

GEA Flow Components

Keeping your product in motion



APPLICATIONS

Beverage

Beer, juice, smoothie products ...

Dairy

Milk, yogurt, cheese ...

Food

Sauces & cremes, ketchup, mayonnaise ...

Pharma/Biotech

Pharmaceuticals, biotechnology products, cosmetics & health care ...

Chemicals

Fine chemicals, bulk chemicals, cleaning chemicals ...

Dairy farming

Raw milk processing ...

What we do

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

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.



Every fourth liter of human blood is handled by GEA equipment



Around one quarter of processed milk is handled by GEA equipment



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



Approx, one in three instant coffee lines has been built

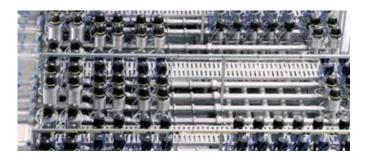
GEA Flow Components meet the highest hygienic standards where required, such as EHEDG and 3-A standards.

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.



HYGIENIC VALVE TECHNOLOGY



ASEPTIC VALVE TECHNOLOGY



HYGIENIC PUMP TECHNOLOGY



CLEANING TECHNOLOGY



Hygienic valve technology

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

Hygienic valves from GEA form the core component of matrix-piped process plants. All our valves facilitate considerable cost savings, offering a flexible valve concept and reliable, innovative control functions. All valves are economically designed for the application for which they are intended.

Complementing our portfolio, we provide highefficiency product recovery systems to increase plant output and reduce waste, water and detergent consumption, as well as process connections, expansion compensators and safety-enhancing tank lock systems.

GEA VARIVENT® system

VARIVENT® valves are the core component in matrix-piped process plants. They are operationally reliable, easy to maintain and suitable for CIP/SIP operations. They contribute significantly to the highest product quality. Low operation, maintenance and service costs make the system economical and productive.

The VARIVENT® system is a flexible, modular system that has many advantages. For instance, standardized parts that go with various valve types. The result: cost-effectiveness for the plant owner, optimized stock keeping, favorably priced spare parts and low part diversity.

Our valve program includes single-seat shut-off valves, single-seat divert valves, mixproof valves, mixproof bottom valves, vacuum valves and sampling valves. Modulating control valves, safety valves, constant pressure valves and overflow valves complete this comprehensive program. Many of these valve types are EHEDG certified and meet the 3-A standards.

VARIVENT® valves are characterized by their special sealing technique. The metallic stop of the valve disk is the core element for a defined deformation of the seal. With this technique a longer service life in the process plant is reached – leading to shorter downtimes and continuous production.

All of our valve series can be combined with $T.VIS^{\circledast}$ control tops. They integrate and combine our valves into the automated process plant.



Mixproof valve

SI7FS

Valve type	Metric	Inch OD	Inch IPS
Single-seat shut-off valves	DN 25 – DN 150	1"-6"	2"-6"
Single-seat divert valves	DN 25 – DN 150	1"-6"	2"-6"
Single-seat long stroke valves	DN 65 – DN 100	2.5" – 4"	-
Mixproof valves	DN 25 – DN 150	1"-6"	2"-6"
Mixproof double-seal valves	DN 25 – DN 150	1"-6"	-
Mixproof divert valves	DN 25 – DN 150	1"-6"	2"-6"
Mixproof bottom valves	DN 25 – DN 150	1"-6"	2"-6"
Control valves	DN 25 – DN 150	1"-6"	2"-6"
Overflow valves	DN 25 – DN 100	1"-4"	2"-4"
Constant pressure valves	DN 40 + DN 65	1.5" + 2.5"	_



Mixproof double-seal valve



Single-seat shut-off valve



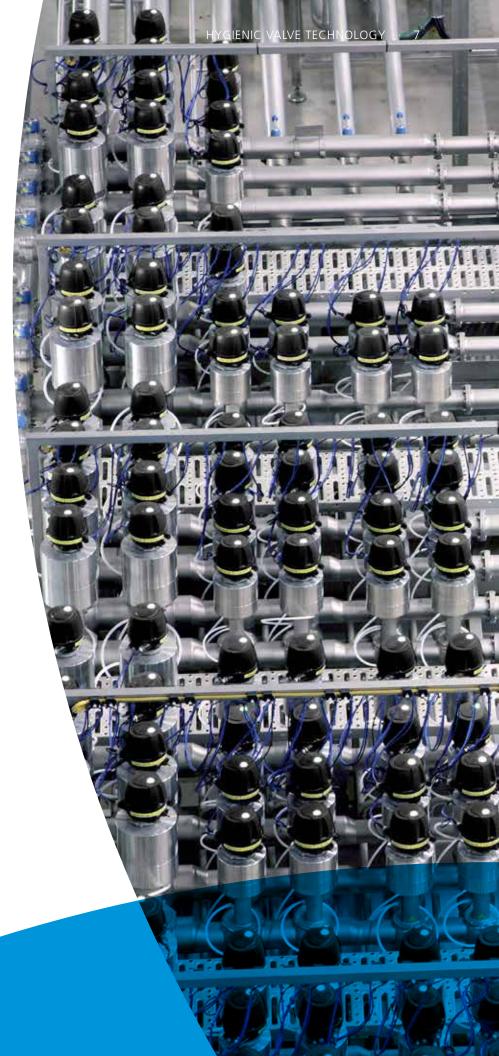
Mixproof bottom valve



Mixproof divert valve



 $Control\ valve$



GEA T-smart valves

Our T-smart valve series is designed for basic functions; it is favorably priced and designed for standard applications. This valve series includes seat and butterfly valves.

The T-smart valve series is characterized by standardized products while still offering necessary variations (e.g., body combinations, seals, feedback options). Clearly assigned item numbers simplify the selection and ordering process.

The butterfly valves T-smart 7 are used as cost-effective shut-off elements on valve blocks, panels and pipe fences for product and cleaning.

The T-smart 7 offers the benefits of excellent hygiene, higher ease of assembly, shorter assembly and maintenance times and thus higher production uptimes.

Also a mixproof butterfly valve, T-smart 9 is available and suitable for a safe media separation. All variants are highly functional, CIP/SIP compatible, easy to maintain and reliable for the safety of the production process.



Single-seat shut-off valve

Valve type	Metric	Inch OD
Seat valves T-smart	DN 25 – DN 100	1"-4"
Butterfly valves T-smart 7	DN 15 – DN 150	0.5" – 4"
Mixproof butterfly valves T-smart 9	DN 50 – DN 100	2"-4"



Butterfly valves



Mixproof seat valve



 ${\it Mixproof\ butterfly\ valve}$



GEA ECOVENT® valves

With our ECOVENT® program, we offer a valve series that covers shut-off and divert valves. ECOVENT® valves are based on the VARIVENT® philosophy and offer a cost-effective product with basic functions.







Single-seat shut-off valve

Metric	Inch OD
DN 10 – DN 100	1"-4"

GEA VARINLINE® housings and connection flanges

The installation of VARINLINE® housings into the pipeline system permits integration of measurement and control instruments in the process system and, thus, a transparent structure to the production process.

VARINLINE® housings can have up to two process connections - they allow pocket-free installation of the sensors and hence are used in process plants with high hygienic standards.

Many manufacturers have assumed this established process connection type and offer meters for installation of VARINLINE® fittings as standard. This ensures hygienic and quick integration of different devices into the process system.



The process connections offer the option of holding up to two components in one VARINLINE® housing



Metric	Inch OD	Inch IPS	ISO
DN 10 – DN 150	1"-6"	2"-6"	13.5 – 114.3

GEA VARICOVER® product recovery system

VARICOVER® product recovery systems are used in different applications to optimize the economic efficiency of a process system by recovering the valuable products from pipelines.

Product recovery systems are used whenever viscous products are expelled from pipe systems without the risk of intermixing with other media. Wastewater costs are reduced considerably, with corresponding savings of water and detergent consumption



station MST

Metric	Inch OD
DN 25 – DN 100	1"-4"



GEA VARICOMP® expansion compensator

The innovative VARICOMP® expansion compensator equalizes expansions and tensions that result from temperature differences in the pipeline system. Its special design principle makes it suitable for aseptic processes.

The unique advantage of the VARICOMP® expansion compensator, the pocket-free design with draining capability, meets the requirements of optimum cleaning with CIP/SIP processes. Due to its compact dimensions, the VARICOMP® expansion compensator is especially suitable for valve blocks and process units.



Expansion compensator

Metric	Inch OD	Inch IPS
DN 50 – DN 125	2"-4"	3"-6"



GEA VARITOP® tank safety system

This modular and compact system is used for the protection and cleaning of process tanks and it satisfies the highest hygienic demands. VARITOP® meets the requirements of cleaning compatibility as well as CIP/gas management, functionality and reliability.

Tanktop safety systems

- · Installation on a tank dome cover or using a central connection
- · Ventilation and cleaning via one connection only
- · Connection for pressure measurement
- Free selection of the cleaner type

Safety valves

- · Spring-loaded safety valves
- Against overpressure for steam, gases and liquids

SI7FS

Metric	Inch OD
DN 25 – DN 100	1"-4"

Vacuum valves

- · For securing tanks against vacuum pressure
- · Valve opens upwards

Metric	Inch OD	Inch IPS
DN 65 – DN 100	2.5" – 4"	6"



Installation using a central connection



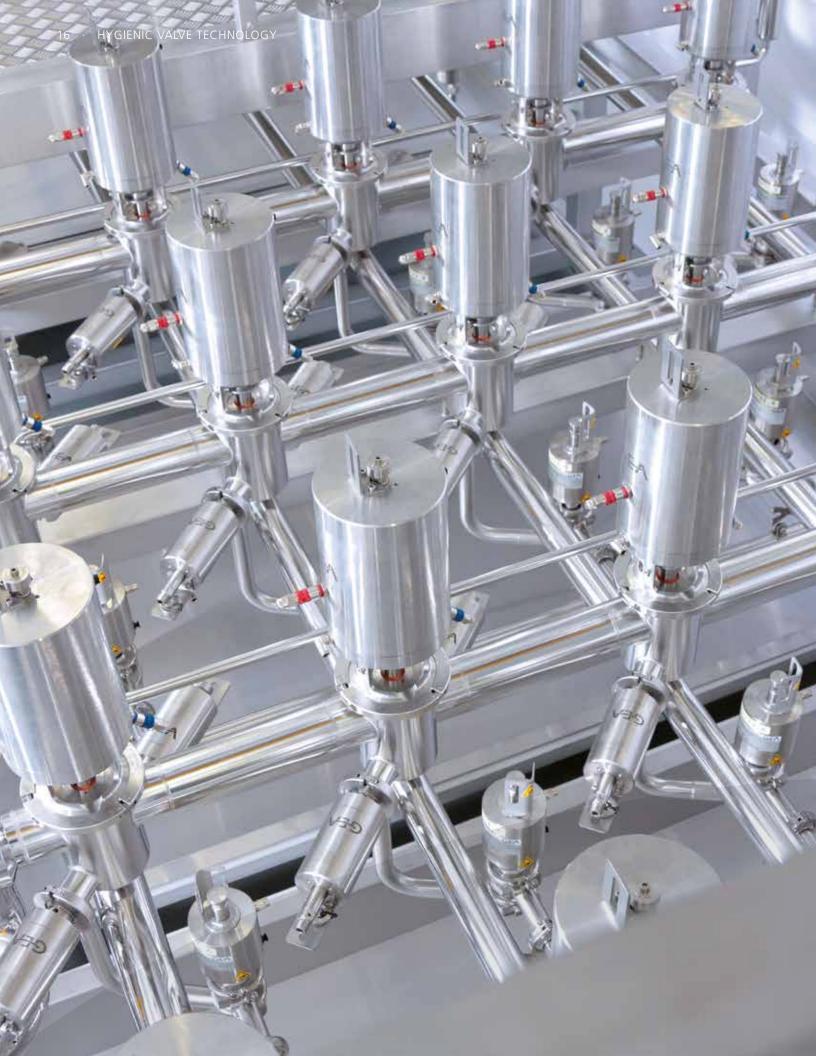
Installation on a tank dome cover





Spring-loaded safety valve





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 provide microbial stability of the product over the whole process.

The increased safety of UltraClean valves results from the valve stem being protected from the atmosphere by steam or by a hermetical sealing diaphragm. In conjunction with the materials used, UltraClean valve concepts provide cost-effective solutions for products not requiring the most stringent aseptic process demands.

Aseptic valves, the highest hygienic class, are distinguished by the uncompromising hermetic sealing of the valve stem against the environment, minimizing the risk of contamination in sterile processes. Aseptic components also rank highest in safety due to the detection possibilities of stainless-steel bellow technology and other construction features.

GEA D-tec® stem diaphragm valves

D-tec® stem diaphragm valves are characterized by a higher safety protection against contamination from the environment and, thus, provide microbial stability of the product over the whole process in UltraClean applications in the food, beverage and dairy industry.

The hermetically sealing diaphragm gives the D-tec® stem diaphragm valve a higher hygienic standard that ensures higher product quality and longer shelf-life of products as is often demanded from customers with UltraClean applications. The innovative connection between valve stem and diaphragm in the product area and the minimized mechanical stress of the diaphragm during switching procedures should be noted. The D-tec® diaphragm sets standards for the service life at proven temperature resilience and cleaning ability.

The D-tec® stem diaphragm valve is based on the VARIVENT® modular system and offers many advantages. For example, a high level of flexibility in terms of valve configuration. The result: economic efficiency for the system operator and a reduced number of spare parts required in inventory.

All of our D-tec® valves can be equipped with T.VIS® control tops. They integrate and combine our valves into the automated process plant.



Shut-off valve

Valve type	Metric	Inch OD
Shut-off valves	DN 25 – DN 100	1"-4"
Divert valves	DN 25 – DN 100	1"-4"





Divert valve

GEA Aseptomag® aseptic valves

Aseptomag® aseptic valves are designed to meet the highest demands for aseptic processes in the dairy, food and beverage industry.

Aseptic bellow valves distinguish themselves with the uncompromisingly hermetic seal of the valve stem, thereby minimizing contamination risks and maximizing detection possibilities. The Aseptomag® valve program is the equivalent to the VARIVENT® program for aseptic processes and provides everything from shut-off over bottom-seat to mixproof and sampling valves. The valve program meets the highest hygienic standards where required, such as EHEDG and 3-A standards. Thanks to the modular build-up of the Aseptomag® program, it also allows tailor-made valve solutions for specific process requirements (i.e., components for aseptic pigging systems). Aseptomag® valves can be combined with T.VIS® control and can be seamlessly integrated into an automated process plant.



Valve type	Metric	Inch OD
Shut-off valves AV	DN 15 – DN 150	0.75" – 6"
Bottom-seat valves AVBS	DN 15 – DN 150	0.75" - 6"
Divert valves UV	DN 15 – DN 100	0.75" – 4"
Filling valves AF	DN 25 – DN 100	1" - 4"
Control valves RV	DN 15 – DN 100	0.75" - 4"
Back-pressure valves GD	DN 15 – DN 150	0.75" - 6"
Mini valves AMV	DN 06 – DN 10	0.25" - 0.5"
Leakage valves LV	DN 40 – DN 100	1.5" – 4"
Leakage bottom-seat valves DT	DN 40 – DN 100	1.5" – 4"
Leakage valves ADV	DN 25 – DN 100	1" - 4"
Double-chamber valves DK	DN 25 – DN 150	1" - 6"
DK bottom-seat valves DKBS	DN 25 – DN 150	1" - 6"
DK valves – type DDK	DN 25 – DN 150	1" - 6"
DK valves – type AXV	DN 25 – DN 150	1" - 6"
Sampling valves PV	DN 10 – DN 15	0.5" - 0.75"
Steam inlet valves DE	DN 25 – DN 40	1" – 1.5"

 $^{^*}$ Additional valve sizes and connection standards (i.e., ISO) available upon request



Shut-off valve



Control valve



Leakage valve



Double-chamber bottom-seat valve



 ${\it Divert\ valve}$



 ${\it Back-pressure\ valve}$



Double-chamber valve



Sampling valve



GEA VESTA® sterile valves

VESTA® sterile valves are a true asset for applications from the laboratory up to highly complex process plants especially in the pharmaceutical, biotech and cosmetics industry, but they can also be used in the food industry.

Thanks to the hermetic sealing of the valve stem with a PTFE bellow, VESTA® sterile valves provide a maximum level of process line isolation and thus contribute to customers' product and process safety.

The VESTA® valve series is specifically designed to meet the highest requirements for sterile processes in the pharmaceutical, biotech and cosmetics industry. The valve program provides everything that is required to ideally serve these industries. The high-quality valve range consists of different valve types, and thanks to the modular build-up, the valves can also be tailor-made for specific process conditions and still meet all requirements from a regulatory point of view.

VESTA® valves can be seamlessly integrated into an automated process plant by using the T.VIS® control tops.



Shut-off valve

Tank bottom valve

Valve type	Metric	Inch OD	ISO
Shut-off valves	DN 10 – DN 100	0.5" - 4"	ISO 13.5 – ISO 114.3
Mixed matched valves	DN 10 – DN 80	0.5" - 3"	ISO 13.5 – ISO 88.9
Tank bottom valves	DN 10 – DN 100	0.5" - 4"	ISO 13.5 – ISO 114.3
Block valves	DN 10 – DN 65	0.5" – 2.5"	ISO 13.5 – ISO 76.1
Sampling valves	DN 10 – DN 15	0.5" - 0.75"	ISO 13.5 – ISO 17.2
Multiport	DN 10 – DN 25	0.5" – 1"	ISO 13.5 – ISO 33.7



Sampling valve



 ${\it Mixed\ matched\ valve}$



 $Block\ valve$



Multiport



GEA system solutions for the aseptic industry

Besides our components portfolio, GEA also offers standardized as well as tailor-made system solutions for different applications and industries.



VESTA® sampling system

The fillasept® pilot filling machine is designed to fill containers up to 2 liters under aseptic conditions. The decontamination and drying process is fully automated and the residual head space volume can be filled with nitrogen gas. The whole filling and closing process takes place in the integrated laminar flow area, which allows flexibility on one hand and maximum product safety on the other hand.

The aseptic VESTA® sampling system is based on a modular design concept, making sampling at different locations in the process line possible with outstanding simplicity. Thanks to the system's compact design and freely selectable degree of automation, it can adapt with ease to any customer process requirements.



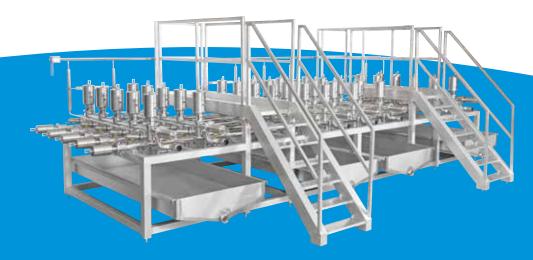
fillasept® pilot filling machine

The IBCfill® filling system is a 'plug & play' solution for the aseptic filling of IBC modules (Intermediate Bulk Containers) and is especially distinguished by its compact design, the easy connection to industrial processes and the smooth adjustment of process parameters.



IBCfill® filling system

In addition to our standardized systems, we assist customers with implementing specific process functionality into compact modules by using components out of our modular and extensive product portfolio. We design, plan and fabricate tailor-made valve manifolds in close cooperation with our customers, focusing on product and process safety as well as maintainability.





Hygienic pump technology

A great variety of hygienic pumps in two modern pump lines with sensibly rated high-efficiency motors and carefully designed flow paths, driving economic efficiency and sustainable operation.

State-of-the-art pump technology, made to our customers' preferences

At the GEA Hilge Hygienc Pumps Center of Competence in Bodenheim we develop innovative pumps and processes together with our customers. Our decades of up-close experience with operations and systems at our customers' production sites ensure optimum selection and configuration of the right pumps for every application (e.g., food and dairy, brewery and beverage, pharmaceutical and biotech, chemicals and personal care).

Maximum efficiency

Two product lines, GEA VARIPUMP and GEA SMARTPUMP, enable our customers to choose from a highly versatile pump range with a multitude of smart adaption options to achieve simpler operation, higher-quality production, and reduced consumption of valuable resources. Special construction features of our many types of pumps provide for exceptionally gentle product handling, delivering top-quality products to consumers.

Maximum reliability

Our customers rely on the safe, continuous operation of their production systems without unplanned breaks or disturbances. That is why GEA pumps are optimized for uncompromising reliability in all applications. Thanks to their robust design and long service life, they are known as "workhorses" for their ease of maintenance and outstanding service, proven over decades. Of course, GEA pumps also comply with all relevant hygiene standards and norms (e.g., 3-A*, QHD and EHEDG), with continuous documentation and up-to-date certifications safely ensuring judicial security.

^{*}GEA Hilge HYGIA, GEA Hilge TP, GEA Hilge TPS

Two modern product lines

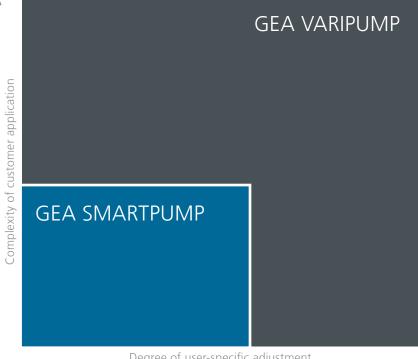
Two product lines, GEA VARIPUMP and GEA SMARTPUMP, enable our customers to choose from a highly versatile pump range with a multitude of smart adaption options to achieve simpler operation, higher-quality production, and reduced consumption of valuable resources.

Complex applications with advanced requirements

High system pressures, high media temperatures, high solid content in media, highest requirements regarding surface quality and materials

Standard applications with low complexity

System pressures up to 16 bar, low media temperatures, non-critical conveying media, standard requirements regarding surface quality and materials



Degree of user-specific adjustment

Standard pump types

Pre-defined model variants for common applications

High flexibility

Individual adjustment, custom engineering

GEA VARIPUMP

The pump models in the GEA VARIPUMP line have been specially conceived for extreme application demands and are individually optimized for each task.

Characteristics of the GEA VARIPUMP line:

- Developed for advanced application conditions
- Project-specific customization
- Surface roughness up to R_a ≤ 0.4 μm
- Selection of materials in contact with product according to specific requirements

GEA SMARTPUMP

The GEA SMARTPUMP line covers common applications at standard conditions. The pumps are highly standardized, attractively priced, easy to select and ready for fast delivery.

Characteristics of the GEA SMARTPUMP line:

- Application for common and clearly defined "standard" process tasks
- Simple selection and configuration, fast delivery
- · Standardized spare parts



Overview of pump types

GEA Hilge HYGIA

The "Swiss knife" among the hygienic pumps. Premium quality and highest flexibility of customization ensure successful application in the food, beverage, and pharma industries.

GEA Hilge MAXA

This single-stage centrifugal pump is designed for heavy-duty operation in a range of industrial processes.

Technical data	60 Hz
Flow rate	528 gpm (120 m³/h)
Flow head	302 ft (92 m)
System pressure	232 to 363 psi (16 up to 25 bar max)

Technical data	60 Hz
Flow rate	5812 gpm (1320 m³/h)
Flow head	328 ft (100 m)
System pressure	145 psi (10 bar)

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





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	60 Hz
Flow rate	1057 gpm (240 m³/h)
Flow head	427 ft (130 m)
System pressure	232 psi (16 bar)

GEA Hilge SIPLA

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

Technical data	60 Hz
Flow rate	282 gpm (64 m³/h)
Flow head	197 ft (60 m)
System pressure	145 psi (10 bar)



Single-stage self-priming centrifugal pumps



GEA Hilge TPS

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

Technical data	60 Hz
Flow rate	680 gpm (155 m³/h)
Flow head	460 ft (140 m)
System pressure	232 psi (16 bar)

GEA Hilge CONTRA

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

Technical data	60 Hz
Flow rate	154 gpm (35 m³/h)
Flow head	754 ft (230 m)
System pressure	362 psi (25 bar)



centrifugal pumps



GEA Hilge DURIETTA

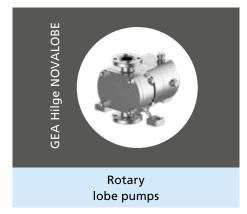
This end-suction single- or multi-stage centrifugal pump in a very compact design has been created for applications with low flow rates at high flow heads.

Technical data	60 Hz
Flow rate	35 gpm (8 m³/h)
Flow head	131 ft (40 m)
System pressure	116 psi (8 bar)

GEA Hilge NOVALOBE

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

Technical data	60 Hz
Displacement	0.5 g/rev (2.1 l/rev)
System pressure	232 psi (16 bar)





Cleaning technology

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

Power meets intelligence in GEA cleaning technology, developed for advanced processes. Our tank cleaning devices - whether index, orbital, rotary or static combine strong mechanical impact with a self-cleaning hygienic design. They are the superior choice for sustainable, eco-friendly practices and best cleaning results in multiple industries.

GEA tank cleaners series

GEA cleaning technology offers the optimal solution for every cleaning process.

We offer economical, flexible and service-oriented solutions. Our wide range of orbital, index, rotating, static and retractable cleaners achieve optimal cleaning results in many different industries. Our cleaning equipment has been developed for

sustainable application, with special emphasis on saving valuable resources in the cleaning process. We do reach this target by hygienic design and the accurate selection of the cleaner type for the required task.

Orbital Cleaners

- · Liquid-driven
- · Working pressure 4 to 10 bar
- · Cleaning diameter up to 33 m
- Flow rate 2.5 to 48 m³/h



Tempest



Jumbo 6

Index Cleaners

- · Working pressure 4 to 90 bar
- · Cleaning diameter up to 27 m
- Flow rate 1.2 to 25 m³/h



Fury TWB



Fury 602/404

Rotating Cleaners

- · Controlled rotating or Free rotating
- · Working pressure 1 to 20 bar
- · Cleaning diameter up to 12 m
- Flow rate 0.9 to 30 m³/h



Turbo SSB



Chemidisc



Torus

Static Cleaners

- 3-A optional
- Working pressure 15-40 psi
- Cleaning diameter up to 26'
- Flow rate 5-300 gpm



Spray balls

Retractable

- · Retractable cleaning devices for special cleaning applications
- Working pressure 15-40 psi



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We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

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