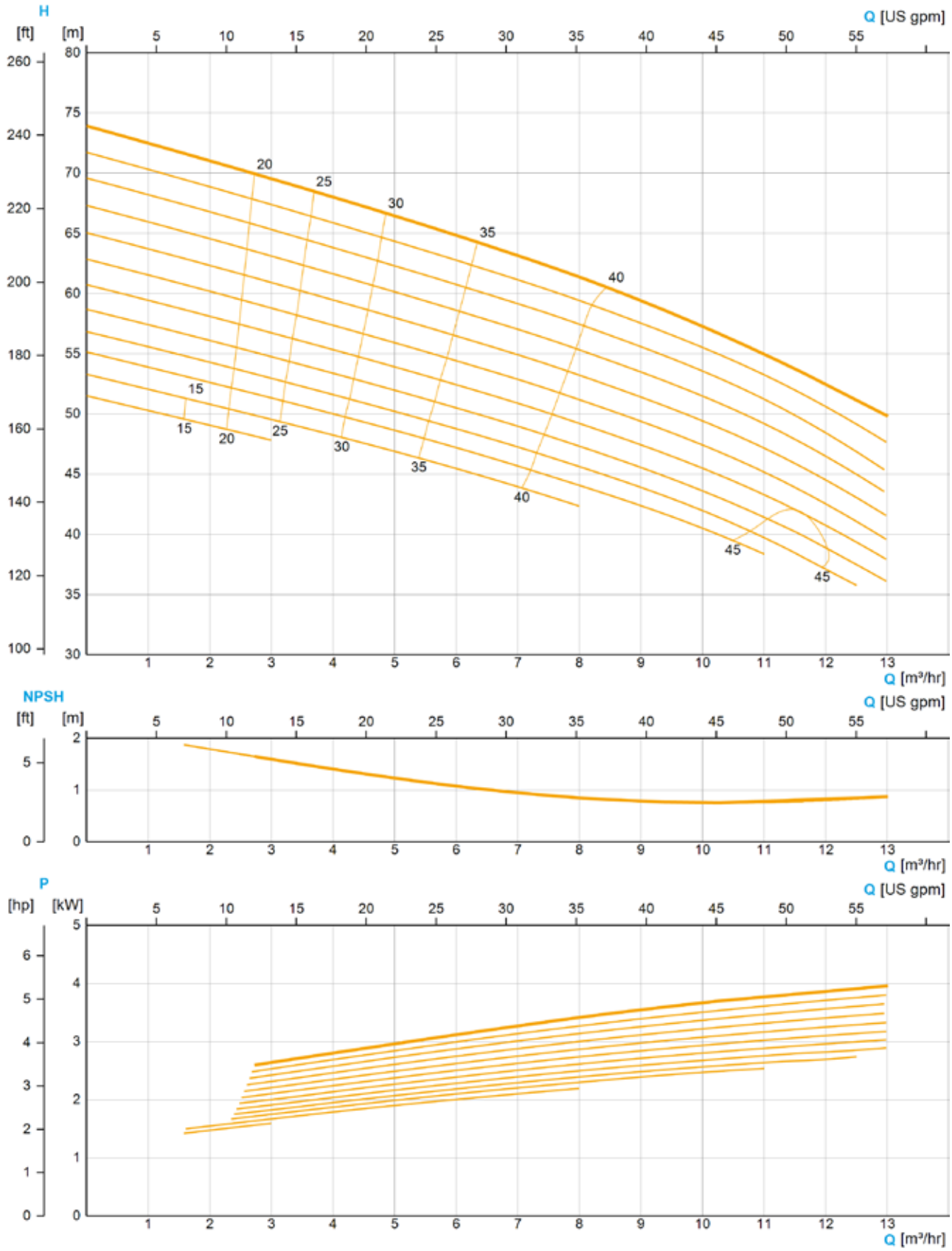
The flow charts are based on water, temperature 20 °C



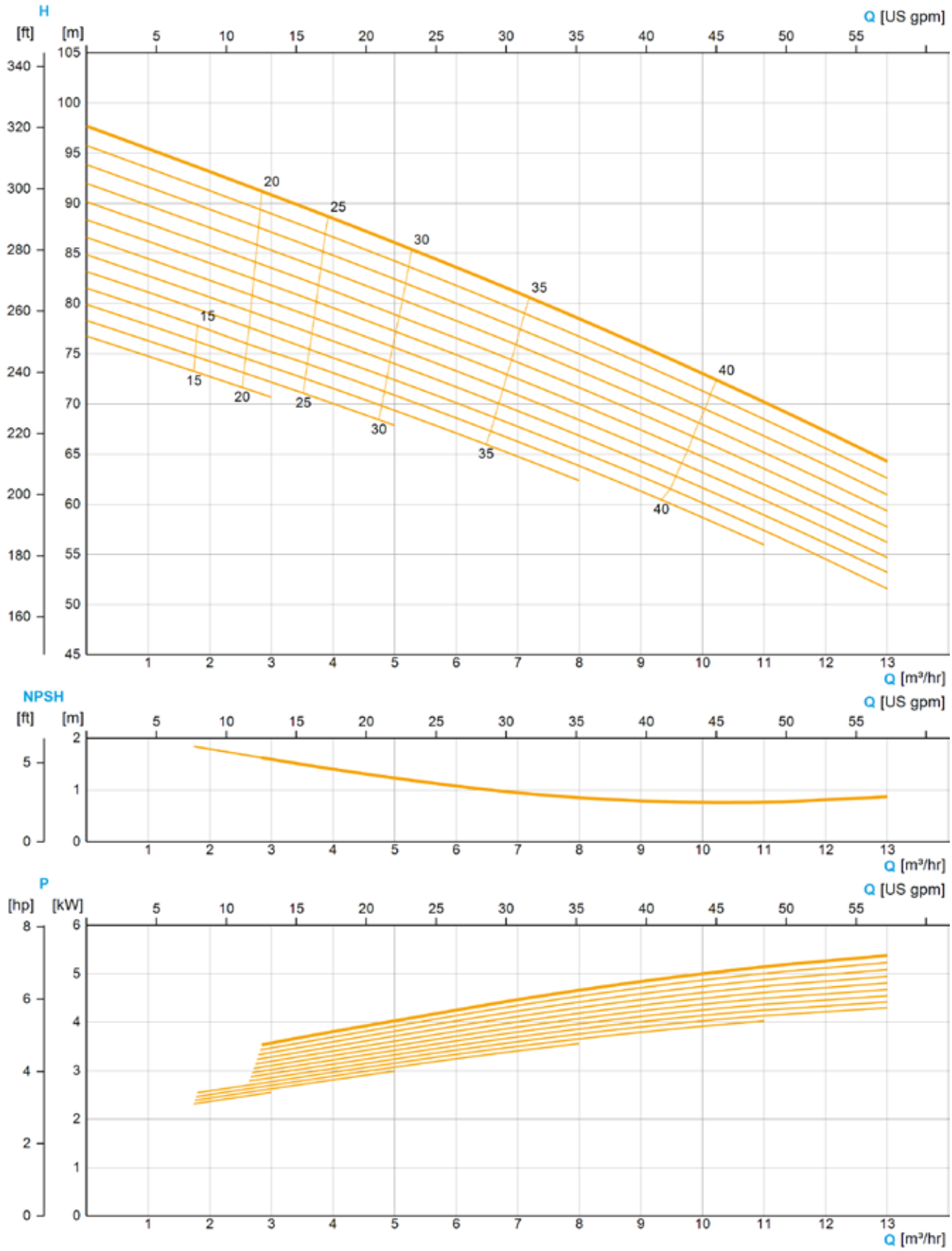
The flow charts are based on water, temperature 20 °C



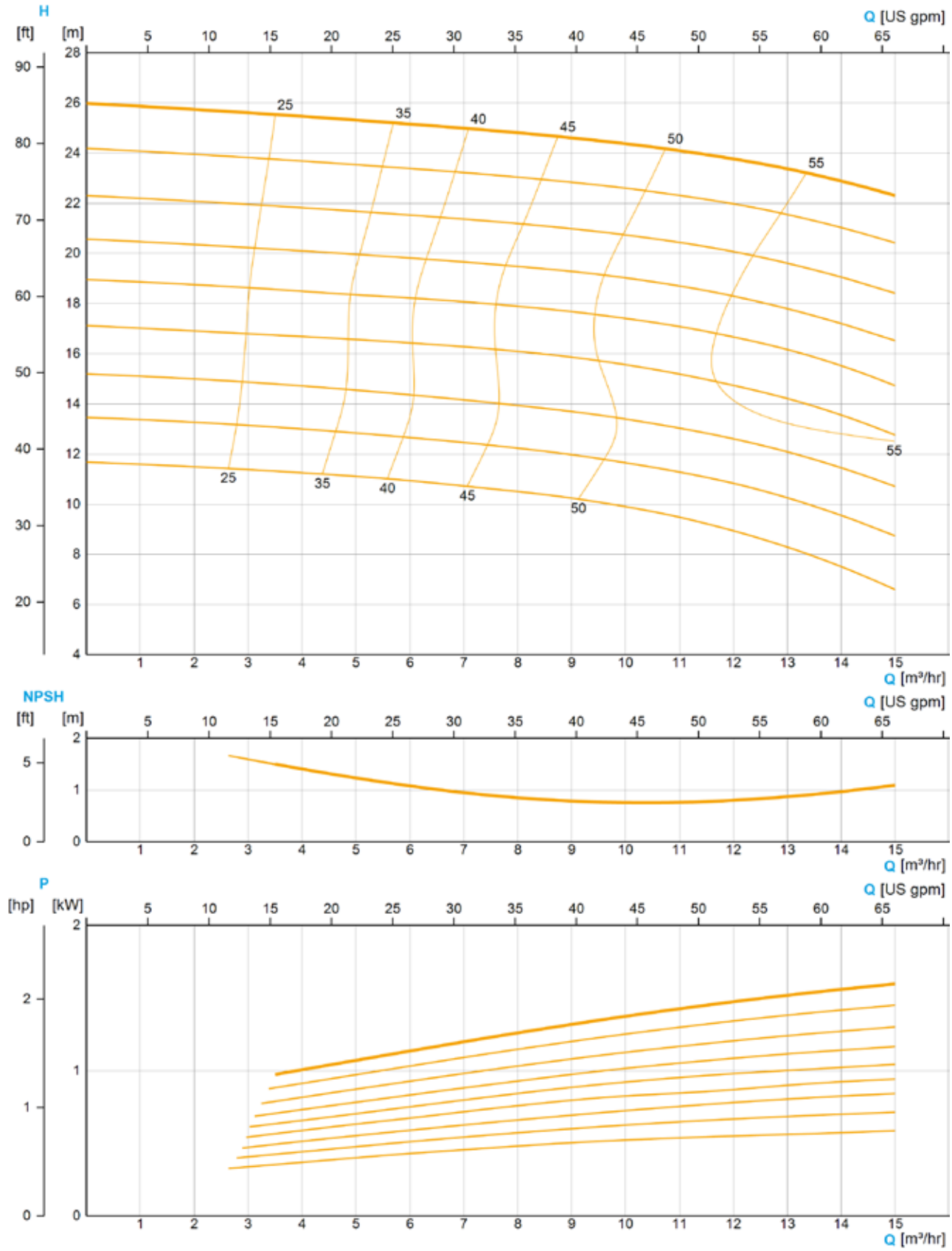
The flow charts are based on water, temperature 20 °C



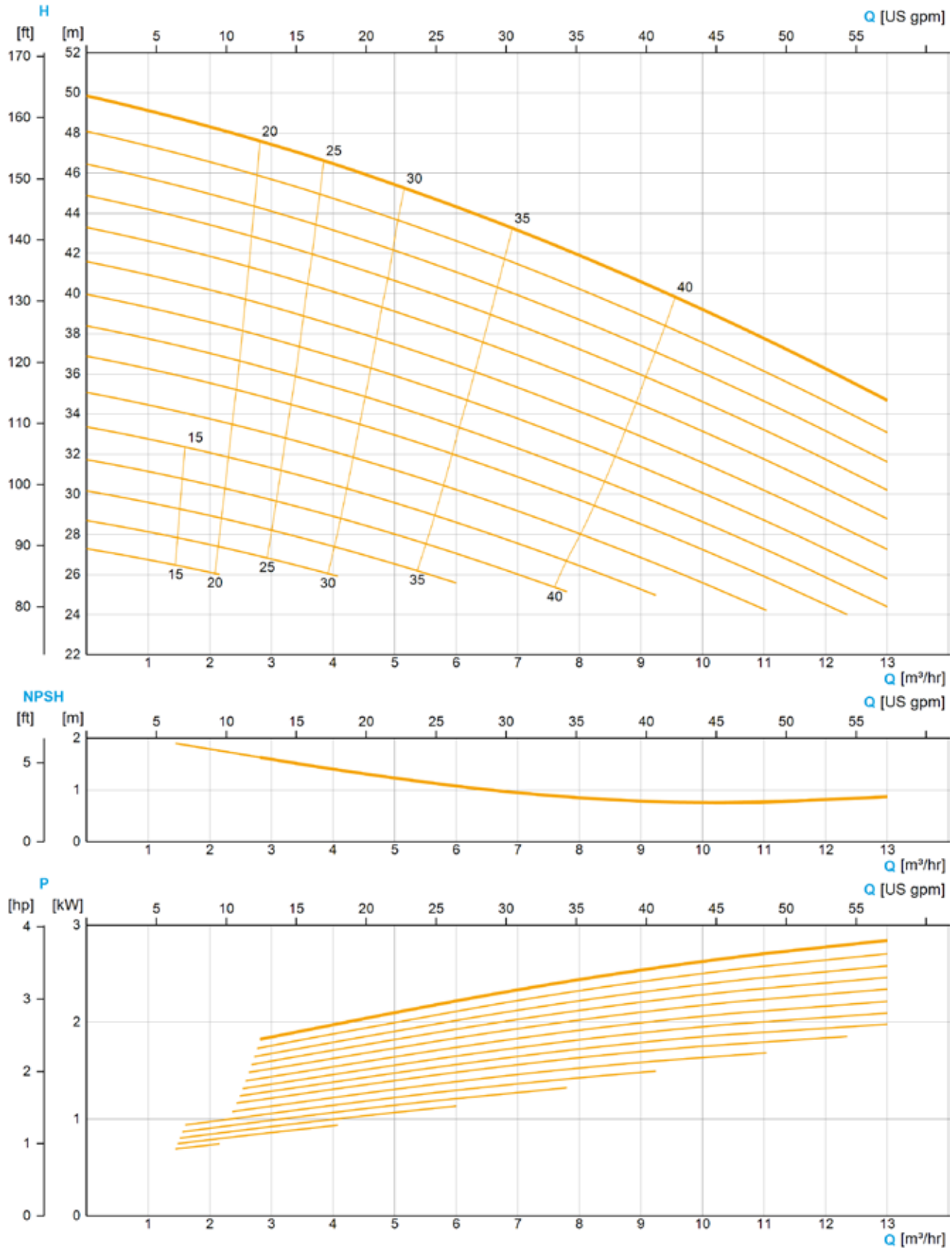
The flow charts are based on water, temperature 20 °C



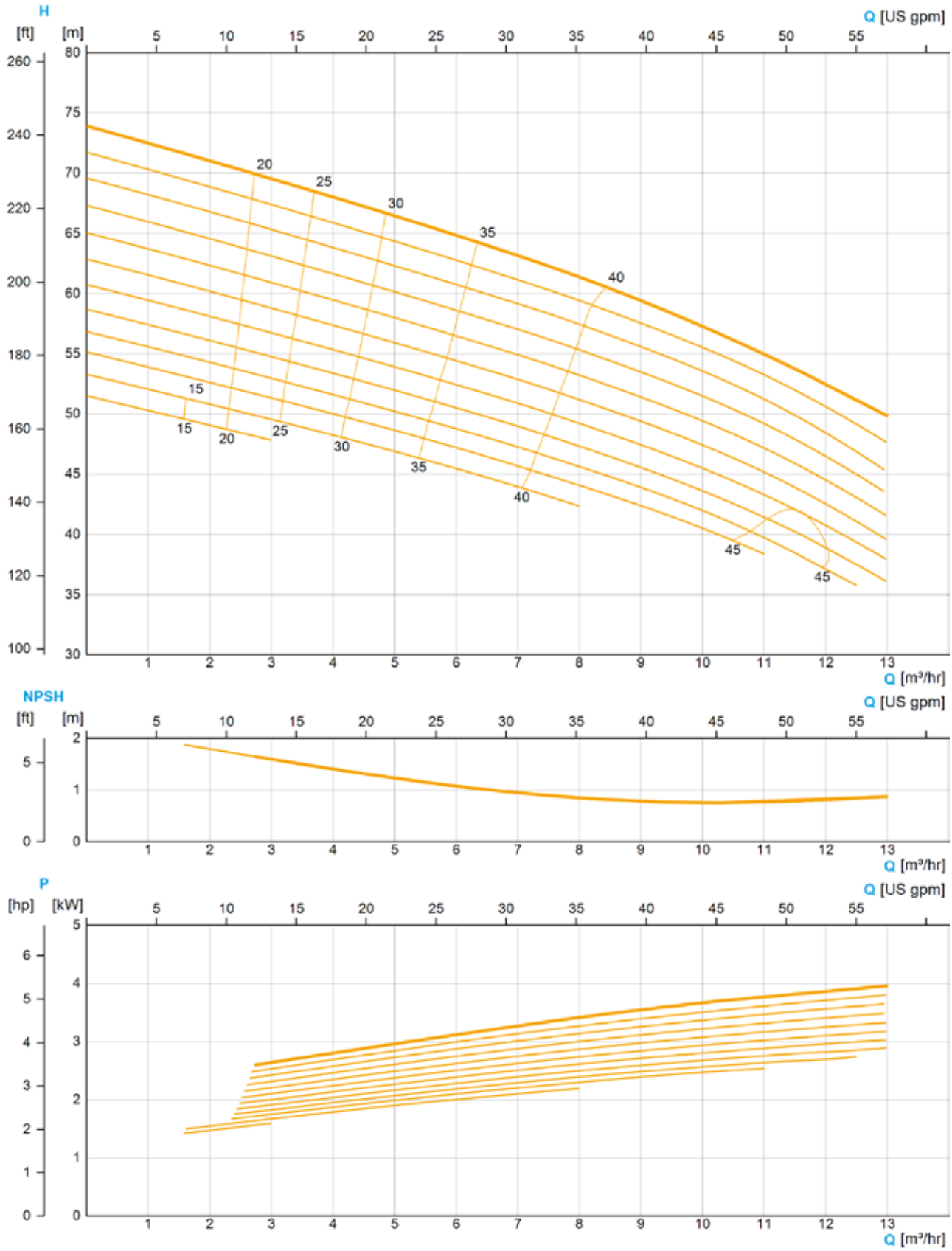
The flow charts are based on water, temperature 20 °C



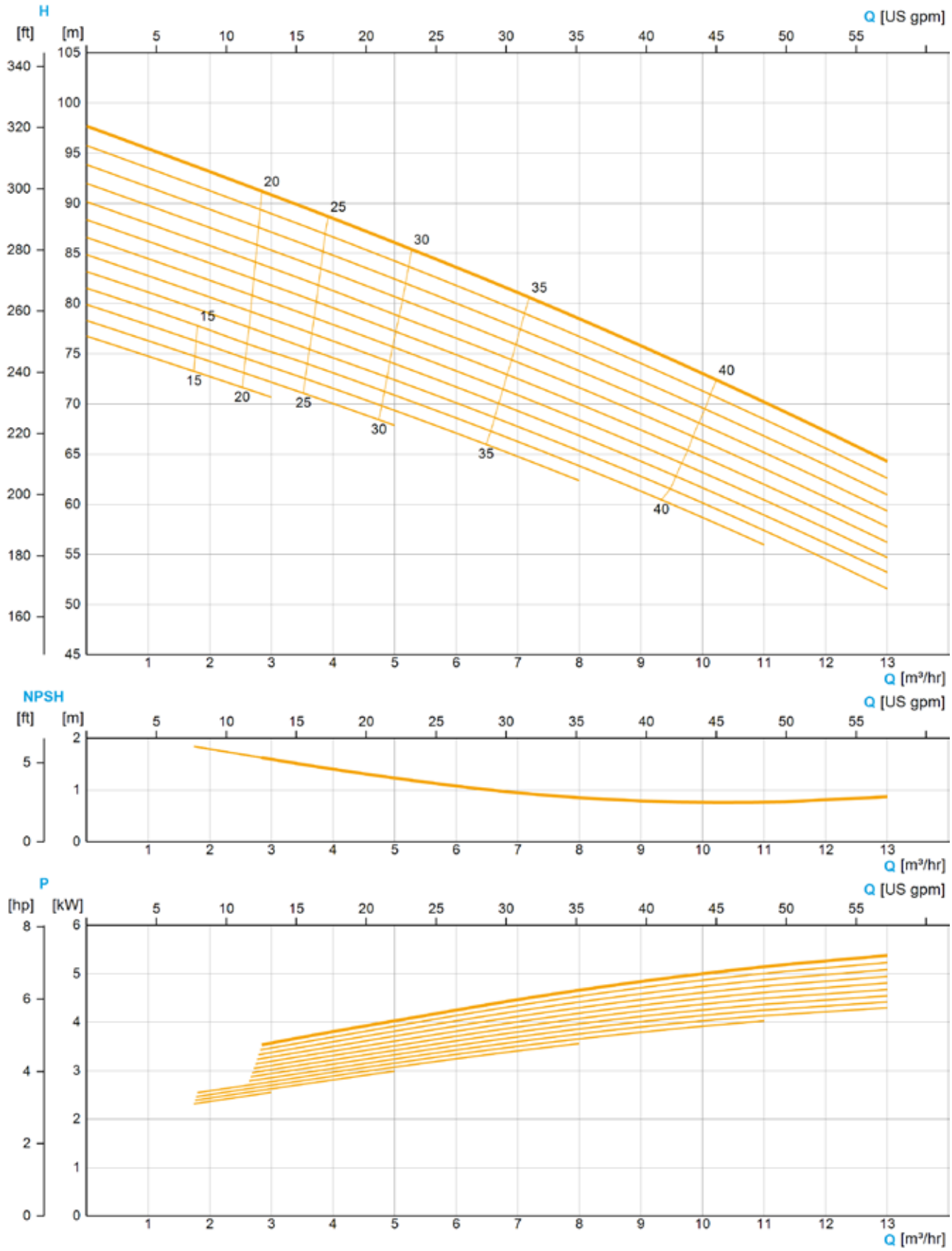
The flow charts are based on water, temperature 20 °C



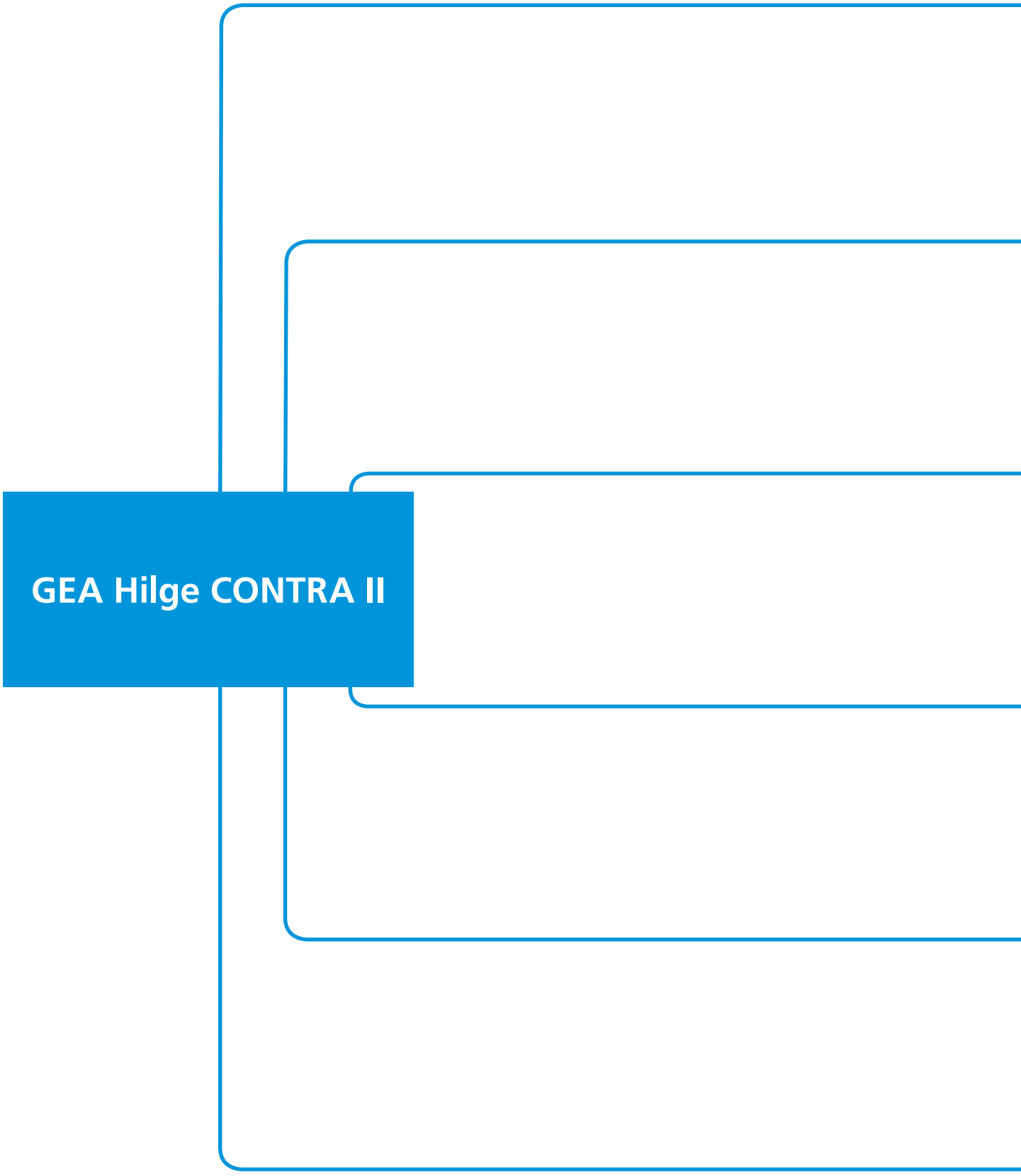
The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C


GEA Hilge CONTRA II

GEA Hilge CONTRA II Bloc

GEA Hilge CONTRA II Bloc-SUPER

GEA Hilge CONTRA II Bloc-V

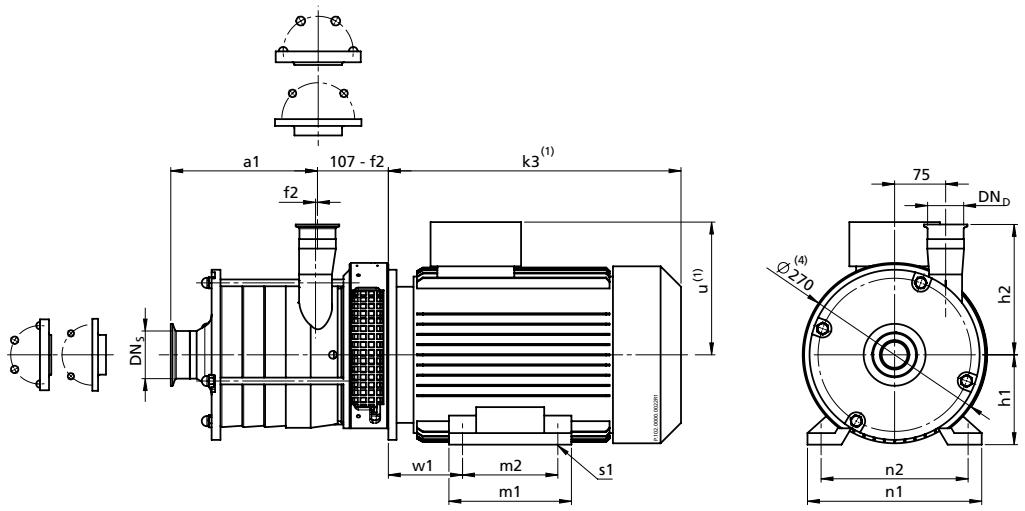
GEA Hilge CONTRA II Adapta

GEA Hilge CONTRA II Adapta-SUPER

GEA Hilge CONTRA II Adapta-V

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



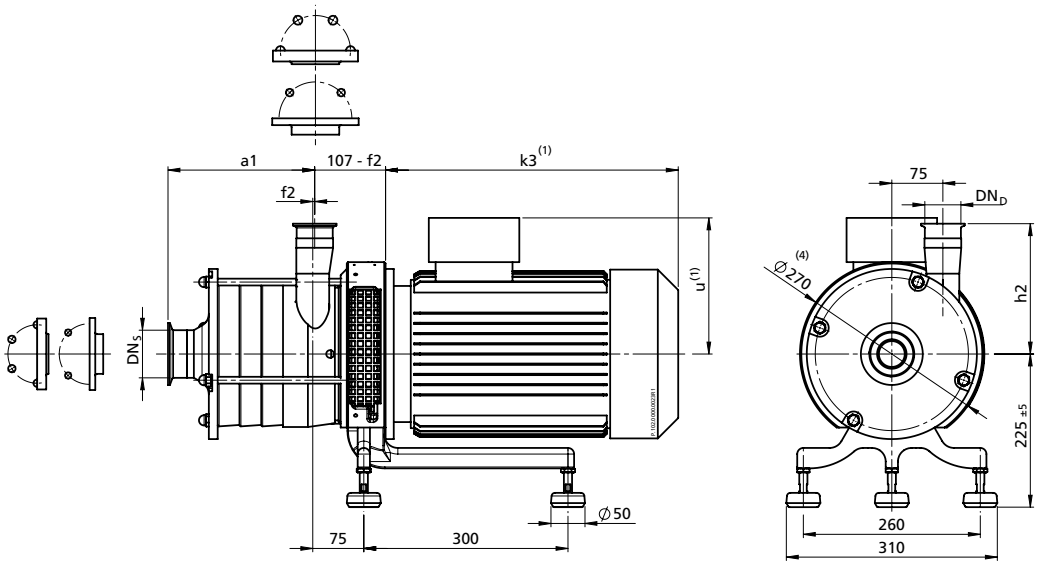
2-pole

P2 [kW]	IEC-size	h_1 [mm]	k_3 (1) [mm]	u(1) [mm]	w_1 [mm]	m_1 [mm]	m_2 [mm]	n_1 [mm]	n_2 [mm]	s_1 [mm]	Weight [kg]
4.0	112M	112	340	175	70	175	140	220	190	12×16	64
5.5	112M	132	430	200	109	180	140	256	216	12×16	70
7.5	132S	132	430	200	109	180	140	256	216	12×16	78
11.0	132M	132	450	200	109	210	178	260	216	12×16	116
15.0	160M	160	530	225	120	260	210	320	254	15×19	125
18.5	160L	160	565	225	120	305	254	320	254	15×19	140

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



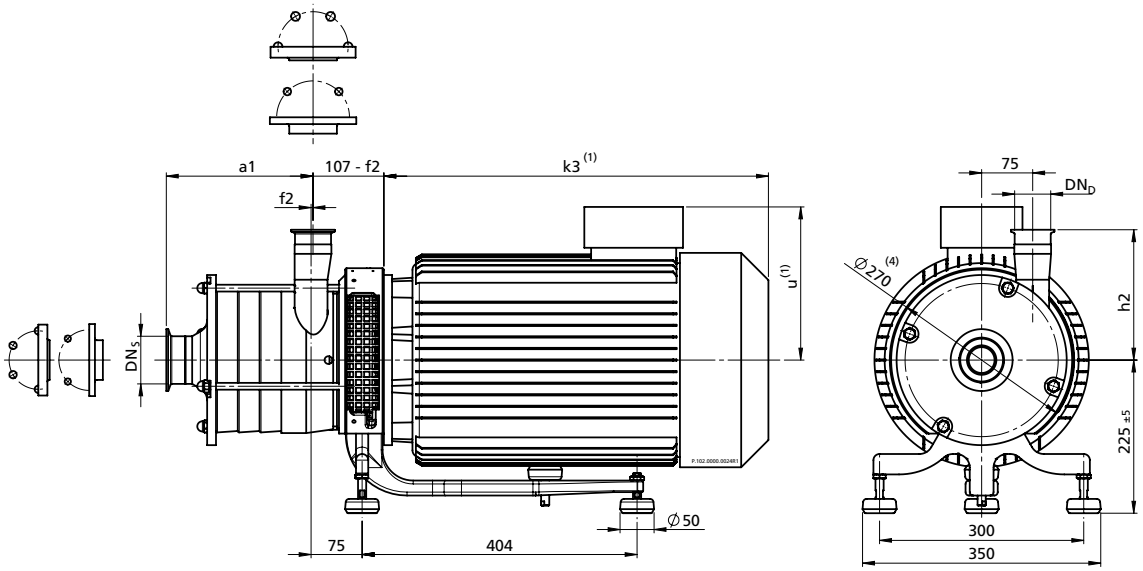
2-pole

P2 [kW]	IEC-size	k_3(1) [mm]	u(1) [mm]	Weight [kg]
4.0	112M	340	175	67
5.5	112M	430	200	74
7.5	132S	430	200	81
11.0	132M	450	200	120

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



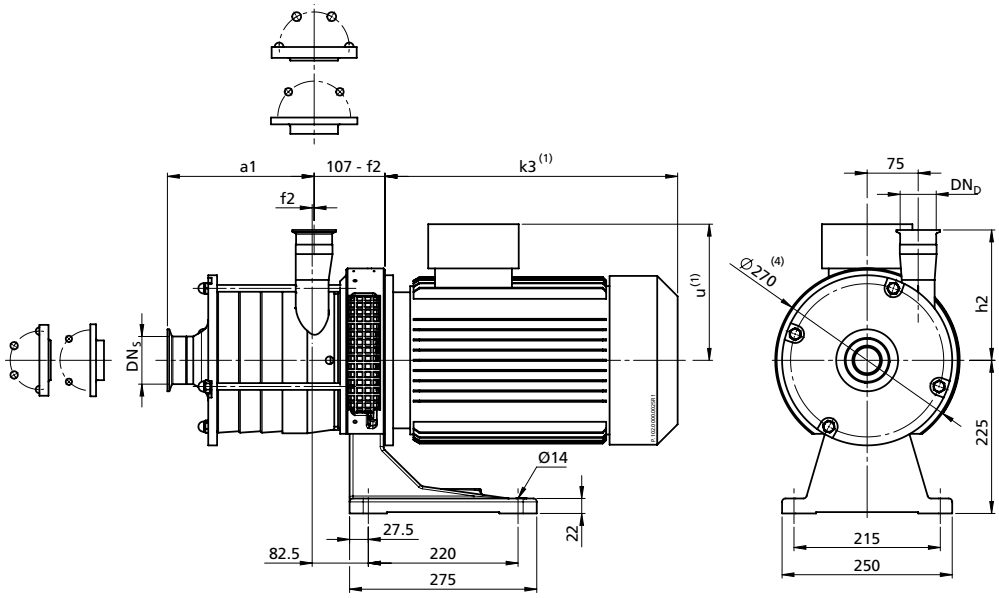
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
15.0	160M	530	225	131
18.5	160L	565	255	146

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



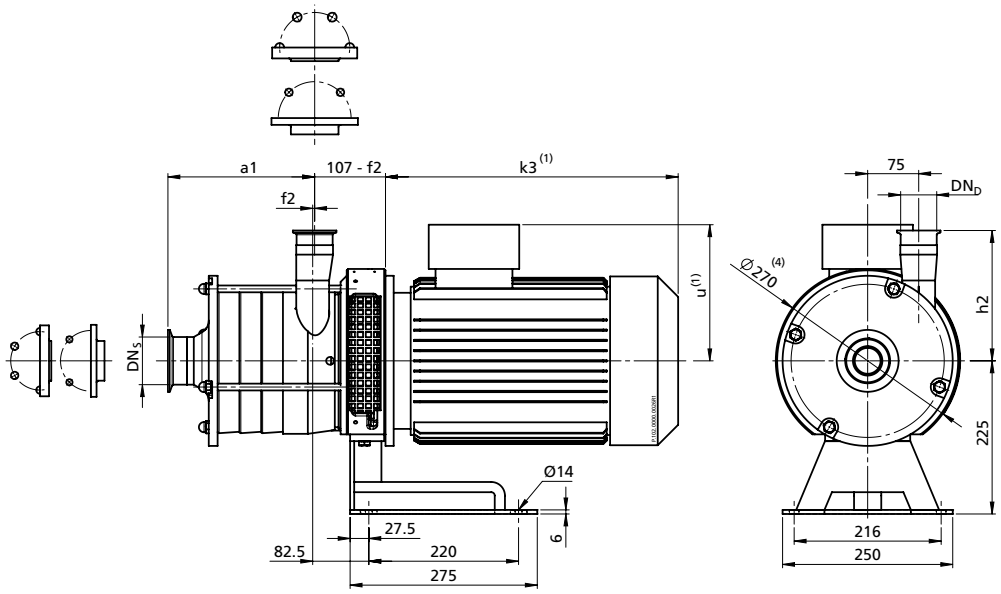
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
4.0	112M	340	175	72
5.5	112M	430	200	78
7.5	132S	430	200	86
11.0	132M	450	200	124

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



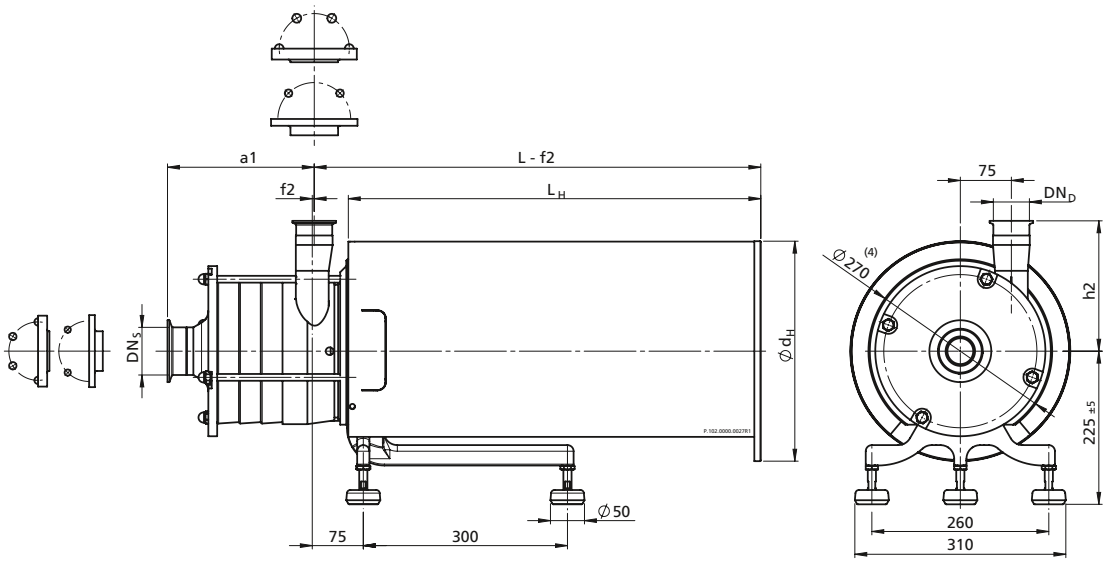
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u(1) [mm]	Weight [kg]
4.0	112M	340	175	68
5.5	112M	430	200	75
7.5	132S	430	200	82
11.0	132M	430	200	121

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



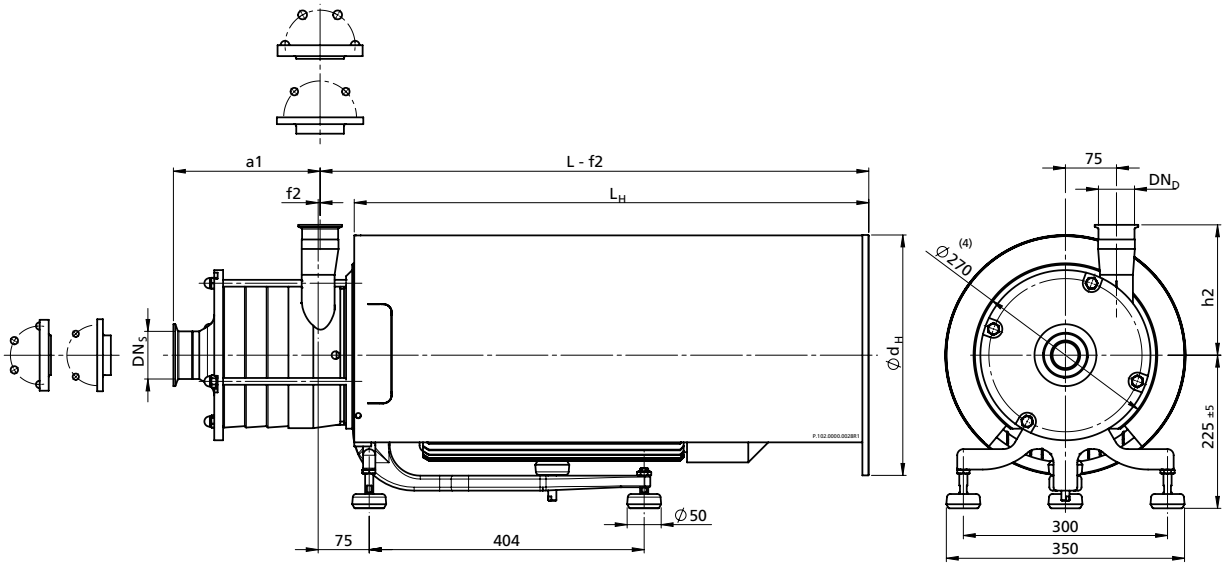
2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	573	520	270	70
5.5	112M	573	520	270	77
7.5	132S	653	600	320	86
11.0	132M	653	600	320	124

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	$\varnothing d_H$ [mm]	Weight [kg]
15.0	160M	803	750	350	136
18.5	160L	803	750	350	151

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

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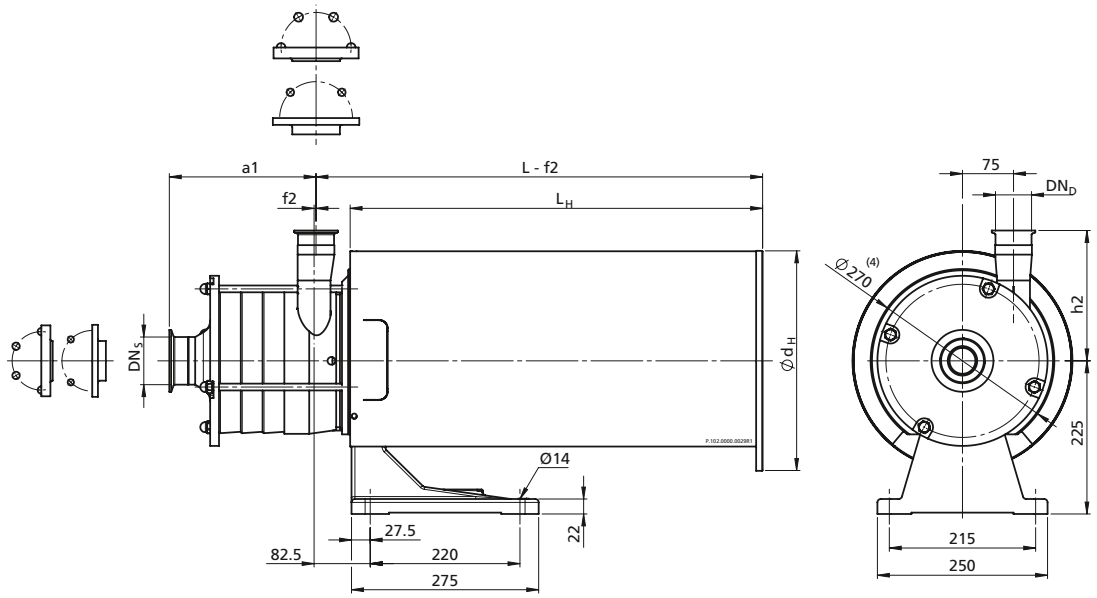


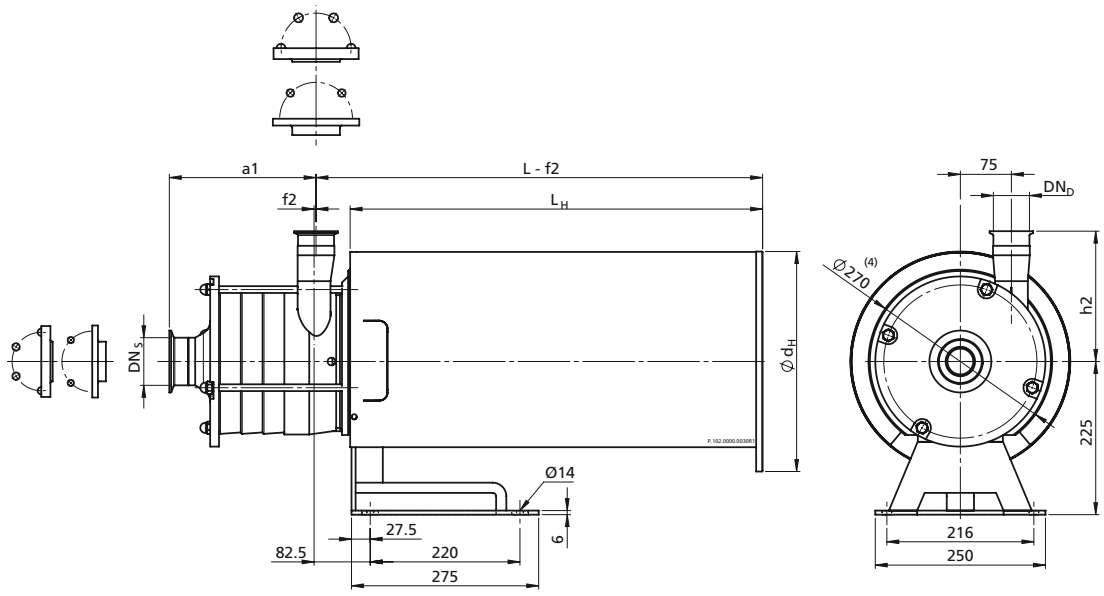
2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	573	520	270	75
5.5	112M	573	520	270	81
7.5	132S	653	600	320	90
11.0	132M	653	600	320	128

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



2-pole

P2 [kW]	IEC-size	l [mm]	l_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	573	520	270	71
5.5	112M	573	520	270	78
7.5	132S	653	600	320	86
11.0	132M	653	600	320	125

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(4) Largest diameter for pump without motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED EHEDG TYPE EL - CLASS I* FDA

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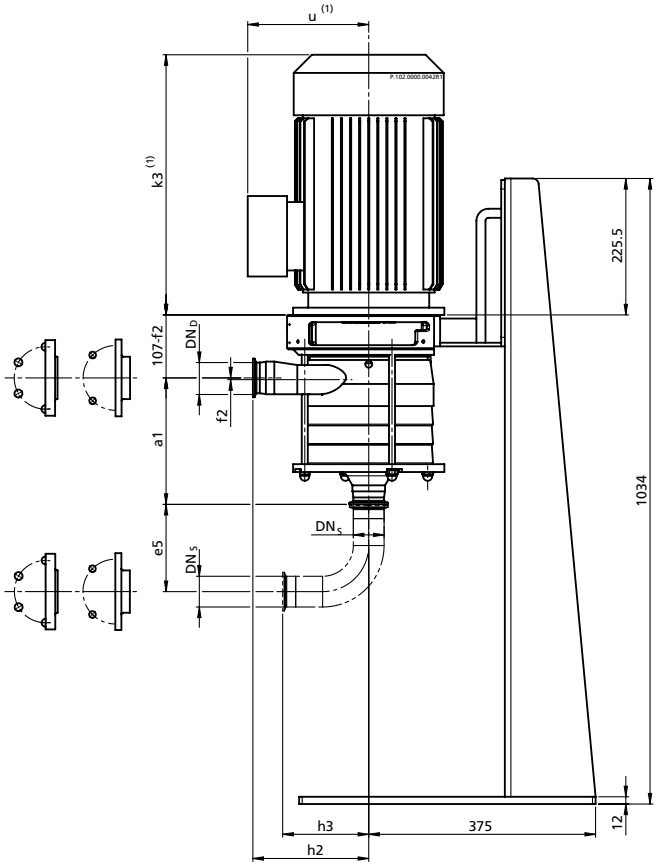
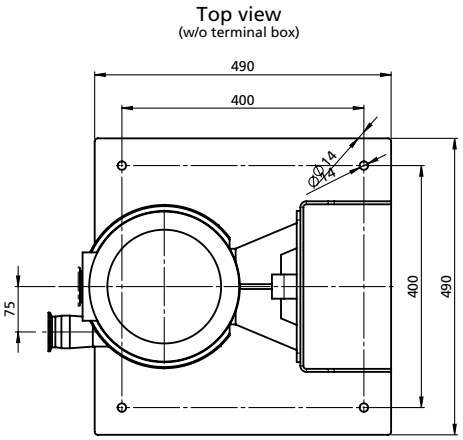




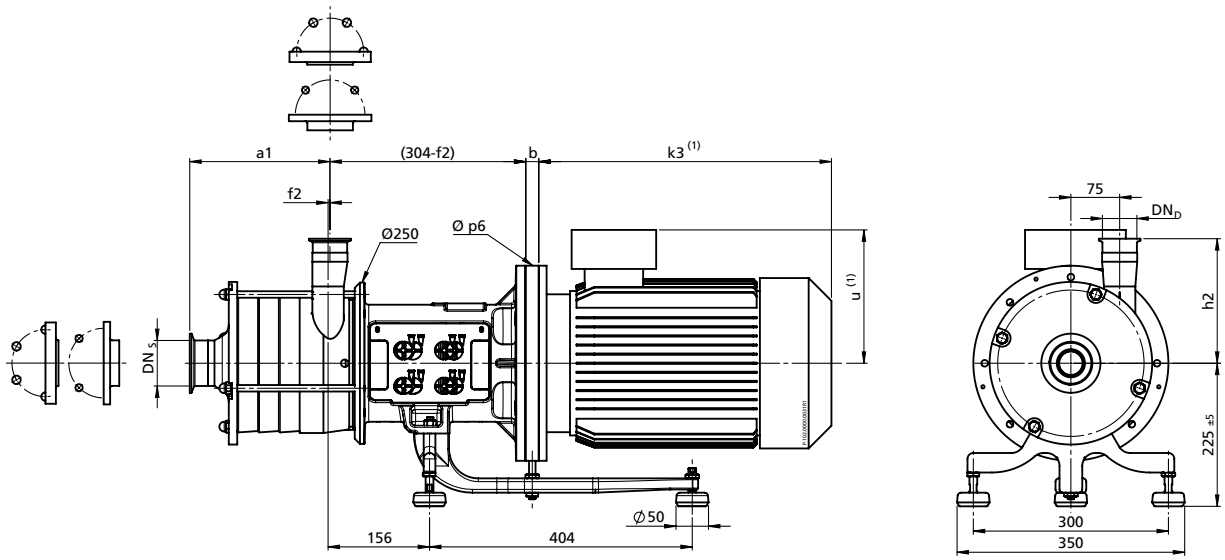
2-pole

P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
4.0	112M	340	175	110
5.5	112M	430	200	117
7.5	132S	430	200	124
11.0	132M	450	200	163
15.0	160M	530	225	172
18.5	160L	565	225	187

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



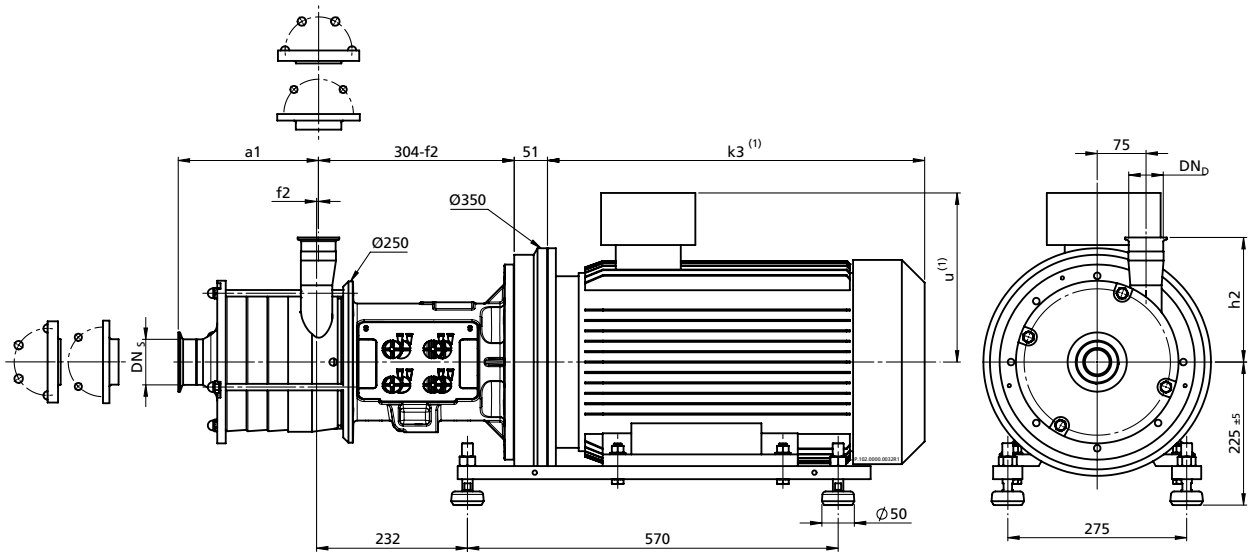
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_e [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
4.0	112M	0	250	380	185	334	201	95
5.5	132S	20	300	450	205	365	201	121
7.5	132S	20	300	450	205	389	237	130

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging for standard motor

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



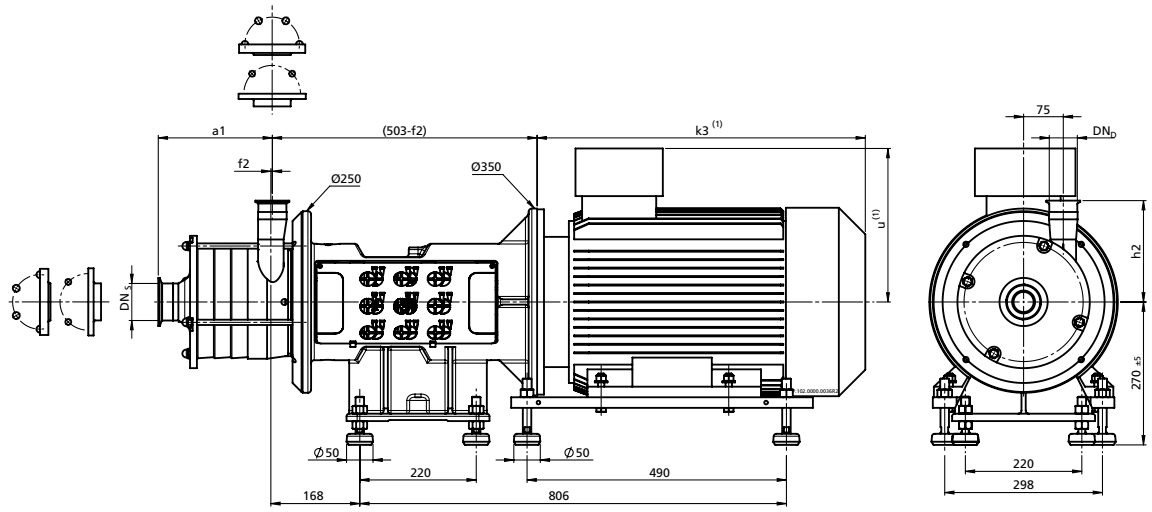
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_e [mm]	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
11.0	160M	51	350	570	260	406	237	163
15.0	160M	51	350	570	260	471	308	170
18.5	160L	51	350	580	260	515	308	192

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



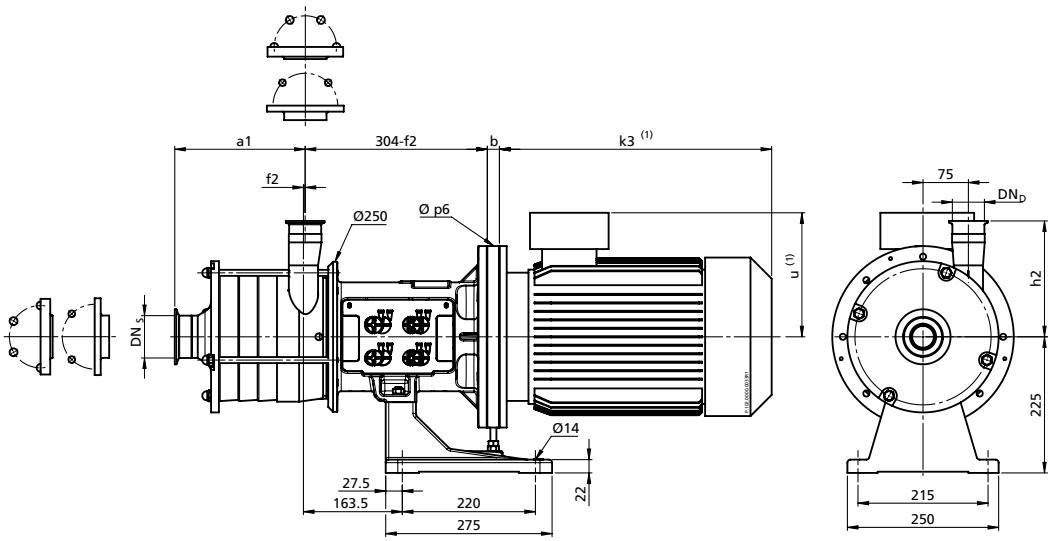
2-pole

		Standard		tronic		
P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
22.0	180L	620	290	541	308	283

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3 × 380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



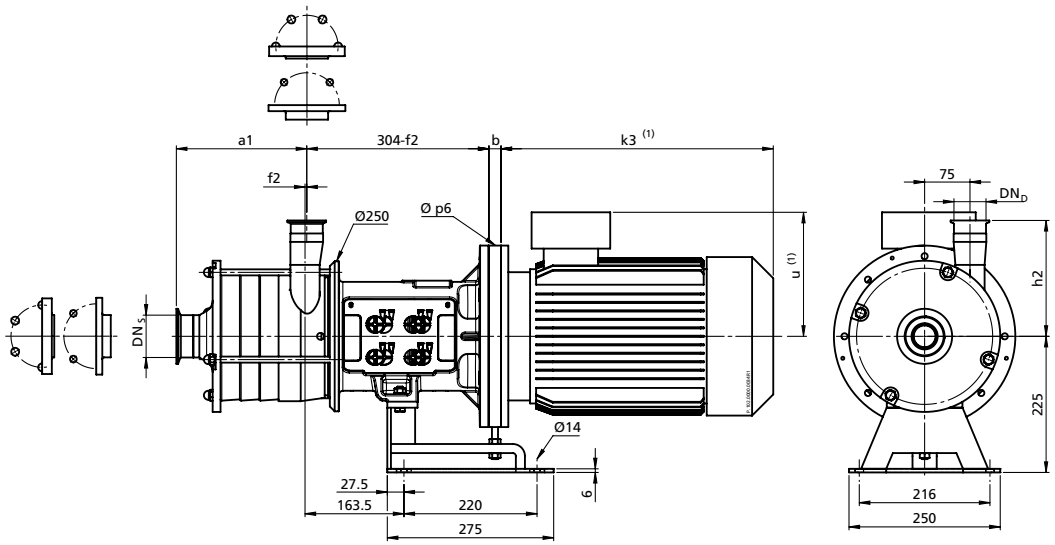
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	$k_3^{(1)}$ [mm]	$u^{(1)}$ [mm]	$k_3^{(1)}$ [mm]	$u^{(1)}$ [mm]	Weight [kg]
4.0	112M	0	250	380	185	334	201	97
5.5	132S	20	300	450	205	365	201	123
7.5	132S	20	300	450	205	389	237	132
11.0	160M	51	350	570	260	406	237	160
15.0	160M	51	350	570	260	471	308	167
18.5	160L	51	350	580	260	515	308	189

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



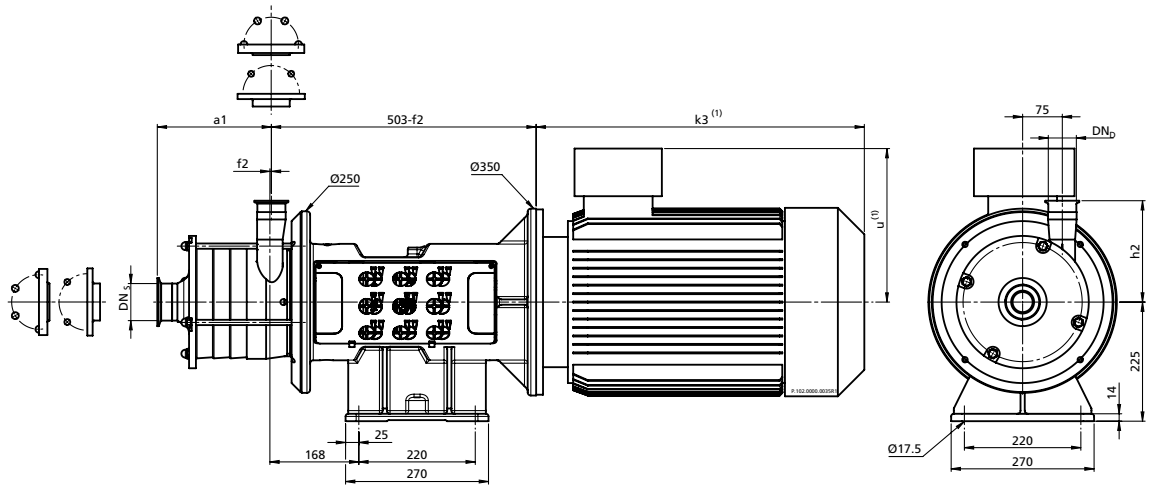
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	$k_3^{(1)}$ [mm]	$u^{(1)}$ [mm]	$k_3^{(1)}$ [mm]	$u^{(1)}$ [mm]	Weight [kg]
4.0	112M	0	250	380	185	334	201	93
5.5	132S	20	300	450	205	365	201	120
7.5	132S	20	300	450	205	389	237	129
11.0	160M	51	350	570	260	406	237	156
15.0	160M	51	350	570	260	471	308	164
18.5	160L	51	350	580	260	515	308	185

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL – CLASS I, FDA

* registered for recertification



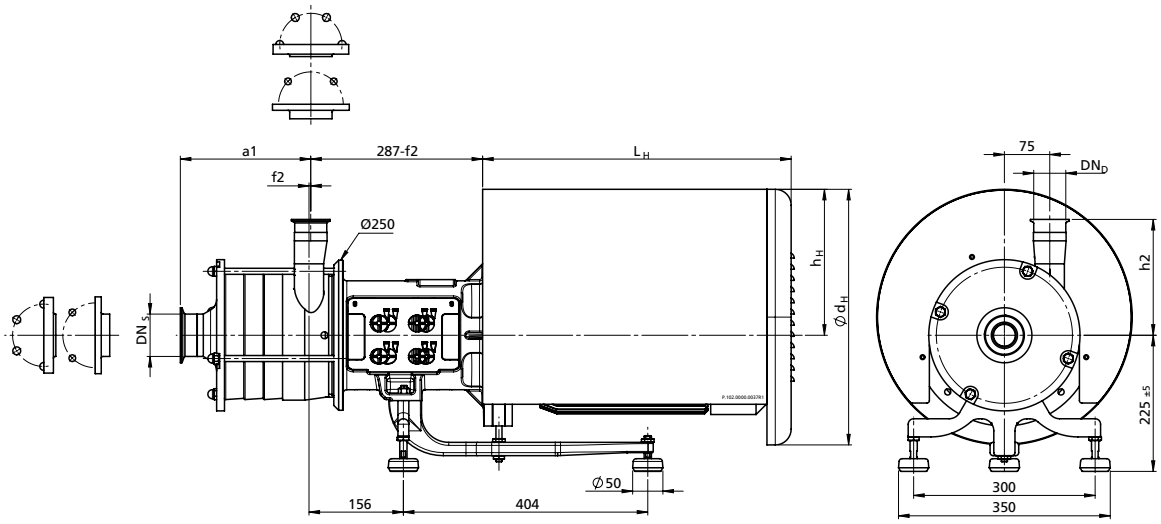
2-pole

		Standard		tronic		
P2 [kW]	IEC-size	k_3 (1) [mm]	u (1) [mm]	k_3 (1) [mm]	u (1) [mm]	Weight [kg]
22.0	180M	620	290	541	308	273

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



2-pole

P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	510	240	420	102
5.5	132S	510	240	420	129
7.5	132S	510	240	420	138

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

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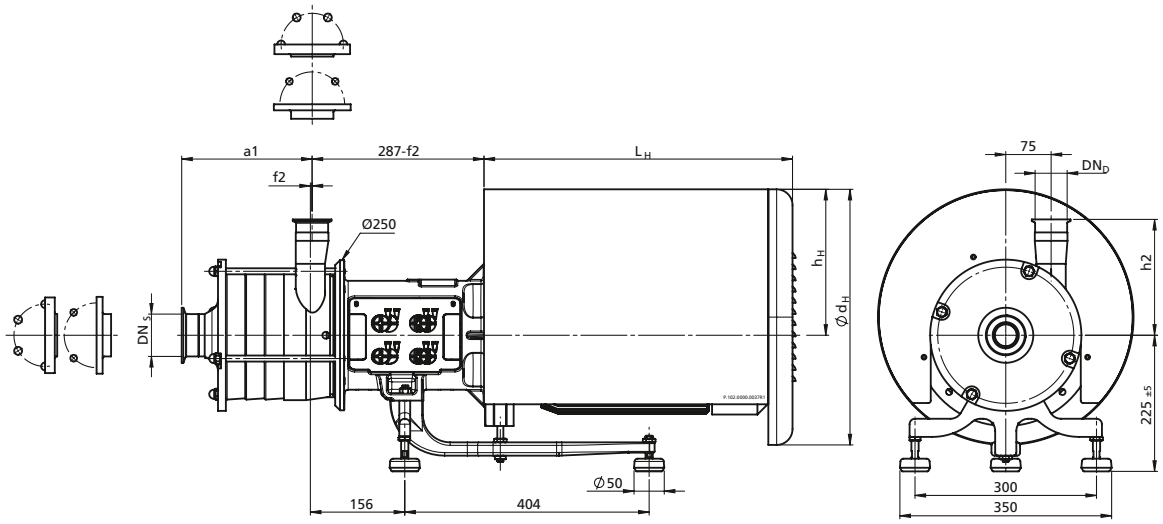


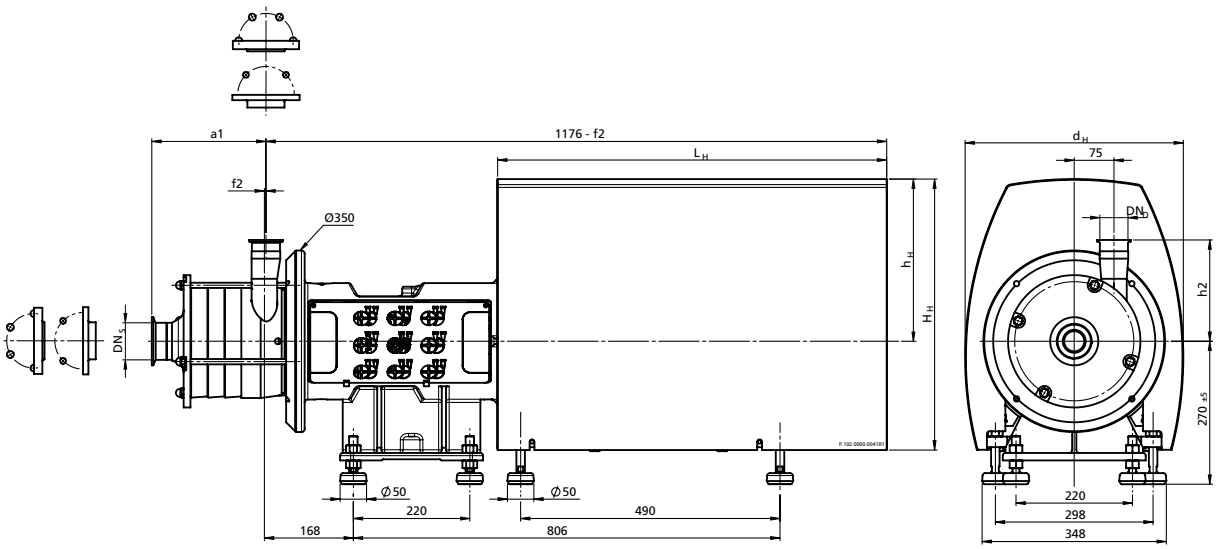
2-pole

P2 [kW]	IEC-size	Weight [kg]
11.0	160M	175
15.0	160M	182
18.5	160L	204

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



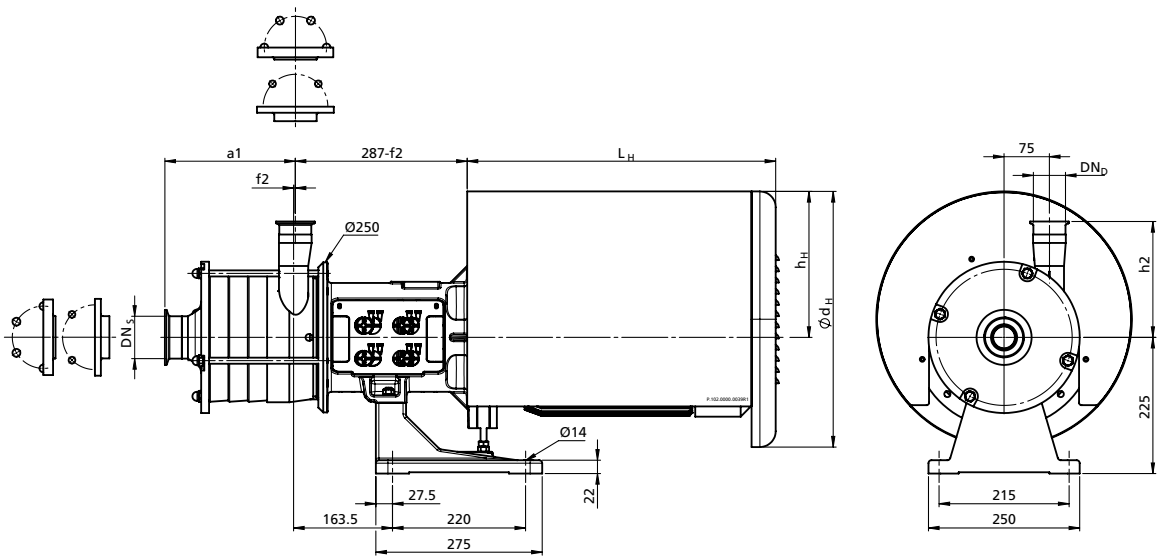
2-pole

P2 [kW]	IEC-size	L_H [mm]	H_H [mm]	h_H [mm]	d_H [mm]	Weight [kg]
22.0	180M	736	512	307	413	303

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



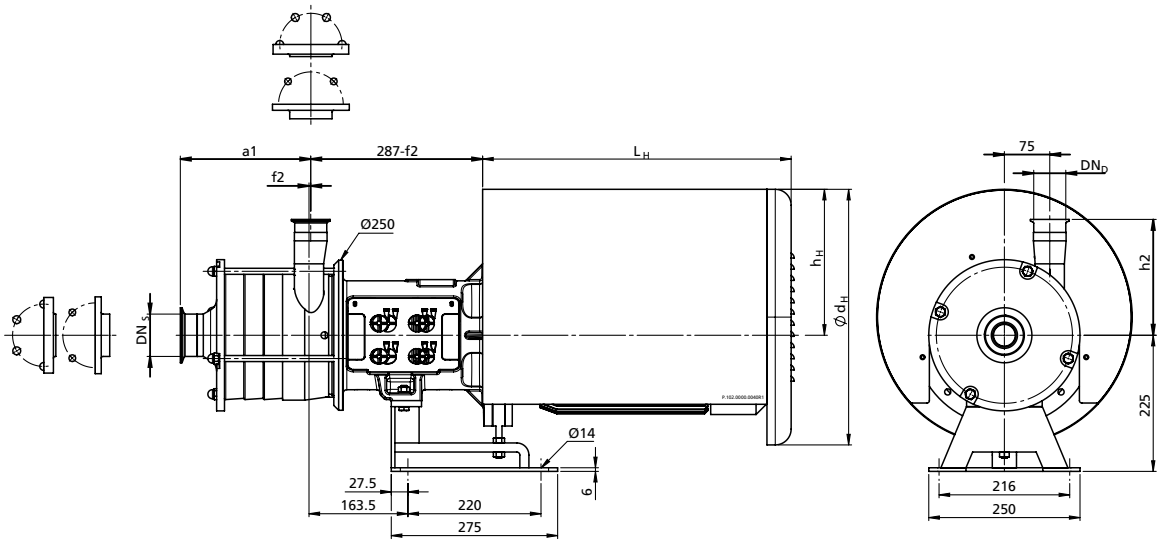
2-pole

P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	510	240	420	104
5.5	132S	510	240	420	131
7.5	132S	510	240	420	140
11.0	160M	650	285	485	172
15.0	160M	650	285	485	179
18.5	160L	650	285	485	201

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED* EHEDG TYPE EL - CLASS I, FDA

* registered for recertification



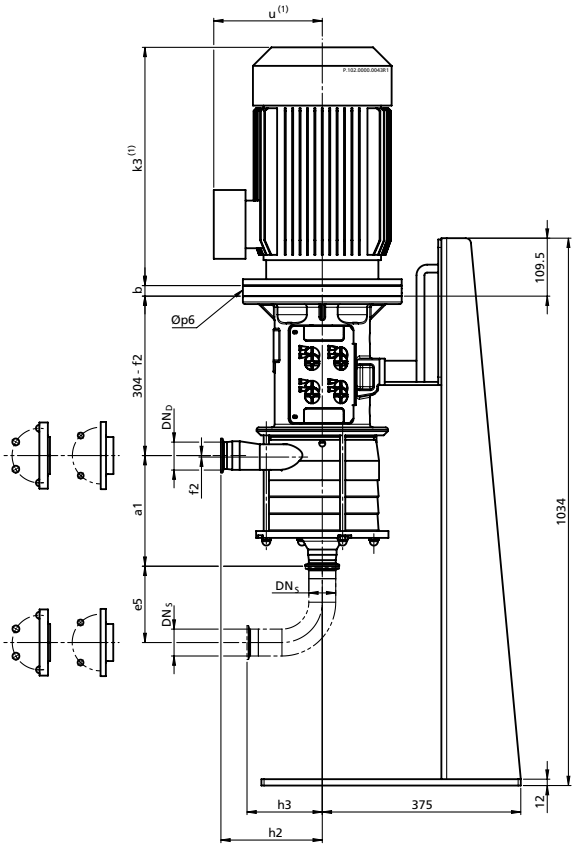
2-pole

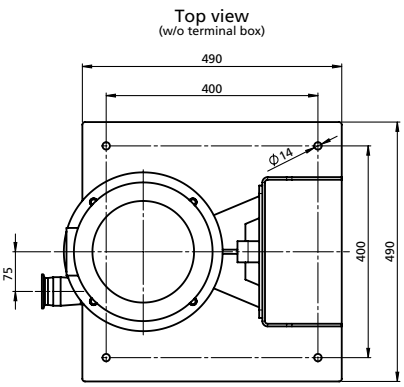
P2 [kW]	IEC-size	l_H [mm]	h_H [mm]	ød_H [mm]	Weight [kg]
4.0	112M	510	240	420	101
5.5	132S	510	240	420	127
7.5	132S	510	240	420	136
11.0	160M	650	285	485	168
15.0	160M	650	285	485	176
18.5	160L	650	285	485	197

Dimensions depend on the casing size (DN_S, DN_D, a1, h2, e1). See table of connections.
Weight: net-weight without packaging

Technical data of the standard version	
Materials	Pump housing: stainless steel 316L (1.4404/1.4435) Impeller: precision casting 316L (1.4404)
Connections	Thread DIN 11851
Nominal width of connections	Suction side DN 50–80, pressure side DN 40–65
Mechanical seal	Single mechanical seal, material carbon/stainless steel/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: IEC-Motor, 3×380/400/415 V/50 Hz, IP 55, ISO-Class F, incl. PTC thermistor, IE3
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 40 m³/h
Flow rate 60 Hz	Max. 35 m³/h
Pump head 50 Hz	Max. 160 m
Pump head 60 Hz	Max. 230 m
Housing pressure	25 bar
Certificates	CERTIFIED EHEDG TYPE EL - CLASS I* FDA

* registered for recertification

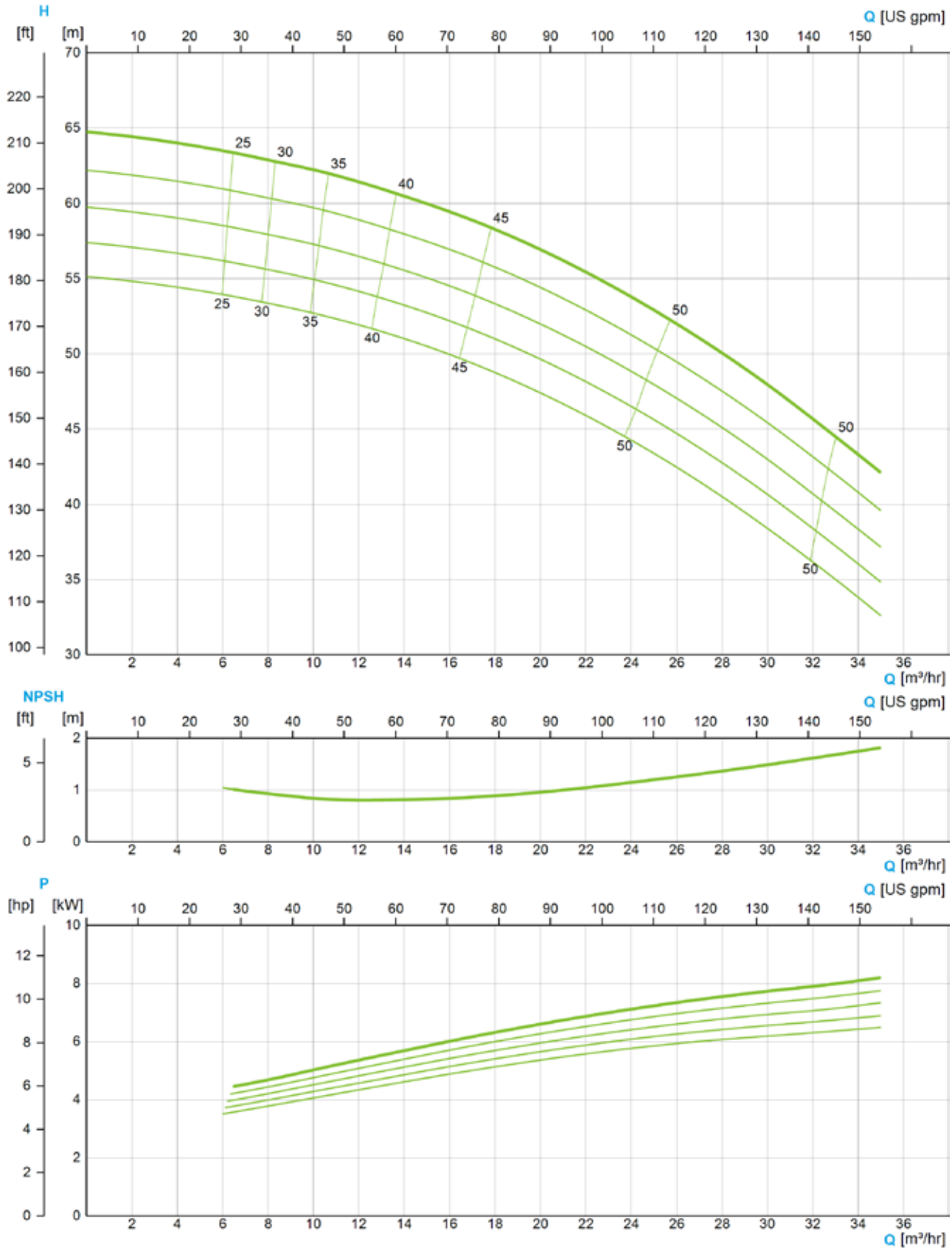




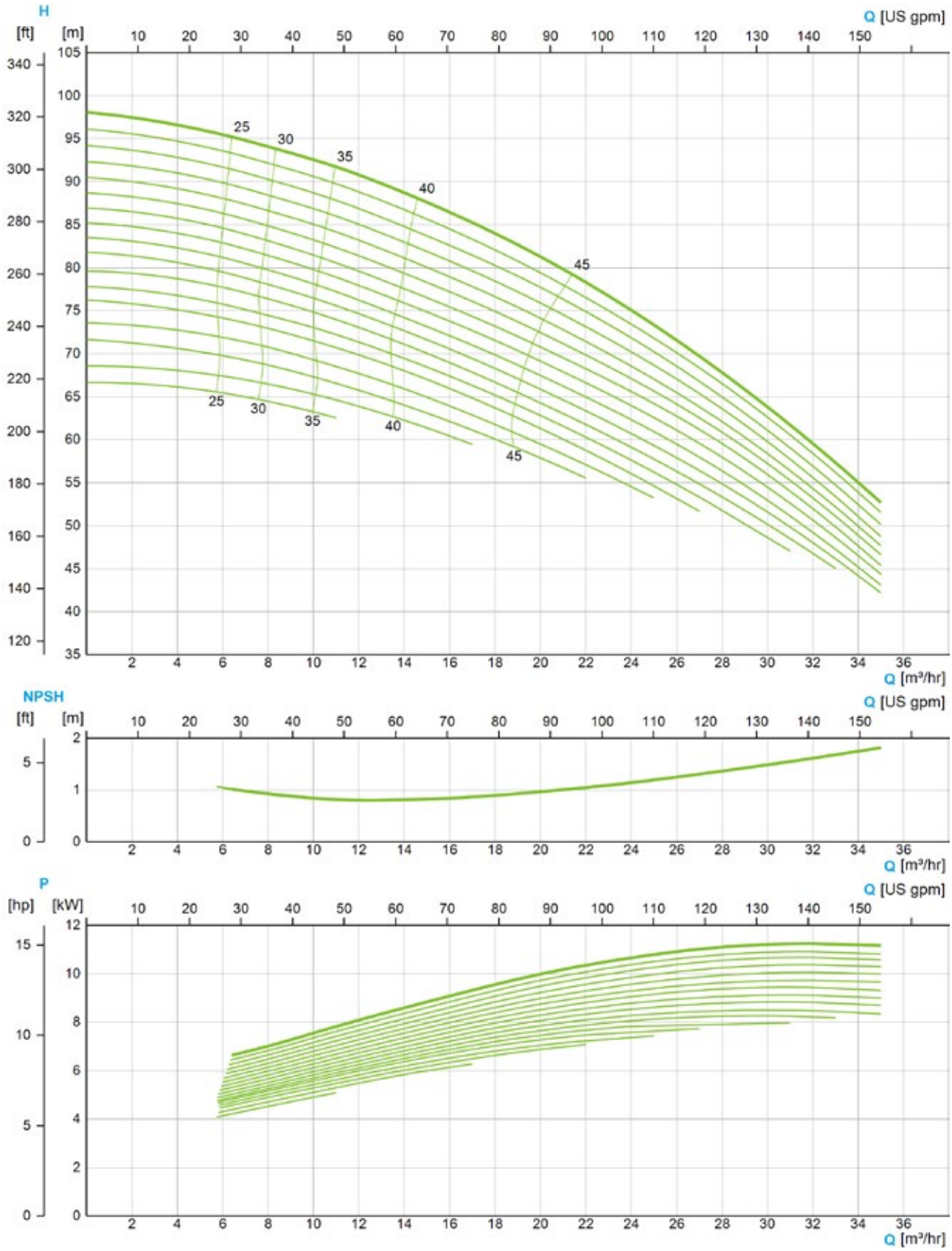
2-pole

				Standard		tronic		
P2 [kW]	IEC-size	b [mm]	p_6 [mm]	k_3(1) [mm]	u(1) [mm]	k_3(1) [mm]	u(1) [mm]	Weight [kg]
4.0	112M	0	250	380	185	334	201	135
5.5	132S	20	300	450	205	365	201	162
7.5	132S	20	300	450	205	389	237	171
11.0	160M	51	350	570	260	406	237	198
15.0	160M	51	350	570	260	471	308	206
18.5	160L	51	350	580	260	515	308	227
22	160L	On request						

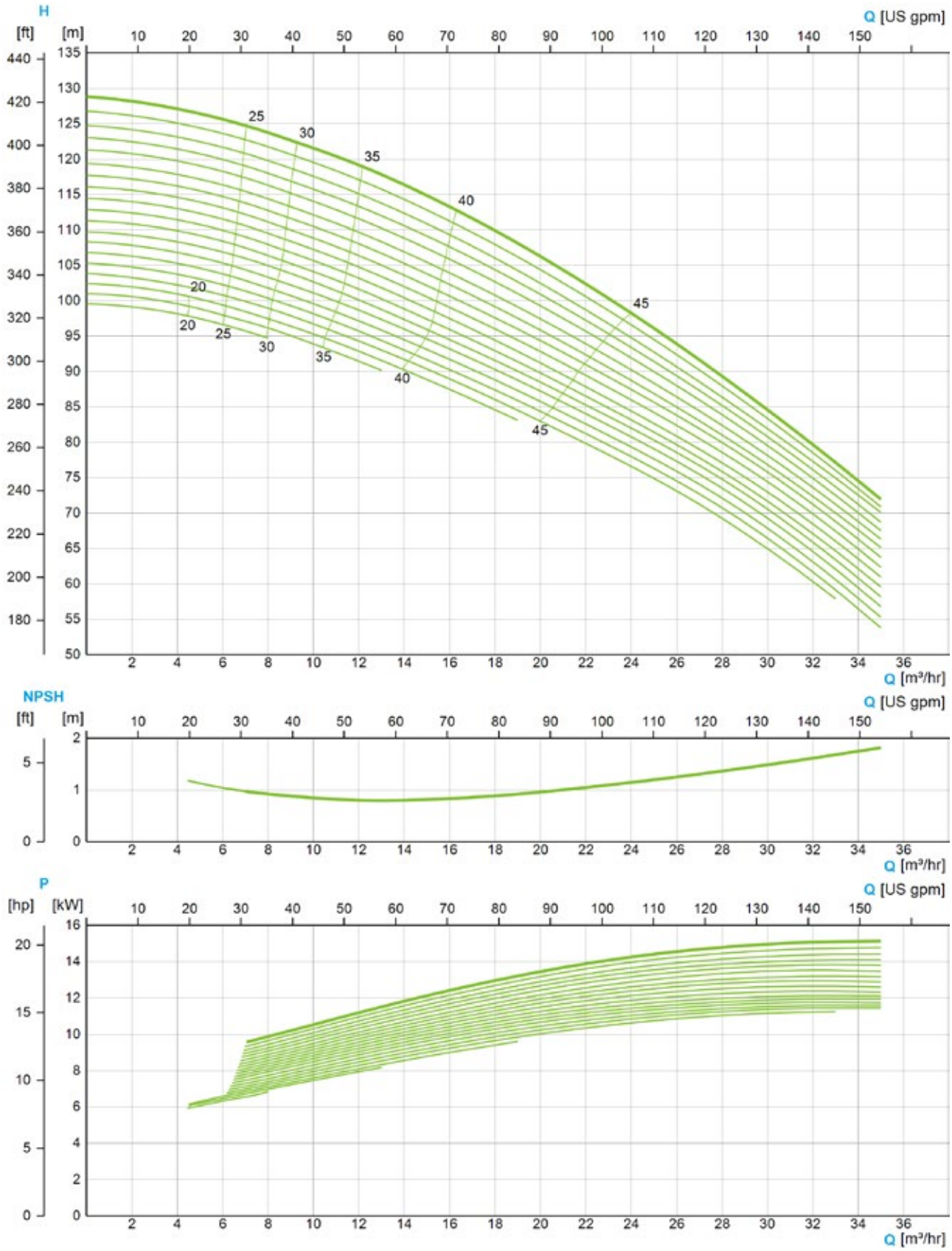
Dimensions depend on the casing size (DN_S, DN_D, a1, h2, h3, e1, e5). See table of connections.
(1) Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.
Weight: net-weight without packaging



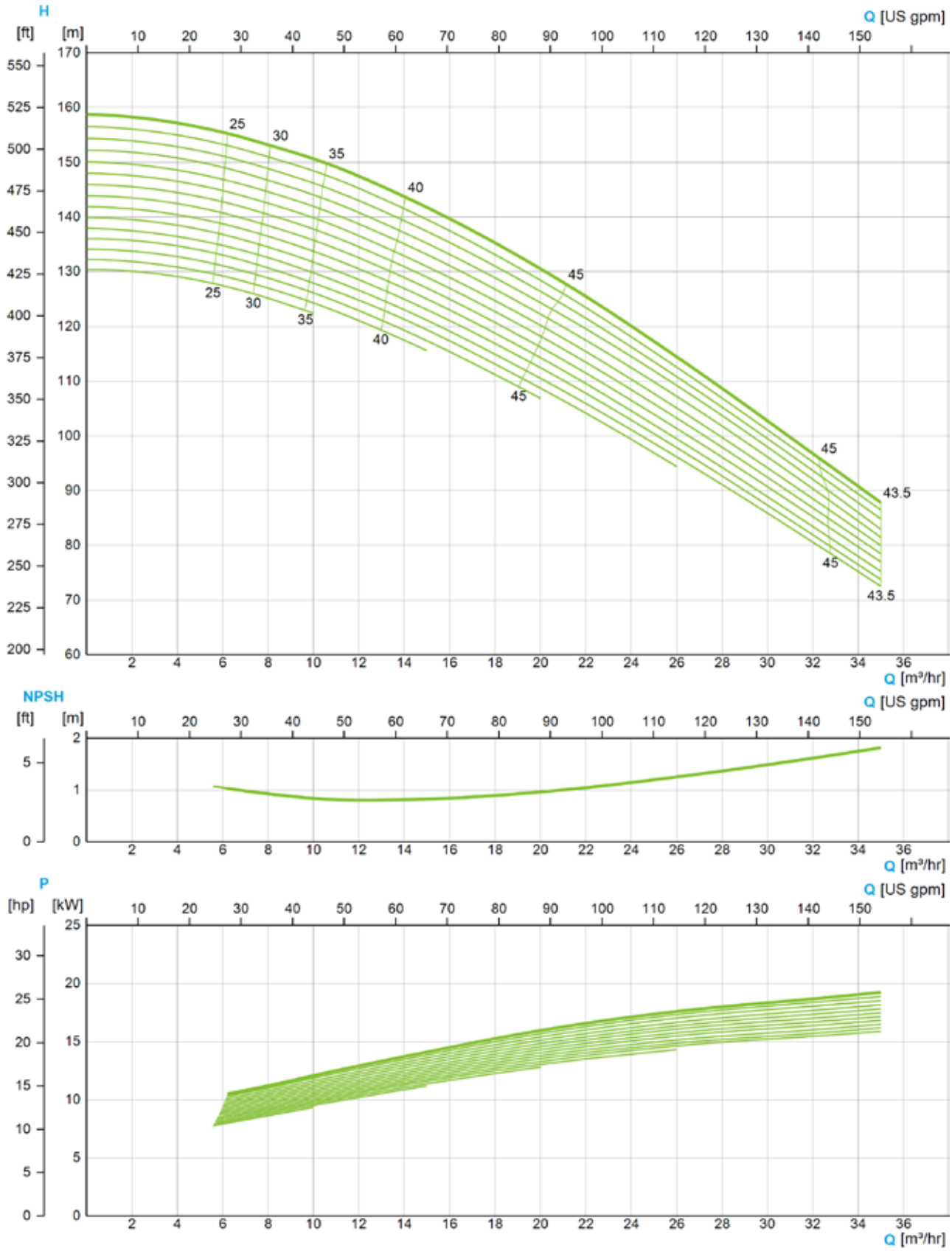
The flow charts are based on water, temperature 20 °C



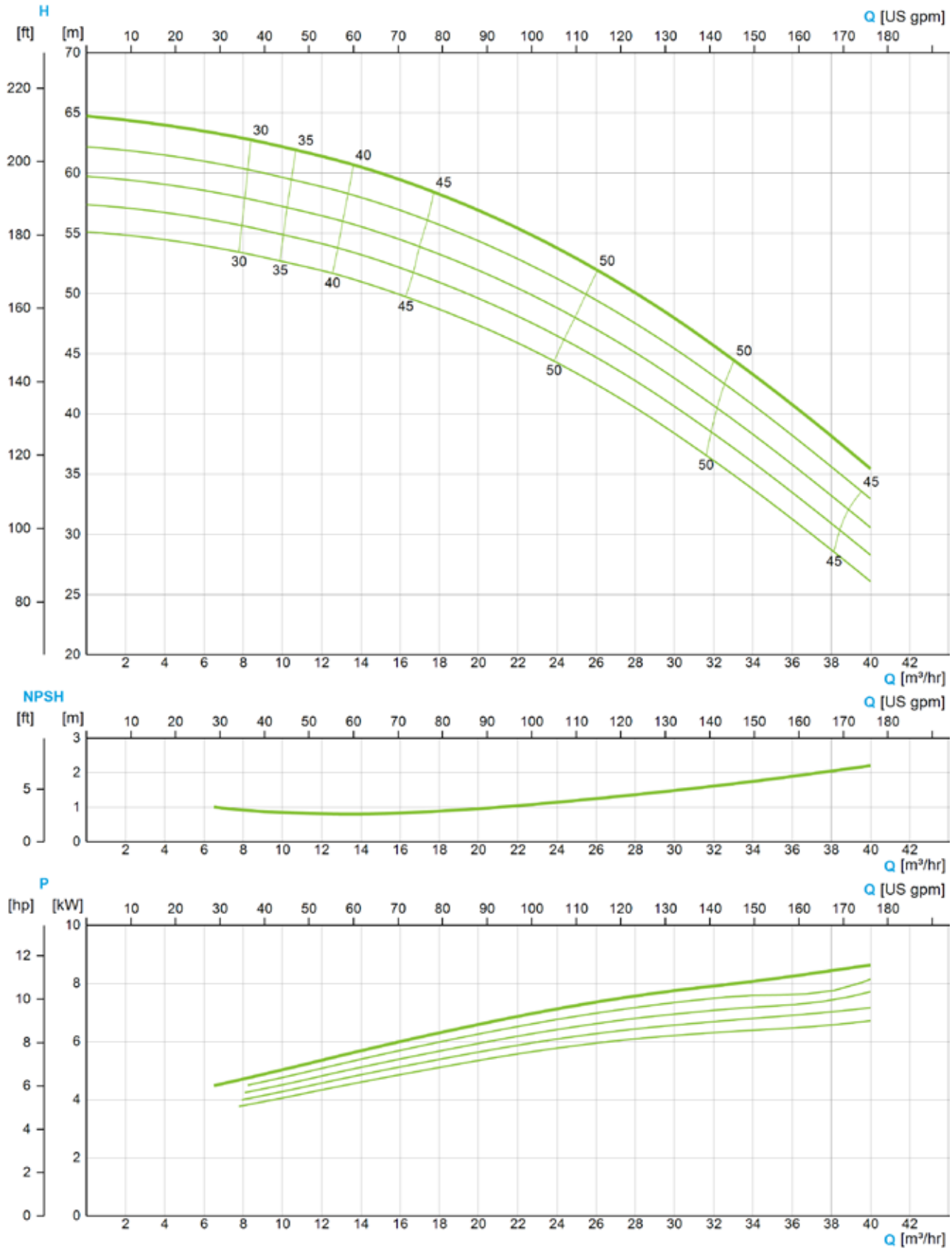
The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



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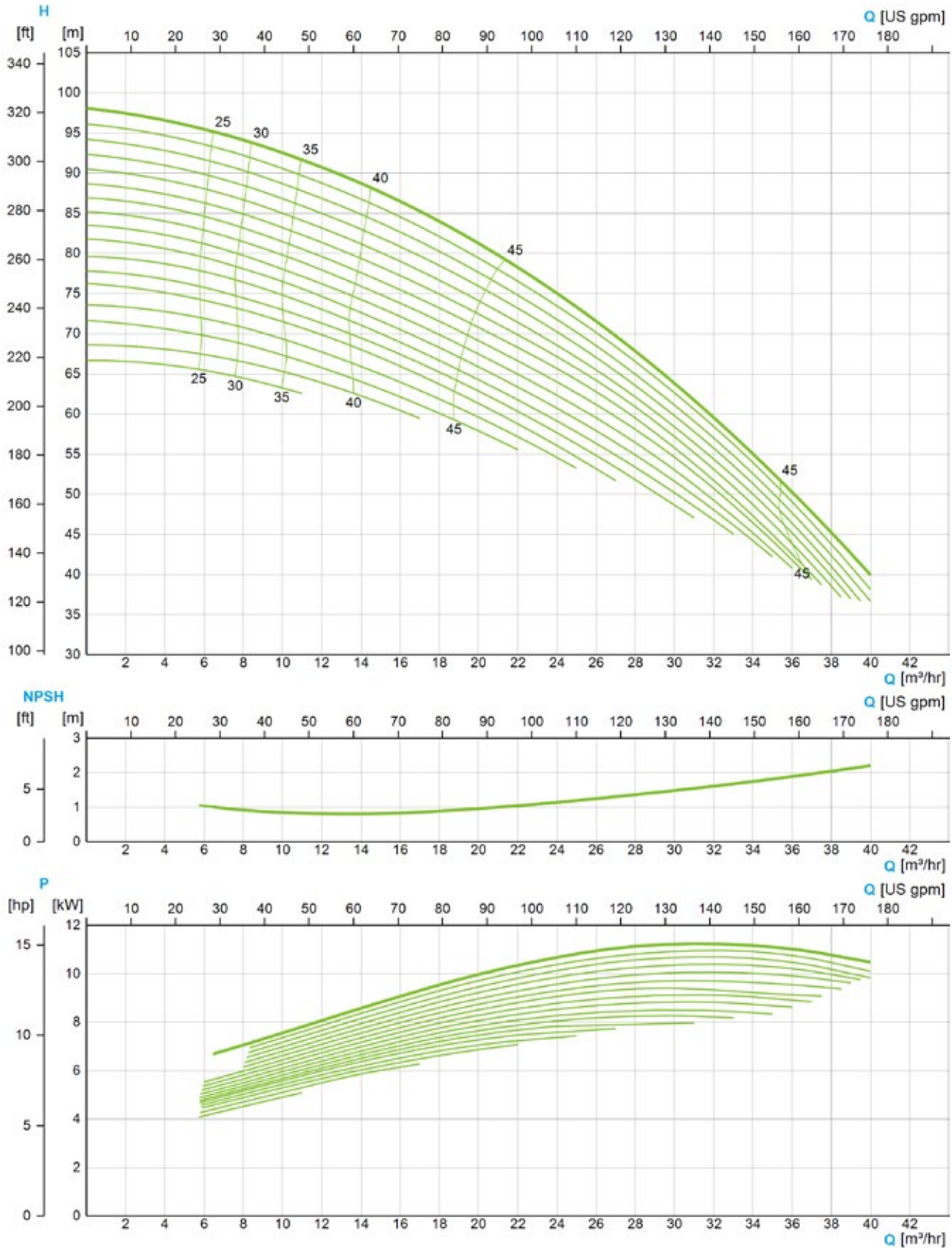
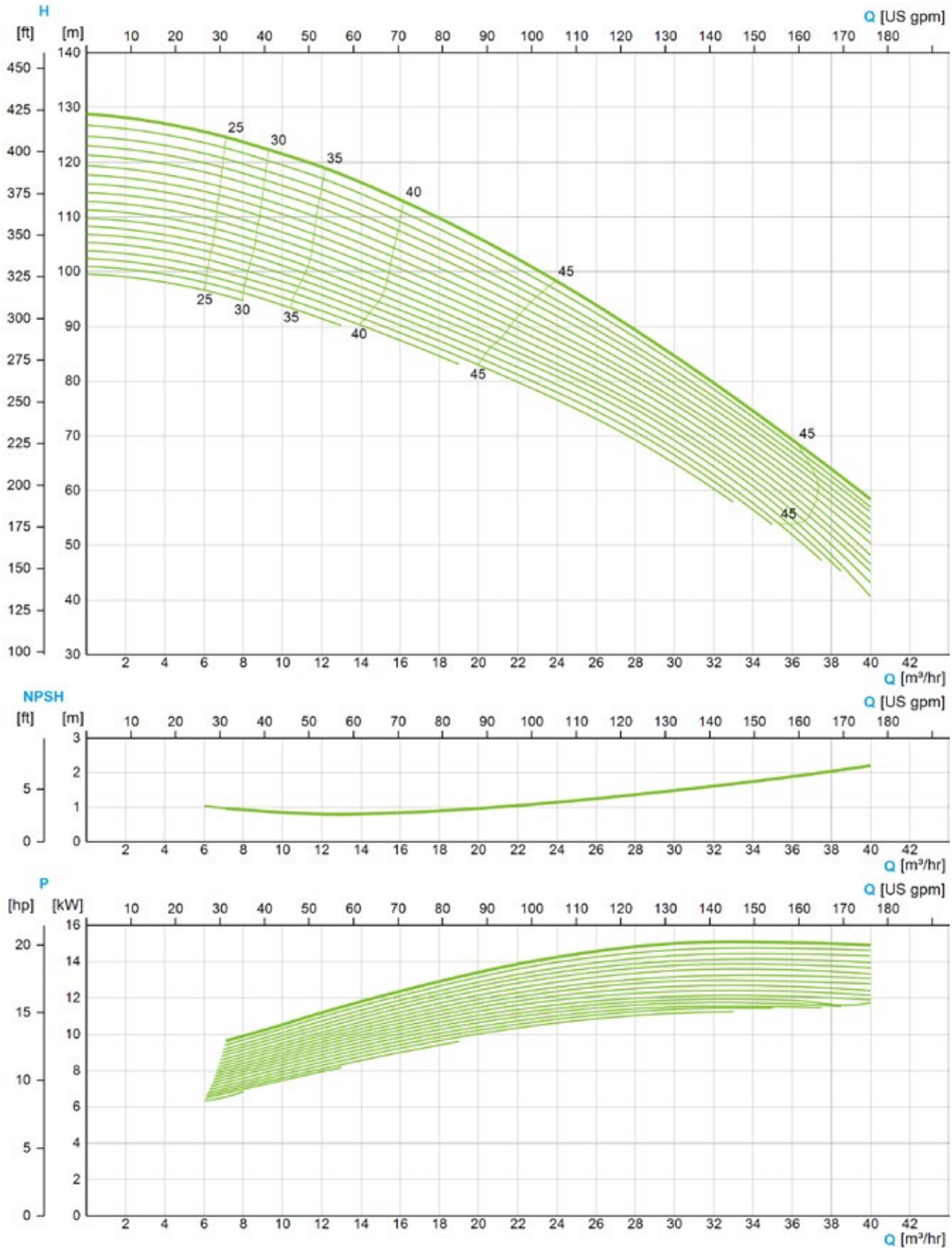
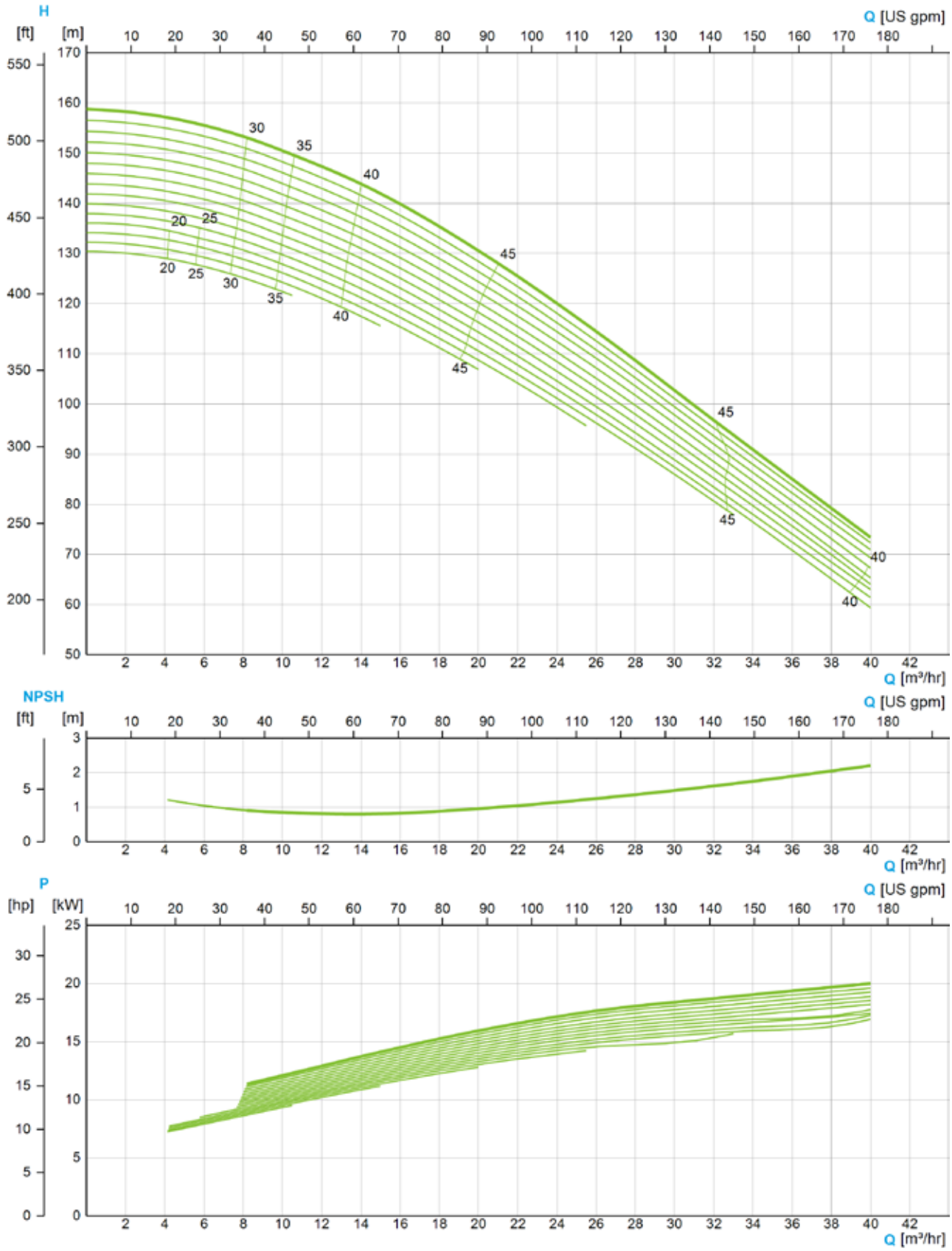


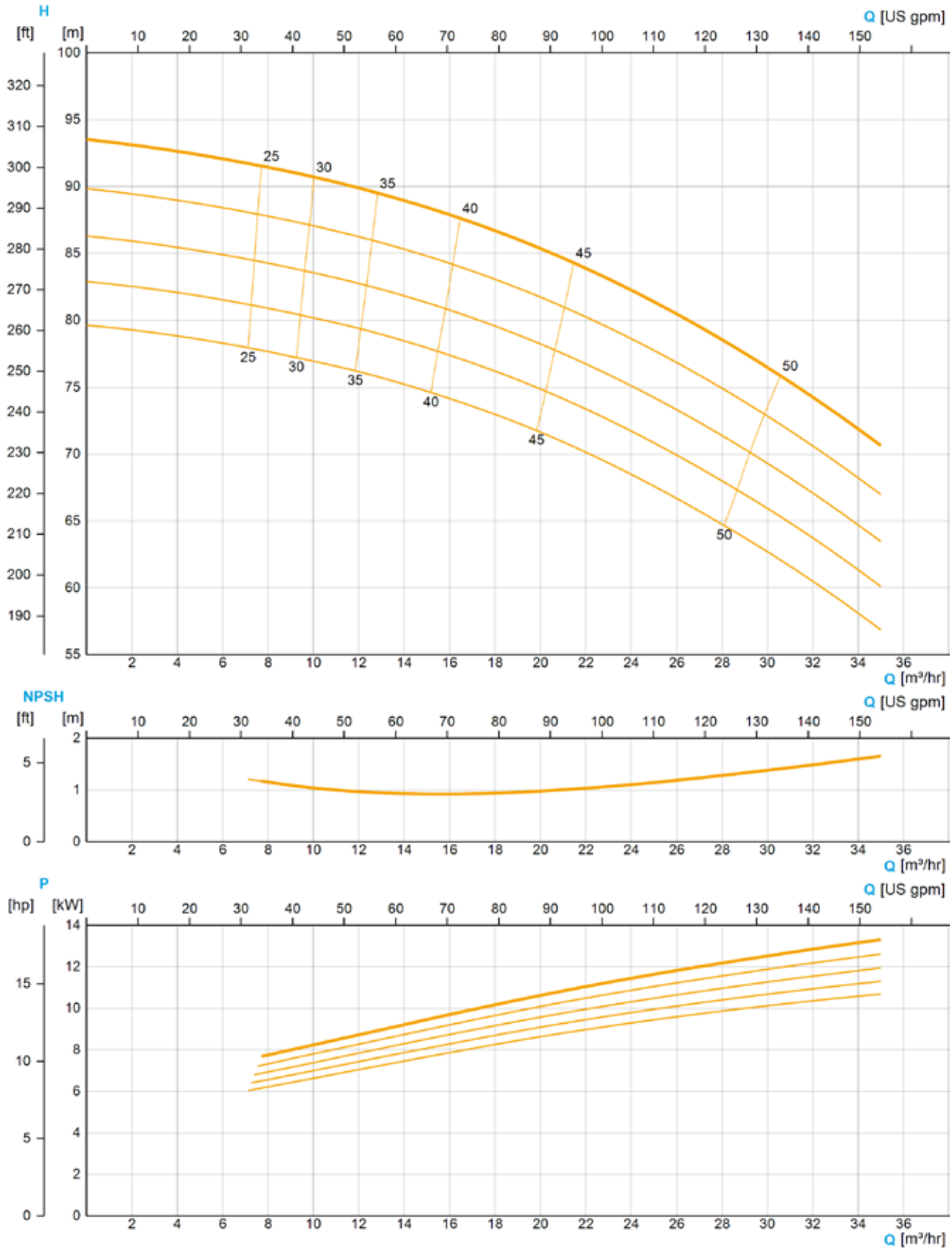
The flow charts are based on water, temperature 20 °C



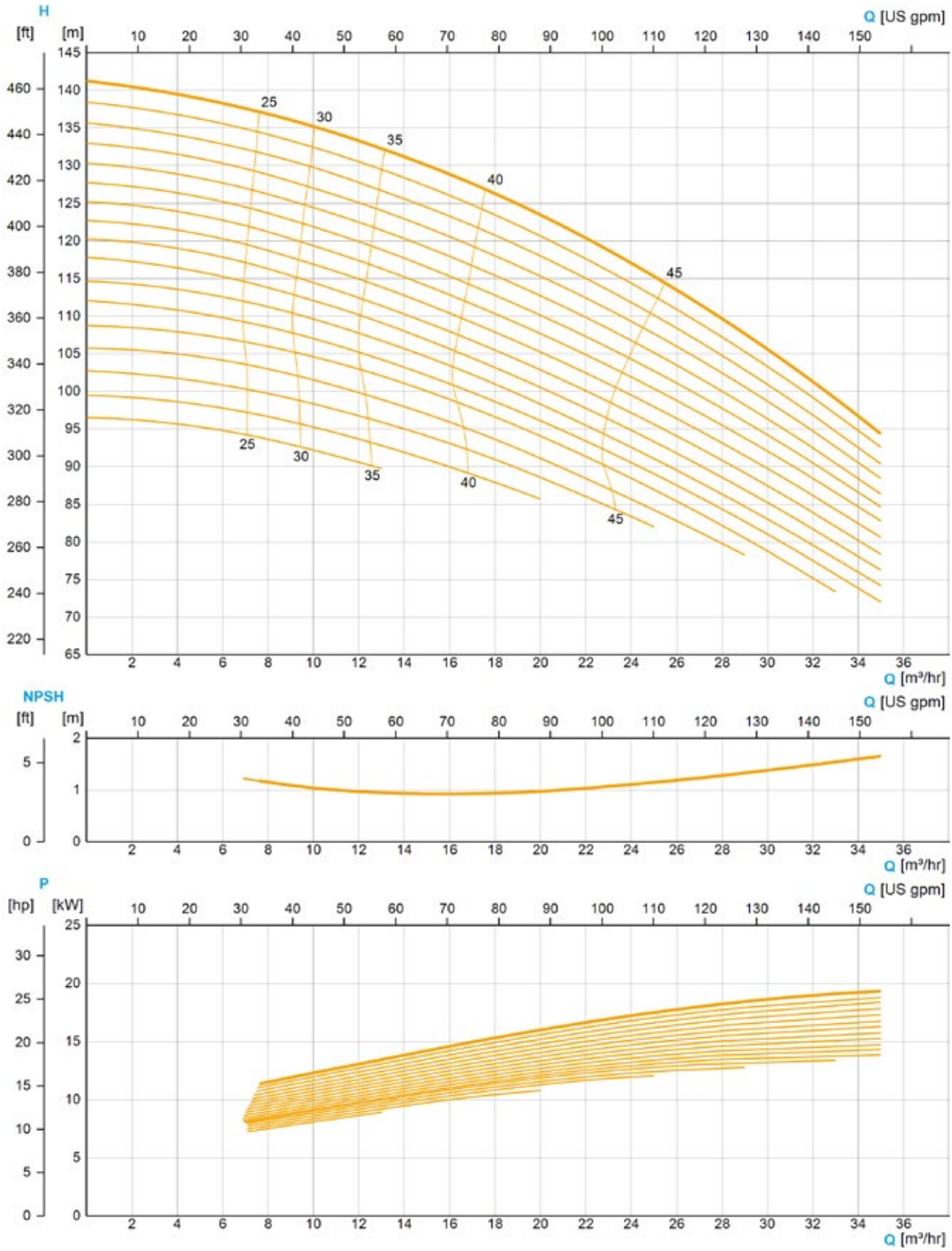
The flow charts are based on water, temperature 20 °C



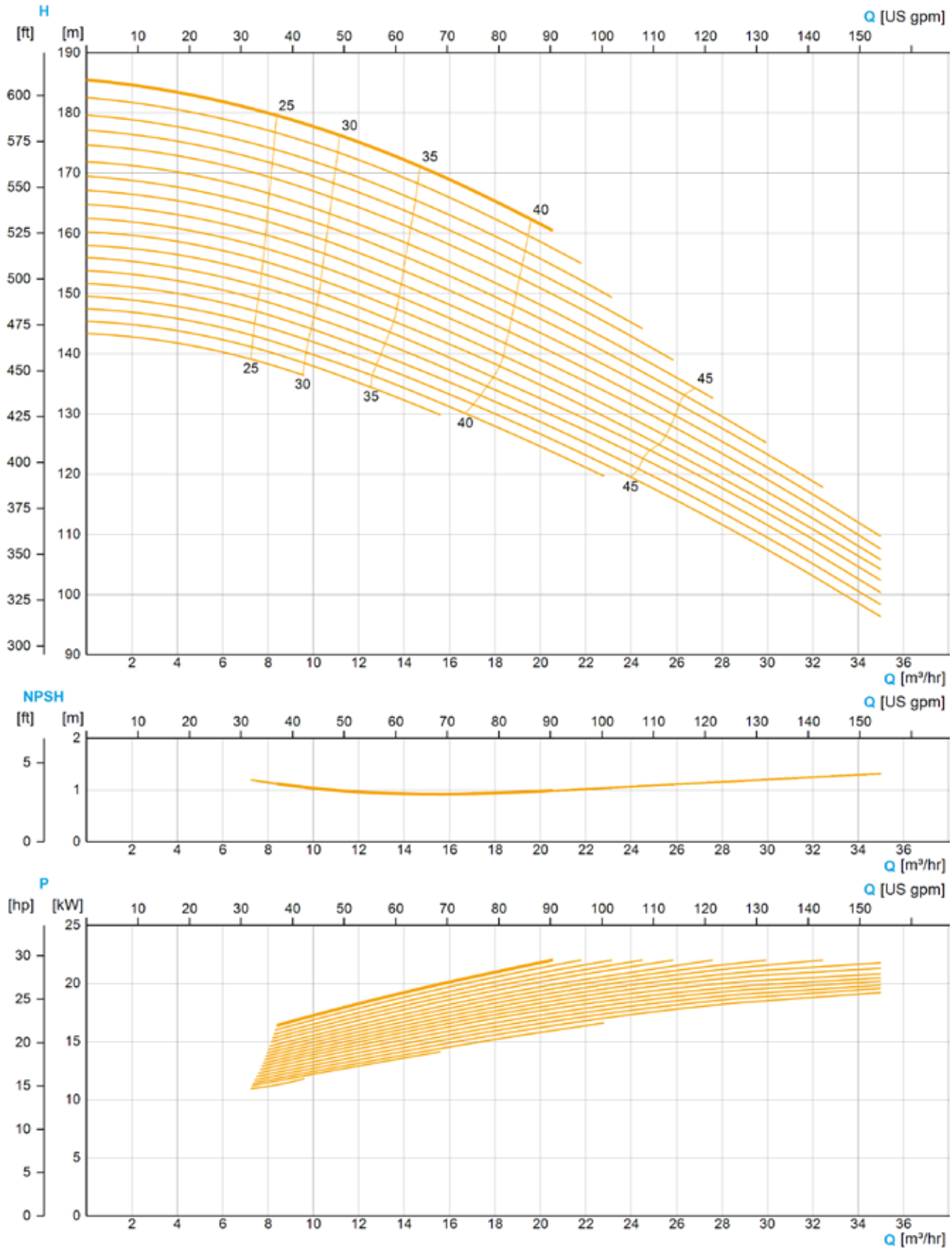
The flow charts are based on water, temperature 20 °C



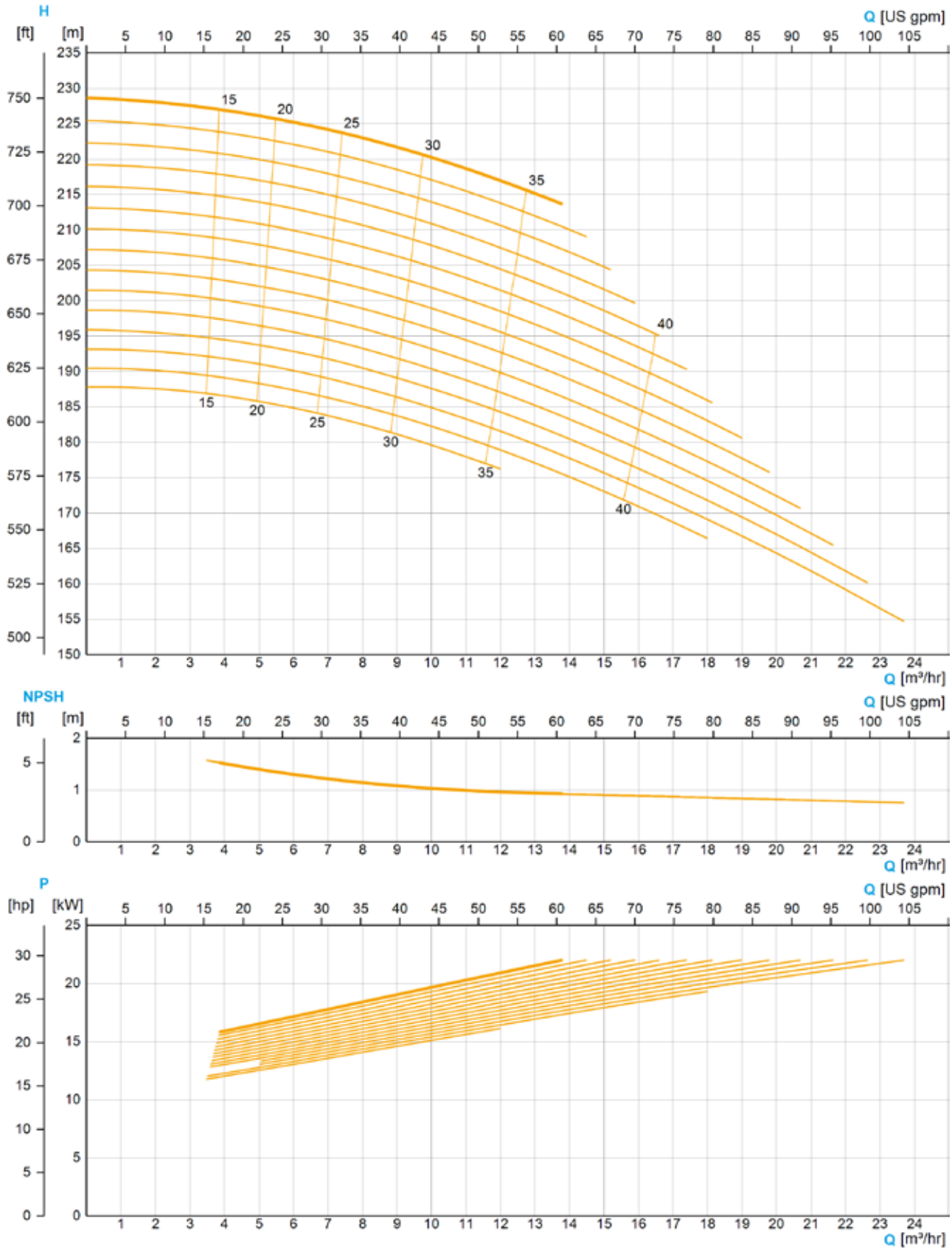
The flow charts are based on water, temperature 20 °C



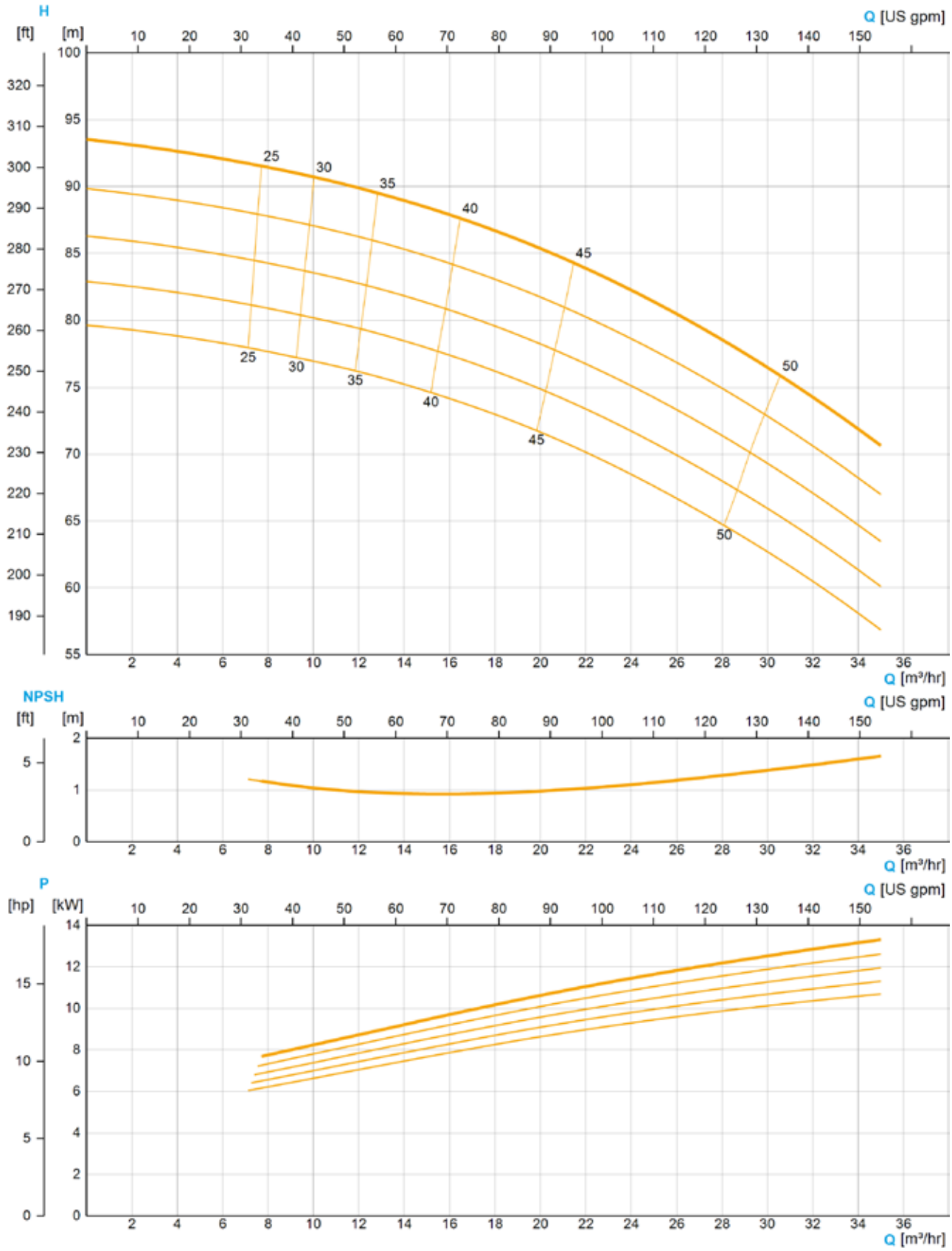
The flow charts are based on water, temperature 20 °C



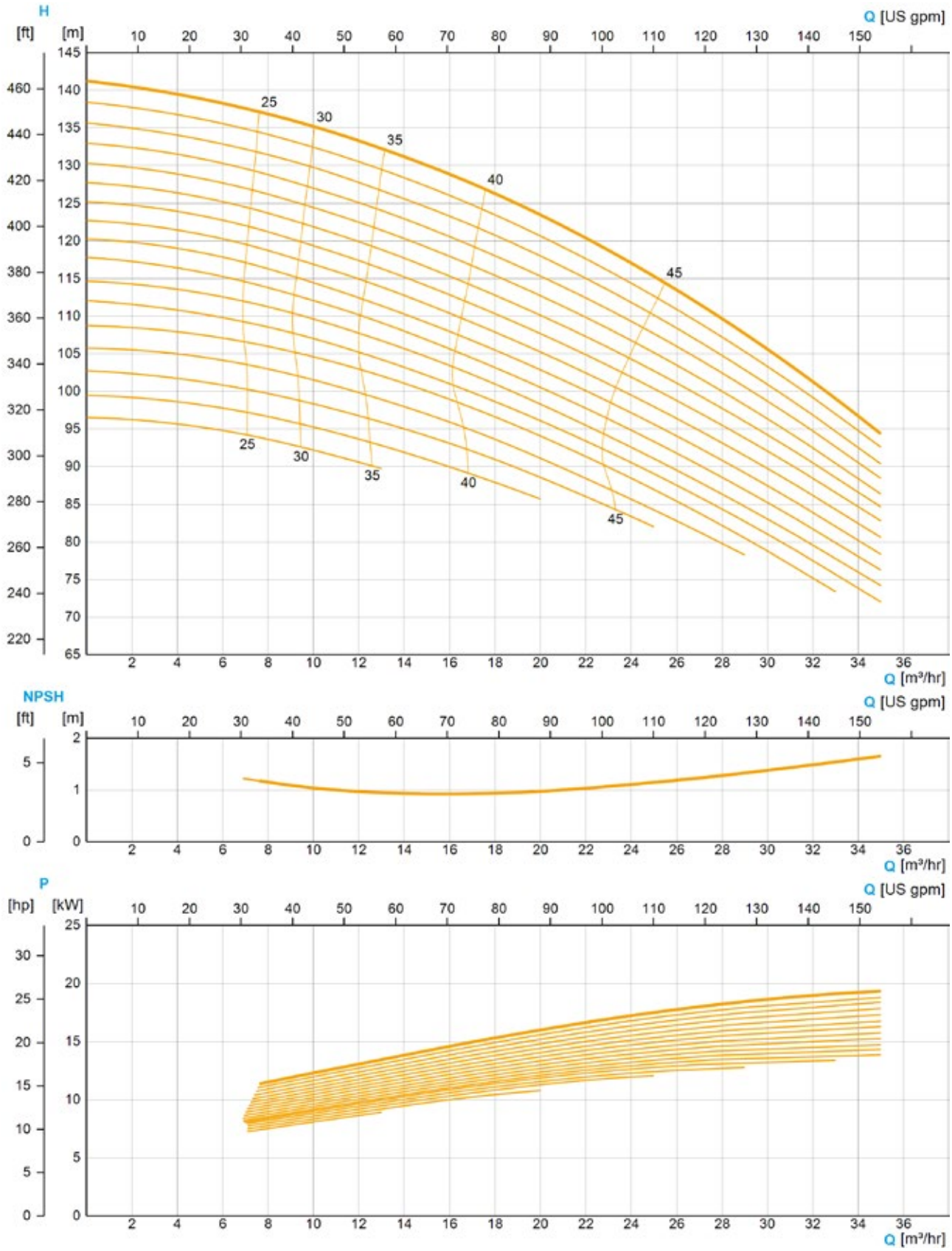
The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



The flow charts are based on water, temperature 20 °C



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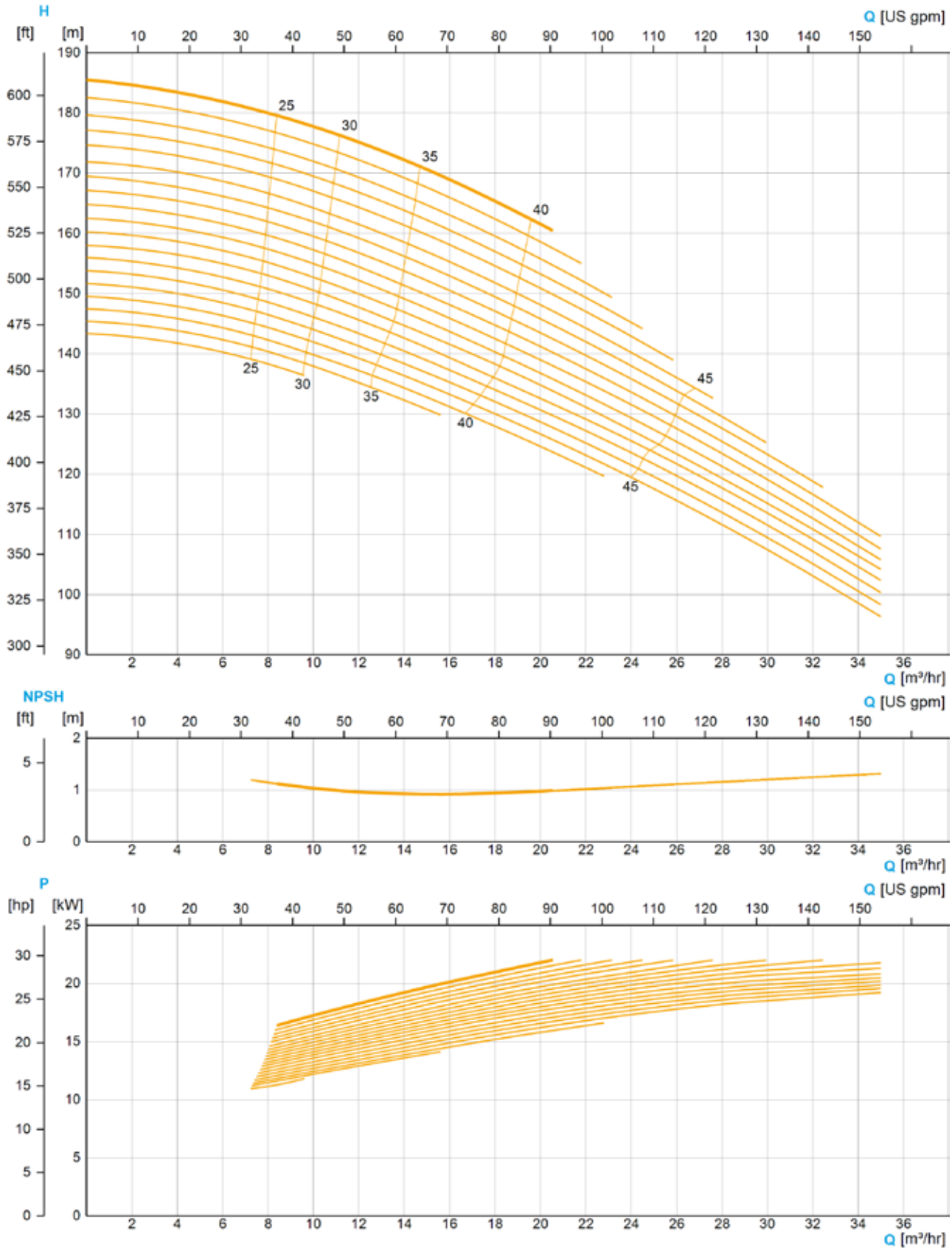

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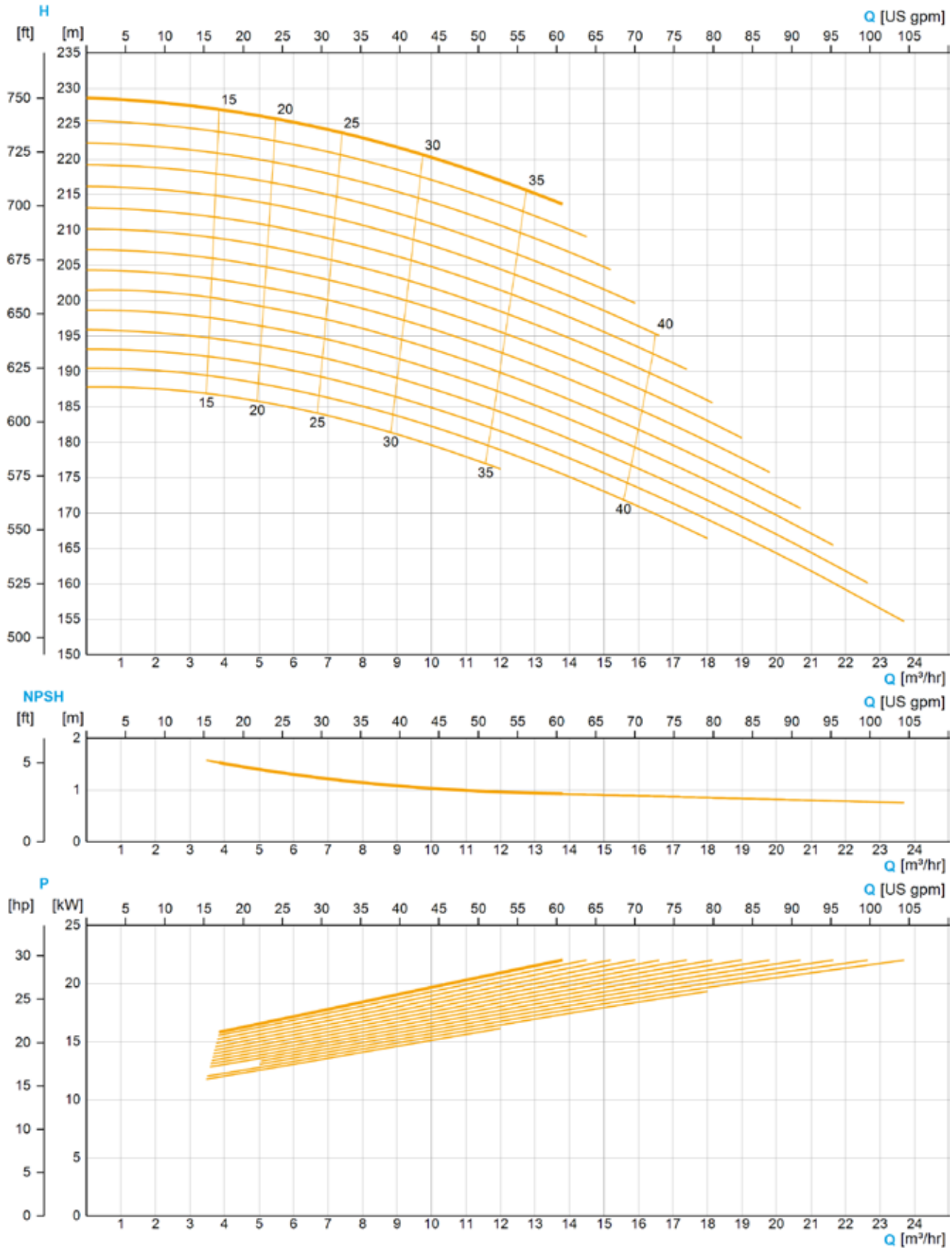

The flow charts are based on water, temperature 20 °C

INQUIRY SHEET · CENTRIFUGAL PUMPS 1/2

engineering for a better world

GEA Hygienic Pumps

Contact Data

Company:

Contact Person: E-mail:

Phone: Country:

Preferred Range

☐ VARIPUMP ☐ SMARTPUMP ☐ No requirement

Liquid Data

*Liquid: Solids: ☐ No ☐ Yes:

*Liquid temperature [°C / °F]: Kind of solids:

*Density [kg/dm³]: Size of solids [mm]:

*Viscosity [mPas]: Abrasive: ☐ No ☐ Yes

Concentration [%]:

Operating Conditions

*Duty point 1 *Flow [m³/h/gpm]: *Head [m lc]:

Duty point 2 Flow [m³/h/gpm]: Head [m lc]:

☐ End-suction pump: ☐ Self-priming pump:

Inlet pressure (NPSHa) [m]: Suction head [m]:

Vacuum at inlet: ☐ No ☐ Yes: Gas content: ☐ No ☐ < 5 % ☐ > 5 %

Vacuum, abs. [mbar]:

System pressure [bar]:

Cleaning / Sterilization

CIP: ☐ No ☐ Yes: SIP: ☐ No ☐ Yes:

CIP Temperature [°C / °F]: SIP Temperature [°C / °F]:

CIP Flow [m³/h/gpm]: SIP Duration [min]:

CIP Head [m Fls]:

Pump execution

***Connection Type**

☐ Tri Clamp (DIN 32676) ☐ ANSI Flange ☐ DIN 11851

☐ DIN 11853-2 / 11864-2 ☐ Other:

Connection Size DN_I/DN_O:

Other:

Drainable: ☐ No ☐ Yes

Execution and Design

☐ Pump in Bloc version with motor

☐ Pump in long coupled version with base plate and standard motor

☐ With stainless steel motor shroud

☐ 3-A stainless steel adjustable feet

☐ Combi foot

☐ On Trolley

☐ Cast iron foot

☐ Stainless steel foot

☐ Motor foot

☐ Horizontal

☐ Vertical

☐ Vertical with stainless steel stand

INQUIRY SHEET · CENTRIFUGAL PUMPS 2/2

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GEA Hygienic Pumps

Surface Roughness

- ☐ Not specified
- ☐ $R_a \leq 3.2$ µm
- ☐ $R_a \leq 0.8$ µm
- ☐ $R_a \leq 0.4$ µm

Ferrite Content

- ☐ Not specified
- ☐ Fe < 1%

Shaft Seal

- ☐ Single mechanical seal
- ☐ Flushed mechanical seal

Material Shaft Seal

- ☐ Carbon/Stainless Steel
- ☐ SiC/SiC
- ☐ Carbon/SiC
- ☐ other: _____

Elastomer

- ☐ EPDM
- ☐ FKM (Viton)
- ☐ other: _____

Motor Data

Power supply:

- ☐ 3~ 400V/50 Hz
- ☐ 3~ 200V/50 Hz
- ☐ other: _____
- ☐ 3~ 460V/60 Hz
- ☐ 3~ 200V/60 Hz
- ☐ 3~ 380V/60 Hz

Motor speed [1/min]: _____

PTC-Thermistors: ☐ No ☐ Yes

2 wire-Thermistors: ☐ No ☐ Yes

Variable speed drive ☐ No ☐ Yes:

- ☐ External frequency converter (not on motor)
- ☐ Integrated frequency converter (on motor)

Explosion protection ☐ No ☐ Yes

ATEX ☐ No ☐ Yes:

Ex-Zone: _____

Temperature class: _____

Ambient temperature [°C/°F]: _____

EXP Motor ☐ No ☐ Yes:

Temperature class: _____

Ambient Temperature [°C/°F]: _____

Class: _____

Division: _____

Group: _____

Certificates/Documentation

- ☐ 3-A Sanitary Standard certification
- ☐ Inspection certificate 3.1 acc. to DIN EN 10204
- ☐ Test report 2.2 acc. to DIN EN 10204
- ☐ EHEDG certification
- ☐ Further certificates and documentation: _____
- ☐ FDA declaration of conformity
- ☐ Surface roughness test report
- ☐ Delta ferrite test report

Further Information

** Fields marked with an asterisk are mandatory for a pump selection*

V1.0-2018

2.1		Works certificate according to DIN EN 10204: Declaration of the compliance with the order. This certificate is issued by the manufacturer.
2.2		Test report according to DIN EN 10204: Declaration of the compliance with the order under specification of the results of non specific tests. This certificate is issued by the manufacturer.
3.1		Inspection certificate 3.1 according to DIN EN 10204: Declaration of the compliance with the order under specification of the results of spcific tests. This certificate is issued by an authority which is independent of manufacturing and is validated by the manufacturers authorised inspection representative
3-A		3-A Sanitary Standards, Inc. (3-A SSI) is an independent, non-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries.
AS-i		Actuator Sensor interface. BUS system for the lowest field level.
ASME-BPE		Standard of the ASME's – bioprocessing equipment association
ATEX		Atmosphères Explosibles. ATEX comprises the directives of the European Union in the area of explosion protection. For one thing, this is the ATEX equipment directive 94/9/EC, for another, the ATEX workplace directive 1999/92/EC.
cCSAus		Test of a product by CSA according to applicable safety standards in Canada and the USA.
CE		Conformité Européenne. By affixing the CE mark, the manufacturer confirms that the product complies with the European directives applicable to the specific product.
CSA		Canadian Standards Association. A non-governmental Canadian organization which issues standards as well as checking and certifying the safety of products. It is now globally active.
cULus		Test of a product by UL according to applicable safety standards in Canada and the USA.
DIN EN ISO 9001:2015		This norm is the basis for a multitude of varied organizations in different industries worldwide for quality assurance and quality management. It is the most widespread standards of ISO (International Organisation for Standardization).
EAC		Euroasion conformity. The symbol is used similar to the European CE mark. The manufacturer or supplier confirms that the machine has passed all necessary compliance procedures in ohne of the Member States of the customs union.
EG 1935/2004		Materials in contact with the product used in pumps from GEA Hilge are in accordance with EC regulation 1935/2004. This defines a general framework for materials and objects intended to come into contact with foodstuffs.
EHEDG		European Hygienic Engineering & Design Group. European supervisory authority for foodstuffs and pharmaceuticals. This authority issues approvals and certificates for products and materials that are used in the foodstuffs and pharmaceuticals industries.
FDA		Food and Drug Administration. US supervisory authority for foodstuffs and pharmaceuticals. This authority issues approvals and certificates for products and materials that are used in the foodstuffs and pharmaceuticals industries.
QHD		The QHD (Qualified Hygienic Design) is a two-phase testing system for the hygienic design and cleanability of components, machinery and plants for aseptic or sterile applications. The system ensures that all surfaces can be cleaned in place (CIP). The QHD symbol is used by manufacturers to indicate compliance with the QHD criteria.
UL		Underwriters Laboratories. An organization founded in the USA for checking and certifying products and their safety.
USP Class VI		The United States Pharmacopeial Convention (USP) is a scientific nonprofit organization that sets standards to help protecting public health. Class VI administer tests and impacts of material and their substances on animal and human tissues.

Abbreviation	Explanation
°C	Degrees Celsius, unit of measurement for temperature
°F	Degrees Fahrenheit, unit of measurement for temperature
3D	Three-dimensional
A	Ampere, unit of measurement of current intensity or Output, term used in automation
AC	Alternating Current
ADI free	All elastomer compounds are free of animal-derived ingredients
AISI	American Iron and Steel Institute, association of the American steel industry
ANSI	American National Standards Institute, American body for standardizing industrial processes
approx.	approximately
AS-i	Actuator Sensor interface, standard for fieldbus communication
ASME	American Society of Mechanical Engineers, professional association of mechanical engineers in the USA
ASME-BPE	Standard of the ASME's – bioprocessing equipment association
ATEX	Atmosphères Explosibles, synonymous with the directives of the European Union for potentially explosive areas
bar	Unit of measurement for pressure. All pressure values [bar/psi] refer to positive pressure [bar_g/psi_g], unless specifically stated otherwise.
bar_g	Unit of measurement for pressure relative to atmospheric pressure
CAN	Controller Area Network; asynchronous serial bus system
CE	Conformité Européenne, administrative symbol for the free movement of industrial products
CIP	Cleaning In Place, designates a process for cleaning technical process systems.
CRN	Canadian Registration Number, is issued by a Canadian Jurisdiction and covers pressure vessels, fittings, or pressure piping. It is a necessary authorization allowing these components to be in operation in Canada.
CSA	Canadian Standards Association, a non-governmental Canadian Standardization organization
Cv	The Cv value corresponds to the water flow rate through a valve (in US gal / min) at a pressure differential of 1 PSI and a water temperature of 5 °C to 30 °C. kv = 14,28 Cv (USA).
Cvs	The Cv values of a valve at nominal stroke (100 % opening) is designated the Cvs value.
dB	Decibel, one tenth of a bel, named after Alexander Graham Bell and used for identifying levels and dimensions
DC	Direct Current
DIN	Deutsches Institut für Normung e. V. Standardization organization in the Federal Republic of Germany, DIN = synonym for standards issued by the organization

Abbreviation	Explanation
DIP	Dual Inline Package, design of a switch
DN	Diameter Nominal, DIN nominal width
Device Net	Network system used in the automation industry to interconnect control devices for data exchange
E	Input, term used in automation
EAC	Certification of technical confirmity from the customs union of Russia/Balarus/Kazakhstan
Pressure Equipment Directive 97/23/EC	Directive of the European Parliament and the Council Directive for layout and conformity evaluation for pressure equipment and assemblies with a maximim pressure (PS) of more than 0.5 bars.
EG No. 1935/2004	Regulation of the European Parliament which lays down common rules for materials which come, or may come, into contact with food, either directly or indirectly.
EHEDG	European Hygienic Engineering and Design Group. Consortium of equipment manufacturers, food industries, research institutes as well as public health authorities
EN	European standard, rules of the European Committee for Standardization
EPDM	Ethylene propylene diene rubber, acronym acc. to DIN/ISO 1629
Ex	Synonym for ATEX
FDA	Food and Drug Administration, official foodstuffs monitoring in the United States
FEM calculation	Finite Element Method; calculation process for simulating solids
FKM	Fluorinated rubber, acronym acc. to DIN/ISO 1629
GOST	Gosudarstvennyy Standart, Certification of conformity for components according to standards and regulations of the Russian Federation
H	Henry, unit of measurement for inductance
HNBR	Hydrated acrylonitrile butadiene rubber, acronym acc. to DIN/ISO 1629
Hz	Hertz, unit of frequency named after Heinrich Hertz
I	Formula symbol for electrical current
IEC	International Electrotechnical Commission, international standardization organization for electrical and electronic engineering
IP	Ingress Protection/International Protection, index of protection class acc. to IEC 60529
IPS	Iron Pipe Size, American pipe dimension
ISA	International Society of Automation, international US organization of the automation industry
ISO	International Organization for Standardization, international organization that produced international standards, ISO = synonym for standards from the organization
kg	Kilogram, unit of measurement for weight
Kv	The Kv value corresponds to the water flow rate through a valve (in m^3/h) at a pressure differential of 0.98 bar and a water temperature of 5 °C to 30 °C.

Abbreviation	Explanation
Kvs	The Kv values of a valve at nominal stroke (100 % opening) is designated the Kvs value
L	Conductive
LED	Light-Emitting Diode
mm	Millimeter, unit of measurement for length
M	Metric, system of units based on the meter or Mega, one million times a unit
m^3/h	Cubic meters per hour, unit of measurement for volumetric flow
max.	Maximum
NAMUR	Standardization working association for measuring and control technology in the chemical industry, synonym for the interface type of the organization, especially for potentially explosive atmospheres
NC	Normally Closed; valve or solenoid valve control which is closed in idle status
NO	Normally Open; valve or solenoid valve control which is open in idle status
NOT-element	Logic element, NOT gate
NPN	Signal transmission against reference potential, current-consuming
NPT	National Pipe Thread, US thread standard for self-sealing pipe fittings
OD	Outside Diameter, pipe dimension
ODVA	Open DeviceNet Vendor Association, global association for network standards
PA 12/L	Polyamide
Pg	Armoured thread
PN	Nominal pressure for pipeline systems according to EN 1333, rated pressure in bar at room temperature (20 °C)
PNP	Signal transmission against reference potential, current-supplying
PPO	Polyphenylene oxide, thermoplastic material
PS	Maximum permitted operating pressure at which the components can operate safely at maximum allowable temperature (TS)
psi	Unit of measurement for pressure, pound-force per square inch, 1 psi = 6894.75 Pa. All pressure values [bar/psi] refer to positive pressure [bar_g/psi_g], unless specifically stated otherwise.
psi_g	Unit of measurement for pressure relative to atmospheric pressure
PV	Solenoid valve
R_a in µm	Average roughness value, describes the roughness of a technical surface
International Protection-Code IP67, IP66, IP69K	Classifies and rates the degree of protection provided against intrusion dust, accidental contact, and water

Abbreviation	Explanation
SES	GEA Tuchenhagen control head for Ex areas, control top system of GEA Tuchenhagen
SET-UP	Self-learning installation, the SET-UP procedure carries out all necessary settings for generating messages during commissioning and maintenance.
SIP	Sterilization in Place, refers to a process for cleaning technical process systems
SMS	Svensk Mjölk Standard, Scandinavian pipe dimension
SW	Indicates the size of a tool spanner, "Schlüsselweite"
TA-Luft VDI 2440	If a product is certified according to TA Luft it meets the requirements for proof of high grade performance according to TA Luft of 1.0x 10-4 mbar x l / (s x m) at service conditions under the VDI guideline 2440. The product will hence be tested for tightness.
TS	Maximum permitted operating temperature
UL	Underwriters Laboratories, a certification organization established in the USA
USP Class VI	The United States Pharmacopeial Convention (USP) is a scientific nonprofit organization that sets standards to help protecting public health. Class VI administer tests and impacts of material and their substances on animal and human tissues.
UV	Ultraviolet, ultraviolet radiation is a wavelength of light
V	Volt, unit of measurement for voltage
VMQ	High-polymer vinyl methyl polysiloxane, silicone rubber, MVQ = synonym
W	Watt, unit of measurement for power
Y	Control air connection for the working cylinder, designation from pneumatic systems
µ	Micro, one millionth of a unit
Ω	Ohm, the unit of electrical resistance named after Georg Simon Ohm

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GEA is a global technology company with multi-billion euro sales operations in more than 50 countries. Founded in 1881 the company is one of the largest providers of innovative equipment and process technology. GEA is listed in the STOXX® Europe 600 Index. In addition, the company is included in selected MSCI Global Sustainability Indexes.

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