



GEA Hilge HYGIA H

Centrifugal Pumps 50/60 Hz
Launch-Catalog

Legal notice

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GEA Hilge

Niederlassung der GEA Tuchenhausen GmbH

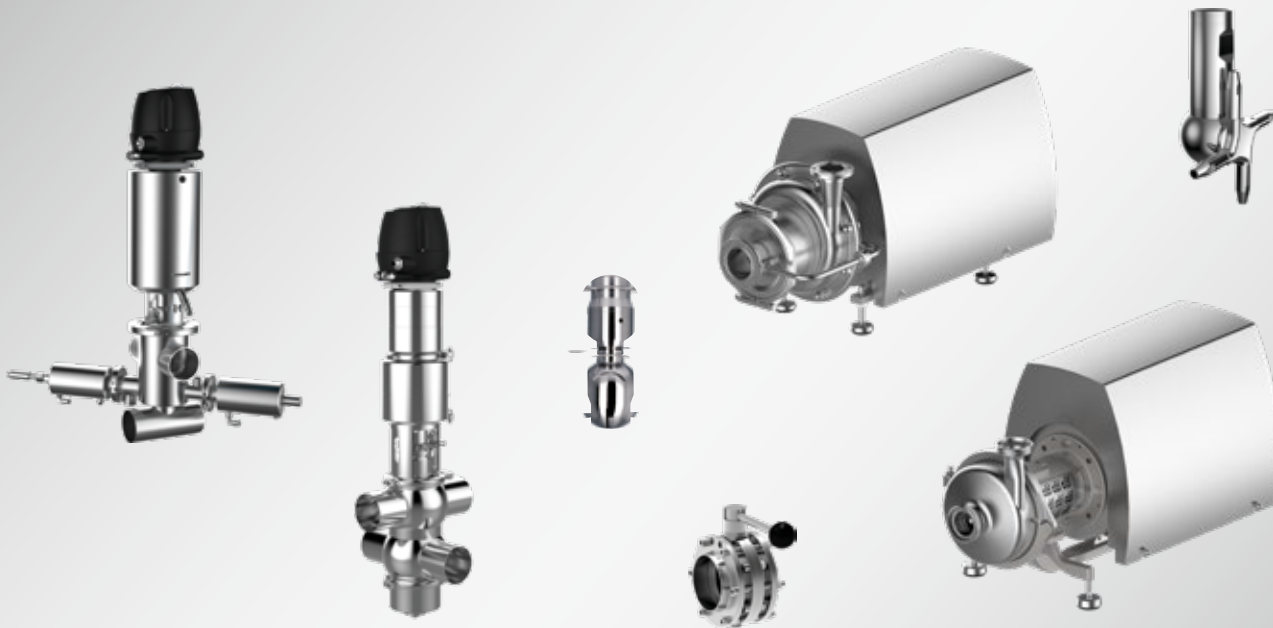
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Regardless of the application – for our customers product quality and profitability are what matters. This is what GEA Flow Components is known for. Our engineers are specialists in everything that flows.

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.



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

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.



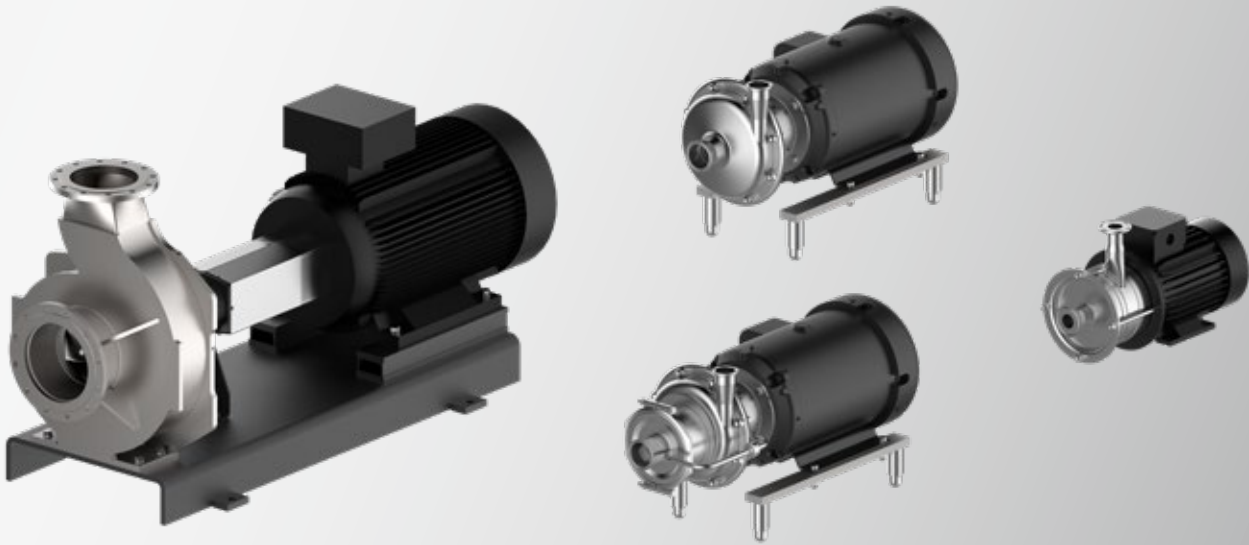
Gentle product handling, continued reliability and economic efficiency are key characteristics of the state-of-the-art hygienic pumps in the GEA Flow Components range.

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

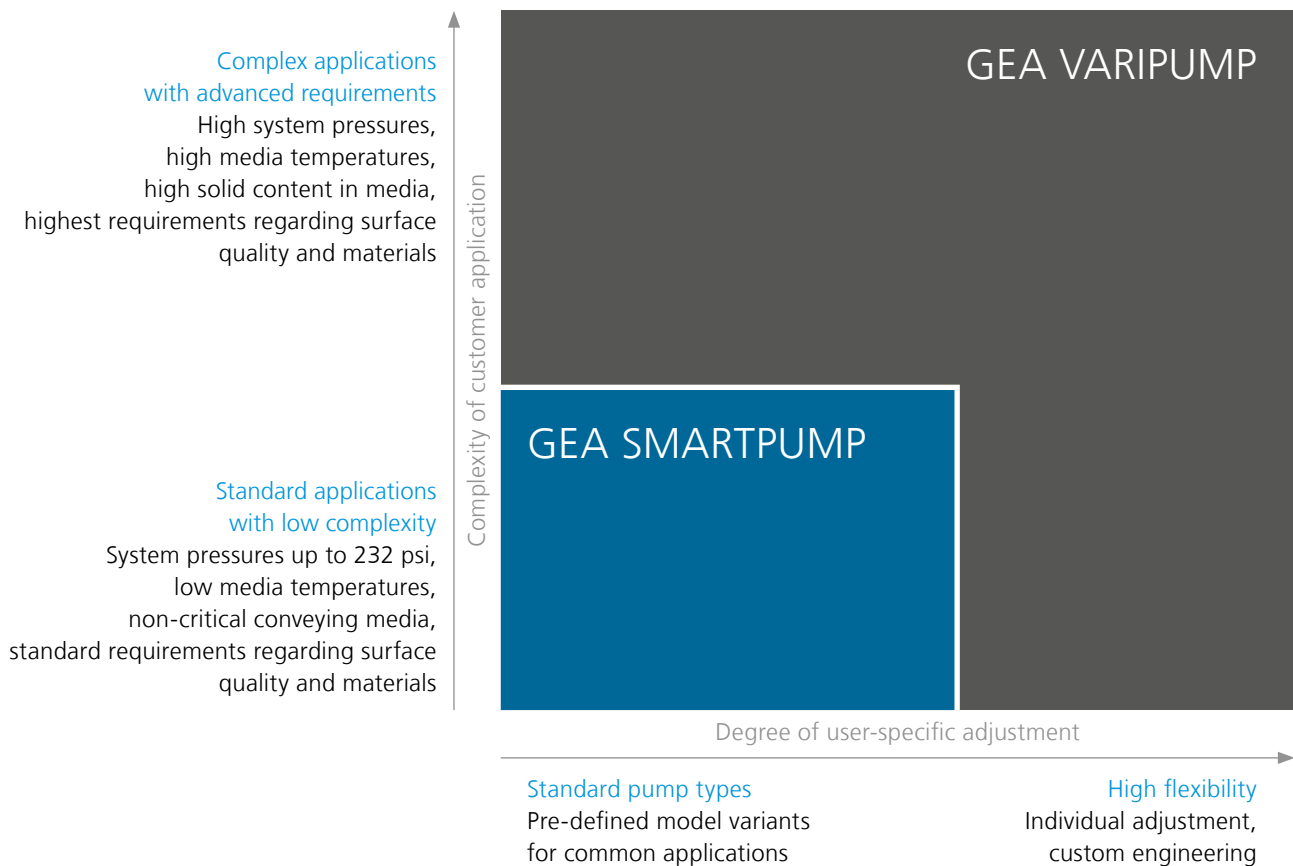
- Lower climate and environmental impact
- Sustainable, environmentally friendly production processes
- High standards for hygienic processing and care of products

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 $R_a \leq 16 \mu\text{in}$ ($0.4 \mu\text{m}$)
- Product-wetted materials according to specific requirements (e.g. no cast parts, $F_e \leq 1\%$ optional)

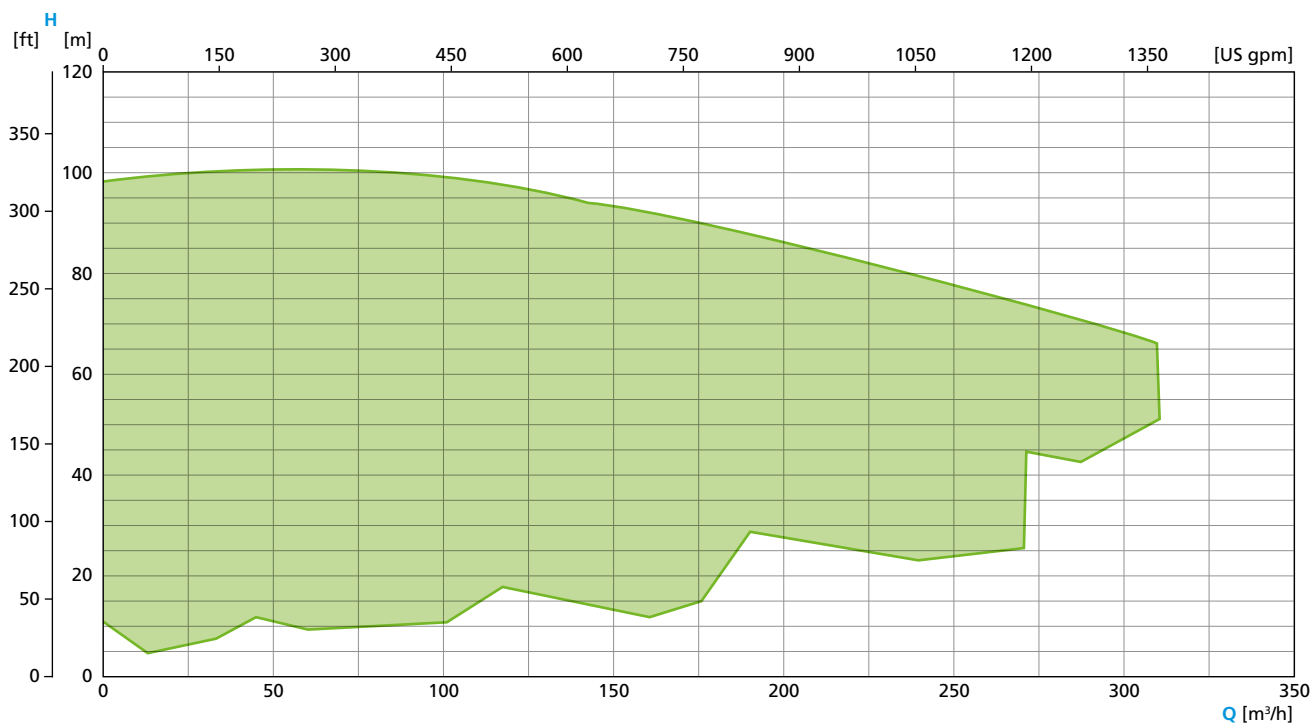
GEA SMARTPUMP

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.

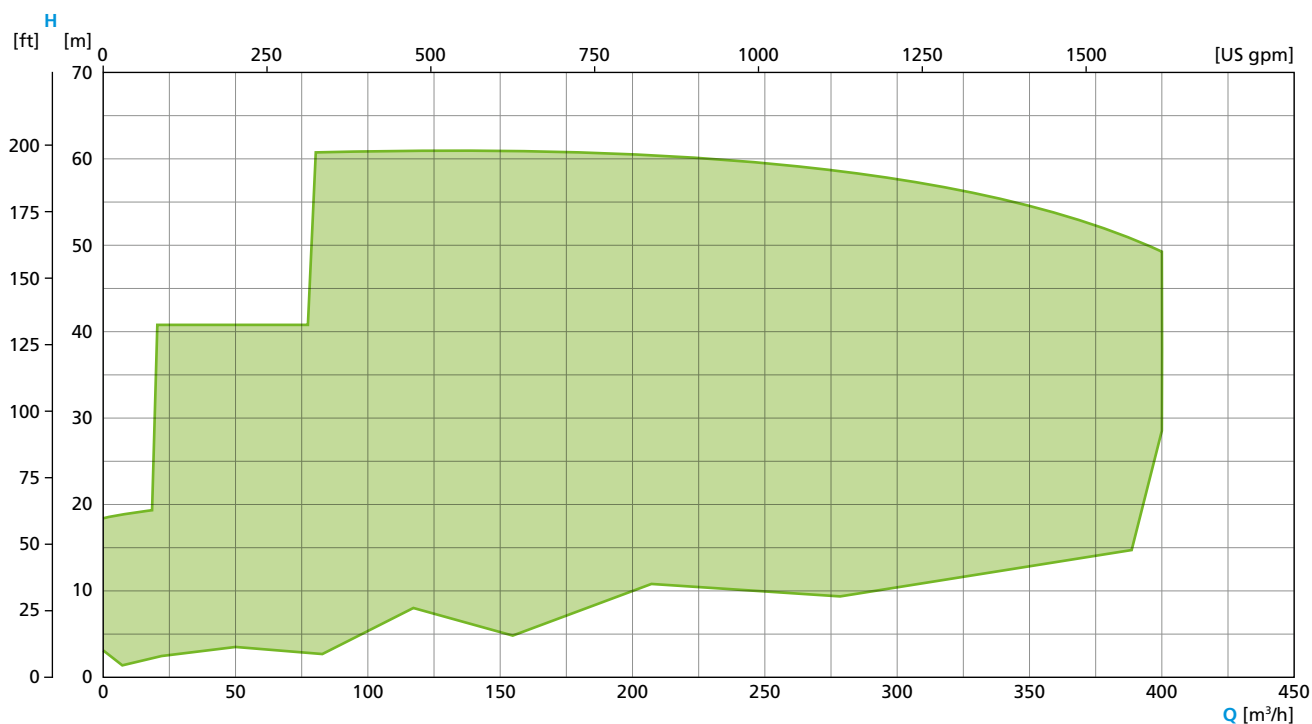
The modular construction using high-value materials, the proven “Hygienic Design” and easy-to-apply standardized spare parts all recommend GEA SMARTPUMP pumps for use in cost-critical production systems – at no compromise in terms of quality.

- 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

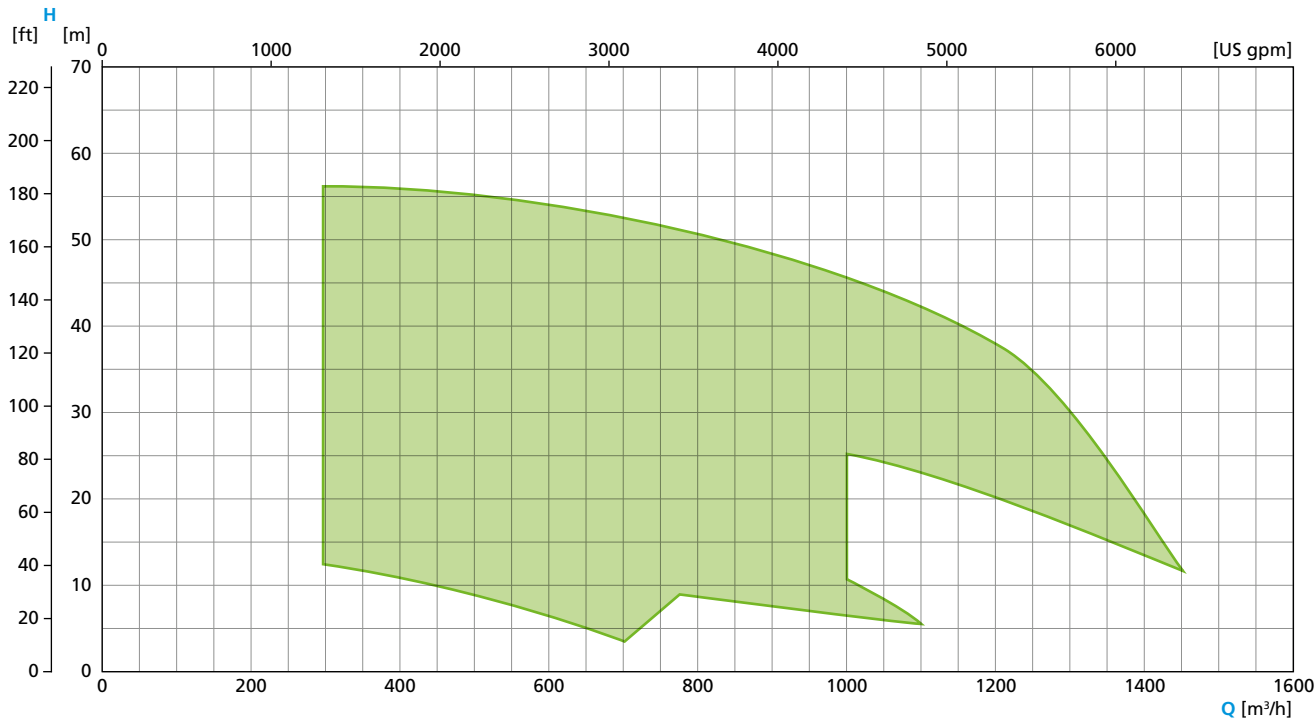


Single-stage, VARIPUMP*
4-pole, 50 Hz



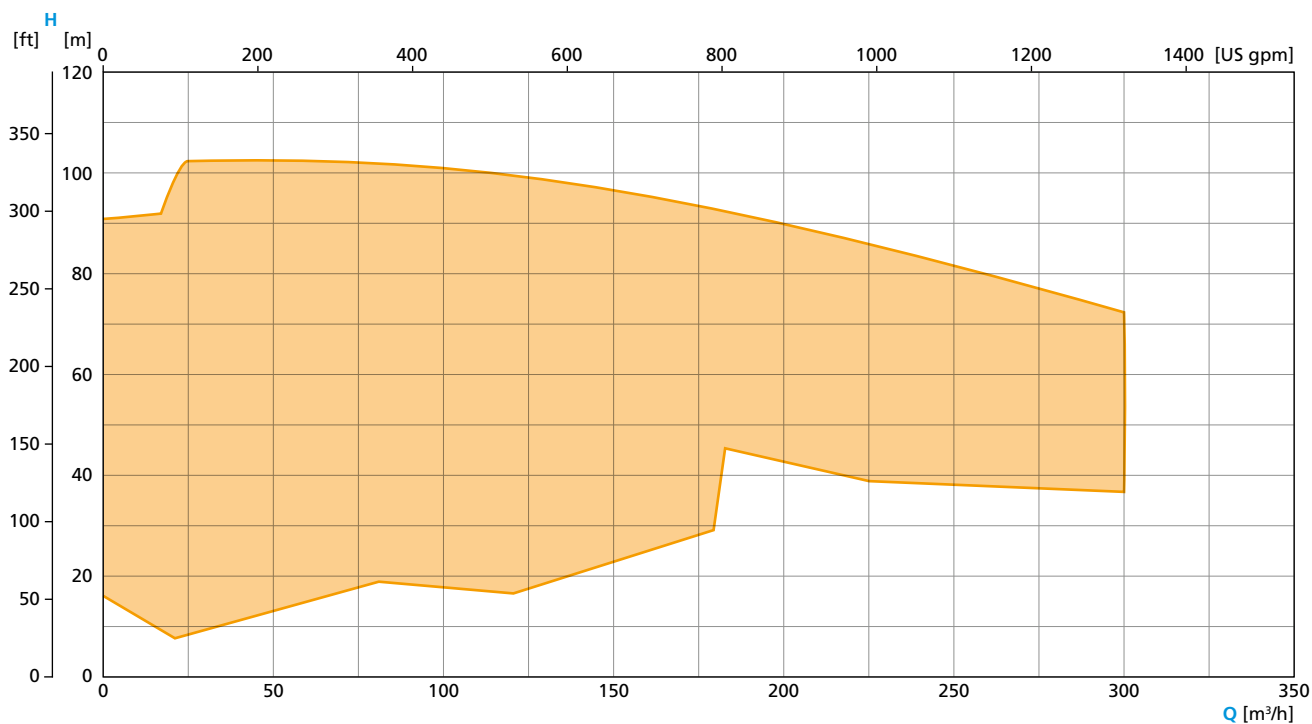
* GEA Hilge HYGIA & GEA Hilge MAXA (up to 150/400)

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

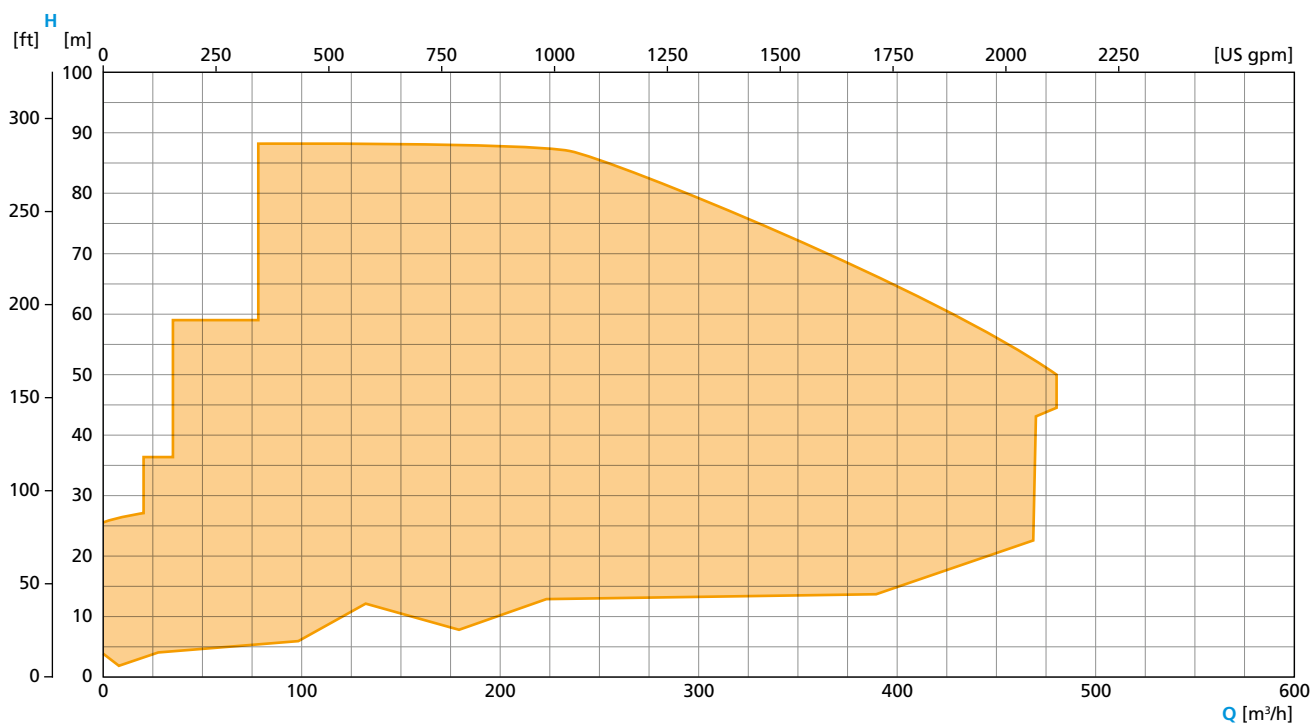


* GEA Hilge MAXA 200/400 and 250/400

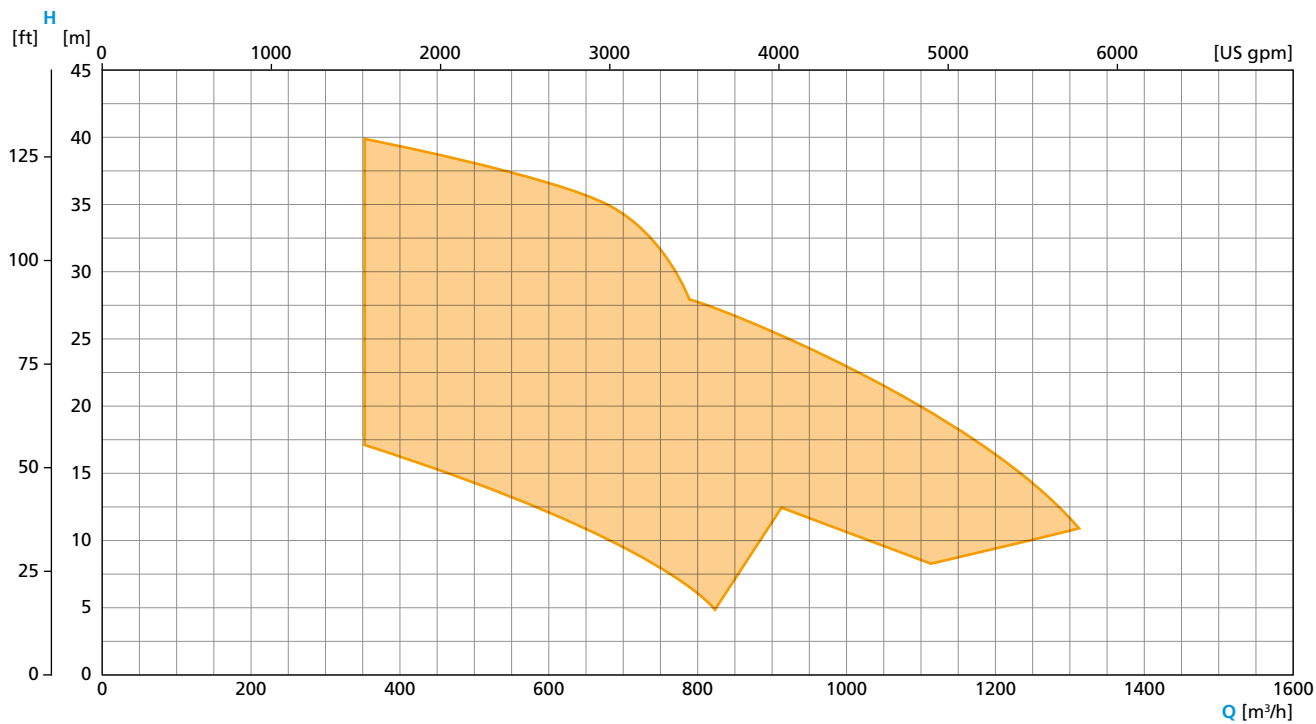
Single-stage, VARIPUMP
2-pole, 60 Hz



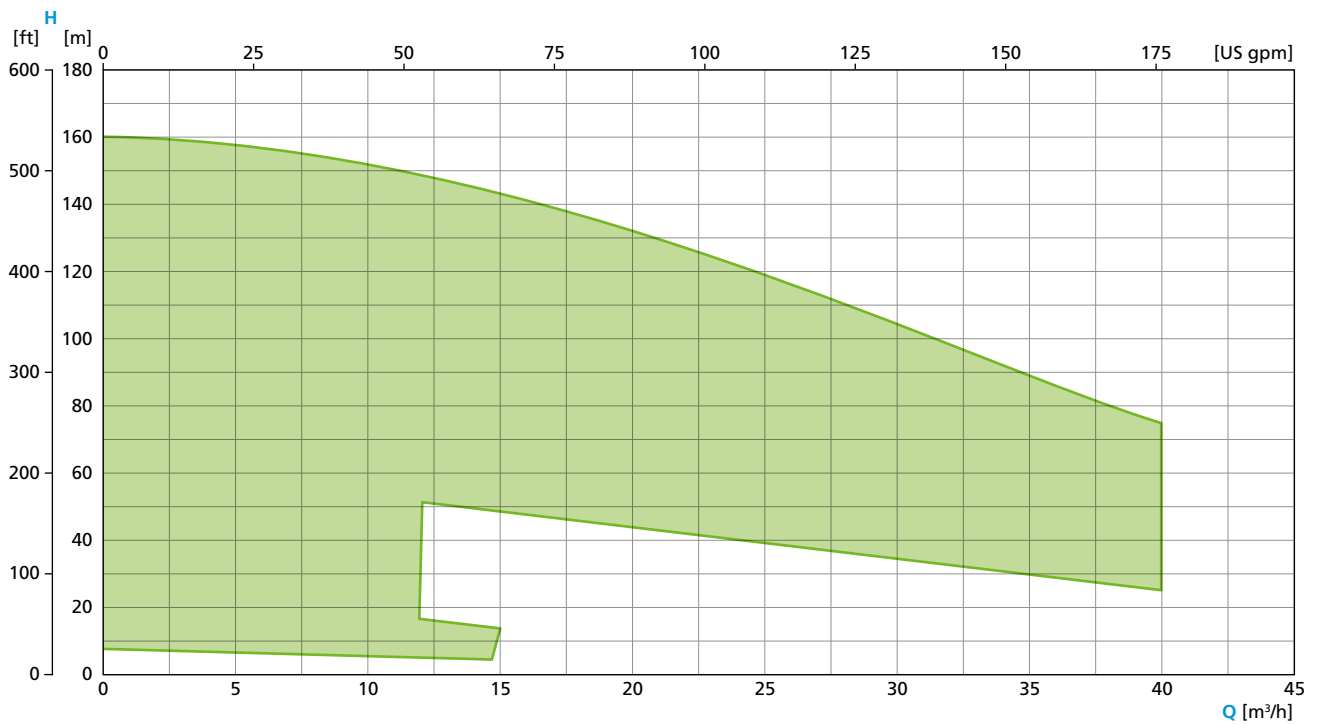
Single-stage, VARIPUMP
4-pole, 60 Hz



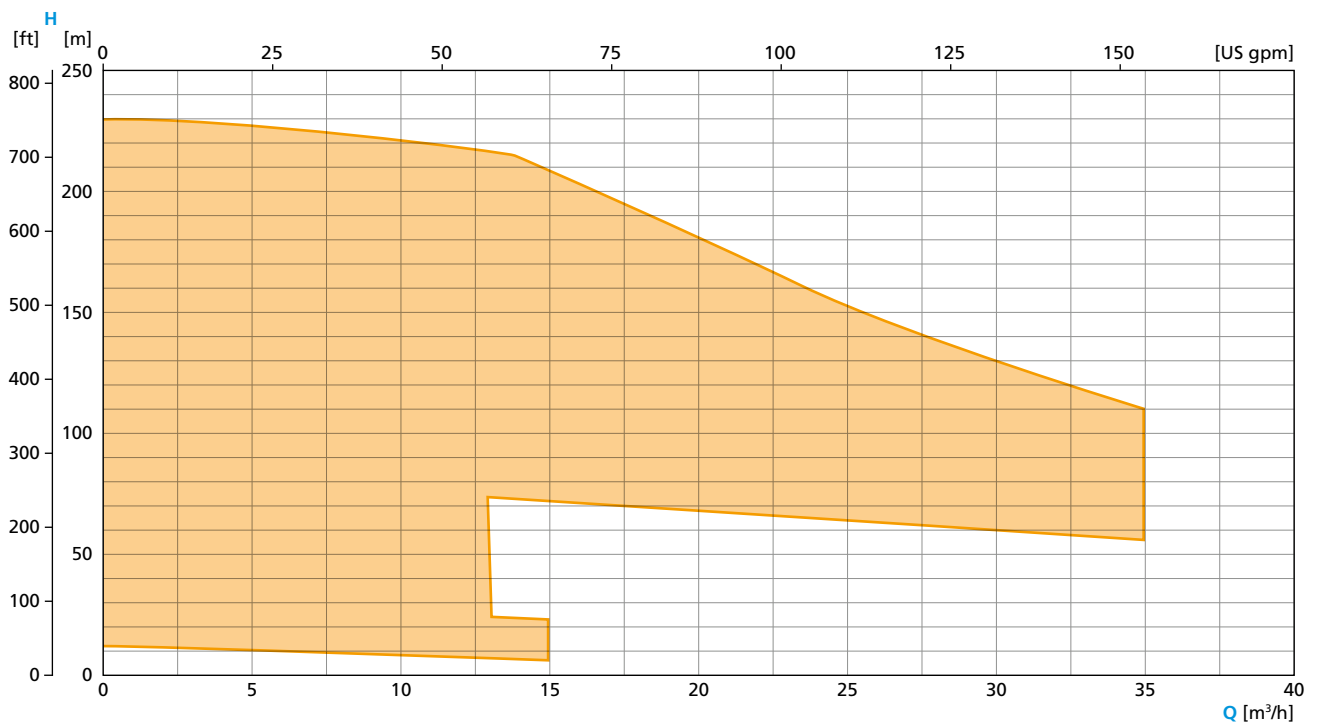
Single-stage, VARIPUMP
6-pole, 60 Hz



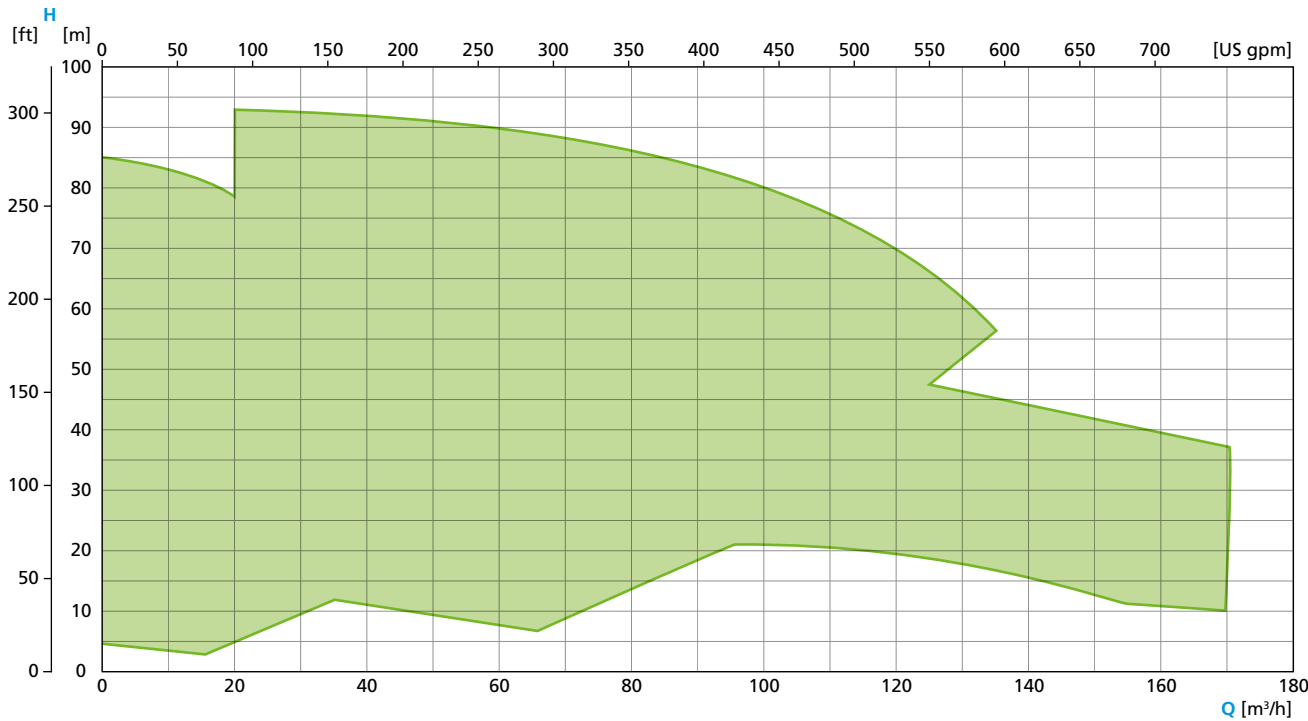
Multi-stage, VARIPUMP
2-pole, 50 Hz



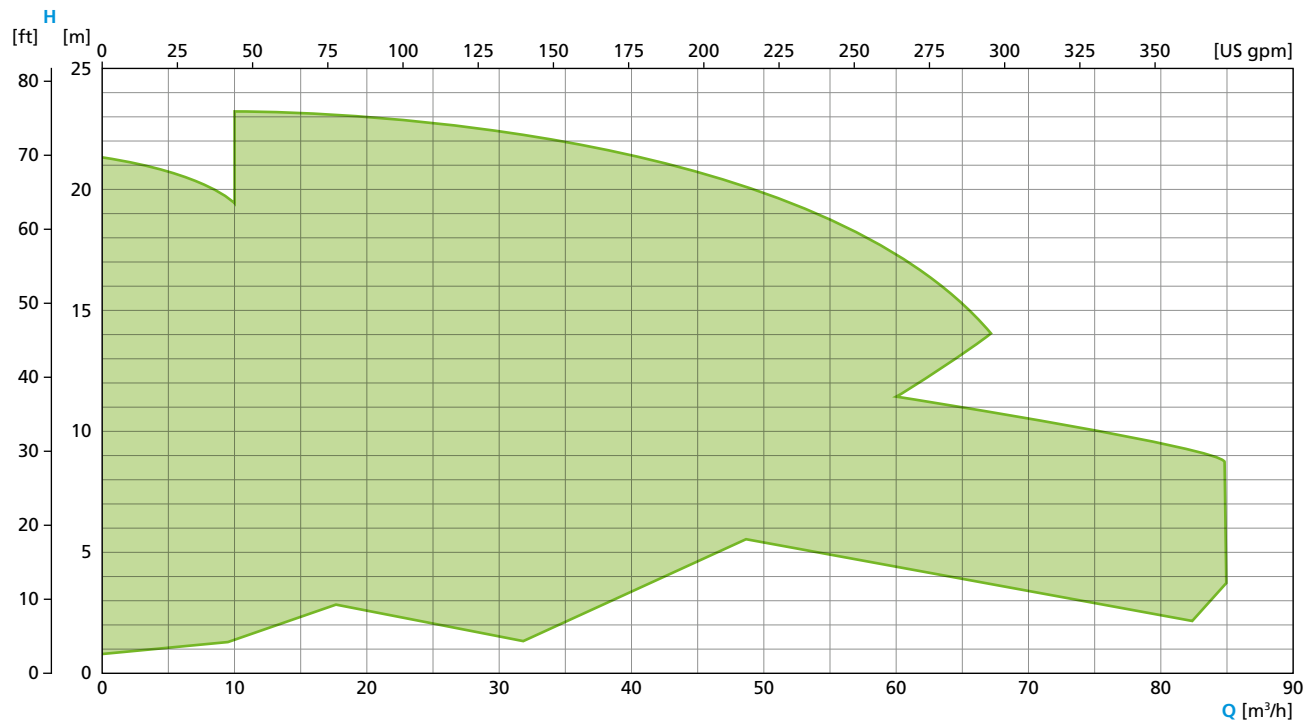
Multi-stage, VARIPUMP
2-pole, 60 Hz



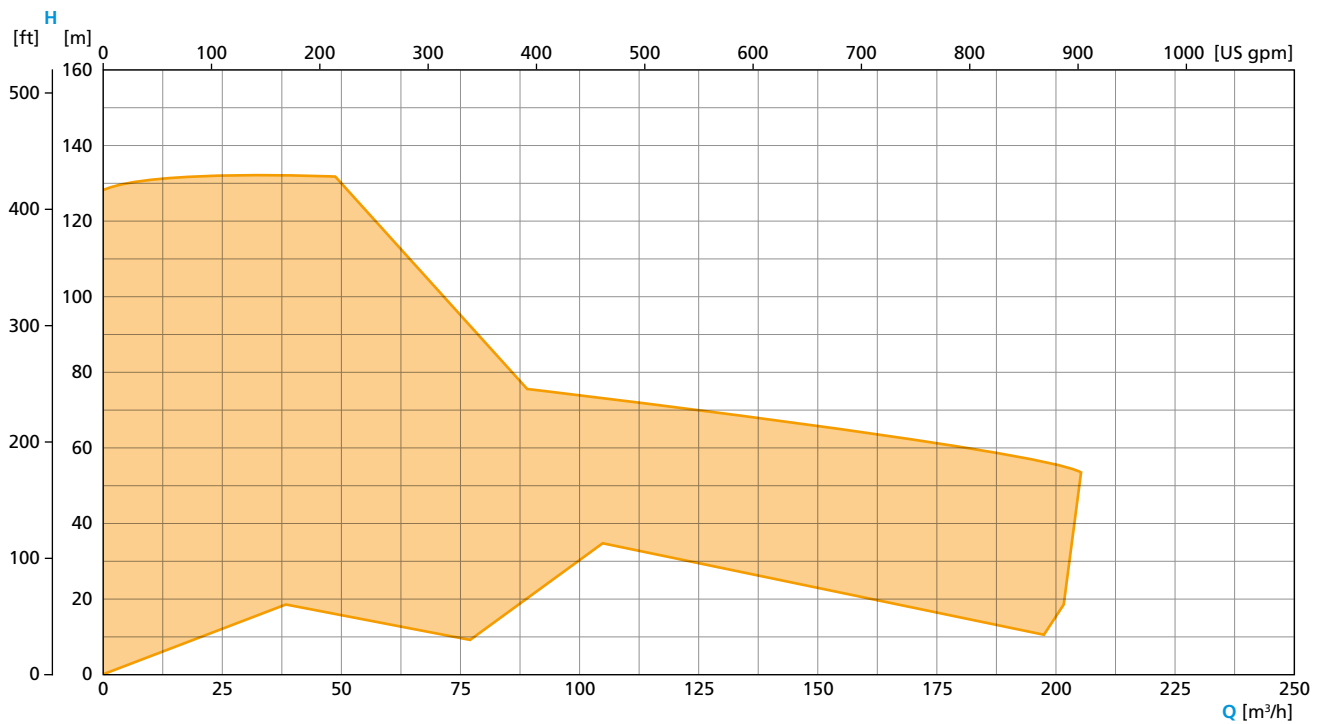
Single-stage, SMARTPUMP
2-pole, 50 Hz



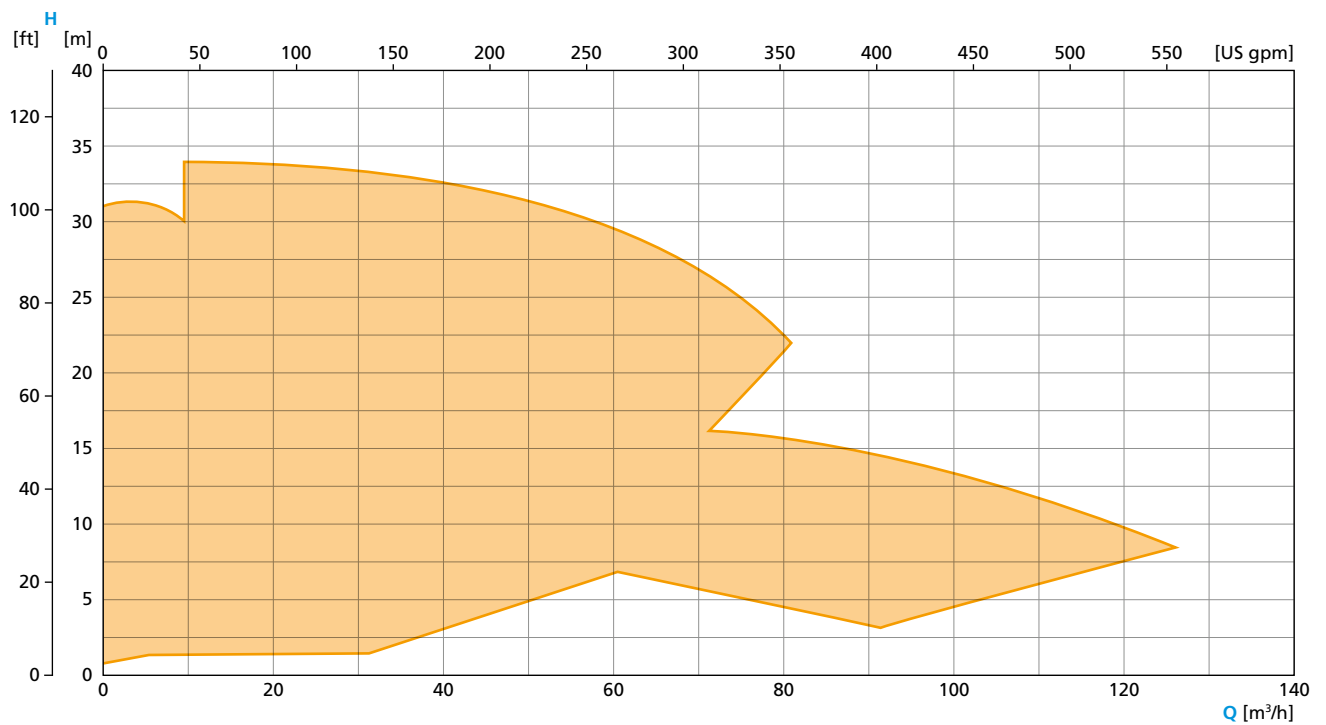
Single-stage, SMARTPUMP
4-pole, 50 Hz



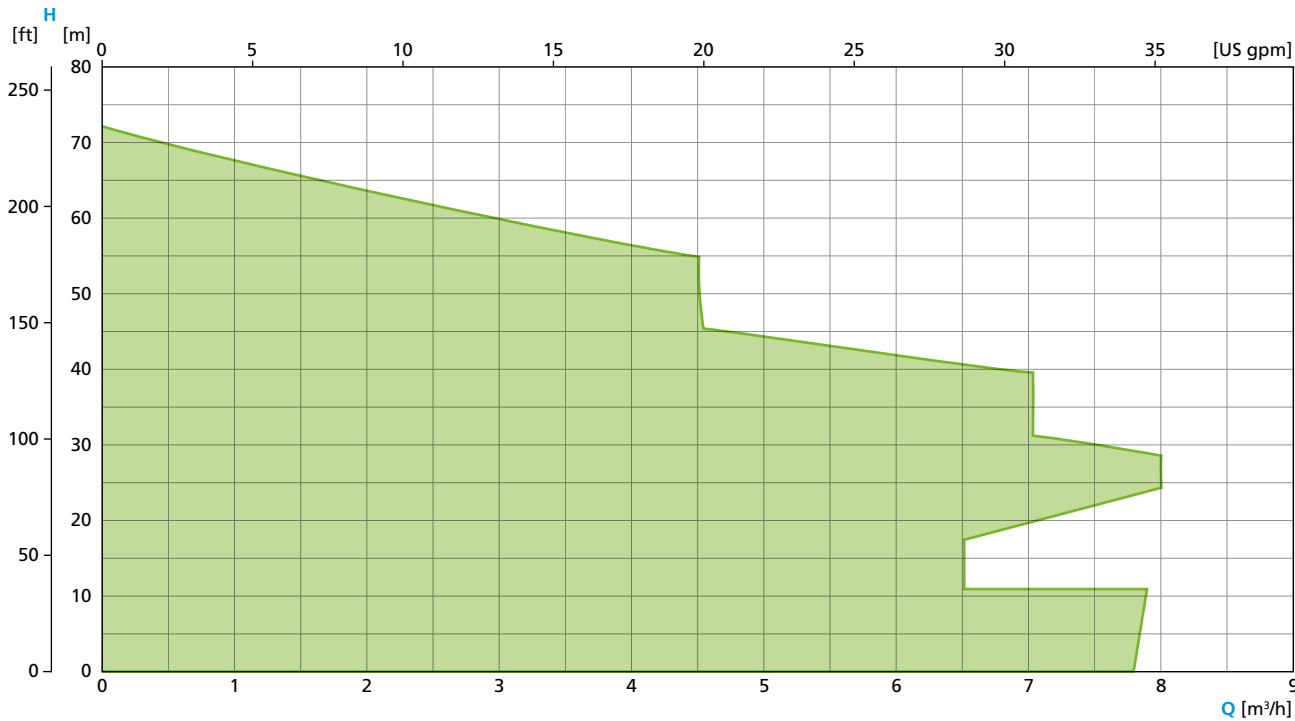
Single-stage, SMARTPUMP
2-pole, 60 Hz



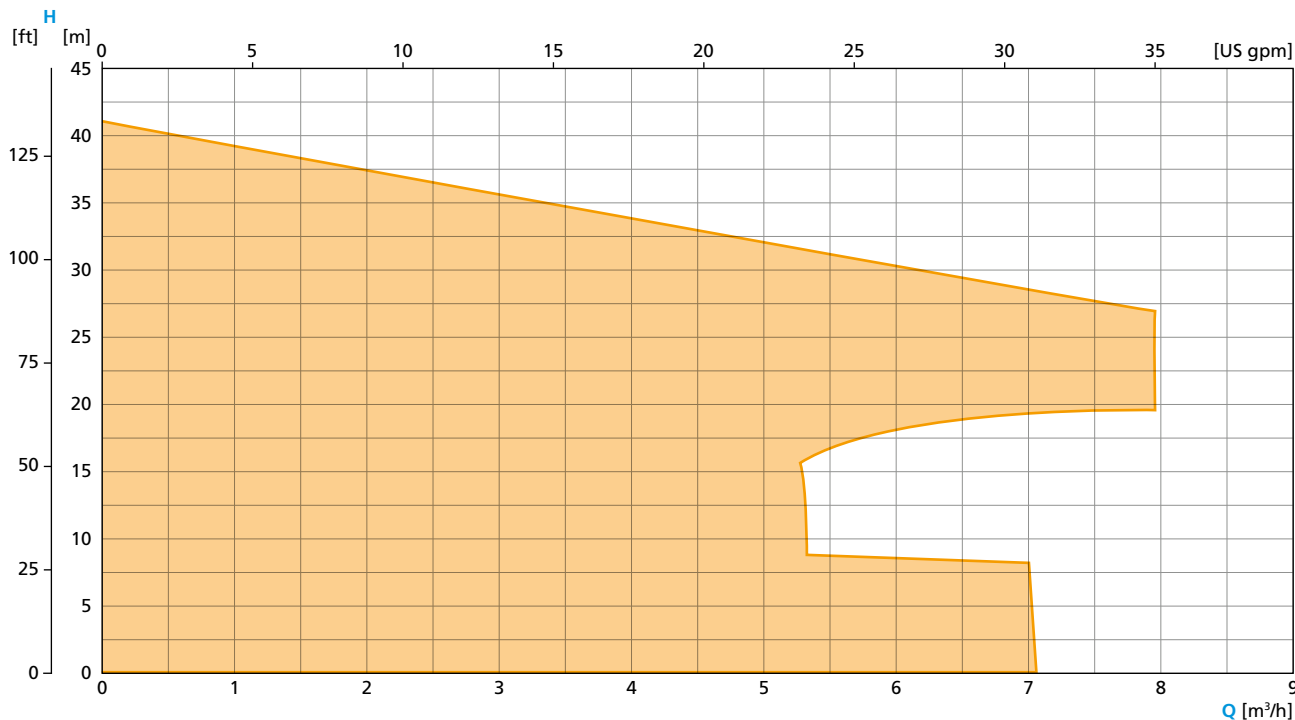
Single-stage, SMARTPUMP
4-pole, 60 Hz



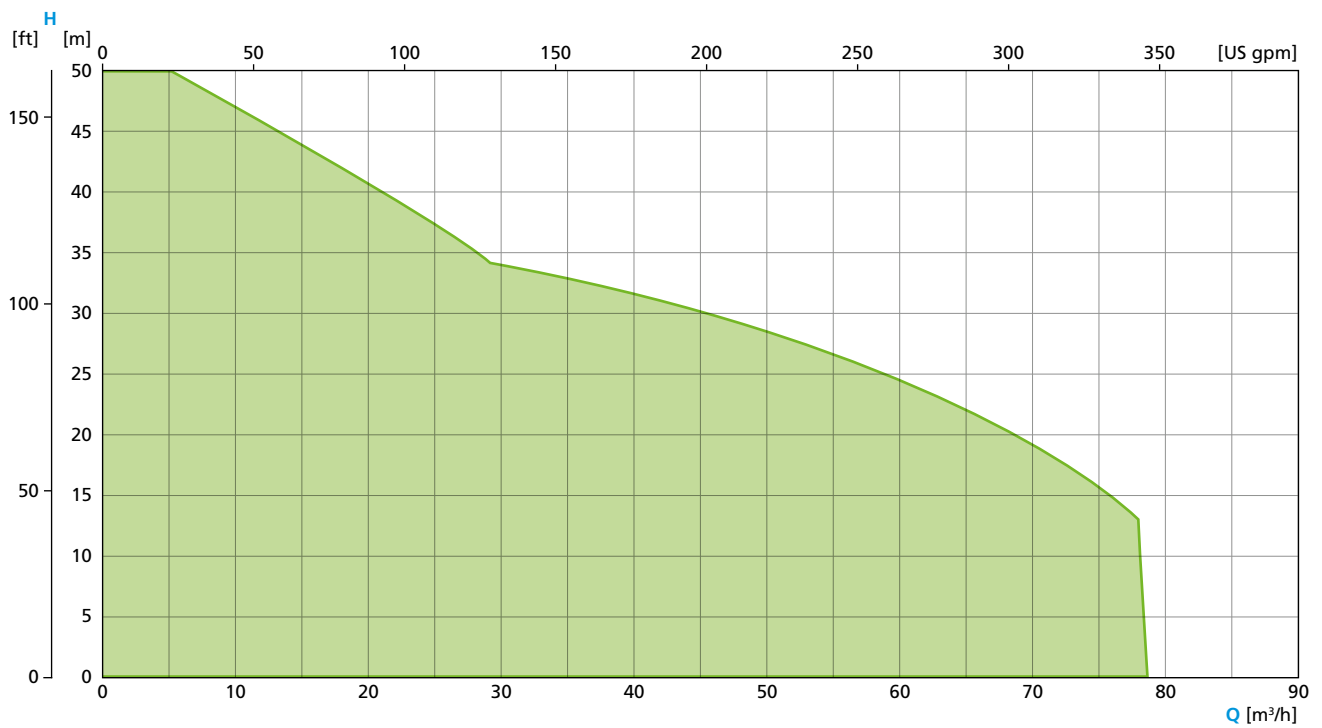
Multi-stage, SMARTPUMP
2-pole, 50 Hz



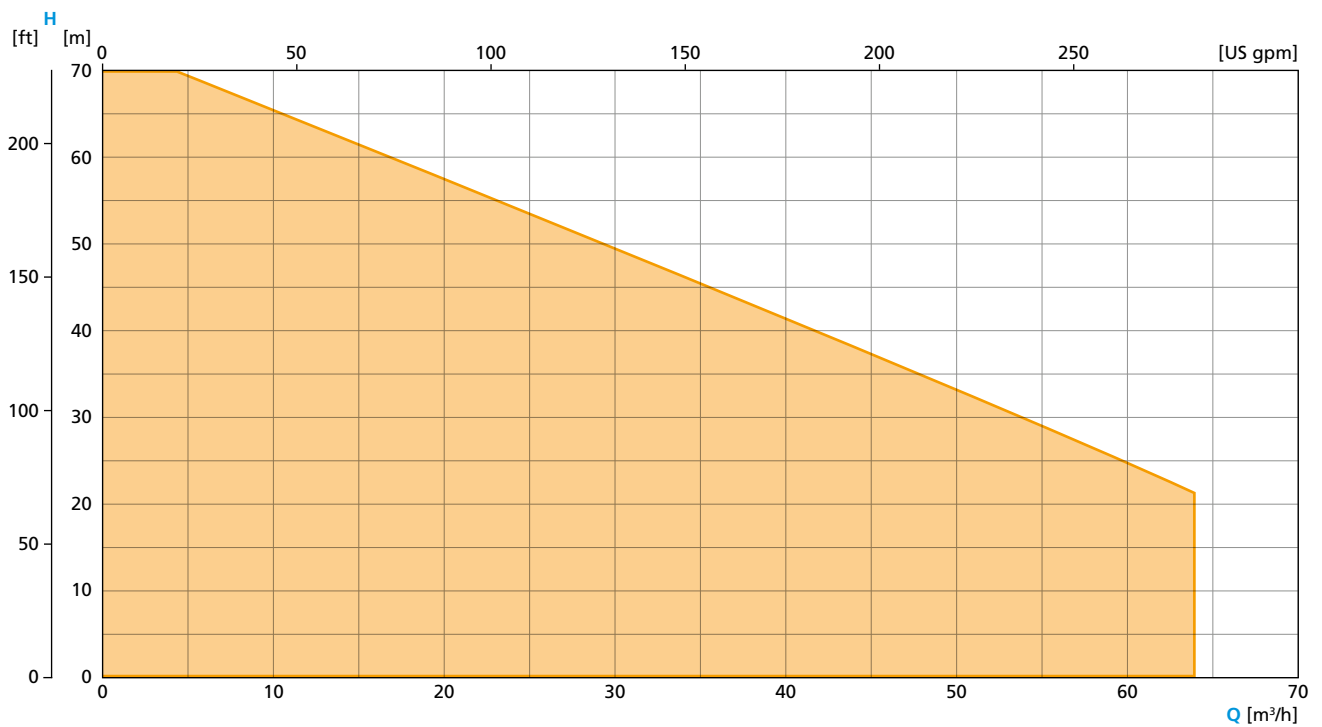
Multi-stage, SMARTPUMP
2-pole, 60 Hz



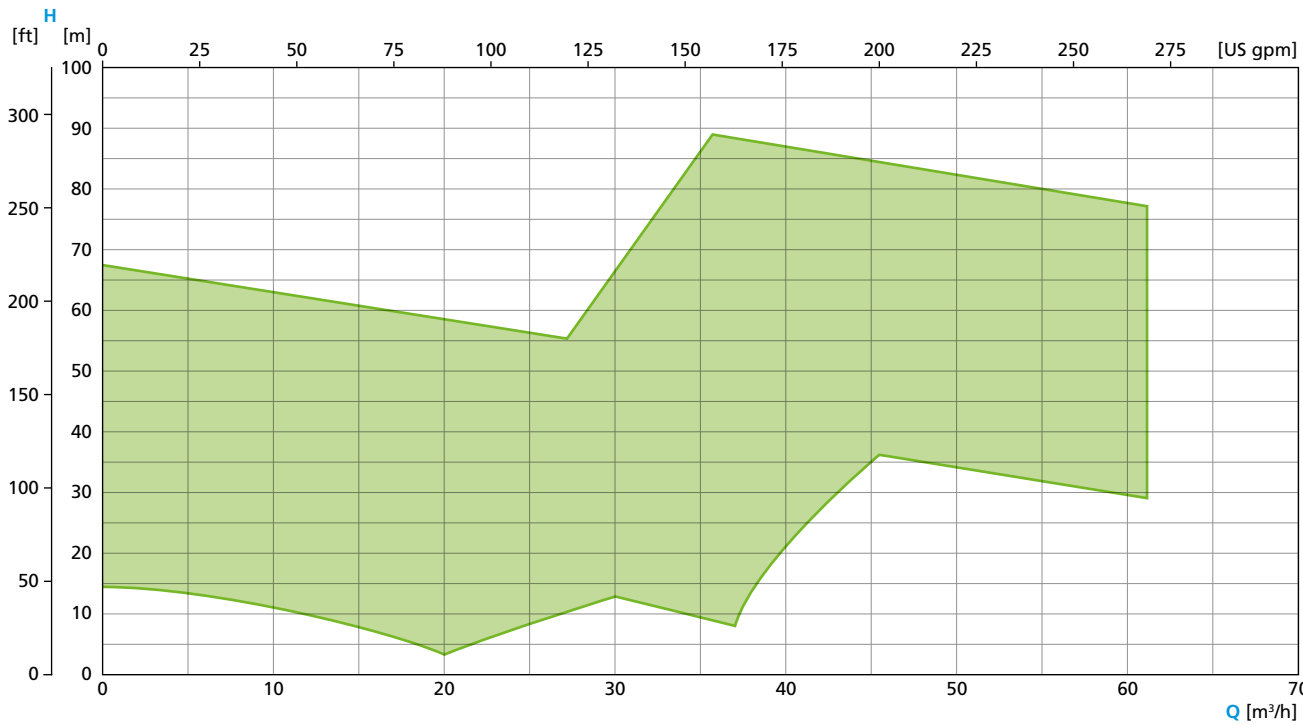
Single-stage, self-priming, VARIPUMP
4-pole, 50 Hz



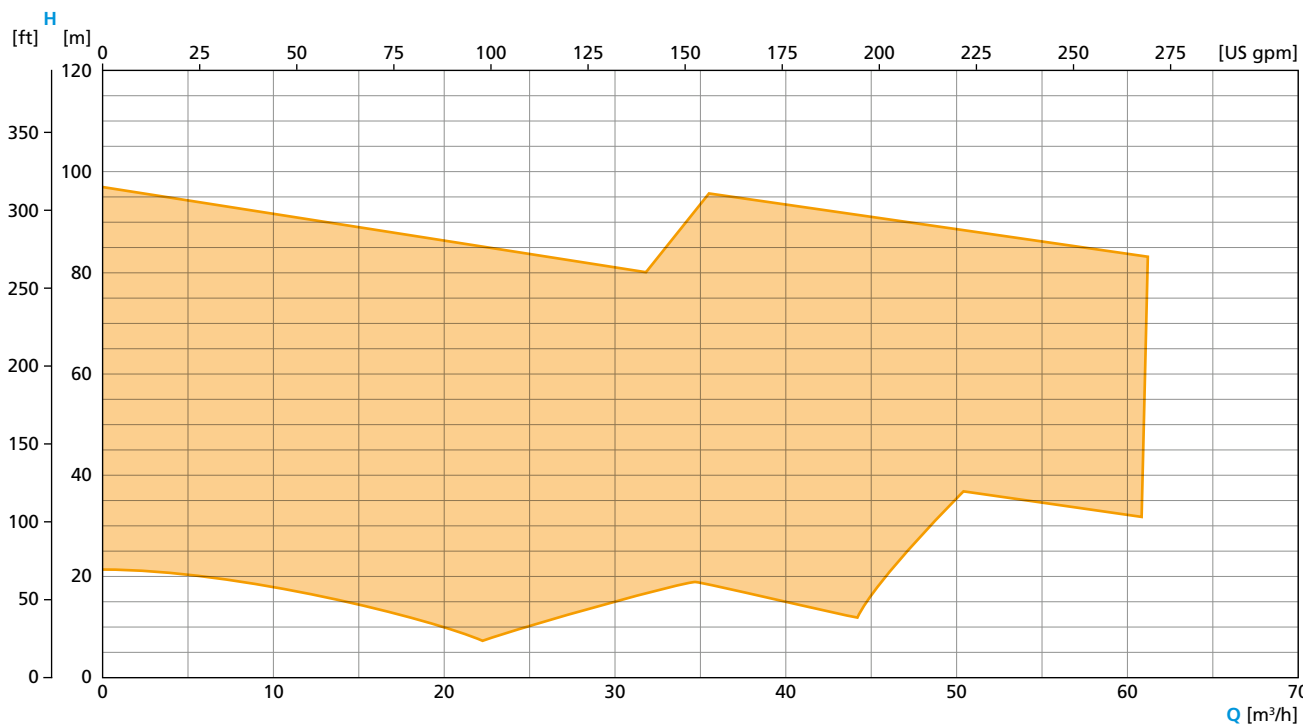
Single-stage, self-priming, VARIPUMP
4-pole, 60 Hz



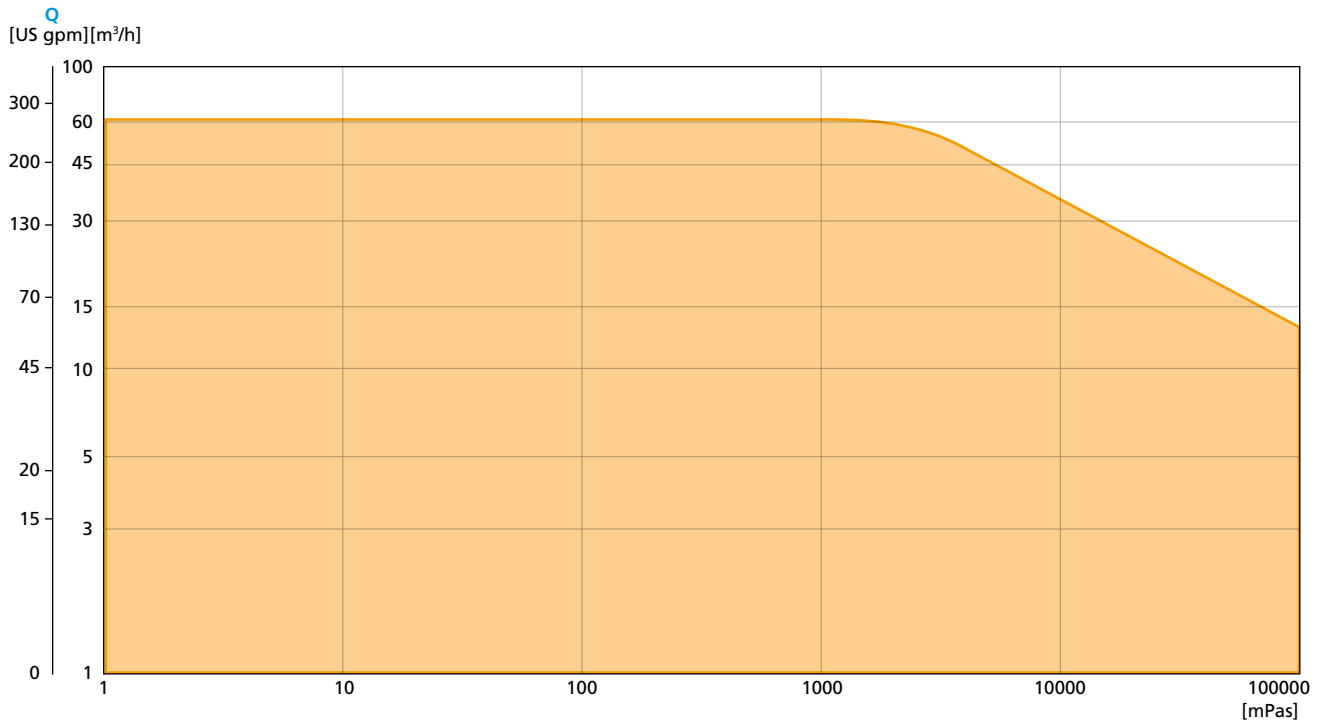
Single-stage, self-priming, SMARTPUMP
2-pole, 50 Hz



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



Rotary Lobe Pump, VARIPUMP



GEA 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	881 US gpm	771 US gpm
Head	236 ft	345 ft
System pressure	232/363/928 psi	

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	6,384 US gpm	6,384 US gpm
Head	328 ft	328 ft
System pressure	145 psi	

GEA VARIPUMP

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

GEA Hilge HYGIA



GEA Hilge MAXA

**Single-stage end-suction centrifugal pumps****GEA SMARTPUMP**

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

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	969 US gpm	1,057 US gpm
Head	312 ft	427 ft
System pressure	232 psi	

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	343 US gpm	282 US gpm
Head	154 ft	197 ft
System pressure	145 psi	

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	176 US gpm	154 US gpm
Head	525 ft	755 ft
System pressure	363 psi	

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	0.34 gallons/rev
System pressure	145/232 psi

GEA Hilge SIPLA



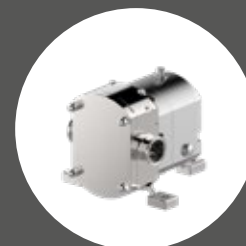
Single-stage self-priming centrifugal pumps

GEA Hilge CONTRA



Multi-stage centrifugal pumps

GEA Hilge NOVALOBE



Rotary lobe pumps

GEA Hilge TPS

**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	550 US gpm	682 US gpm
Head	312 ft	453 ft
System pressure	232 psi	

GEA Hilge DURIETTA

**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	35 US gpm	35 US gpm
Head	236 ft	135 ft
System pressure	116 psi	

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.

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

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.

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 HYGIA H-SUPER on 3-A Stainless Steel Adjustable Feet

Technical Data

	50 Hz	60 Hz
Flow head	236 ft	345 ft
Flow rate	881 US gpm	771 US gpm
System pressure	928 psi	
Operating temperature	203 °F	
Sterilization temperature	284 °F (SIP)	
Max. pump efficiency	72 %	73 %

Applications

The GEA Hilge HYGIA H 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.)

Pharmaceutical and biotechnology

- Pure-water systems
- Water for Injection (WFI)

Design

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

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:

- 3-A Sanitary Standard
- EAC
- GMP regulations



Certification

For explanation see chapter certificates on page 26.

The pumps fulfil the following surface requirements in terms of the wet end parts:

- Standard: $R_a \leq 125 \mu\text{in}$ (3.2 μm)
- Optional: $R_a \leq 32 \mu\text{in}$ (0.8 μm)

The materials used for GEA Hilge HYGIA H pumps have been selected for the use in hygienic processes. The housings are made of CrNiMo (1.4404) forged and have a smooth surface without pores and blowholes. The pumps have a mechanical seal and a fan-cooled asynchronous motor to enclosure class IP55.

Impeller

Semi-open impeller

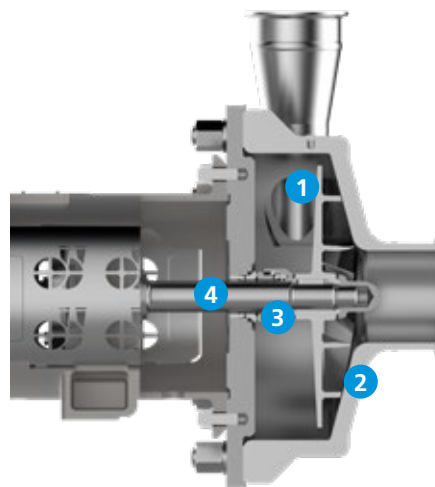


The electro-polished, stainless steel, semi-open impeller is available in three versions, according to the application.

Impeller version	Surface finish
Cast	$R_a \leq 125 \mu\text{in}$ (3.2 μm)
Cast	$R_a \leq 32 \mu\text{in}$ (0.8 μm)
Milled	$R_a \leq 32\text{--}16 \mu\text{in}$ (0.8–0.4 μm)

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

Materials



Material overview GEA Hilge HYGIA H

Item	Component	Material	No.
1	Impeller	CrNiMo steel	316L (1.4404/1.4435) 318LN (1.4462)
2	Pump casing	CrNiMo steel	316L (1.4404)
3	Seal	Single mechanical seal SiC/SiC,	
4	Pump shaft	CrNiMo steel	316Ti (1.4571) 318LN (1.4462)
	Foot	Stainless steel	
	Shroud	Stainless steel	

Intended use of motor

The range of motors differentials general purpose and wash-down motors. These types vary in resistance against humidity and general conditions in the plants. We recommend the use of wash-down motors in case one or more of the following boundary conditions apply:

- Continuous exposure to high-humidity (100 %) environments
- Continuous exposure to saline (5 %) environments
- IP X6 (Water projected in powerful jets – 0.5 inch nozzle – against the enclosure from any direction, Water volume: 26.42 gallons per minute, Pressure: 0.15 psi at distance of 9.84 ft)
- Use of alkaline cleaners such as Potassium Hydroxide or Sodium Hydroxide at low concentrations during wash-down routines
- Presence of animal fats, mineral or vegetable oils, detergents or ethylene glycol

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	1,181–2,362 µin (30–60 µm)
	KTL coating	591–787 µin (15–20 µm)
Top coating	2K epoxy resin	1,969–2,756 µin (50–70 µm)
	2K polyurethane color	2,362 µin (60 µm)
	KTL coating	591–787 µin (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
$R_a \leq 125 \mu\text{in}$ (3.2 µm)	Casing
$R_a \leq 32 \mu\text{in}$ (0.8 µm)	All components that come into contact with the pumped fluid

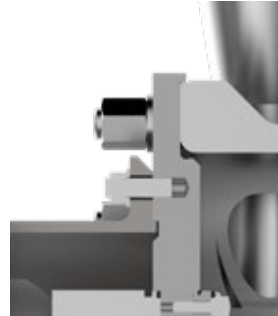
Lantern (motor stool) and cast impeller not electro-polished.

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.

Flange ring (HP)

- System pressure up to 928 psi
- Discharge port position: 12 o'clock



Mechanical seal

GEA Hilge offers the following seal designs:

- Single mechanical seal
- Single mechanical seal, flushed (Quench)
- Double mechanical seal, tandem

The pumps of the GEA Hilge HYGIA H 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 SiC/SiC with EPDM elastomers. Other executions and materials are available on request.

For further information on mechanical seals, see page 37.

Design variants

Standard version	Description
GEA Hilge HYGIA H Adapta	Horizontal installation, mounted pump shaft, standard motor

GEA Hilge offers each pump range in different designs.

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.



GEA Hilge HYGIA H Adapta
on Motor Foot



GEA Hilge HYGIA H Adapta
on on 3-A Stainless Steel Adjustable Feet



GEA Hilge HYGIA H Adapta
on Stainless Steel Adjustable Feet

Designs

Terminal box position

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



Possible terminal box positions: left

Pump connections

GEA Hilge offers the following standard connection for the GEA Hilge HYGIA H pump range:

- High pressure clamp similar to DIN 32676

You can find additional information in the connection selection guide on page 36.

Noise emissions

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

Motor power [hp]	Lpfa, 2-pole [dB (A)]
3.0	73
5.0	73
7.5	76
10.0	76
15.0	79
20.0	79
25.0	80
30.0	80
40.0	80
50.0	80
60.0	80

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
Pump casing made from rolled steel with thick walls
Modular construction: Multiple connection types, connection sizes, mountings and various mechanical seal executions for different applications may be combined on an individual basis
Various combinations of impeller geometries and connection sizes
Motors with various voltages and frequencies
Cover a large performance range with only two pump sizes
Casing with flange ring closure, easily accessible mechanical seal. Easily interchangeable motors through the use of standard motors. Service kits for all standard mechanical seals
Various documents and certificates for pumps and components

Benefits
Durable and robust
High flexibility
Duty-point-precise sizing, good NPSH value and high efficiency
Optimal adaptation to customer requirements
Low spare parts inventory
Service-friendliness
Extensive documentation and certificates

Pump range GEA Hilge HYGIA H

Hydraulic data	GEA Hilge HYGIA H I	GEA Hilge HYGIA H II
Max. head [ft] – 50 Hz / 60 Hz	148 / 203	236 / 345
Max. flow rate [US gpm]– 50 Hz / 60 Hz	198 / 220	881 / 771
Max. pressure [psi]	928	928
Max. pump efficiency [%] – 50 Hz/60 Hz	71 / 68	72 / 73

Motor data			Motor approval	IE Class	
Power [hp]	GEA Hilge HYGIA H I	GEA Hilge HYGIA H II	Nema MG-1 table 12-12	60 Hz	PTC
3.0	•		•	3	•
5.0	•		•	3	•
7.5	•	•	•	3	•
10.0		•	•	3	•
15.0		•	•	3	•
20.0		•	•	3	•
25.0		•	•	3	•
30.0		•	•	3	•
40.0		•	•	3	•
50.0		•	•	3	•
60.0		•	•	3	•

Design	GEA Hilge HYGIA H I	GEA Hilge HYGIA H II
Adapta	•	•

Connection type	Standard	Max. pressure [psi]	GEA Hilge HYGIA H I	GEA Hilge HYGIA H II
Clamp	High pressure clamp similar to DIN32676, Row A (DIN)	928	•	•
Clamp	High pressure clamp similar to DIN32676, Row B (ISO)	928	•	•
Clamp	High pressure clamp similar to DIN32676, Row C (OD/ASME)	928	•	•

Motors

GEA Hilge HYGIA H I

Motor power [hp]	GEA Hilge HYGIA H I
	2-pole [frame size]
3.0	182T
5.0	184T
7.5	213T

GEA Hilge HYGIA H II

Motor power [hp]	GEA Hilge HYGIA H II
	2-pole [frame size]
7.5	213T
10.0	215T
15.0	254T
20.0	256T
25.0	284TS
30.0	286TS
40.0	324TS
50.0	326TS
60.0	364TS

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, fit either 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, C-face standard motors with main dimensions and electrical tolerances acc. NEMA-MG1.

Pump range	Design – NEMA-MG1
GEA Hilge HYGIA	C-face foot mounted C-face footless

Relative air humidity: Max. 95 %

Enclosure class: IP55

Insulation class: F according to NEMA-MG1

Ambient temperature: Max. 104 °F (standard motor)

Selecting according to the application

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

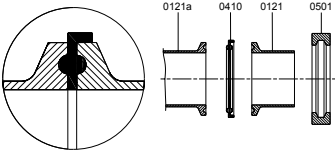
Connection		Application																				
Type		Standard		Beverages					Food				Life science and personal care			Industrial applications					Cleaning	
				Beer	Wine	Juice	Alcohol	Soft drinks	Confectionery	Dairy products	Frying oil	Syrup	Pure water	Biotechnology products	Perfumes and lotions	Glue and paint	Purification products	Chemical products	Industrial wastewater and efflux	Surface treatment products	Biofuel	CIP
Clamps	High pressure clamp	Similar to DIN 32676 Row A (DIN) Row B (ISO) Row C (ASME-BPE)		•	•		•		•			•	•	•							•	•

- Commonly used connections

Design

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

Clamps

Applications	Standard	Design	Description of the components
<ul style="list-style-type: none"> • Food Industry • Biotechnology / Pharmaceutical Industry 	Similar to DIN 32676 Row A (DIN) Row B (ISO) Row C (OD/ASME)		0121a: Clamp connection at pump casing 0121: Clamp connection 0410: Profile gasket 0501: Clamp ring

In order to ensure correct operation (depending on the application and the medium), single or single mechanical flushed seal systems can be supplied. The mechanical seal is optimally placed inside the pump. This ensures efficient lubrication and cooling of the mechanical seal, while also

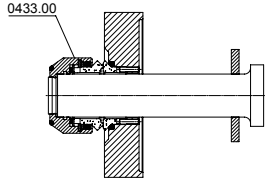
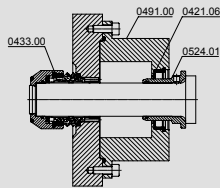
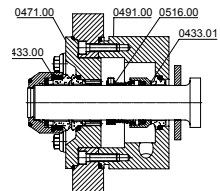
ensuring CIP (Cleaning In Place) and SIP (Sterilization In Place) capability. The standard material for the mechanical seals are SiC/SiC with EPDM or FKM (Viton) elastomers.

Mechanical seals

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

Version	Material pairs stationary seat/seal face/O-rings	Max. pressure	Max. temperature
Encapsulated spring	Silicon carbide/silicon carbide/EPDM Silicon carbide/silicon carbide/FKM	928 psi	41 to 212 °F

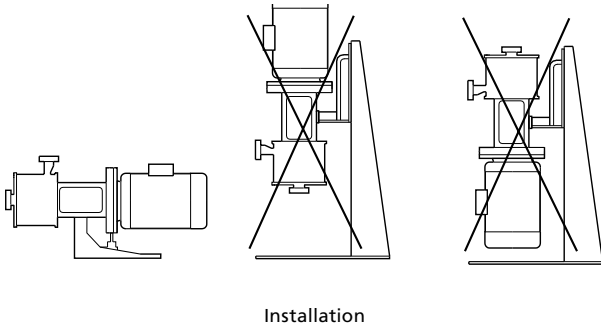
Mechanical seal arrangements

Arrangement	Design	Components	Seal characteristics
Single mechanical seal with encapsulated spring		0433.00: Mechanical seal	<ul style="list-style-type: none"> • Encapsulated spring • Easy to clean • Optimal position inside the pump • Bidirectional
Flushed mechanical seal with quench		0433.00: Mechanical seal 0421.06: Lip seal 0491.00: Shaft seal cartridge 0524.01: Shaft sleeve	<ul style="list-style-type: none"> • Flushed single seal • Optimal position inside the pump • Easy to retrofit • Encapsulated spring
Double mechanical seal, tandem		0433.00: Mechanical seal, product side 0433.01: Mechanical seal, atmosphere side 0471.00: Seal cover 0516.00: Locating ring 0491.00: Shaft seal cartridge	<ul style="list-style-type: none"> • Tandem arrangement • Product-side spring encapsulated • Pressure-less flushing (seal cartridge) • No dry running • Mechanical seals are lubricated and cooled

Mechanical installation

GEA Hilge HYGIA H

Never install the pump vertically!

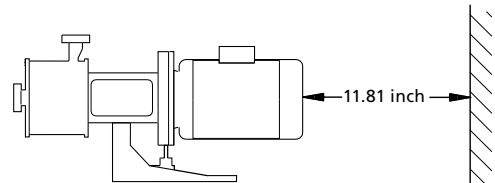


Space requirements

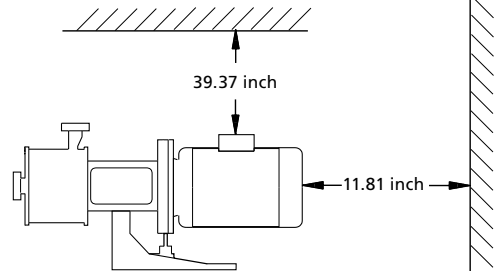
Horizontal installation

- Pumps fitted with motors up to and including 5.0 hp require an 11.81 inch clearance behind the motor.
- Pumps fitted with motors of 7.5 hp and up require at least a 1 meter clearance above the motor and 11.81 inch behind it to allow the use of lifting equipment.

0.75–5 hp



>7.5 hp



Horizontal installation

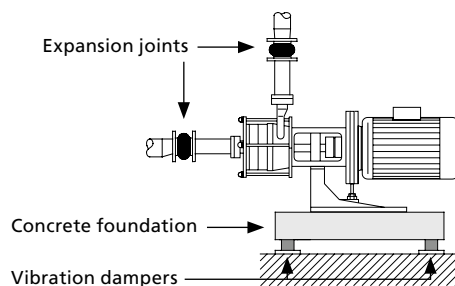
Elimination of noise and vibrations

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 15 hp. 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 100/4".

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 [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	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	< 212	10	1	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Cold wort Original wort	< 104	< 11	< 5	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Hop extract (dissolved) Lees Mash (beer)	< 212	< 11	< 5	–	kiE/WDR	kiE/aeE
Lauter wort	104–194	< 11	< 5	–	kiE/WDR	kiE/aeE
Hot wort	104–239	< 11	< 5	–	kiE/WDR	kiE/aeE
Crop yeast Pitching yeast Yeast	< 68	< 11	< 100	aeE	–	–
Enzymes (watery dissolution)	< 140	< 11	< 5	aeE	–	–
Lactic acid, con. < 50 % (C ₃ H ₆ O ₃)	< 212	< 11	< 5	kiV (up to 233 psi), kil (up to 232 psi)	–	–
Lactic acid, con. > 50 % (C ₃ H ₆ O ₃)	< 212	< 12	< 5	kiV (up to 233 psi), kil (up to 232 psi)	–	–

Application water

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Iced water	25 to 37	< 10	1	kiE (up to 145 psi), kiH (from 145 psi)	–	–
Cold water	< 232	< 10	1	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Demineralised water (Not for sterile applications)						
Drinking water						
Flushing water						
Hot water						
Mineral water						
Process water						
Service water						
Water						

Application wine/sparkling wine

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Champagne	< 95	< 10	1	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Cherry wine						
Cider						
Cidre						
Dry sparkling wine						
Fruit wine						
Prosecco						
Red wine						
Rosé						
Sparkling wine						
Strawberry wine						
White wine						
Wine						
Young wine						
Dessert wine	< 95	< 11	15	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Dessert wine, late-harvest wine						
Drape must (w/o. particles)						
Ice wine	< 95	< 11	100	aeE (up to 145 psi), aiH (from 145 psi)	–	–
Wine lees						
Wine yeast						
Mash (wine)	< 95	< 11	5	aeE (up to 145 psi), aiH (from 145 psi)	–	–

Application coffee/tea/cocoa

				Mechanical seal* material product side / atmospheric side			
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem	Encapsulated seal for vacuum application
Coffee	< 257	10	1	aeE	–	–	
Coffee extract	< 176–212	< 12	< 250	–	–	kiV/aeV	x
Tea	< 257	10	1	aeE	–	–	
Fruit tea / flavored tea	< 257	10	1	aeE	–	–	
Cocoa drink	< 104	12	< 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 [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Buttermilk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
UHT milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Yoghurt milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Kefir	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Cheese milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Skimmed milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Skimmed milk concentrate	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Milk concentrate	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Lactic culture	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Milk mix	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Whey	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Raw milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Pre-stirred yoghurt	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Sour milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Sour cream with thickening agents	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Full cream milk	< 131	< 11	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	> 131 – < 212	< 11	< 5	–	aeE/WDR (up to 145 psi), aiH/WDR (from 145 psi)	aeE/aeE (up to 145 psi), aiH/aeE (from 145 psi)
Coffee cream	< 131	< 11	< 40	aeV (up to 145 psi), ail (from 145 psi)	–	–
	> 131 – < 212	< 11	< 20	–	aeV/WDR (up to 145 psi), ail/WDR (from 145 psi)	aeV/aeV (up to 145 psi), ail/aeV (from 145 psi)
Whipping cream	< 131	< 11	< 40	aeV (up to 145 psi), ail (from 145 psi)	–	–
	> 131 – < 212	< 11	< 20	–	aeV/WDR (up to 145 psi), ail/WDR (from 145 psi)	aeV/aeV (up to 145 psi), ail/aeV (from 145 psi)
Sour cream	< 131	< 11	< 40	aeV (up to 145 psi), ail (from 145 psi)	–	–
	> 131 – < 212	< 11	< 20	–	aeV/WDR (up to 145 psi), ail/WDR (from 145 psi)	aeV/aeV (up to 145 psi), ail/aeV (from 145 psi)
Cream	< 131	< 11	< 40	aeV (up to 145 psi), ail (from 145 psi)	–	–
	> 131 – < 212	< 11	< 20	–	aeV/WDR (up to 145 psi), ail/WDR (from 145 psi)	aeV/aeV (up to 145 psi), ail/aeV (from 145 psi)
Condensed milk	< 131	< 11	< 40	aeV (up to 145 psi), ail (from 145 psi)	–	–
	> 131 – < 212	< 11	< 20	–	aeV/WDR (up to 145 psi), ail/WDR (from 145 psi)	aeV/aeV (up to 145 psi), ail/aeV (from 145 psi)

Application vinegar / sauces / marinade

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Soy sauce	41–203	13	25	kiE	–	–
	203–257	13	25	–	kiE/WDR	kiE/aeE
Cider vinegar						
Herb-flavored vinegar						
Vinegar	140	10	1	aeE	–	–
Wine vinegar						
Vinegar essence	140	11	1	aeV	–	–

* aeE: carbon/stainless steel/EPDM, aeV: carbon/stainless steel/Viton, aiH: carbon/SIC/EPDM (USP-Class VI), ail: 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 [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem	Encapsulated seal
Apple juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Apricot/mango juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Cherry juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Cola	< 212	10	< 5	aeE	–	–	
	< 212	10	< 5	aeE	–	–	
Concentrated lemon juice, without pulp and granules	< 158	10	25	kiV	–	–	
Cranberry juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Fruit juice, with granules	< 158	10	< 50	kiE	–	–	x
Fruit juice, with pulp		10	< 50	aeE	–	–	x
Fruit juice, with pulp and with granules	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Fruit juice, without pulp	< 158	10	< 50	aeE	–	–	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
Grape juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Iced tea	< 212	10	< 5	aeE	–	–	
Lemon juice, with pulp and granules	< 158	10	25	kiV	–	–	x
Lemon juice, without pulp and granules	< 158	10	25	aeV	–	–	
Lemonade	< 212	10	< 5	aeE	–	–	
	< 212	10	< 5	aeE	–	–	
Mineral water	< 212	10	< 5	aeE	–	–	
	< 212	10	< 5	aeE	–	–	
Multivitamin juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Orange juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Peach / passion fruit juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x

				Mechanical seal* material product side / atmospheric side			
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem	Encapsulated seal
Raspberry / strawberry juice	< 158	10	< 50	aeE	–	–	
	< 158	10	< 50	aeE	–	–	x
	< 158	10	< 50	kiE	–	–	x
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	
	> 158 – < 203	10	< 10	–	kiE/WDR	kiE/aeE	x
Vegetable juice, with pulp and granules	< 158	11	< 50	kiV	–	–	x
	> 158 – < 203	11	< 10	–	–	kiV/aeV	x
Vegetable juice, without pulp and granules	< 158	11	< 50	aeV	–	–	
	> 158 – < 203	11	< 10	–	–	kiV/aeV	

Application concentrated fruit juice

					Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Concentration [Brix]	Single	Quench	Tandem
Concentrated fruit juice	41–194	12	related to temperature	to 25°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	41–104	12		26–49°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	12		26–49°	–	aeE/WDR	aeE/aeE
	59–104	12		50°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	12		50°	–	aeE/WDR	aeE/aeE
	59–104	13		55°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		55°	–	aeE/WDR	aeE/aeE
	59–104	13		60°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		60°	–	aeE/WDR	aeE/aeE
	59–104	13		65°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		65°	–	aeE/WDR	aeE/aeE
	68–104	14		70°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	14		70°	–	aeE/WDR	aeE/aeE

Application oil

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Cocoa butter	50–86	9	< 80	aeV	–	–
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	86–257	9	< 40	aeV	–	–
Sesame oil						
Soy oil / soy bean oil						
Sunflower oil						
Walnut oil						
Wheat germ oil						
Chip fat	< 338	9	10		–	–
Butter oil (liquid)	> 113–248	9	45	aeV	–	–
Lard (liquid)	> 113–248	9	45	aeV	–	–
Liquid butter	> 95–248	9	45	aeV	–	–
Fish oil	50–257	10	< 100	aeV	–	–
Whale oil	50–257	10	< 100	aeV	–	–
Cod liver (cod-liver oil)	50–257	10	< 100	aeV	–	–
Mineral oil	50–212			aeV	–	–
Motor oil						
Petroleum						
Derv	50–212	9	< 15	aeV	–	–
Diesel oil						
Oil-in-water emulsion	32–212	10	< 50	aeV	–	–

Application spirits

					Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Concentration [%]	Single	Quench	Tandem
Spirits	104	10	< 5		aeE (up to 145 psi), aiH (from 145 psi)	–	–
	< 122	12	< 150		–	aeE/WDR	kiE/aeE
	< 212	12	< 100		–	aeE/WDR	kiE/aeE
	< 172	10	1	< 10	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	< 172	9	1	< 50	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	< 172	8	1	< 98	aeE (up to 145 psi), aiH (from 145 psi)	–	–

Application cleaning in place (CIP)

					Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [kg/m³]	Viscosity [mPas]	Concentration [%]	Single	Quench	Tandem
CIP liquid (concentration approx. 5 %)	< 212	11	< 5	< 5	aeE (up to 145 psi), aiH (from 145 psi)	–	–

Application sugar syrup

					Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [mPas]	Concentration [Brix]	Single	Quench	Tandem
Sugar syrup without crystals	41–194	12	related to temperature	to 25°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	41–104	12		26–49°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	12		26–49°	0	aeE/WDR	aeE/aeE
	59–104	12		50°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	12		50°	0	aeE/WDR	aeE/aeE
	59–104	13		55°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		55°	0	aeE/WDR	aeE/aeE
	59–104	13		60°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		60°	0	aeE/WDR	aeE/aeE
	59–104	13		65°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	13		65°	0	aeE/WDR	aeE/aeE
	68–104	14		70°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	14		70°	0	aeE/WDR	aeE/aeE
	68–104	14		72,7°	aeE (up to 145 psi), aiH (from 145 psi)	–	–
	104–194	14		72,7°	0	aeE/WDR	aeE/aeE
	41–194	12		to 25°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	41–104	12		26–49°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	12		26–49°	0	kiE/WDR	kiE/aeE
	59–104	12		50°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	12		50°	0	kiE/WDR	kiE/aeE
	59–104	13		55°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	13		55°	0	kiE/WDR	kiE/aeE
	59–104	13		60°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	13		60°	0	kiE/WDR	kiE/aeE
	59–104	13		65°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	13		65°	0	kiE/WDR	kiE/aeE
	68–104	14		70°	kiE (up to 145 psi), kiH (145 – 233 psi)	–	–
	104–194	14		70°	0	kiE/WDR	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.

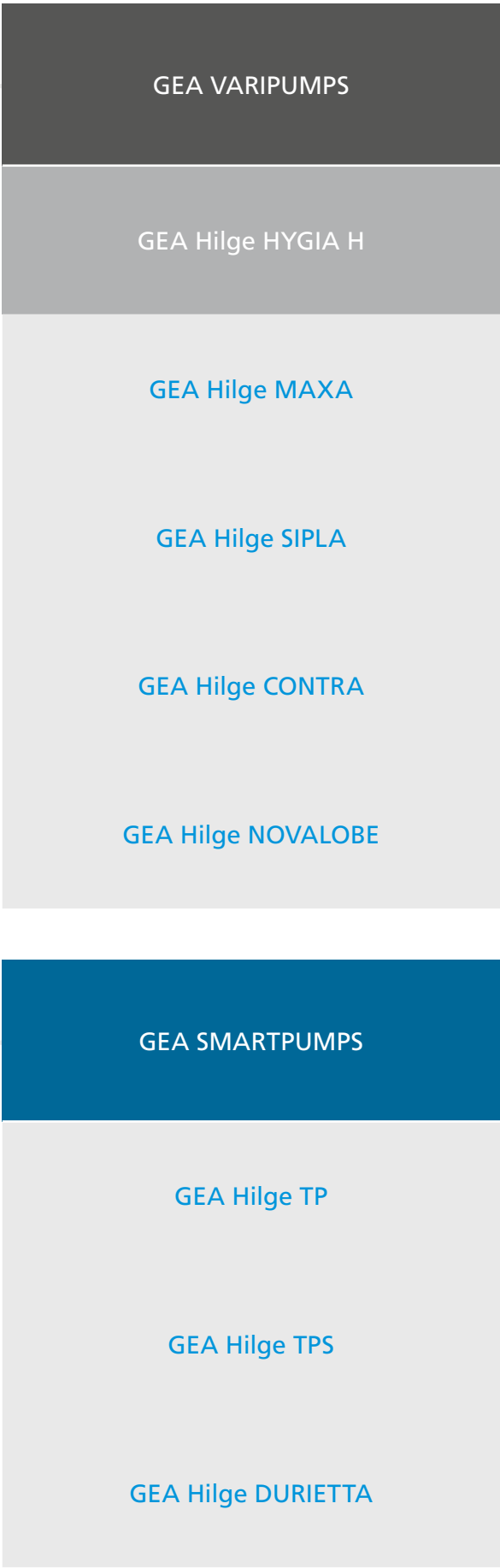
Application chemicals

					Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Concentration [%]	Single	Quench	Tandem
Caustic soda (NaOH)	< 140	related to concentration		< 15	kiE	–	–
	< 140			> 15 – < 50	–	kiE/WDR	kiE/aeE
	> 140 – < 214	related to concentration		< 12	kiE	–	–
	> 140 – < 214			< 12 – < 50	–	kiE/WDR	kiE/aeE
Peracetic / peroxyacetic (C ₂₄ O ₃)	< 140	< 10	< 1	< 5	kiV	–	–
Phosphoric acid (H ₃ PO ₄)	< 104	1 % = 10	< 5	< 15	kiV	–	–
	> 104 – < 185	5 % = 10	< 5	< 15	–	kiV/WDR	kiV/aeV
		10 % = 11					
		20 % = 11					
Nitric acid (HNO ₃)	< 185	35 % = 12	< 5	> 15 – < 45	–	–	kiV/aeV
	32–68	1 % = 10	5	0–10	kiV	–	–
	68–104	10 % = 10	5	0–10	–	kiV/WDR	kiV/aeV
	32–104	20 % = 11	5	10.1–20	–	kiV/WDR	kiV/aeV
	104–185	30 % = 12	5	0–20	–	–	kiV/aeV
Sulfuric acid (H ₂ SO ₄)	32–185	40 % = 12	5	20.1–40	–	–	kiV/aeV
	< 68	< 11	< 25	< 12	–	–	kiV/aeV
High test peroxide (H ₂ O ₂) Hydrogen peroxide	< 194	< 11	2	2–3	aeV	–	–
	< 194	< 12	2	< 40	kiV	–	–
	< 194	< 13	2	< 60	kiV	–	–
	< 140	< 15	2	< 100	–	–	kiV/aeV
Brine solution Common salt solution Sodium chloride (NaCl)	< 86	< 11	< 5	< 5	aeE	–	–
	86–104	< 11	< 5	< 5	kiE	–	–
	< 104	< 11	< 5	5.1–10	kiE	–	–
	< 104	< 12	< 25	10.1–25	–	kiE/WDR	kiE/aeE
Curing brine (butchery)	< 104	12	< 300	< 20	kiE	–	–
Salting brine (cheese dairy)	< 104	13	< 60	20–30	–	kiE/WDR	kiE/aeE
Ammonia/ammoniac (NH ₃)	< 104	8	< 5		–	aeE/WDR	aeE/aeE
Caustic potash (KOH) Potassium hydroxide	< 140	< 11	< 5	< 10	kiE	–	–
	< 140	< 12	< 5	< 20	kiE	–	–
Glycerol Propanetriol	80	< 11	< 5	0–40	aeV	–	–
	80	< 12	< 20	40.1–60	aeV	–	–
	80	< 12	< 50	60.1–75	aeV	–	–
	80	< 12	< 100	75.1–85	aeV	–	–
Propylene-glycol (C ₃ H ₈ O ₂)	32–176	10	< 5	1–20	kiV	–	–
	23–176	10	< 20	20.1–50	kiV	–	–
	14–176	10	< 150	50.1–75	kiV	–	–
	14–0	11	< 255	75.1–100	kiV	–	–
	32–176	11	< 150	75.1–100	kiV	–	–
Ethanediol Ethylene-glycol (C ₂ H ₆ O ₂)	32–176	10	< 5	1–20	kiE	–	–
	23–176	11	< 20	20.1–50	kiE	–	–
	14–176	11	< 40	50.1–75	kiE	–	–
	14–32	11	< 100	75.1–100	kiE	–	–
	32–176	11	< 65	75.1–100	kiE	–	–
Citric acid (C ₆ H ₈ O ₇) Natural citric acid	41–176	1 % = 10 10 % = 10	< 15	< 10	kiV	–	–
	41–176	10.1 % = 10 20 % = 11 30 % = 11 50 % = 13	< 15	10.1–50	kiV	–	–
Acetic acid (C ₂ H ₄ O ₂)	41–176	10	1	< 10	aeE	–	–
	41–212	11	1	10.1–100	–	–	aeK/aeE

Application waste water

				Mechanical seal* material product side / atmospheric side		
Subgroup	Temperature [°F]	Density [lb/gal]	Viscosity [CPS]	Single	Quench	Tandem
Dirty water	< 176					
Laboratory waste water	< 140					
Sewage	< 176	10	1	kiV	–	–
Waste water, without solids (not abrasive), pH < 7	< 176					
Dirty water						
Laboratory waste water						
Sewage	< 176	10	1	kiE	–	–
Waste water, without solids (not abrasive), pH < 7						
Landfill seepage water, not ozoniferous, chloride content max. 350mg/l	< 122	10	1	kiV	–	–
Landfill seepage water, not ozoniferous, no chloride content	< 122	10	1	kiV	–	–
Activated sludge	< 140	10	1	kiV	–	–

* 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.



**GEA Hilge HYGIA H
Single-stage
end-suction
centrifugal pumps**

GEA Hilge HYGIA H I 1

GEA Hilge HYGIA H II 2

Nominal width Connection type	DN	50/40	50/50	65/50
	OD	2" / 1½"	2" / 2"	2½" / 2"
	ISO	60.3/48.3	60.3/60.3	76.1/60.3
Clamp	a ₁	3.54	3.43	3.43
DIN 32676	e ₁	3.35	3.15	3.15
Row A (DIN)*	h ₂	8.50	8.50	8.50
Clamp	a ₁	3.54	3.43	3.43
DIN 32676	e ₁	3.35	3.15	3.15
Row B (ISO)**	h ₂	8.50	8.50	8.50
Clamp	a ₁	3.54	3.43	3.43
DIN 32676	e ₁	3.35	3.15	3.15
Row C (OD)***	h ₂	8.50	8.50	8.50

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

DN code: The code corresponds to the design annular casing without draining / venting

* For pipes according to DIN 11866 row A

** For pipes according to DIN 11866 row B

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

Nominal width Connection type	DN	65/65	80/65	80/80	100/80	100/100
	OD	2½"/2½"	3"/2½"	3"/3"	4"/3"	4"/4"
	ISO	76.1/76.1	88.9/76.1	88.9/88.9	114.3/88.9	114.3/114.3
Clamp	a ₁	4.57	4.96	5.04	5.35	5.35
DIN 32676	e ₁	3.86	3.86	3.37	3.37	3.37
Row A (DIN)*	h ₂	9.84	9.84	9.92	9.92	10.31
Clamp	a ₁	4.57	4.96	5.04	5.35	5.35
DIN 32676	e ₁	3.86	3.86	3.37	3.37	3.37
Row B (ISO)**	h ₂	9.84	9.84	9.92	9.92	10.31
Clamp	a ₁	4.57	4.96	4.96	5.35	5.35
DIN 32676	e ₁	3.86	3.86	3.37	3.37	3.37
Row C (OD)***	h ₂	9.84	9.84	11.89	11.89	10.31

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

DN code: The code corresponds to the design annular casing without draining / venting

* For pipes according to DIN 11866 row A

** For pipes according to DIN 11866 row B

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

GEA Hilge HYGIA H I
2-pole
50/60 Hz

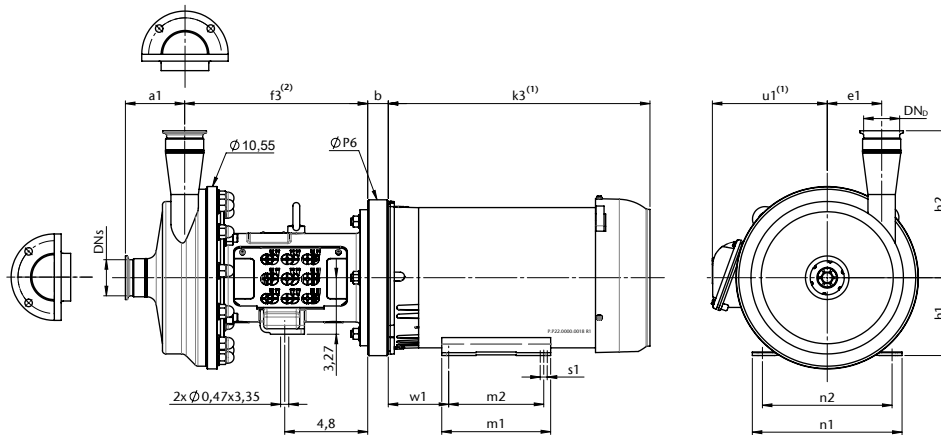
GEA Hilge HYGIA H I Adapta



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2"-2½", pressure side 1½"-2½"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 45 m³/h (198 US gpm)
Flow rate 60 Hz	Max. 50 m³/h (220 US gpm)
Pump head 50 Hz	Max. 45 m (148 ft)
Pump head 60 Hz	Max. 62 m (203 ft)
Housing pressure	64 bar (928 psi)

Certificates



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	w ₁ [inch]	m ₁ [inch]	m ₂ [inch]	n ₁ [inch]	n ₂ [inch]	s ₁ [inch]	h ₁ [inch]	Weight [lb]
3.0	182TC	15.20	7.60	10.59	1.19	9.02	3.38	6.30	4.50	8.66	7.50	0.41	4.50	141
5.0	184TC	15.20	7.60	10.59	1.19	9.02	3.38	6.30	4.50	8.66	7.50	0.41	4.50	156
7.5	213TC	16.90	9.40	10.59	1.69	9.02	4.25	7.95	5.50	9.45	8.50	0.41	5.25	214

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

⁽²⁾ Dimension valid for DN_b 50, DN_b 2" and DN_b 60.3. For all other connection dimension f₃ = 10.47

Weight: net-weight without packaging

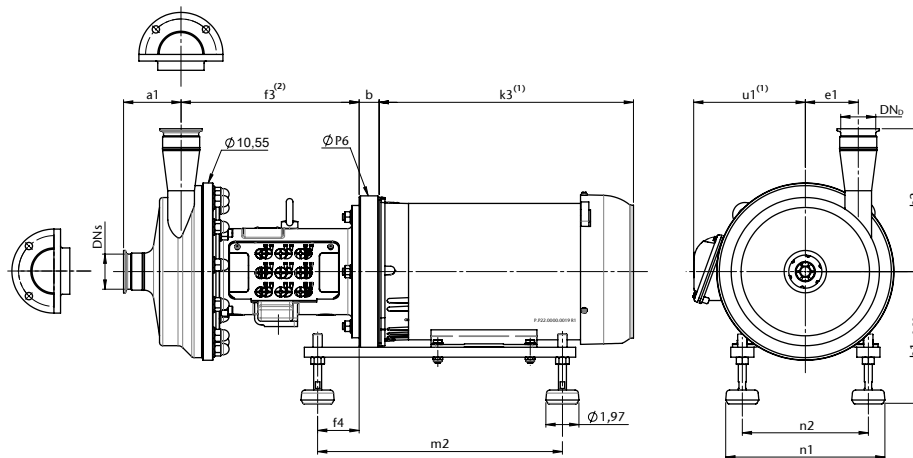
* The pump needs to be mounted according to 3-A Sanitary standard.



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2"-2½", pressure side 1½"-2½"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 45 m³/h (198 US gpm)
Flow rate 60 Hz	Max. 50 m³/h (220 US gpm)
Pump head 50 Hz	Max. 45 m (148 ft)
Pump head 60 Hz	Max. 62 m (203 ft)
Housing pressure	64 bar (928 psi)

Certificates



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	m ₂ [inch]	f ₄ [inch]	n ₁ [inch]	n ₂ [inch]	h ₁ [inch]	Weight [lb]
3.0	182TC	15.20	7.60	10.59	1.19	9.02	14.57	2.47	9.47	7.50	9.25	152
5.0	184TC	15.20	7.60	10.59	1.19	9.02	14.57	2.47	9.47	7.50	9.25	167
7.5	213TC	16.90	9.40	10.59	1.69	9.02	16.14	0.98	10.47	8.50	9.25	226

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

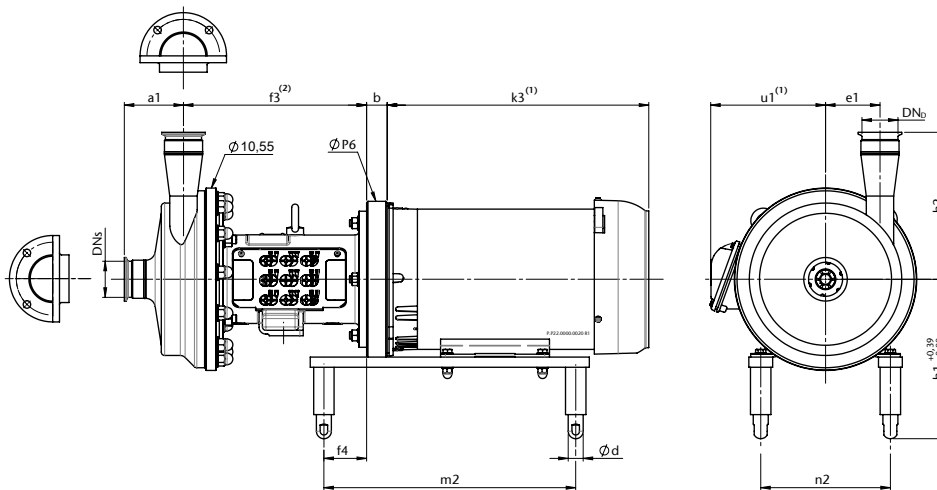
⁽²⁾ Dimension valid for DN_b 50, DN_b 2" and DN_b 60.3. For all other connection dimension f₃ = 10.47

Weight: net-weight without packaging



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2"-2½", pressure side 1½"-2½"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 45 m³/h (198 US gpm)
Flow rate 60 Hz	Max. 50 m³/h (220 US gpm)
Pump head 50 Hz	Max. 45 m (148 ft)
Pump head 60 Hz	Max. 62 m (203 ft)
Housing pressure	64 bar (928 psi)
Certificates	



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	m ₂ [inch]	f ₄ [inch]	d [inch]	n ₂ [inch]	h ₁ [inch]	Weight [lb]
3.0	182TC	15.20	7.60	10.59	1.19	9.02	14.57	2.47	0.87	7.50	9.22	153
5.0	184TC	15.20	7.60	10.59	1.19	9.02	14.57	2.47	0.87	7.50	9.22	168
7.5	213TC	16.90	9.40	10.59	1.69	9.02	16.14	0.98	0.87	8.50	9.86	227

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

⁽²⁾ Dimension valid for DN_b 50, DN_b 2" and DN_b 60.3. For all other connection dimension f₃ = 10.47

Weight: net-weight without packaging

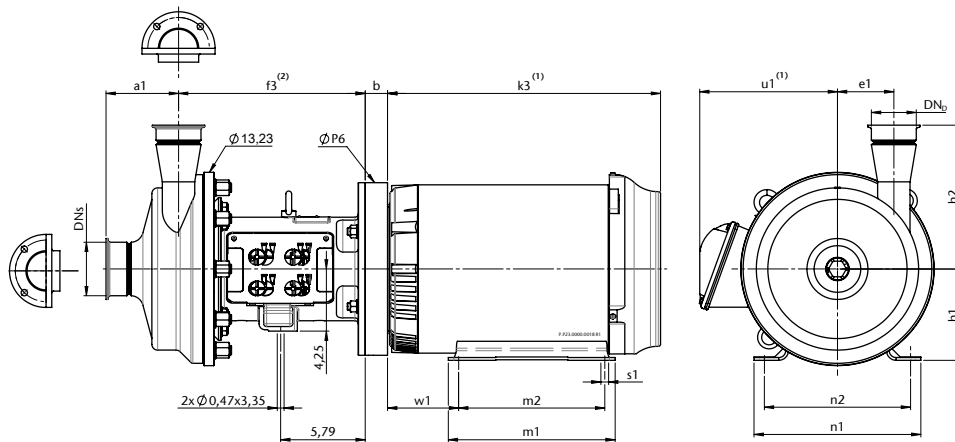
GEA Hilge HYGIA H II
2-pole
50/60 Hz

GEA Hilge HYGIA H II Adapta



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"-4", pressure side 2½"-4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208-230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)
Certificates	



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	w ₁ [inch]	m ₁ [inch]	m ₂ [inch]	n ₁ [inch]	n ₂ [inch]	s ₁ [inch]	h ₁ [inch]	Weight [lb]
7.5	213TC	16.90	9.40	12.77	0.91	11.81	4.25	7.95	5.50	9.45	8.50	0.41	5.25	278
10.0	215TC	18.30	9.40	12.77	0.91	11.81	4.25	7.95	5.50	9.45	8.50	0.41	5.25	313
15.0	254TC	21.30	10.30	12.77	1.54	11.81	4.75	11.42	8.25	11.42	10.00	0.53	6.25	327
20.0	256TC	21.30	10.30	12.77	1.54	11.81	4.75	11.42	8.25	11.42	10.00	0.53	6.25	363

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

⁽²⁾ Dimension valid for DN_b 65, DN_b 2½" and DN_b 76.1. For all other connection dimension f₃ = 12.7

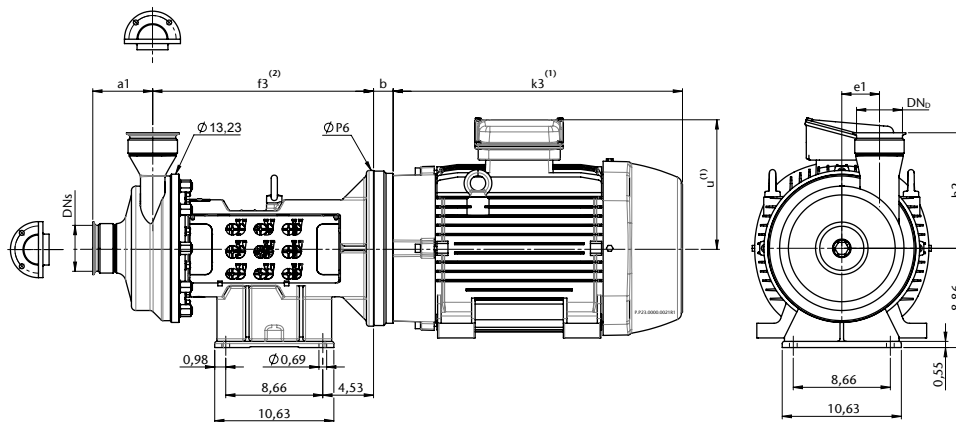
Weight: net-weight without packaging

* The pump needs to be mounted according to 3-A Sanitary standard.



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"–4", pressure side 2½"–4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)
Certificates	



2-pole

P2 [hp]	NEMA- size	$k_3^{(1)}$ [inch]	$u^{(1)}$ [inch]	$f_3^{(2)}$ [inch]	b [inch]	P_6 [inch]	Weight [lb]
25.0	284TSC	23.30	12.60	19.70	1.18	13.78	618
30.0	286TSC	23.30	12.60	19.70	1.18	13.78	648
40.0	324TSC	26.00	12.60	19.70	1.75	13.78	803
50.0	326TSC	26.00	12.60	19.70	1.75	13.78	840
60.0	364TSC	28.59	16.10	19.70	1.75	13.78	1081

Dimensions depend on the casing size (DN_s , DN_b , a_1 , h_2 , e_1). 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.

Tronic: motor with integrated frequency driver.

⁽²⁾ Dimension valid for $DN_b 65$, $DN_b 2\frac{1}{2}"$ and $DN_b 76.1$. For all other connection dimension $f_3 = 19.63$

Weight: net-weight without packaging

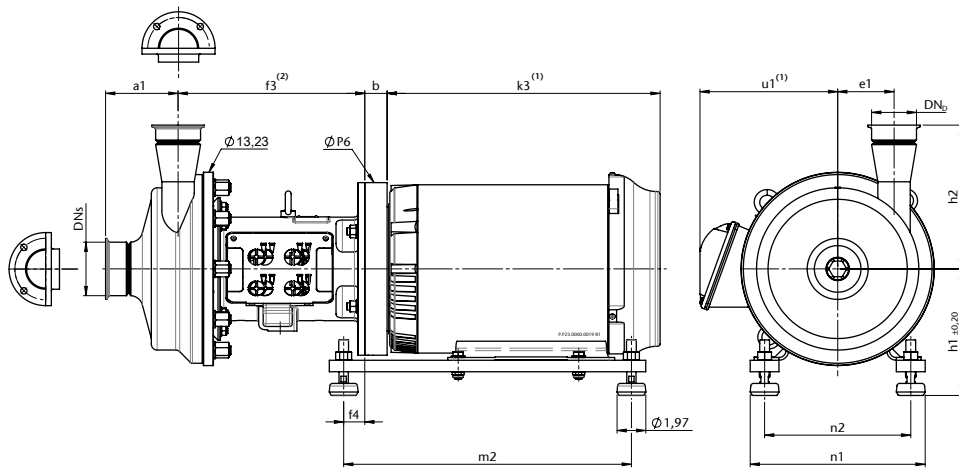
* The pump needs to be mounted according to 3-A Sanitary standard.



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"-4", pressure side 2½"-4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208-230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)

Certificates



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	m ₂ [inch]	f ₄ [inch]	n ₁ [inch]	n ₂ [inch]	h ₁ [inch]	Weight [lb]
7.5	213TC	16.90	9.40	12.77	0.91	11.81	16.14	1.76	10.47	8.50	10.24	290
10.0	215TC	18.30	9.40	12.77	0.91	11.81	16.14	1.76	10.47	8.50	10.24	325
15.0	254TC	21.30	10.30	12.77	1.54	11.81	19.69	1.44	11.97	10.00	10.24	351
20.0	256TC	21.30	10.30	12.77	1.54	11.81	19.69	1.44	11.97	10.00	10.24	387

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

⁽²⁾ Dimension valid for DN_b 65, DN_b 2½" and DN_b 76.1. For all other connection dimension f₃ = 12.7

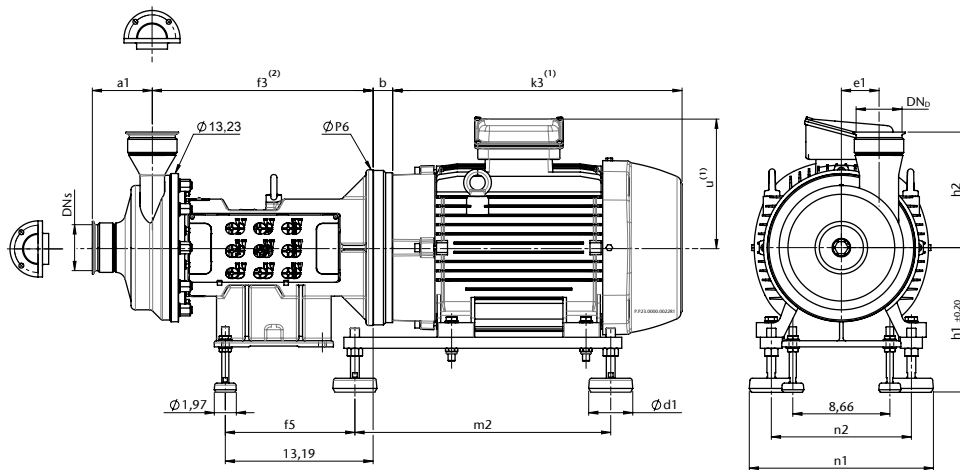
Weight: net-weight without packaging



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"-4", pressure side 2½"-4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208-230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)

Certificates



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	m ₂ [inch]	f ₅ [inch]	d ₁ [inch]	n ₁ [inch]	n ₂ [inch]	h ₁ [lb]	Weight [lb]
25.0	284TSC	23.30	12.60	19.70	1.18	13.78	21.26	10.90	2.95	13.95	11.00	10.63	651
30.0	286TSC	23.30	12.60	19.70	1.18	13.78	21.26	10.90	2.95	13.95	11.00	10.63	681
40.0	324TSC	26.00	12.60	19.70	1.75	13.78	22.83	11.56	3.94	16.44	12.50	12.92	854
50.0	326TSC	26.00	12.60	19.70	1.75	13.78	22.83	11.56	3.94	16.44	12.50	12.92	891
60.0	364TSC	28.59	16.10	19.70	1.75	13.78	23.62	12.18	3.94	17.96	14.02	13.92	1133

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

⁽²⁾ Dimension valid for DN_b 65, DN_b 2½" and DN_b 76.1. For all other connection dimension f₃ = 19.63

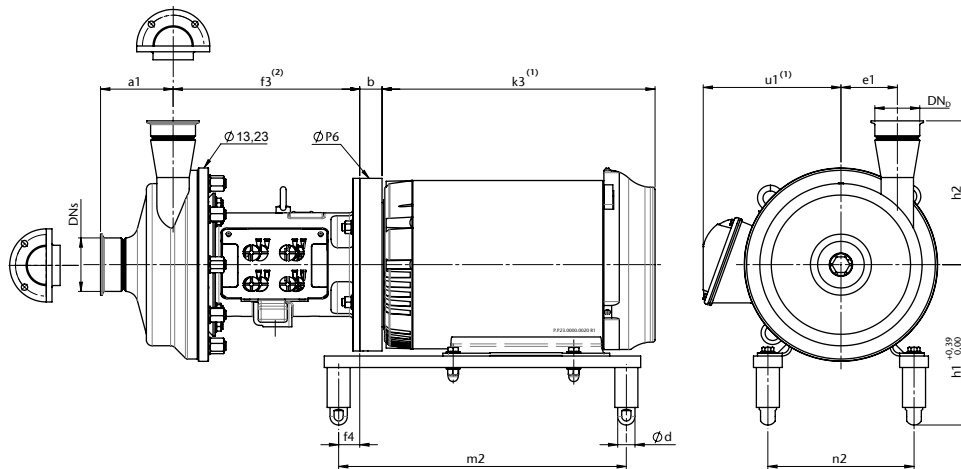
Weight: net-weight without packaging



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"–4", pressure side 2½"–4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)

Certificates



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	P ₆ [inch]	m ₂ [inch]	f ₄ [inch]	d [inch]	n ₂ [inch]	h ₁ [inch]	Weight [lb]
7.5	213TC	16.90	9.40	12.77	0.91	11.81	16.14	1.76	0.87	8.50	9.86	291
10.0	215TC	18.30	9.40	12.77	0.91	11.81	16.14	1.76	0.87	8.50	9.86	326
15.0	254TC	21.30	10.30	12.77	1.54	11.81	19.68	1.44	1.18	10.00	10.97	350
20.0	256TC	21.30	10.30	12.77	1.54	11.81	19.68	1.44	1.18	10.00	10.97	386

Dimensions depend on the casing size (DN_s, DN_b, 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.

Tronic: motor with integrated frequency motor.

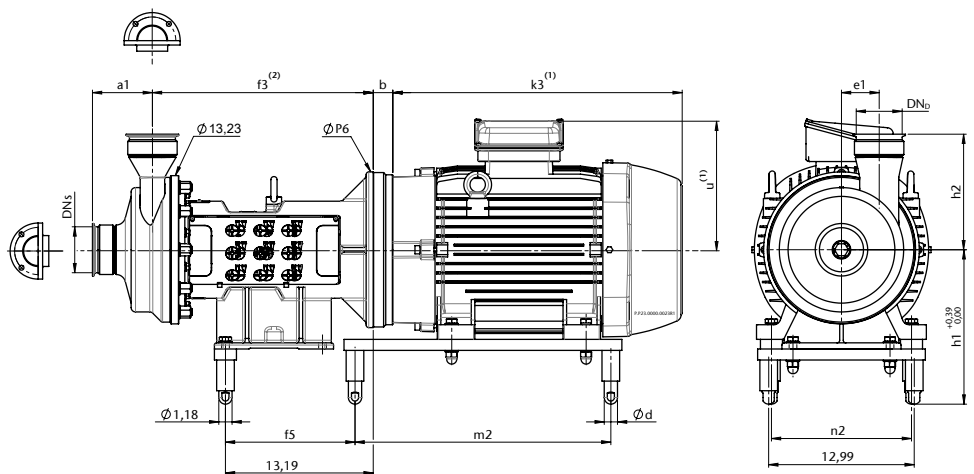
⁽²⁾ Dimension valid for DN_b 65, DN_b 2½" and DN_b 76.1. For all other connection dimension f₃ = 12.7

Weight: net-weight without packaging



Technical data of the standard version

Materials	Pump housing: stainless steel 316L (1.4404) Impeller: precision casting 316L (1.4404)
Connections	High pressure clamp similar to DIN 32676 Row C (ASME BPE, Tri-Clamp)
Nominal width of connections	Suction side 2½"–4", pressure side 2½"–4"
Mechanical seal	Single mechanical seal, material SiC/SiC/EPDM (FDA, USP Class VI)
Static seals	EPDM (FDA, USP Class VI)
Motor	Standard motor: NEMA-Motor, 3-phase, 208–230V/460V, C-face with foot, IP 55, ISO-Class F, incl. PTC thermistor, premium efficiency
Documentation	Operating instructions, declaration of conformity, pump test report
Flow rate 50 Hz	Max. 200 m³/h (881 US gpm)
Flow rate 60 Hz	Max. 175 m³/h (771 US gpm)
Pump head 50 Hz	Max. 72 m (236 ft)
Pump head 60 Hz	Max. 105 m (345 ft)
Housing pressure	64 bar (928 psi)
Certificates	



2-pole

P2 [hp]	NEMA- size	k ₃ ⁽¹⁾ [inch]	u ⁽¹⁾ [inch]	f ₃ ⁽²⁾ [inch]	b [inch]	p ₆ [inch]	m ₂ [inch]	f ₅ [inch]	d [inch]	n ₂ [inch]	h ₁ [inch]	Weight [lb]
25.0	284TSC	23.30	12.60	19.70	1.18	13.90	21.26	10.90	1.18	11.00	13.78	662
30.0	286TSC	23.30	12.60	19.70	1.18	13.90	21.26	10.90	1.18	11.00	13.78	692
40.0	324TSC	26.00	12.60	19.70	1.75	13.90	22.83	11.56	1.18	12.50	13.78	852
50.0	326TSC	26.00	12.60	19.70	1.75	13.90	22.83	11.56	1.18	12.50	13.78	889
60.0	364TSC	28.59	16.10	19.70	1.75	13.90	23.62	12.18	1.18	14.02	13.92	1131

Dimensions depend on the casing size (DN_s, DN_b, a1, h2, e1). See table of connections.

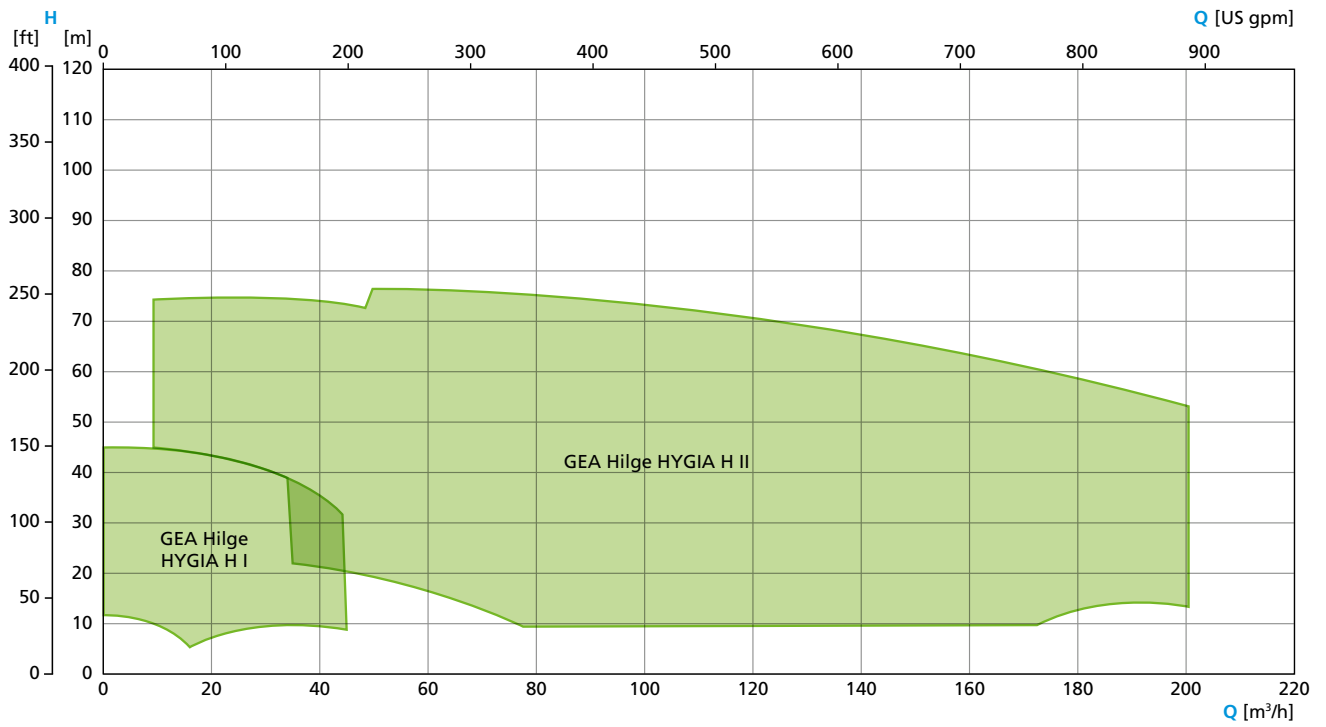
⁽¹⁾ Motor dimensions depend on the motor manufacturer and execution. The shown motor dimensions indicate the size for the standard motor.

Tronic: motor with integrated frequency motor.

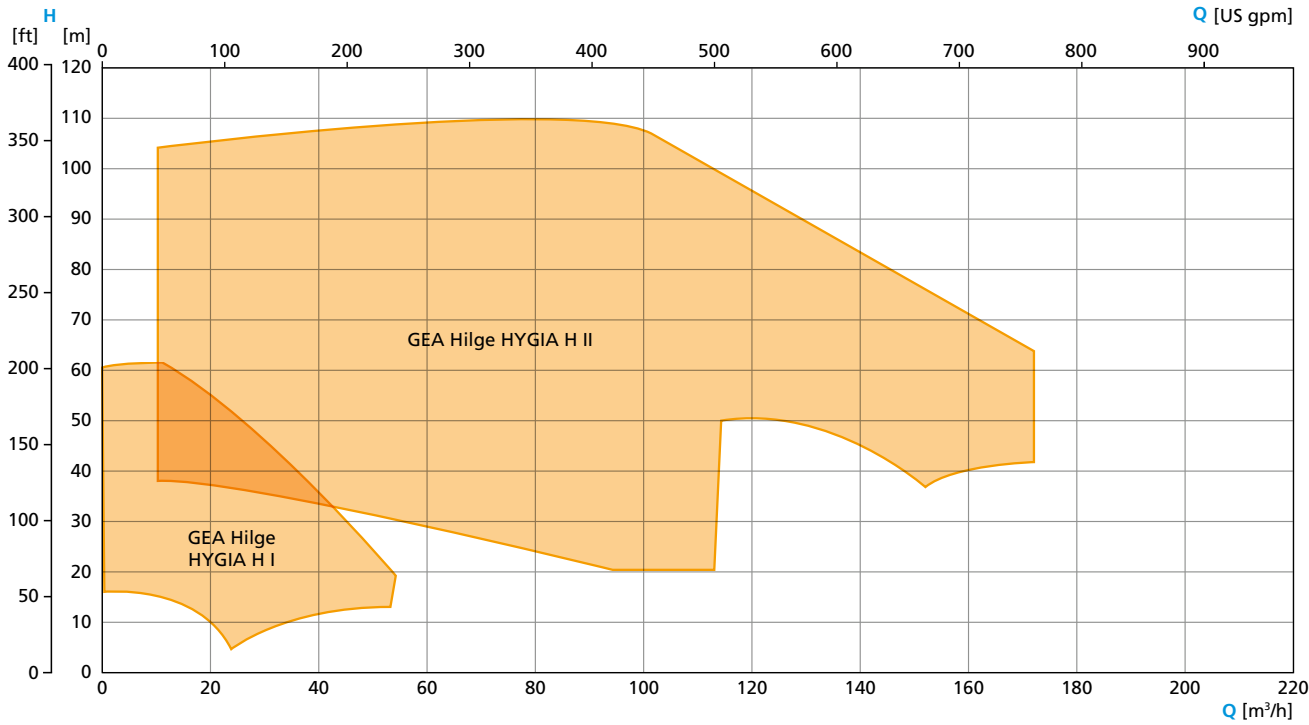
⁽²⁾ Dimension valid for DN_b 65, DN_b 2½" and DN_b 76.1. For all other connection dimension f₃ = 19.63

Weight: net-weight without packaging

2-pole, 50 Hz







2-pole, 60 Hz



Pump Type Code GEA Hilge HYGIA H

Position	Composition of order code					
1	Pump type					
	HYGIA H I		HYGIA H II			
2	No. of stages					
	1 1-stage					
3	Version					
	A/B/C Non 3-A					
4	D 3-A					
	Design					
5	A					
	Adapta					
6	Mounting					
	H M* B F					
7	On 3-A Stainless Steel Adjustable Feet					
	On Motor Foot					
8	On Adjustable Feet					
	On Adapta Foot					
9	Stainless steel shroud					
	W Without stainless steel shroud					
10	Impeller					
	C					
11	Semi-open					
	Impeller diameter (mm)					
12	Connection type					
	HCA High pressure clamp similar to DIN32676, Row A (DIN)					
13	HCB High pressure clamp similar to DIN32676, Row B (ISO)					
	HCC High pressure clamp similar to DIN32676, Row C (OD/ASME)					
14	Connection norm					
	D DIN O OD I ISO					
15	Diameter suction side					
	DIN OD ISO					
16	50 50 2 2" 60 60.3					
	65 65 2½ 2½" 76 76.1					
17	80 80 3 3" 88 88.9					
	100 100 4 4" 114 114.3					
18	Diameter pressure side					
	DIN OD ISO					
19	40 40 1½ 1½" 48 48.3					
	50 50 2 2" 60 60.3					
20	65 65 2½ 2½" 76 76.1					
	80 80 3 3" 88 88.9					
21	100 100 4 4" 114 114.3					

13	Surface roughness
	1 $R_a \leq 125 \mu\text{m}$ (3.2 μm) 3 $R_a \leq 32 \mu\text{m}$ (0.8 μm)
14	Material product-wetted parts
	2 1.4404/1.4435 (316L)
15	Ferrite content
	W Without restriction
16	Design of mechanical seal
	<div>E</div>  <div>Single</div> <div>Q</div>  <div>Quench</div> <div>T</div>  <div>Tandem (Double)</div>
17	Mechanical seal, execution of spring
	 <div>E Encapsulated spring</div>
18	Mechanical seal material (static)
	t SiC (SiCar) solid/sintered
19	Mechanical seal material (rotating)
	u SiC (SiCar) solid/sintered, embedded graphite
20	Elastomer
	I FKM USP Class VI
	V FKM
	E EPDM
	H EPDM USP Class VI
21	Options
	W Without drain
22	Further options
	Drain
	W Without drain

* The pump needs to be mounted according to 3-A Sanitary Standard.

 With 3-A Sanitary Standard



Example of pump order code:

Position	1		2		3		4		5		6		7		8		9																		
Code	HYGIA H I /		1 /		D /		A		H		W /		C		180 /		HCC /																		
10		11		12		13		14		15		16		17		18		19		20		21		22											
O		2		x		2		/		3		2		W		/		E		E		t		u		H		/		W		/		W	

Motor code

Position	Composition of order code			
1	Motor standard			
	NEMA			
2	No. of poles			
	2 2-pole			
3	Frequency			
	50 50 Hz			
	60 60 Hz			
4	Motor power			
	3 hp to 60 hp			
5	Voltage			
	220/380 220VD/380VY			
	208–230/460 208–230/460			
6	Motor design			
	CM C-Face with foot			
7	Size			
	182TC to 364TSC			
8	Efficiency class			
	P NEMA premium efficiency			
	S NEMA super premium efficiency			
9	Protection class			
	55 IP55	56 IP 56	65 IP65	66 IP66
10	Motor supplier (alternative motor suppliers on request)			
	S Standard			
11	Options			
	G General purpose			
	W Washdown			
	A Stainless steel washdown			
	S Special			
12	Terminal box			
	L Left			
13	External fan			
	W Without external fan			
14	Thermistor			
	M With thermistor			
15	Frequency converter			
	W Without integrated frequency converter			
16	ATEX			
	W Without ATEX			

Example of motor dimension order code:

Position	1	2	3	4	5	6	7	8
Code	NEMA	2	60	15 hp	208–230/460	CM	254TC	P
9	55	10	11	12	13	14	15	16
	S	G	L	W	M	W	W	

INQUIRY SHEET · CENTRIFUGAL PUMPS 1/2



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 [°F]: _____ Kind of solids: _____

*Density [lb/ft³]: _____ Size of solids [in]: _____

Viscosity [cPs]: _____ Abrasive: ☐ No ☐ Yes

Concentration [%]: _____

Operating Conditions

*Duty point 1 Flow [US gpm]: _____ *Head [ft lc]: _____

Duty point 2 Flow [US gpm]: _____ Head [ft lc]: _____

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

Inlet pressure (NPSHa) [ft]: _____ Vacuum at inlet: ☐ No ☐ Yes

Suction head [ft]: _____ Vacuum, abs. [psi]: _____

System pressure [psi]: _____ Gas content: ☐ No ☐ < 5 % ☐ > 5 %

Cleaning / Sterilization

CIP: ☐ No ☐ Yes: _____ SIP: ☐ No ☐ Yes: _____

CIP Temperature [°F]: _____ SIP Temperature [°F]: _____

CIP Flow [US gpm]: _____ SIP Duration [min]: _____

CIP Head [ft]: _____

Pump execution

*Connection Type ASME

☐ Tri Clamp (DIN 32676) ☐ ANSI Flange

☐ Other: _____

Connection Size

DN_i/DN_o:

Drain port

☐ No

☐ Yes: _____

Execution and Design

☐ Bloc version: Pump with stub shaft and motor

☐ Adapta bloc version: Pump with bearing bracket and standard motor

☐ With stainless steel shroud

☐ 3-A Stainless Steel Adjustable Feet

☐ Combi foot

☐ On Trolley

☐ Motor foot

☐ Horizontal

☐ Vertical

☐ Vertical with stainless steel stand

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

V1.1-2017 USA

INQUIRY SHEET · CENTRIFUGAL PUMPS 2/2



GEA Hygienic Pumps

Surface Roughness

- ☐ Not specified
- ☐ $R_a \leq 125 \mu\text{in}$ (3.2 μm)
- ☐ $R_a \leq 32 \mu\text{in}$ (0.8 μm)
- ☐ $R_a \leq 16 \mu\text{in}$ (0.4 μm)

Ferrite Content

- ☐ Not specified
- ☐ $F_e < 1\%$

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

Supply voltage:

- ☐ 3~ 480V/60 Hz
- ☐ 3~ 208–230/460V/60 Hz
- ☐ 3~ 230V/60 Hz
- ☐ 3~ 575V/60 Hz
- ☐ other: _____

Motor speed [1/min]: _____

Thermistors: ☐ No ☐ YesVariable speed drive ☐ No ☐ Yes:

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

Explosion atmosphere ☐ No ☐ YesEXP Motor ☐ No ☐ Yes:

Temperature class: _____

Ambient Temperature [°F]: _____

Class: _____

Division: _____

Group: _____
















Certificates/Documentation

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

Further Information

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

V1.1-2017 USA

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 specific tests. This certificate is issued by an authority which is independent of manufacturing and is validated by the manufacturers authorized 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		Euroasian 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 one 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.
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

Abbreviation	Explanation
DIN	Deutsches Institut für Normung e. V. Standardization organization in the Federal Republic of Germany, DIN = synonym for standards issued by the organization
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 conformity from the customs union of Russia/Belarus/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 maximum 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

Abbreviation	Explanation
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.
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	Armored 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)

Abbreviation	Explanation
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
SES	GEA Tuchenhausen control head for Ex areas, control top system of GEA Tuchenhausen
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 Mjolk 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



We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

“Engineering for a better world” is the driving and energizing principle connecting GEA’s workforce. As one of the largest systems suppliers, GEA makes an important contribution to a sustainable future with its solutions and services, particularly in the food, beverage and pharmaceutical sectors. Across the globe, GEA’s plants, processes and components contribute significantly to the reduction of CO₂ emissions, plastic use as well as food waste in production.

GEA is listed on the German MDAX and the STOXX® Europe 600 Index and also included in the DAX 50 ESG and MSCI Global Sustainability indexes.

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