Valves, measurement and control systems

for semiconductor production

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General information

GEMÜ Group

Through continuous innovative design and a focus on quality and proximity to our customers, GEMÜ is one of today's leading worldwide manufacturers of valves, measurement and control systems. We have achieved this status by investing extensively in application-focused research and development. After more than 55 years of healthy growth, Gert Müller, son of founder Fritz Müller, now directs our independent family-owned enterprise alongside his cousin Stephan Müller.

50+

Countries

Subsidiaries and long-term partners

Employees

1900+

Reorganized – for even greater proximity to our customers.
With our wide product range, we offer solutions for the most varied customer groups.
To operate in a way that is more customer-oriented, strategic business units have been created:

Pharma, Food & Biotech

The Pharma, Food & Biotech business unit is the biggest business unit of the GEMÜ Group. With its large base of user knowledge and its efficient products, it is used for all the processes of the pharmaceutical, biotechnology and cosmetics industries as well as the food and beverage industries.

Industry

Due to the variety of industrial applications, the Industry business unit has specialized in five main industrial sectors. Regardless of whether it concerns industrial water treatment, chemical industry and environmental systems, mechanical engineering and processing industries or surface finishing, the Industry business unit can provide the right range for these and other areas of application.

Semiconductor

The Semiconductor business segment focuses on pure and ultra pure process media in many different areas of application. The focus here is on valves for systems in the production of semiconductors and microchips, the production of photovoltaic systems and batteries, and the manufacture of ultra high purity chemicals.

Global manufacture

We develop and manufacture virtually all products at six different locations. At sites in Germany, Switzerland, the USA, China, Brazil and France, we draw on our many years of experience in the manufacture of valves, measurement and control systems to offer you products and solutions worldwide which conform to GEMÜ standards of quality.

So that we can also continue to impress you with high quality and expert advice in the future, we are continually investing in modernizing our production centres.

Cleanroom plant

For critical fluid handling, there are stringent requirements for the purity and resistance of the components used. At the GEMÜ cleanroom plant in Emmen, Switzerland, our ultra pure valves, measurement and control systems and single-use products and medical products are injection-moulded, cleaned, assembled, tested and packaged under cleanroom conditions.

The factory uses the very latest manufacturing technologies and achieves cleanroom quality in accordance with ISO class 8 (in operation) as well as GMP class C. This level of quality applies to the entire manufacturing process – from material supply via production to subsequent assembly and packaging.

Diaphragm production

GEMÜ leaves nothing to chance in the development and manufacture of diaphragms. As well as many years of experience in the area of diaphragm valves, GEMÜ can draw on the Group's ever increasing expertise in the field of diaphragm production. In addition to the development of compounds, this also includes production and permanent control of the diaphragms during the manufacturing process. Random sampling of the finished products completes the comprehensive test cycle.

GEMÜ ensures its usual diaphragm quality thanks to the following measures:

- Raw materials are sourced exclusively from selected suppliers
- Comprehensive testing of the raw materials in our in-house laboratory or in external, accredited institutions
- Storage of raw materials under controlled conditions
- Automated testing and documentation processes during production
- State-of-the-art production facilities
- The diaphragms are tested on our own test rigs

Technical consultation and service range

The correct installation and predictive maintenance of valves, measurement and control components are important prerequisites for efficient operation and optimum operating cycles for a plant. This is why we also support you in this regard and offer various additional services.

All-round service

Our well-trained advisors and service engineers support designers, equipment manufacturers and operators, in addition to service providers, in planning, configuring, commissioning and maintaining pipework components. They have in-depth knowledge of the market and can find the optimum technical and cost-effective product version for the relevant application from our comprehensive range. Repair and maintenance work can be carried out at the service centres or directly on site. If you wish, our qualified fitters can also assume responsibility for component inventory, data management and retrofitting for CONEXO.

Furthermore, we offer a variety of technical training courses. With a multi-stage training system and individual training models, we pass all the required knowledge and tools for installing and maintaining GEMÜ products on to employees from Installation and Service. This also includes an innovative, specially designed VR training course (virtual reality training). This lets you practise and internalize the movements required when carrying out maintenance work with CONEXO, for example.

Prepared for Industry 4.0

With CONEXO, we offer an RFID system architecture that enables clear identification of wearing parts, paperless maintenance and process documentation.

To meet the growing requirements of digitalization, we founded the start-up inevvo solutions in 2018. Its core expertise is the sale and further development of the CONEXO RFID system. This allows positive electronic identification of our valve components using the integrated RFID chip.

In addition, the CONEXO software supports the user with paperless maintenance. An app for mobile devices guides maintenance technicians through the fully customizable maintenance workflows step by step. Clear identification of components, coupled with innovative elements such as photo documentation or assessment schemes, ensures transparent and reliable maintenance. The recorded data can then be processed electronically. Further information can be obtained from ***www.inevvo-solutions.com***

Applications

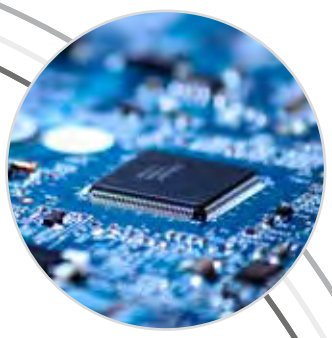
Semiconductor business segment

GEMÜ has excellent references for the use of valves in areas of application that have high purity requirements. Our products are used specifically for process equipment, ultra pure chemical supply systems, ultra pure water treatment plants and ultra pure water distribution installations.
Areas of application include the sectors of optics, medicine, photovoltaic systems, electronic systems and microelectronics, semiconductor production, the pharmaceutical industry, biotechnology and gene technology as well as precision mechanics and micromechanics.

Valves for the age of digital transformation

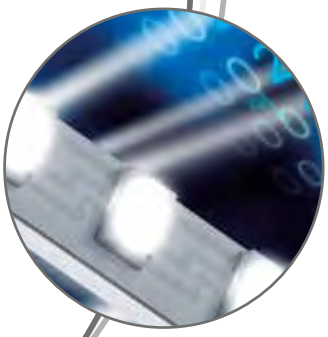
Due to digitalization and increasing networking, highly efficient microchips, intelligent sensor technology and innovative end devices are increasingly in demand.

With our valves, we can provide you with products that put you in an ideal position to withstand the challenges of the digital age, such as rising pressure to reduce production costs, increasing automation and growing manufacturing complexity.



Microchips and MEMS

Flat panels and displays



LEDs and OLEDs

Solar panels

Industry 4.0
Smart home
Driverless cars
Renewable energies
Big data
Digital transformation
Human machine interaction
Artificial intelligence
E-mobility

Areas of application


Semiconductor factory
Exhaust air purification and climate control
CMP
Etching process
Analysis
Cutting to size, bonding and packaging
CHEMIE- & ABWASSERENTSORGUNG
Chemical and slurry recovery
Ultra pure water
Solvents
Waste water treatment

Wafer manufacture

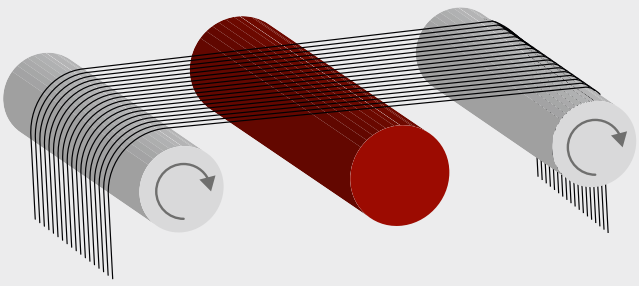
Silicon (sand, quartz), which is a typical semiconductor (conductivity lies between that of conductors and nonconductors), is generally used to manufacture wafers. First, the silicon is melted and purified several times, chemically and metallurgically.

Out of this purified silicon melt, a silicon cylinder (ingot) is extracted from a seed crystal. Discs (wafers) of less than 1 mm are then sawn off from this. After that, the edges of the wafers are rounded off, lapped, etched and polished with diamond milling cutters.

The slurries used in the various process steps require reliable and robust valves, measurement and control systems.

Process requirements

- High resistance to abrasive and corrosive media
- Long service life
- Precise control of cutting and grinding slurries used



Diagrammatic view of ingot cutting

GEMÜ 687
Stainless steel diaphragm valves

Tried-and-tested functional principle
- High Kv value
- Long service life
- Low-impact media handling

Highly resistant body materials
- Lined bodies made of SG iron or investment casting material with PFA/PP/hard rubber
- Wide range of applications

Adaptable automation and sensor system
- Position control
- Flow measurement
- Position feedback

Further product recommendations for wafer manufacture

GEMÜ CleanStar

GEMÜ iComLine

Plastic diaphragm valves

Chemical manufacture

Numerous chemicals, slurries and solvents are required for semiconductor production. The varied processes in the chemical industry have stringent requirements for the valve technology employed here. Specific valve and component solutions are therefore much in demand when dealing with critical working media, high temperatures and high pressures.

Process requirements

- High purity materials and uncompromising resistance
- Long service life
- Low-impact media handling at high Kv values

GEMÜ PurePlus ultra pure diaphragm valves made of PFA and PVDF

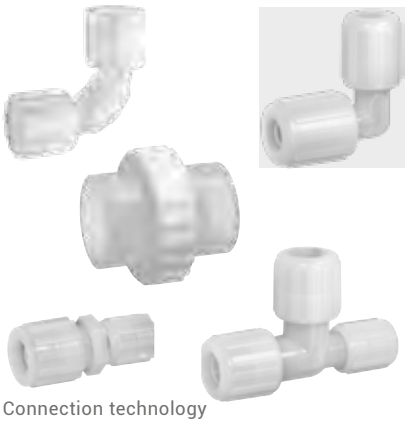
Tried-and-tested functional principle
- High Kv value
- Long service life
- High resistance

Various valve body versions
- T body as an optimum solution for sampling
- 2/2-way body made of highly resistant PVDF

Adaptable automation and sensor system
- Pilot valves
- Flow measurement
- Positioner

Further product recommendations for chemical manufacture

Lined diaphragm valves



Connection technology

Butterfly valves

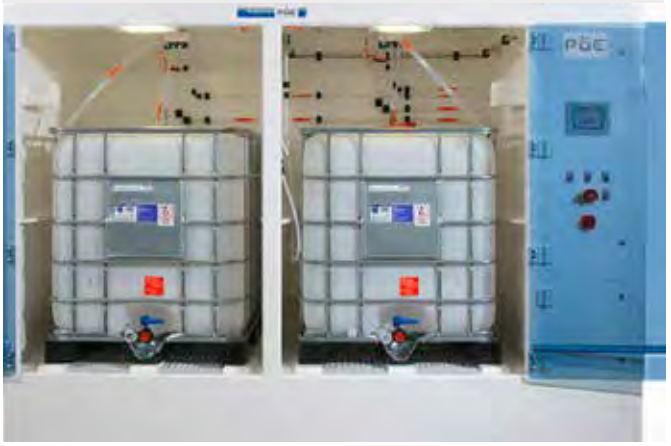
Chemical supply

Chemicals are used in semiconductor production in virtually all processes, in particular for purifying, coating and etching. The corrosive, ultra high purity chemicals used there set stringent requirements in terms of the purity and resistance of the system and its components.

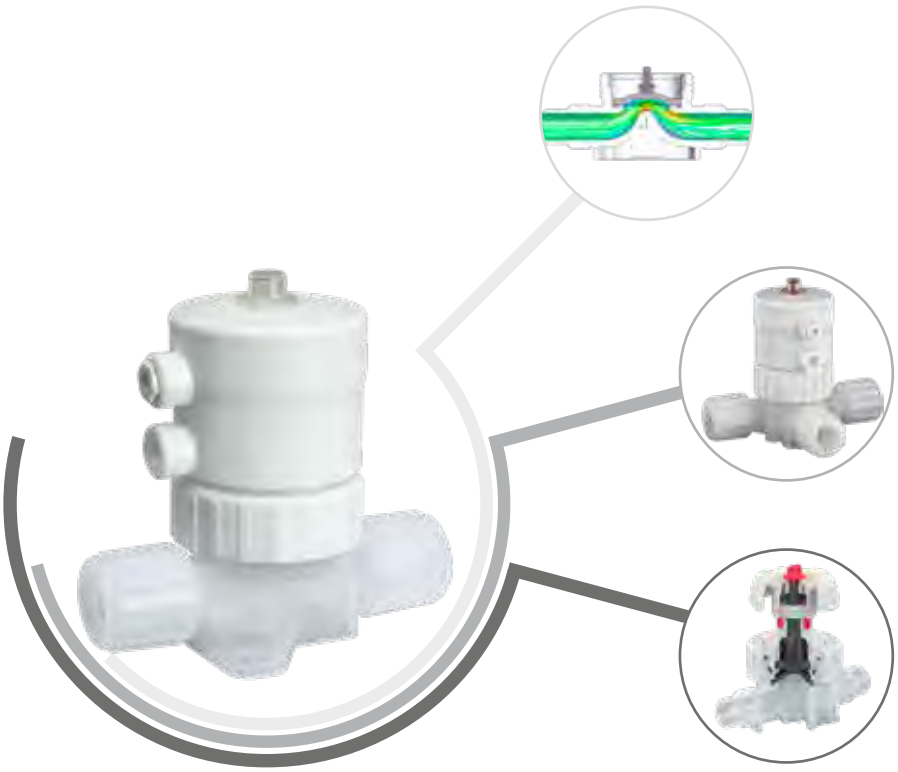
This is why diaphragm valves made of high-quality fluoropolymer plastics are particularly recommended for chemical mixing and supply systems.

Process requirements

- High purity materials and uncompromising resistance
- Long service life
- Low-impact media handling at high Kv values



GEMÜ CleanStar
Highly resistant diaphragm valves



High-flow bodies
- High Kv value
- Long service life
- Low-impact media handling

Body and connection options
- Flexible and versatile
- Wide range of applications
- Cost-efficient

Metal-free design
- Minimal contamination
- High resistance

Further product recommendations for chemical supply

Lined diaphragm valves

Connection technology

Measurement systems

Slurry supply

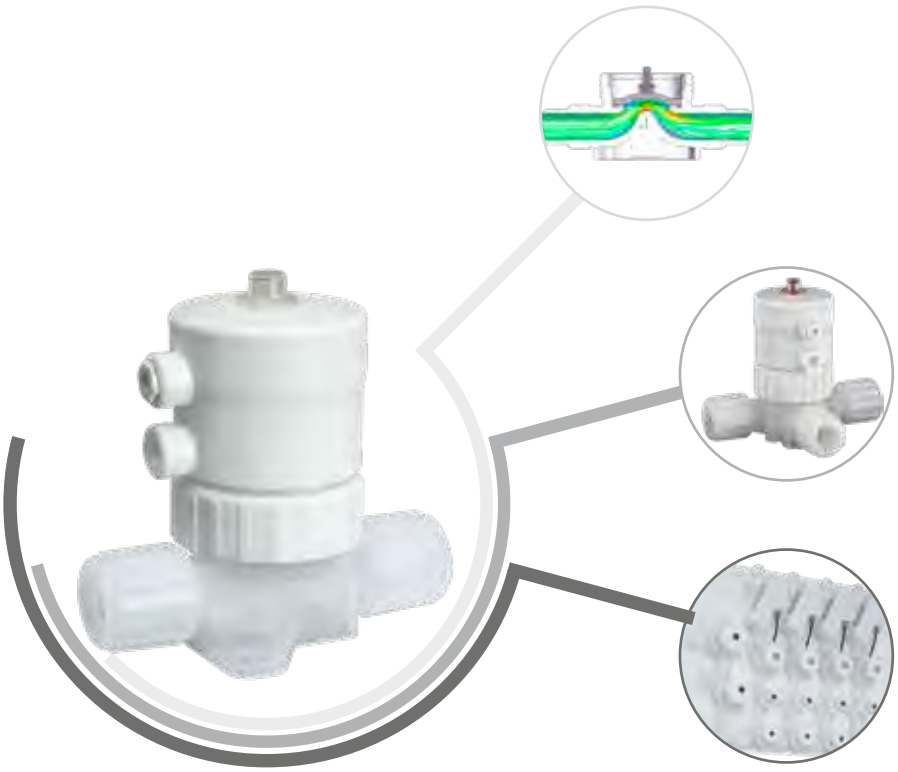
The safe of handling of abrasive media requires special attention right from the planning and design phase. Typically, abrasive media is required for differing process stages in semiconductor production.

GEMÜ products are used successfully in the production and supply of slurry as well as in the treatment and recycling of slurries.

Process requirements

- High purity materials and uncompromising resistance
- Long service life
- Low-impact media handling at high Kv values

GEMÜ CleanStar
Highly resistant diaphragm valves



High-flow bodies
- High Kv value
- Long service life
- Low-impact media handling

Various valve body versions
- V valve body
- T body
- SpaceSaver connection

Individual system solutions
- Customized manifolds
- Ready-to-install assembly

Further product recommendations for slurry supply

Stainless steel diaphragm valves

Plastic diaphragm valves

Pressure measurement devices

Solvent supply

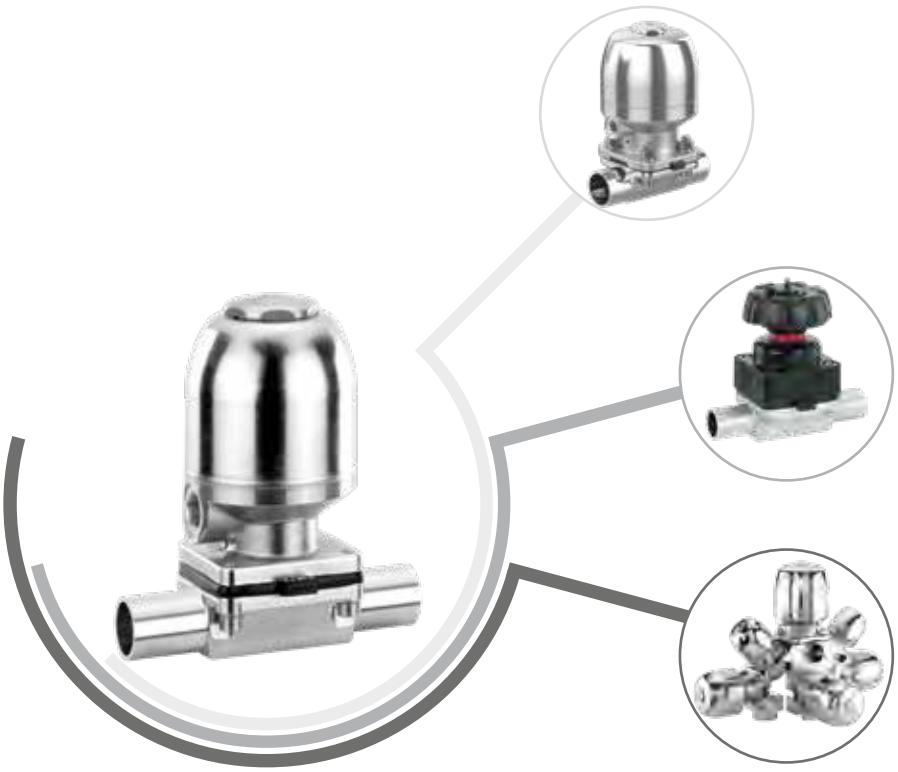
Organic solvents such as isopropanol, acetone and N-methylpyrrolidone (NMP) are generally used in the semiconductor industry to dissolve substances and for cleaning purposes. For example, in the lithography process, photoresist is removed with special solvents.

The critical and corrosive solvents set stringent requirements in terms of the chemical resistance and explosion protection of the system. This is why conductive materials such as stainless steel are generally used in this sector. PFA valves are also used in systems in which explosion protection is not relevant.

Process requirements

- Use of conductive materials acc. to ATEX certifications
- High-grade surface finish of valve bodies
- Low maintenance and installation costs

GEMÜ 650 BioStar
stainless steel diaphragm valves



Tried-and-tested functional principle
- High Kv value
- Long service life
- Hermetic separation between medium and actuator

Various actuator versions
- Flexible and versatile
- Wide range of applications
- Cost-efficient

Tailor-made block solutions
- Can be adapted to suit the customer
- Space-saving design

Further product recommendations for solvent supply

GEMÜ CleanStar

GEMÜ 601 with T body

GEMÜ M-block in stainless steel

Ultra pure water treatment

In process plants, ultra pure water and pure water play an increasingly significant role in the quality of the final products in high-tech production. Process plants require treated water at different levels of purity.

Therefore, GEMÜ diaphragm valves have proven valuable in the field of ultra pure water treatment and distribution installations in particular.

Process requirements

- High temperatures at simultaneously high pressures
- Low operating costs
- Any installation position and flow direction

GEMÜ PurePlus
Ultra pure diaphragm valves made of PVDF

Tried-and-tested functional principle
- High Kv value
- Long service life
- High resistance

Adaptable automation and sensor system
- Pilot solenoid valves
- Flow measurement
- Positioner

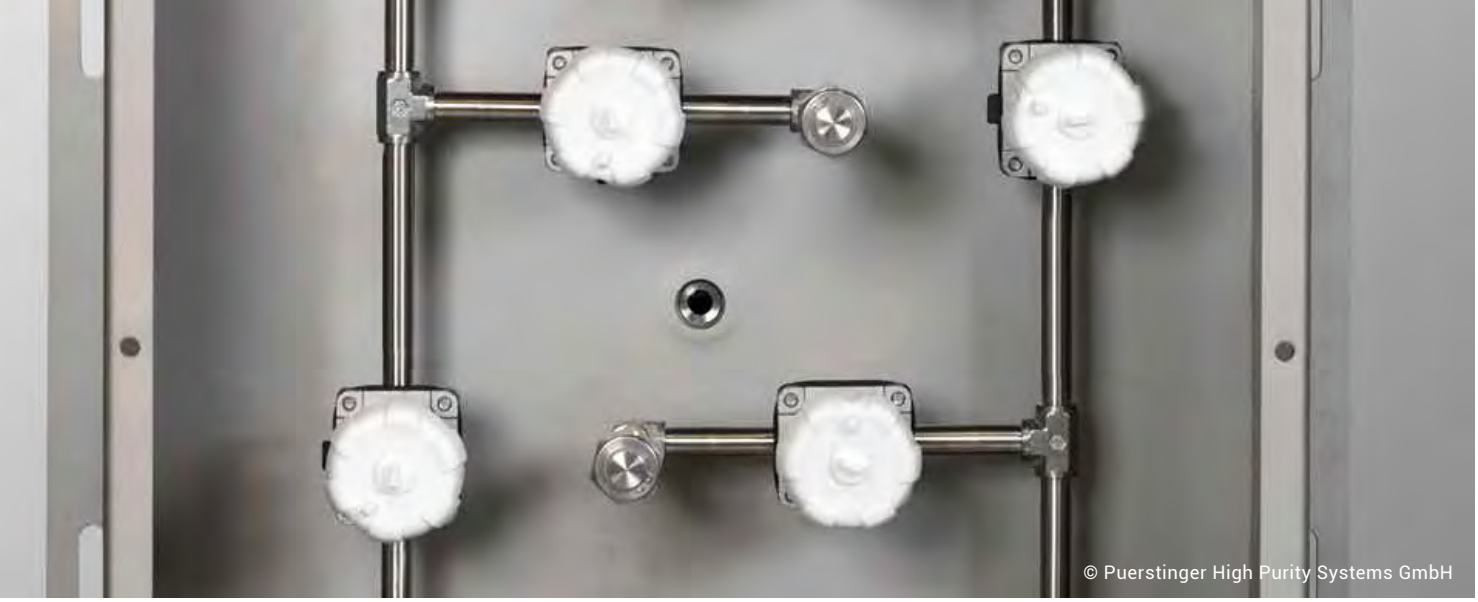
Different body configurations
- T body as an optimum solution for sampling
- Customized valve block solutions

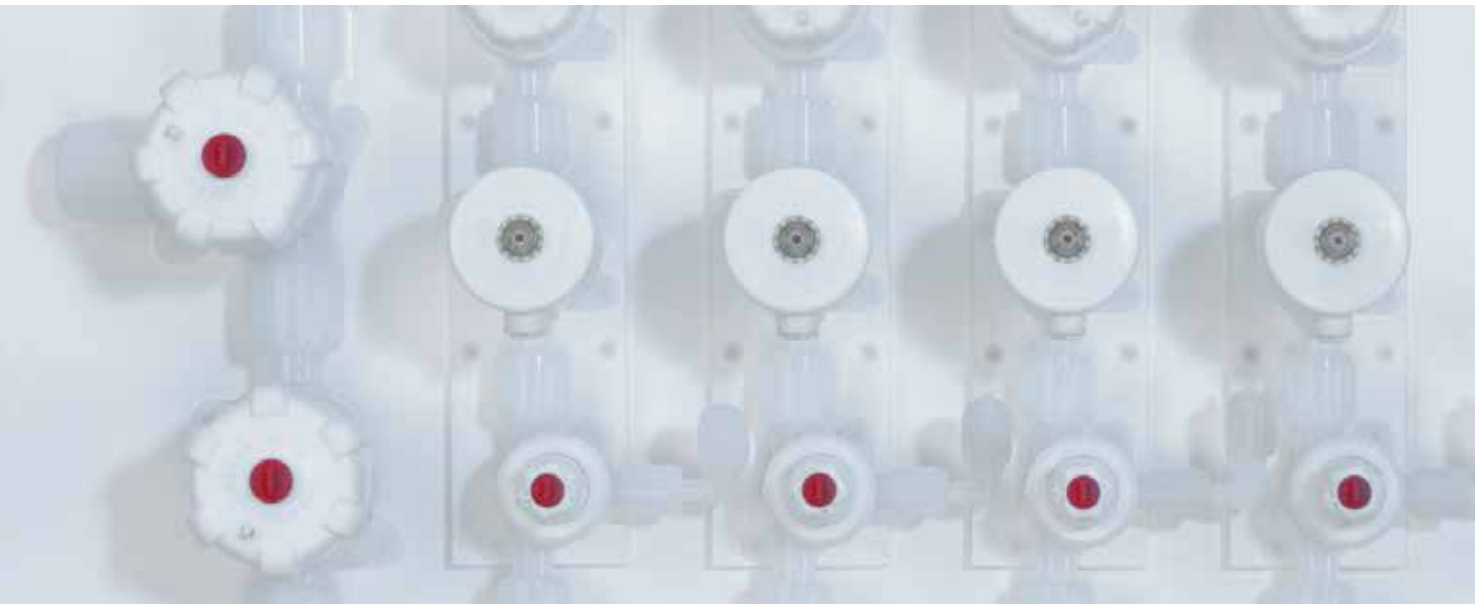
Further product recommendations for ultra pure water treatment

Plastic diaphragm valves

Butterfly valves

Flowmeters





Media distribution

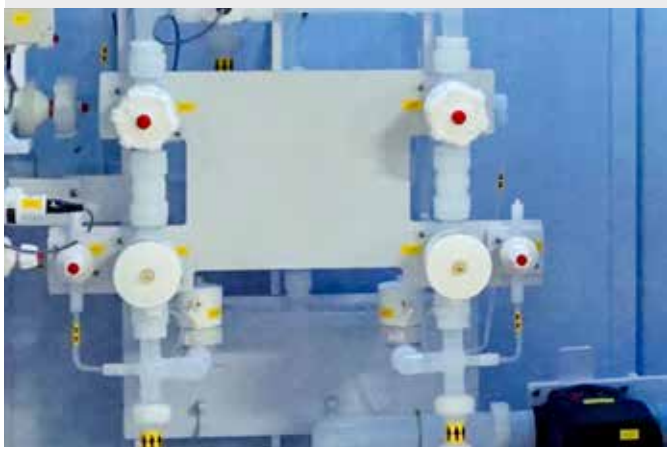
"Valve manifold boxes" (VMBs) can be found on the level under the cleanroom. These act as an interface between the supply level and processing device and make the relevant media available to the processing devices.

High flow and cost-efficiency are the decisive factors here, which is why GEMÜ CleanStar valves are offered as optimum complete manifolds for this application.

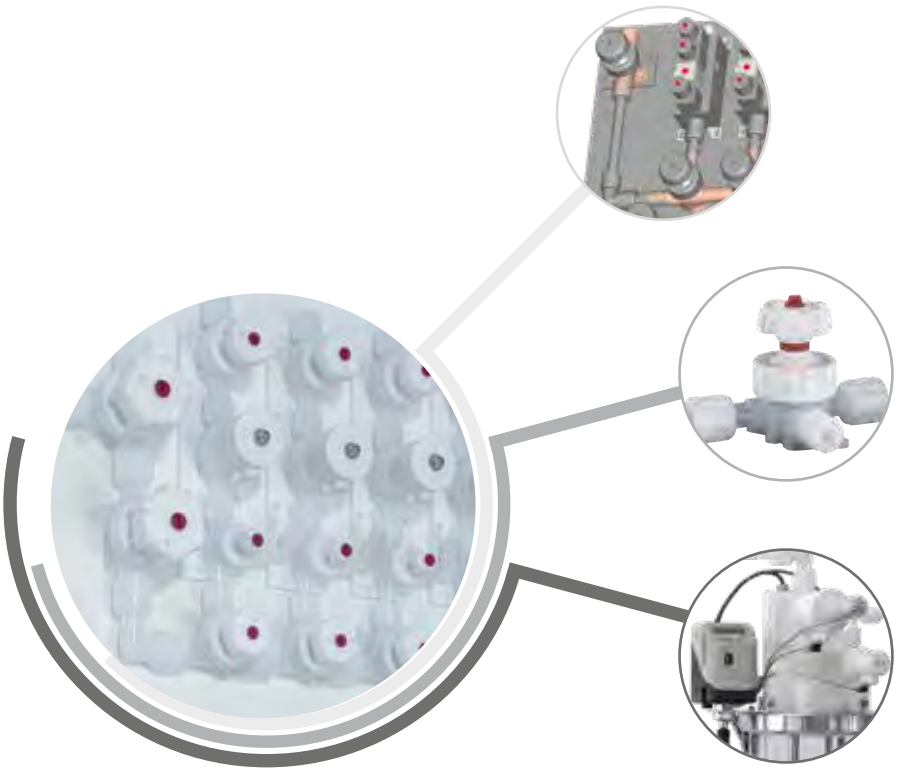
GEMÜ is responsible for engineering and design.

Process requirements

- High flow rates
- Simple installation
- Instrumentation



GEMÜ manifolds
Valve manifolds as subsystems



Simple system integration
- Simple installation
- "Plug and play"

Various valve body versions
- V valve body
- T body
- SpaceSaver connection

Complete system
- Valves, measurement and control components from a single source
- Can be adapted to suit the customer
- Pre-assembled delivery

Further product recommendations for media distribution

Connection technology

GEMÜ C30 Hydra-Gauge

Measurement systems

Lithography

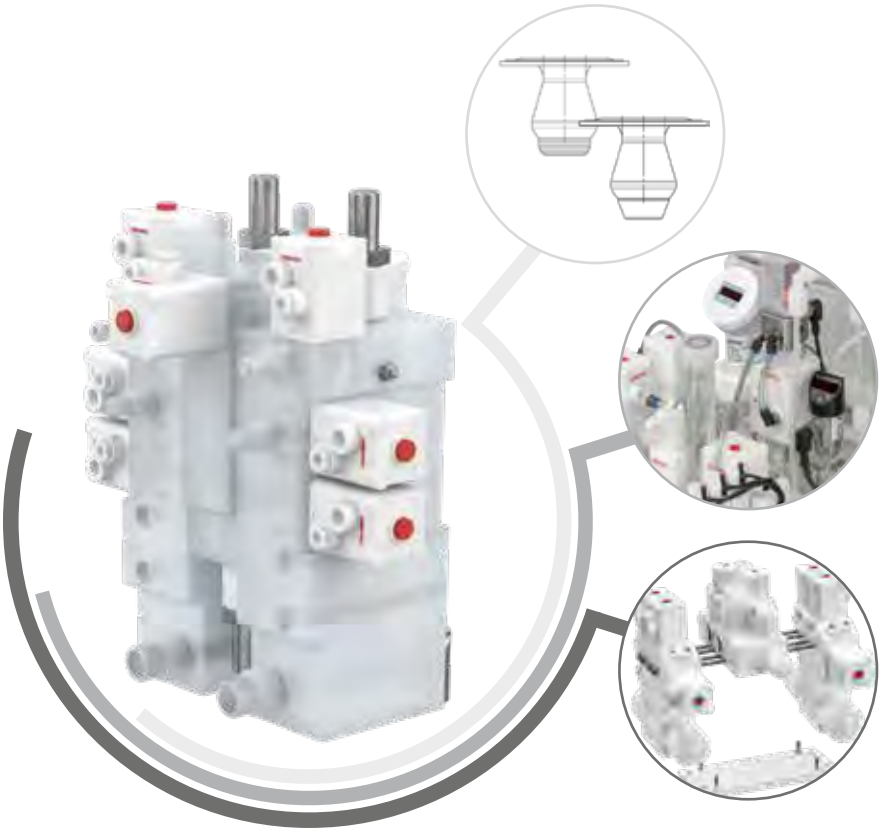
Photolithography is a key process in semiconductor production. It involves circuit structures being transmitted onto the wafer through exposure.

To do so, light-sensitive paint is first applied to the wafers. Then the circuit structures located on a screen are transmitted onto the wafer using UV light. Areas with soluble paint are stripped again using a developer solution. The structures that develop then act as a template for the subsequent etching process.

Process requirements

- Compact design
- Integrated automation components
- Dosing and control

GEMÜ PC50 iComLine
M-block diaphragm globe valves



Versatile connection options and control versions
- Equal-percentage regulating cones
- Linear regulating cones
- Customized regulating cones

Sensor integration
- Pressure measurement system
- Temperature sensors
- Flow measurement
- Heating elements

Modular design
- Flow-optimized design
- Simple replacement of individual block sections
- Efficient inventory

Further product recommendations for the lithography process

GEMÜ iComLine

GEMÜ CleanStar

Connection technology

Etching process

Etching processes are required to remove and clean layers of material from the silicon disc and to strip selectively determined areas of the wafer's surface (e.g. in line with the lithographically generated screens and structures). This is generally done using plasma-supported etching procedures, either wet chemical or free from moisture. Highly aggressive chemicals and gases are used in this case.

Process requirements

- Compact design
- Integrated automation components
- Extremely stringent requirements for purity and resistance

GEMÜ PC50 iComLine
M-block diaphragm globe valves

Various connection options
- Flare
- Pillar
- Butt weld spigot

Sensor integration
- Pressure measurement system
- Temperature sensors
- Flow measurement

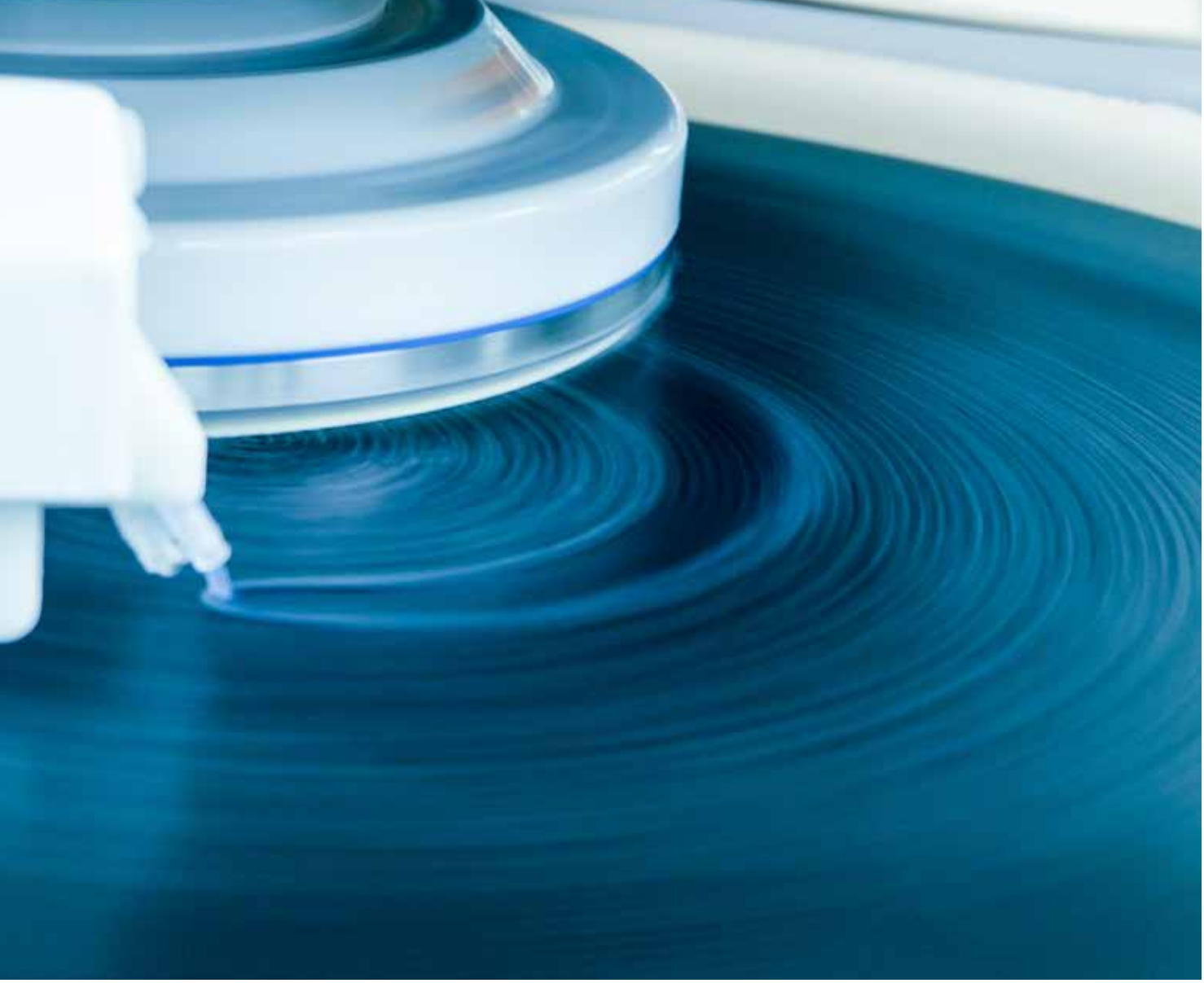
Pretensioning element
- Long service life
- Tightness at fluctuating temperatures

Further product recommendations for the etching process

GEMÜ iComLine

GEMÜ CleanStar

Check valves



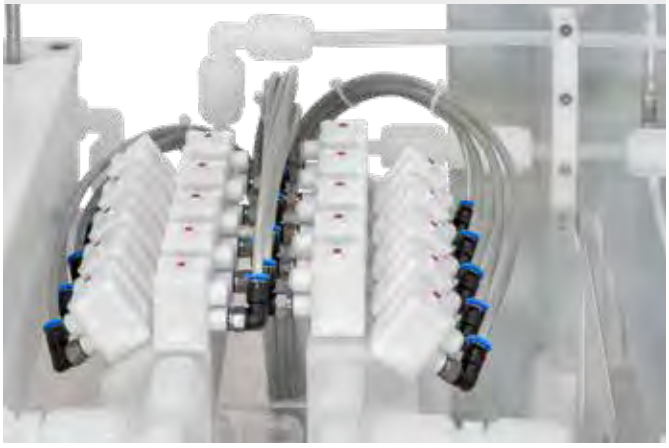
CMP

Chemical mechanical polishing (CMP) is one of the key technologies for manufacturing microelectronic switching circuits. To achieve the desired structures on the wafers, CMP process steps are sometimes repeated more than 30 times.

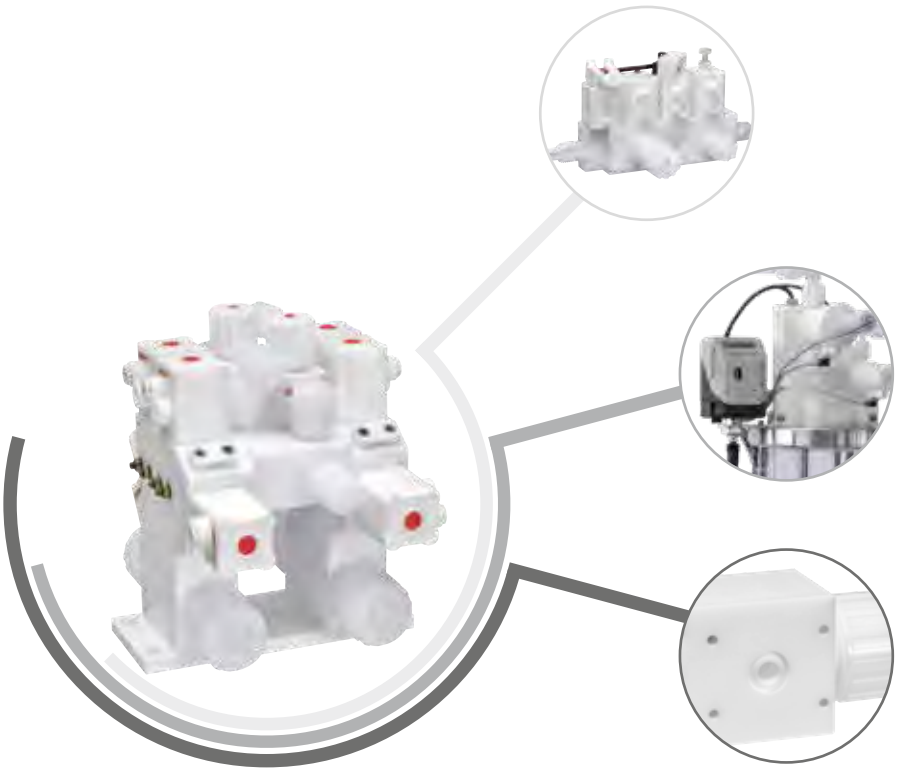
Particular significance is consequently given to handling slurries and cleaning media, which is why, in the process area, the GEMÜ iComLine series can definitively be counted on in this regard.

Process requirements

- Compact design
- Integrated automation components
- Extremely stringent requirements for purity and resistance



GEMÜ PC50 iComLine
M-block diaphragm globe valves



Innovative valve design
- Small footprint
- Ideal for control applications
- Very suitable for corrosive media

Sensor integration
- Pressure measurement system
- Temperature sensors
- Flow measurement

Sealing without O-ring
- Innovative sealing concept
- Fewer wearing parts
- Less maintenance

Further product recommendations for the CMP process

GEMÜ iComLine

GEMÜ CleanStar

GEMÜ CV

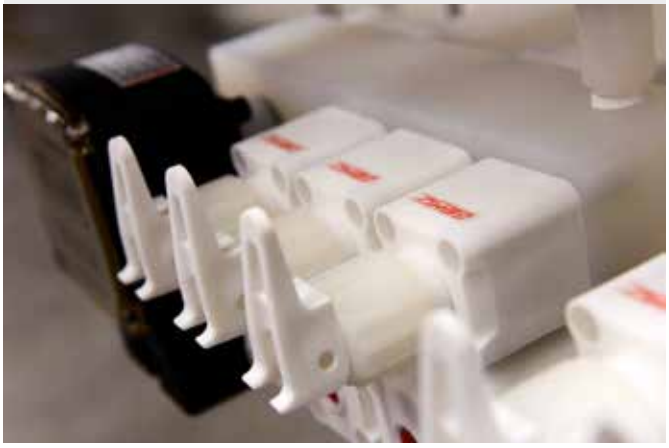
Analysis

The entire chemical and ultra pure water supply, chemical distribution, as well as chemical and waste water disposal and its treatment, is monitored and controlled using analysis. Integrating analysis into the process control system of semiconductor production also ensures, for instance, supply media with a stable etch rate based on automatic refilling. Through a precise control system and monitoring, media consumption is optimized and waste is reduced.

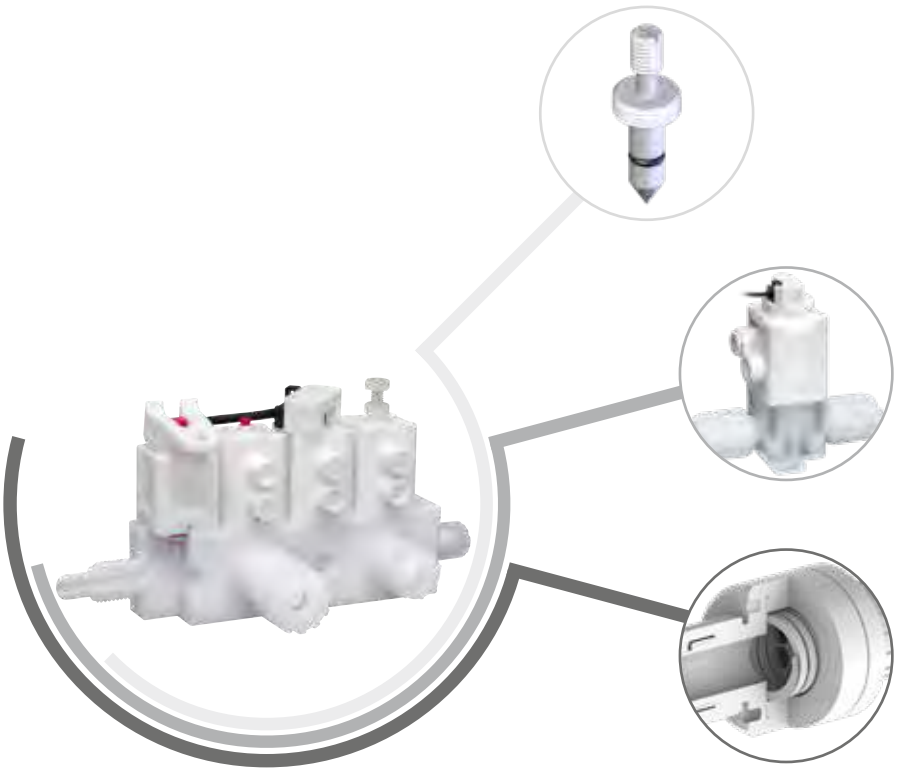
This requires compact valve solutions of small nominal sizes and sampling options that GEMÜ designs and manufactures in cooperation with its customers.

Process requirements

- Dosing at minimum quantities
- Sampling options
- Extremely stringent demands regarding purity and resistance



GEMÜ PC50 iComLine
M-block diaphragm globe valves



Fine-tuning options
- Sensor integration
- Integrated needle valves
- Integrated throttles

Electrical position indicator
- Intelligent process automation
- Available as retrofit solution

Integrated check valves
- Metal-free
- Cleanroom manufactured
- Compact design

Further product recommendations for processes of analysis

GEMÜ iComLine

Connection technology

GEMÜ PC50 iComLine

Waste water treatment

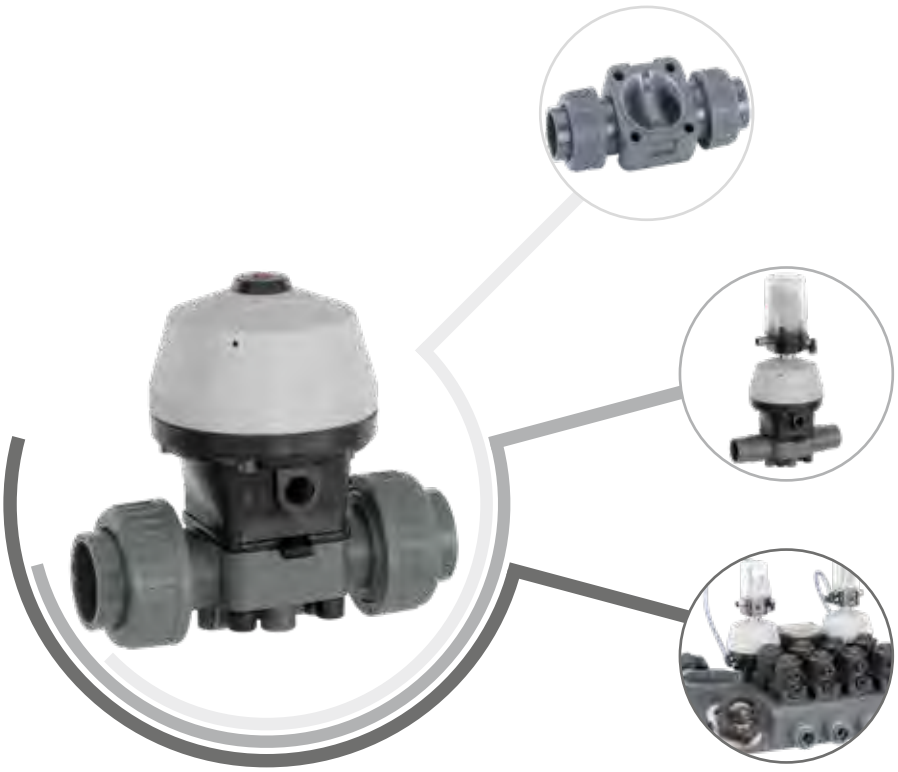
Industrial waste water treatment is important in state-of-the-art semiconductor factories. The chemicals used to produce the wafers must be neutralized before disposal.

The waste water from the different processes sets strict demands for the components used in relation to physical and chemical resistance.

Process requirements

- Physical and chemical resistance
- High flow rates

GEMÜ R690
Low-maintenance plastic diaphragm valves



Flow-optimized valve body
- Optional flow direction
- Bodies and diaphragms available in different materials
- DN 15 to 100

Adaptable automation and sensor system
- Position control
- Flow measurement
- Position feedback

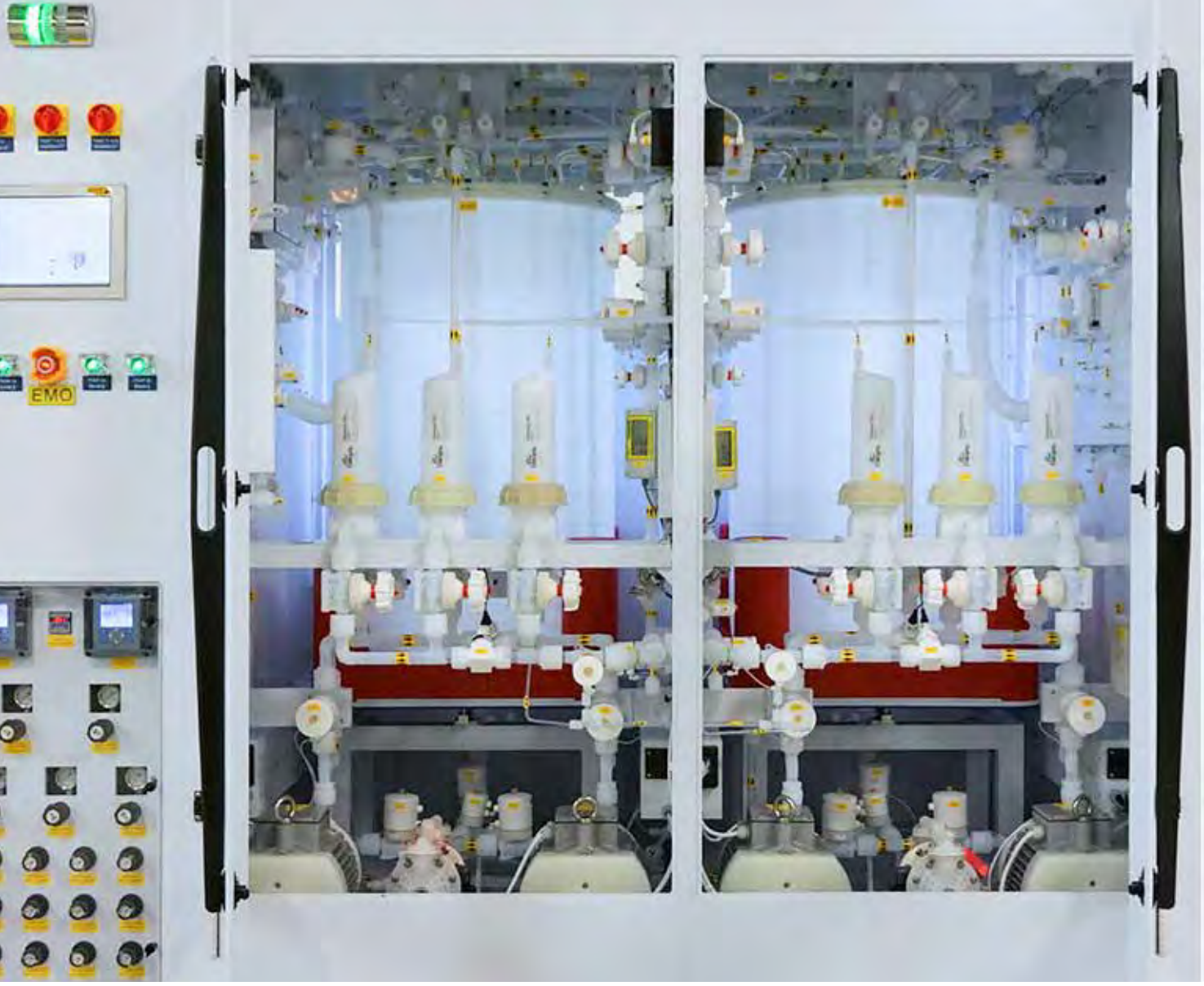
Tailor-made block solutions
- Valve block solutions can be adapted to suit the customer
- Space-saving design

Further product recommendations for waste water treatment

Butterfly valves

Ball valves

Flowmeters



Chemical and slurry recovery

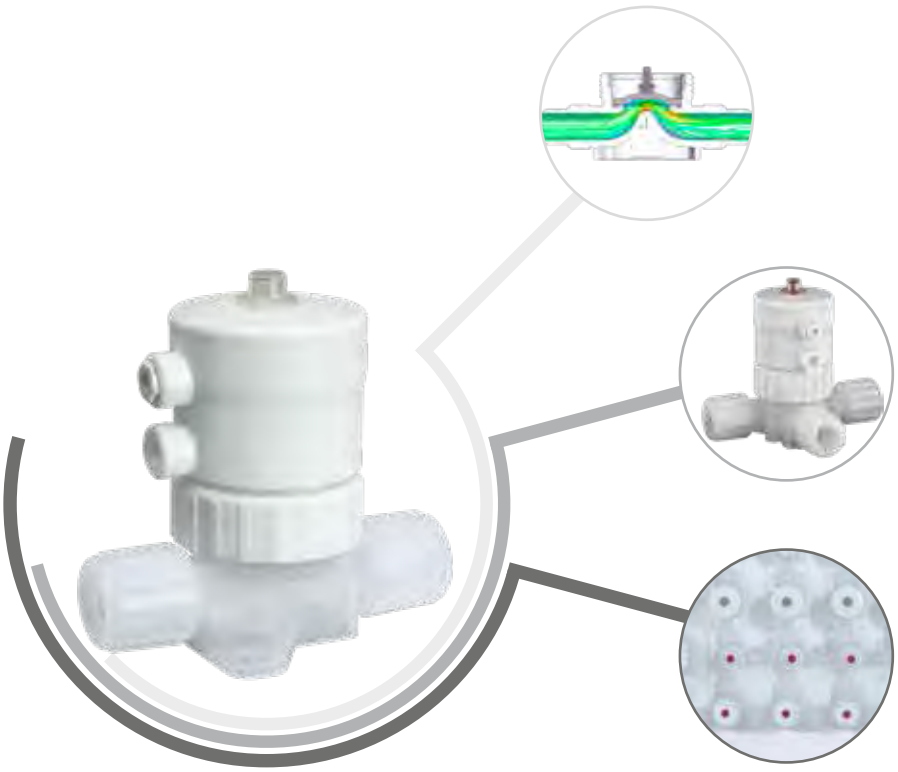
Recycling and recovering the chemicals/slurries that are used in semiconductor production processes is becoming increasingly important on both environmental and economic grounds.

Here too, the valve solutions employed have a significant impact on the quality of the media recovered.

Process requirements

- Highest accuracy
- Highest purity
- Low costs

GEMÜ CleanStar
Highly resistant diaphragm valves for corrosive and abrasive media



High-flow bodies
- High Kv value
- Long service life
- Low-impact media handling

Body and connection options
- V valve body
- T body
- SpaceSaver

Tailor-made block solutions
- Valve block solutions can be adapted to suit the customer
- Space-saving design
- Valve manifolds

Further product recommendations for chemical and slurry recovery

GEMÜ HydraLine

Connection technology

Plastic diaphragm valves

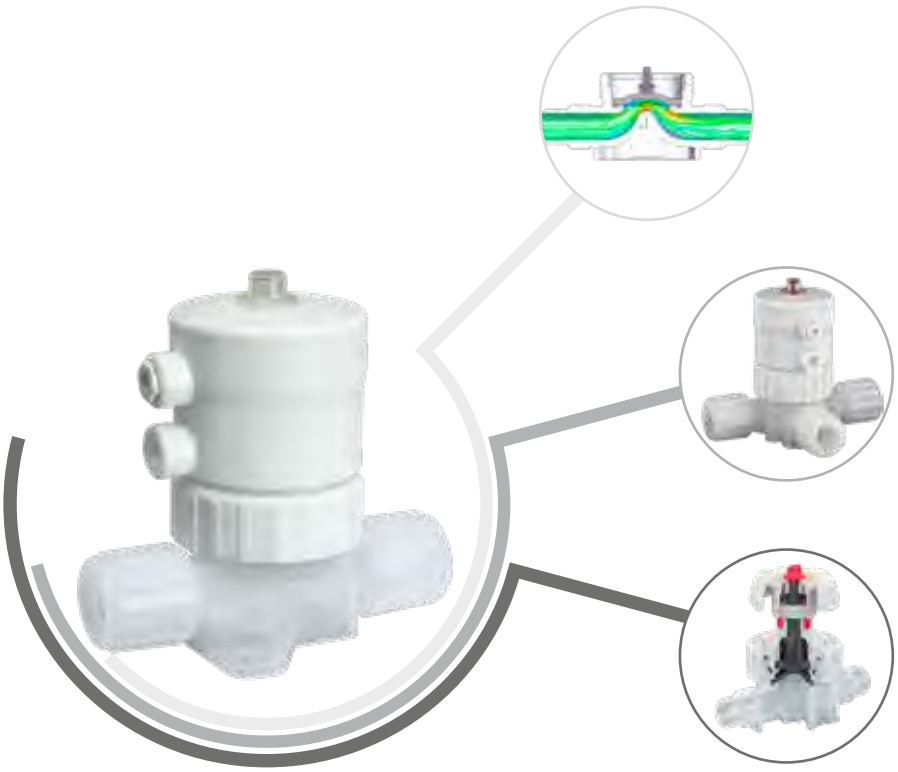
Exhaust air purification and climate control

The various process steps in semiconductor production release process gases and other chemicals that are to some extent toxic, highly flammable or harmful for the environment. Therefore, state-of-the-art semiconductor factories feature professional exhaust air purification systems to emit these substances into the environment in a purified, harmless state.

Process requirements

- Purity
- Reliability
- Safety

GEMÜ CleanStar
Ultra pure diaphragm valves



High-flow bodies
- High Kv value
- Long service life
- Low-impact media handling

Body and connection options
- V valve body
- T body
- SpaceSaver

Customer orientation
- Customized valve block solutions
- Space-saving design

Further product recommendations for exhaust air purification and climate control

GEMÜ HydraLine

Flowmeters

Flowmeters

Valve designs

Valve types

Whether it is for water, gas or air – valves are used for shutting off or regulating a medium in piping. But which functional principle is the right one? The designations of various valve types are frequently more numerous than the types themselves. That is why we are giving you an overview here of the most common designs in the industrial plant and machinery sectors.

Valves with linear movement

Diaphragm valves
Diaphragm valves are the all-rounders in the world of valves.
One of their major advantages is that only two components come into contact with the working medium – the diaphragm and the valve body.

The flexible diaphragm becomes deformed via a compressor and, during the closing movement, is pressed onto the sealing weir of the valve body with a positive and non-positive fit.

Diaphragm globe valves
Valves that combine the advantages of the hermetic sealing of an actuator and the medium of a diaphragm valve with the advantages of a globe valve are designated as diaphragm globe valves.

The flexible PD (plug diaphragm) is compressed onto the valve seat for sealing. The actuator is hermetically separated from the medium by a diaphragm globe valve.

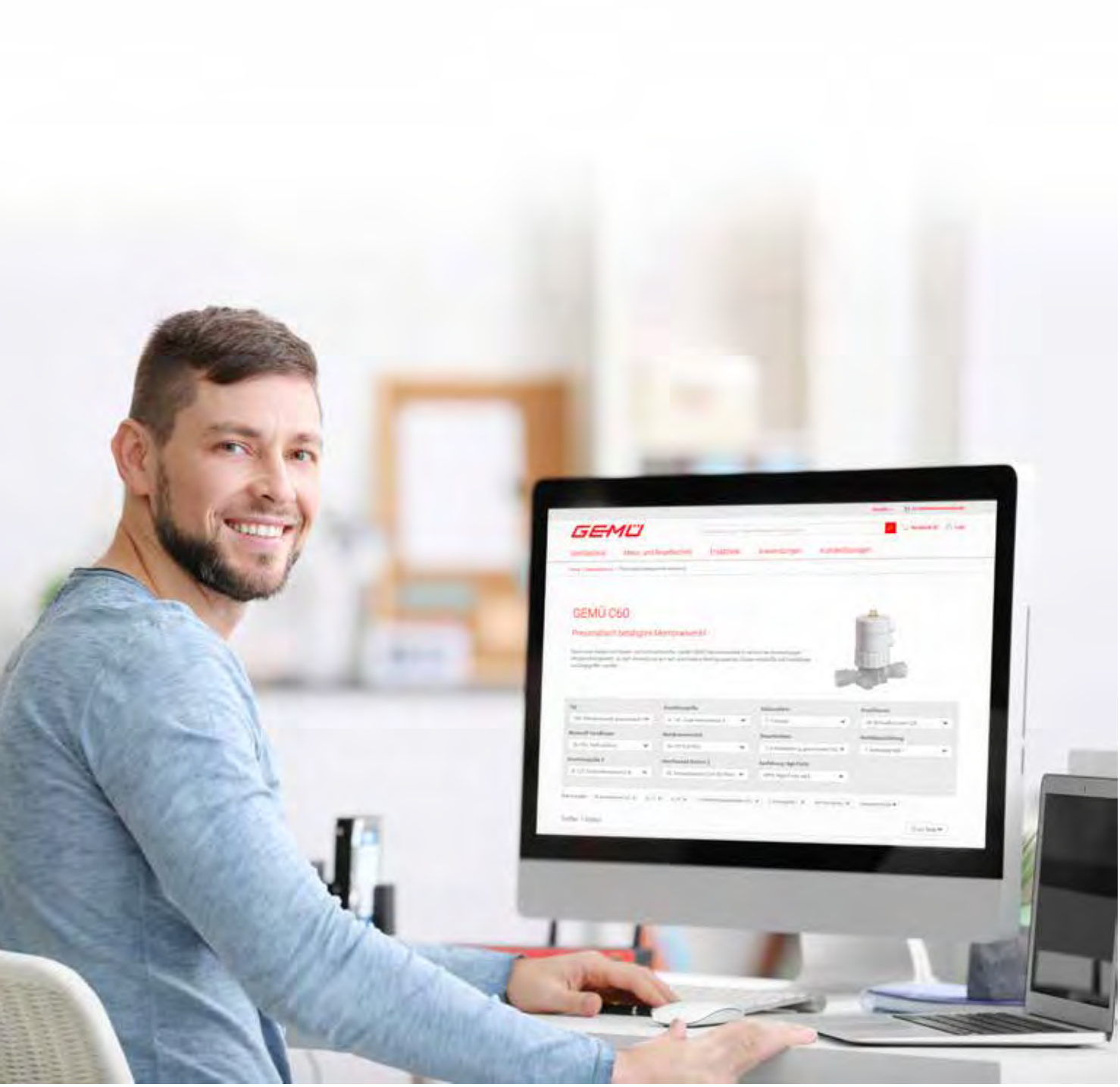
Rotating valves

Butterfly valves
If pipes are large, then butterfly valves are required. Most frequently, they are used for controlling mechanically pure liquids. In the right material combination, however, slightly abrasive liquids or gases pose no problem either.

Butterfly valves comprise a ring-shaped body into which a liner and a butterfly disc are inserted. The disc swings 90° into the liner.

Ball valves
Ball valves are versatile and can also be used in extreme circumstances. This type of valve is particularly well-suited to safely shutting off liquid and gaseous media at a very high operating pressure.

The ball valve comprises a ball with a continuous hole, which sits in a body between sealing rings. The valve can be opened and closed by rotating it through 90°.

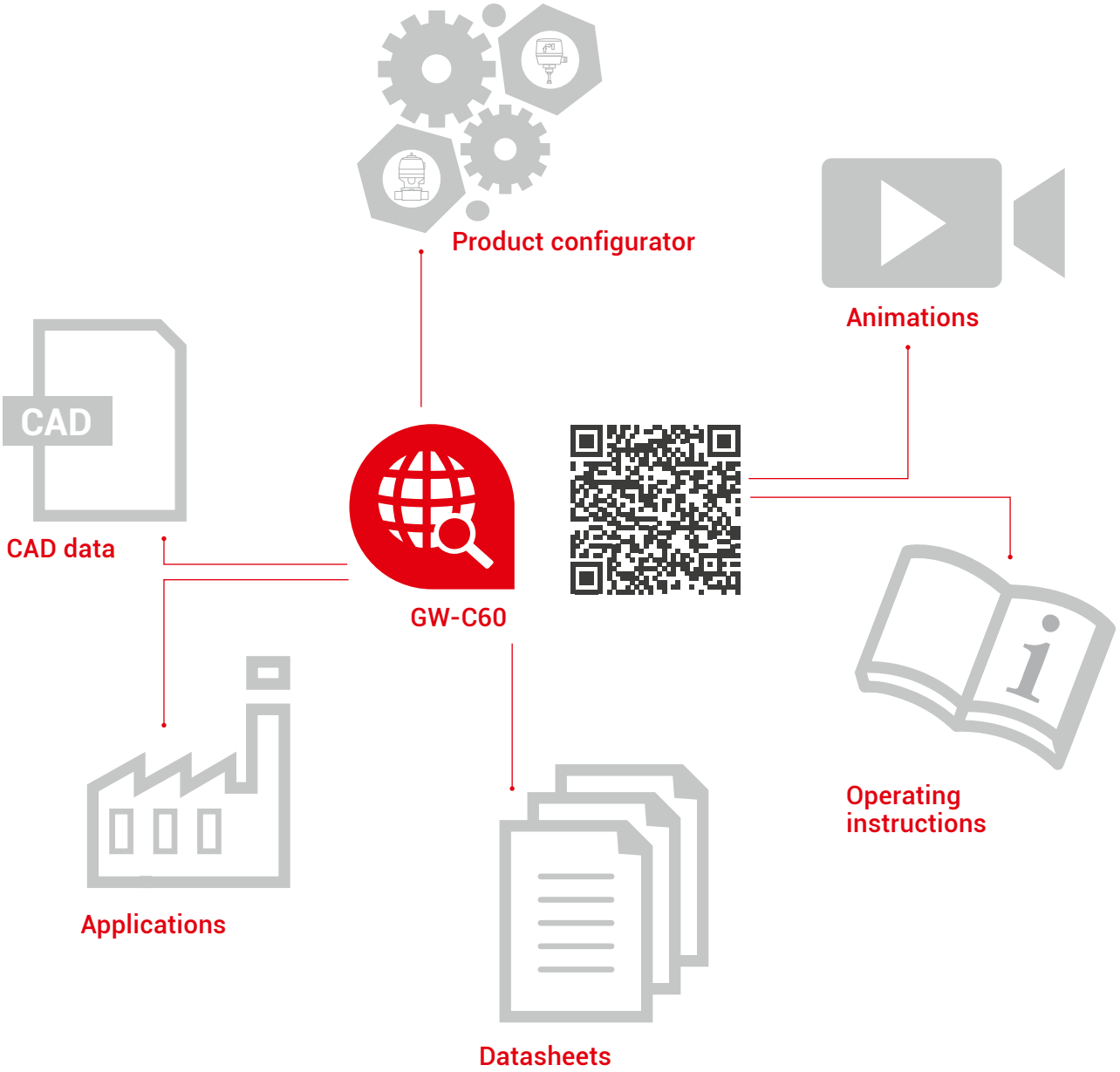


Configure easily online

With this product range, we want to offer you a quick overview of all standard products in our range. We have, therefore, listed the most important technical specifications for individual products in this catalogue. But there's still more to discover! On our website, you can find a great deal of further useful information, such as datasheets, operating instructions and animations, allowing you to configure a valve completely in line with your requirements.

Go directly to the online product page using the web code

The web code consists of the abbreviation "GW-" and the respective product type. For example, the GEMÜ C60 CleanStar diaphragm valve has the web code GW-C60. Enter the web code in the search window on the GEMÜ website ***www.gemu-group.com*** and you will be taken straight to the associated product page. Alternatively, you can scan the QR code.



Diaphragm valves

Description

Diaphragm valves are the all-rounders in the world of valves. One of their major advantages is that only two components come into contact with the working medium – the diaphragm and the valve body. Diaphragm valves are amongst the valve types with minimal deadleg and are, therefore, insensitive to particulate media and can be cleaned safely. They are the first choice for applications in which deposits of the medium are to be avoided at all costs.

The large material selection means that GEMÜ diaphragm valves are ideally suited for corrosive, abrasive or ultra pure media, which are often found in chemical engineering and in the industrial water treatment and processing industries.

Features

- For ultra pure to heavily contaminated abrasive media
- Optional flow direction
- Hermetic separation between medium and actuator
- Very good cleanability

Typical working media

- Inert and corrosive media
- Clean and contaminated abrasive media
- Liquids and gases
- Slurries and chemicals

Applications

- Treatment of ultra pure, process and waste water
- Chemical, slurry and solvent supply
- Chemical production and filling
- Ingot and wafer production
- Microchip manufacture
- Wet processes
- Wafer cleaning
- Electroplating
- Parts cleaning

Functional principle of diaphragm valves

Open

Closed

The diaphragm valve works thanks to the interaction of perfectly tuned components. These are the valve body, the shut-off diaphragm, the diaphragm fixing, the compressor as well as the actuator.

The flexible diaphragm becomes deformed via a compressor and, during the closing movement, is pressed onto the sealing weir of the valve body with a positive and non-positive fit. You can choose the flow direction here.

GEMÜ seal system

GEMÜ valve bodies are distinguished by a sealing bead running close to the seat diameter. The defined sealing edge between the valve body and the diaphragm makes it ideal for sterile applications. This measure reduces the ring-shaped gap between diaphragm and valve body in the external sealing area. This special feature makes GEMÜ diaphragm valves suitable for sterile applications. When developing our diaphragms, we also consider this crucial functional and design characteristic, which was developed by GEMÜ more than three decades ago and has been continually refined since then. This is the only way to ensure that our customers can rely on the valve as a complete unit.

GEMÜ diaphragms have been developed, tested, and approved for applications with GEMÜ valve bodies. Therefore GEMÜ does not recommend the use of other manufacturers' diaphragms with GEMÜ valve bodies. We shall not accept any liability resulting from the use of diaphragms of other manufacturers inside GEMÜ diaphragm valves.

GEMÜ seal system

Modular system for diaphragm valves

With the GEMÜ modular system, we offer you the opportunity to put together a suitable valve in line with your requirements. Discover all configuration options at ***www.gemu-group.com***

Measurement and control technology
Electrical position indicators and combi switchboxes | Positioners and process controllers | Accessories



Actuators
Manual | Pneumatic | Motorized
Metal | Plastic



Diaphragms
EPDM | PTFE/EPDM | FKM



Bodies
2/2-way body | T body | Welding configurations | i-body | Multi-port body
Metal | Plastic



Configure your valve online
at *www.gemu-group.com*

Lined diaphragm valves

Lined valve bodies can be used if a valve is exposed to particularly heavy chemical or mechanical loads. The combination of robust body housing and durable plastics is preferable for corrosive media and safety-relevant systems, such as in the chemical industry.

At GEMÜ, we manufacture the injection moulding tools for the plastic linings ourselves.

Our special manufacturing processes and the sophisticated geometric suitability of the material transitions make lined GEMÜ valve bodies a long-term, high-quality application solution. For additional reliability of application, we carry out an individual inspection of each lining.

The lined GEMÜ valve bodies are produced exclusively using high-quality materials and only at selected and certified foundries.

This is how high-quality, lined diaphragm valves are developed at GEMÜ

- Injection moulding is carried out via a central sprue from below through the valve weir, preventing the plastic layer from detaching from the metal body under vacuum operating conditions
- The metal/plastic material transition is designed at the pipe connections so that the plastic lining is fixed axially inside the pipe and no stress damage can occur as a result of thermal expansion
- A temperature-resistant coating on the metal bodies prepared for injection provides a high level of corrosion protection for the metal surface even underneath the plastic layer

Lining/injection moulding

GEMÜ injects the plastic valve body linings subject to strict quality controls, e.g. spark testing.

When selecting the materials for the lining, you can choose between polypropylene (PP) and fluoroplastics (PFA), as well as soft and hard rubber.

Using an extruder, fluid thermoplastics and elastomers are injected between the metal bodies and into the metal mould core inside the bodies. The lining thickness can, therefore, be defined precisely – and at a consistently high quality.

Coating

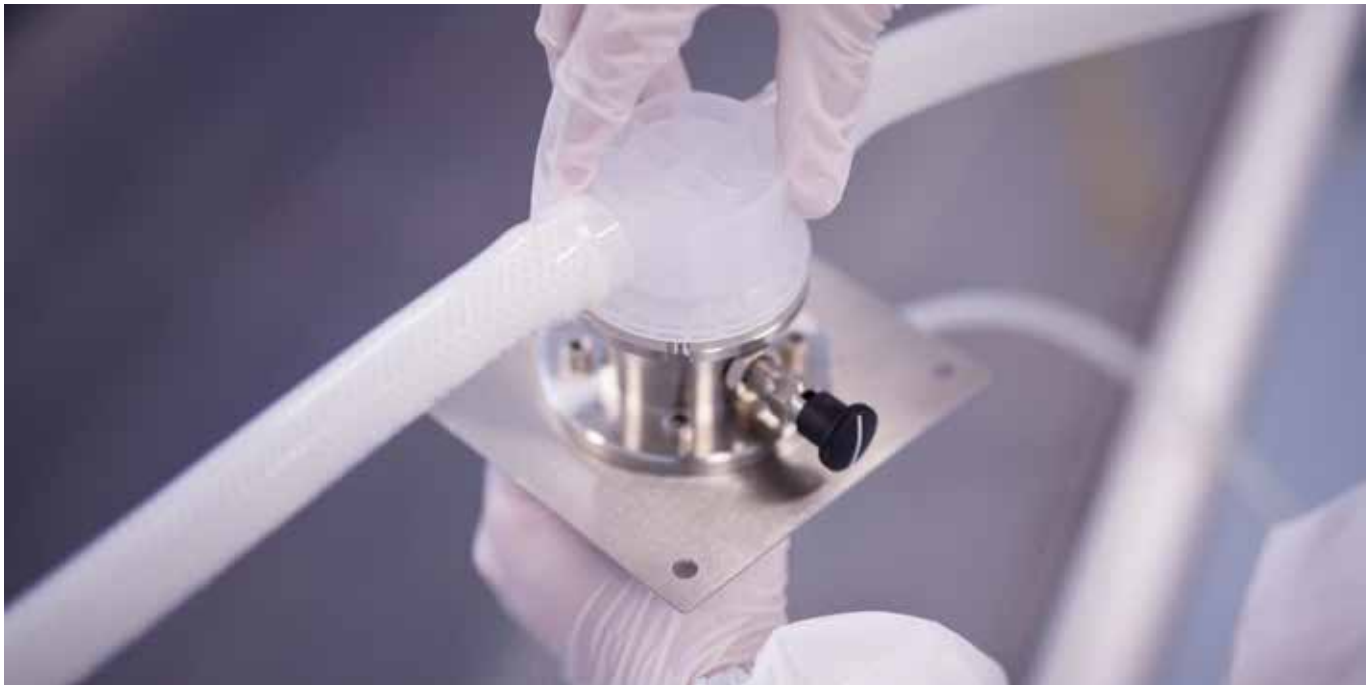
In demanding ambient conditions, valves also need special external protection. This is why GEMÜ offers different coating solutions:

- Metal, paint or synthetic powder coating
- Coating applied by galvanization, painting or immersion/enamelling
- Thin coating, less material coating
- Materials such as zinc, chrome, epoxy, phenol resins, nylon or fluoroplastics are used as coating materials.

Single-use valves

GEMÜ also offers diaphragm valves for single use. These are designated as single-use valves and are used if it is crucial to avoid cross-contamination or if a simplified plant design is required. Secondary processes once required for cleaning and sterilization (CIP/SIP) are no longer at all necessary in single-use systems and processes. The necessary purity is guaranteed by using gamma rays to sterilize all the process components used.

Unlike with a conventional diaphragm valve, the two media wetted components (valve body and diaphragm) are sealed together. This produces the central component, the single-use valve body, which is removed from the manual actuator and disposed of after a single use. The actuator remains in the system for multiple use. The single-use diaphragm valve body and the actuator are joined using a clamp. These are locked together and unlocked through a defined opening and closing procedure.



Manually operated plastic diaphragm valves

Overview

GEMÜ type	C67 CleanStar	677HP PurePlus	617	R677
				
Special feature	High-Flow valve body			High-Flow valve body
Nominal sizes	DN 4 to 25	DN 15 to 100	DN 12 to 20	DN 15 to 100
Media temperature	-10 to 150 °C	-20 to 80 °C	-10 to 80 °C	-10 to 80 °C
Ambient temperature	0 to 60 °C	-10 to 60 °C	-10 to 50 °C	-10 to 50 °C
Operating pressure	0 to 6 bar	0 to 10 bar	0 to 6 bar	0 to 10 bar
Connection types				
Flange	-	-	-	●
Flare	●	-	●	-
Flare SpaceSaver	●	-	-	-
PrimeLock®	●	-	-	-
PrimeLock® SpaceSaver	●	-	-	-
Solvent cement socket	-	-	●	-
Spigot	●	●	●	●
Super 300 Type Pillar® SpaceSaver	●	-	-	-
Threaded connection	-	-	●	-
Union end	●	-	●	●
Body materials				
ABS	-	-	-	●
Inliner PFA / Outliner PVDF	-	●	-	-
Inliner PP-H/outliner PP	-	-	-	●
Inliner PVDF/outliner PP	-	-	-	●
PFA	●	-	-	-
PP	-	-	●	●
PP-H	●	-	●	-
PVC-U	-	-	●	●
PVDF	-	●	●	●
Conformities				
EAC	●	●	●	●
FDA	●	●	●	●
NSF	-	-	●	●
TA Luft (German Clean Air Act)	●	-	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ C67 CleanStar
Manually operated diaphragm valve

The GEMÜ C67 HPW CleanStar ultra-pure 2/2-way diaphragm valve is manually operated. All media wetted parts are made of PFA or PTFE.

Features

- High purity due to cleanroom manufacturing
- High Flow version
- High flow rates
- Minimal deadleg
- Optional flow direction
- Also available as T valve
- The valve is available with ECTFE union nut as an option.
  Thus you achieve: brief equipment rinsing times, clearly improved Kv values (High Flow), high "MTBF" and reduced costs

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 25
Body configurations:	2/2-way body | T body
Connection types:	Flare | Flare SpaceSaver | PrimeLock® | PrimeLock® SpaceSaver | Spigot | Super 300 Type Pillar® SpaceSaver | Union end
Connection standards:	DIN
Body materials:	PFA | PP-H, grey | PP-H, natural | PVDF
Diaphragm materials:	PTFE/EPDM
Conformities:	EAC | FDA | TA Luft (German Clean Air Act)

Go online!

GW-C67

GEMÜ 677HP PurePlus
Manually operated diaphragm valve

The GEMÜ 677 HPW 2/2-way diaphragm valve has a low maintenance plastic handwheel and is manually operated. An integral optical position indicator is standard.

Features

- High flow rates
- Minimal deadleg
- Optional flow direction and installation position
- Due to its design particularly suitable for polishing agents and slurries
- Extensive range of accessories

Technical specifications

Media temperature:	-20 to 80 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 100
Body configurations:	2/2-way body | T body
Connection types:	Spigot
Connection standards:	DIN
Body materials:	Inliner PFA / Outliner PVDF, carbon fibre reinforced | PVDF
Diaphragm materials:	PTFE/EPDM
Conformities:	EAC | FDA

Go online!

GW-677HP

GEMÜ 617
Manually operated diaphragm valve

The GEMÜ 617 2/2-way diaphragm valve has a low maintenance plastic bonnet and is manually operated. An integral optical position indicator is standard.

Features

- High flow rates
- Integral optical position indicator
- Choice of various body materials and connection types

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 12 to 20
Body configurations:	2/2-way body
Connection types:	Flare | Solvent cement socket | Spigot | Threaded connection | Union end
Connection standards:	BS | DIN | ISO
Body materials:	PP, reinforced | PP-H, natural | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | NSF

Go online!

GW-617

GEMÜ R677
Manually operated diaphragm valve

The GEMÜ R677 2/2-way diaphragm valve has a low maintenance plastic bonnet and is manually operated. An integral optical position indicator is standard. The high-flow valve body provides compact dimensions at high flow rates.

Features

- Same mounting height planes over multiple nominal sizes
- Integral optical position indicator
- Compact system design thanks to flow-optimized high-flow valve bodies

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 100
Body configurations:	2/2-way body
Connection types:	Flange | Spigot | Union end
Connection standards:	ANSI | ASTM | BS | DIN | EN | ISO | JIS
Body materials:	ABS | Inliner PP-H, grey / outliner PP, reinforced | Inliner PVDF/outliner PP, reinforced | PP, reinforced | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | NSF

Go online!

GW-R677

Manually operated metal diaphragm valves

Overview

GEMÜ type	601 / 612 / 673	602	675	653 BioStar	654 BioStar
					
Nominal sizes	DN 4 to 65	DN 4 to 15	DN 15 to 150	DN 10 to 100	DN 4 to 100
Media temperature	-10 to 100 °C	-10 to 100 °C	-10 to 100 °C	-10 to 100 °C	-10 to 100 °C
Ambient temperature	0 to 60 °C	0 to 60 °C	0 to 60 °C	0 to 60 °C	0 to 60 °C
Operating pressure	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar
Connection types					
Clamp	●	●	-	●	●
Flange	●	●	●	●	●
Spigot	●	●	-	●	●
Threaded connection	●	●	●	●	●
Body materials					
1.4408	●	●	-	●	●
1.4408, lined	-	-	-	●	●
1.4435	●	●	-	●	●
1.4435 (316L)	●	●	-	●	●
1.4435 (BN2)	●	●	-	●	●
1.4539	●	●	-	●	●
EN-GJL-250	-	-	●	-	-
EN-GJS-400-18-LT, lined	●	-	●	-	-
EN-GJS-500-7, lined	-	-	●	-	-
Conformities					
3A	●	●	-	●	●
CRN	●	●	-	●	●
EAC	●	●	●	●	●
FDA	●	●	●	●	●
Oxygen	●	●	-	●	●
Reg. (EU) No. 10/2011	●	●	●	●	●
Regulation (EC) No. 1935/2004	●	●	●	●	●
Regulation (EC) No. 2023/2006	●	●	-	●	●
TA Luft (German Clean Air Act)	●	●	●	●	●
USP	●	●	-	●	●

GEMÜ 601 / 612 / 673
Manually operated diaphragm valve

The GEMÜ 601/612/673 2/2-way diaphragm valves have temperature-resistant plastic handwheels and are manually operated. A closing stroke limiter or a seal adjuster to increase service life of the diaphragm and an optical position indicator are integrated as standard.

Features

- Compact design (ideal when space is at a premium)
- CIP/SIP capable
- Autoclave capability
- Long diaphragm service life thanks to patented closing stroke limiter
- Continuous minimum flow regulation thanks to closing stroke limiter
- Optional PVDF handwheel available in white (not autoclavable)

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 4 to 65
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material | EN-GJS-400-18-LT, SG iron material
Body lining:	PFA | PP
Diaphragm materials:	EPDM | FKM | PTFE/EPDM
Conformities:	3A | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | TA Luft (German Clean Air Act) | USP

Go online!

GW-601 GW-612 GW-673

GEMÜ 602
Manually operated diaphragm valve

The GEMÜ 602 2/2-way diaphragm valve has a stainless steel handwheel and is manually operated. Bonnet and internals are made entirely from stainless steel. A closing stroke limiter to increase service life of the diaphragm and an optical position indicator are integrated as standard.

Features

- Compact design (ideal when space is at a premium)
- CIP/SIP capable
- Autoclave capability
- Long diaphragm service life thanks to patented closing stroke limiter
- Continuous minimum flow regulation thanks to closing stroke limiter

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 4 to 15
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material
Diaphragm materials:	EPDM | FKM | PTFE/EPDM
Conformities:	3A | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | TA Luft (German Clean Air Act) | USP

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GW-602

GEMÜ 675
Manually operated diaphragm valve

The GEMÜ 675 2/2-way diaphragm valve has a metal handwheel and is manually operated. An integral optical position indicator is standard.

Features

- Suitable for particulate and abrasive media
- Various lining materials are available for a wide range of media
- Standard integral optical position indicator

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 150
Body configurations:	2/2-way body
Connection types:	Flange | Threaded connection
Connection standards:	ANSI | BS | DIN | EN
Body materials:	EN-GJL-250, cast iron material | EN-GJS-400-18-LT, SG iron material | EN-GJS-500-7, ductile iron material
Body lining:	Hard rubber | PFA | PP
Diaphragm materials:	CR | EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | TA Luft (German Clean Air Act)

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GW-675

GEMÜ 653 BioStar
Manually operated diaphragm valve

The GEMÜ 653 2/2-way diaphragm valve has a stainless steel bonnet and is manually operated. The valve features a handwheel made of temperature and chemical resistant plastic. An integral optical position indicator is standard.

Features

- CIP/SIP capable
- Autoclave capability
- Extensive range of accessories available
- Opening stroke and closing stroke limiter
- Handwheel locking available upon request (electric or mechanical)
- Configurable with proximity switches for position feedback

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 10 to 100
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material
Body lining:	PFA
Diaphragm materials:	EPDM | FKM | PTFE/EPDM
Conformities:	3A | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | TA Luft (German Clean Air Act) | USP

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GW-653

GEMÜ 654 BioStar
Manually operated diaphragm valve

The GEMÜ 654 2/2-way diaphragm valve has a stainless steel bonnet and is manually operated. The valve has a handwheel made from stainless steel. An integral optical position indicator is standard.

Features

- Handwheel design allows minimal heat sink
- CIP/SIP capable
- Autoclave capability
- Extensive range of accessories available
- Opening stroke and closing stroke limiter
- Handwheel locking available upon request (electric or mechanical)
- Configurable with proximity switches for position feedback

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 4 to 100
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material
Body lining:	PFA
Diaphragm materials:	EPDM | FKM | PTFE/EPDM
Conformities:	3A | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | TA Luft (German Clean Air Act) | USP

Go online!

GW-654

Pneumatically operated plastic diaphragm valves

Overview

GEMÜ type	C60 CleanStar	600HP	610
			
Special feature	High-Flow valve body		
Nominal sizes	DN 4 to 25	DN 40 to 50	DN 12 to 20
Media temperature	-10 to 150 °C	0 to 90 °C	-10 to 80 °C
Ambient temperature	0 to 60 °C	0 to 60 °C	-10 to 50 °C
Operating pressure	0 to 6 bar	0 to 6 bar	0 to 6 bar
Connection types			
Flange	-	-	-
Flare	●	-	●
Flare SpaceSaver	●	-	-
PrimeLock®	●	-	-
PrimeLock® SpaceSaver	●	-	-
Solvent cement socket	-	-	●
Spigot	●	●	●
Super 300 Type Pillar® SpaceSaver	●	-	-
Threaded connection	-	-	●
Union end	●	-	●
Body materials			
ABS	-	-	-
Inliner PFA / Outliner PVDF	-	●	-
Inliner PP-H/outliner PP	-	-	-
Inliner PVDF/outliner PP	-	-	-
PFA	●	-	-
PP	-	-	●
PP-H	●	-	●
PVC-U	-	-	●
PVDF	●	-	●
Conformities			
EAC	●	●	●
FDA	●	●	●
NSF	-	-	●
TA Luft (German Clean Air Act)	●	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ type	630	R690	690HP PurePlus
			
Special feature		High-Flow valve body	
Nominal sizes	DN 12 to 20	DN 15 to 100	DN 15 to 100
Media temperature	-10 to 80 °C	-10 to 80 °C	-10 to 80 °C
Ambient temperature	-10 to 50 °C	-10 to 50 °C	-5 to 50 °C
Operating pressure	0 to 6 bar	0 to 10 bar	0 to 10 bar
Connection types			
Flange	-	●	-
Flare	●	-	-
Flare SpaceSaver	-	-	-
PrimeLock®	-	-	-
PrimeLock® SpaceSaver	-	-	-
Solvent cement socket	●	-	-
Spigot	●	●	●
Super 300 Type Pillar® SpaceSaver	-	-	-
Threaded connection	●	-	-
Union end	●	●	-
Body materials			
ABS	-	●	-
Inliner PFA / Outliner PVDF	-	-	-
Inliner PP-H/outliner PP	-	●	●
Inliner PVDF/outliner PP	-	●	-
PFA	-	-	-
PP	●	●	-
PP-H	●	-	-
PVC-U	●	●	-
PVDF	●	●	●
Conformities			
EAC	●	●	●
FDA	●	●	-
NSF	●	●	-
TA Luft (German Clean Air Act)	-	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ C60 CleanStar
Pneumatically operated diaphragm valve

The GEMÜ C60 CleanStar® ultra pure 2/2-way diaphragm valve has a plastic piston actuator and is pneumatically operated. A stroke limiter and an optical position indicator are integrated as standard. All media wetted parts are made of PFA or PTFE.

Features

- High purity due to cleanroom manufacturing
- High Flow version
- High flow rates
- Minimal deadleg
- Optional flow direction
- Also available as T valve
- The valve is available with ECTFE union nut as an option.
  Thus you achieve: brief equipment rinsing times, clearly improved Kv values (High Flow), high "MTBF" and reduced costs

also as control valve

EAC

FDA

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 25
Body configurations:	2/2-way body | T body
Connection types:	Flare | Flare SpaceSaver | PrimeLock® | PrimeLock® SpaceSaver | Spigot | Super 300 Type Pillar® SpaceSaver | Union end
Connection standards:	DIN
Body materials:	PFA | PP-H, grey | PP-H, natural | PVDF
Diaphragm materials:	PTFE/EPDM
Conformities:	EAC | FDA | TA Luft (German Clean Air Act)

Go online!

GW-C60

GEMÜ 600HP
Pneumatically operated diaphragm valve

The GEMÜ 600 HP 2/2-way diaphragm valve has a low maintenance plastic piston actuator and is pneumatically operated. A stroke limiter, a manual override and an optical position indicator are integrated as standard.

Features

- High flow rates
- Minimal deadleg
- Optional flow direction and installation position
- Due to its design particularly suitable for polishing agents and slurries
- Extensive range of accessories

also as control valve

EAC

FDA

Technical specifications

Media temperature:	0 to 90 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 40 to 50
Body configurations:	2/2-way body
Connection types:	Spigot
Connection standards:	DIN
Body materials:	Inliner PFA / Outliner PVDF
Diaphragm materials:	PTFE/EPDM
Conformities:	EAC | FDA

Go online!

GW-600HP

GEMÜ 610
Pneumatically operated diaphragm valve

The GEMÜ 610 2/2-way diaphragm valve has a low maintenance plastic piston actuator and is pneumatically operated. An integral optical position indicator is standard. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

Features

- Same mounting height planes over multiple nominal sizes
- High flow rates
- Integral optical position indicator and closing stroke limiter as standard
- Option with electrical position indicator

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 12 to 20
Body configurations:	2/2-way body
Connection types:	Flare | Solvent cement socket | Spigot | Threaded connection | Union end
Connection standards:	BS | DIN | ISO
Body materials:	PP, reinforced | PP-H, natural | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | NSF

Go online!

GW-610

GEMÜ 630
Pneumatically operated diaphragm valve

The GEMÜ 630 2/2-way diaphragm valve has a low-maintenance plastic piston actuator and is pneumatically operated. An integral optical position indicator is standard. The valve is also equipped with a stroke limiter. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

Features

- Variable spring set for applications with low control pressure
- Mounting plates for height compensation of differing body dimensions and nominal sizes available
- Extensive range of accessories

also as control valve

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 12 to 20
Body configurations:	2/2-way body
Connection types:	Flare | Solvent cement socket | Spigot | Threaded connection | Union end
Connection standards:	ANSI | BS | DIN | EN | ISO
Body materials:	PP, reinforced | PP-H, natural | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | NSF

Go online!

GW-630

GEMÜ R690
Pneumatically operated diaphragm valve

The GEMÜ R690 2/2-way diaphragm valve has a low maintenance membrane actuator and is pneumatically operated. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available. The valve body provides compact dimensions at high flow rates.

Features

- Same mounting height planes over multiple nominal sizes
- Compact system design thanks to flow-optimized high-flow valve bodies
- Reduced control air consumption
- Modified spring sets available for applications with reduced control pressure

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 100
Body configurations:	2/2-way body
Connection types:	Flange | Spigot | Union end
Connection standards:	ANSI | ASTM | BS | DIN | EN | ISO | JIS
Body materials:	ABS | Inliner PP-H, grey / outliner PP, reinforced | Inliner PVDF/outliner PP, reinforced | PP, reinforced | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | NSF

Go online!

GW-R690

GEMÜ 690HP PurePlus
Pneumatically operated diaphragm valve

The GEMÜ 690HP 2/2-way diaphragm valve has a low-maintenance membrane actuator and is pneumatically operated. "Normally closed" (NC), "Normally open" (NO) and "Double acting" (DA) control functions are available.

Features

- Compact, lightweight construction and high performance
- High flow rates
- Minimal deadleg
- Proven long life membrane actuator
- Leak detection hole
- Simple diaphragm replacement

also as control valve

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-5 to 50 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 100
Body configurations:	2/2-way body | T body
Connection types:	Spigot
Connection standards:	DIN
Body materials:	Inliner PP-H, grey / outliner PP, reinforced | Inliner PP-H, natural / Outliner PP, reinforced | PVDF
Diaphragm materials:	PTFE/EPDM
Conformities:	EAC

Go online!

GW-690HP

Pneumatically operated metal diaphragm valves

Overview

GEMÜ type	650 BioStar	605 / 625 / 687	615 / 695	620
				
Nominal sizes	DN 4 to 100	DN 4 to 100	DN 10 to 50	DN 15 to 150
Media temperature	-10 to 100 °C	-10 to 100 °C	-10 to 80 °C	0 to 100 °C
Ambient temperature	0 to 60 °C	0 to 60 °C	0 to 60 °C	0 to 60 °C
Operating pressure	0 to 10 bar	0 to 8 bar	0 to 10 bar	0 to 10 bar
Connection types				
Clamp	●	●	●	-
Flange	●	●	●	●
Spigot	●	●	●	-
Threaded connection	●	●	●	●
Body materials				
1.4408	●	●	●	-
1.4408, lined	●	●	●	-
1.4435	●	●	●	-
1.4435 (316L)	●	●	●	-
1.4435 (BN2)	●	●	●	-
1.4539	●	●	●	-
CW617N	-	-	●	-
EN-GJL-250	-	-	●	●
EN-GJS-400-18-LT, lined	-	●	●	●
EN-GJS-500-7, lined	-	-	-	●
Conformities				
3A	●	-	-	-
BSE/TSE	●	●	●	-
CRN	●	●	-	-
EAC	●	●	●	●
FDA	●	●	●	●
Oxygen	●	●	●	-
Reg. (EU) No. 10/2011	●	●	●	-
Regulation (EC) No. 1935/2004	●	●	●	-
Regulation (EC) No. 2023/2006	●	●	●	-
SIL	●	●	-	-
TA Luft (German Clean Air Act)	●	●	-	●
USP	●	●	●	-

GEMÜ 650 BioStar
Pneumatically operated diaphragm valve

The GEMÜ 650 BioStar 2/2-way diaphragm valve has a stainless steel piston actuator and is pneumatically operated. The valve is designed for use in a sterile environment. All actuator parts are made from stainless steel (except seals). The compression springs of diaphragm sizes 80 and 100 are made of epoxy coated spring steel. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available. An integral optical position indicator is standard.

Features

- Compact design (ideal when space is at a premium)
- CIP/SIP capable
- Autoclave capability, depending on version
- Controlled exhaust air duct available as an option
- Wide range of adaptation options for add-on components and accessories

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 4 to 100
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material
Body lining:	PFA
Diaphragm materials:	EPDM | PTFE/EPDM
Conformities:	3A | BSE/TSE | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | SIL | TA Luft (German Clean Air Act) | USP

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GW-650

GEMÜ 605 / 625 / 687
Pneumatically operated diaphragm valve

The GEMÜ 605/625/687 2/2-way diaphragm valves have a low maintenance plastic actuator and are pneumatically operated. The valves have a metal distance piece. An integral optical position indicator is standard. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

Features

- Hermetic separation between medium and actuator
- CIP/SIP capable
- Wide range of adaptation options for add-on components and accessories

also as control valve

Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 8 bar
Nominal sizes:	DN 4 to 100
Body configurations:	2/2-way body | i-body | Multi-port body | T body | Tank valve body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material | CW617N, brass | EN-GJS-400-18-LT, SG iron material
Body lining:	Hard rubber | PFA | PP
Diaphragm materials:	EPDM | FKM | PTFE/EPDM
Conformities:	BSE/TSE | CRN | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | SIL | TA Luft (German Clean Air Act) | USP

Go online!

GW-605 GW-625 GW-687

GEMÜ 615 / 695
Pneumatically operated diaphragm valve

The GEMÜ 615/695 2/2-way diaphragm valves have a low maintenance plastic actuator and are pneumatically operated. An integral optical position indicator is standard. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

Features

- Wide range of adaptation options for add-on components and accessories
- CIP capable

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 10 to 50
Body configurations:	2/2-way body | i-body | Welding configuration
Connection types:	Clamp | Flange | Spigot | Threaded connection
Connection standards:	ANSI | ASME | BS | DIN | EN | ISO | JIS | SMS
Body materials:	1.4408, investment casting material | 1.4435 (316L), forged material | 1.4435 (BN2), forged material | 1.4435, investment casting material | 1.4539 (904L), forged material | EN-GJL-250, cast iron material | EN-GJS-400-18-LT, SG iron material
Body lining:	Hard rubber | PFA | PP
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM
Conformities:	BSE/TSE | EAC | FDA | Oxygen | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | USP

Go online!

GW-615 GW-695

GEMÜ 620
Pneumatically operated diaphragm valve

The GEMÜ 620 2/2-way diaphragm valve has a low maintenance membrane actuator made of metal or plastic and is pneumatically operated. The valve has a metal distance piece. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

Features

- Suitable for particulate and abrasive media
- Various lining materials are available, such as PFA, PP or hard rubber
- Standard optical position indicator
- Wide range of adaptation options for add-on components and accessories

also as control valve

EAC

FDA

Technical specifications

Media temperature:	0 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 15 to 150
Body configurations:	2/2-way body
Connection types:	Flange | Threaded connection
Connection standards:	ANSI | BS | EN | ISO
Body materials:	EN-GJL-250, cast iron material | EN-GJS-400-18-LT, SG iron material | EN-GJS-500-7, ductile iron material
Body lining:	Hard rubber | PFA | PP
Diaphragm materials:	CR | EPDM | FKM | NBR | PTFE/EPDM
Conformities:	EAC | FDA | TA Luft (German Clean Air Act)

Go online!

GW-620

M-block diaphragm valves

GEMÜ P600M
M-block plastic diaphragm valve

The plastic M-block diaphragm valve, GEMÜ P600M, comprises one or more diaphragm valve seats. These can be equipped with manual, pneumatic and motorized actuators. The downstream media is isolated using a diaphragm at the valve seat.

Features

- Combining several valves and pipe sections in one compact unit
- Reduced installation space
- Combining several functions in one blockControl, batch, distribute, flush, etc.
- Reduced number of welded and solvent cemented joints in the plant
- Customised block construction

also as control valve

Technical specifications

Media temperature:	-10 to 80 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 6 to 50
Body configurations:	Multi-port body
Connection types:	Clamp | Spigot | Threaded connection | Union end
Connection standards:	ASME | DIN | ISO
Body materials:	PP-H, grey | PP-H, natural | PVC-U, grey | PVDF
Diaphragm materials:	EPDM | FKM | NBR | PTFE/EPDM

GEMÜ P600M
M-block stainless steel diaphragm valve

The M-block diaphragm valve in stainless steel, GEMÜ P600M, comprises one or more diaphragm valve seats. It is possible to choose between manual, pneumatic and motorized actuator variants. The downstream media is isolated using a diaphragm at the valve seat.

Features

- Compact design saves space
- Individual, customized and flexible design
- Reduced deadleg
- Fewer connection points and weld seams
- Huge variety of functions combined in the smallest of spaces
- Hermetic separation between medium and actuator
- Wide range of adaptation options from measurement and control systems, in addition to accessories

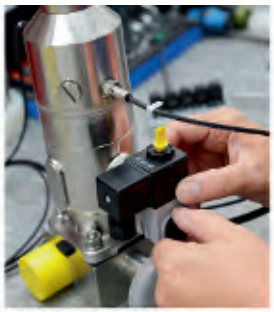
Technical specifications

Media temperature:	-10 to 100 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 4 to 150
Body configurations:	Multi-port body
Connection types:	Clamp I Flange I Spigot I Threaded connection
Connection standards:	ANSI I ASME I BS I DIN I EN I ISO I JIS I SMS
Body materials:	1.4435 (316L), block material I 1.4435 (BN2), block material I 1.4539 (904L), block material
Diaphragm materials:	EPDM I PTFE/EPDM
Conformities:	3A I BSE/TSE I CRN I EAC I FDA I Regulation (EC) No. 1935/2004 I USP

Add-on components for diaphragm valves

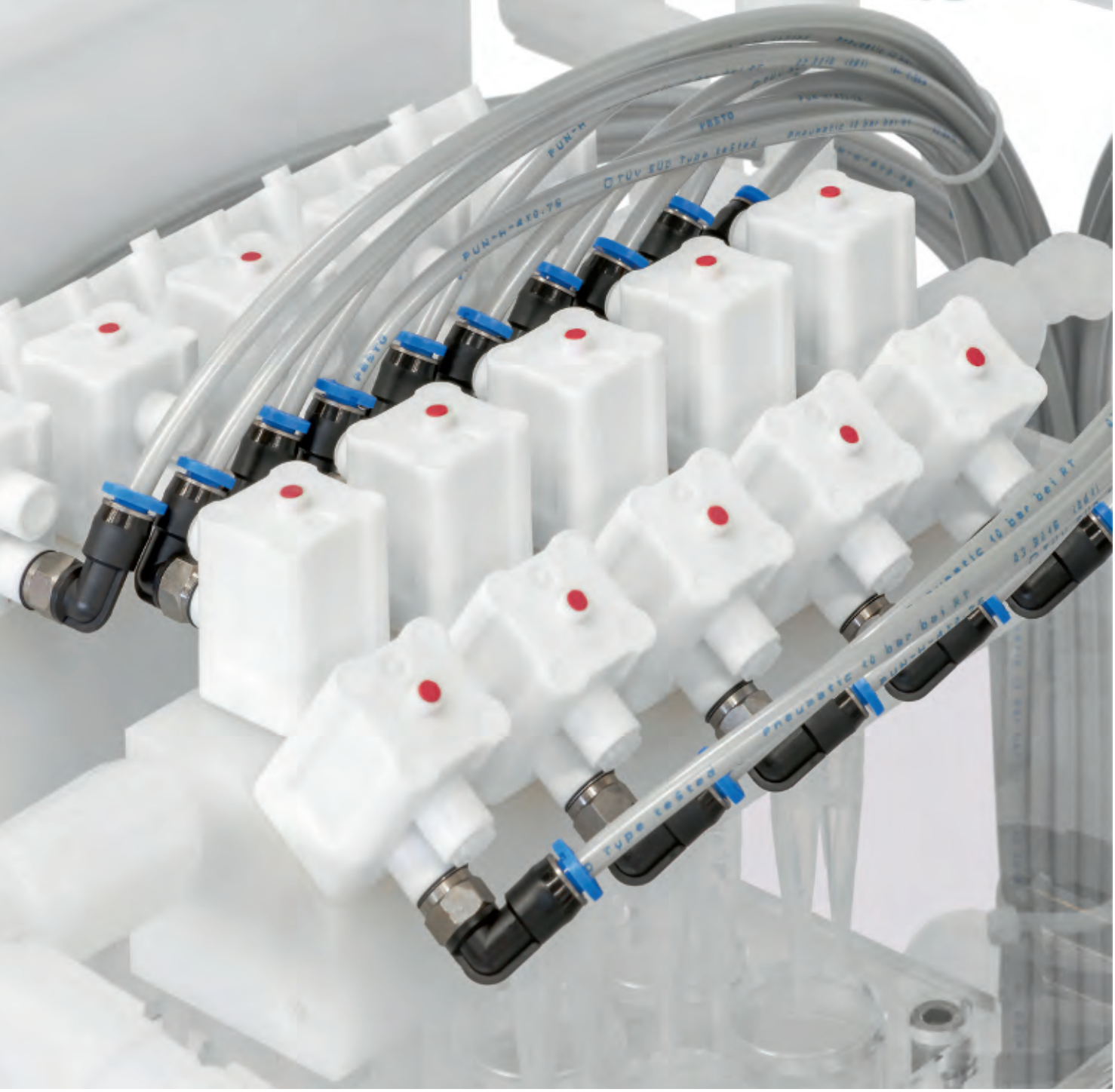
GEMÜ type	605	610	615	617	620	625	630	650
Measurement and control technology								
Electrical position indicator								
GEMÜ 1201 / 1211 / 1214 ▸ page 193					●		●	●
GEMÜ 1205 ▸ page 194					●		●	●
GEMÜ 1215 ▸ page 191	●	●	●		●	●	●	●
GEMÜ 1230 / 1231 / 1232 ▸ page 192	●	●	●		●	●	●	●
GEMÜ 1234 ▸ page 195	●	●	●		●	●	●	●
GEMÜ 1235 / 1236 ▸ page 196	●	●	●		●	●	●	●
GEMÜ 1242	●	●	●		●	●	●	●
Combi switchbox								
GEMÜ 4241 ▸ page 203		●	●			●		●
GEMÜ 4242 ▸ page 204	●	●	●		●	●	●	●
Pilot valve								
GEMÜ 0324	●	●	●		●	●	●	●
Control systems								
Positioner								
GEMÜ 1434 µPos ▸ page 178	●	●	●		●	●	●	●
GEMÜ 1435 ePos ▸ page 180	●	●	●		●	●	●	●
Positioner and process controller								
GEMÜ 1436 cPos ▸ page 179	●	●	●		●	●	●	●
Accessories								
Clamping devices ▸ page 235								●
Manual override ▸ page 238					●			●
Stroke limiters ▸ page 237	●	●	●		●	●	●	●
Position indicators ▸ page 236	●	●	●		●	●	●	●
Sensor accessories ▸ page 239	●	●	●		●	●	●	●
Connection accessories ▸ page 232	●	●	●		●	●	●	●
Valve mounting accessories		●		●	●		●	

GEMÜ valves are fully assembled in our in-house Assembly department – with compatible accessories on request.



Our pre-assembled solutions are supplied to you preset and tested. Not only can you obtain all components from a single source, you also save on the time and effort required for logistics and installation of the plant on site, as well as for documentation.

GEMÜ type	653	654	687	695	C60	R677	R690
Measurement and control technology							
Electrical position indicator							
GEMÜ 1201 / 1211 / 1214 ▸ page 193			●	●			●
GEMÜ 1205 ▸ page 194			●	●			●
GEMÜ 1215 ▸ page 191			●	●	●	●	●
GEMÜ 1230 / 1231 / 1232 ▸ page 192			●	●	●		●
GEMÜ 1234 ▸ page 195			●				
GEMÜ 1235 / 1236 ▸ page 196			●	●	●		●
GEMÜ 1242			●	●	●		●
Combi switchbox							
GEMÜ 4241 ▸ page 203			●				
GEMÜ 4242 ▸ page 204			●	●	●		●
Pilot valve							
GEMÜ 0324			●	●	●		●
Control systems							
Positioner							
GEMÜ 1434 µPos ▸ page 178			●	●	●		●
GEMÜ 1435 ePos ▸ page 180			●	●			●
Positioner and process controller							
GEMÜ 1436 cPos ▸ page 179			●	●			●
Accessories							
Clamping devices ▸ page 235							
Manual override ▸ page 238			●	●			●
Stroke limiters ▸ page 237			●	●			●
Position indicators ▸ page 236			●	●			●
Sensor accessories ▸ page 239	●	●	●	●			●
Connection accessories ▸ page 232			●	●	●		●
Valve mounting accessories						●	●



Diaphragm globe valves

Description

Valves that combine the advantages of the hermetic sealing of an actuator and the medium of a diaphragm valve with the advantages of a globe valve are designated as diaphragm globe valves.

GEMÜ diaphragm globe valves are suitable both for open/close applications and for control and dosing applications. The PTFE diaphragms used reliably isolate the medium from the actuator. The valves are easy to clean and, in comparison with valves with bellows, have significantly reduced deadlegs. A pretensioning element included in the actuator guarantees external leak tightness, even with temperature fluctuations and settling of the plastic parts. The valves are available with a straight through body, angle valve body or as M-block systems.

Features

- CIP/SIP capable and autoclavable
- Available with linear or equal-percentage control characteristic
- Hermetic separation of the actuator from the medium using a sealing diaphragm
- High number of switching cycles
- Various valve body connections available
- Customized block designs possible
- Compact design
- No "lift effect" thanks to the use of the GEMÜ PD design

Typical working media

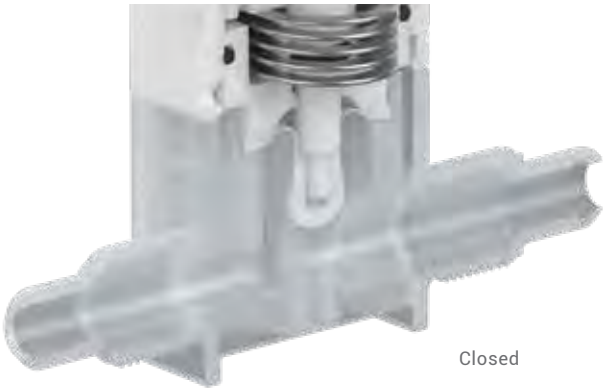
- Inert and corrosive media
- Liquids and gases

Applications

- Dosing at minimum quantities
- Suitable for media containing oil or grease
- Isolation of sensitive process media
- All types of media for filling machines (vacuum, liquid, gaseous)
- Filling processes in hygienic and aseptic plants in the pharmaceutical, biotechnology, food and beverage industries

Functional principle of diaphragm globe valves

Open



Closed

Diaphragm globe valves are based on an innovative seal system that GEMÜ has developed to combine the advantages of diaphragm valves with those of globe valves. Fast cycle duties and high switching frequencies can be achieved due to the basic design similar to that of a globe valve. Thanks to a cone-shaped diaphragm as a seal, the actuator is hermetically separated from the medium – as with diaphragm valves.

We also designate this patented seal as a PD (plug diaphragm). The flexible PD is compressed onto the valve seat for sealing. This allows the valve body to be perfectly adjusted to the PD. In addition to the traditional cone-shaped PD, various PDs with control geometry are also available, which additionally distinguishes this product group as ideal for precise control tasks.

Modular system for diaphragm globe valves

With the GEMÜ modular system, we offer you the opportunity to put together a suitable valve in line with your requirements. Discover all configuration options at ***www.gemu-group.com***

Measurement and control technology
Electrical position indicators and combi switchboxes | Positioners and process controllers | Accessories



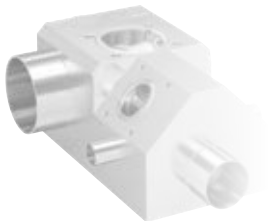
Actuators
Manual | Pneumatic | Motorized
Metal | Plastic



Plug diaphragm
PTFE/PFA/1.4435

Bodies
2/2-way body | Angle valve body | Multi-port body





Configure your valve online
at *www.gemu-group.com*

Manually operated diaphragm globe valves

Overview

GEMÜ type	C51 iComLine	C57 iComLine	567 BioStar control
			
Nominal sizes	DN 4 to 25	DN 4 to 25	DN 8 to 25
Media temperature	-10 to 150 °C	-10 to 150 °C	-10 to 160 °C
Ambient temperature	0 to 60 °C	0 to 60 °C	-10 to 60 °C
Operating pressure	0 to 6 bar	0 to 6 bar	0 to 10 bar
Connection types			
Clamp	-	-	●
Flare	●	●	-
PrimeLock®	●	●	-
Spigot	-	-	●
Super 300 Type Pillar®	●	●	-
Body materials			
1.4435 (316L)	-	-	●
1.4435 (BN2)	-	-	●
PFA	●	●	-
PTFE	●	●	-
Conformities			
3A	-	-	●
ATEX	-	-	●
EAC	●	●	-
FDA	●	●	●
Reg. (EU) No. 10/2011	-	-	●
Regulation (EC) No. 1935/2004	-	-	●
Regulation (EC) No. 2023/2006	-	-	●
USP	-	-	●

GEMÜ C51 iComLine
Manually operated diaphragm globe valve

The GEMÜ C51 iComLine ultra-pure 2/2-way plastic diaphragm globe valve is manually operated using a hand lever (quarter turn). All media-wetted parts are made of PTFE. The external actuator parts are made of PVDF. In addition to 2/2-way valve bodies, customized multi-port valve block solutions can be produced.

Features

- Low space requirement due to compact design
- Ideally suited for corrosive media
- High purity due to cleanroom manufacturing
- Manifolds are a space-saving design solution
- Choice of design with PTFE-coated screws and compression springs

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 25
Body configurations:	2/2-way body I Multi-port body
Connection types:	Flare I PrimeLock® I Super 300 Type Pillar®
Body materials:	PFA I PTFE
Diaphragm materials:	PTFE
Conformities:	EAC I FDA

Go online!

GW-C51

GEMÜ C57 iComLine
Manually operated diaphragm globe valve

The GEMÜ C57 iComLine ultra-pure 2/2-way plastic diaphragm globe valve is manually operated using a handwheel. All media-wetted parts are made of PTFE. The external actuator parts are made of PVDF. An integral optical position indicator is standard. In addition to 2/2-way valve bodies, customized multi-port valve block solutions can be produced.

Features

- Low space requirement due to compact design
- Ideally suited for corrosive media
- High purity due to cleanroom manufacturing
- Manifolds are a space-saving design solution
- Choice of design with PTFE-coated screws and compression springs

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	1/4“ (DN 4) to 1 1/4“ (DN 25)
Body configurations:	2/2-way body I Multi-port body
Connection types:	Flare I PrimeLock® I Super 300 Type Pillar®
Body materials:	PFA I PTFE
Diaphragm materials:	PTFE
Conformities:	EAC I FDA

Go online!

GW-C57

GEMÜ 567 BioStar control
Manually operated control valve

The GEMÜ 567 BioStar Control 2/2-way diaphragm globe valve is designed for use in sterile applications. Flow rates range from 80 l/h to 12,500 l/h, depending on the version. The sealing concept of the valve is based on the GEMÜ PD design. All actuator parts (except the seals) are made from stainless steel.

Features

- Hermetic separation between medium and actuator due to PD sealing technology
- Easy, fast, and error-optimized maintenance
- Actuator can be replaced under operating pressure without contaminating the medium
- FDA compliant as standard and suitable for contact with food according to Regulation (EC) No. 1935/2004
- Highly suitable for precise control applications

also as control valve

Technical specifications

Media temperature:	-10 to 160 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 8 to 25
Body configurations:	Angle valve body | Multi-port body
Connection types:	Clamp | Spigot
Connection standards:	ASME | DIN | EN | ISO
Body materials:	1.4435 (316L), block material | 1.4435 (BN2), block material
Seal materials:	1.4435/FKM/PTFE | PTFE
Conformities:	3A | ATEX | FDA | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | USP

Go online!

GW-567

Pneumatically operated diaphragm globe valves

Overview

GEMÜ type	C50 iComLine	567 BioStar control	F40
			
Nominal sizes	DN 4 to 25	DN 8 to 25	DN 8 to 25
Media temperature	-10 to 150 °C	-10 to 160 °C	-10 to 140 °C
Ambient temperature	0 to 60 °C	-10 to 60 °C	-10 to 60 °C
Operating pressure	0 to 6 bar	0 to 10 bar	0 to 7 bar
Connection types			
Clamp	-	●	●
Flare	●	-	-
PrimeLock®	●	-	-
Spigot	-	●	●
Super 300 Type Pillar®	●	-	-
Body materials			
1.4435	-	-	●
1.4435 (316L)	-	●	●
1.4435 (BN2)	-	●	-
PFA	●	-	-
PTFE	●	-	-
Conformities			
3A	-	●	●
ATEX	-	●	●
EAC	●	-	-
EHEDG	-	-	●
FDA	●	●	●
Reg. (EU) No. 10/2011	-	●	●
Regulation (EC) No. 1935/2004	-	●	●
Regulation (EC) No. 2023/2006	-	●	●
USP	-	●	●

GEMÜ C50 iComLine
Pneumatically operated diaphragm globe valve

The GEMÜ C50 iComLine ultra-pure 2/2-way plastic diaphragm globe valve has a pneumatic actuator. All media wetted parts are made of PTFE. The external actuator parts are made of PVDF. An integral optical position indicator is standard. In addition to 2/2-way valve bodies, customized multi-port valve block solutions can be produced.

Features

- Low space requirement due to compact design
- Ideally suited for corrosive media
- High purity due to cleanroom manufacturing
- Manifolds are a space-saving design solution
- Choice of design with PTFE-coated screws and compression springs

also as control valve

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	1/4 " (DN 4) to 1 1/4 " (DN 25)
Body configurations:	2/2-way body I Multi-port body
Connection types:	Flare I PrimeLock® I Super 300 Type Pillar®
Body materials:	PFA I PTFE
Diaphragm materials:	PTFE
Conformities:	EAC I FDA

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GW-C50

GEMÜ 567 BioStar control
Pneumatically operated control valve

The GEMÜ 567 BioStar Control 2/2-way diaphragm globe valve is designed for use in sterile applications. Flow rates range from 80 l/h to 12,500 l/h, depending on the version. The sealing concept of the valve is based on the GEMÜ PD design. All actuator parts (except the seals) are made from stainless steel. Normally Closed, Normally Open and Double Acting control functions are available.

Features

- Hermetic separation between medium and actuator due to PD sealing technology
- Easy, fast, and error-optimized maintenance
- Actuator can be replaced under operating pressure without contaminating the medium
- FDA compliant as standard and suitable for contact with food according to Regulation (EC) No. 1935/2004
- Highly suitable for precise control applications

Technical specifications

Media temperature:	-10 to 160 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 8 to 25
Body configurations:	Angle valve body | Multi-port body
Connection types:	Clamp | Spigot
Connection standards:	ASME | DIN | EN | ISO
Body materials:	1.4435 (316L), block material | 1.4435 (BN2), block material
Seal materials:	1.4435/FKM/PTFE | PTFE
Conformities:	3A | ATEX | FDA | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | USP

Go online!

GW-567

GEMÜ F40
Pneumatically operated filling valve

The GEMÜ F40 2/2-way filling valve is designed for filling processes in aseptic and hygienic applications. Flow rates up to 18.500 l/h are possible depending on the version. The sealing concept of the valve is based on the GEMÜ PD design, whereby the actuator is hermetically separated from the medium. All actuator parts (except the seals) are made from stainless steel. Normally Closed and Normally Open control functions are available.

Features

- Hermetic separation between medium and actuator due to PD sealing technology
- Long service life with over 10 million cycle duties
- Designed according to Hygienic Design guidelines and EHEDG certified
- FDA compliant as standard and suitable for contact with food according to Regulation (EC) No. 1935/2004
- Very fast and easy maintenance thanks to quick locking system and innovative cartridge spare parts system
- Suitable for vacuum up to 20 mbar (a)

also as control valve

Technical specifications

Media temperature:	-10 to 140 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 7 bar
Nominal sizes:	DN 8 to 25
Body configurations:	2/2-way body | Multi-port body
Connection types:	Clamp | Spigot
Connection standards:	ASME | DIN | EN
Body materials:	1.4435 (316L), block material | 1.4435, investment casting material
Seal materials:	PTFE
Conformities:	3A | ATEX | EHEDG | FDA | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | USP

Go online!

GW-F40

M-block diaphragm globe valves

GEMÜ PC50 iComLine
M-block diaphragm globe valve for ultra pure applications

The purity of the process media used in many high-tech areas is increasingly decisive for the quality and quantity of the products. In order to offer our customers from this sector a flexible and cost-effective solution that also saves space, we focus on our plastic M-block systems. Due to their individual design, they can combine a wide variety of functions in the smallest of spaces. The GEMÜ PC50 iComLine actuators are based on the GEMÜ C50, C51 and C57 iComLine valve types. These are suitable for many areas of application with selection of the appropriate plastic material.

Features

- Fully-integrated system solutions (valve functions, fittings, sensor system, check valves, tank/ housing walls)
- Compact design, low space requirement, logistical advantage, reduction of installation time, few connection points, low-maintenance and cost-effective
- Materials are media-specific, matched to requirements and cost-effective
- Cleanroom manufacturing (HP version), complies with SEMI F 57

Technical specifications

Media temperature:	-10 to 200 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 40
Body configurations:	Multi-port body
Connection types:	Clamp | Flare | PrimeLock® | Super 300 Type Pillar® | Threaded connection | Threaded socket | Union end | Yodogawa Nano Link
Body materials:	| PP | PTFE TFM™ | PVC | PVDF | Stainless steel
Seal materials:	PTFE
Conformities:	**META-Daten fehlen**

Go online!

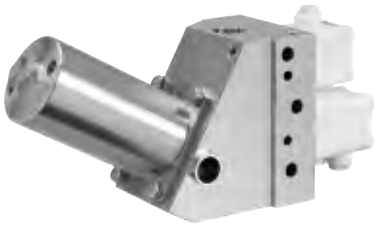
GW-PC50

GEMÜ P500M
M-block diaphragm globe valve for filling processes

The GEMÜ P500M stainless steel M-block valve for filling processes, comprises one or more diaphragm globe valves. You can choose between manual, pneumatic and motorized versions. The downstream media is isolated at the valve seat of a diaphragm globe valve using a plug diaphragm (PD). This allows a hermetic separation between the actuator and the medium and ensures very good control accuracy.

Features

- Compact design saves space
- Individual, customized and flexible design
- Fewer connection points and weld seams
- Huge variety of functions combined in the smallest of spaces
- Resistant sealing from modified PTFE (TFM™) – no retightening required
- Quick and easy maintenance thanks to cartridge spare parts system
- Suitable for fast and high cycle duties
- Highly suitable for control applications
- Wide range of adaptation options from measurement and control systems, in addition to accessories



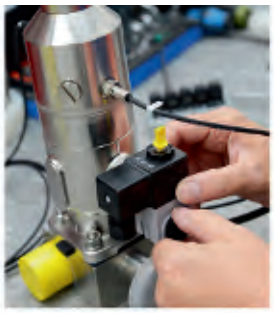
Technical specifications

Media temperature:	-10 to 140 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 7 bar
Nominal sizes:	DN 6 to 25
Body configurations:	Multi-port body
Connection types:	Clamp I Flange I Spigot I Threaded connection
Connection standards:	ANSI I ASME I BS I DIN I EN I ISO I JIS I SMS
Body materials:	1.4435 (316L), block material I 1.4435 (BN2), block material I 1.4539 (904L), block material
Seal materials:	PTFE TFM™
Conformities:	FDA I Reg. (EU) No. 10/2011 I Regulation (EC) No. 1935/2004 I Regulation (EC) No. 2023/2006 I USP

Add-on components for diaphragm globe valves

GEMÜ type	567	C50	F40
Measurement and control technology			
Electrical position indicators			
GEMÜ 1201 / 1211 / 1214 ▸ page 193			●
GEMÜ 1205 ▸ page 194			●
GEMÜ 1215 ▸ page 191		●	
GEMÜ 1230 / 1231 / 1232 ▸ page 192		●	●
GEMÜ 1234 ▸ page 195		●	●
GEMÜ 1235 / 1236 ▸ page 196		●	●
GEMÜ 1242			●
GEMÜ C12A ▸ page 190		●	
Combi switchboxes			
GEMÜ 4242 ▸ page 204			●
Pilot valve			
GEMÜ 0324		●	
Control systems			
Positioner			
GEMÜ 1434 µPos ▸ page 178	●	●	●
GEMÜ 1435 ePos ▸ page 180	●		
Positioner and process controller			
GEMÜ 1436 cPos ▸ page 181	●	●	●
Accessories			
Connection accessories ▸ page 232		●	
Stroke limiters ▸ page 237		●	●
Sensor accessories ▸ page 239			●

GEMÜ valves are fully assembled in our in-house Assembly department – with compatible accessories on request.



Our pre-assembled solutions are supplied to you preset and tested. Not only can you obtain all components from a single source, you also save on the time and effort required for logistics and installation of the plant on site, as well as for documentation.

Check valves

GEMÜ CV
Check valve

The GEMÜ CV metal-free check valve comprises a PTFE body. All functional parts are also made of PTFE. PFA, PVDF and CPFA materials are available for the union nuts in the flare connections. Sealing is O-ring-free.

Features

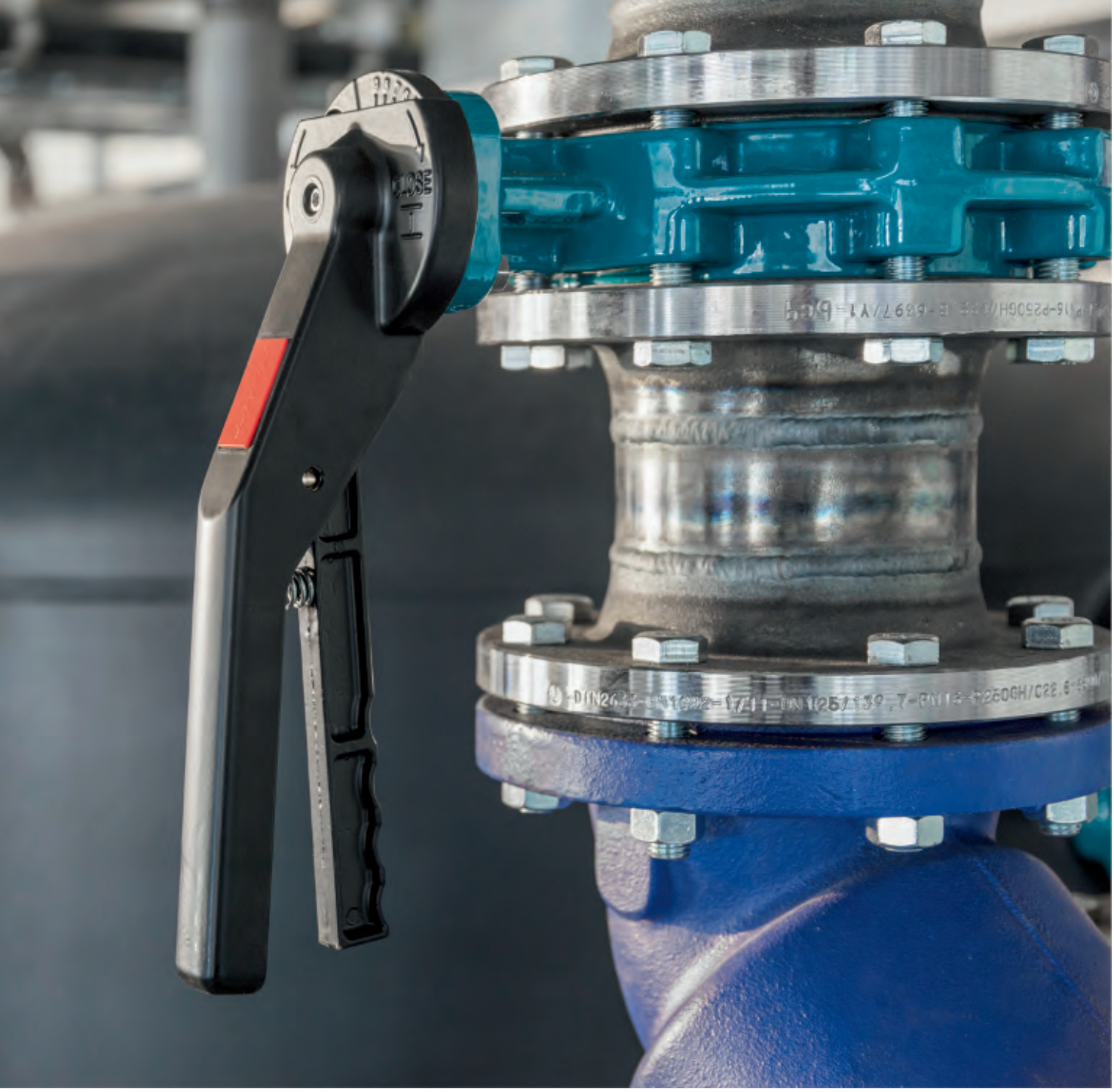
- Long life seal characteristics
- O-ring free seal system
- Compact design
- Low opening pressure
- Special versions available for direct integration into a block valve

Technical specifications

Media temperature:	0 to 130 °C
Ambient temperature:	0 to 100 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 20
Connection types:	Flare
Body materials:	PTFE
Seal materials:	PTFE
Conformities:	EAC

Go online!

GW-CV



Butterfly valves

Description

If pipes are large, then butterfly valves are required. Most frequently, they are used for controlling mechanically pure liquids. In the right material combination, however, slightly abrasive liquids or gases pose no problem either. Due to the variety of materials, the GEMÜ butterfly valves are universally compatible, for example in various industrial applications, in drinking water and waste water treatment and in the coastal and offshore sector.

For all nominal sizes, butterfly valves are effective as short shut-off valves with high flow rates. They are a cost-effective alternative to other valve types, where there are no stringent requirements regarding switching cycles, hygiene or control accuracy.

Features

- Large range of nominal sizes
- Short length
- Low weight
- Fast operating time
- Simple installation and low maintenance requirements

Typical working media

- Liquids: Water, oils, acids, alkalis, surfactants, solvents, heating media/coolants
- Gases: Steam, air, nitrogen, natural gas, noble gases, vapour
- Solids: Bulk materials

Applications

- Treatment of process water, drinking water, waste water
- Biogas plants
- Chemical industry
- Fertilizer chemicals and agrochemicals
- Irrigation systems
- Refineries and the petrochemical industry
- Surface finishing/paint shop and coating
- Heating and cooling systems
- Distribution of gas and water
- Swimming pool processes
- Ship and offshore area
- Textile industry
- Paper/woodpulp industry
- Steel works
- Mining

Functional principle of butterfly valves

Open

Closed

Butterfly valves comprise a ring-shaped body into which a liner is inserted. When fully opened, the butterfly disc carried in a shaft is parallel to the flow direction. The disc is rotated by 90° into the liner, which closes the butterfly valve. The liner isolates the inner housing from the medium and ensures that the butterfly valve is leak-tight inside and outside. When partially open, butterfly valves can also be used as control valves. (To be highlighted in a note in a separate text box: For control applications, GEMÜ offers adjusted position indicators as well as positioners and process controllers for quarter turn valves.)

GEMÜ's butterfly discs are spherical and polished, and achieve particularly low torques due to the optimized sealing concept between disc, shaft and liner.

Flange connections are the standard connections for butterfly valves. A distinction is made between different body configurations:

Wafer body configuration

- Wafer-type flange design
- Low weight
- Optional installation position

Lug body configuration

- Flange-mounted design (can be used as end-of-line valve)
- Optimized centring
- Simple installation
- Optional installation position

U section body configuration

- Flange-mounted design (can be used as end-of-line valve)
- Optimized centring
- Simple installation
- Short installation length

Wafer | Lug | U section

Modular system for butterfly valves

With the GEMÜ modular system, we offer you the opportunity to put together a suitable valve in line with your requirements. Discover all configuration options at ***www.gemu-group.com***

Measurement and control technology
Electrical position indicators and combi switchboxes | Positioners and process controllers | Accessories



Actuators
Manual | Pneumatic | Motorized
Metal | Plastic



Liners and discs
Elastomer | Elastomer/thermoplastic
Metal | Plastic



Bodies
Metal | Plastic



Configure your valve online
at *www.gemu-group.com*

Overview of series

Different series are advantageous depending on the area of application, as each application has quite specific requirements for isolation technology. Due to the GEMÜ modular system, the materials for butterfly discs and liners can also be adjusted to the process parameters for each series.

All series are available both with manual, pneumatic or motorized actuators and with a bare shaft.

GEMÜ Victoria series

GEMÜ 480, 481, 487 and 488 Victoria

- Soft-seated butterfly valve
- All-rounder with a large variety of materials

GEMÜ Edessa series

GEMÜ 490, 491, 497 and 498 Edessa

- PTFE seal butterfly valve
- Suitable for corrosive chemical applications due to selection of highly resistant materials

GEMÜ D450 series

GEMÜ K410, 410, 417 and 423

- Soft-seated butterfly valve made of corrosion-resistant plastic
- Disc outlet dimension designed on plastic piping

GEMÜ 410 series

GEMÜ D450, D451, D457 and D458

- Butterfly valve made of corrosion-resistant plastic
- Simple installation using union nut

Manually operated butterfly valves

Overview

GEMÜ type	487 Victoria	497 Edessa	417	D457
				
Media temperature	-10 to 150 °C	-20 to 200 °C	0 to 60 °C	5 to 90 °C
Operating pressure	0 to 16 bar	0 to 10 bar	0 to 6 bar	0 to 10 bar
Nominal sizes	DN 25 to 600	DN 25 to 1050	DN 15 to 50	DN 50 to 300
Connection types (body configuration)				
Flange	-	-	-	●
Flange (lug)	●	●	-	-
Flange (U section)	●	-	-	-
Flange (wafer)	●	●	-	-
Union end	-	-	●	-
Body materials				
1.4435 (316L)	-	●	-	-
EN-GJS-400-15, coated	●	-	-	-
EN-GJS-400-18-LT, coated	-	●	-	-
PP	-	-	-	●
PVC-U	-	-	●	-
S355J2 + N	-	●	-	-
VE Duroplast, reinforced	-	●	-	-
Liner materials				
EPDM	●	-	●	●
FKM	●	-	●	●
NBR	●	-	-	-
PTFE / silicone	-	●	-	-
PTFE TFM™ / FKM	-	●	-	-
PTFE TFM™/EPDM	-	●	-	-
PTFE TFM™/silicone	-	●	-	-
PTFE/EPDM	-	●	-	-
PTFE/FKM	-	●	-	-
SBR, abrasion resistant	●	-	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ type	487 Victoria	497 Edessa	417	D457
				
Disc materials				
1.4404 (316L)	-	●	-	-
1.4404 (316L), coated	-	●	-	-
1.4408	●	-	-	-
1.4408, coated	●	-	-	-
1.4408, polished	●	-	-	-
1.4469	-	●	-	-
2.4602 (alloy 22)	-	●	-	-
3.7035	-	●	-	-
EN-GJS-400-15, coated	●	-	-	-
PP-H	-	-	-	●
PVC-C	-	-	-	●
PVC-U	-	-	-	●
PVDF	-	-	●	-
Conformities				
ACS	●	-	-	-
ATEX	●	●	-	-
Belgaqua	●	-	-	-
DNV GL	●	-	-	-
DVGW Drinking water	●	-	-	-
DVGW Gas	●	-	-	-
EAC	●	●	●	●
FDA	●	●	-	-
SIL	-	●	-	-
TA Luft (German Clean Air Act)	-	●	-	-
USP	-	●	-	-
WRAS	●	-	-	-

GEMÜ 487 Victoria
Manually operated butterfly valve

The GEMÜ 487 Victoria soft seated butterfly valve is manually operated. It has a metal hand lever or gearbox depending on customer requirements. The butterfly valve is available in nominal sizes DN 25 to 600 and standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) available in wafer, lug and U section body versions.

Features

- Low torques thanks to special disc contour
- Improved sealing
- Extensive applications using a variety of materials
- Robust body coating in accordance with ISO 12944-6 C5-M
- Lockable hand lever
- Optional end position control
- Min. 250 µm layer thickness body coating
- Bubble tight sealing, in accordance with EN 12266-1/P12, leak rate A

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	-10 to 70 °C
Operating pressure :	0 to 16 bar
Nominal sizes:	DN 25 to 600
Body configurations:	Lug | U section | Wafer
Connection standards:	AS | ASME | BS | DIN | EN | ISO | JIS
Body materials:	EN-GJS-400-15, SG iron material
Body coating:	Epoxy
Liner materials:	EPDM | FKM | NBR | SBR, abrasion resistant
Disc materials:	1.4408, investment casting material | 1.4408, polished investment casting material | EN-GJS-400-15, SG iron material
Disc coating:	EPDM | Epoxy | Halar® | Rilsan®
Conformities:	ACS | ATEX | Belgaqua | DNV GL | DVGW Drinking water | DVGW Gas | EAC | FDA | WRAS

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GW-487

GEMÜ 497 Edessa
Manually operated butterfly valve

The GEMÜ 497 Edessa PTFE seal butterfly valve is manually operated. It has a metal hand lever or gearbox depending on customer requirements. The disc and shaft are one piece; the body and liner are available in different designs. The butterfly valve is available in nominal sizes DN 25 to 1050 (1½"–36"), in the standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) and wafer and lug body versions available.

Features

- Suitable for chemically corrosive media
- High-quality selection of materials can be combined in different ways
- High level of plant reliability thanks to one-piece shaft and spring-washer-supported seal system
- Long service life thanks to shaft bearings and special disc and liner geometry
- Lockable hand lever
- Optional stainless steel hand lever

Technical specifications

Media temperature:	-20 to 200 °C
Ambient temperature:	-20 to 95 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 25 to 1050
Body configurations:	Lug | Wafer
Connection standards:	AS | ASME | DIN | EN | ISO | JIS
Body materials:	1.4404, block material | EN-GJS-400-18-LT, SG iron material | S355J2 + N, cast steel material | VE Duroplast, reinforced
Body coating:	Epoxy
Liner materials:	PTFE / silicone | PTFE TFM™ / FKM | PTFE TFM™/EPDM | PTFE TFM™/silicone | PTFE/EPDM | PTFE/FKM
Disc materials:	1.4404 (316L), forged material | 1.4469, Duplex cast steel material | 2.4602 (alloy 22), block material | 3.7035, titan
Disc coating:	PFA
Conformities:	ATEX | EAC | FDA | SIL | TA Luft (German Clean Air Act) | USP

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GW-497

GEMÜ 417
Manually operated butterfly valve

The GEMÜ 417 butterfly valve has an ergonomically designed corrosion resistant plastic hand lever. It can be protected against accidental operation by the integrated locking device.

Features

- Low weight
- Corrosion resistant plastic body
- Simple installation with union nut
- Ergonomic handle with anti-twist system and locking device

Technical specifications

Media temperature:	0 to 60 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 15 to 50
Connection types:	Union end
Connection standards:	BS | DIN
Housing materials:	PVC-U, grey
Liner materials:	EPDM | FKM
Disc materials:	PVDF
Conformities:	EAC

Go online!

GW-417

GEMÜ D457
Manually operated butterfly valve

The GEMÜ D457 soft seated butterfly valve is manually operated. It has a metal hand lever or gearbox according to customer requirements. The butterfly valve is available in nominal sizes DN 50 - 300 and has a Wafer body version.

Features

- Low weight
- Corrosion resistant plastic body
- Disc outlet dimension designed on plastic piping
- Lockable hand lever made of plastic with latch positions

Technical specifications

Media temperature:	5 to 90 °C
Ambient temperature:	20 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 50 to 300
Connection types:	Flange
Connection standards:	ANSI | EN | JIS
Housing materials:	PP, reinforced
Liner materials:	EPDM | FKM
Disc materials:	PP-H | PVC-C | PVC-U
Conformities:	EAC

Go online!

GW-D457

Pneumatically operated butterfly valves

Overview

GEMÜ type	481 Victoria	491 Edessa	410	D451
				
Media temperature	-10 to 150 °C	-20 to 200 °C	0 to 60 °C	5 to 90 °C
Operating pressure	0 to 16 bar	0 to 10 bar	0 to 6 bar	0 to 10 bar
Nominal sizes	DN 25 to 600	DN 25 to 1050	DN 15 to 50	DN 50 to 300
Connection types (body configuration)				
Flange	-	-	-	●
Flange (lug)	●	●	-	-
Flange (U section)	●	-	-	-
Flange (wafer)	●	●	-	-
Union end	-	-	●	-
Body materials				
1.4435 (316L)	-	●	-	-
EN-GJS-400-15, coated	●	-	-	-
EN-GJS-400-18-LT, coated	-	●	-	-
PP	-	-	-	●
PVC-U	-	-	●	-
S355J2 + N	-	●	-	-
VE Duroplast, reinforced	-	●	-	-
Liner materials				
EPDM	●	-	●	●
FKM	●	-	●	●
NBR	●	-	-	-
PTFE / silicone	-	●	-	-
PTFE TFM™ / FKM	-	●	-	-
PTFE TFM™/EPDM	-	●	-	-
PTFE TFM™/silicone	-	●	-	-
PTFE/EPDM	-	●	-	-
PTFE/FKM	-	●	-	-
SBR, abrasion resistant	●	-	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ type	481 Victoria	491 Edessa	410	D451
				
Disc materials				
1.4404 (316L)	-	●	-	-
1.4404 (316L), coated	-	●	-	-
1.4408	●	-	-	-
1.4408, coated	●	-	-	-
1.4408, polished	●	-	-	-
1.4469	-	●	-	-
2.4602 (alloy 22)	-	●	-	-
3.7035	-	●	-	-
EN-GJS-400-15, coated	●	-	-	-
PP-H	-	-	-	●
PVC-C	-	-	-	●
PVC-U	-	-	-	●
PVDF	-	-	●	-
Conformities				
ACS	●	-	-	-
ATEX	●	●	-	-
Belgaqua	●	-	-	-
DNV GL	●	-	-	-
DVGW Drinking water	●	-	-	-
DVGW Gas	●	-	-	-
EAC	●	●	●	●
FDA	●	●	-	-
SIL	-	●	-	-
TA Luft (German Clean Air Act)	-	●	-	-
USP	-	●	-	-
WRAS	●	-	-	-

GEMÜ 481 Victoria
Pneumatically operated butterfly valve

The GEMÜ 481 Victoria soft seated butterfly valve has a metal actuator and is pneumatically operated. Normally Closed, Normally Open and Double Acting control functions are available. The butterfly valve is available in nominal sizes DN 25 to 600 and standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) available in wafer, lug and U section body versions.

Features

- Low torques thanks to special disc contour
- Improved sealing
- Extensive applications using a variety of materials
- Robust body coating in accordance with ISO 12944-6 C5-M
- Fast operating times
- Optional accessories are installed, set and tested so they are ready for operation
- Min. 250 µm layer thickness body coating
- Bubble tight sealing, in accordance with EN 12266-1/P12, leak rate A

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	-10 to 70 °C
Operating pressure :	0 to 16 bar
Nominal sizes:	DN 25 to 600
Body configurations:	Lug | U section | Wafer
Connection standards:	AS | ASME | BS | DIN | EN | ISO | JIS
Body materials:	EN-GJS-400-15, SG iron material
Body coating:	Epoxy
Liner materials:	EPDM | FKM | NBR | SBR, abrasion resistant
Disc materials:	1.4408, investment casting material | 1.4408, polished investment casting material | EN-GJS-400-15, SG iron material
Disc coating:	EPDM | Epoxy | Halar® | Rilsan®
Conformities:	ACS | ATEX | Belgaqua | DNV GL | DVGW Drinking water | DVGW Gas | EAC | FDA | WRAS

Go online!

GW-481

GEMÜ 491 Edessa
Pneumatically operated butterfly valve

The GEMÜ 491 Edessa PTFE seal butterfly valve has a metal actuator and is pneumatically operated. Normally Closed, Normally Open and Double Acting control functions are available. The disc and shaft are one piece; the body and liner are available in different designs. The butterfly valve is available in nominal sizes DN 25 to 1050 (1½"–36"), in the standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) and wafer and lug body versions available.

Features

- Suitable for chemically corrosive media
- High-quality selection of materials can be combined in different ways
- High level of plant reliability thanks to one-piece shaft and spring-washer-supported seal system
- Long service life thanks to shaft bearings and special disc and liner geometry
- Optional accessories are installed, set and tested so they are ready for operation

Technical specifications

Media temperature:	-20 to 200 °C
Ambient temperature:	-20 to 95 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 25 to 1050
Body configurations:	Lug | Wafer
Connection standards:	AS | ASME | DIN | EN | ISO | JIS
Body materials:	1.4404, block material | EN-GJS-400-18-LT, SG iron material | S355J2 + N, cast steel material | VE Duroplast, reinforced
Body coating:	Epoxy
Liner materials:	PTFE / silicone | PTFE TFM™ / FKM | PTFE TFM™/EPDM | PTFE TFM™/silicone | PTFE/EPDM | PTFE/FKM
Disc materials:	1.4404 (316L), forged material | 1.4469, Duplex cast steel material | 2.4602 (alloy 22), block material | 3.7035, titan
Disc coating:	PFA
Conformities:	ATEX | EAC | FDA | SIL | TA Luft (German Clean Air Act) | USP

Go online!

GW-491

GEMÜ 410
Pneumatically operated butterfly valve

The GEMÜ 410 butterfly valve has a low maintenance corrosion-resistant plastic piston actuator and is pneumatically operated. Normally Closed and Normally Open control functions are available. The valve body is available in a plastic design.

Features

- Low weight
- Corrosion resistant plastic body
- Simple installation with union nut
- Space-saving piston actuator made of plastic

also as control valve

EAC

Technical specifications

Media temperature:	0 to 60 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 15 to 50
Connection types:	Union end
Connection standards:	BS | DIN
Housing materials:	PVC-U, grey
Liner materials:	EPDM | FKM
Disc materials:	PVDF
Conformities:	EAC

Go online!

GW-410

GEMÜ D451
Pneumatically operated butterfly valve

The GEMÜ D451 soft-seated butterfly valve has a metal actuator and is pneumatically operated. The Normally Closed, Normally Open and Double Acting control functions are available. The butterfly valve is available in nominal sizes DN 50–300 and has a wafer body version.

Features

- Low weight
- Corrosion resistant plastic body
- Short operating times

Technical specifications

Media temperature:	5 to 90 °C
Ambient temperature:	20 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 50 to 300
Connection types:	Flange
Connection standards:	ANSI | EN | JIS
Housing materials:	PP, reinforced
Liner materials:	EPDM | FKM
Disc materials:	PP-H | PVC-C | PVC-U
Conformities:	EAC

Go online!

GW-D451

Motorized butterfly valves

Overview

GEMÜ type	423	D458	488 Victoria	498 Edessa
				
Media temperature	0 to 60 °C	5 to 90 °C	-10 to 150 °C	-20 to 200 °C
Operating pressure	0 to 6 bar	0 to 10 bar	0 to 16 bar	0 to 10 bar
Nominal sizes	DN 15 to 50	DN 50 to 300	DN 25 to 600	DN 25 to 1050
Connection types (body configuration)				
Flange	-	●	-	-
Flange (lug)	-	-	●	●
Flange (U section)	-	-	●	-
Flange (wafer)	-	-	●	●
Union end	●	-	-	-
Body materials				
1.4435 (316L)	-	-	-	●
EN-GJS-400-15, coated	-	-	●	-
EN-GJS-400-18-LT, coated	-	-	-	●
PP	-	●	-	-
PVC-U	●	-	-	-
S355J2 + N	-	-	-	●
VE Duroplast, reinforced	-	-	-	●
Liner materials				
EPDM	●	●	●	-
FKM	●	●	●	-
NBR	-	-	●	-
PTFE / silicone	-	-	-	●
PTFE TFM™ / FKM	-	-	-	●
PTFE TFM™/EPDM	-	-	-	●
PTFE TFM™/silicone	-	-	-	●
PTFE/EPDM	-	-	-	●
PTFE/FKM	-	-	-	●
SBR, abrasion resistant	-	-	●	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ type	423	D458	488 Victoria	498 Edessa
				
Disc materials				
1.4404 (316L)	-	-	-	●
1.4404 (316L), coated	-	-	-	●
1.4408	-	-	●	-
1.4408, coated	-	-	●	-
1.4408, polished	-	-	●	-
1.4469	-	-	-	●
2.4602 (alloy 22)	-	-	-	●
3.7035	-	-	-	●
EN-GJS-400-15, coated	-	-	●	-
PP-H	-	●	-	-
PVC-C	-	●	-	-
PVC-U	-	●	-	-
PVDF	●	-	-	-
Conformities				
ACS	-	-	●	-
ATEX	-	-	●	●
Belgaqua	-	-	●	-
CSA	●	●	●	●
DNV GL	-	-	●	-
DVGW Drinking water	-	-	●	-
DVGW Gas	-	-	●	-
EAC	●	●	●	●
FDA	-	-	●	●
SIL	-	-	-	●
TA Luft (German Clean Air Act)	-	-	-	●
USP	-	-	-	●
WRAS	-	-	●	-

GEMÜ 423
Motorized butterfly valve

The GEMÜ 423 butterfly valve has a low maintenance motorized quarter turn actuator. A manual override and an optical position indicator are integrated as standard.

Features

- Low weight
- Adjustable end positions by means of microswitches
- Corrosion resistant plastic body
- Simple installation with union nut
- Compact design

also as control valve

EAC

Technical specifications

Media temperature:	0 to 60 °C
Ambient temperature:	-10 to 60 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 15 to 50
Connection types:	Union end
Connection standards:	BS | DIN
Housing materials:	PVC-U, grey
Liner materials:	EPDM | FKM
Disc materials:	PVDF
Supply voltage:	100 - 120 V AC, 50/60 Hz | 12 - 24 V AC/DC | 220 - 240 V AC, 50/60 Hz | 24 - 240 V AC/DC | 380 - 480 V AC, 50/60 Hz
Operating time 90°:	4 to 100 s
Protection class:	IP 65, 66, 67, 68
Conformities:	CSA | EAC

Go online!

GW-423

GEMÜ D458
Motorized butterfly valve

The GEMÜ D458 butterfly valve is motorized. Various metal or plastic on/off or control actuators are available. A manual override and an optical position indicator are integrated as standard. The butterfly valve is available in nominal sizes DN 50 - 300 and has a Wafer body version.

Features

- Low weight
- Corrosion-resistant materials
- Disc outlet dimension designed on plastic piping

also as control valve

EAC

Technical specifications

Media temperature:	5 to 90 °C
Ambient temperature:	20 to 60 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 50 to 300
Connection types:	Flange
Connection standards:	ANSI | EN | JIS
Housing materials:	PP, reinforced
Liner materials:	EPDM | FKM
Disc materials:	PP-H | PVC-C | PVC-U
Supply voltage:	100 - 120 V AC, 50/60 Hz | 12 - 24 V AC/DC | 220 - 240 V AC, 50/60 Hz | 380 - 480 V AC, 50/60 Hz
Operating time 90°:	4 to 100 s
Protection class:	IP 65, 66, 67, 68
Conformities:	CSA | EAC

Go online!

GW-D458

GEMÜ 488 Victoria
Motorized butterfly valve

The GEMÜ 488 Victoria soft-seated butterfly valve is motorized. Various metal or plastic on/off or control actuators are available. The butterfly valve is available in nominal sizes DN 25 to 600 and standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) available in wafer, lug and U section body versions.

Features

- Low torques thanks to special disc contour
- Improved sealing
- Extensive applications using a variety of materials
- Robust body coating in accordance with ISO 12944-6 C5-M
- Manual override
- Wide choice of motorized actuator types
- Min. 250 µm layer thickness body coating
- Bubble tight sealing, in accordance with EN 12266-1/P12, leak rate A

also as control valve

Technical specifications

Media temperature:	-10 to 150 °C
Ambient temperature:	-10 to 70 °C
Operating pressure :	0 to 16 bar
Nominal sizes:	DN 25 to 600
Body configurations:	Lug | U section | Wafer
Connection standards:	AS | ASME | BS | DIN | EN | ISO | JIS
Body materials:	EN-GJS-400-15, SG iron material
Body coating:	Epoxy
Liner materials:	EPDM | FKM | NBR | SBR, abrasion resistant
Disc materials:	1.4408, investment casting material | 1.4408, polished investment casting material | EN-GJS-400-15, SG iron material
Disc coating:	EPDM | Epoxy | Halar® | Rilsan®
Supply voltage:	100 - 120 V AC, 50/60 Hz | 12 - 24 V AC/DC | 220 - 240 V AC, 50/60 Hz | 380 - 480 V AC, 50/60 Hz
Operating time 90°:	4 to 100 s
Protection class:	IP 65, 66, 67, 68
Conformities:	ACS | ATEX | Belgaqua | CSA | DNV GL | DVGW Drinking water | DVGW Gas | EAC | FDA | WRAS

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GW-488

GEMÜ 498 Edessa
Motorized butterfly valve

The GEMÜ 498 Edessa PTFE seal butterfly valve is motorized. Various metal or plastic on/off or control actuators are available. The disc and shaft are one piece; the body and liner are available in different designs. The butterfly valve is available in nominal sizes DN 25 to 1050 (1½"–36"), in the standard installation lengths: ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) and wafer and lug body versions available.

Features

- Suitable for chemically corrosive media
- High-quality selection of materials can be combined in different ways
- High level of plant reliability thanks to one-piece shaft and spring-washer-supported seal system
- Long service life thanks to shaft bearings and special disc and liner geometry
- Wide choice of motorized actuator types

Technical specifications

Media temperature:	-20 to 200 °C
Ambient temperature:	-20 to 95 °C
Operating pressure :	0 to 10 bar
Nominal sizes:	DN 25 to 1050
Body configurations:	Lug | Wafer
Connection standards:	AS | ASME | DIN | EN | ISO | JIS
Body materials:	1.4404, block material | EN-GJS-400-18-LT, SG iron material | S355J2 + N, cast steel material | VE Duroplast, reinforced
Body coating:	Epoxy
Liner materials:	PTFE / silicone | PTFE TFM™ / FKM | PTFE TFM™/EPDM | PTFE TFM™/silicone | PTFE/EPDM | PTFE/FKM
Disc materials:	1.4404 (316L), forged material | 1.4469, Duplex cast steel material | 2.4602 (alloy 22), block material | 3.7035, titan
Disc coating:	PFA
Supply voltage:	100 - 120 V AC, 50/60 Hz | 12 - 24 V AC/DC | 220 - 240 V AC, 50/60 Hz | 380 - 480 V AC, 50/60 Hz
Operating time 90°:	4 to 100 s
Protection class:	IP 65, 66, 67, 68
Conformities:	ATEX | CSA | EAC | FDA | SIL | TA Luft (German Clean Air Act) | USP

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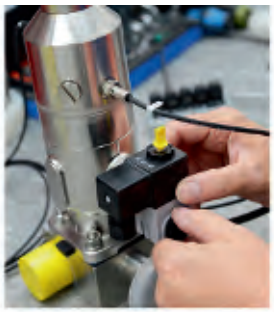
GW-498

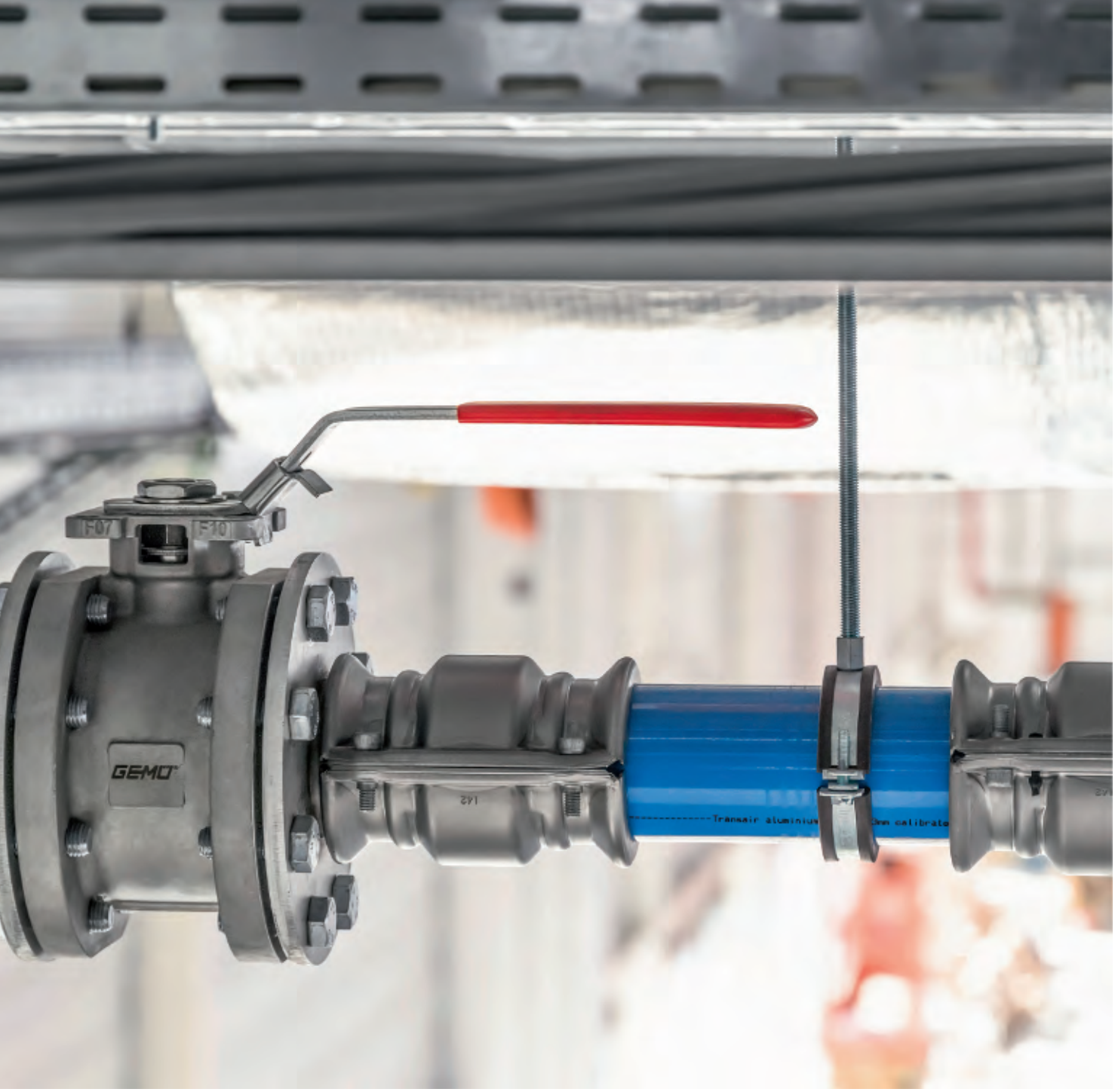
Add-on components for butterfly valves

GEMÜ type	410	417	423	481	487	491	497	D451
Measurement and control technology								
Electrical position indicators								
GEMÜ 1201 / 1211 / 1214 ▸ page 193	●							
GEMÜ 1205 ▸ page 194	●							
GEMÜ 1215 ▸ page 191	●							
GEMÜ 1225 ▸ page 197	●	●	●					
GEMÜ 1230 / 1231 / 1232 ▸ page 192	●							
GEMÜ 1235 / 1236 ▸ page 196	●			●		●		●
GEMÜ 1242	●			●		●		●
GEMÜ LSC ▸ page 198				●	●	●	●	●
GEMÜ LSF ▸ page 199				●	●	●	●	●
Combi switchboxes								
GEMÜ 4242 ▸ page 204	●			●		●		●
Pilot valve								
GEMÜ 0324	●							
Control systems								
Positioner								
GEMÜ 1434 µPos ▸ page 178	●							
GEMÜ 1435 ePos ▸ page 180	●			●		●		●
Positioner and process controller								
GEMÜ 1436 cPos ▸ page 181	●			●		●		●
Accessories								
Connection accessories ▸ page 232	●							
Stroke limiters ▸ page 237	●							
Position indicators ▸ page 236	●							
Sensor accessories ▸ page 239	●							

GEMÜ valves are fully assembled in our in-house Assembly department – with compatible accessories on request.



Our pre-assembled solutions are supplied to you preset and tested. Not only can you obtain all components from a single source, you also save on the time and effort required for logistics and installation of the plant on site, as well as for documentation.



Ball valves

Description

Ball valves are versatile and can also be used in extreme circumstances. With the ball that has been drilled through as a shut-off body, this valve type is particularly well-suited to safely shutting off liquid and gaseous media at a very high operating pressure. As media travels between the ball and the body when opening and closing, ball valves are suitable for mechanically pure, inert or corrosive liquids, gases or steam. Caution must be exercised with crystallizing media, as these can have a negative effect on functionality.

Features

- High flow rates
- Fast cycle duties
- High operating pressures
- High temperatures

Typical working media

- Liquids: Water, glycol, cooling lubricant
- Gases: Air, compressed air

Applications

- Generation and distribution of compressed air, water, industrial gas
- Batch and filling processes
- Heat exchangers and heating systems
- Heating and cooling processes in machines, systems and buildings
- Dyeing and cleaning
- Filter systems and filter cleaning

Functional principle of ball valves

Open

Closed

The ball valve comprises a ball with a continuous hole, which generally sits in a body between PTFE sealing rings. The ball is connected via an externally positioned shaft. The valve can be opened and closed by rotating it through 90°.

The deadleg needs to be taken into account for ball valves. Caution must be exercised with crystallizing media. If a medium is enclosed in the ball, this can have a negative impact on functionality and service life.

Ball holes

GEMÜ ball valves are available as both a 2/2-way straight through body and a 3/2-way valve with T or L ball. With these special designs, various customers can also use ball valves to bypass the media flow.

Full and reduced flow bore

There is a difference between ball valves with full flow bore and reduced flow bore. With a full flow bore, the hole in the ball has the same inside diameter as the connected piping. A major advantage of the version with full flow bore is that the full cross section of the pipe is free when open. This results in minimal pressure loss and a high Kvs value. This makes the ball valves ideal for high viscosity media, and they are the only named valves that are also piggable.

In the design with reduced flow bore, the inside diameter in the area of the ball is reduced. An altered pressure structure is, therefore, generated in the valve and outlet distance. The turbulence that this creates results in a jet effect that is, among other things, suitable for applications with dual-substance or multi-substance mixtures.

Modular system for ball valves

With the GEMÜ modular system, we offer you the opportunity to put together a suitable valve in line with your requirements. Discover all configuration options at ***www.gemu-group.com***

Measurement and control technology
Electrical position indicators and combi switchboxes | Positioners and process controllers | Accessories



Actuators
Manual | Pneumatic | Motorized
Metal | Plastic



Bodies
2/2-way body | Multi-port body
Metal | Plastic


Configure your valve online
at *www.gemu-group.com*

Manually operated ball valves

Overview

GEMÜ type	740	797	717
			
Special feature	Option with cavity filled seat and high-grade surface finish	High pressures	
Media temperature	-20 to 220 °C	-20 to 180 °C	-20 to 100 °C
Ambient temperature	0 to 60 °C	-20 to 60 °C	-10 to 50 °C
Operating pressure	0 to 63 bar	0 to 137 bar	0 to 16 bar
Nominal sizes	DN 8 to 100	DN 8 to 100	DN 10 to 100
Connection types			
Clamp	●	-	-
Flange	-	●	●
Solvent cement socket	-	-	●
Spigot	●	●	●
Threaded connection	-	●	●
Union end	-	-	●
Connection standards			
ANSI	-	-	●
ASME	●	●	-
BS	-	-	●
DIN	●	●	●
EN	●	●	●
ISO	●	●	●
JIS	-	-	●
NPT	-	●	●
SMS	●	●	-
Body configurations			
2/2-way body	●	●	●
Multi-port body	-	-	●
Body materials			
1.4404 (CF3M)	●	-	-
1.4408	-	●	-
ABS	-	-	●
PP-H	-	-	●
PVC-C	-	-	●
PVC-U	-	-	●
PVDF	-	-	●
Conformities			
ATEX	●	●	-
EAC	●	-	●
FDA	●	●	-
FireSafe	-	●	-
TA Luft (German Clean Air Act)	●	●	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 740
Manually operated sanitary ball valve

The GEMÜ 740 3-piece 2/2-way metal ball valve is manually operated. It has a plastic sleeved hand lever with a locking device. The seat seal is available either in PTFE or TFM™.

Features

- Suitable for vacuum applications
- Optionally available with cavity-filled seat
- CIP/SIP capable
- Low maintenance and reliable spindle sealing
- Reduced torque
- High-grade surface finish

Technical specifications

Media temperature:	-20 to 220 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 63 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Clamp I Spigot
Connection standards:	ASME I DIN I EN I ISO I SMS
Body materials:	1.4404 (CF3M), investment casting material
Seal materials:	PTFE
Conformities:	ATEX I EAC I FDA I TA Luft (German Clean Air Act)

Go online!

GW-740

GEMÜ 797
Manually operated high-pressure ball valve

The GEMÜ 797 3-piece 2/2-way metal ball valve is manually operated. It has a plastic sleeved hand lever. The seat seal is made of PTFE. Due to a graphite reinforced body seal, the GEMÜ 797 ball valve is optionally also available as a FireSafe version.

Features

- Low maintenance and reliable spindle sealing
- Broad range of operating temperatures and pressures
- Choice of various body materials and connection types
- Lockable hand lever
- Suitable for vacuum applications
- Fire-safe design according to API 607 optionally available

Technical specifications

Media temperature:	-20 to 180 °C
Ambient temperature:	-20 to 60 °C
Operating pressure :	0 to 137 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Flange | Spigot | Threaded connection
Connection standards:	ASME | DIN | EN | ISO | NPT | SMS
Body materials:	1.4408, investment casting material
Seal materials:	PTFE
Conformities:	ATEX | FDA | FireSafe | TA Luft (German Clean Air Act)

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GW-797

GEMÜ 717
Manually operated ball valve

The GEMÜ 717 2/2 or 3/2-way plastic ball valve has an ergonomically designed hand lever and is manually operated. The seat seal is made from PTFE and the O-ring seals can be made from either EPDM or FKM.

Features

- High flow rates
- Low weight
- Choice of various body materials and connection types
- Union nut with integrated spin-lock
- 2/2 and 3/2-way versions available
- Optionally available with control ball

also as control valve

EAC

Technical specifications

Media temperature:	-20 to 100 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 16 bar
Nominal sizes:	DN 10 to 100
Body configurations:	2/2-way body | Multi-port body
Connection types:	Flange | Solvent cement socket | Spigot | Threaded connection | Union end
Connection standards:	ANSI | BS | DIN | EN | ISO | JIS | NPT
Body materials:	ABS | PP-H, grey | PVC-C, chlorinated | PVC-U, grey | PVDF
Seal materials:	EPDM | FFKM | FKM
Conformities:	EAC

Go online!

GW-717

Pneumatically operated ball valves

Overview

GEMÜ type	741	791	710
			
Special feature	Option with cavity filled seat and high-grade surface finish	High pressures	Plastic ball valve
Media temperature	-20 to 220 °C	-20 to 180 °C	-20 to 100 °C
Ambient temperature	0 to 60 °C	-20 to 60 °C	-10 to 50 °C
Operating pressure	0 to 63 bar	0 to 137 bar	0 to 16 bar
Nominal sizes	DN 8 to 100	DN 8 to 100	DN 10 to 100
Connection types			
Clamp	●	-	-
Flange	-	●	●
Solvent cement socket	-	-	●
Spigot	●	●	●
Threaded connection	-	●	●
Union end	-	-	●
Connection standards			
ASME	●	●	-
ASTM	-	-	●
BS	-	-	●
DIN	●	●	●
EN	●	●	●
ISO	●	●	●
JIS	-	-	●
NPT	-	●	-
SMS	●	●	-
Body configurations			
2/2-way body	●	●	●
Multi-port body	-	-	●
Body materials			
1.4404 (CF3M)	●	-	-
1.4408	-	●	-
ABS	-	-	●
PVC-C	-	-	●
PVC-U	-	-	●
PVDF	-	-	●
Conformities			
ATEX	●	●	-
EAC	●	-	●
FDA	●	●	-
FireSafe	-	●	-
Regulation (EC) No. 1935/2004	●	-	-
TA Luft (German Clean Air Act)	●	●	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 741
Pneumatically operated sanitary ball valve

The GEMÜ 741 3-piece 2/2-way metal ball valve has a metal actuator and is pneumatically operated. The seat seal is available either in PTFE (cavity filled) or in PTFE TFM™.

Features

- Suitable for vacuum applications
- Optionally available with cavity-filled seat
- CIP/SIP capable
- Low maintenance and reliable spindle sealing
- Reduced torque
- High-grade surface finish

Technical specifications

Media temperature:	-20 to 220 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 63 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Clamp I Spigot
Connection standards:	ASME I DIN I EN I ISO I SMS
Body materials:	1.4404 (CF3M), investment casting material
Seal materials:	PTFE
Conformities:	ATEX I EAC I FDA I Regulation (EC) No. 1935/2004 I TA Luft (German Clean Air Act)

Go online!

GW-741

GEMÜ 791
Pneumatically operated high-pressure ball valve

The GEMÜ 791 3-piece 2/2-way metal ball valve has a metal actuator and is pneumatically operated. The seat seal is made of PTFE. Due to a graphite reinforced body seal, the GEMÜ 791 ball valve is optionally also available as a FireSafe version.

Features

- Low maintenance and reliable spindle sealing
- TA-Luft compliant
- Broad range of operating temperatures and pressures
- Additionally encapsulated body seal
- Suitable for vacuum applications
- Fire-safe design according to API 607 optionally available

Technical specifications

Media temperature:	-20 to 180 °C
Ambient temperature:	-20 to 60 °C
Operating pressure :	0 to 137 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Flange | Spigot | Threaded connection
Connection standards:	ASME | DIN | EN | ISO | NPT | SMS
Body materials:	1.4408, investment casting material
Seal materials:	PTFE
Conformities:	ATEX | FDA | FireSafe | TA Luft (German Clean Air Act)

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GW-791

GEMÜ 710
Pneumatically operated ball valve

The 2/2 and/or 3/2-way GEMÜ 710 plastic ball valve has a pneumatic actuator, which can either be made from aluminium or plastic. The seat seal is made from PTFE and the O-ring seals can be made from either EPDM or FKM.

Features

- High flow rates
- Choice of various body materials and connection types
- 2/2 and 3/2-way versions available
- Optionally available with control ball

also as control valve

EAC

Technical specifications

Media temperature:	-20 to 100 °C
Ambient temperature:	-10 to 50 °C
Operating pressure :	0 to 16 bar
Nominal sizes:	DN 10 to 100
Body configurations:	2/2-way body | Multi-port body
Connection types:	Flange | Solvent cement socket | Spigot | Threaded connection | Union end
Connection standards:	ASTM | BS | DIN | EN | ISO | JIS
Body materials:	ABS | PP-H, grey | PVC-C, chlorinated | PVC-U, grey | PVDF
Seal materials:	EPDM | FFKM | FKM
Conformities:	EAC

Go online!

GW-710

Motorized ball valves

Overview

GEMÜ type	748	798
		
Special feature	Option with cavity filled seat and high-grade surface finish	High pressures
Media temperature	-20 to 220 °C	-20 to 180 °C
Ambient temperature	0 to 60 °C	-20 to 60 °C
Operating pressure	0 to 63 bar	0 to 137 bar
Nominal sizes	DN 8 to 100	DN 8 to 100
Supply voltage	12 - 250 V AC/DC	12 - 250 V AC/DC
Operating time 90°	11 to 20 s	11 to 20 s
Connection types		
Clamp	●	-
Flange	-	●
Spigot	●	●
Threaded connection	-	●
Connection standards		
ASME	●	●
DIN	●	●
EN	●	●
ISO	●	●
NPT	-	●
SMS	●	●
Body configurations		
2/2-way body	●	●
Body materials		
1.4404 (CF3M)	●	-
1.4408	-	●
Conformities		
ATEX	-	●
EAC	●	-
FDA	●	●
FireSafe	-	●
TA Luft (German Clean Air Act)	-	●

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 748
Motorized sanitary ball valve

The GEMÜ 748 3-piece 2/2-way metal ball valve is motorized. It has a plastic actuator housing. The seat seal is available either in PTFE or TFM™.

Features

- Suitable for vacuum applications
- Optionally available with cavity-filled seat
- CIP/SIP capable
- Low maintenance and reliable spindle sealing
- Reduced torque
- High-grade surface finish

also as control valve

EAC

FDA

Technical specifications

Media temperature:	-20 to 220 °C
Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 63 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Clamp | Spigot
Connection standards:	ASME | DIN | EN | ISO | SMS
Body materials:	1.4404 (CF3M), investment casting material
Seal materials:	PTFE
Supply voltage:	12 - 250 V AC/DC
Operating time 90°:	11 to 20 s
Protection class:	IP 65
Conformities:	EAC | FDA

Go online!

GW-748

GEMÜ 798
Motorized high-pressure ball valve

The GEMÜ 798 3-piece 2/2-way metal ball valve is motorized. It has a plastic actuator housing. A manual override and an optical position indicator are integrated as standard. The seat seal is made of PTFE. Due to a graphite reinforced body seal, the GEMÜ 798 ball valve is optionally also available as a FireSafe version.

Features

- Low maintenance and reliable spindle sealing
- TA-Luft compliant
- Broad range of operating temperatures and pressures
- Choice of various body materials and connection types
- Suitable for vacuum applications
- Available with Open/Close control or control module

also as control valve

Technical specifications

Media temperature:	-20 to 180 °C
Ambient temperature:	-20 to 60 °C
Operating pressure :	0 to 137 bar
Nominal sizes:	DN 8 to 100
Body configurations:	2/2-way body
Connection types:	Flange I Spigot I Threaded connection
Connection standards:	ASME I DIN I EN I ISO I NPT I SMS
Body materials:	1.4408, investment casting material
Seal materials:	PTFE
Supply voltage:	12 - 250 V AC/DC
Operating time 90°:	11 to 20 s
Protection class:	IP 65
Conformities:	ATEX I FDA I FireSafe I TA Luft (German Clean Air Act)

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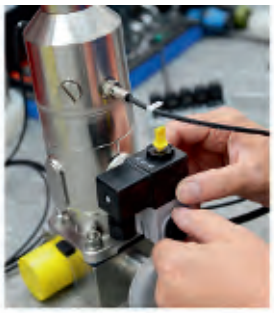
GW-798

Add-on components for ball valves

GEMÜ type	710	740	741	791	797
Measurement and control technology					
GEMÜ 1201/1211/1214 electrical position indicators	●				
GEMÜ 1205 electrical position indicator	●				
GEMÜ 1215 electrical position indicator	●				
GEMÜ 1230/1231/1232 electrical position indicators	●				
GEMÜ 1235/1236 electrical position indicators	●		●	●	
GEMÜ 1242 electrical position indicator	●		●	●	
GEMÜ LSC limit switch box	●	●	●	●	●
GEMÜ LSF inductive dual sensor	●	●	●	●	●
GEMÜ 4242 combi switchbox	●		●	●	
GEMÜ 0324 pilot valve	●				
Control systems					
GEMÜ 1434 µPos positioner	●				
GEMÜ 1435 ePos positioner	●		●	●	
GEMÜ 1436 cPos positioner and process controller	●		●	●	
Accessories					
Connection accessories	●				
Stroke limiters	●				
Optical position indicators	●				
Sensor accessories	●				

GEMÜ valves are fully assembled in our in-house Assembly department – with compatible accessories on request.



Our pre-assembled solutions are supplied to you preset and tested. Not only can you obtain all components from a single source, you also save on the time and effort required for logistics and installation of the plant on site, as well as for documentation.

See also

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Control systems

Positioners and process controllers

In process automation, positioners and process controllers take on the task of putting the installed valves in the desired position and achieving a defined process variable (e.g. temperature, pressure, volumetric flow). To do this, they compare the desired/set variable with the actual variable and output a corresponding positioning signal to the positioning element (control module) in the event of a deviation.

Our product range for valve process automation also comprises electro-pneumatic positioners for valves with pneumatic quarter turn or linear actuators.

Information for selecting positioners

A controlled system achieves optimum functionality not only through the selection of the positioner. All system components must be optimally adapted to each other. If this is not achieved, poor positioning and control results will be observed. The greater the requirements with regard to control accuracy, positioning ratio, cavitation and optimum operating and procurement costs are, the more carefully the selection must be made.

Further information can be found in the valve information section.

Independent of the correct valve design, the valve must be positioned with the positioner and the necessary sensors at the "correct place" in the pipe system. Only then is optimum functionality guaranteed.
With electro-pneumatic positioners, you should install pressure and flow sensors, for example, upstream of the valve, but temperature and pH value sensors downstream of the valve, whilst considering the required inlet/outlet distances.

Positioners and process controllers

Overview

GEMÜ type	1434 µPos	1436 eco cPos	1435 ePos	1436 cPos
				
Controller type	Positioner	Positioner	Positioner	Positioner and process controller
Ambient temperature	0 to 60 °C	0 to 60 °C	-20 to 60 °C	0 to 60 °C
Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
Flow rate				
15 Nl/min	●	-	-	-
150 l/min	-	●	-	●
200 l/min	-	●	-	●
300 l/min	-	-	-	●
50 Nl/min	-	-	●	-
90 Nl/min	-	-	●	-
Measuring range				
Max. 30 mm, linear	●	●	●	●
Max. 50 mm, linear	-	●	●	●
Max. 75 mm, linear	-	●	●	●
Max. 90°, radial	-	●	●	●
Electrical connection types				
Cable gland	-	-	●	-
Connectors	●	●	●	●
Communication modes				
DeviceNet	-	-	-	●
Profibus	-	-	-	●
ProfiNet	-	-	-	●
Programmable outputs				
No	●	●	-	-
Yes	-	-	●	●
Input option				
No	●	●	-	-
Yes	-	-	●	●
Conformities				
EAC	●	●	●	●

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 1434 µPos
Intelligent electro-pneumatic positioner

The GEMÜ 1434 µPos digital electro-pneumatic positioner is used to control small to medium nominal size process valves with single acting linear actuators. The solid compact housing has a transparent cover. LEDs for status indication are integrated. Due to factory preconfiguration, this product does not require a display with operating keys. Pneumatic and electrical connections are arranged so as to save space and enable easy access. All these features make the GEMÜ 1434 µPos a cost-effective solution for control valves with basic requirements.

Features

- No air consumption when idle
- Simple mounting to various valve actuators
- Simple commissioning due to automatic initialisation
- Speed^{-AP} function for fast mounting and initialisation
- Easy operation due to balanced pre-configuration
- Compact design

EAC

Technical specifications

Ambient temperature:	0 to 60 °C
Operating pressure :	0 to 10 bar
Mode of action:	Single acting
Flow rate:	15 Nl/min
Measuring range:	Max. 30 mm, linear
Supply voltage:	24 V DC
Electrical connection types:	M12 plug | M12 socket
Conformity:	EAC

Go online!

GW-1434

GEMÜ 1436 eco cPos
Intelligent electro-pneumatic positioner

The GEMÜ 1436 eco cPos digital electro-pneumatic positioner is used to control process valves with single acting linear or quarter turn actuators. The positioner, travel sensor, switching valves and status LEDs are integrated into the robust and compact housing. Due to factory preconfiguration, this product does not require a display with operating keys. The pneumatic and electrical connections are arranged in one mounting direction to save space and enable easy access. All these features make this positioner a cost-effective solution for control valves with basic requirements.

Features

- No air consumption when idle
- Simple mounting to various valve actuators
- Simple commissioning due to automatic initialisation
- Speed^{-AP} function for fast mounting and initialisation
- Easy operation due to balanced pre-configuration
- High flow rates

Technical specifications

Ambient temperature:	0 to 60 °C
Operating pressure :	1,5 to 7 bar
Mode of action:	Single acting
Flow rate:	150 l/min ǀ 200 l/min
Measuring range:	Max. 30 mm, linear ǀ Max. 50 mm, linear ǀ Max. 75 mm, linear ǀ Max. 90°, radial
Supply voltage:	24 V DC
Electrical connection types:	M12 connector
Conformity:	EAC

Go online!

eco

GEMÜ 1435 ePos
Intelligent electro-pneumatic positioner

The GEMÜ 1435 ePos digital electro-pneumatic positioner is used to control process valves with single acting or double acting linear or quarter turn actuators, and detects the position of the valve using an external travel sensor. It has a robust aluminium housing with protected operating buttons and an LCD display which allows the product to be individually adapted to the control task. The operating times can be adjusted by integrated throttles. Connection and mounting to NAMUR is also possible. Therefore, the GEMÜ 1435 ePos is an optimal solution for control tasks with high requirements, especially in applications with harsh environmental conditions.

Features

- Simple handling and commissioning
- Simple electrical connection by detachable terminals
- Automatically optimises the valve control during initialisation
- No air consumption when idle
- Robust coated aluminium housing

Technical specifications

Ambient temperature:	-20 to 60 °C
Operating pressure :	0 to 6 bar
Mode of action:	Double acting | Single acting
Flow rate:	50 Nl/min | 90 Nl/min
Measuring range:	Max. 30 mm, linear | Max. 50 mm, linear | Max. 75 mm, linear | Max. 90°, radial
Supply voltage:	24 V DC
Electrical connection types:	M12 cable gland | M12 connector | M16 cable gland
Conformity:	EAC

Go online!

GW-1435

GEMÜ 1436 cPos
Intelligent positioner and integrated process controller

The GEMÜ 1436 cPos digital electro-pneumatic positioner has an optional integrated process controller to control process valves with single acting or double acting linear or quarter turn actuators. When using the optional process controller, the signals from the sensors (e.g. flow, level, pressure, temperature) are detected and the media adjusted according to the specified set value. GEMÜ 1436 cPos has a robust aluminium housing with protected operating buttons and an LCD display which allows the product to be individually adapted to complex control tasks. With additional equipment, the positioner can be used directly in fieldbus environments.

Features

- Digital inputs (option) for variable function control for automation
- Fieldbus interfaces e.g. Profibus DP, Profinet and DeviceNet (option)
- No air consumption when idle
- Simple mounting to various valve actuators
- Access rights via different user levels
- High flow rates

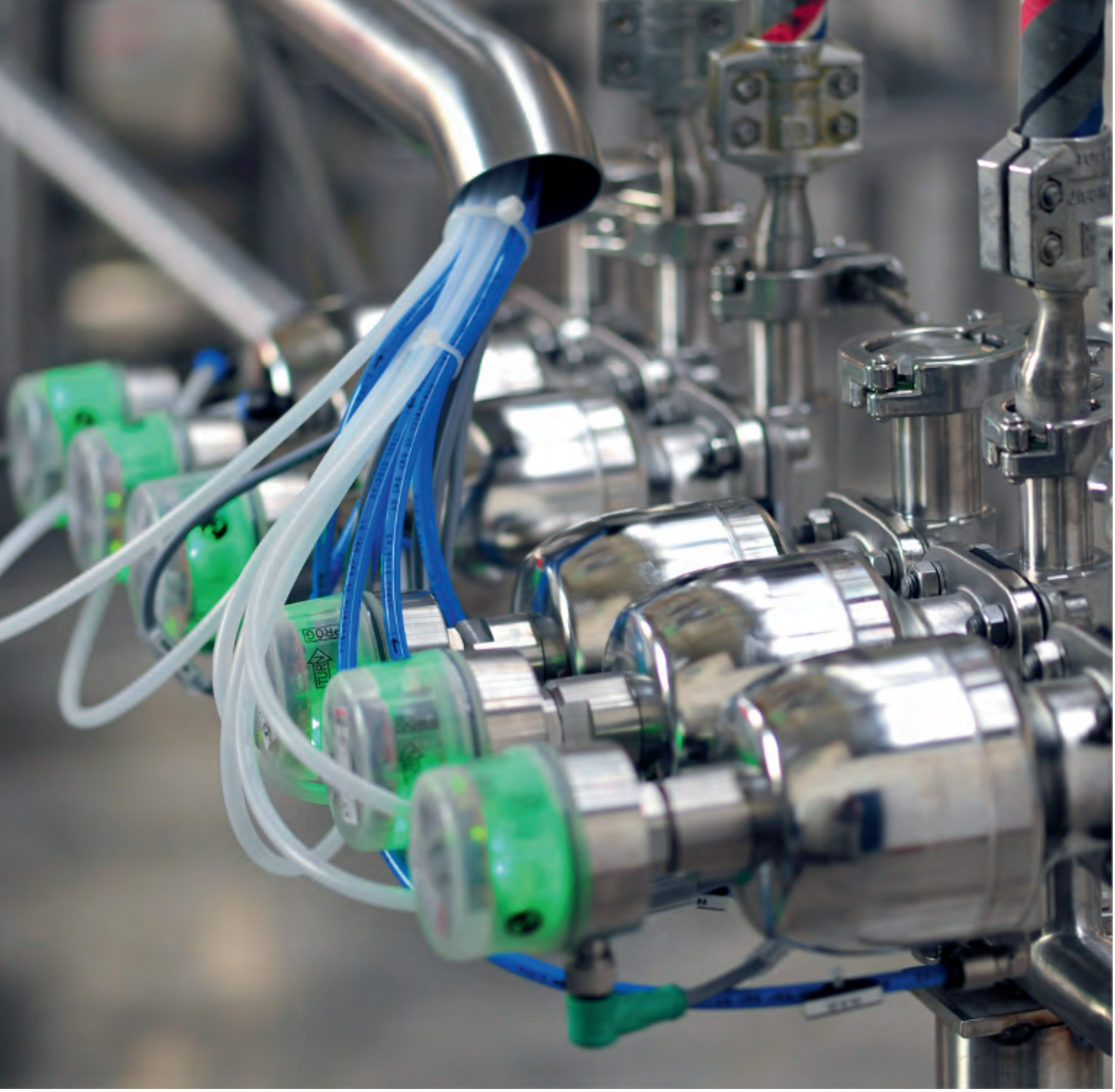
Technical specifications

Ambient temperature:	0 to 60 °C
Operating pressure :	1,5 to 7 bar
Mode of action:	Double acting I Single acting
Flow rate:	150 l/min I 200 l/min I 300 l/min
Measuring range:	Max. 30 mm, linear I Max. 50 mm, linear I Max. 75 mm, linear I Max. 90°, radial
Supply voltage:	24 V DC
Electrical connection types:	M12 connector
Communication modes:	DeviceNet I Profibus I ProfiNet
Conformity:	EAC

Go online!

GW-1436

Measurement and control technology



Electrical position indicators and combi switchboxes

Monitoring the valves installed is essential for all automated processes or systems with particular safety or quality requirements. The end positions of process valves can be measured using electrical position indicators. This is why position indicators are often also designated as limit switches or actuators. A signal transmits the position of the valve, measured using the integrated sensor, to the plant control system. In comparison with electrical position indicators, combi switchboxes also have integrated pilot valves.

Our electrical position indicators and combi switchboxes can be adapted to the pneumatic actuators of globe and diaphragm valves, as well as to quarter turn valves such as butterfly valves and ball valves. Our products range from programmable position indicators and combi switchboxes with automatic initialization through to systems with proximity switches or microswitches and solutions for the explosion-proof area. AS-Interface, DeviceNet and IO-Link are available as communication interfaces.

Electrical position indicators

Overview

GEMÜ type	C12A	1215	1230 / 1231 / 1232	1201 / 1211 / 1214	1205
					
Linear measuring range			2 to 20 mm	2 to 70 mm	2 to 70 mm
Radial measuring range					
Ambient temperature	-10 to 55 °C	-15 to 60 °C	-20 to 60 °C	-20 to 60 °C	-20 to 60 °C
Optical position indicators					
High visibility LED	-	-	-	-	-
Mechanical	-	●	-	-	-
On-site LED	-	-	●	-	-
Electrical connection types					
Cable gland	-	●	●	●	●
Connectors	-	●	●	●	-
Threaded connection	-	-	-	-	-
Switch types					
2-wire proximity switch (NAMUR)	-	-	●	●	-
Microswitch	-	●	●	●	●
3-wire proximity switch	-	-	●	●	-
Communication modes					
IO-Link	-	-	-	-	-
Supply voltage					
10 - 30 V DC	-	-	●	●	-
24 V DC	-	●	●	●	-
250 V AC	-	●	●	●	●
5 - 24 V DC ± 10 %	●	-	-	-	-
8 V DC	-	-	●	●	-
Conformities					
ATEX	-	●	●	●	●
CSA	-	-	●	-	-
EAC	-	●	●	●	●
IECEx	-	-	-	-	-
SIL	-	-	-	-	-
UL	-	-	●	-	-

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ type	1234	1235 / 1236	1225	LSC	LSF
					
Linear measuring range	1 to 10 mm	2,0 to 74,4 mm			
Radial measuring range		0 to 90°	0 to 90°	0 to 90°	0 to 90°
Ambient temperature	-10 to 70 °C	-10 to 70 °C	0 to 70 °C	-25 to 80 °C	-25 to 85 °C
Optical position indicators					
High visibility LED	-	●	-	-	-
Mechanical	-	-	-	●	-
On-site LED	●	●	●	●	●
Electrical connection types					
Cable gland	-	-	●	●	-
Connectors	●	●	-	●	●
Threaded connection	-	-	-	●	-
Switch types					
2-wire proximity switch (NAMUR)	-	-	-	●	●
Microswitch	-	-	●	●	-
3-wire proximity switch	-	-	-	●	●
Communication modes					
IO-Link	-	●	-	-	-
Supply voltage					
10 - 30 V DC	-	-	-	●	●
24 V DC	●	●	●	●	-
250 V AC	-	-	-	-	-
5 - 24 V DC ± 10 %	-	-	-	-	-
8 V DC	-	-	-	●	●
Conformities					
ATEX	-	-	-	●	●
CSA	-	-	-	-	●
EAC	●	●	●	-	-
IECEx	-	-	-	●	●
SIL	-	-	-	●	-
UL	-	-	-	-	●

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ C12A
Electrical position indicator

The photoelectric sensor detects the position of the valve spindle without touching it. An electrical signal transmits the respective position of the valve (open/closed) to the plant control system. The connection is established using 24 V DC.

Features

- Simple installation
- Suitable for GEMÜ iComLine®
- Compact design
- Open / Closed position feedback as standard
- Comes pre-assembled or as a retrofit kit

Technical specifications

Ambient temperature:	-10 to 55 °C
Linear measuring range:	**META-Daten fehlen** to 6 mm
Supply voltages:	5 - 24 V DC ± 10 %
Protection class:	IP 64
Electrical connection types:	**META-Daten fehlen**
Switch types:	**META-Daten fehlen**
Conformities:	**META-Daten fehlen**

Go online!

GW-C12A

GEMÜ 1215
Electrical position indicator

The GEMÜ 1215 electrical position indicator indicates one position of the valve. It is designed so that it can be mounted to GEMÜ valves via a female thread in the actuator housing. It can be used up to a switching cycle number of 10^6.

Features

- The housing can be rotated through 360°
- In addition to electrical position indication an optical position indicator is also installed
- Compact, solid housing

Technical specifications

Ambient temperature:	-15 to 60 °C
Supply voltages:	24 V DC ǀ 250 V AC
Protection class:	IP 65
Electrical connection types:	Cable gland ǀ Connectors
Switch types:	Microswitch
Conformities:	ATEX ǀ EAC

Go online!

GW-1215

GEMÜ 1230 / 1231 / 1232
Electrical position indicators

GEMÜ 1230/1231/1232 electrical position indicators are suitable for mounting on pneumatically operated linear valves. The position of the valve spindle is reliably detected and reported to the plant control system via microswitches or inductive proximity switches, using play-free and non-positive mounting. The product has been designed specially for valves with a stroke from 2 to 20 mm.

Features

- Simple mounting and retrofitting to GEMÜ linear actuators
- Compact, solid housing
- Option with LED indication
- Adjustable switch point tolerances
- Can be fitted to GEMÜ valves or third-party actuators

Technical specifications

Ambient temperature:	-20 to 60 °C
Linear measuring range:	2 to 20 mm
Supply voltages:	10 - 30 V DC | 24 V DC | 250 V AC | 8 V DC
Protection class:	IP 65
Electrical connection types:	Cable gland | Connectors
Switch types:	2-wire proximity switch (NAMUR) | Microswitch | 3-wire proximity switch
Conformities:	ATEX | CSA | EAC | UL

Go online!

GW-1230 GW-1231 GW-1232

GEMÜ 1201 / 1211 / 1214
Electrical position indicators

GEMÜ 1201/1211/1214 electrical position indicators are suitable for mounting on pneumatically operated linear valves. The position of the valve spindle is reliably detected and reported to the plant control system via microswitches or inductive proximity switches, using play-free and non-positive mounting. The product has been designed specially for valves with a stroke of 2 to 60 mm.

Features

- Simple mounting and retrofitting to GEMÜ linear actuators
- Attachment to other valve makes possible
- Compact, solid housing
- Low-wear switches, contactless detection

Technical specifications

Ambient temperature:	-20 to 60 °C
Linear measuring range:	2 to 70 mm
Supply voltages:	10 - 30 V DC | 24 V DC | 250 V AC | 8 V DC
Protection class:	IP 65
Electrical connection types:	Cable gland | Connectors
Switch types:	2-wire proximity switch (NAMUR) | Microswitch | 3-wire proximity switch
Conformities:	ATEX | EAC

Go online!

GW-1201 GW-1211 GW-1214

GEMÜ 1205
Electrical position indicator ATEX

The GEMÜ 1205 electrical position indicator has electro-mechanical microswitches in a flameproof enclosure. Two valve positions, open and/or closed can be remotely indicated.

Features

- Can be fitted to GEMÜ valves or third-party actuators
- Compact, solid aluminium housing
- Adjustable switch point tolerances

Technical specifications

Ambient temperature:	-20 to 60 °C
Linear measuring range:	2 to 70 mm
Supply voltages:	250 V AC
Protection class:	IP 65
Electrical connection types:	Cable gland
Switch types:	Microswitch
Conformities:	ATEX | EAC

Go online!

GW-1205

GEMÜ 1234
Electrical position indicator

The GEMÜ 1234 electrical position indicator for linear actuators has a microprocessor controlled intelligent position sensor with an integrated analogue travel sensor system. Optical position indication is made by LEDs.

Features

- Adjustable switch point tolerances
- Open / Closed position feedback as standard
- Quick cable connection
- Easy to fit
- On-site end position programming
- Can be fitted to GEMÜ valves or third-party actuators

Technical specifications

Ambient temperature:	-10 to 70 °C
Linear measuring range:	1 to 10 mm
Supply voltages:	24 V DC
Protection class:	IP 65
Electrical connection types:	Connectors
Conformities:	EAC

Go online!

GW-1234

GEMÜ 1235 / 1236
Electrical position indicator

GEMÜ 1235 / 1236 electrical position indicators are suitable for mounting on pneumatically operated linear actuators. The position of the valve spindle is reliably electronically detected and evaluated using play-free and non-positive mounting. Intelligent microprocessor controlled functions make commissioning and support during operation easier. The current position of the valve is displayed via high visibility LEDs and fed back via electrical signals.

Features

- Communication and programming interface IO-Link
- Adjustable switch point tolerances
- Speed^{-AP} function for fast mounting and initialisation
- High visibility position indicator by LED
- Can be fitted to GEMÜ valves or third-party actuators
- On-site or remote end position programming via programming input

EAC

IO-Link

Technical specifications

Ambient temperature:	-10 to 70 °C
Linear measuring range:	2,0 to 74,4 mm
Radial measuring range:	0 to 90°
Supply voltages:	24 V DC
Protection class:	IP 67
Electrical connection types:	Connectors
Communication modes:	IO-Link
Conformities:	EAC

Go online!

GW-1235

GW-1236

GEMÜ 1225
Electrical position indicator

The GEMÜ 1225 electrical position indicator for GEMÜ 410, 411, 415, 417, 423 and 428 butterfly valves has two adjustable trip cams which are positively operated by the switching shaft.

Features

- Can be fitted on quarter turn valves
- Retrofitting possible
- Integrated LED display

Technical specifications

Ambient temperature:	0 to 70 °C
Radial measuring range:	0 to 90°
Supply voltages:	24 V DC
Protection class:	IP 45
Electrical connection types:	Cable gland
Switch types:	Microswitch

Go online!

GW-1225

GEMÜ LSC
Limit switch box for quarter turn actuators

The GEMÜ LSC limit switch box is suitable for mounting to manually and pneumatically operated quarter turn valves. It is also fitted with an optical position indicator for visual confirmation of position.

Features

- Adjustable switch point tolerances
- Compact, solid housing
- Can be attached to all quarter turn valves in accordance with the VDI/VDE 3845 standard interface
- Simple mounting and retrofitting to quarter turn actuators
- Up to four position feedback messages
- Solenoid valve connection (optional)
- 3D optical position indicator (optional)
- OPEN/CLOSE LED display (optional)
- Low temperatures to -40 °C (optional)

Technical specifications

Ambient temperature:	-25 to 80 °C
Radial measuring range:	0 to 90°
Supply voltages:	10 - 30 V DC | 24 V DC | 8 V DC
Protection class:	IP 67
Electrical connection types:	Cable gland | Connectors | Threaded connection
Switch types:	2-wire proximity switch (NAMUR) | Microswitch | 3-wire proximity switch
Conformities:	ATEX | IECEx | SIL

Go online!

GW-LSC

GEMÜ LSF
Inductive dual sensor for quarter turn valves

The GEMÜ LSF inductive dual sensor is suitable for mounting to manually and pneumatically operated quarter turn valves. It is also fitted with an optical position indicator for visual confirmation of position.

Features

- Simple mounting and retrofitting to quarter turn actuators
- Compact, solid housing
- Can be attached to all quarter turn valves in accordance with the VDI/VDE 3845 standard interface
- OPEN/CLOSED LED display

Technical specifications

Ambient temperature:	-25 to 85 °C
Radial measuring range:	0 to 90°
Supply voltages:	10 - 30 V DC | 8 V DC
Protection class:	IP 67
Electrical connection types:	Connectors
Switch types:	2-wire proximity switch (NAMUR) | 3-wire proximity switch
Conformities:	ATEX | CSA | IECEx | UL

Go online!

GW-LSF

Combi switchboxes

Overview

GEMÜ type	4240	4241	4242
			
Linear measuring range	5 to 75 mm	5 to 75 mm	2 to 75 mm
Radial measuring range	0 to 90°	0 to 90°	0 to 90°
Ambient temperature	0 to 60 °C	0 to 50 °C	0 to 60 °C
Flow rate			
14 Nl/min	-	-	●
23 Nl/min	-	-	●
250 Nl/min	●	●	●
Electrical connection types			
Cable gland	●	●	-
Connectors	-	●	●
Switch types			
2-wire proximity switch (NAMUR)	●	●	-
Microswitch	●	-	-
3-wire proximity switch	●	-	-
Communication modes			
AS-Interface	-	-	●
DeviceNet	-	-	●
IO-Link	-	-	●
Supply voltage			
24 V DC	●	-	●
8 V DC	●	●	-
Conformities			
ATEX	-	●	●
EAC	-	●	●
ETL Listed C US	-	-	●
IECEx	-	●	●
SIL	-	-	●

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 4240
Combi switchbox

The GEMÜ 4240 combi switchbox is suitable for mounting to pneumatically operated linear actuators. The position of the valve spindle is reliably detected electronically and reported via microswitches or proximity switches, using play-free and non-positive mounting. Integrated pilot valves enable direct activation of the process valve connected to them. The product has been designed specially for valves with a stroke of 5 to 75 mm.

Features

- Position feedback via microswitches, optionally via 2-wire NAMUR proximity switches or 3-wire proximity switches
- Adjustable switch point tolerances using locking levers
- Can be fitted to GEMÜ valves or third-party actuators
- Integrated manual override

Technical specifications

Ambient temperature:	0 to 60 °C
Linear measuring range:	5 to 75 mm
Radial measuring range:	0 to 90°
Flow rate:	250 Nl/min
Supply voltages:	24 V DC | 8 V DC
Protection class:	IP 65, IP 67
Electrical connection types:	Cable gland
Switch types:	2-wire proximity switch (NAMUR) | Microswitch | 3-wire proximity switch

Go online!

GW-4240

GEMÜ 4241
Combi switchbox

The GEMÜ 4241 combi switchbox is suitable for mounting to pneumatically operated linear actuators. The position of the valve spindle is reliably electronically detected and fed back via the play-free and non-positive mounting by means of a 2-wire proximity switch (NAMUR). Integrated pilot valves enable direct activation of the process valve connected to them.

Features

- Position feedback via 2-wire proximity switch (NAMUR)
- Adjustable switch point tolerances using locking levers
- Can be fitted to GEMÜ valves or third-party actuators
- Integrated manual override
- Explosion protection for zone 1 and 21

Technical specifications

Ambient temperature:	0 to 50 °C
Linear measuring range:	5 to 75 mm
Radial measuring range:	0 to 90°
Flow rate:	250 Nl/min
Supply voltages:	8 V DC
Protection class:	IP 65, IP 67
Electrical connection types:	Cable gland I Connectors
Switch types:	2-wire proximity switch (NAMUR)
Conformities:	ATEX I EAC I IECEx

Go online!

GW-4241

GEMÜ 4242
Combi switchbox with integrated pilot valve

The GEMÜ 4242 combi switchbox is suitable for mounting to pneumatically operated linear actuators. The position of the valve spindle is reliably electronically detected and evaluated using play-free and non-positive mounting. Integrated pilot valves enable direct activation of the process valve connected to them. Intelligent microprocessor controlled functions make commissioning and support during operation easier. The current position of the valve is displayed via high visibility LEDs and fed back via electrical signals.

Features

- Fieldbus connection AS-Interface and DeviceNet (optional)
- Communication and programming interface IO-Link
- Adjustable switch point tolerances
- Speed^{-AP} function for fast mounting and initialisation
- High visibility position indicator by LED
- Can be fitted to GEMÜ valves or third-party actuators
- On-site or remote end position programming via programming input
- Integrated manual override

Technical specifications

Ambient temperature:	0 to 60 °C
Linear measuring range:	2 to 75 mm
Radial measuring range:	0 to 90°
Flow rate:	14 Nl/min | 23 Nl/min | 250 Nl/min
Supply voltages:	24 V DC
Electrical connection types:	Connectors
Protection class:	IP 65, IP 67
Communication modes:	AS-Interface | DeviceNet | IO-Link
Conformities:	ATEX | EAC | ETL Listed C US | IECEx | SIL

Go online!

GW-4242

Flowmeters

With the help of a flowmeter, the volume of a liquid or gas that flows through a pipe can be determined. GEMÜ offers various valve designs for this:

Variable area flowmeter

A measuring float is lifted by the volumetric flow in a conical metering tube until equilibrium is achieved between the weight of the measuring float and the force caused by the flow resistance. The measuring float is lifted higher or lower according to the volumetric flow.

Turbine flowmeter

A turbine wheel in the flowmeter is driven by the volumetric flow. The flow velocity can be determined by measuring the rotational speed. The measuring turbines here provide various electrical output signals for further processing.

Magnetically inductive flowmeter

A magnetically inductive flowmeter is suitable only for electrically conductive media. The functional principle is based on Faraday's law of electromagnetic induction.

Ultrasonic flowmeter

For ultrasonic flowmeters, the flow is determined with the help of audible signals. GEMÜ uses the phase difference method here. Two sensors opposite each other alternately send and receive ultrasonic signals. With a standing medium, both sensors receive the sent ultrasonic signals within the same phase, i.e. no difference in phase occurs. With a flowing medium, a phase shift takes place. This phase difference is directly proportional to the flow velocity. The flow volume is determined from the flow velocity and the pipe diameter.

Variable area flowmeter

Overview

GEMÜ type	800	800HP	850	850HP	840
					
Measuring range - Liquids	0,5 to 33000 l/h	20 to 1000 l/h	0,1 to 1600 l/h	200 to 7000 l/h	2500 to 50000 l/h
Measuring range - Gases	0,2 to 450 Nm³/h		0,02 to 37,5 Nm³/h		
Media temperature	-20 to 120 °C	-20 to 120 °C	-20 to 120 °C	-20 to 120 °C	5 to 90 °C
Operating pressure	0 to 15 bar	0 to 10 bar	0 to 15 bar	0 to 10 bar	0 to 10 bar
Nominal sizes	DN 20 to 65	DN 32 to 50	DN 10 to 25	DN 15 to 25	DN 65 to 65
Connection types					
Flange	●	●	●	●	-
Spigot	●	●	●	●	●
Union end	●	●	●	●	-
Metering tube materials					
PA	●	-	●	-	-
PSU	●	-	●	-	-
PVC-U	●	-	●	-	●
PVDF	-	●	-	●	-
Float materials					
PP, black	●	-	●	-	●
PVC-U, red	●	-	●	-	●
PVDF	●	●	●	●	-
Stainless steel 1.4571	●	-	●	-	-
Conformities					
ATEX	-	-	●	-	-
EAC	●	●	●	●	●

Technical data depends on the respective configuration - see datasheet or Product Selection Tool

GEMÜ 800
Variable area flowmeter

The GEMÜ 800 flowmeter operates according to the variable area principle and has a transparent metering tube. The scale printed onto the metering tube is suited to the medium. Dovetail sections moulded onto the metering tube allow for easy mounting of adjustable visual flow indicators, limit switches and a continuous readout transmitter.

Features

- Good level of accuracy, simple operation
- Corrosion resistant plastic body
- Clear and large size printed scale
- ATEX version available as an option
- Over 500 standard scales and 13,000 special scales are available with further scales on request

Technical specifications

Measuring range - Liquids:	0,5 to 33000 l/h
Measuring range - Gases:	0,2 to 450 Nm³/h
Error of measurement:	± 1% of final value and ± 3% of measured value
Media temperature:	-20 to 120 °C
Operating pressure :	0 to 15 bar
Nominal sizes:	DN 20 to 65
Connection types:	Flange I Spigot I Union end
Metering tube materials:	PA I PSU I PVC-U
Float materials:	PP, black I PVC-U, red I PVDF I Stainless steel 1.4571
Conformities:	EAC

Go online!

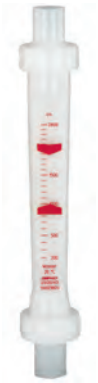
GW-800

GEMÜ 800HP
Variable area flowmeter

The GEMÜ 800 HP flowmeter operates according to the variable area principle and has a transparent metering tube. The scale printed onto the metering tube is suited to the medium. Dovetail sections moulded onto the metering tube allow for easy mounting of adjustable visual flow indicators, limit switches and a continuous readout transmitter.

Features

- Good level of accuracy, simple operation
- Corrosion resistant plastic body
- Clear and large size printed scale
- ATEX version available as an option



Technical specifications

Measuring range - Liquids:	20 to 1000 l/h
Media temperature:	-20 to 120 °C
Operating pressure :	0 to 10 bar
Nominal size:	DN 32
Connection types:	Flange | Spigot | Union end
Metering tube materials:	PVDF
Float materials:	PVDF
Conformities:	EAC

Go online!

GW-800HP

GEMÜ 850
Variable area flowmeter

The GEMÜ 850 flowmeter operates according to the variable area principle and has a transparent metering tube. The scale printed onto the metering tube is suited to the medium. Dovetail sections moulded onto the metering tube allow for easy mounting of adjustable visual flow indicators, limit switches and a continuous readout transmitter.

Features

- Good level of accuracy, simple operation
- Corrosion resistant plastic body
- Clear and large size printed scale
- ATEX version available as an option
- Over 500 standard scales and 13,000 special scales are available with further scales on request

Technical specifications

Measuring range - Liquids:	0,1 to 1600 l/h
Measuring range - Gases:	0,02 to 37,5 Nm³/h
Error of measurement:	± 1% of final value and ± 3% of measured value
Media temperature:	-20 to 120 °C
Operating pressure :	0 to 15 bar
Nominal sizes:	DN 10 to 25
Connection types:	Flange | Spigot | Union end
Metering tube materials:	PA | PSU | PVC-U, transparent
Float materials:	PP, black | PVC-U, red | PVDF | Stainless steel 1.4571
Conformities:	ATEX | EAC

Go online!

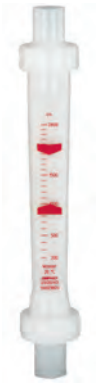
GW-850

GEMÜ 850HP
Variable area flowmeter

The GEMÜ 850 HP flowmeter operates according to the variable area principle and has a transparent metering tube. The scale printed onto the metering tube is suited to the medium. Dovetail sections moulded onto the metering tube allow for easy mounting of adjustable visual flow indicators, limit switches and a continuous readout transmitter.

Features

- Good level of accuracy, simple operation
- Corrosion resistant plastic body
- Clear and large size printed scale
- ATEX version available as an option



Technical specifications

Measuring range - Liquids:	200 to 7000 l/h
Media temperature:	-20 to 120 °C
Operating pressure :	0 to 10 bar
Nominal size:	DN 15
Connection types:	Flange | Spigot | Union end
Metering tube materials:	PVDF
Float materials:	PVDF
Conformities:	EAC

Go online!

GW-850HP

GEMÜ 840
Variable area flowmeter

The GEMÜ 840 flowmeter operates according to the part flow principle The device consists of three parts: Main flow unit, part flow unit and manual diaphragm valve.

Features

- Good level of accuracy, simple operation
- Impact resistant, corrosion resistant
- Large measuring range 3 - 50 m³/h (depending on orifice diameter)
- Part flow metering tube can also be easily replaced without downtime

Technical specifications

Measuring range - Liquids:	2500 to 50000 l/h
Media temperature:	5 to 90 °C
Operating pressure :	0 to 10 bar
Nominal size:	DN 65
Connection types:	Spigot
Metering tube materials:	PVC-U
Float materials:	PP, black | PVC-U, red
Conformities:	EAC

Go online!

GW-840

Electrical flowmeters

GEMÜ C38 SonicLine
Ultrasonic flowmeter

GEMÜ C38 SonicLine is an ultrasonic flowmeter operating according to the phase difference method. Two sensors in opposite position reciprocally send and receive ultrasonic signals. With a standing medium, both sensors receive the sent ultrasonic signals within the same phase, i.e. no difference in phase occurs. With a flowing medium a phase shifting takes place. This phase difference is directly proportional to the flow velocity. The flow volume is determined from the flow velocity and the pipe diameter.

Features

- High accuracy and repeatability
- Extremely fast detection of measured values (250 measured values/sec.)
- Free tube cross section – no moving parts
- Suitable for dynamic processes (dosing time < 1 s)
- High chemical resistance
- Integrated dosing function

Technical specifications

Measuring range - Liquids:	1,8 to 7200 l/h
Error of measurement:	± 1 % of measured value (± 3 mm/s)
Media temperature:	0 to 80 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 6 to 20
Connection types:	Flare
Metering tube materials:	PFA
Electrical connection types:	M12 plug
Supply voltages:	24 V DC
Conformities:	EAC | FDA

Go online!

GW-C38

Pressure and temperature measurement devices

The pressure and temperature of a medium can be measured with the help of pressure and/or temperature measurement devices. These parameters are an important basis for process control, monitoring and automation.

GEMÜ offers electrical measuring transducers and switches for this. Pressure and temperature switches are actuated depending on the medium's pressure or temperature. Measuring transducers convert the pressure or temperature into an electrical signal that can be transmitted to the plant control system. In addition, our range includes pressure measurement devices for sanitary/hygienic applications.

GEMÜ C30 HydraLine
Pressure gauge

The GEMÜ C30 pressure measurement device is equipped with a PFA transmitter and an analogue pressure gauge. The body is made from PFA/PTFE and can be directly integrated into the pipe system by flare unions. The pressure is transmitted by a monitoring liquid (standard IPA (isopropyl alcohol) / DI water, further liquids on request).

Features

- The proven GEMÜ CleanStar® technology is the basis of the transmitter
- Working medium hermetically isolated from the gauge by a patented PFA double diaphragm
- Pressure gauge can be positioned through 360° enabling individual user options
- Production, assembly, calibration and packaging in cleanroom ISO 6
- Minimal deadleg

FDA

Technical specifications

Measuring range:	-1 to 6 bar
Media temperature:	5 to 60 °C
Operating pressure :	-1 to 6 bar
Housing material:	
Body materials:	PFA | PTFE
Connection type:	Flare | NPT thread
Conformities:	FDA

Go online!

GW-C30

GEMÜ C31 HydraLine
Pressure gauge

The GEMÜ C31 pressure measurement device is equipped with a pressure transmitter. The transducer is rotatable through 360°. The body is made from PFA/PTFE and can be directly integrated into the pipe system by flare unions. The pressure is transmitted by a monitoring liquid (standard IPA (isopropyl alcohol) / DI water, further liquids on request).

Features

- The proven GEMÜ CleanStar® technology is the basis of the transmitter
- Working medium hermetically isolated from the gauge by a patented double diaphragm
- Pressure gauge can be positioned through 360° enabling individual user options
- Production, assembly, calibration and packaging in cleanroom ISO 6
- Minimal deadleg

FDA

Technical specifications

Measuring range:	-1 to 6 bar
Error of measurement:	± 0.5 % of final value
Media temperature:	5 to 60 °C
Operating pressure :	-1 to 6 bar
Housing material:	
Body materials:	PFA | PTFE
Connection type:	Flare | NPT thread
Output signals:	4 - 20 mA
Conformities:	FDA

Go online!

GW-C31

GEMÜ C32 HydraLine
Pressure gauge

The GEMÜ C32 pressure measurement device is an electronic pressure measurement device. The pressure measurement device is equipped with a digital display and a ceramic capacitive sensor. This sensor is isolated from the process by a double diaphragm system. No pressure transmission fluid is required. The body is made from PFA/PTFE and can be directly integrated into the pipe system by flare unions.

Features

- Minimal deadleg
- No transmission fluid "Dry solution"
- Non-metallic ultra pure ceramic sensor
- Vented double diaphragm isolates the sensor
- No additional auxiliary power required
- 5 different units of pressure can be freely set
- Production, assembly, calibration and packaging in cleanroom ISO 6

FDA

Technical specifications

Measuring range:	0 to 6 bar
Error of measurement:	± 0.5 % of final value
Media temperature:	0 to 60 °C
Operating pressure :	0 to 6 bar
Housing material:	PVDF
Body materials:	PFA | PTFE
Connection type:	Flare | NPT thread
Output signals:	4 - 20 mA
Conformities:	FDA

Go online!

GW-C32

GEMÜ 3140
Pressure transducer and pressure switch

The GEMÜ 3140 pressure transducer/switch is ideal for precise measurements in a wide pressure range. The sensor is suitable for use with both highly viscous and contaminated media and is also suitable for corrosive media due to its high-quality material selection. A variety of electrical and mechanical connections are available, depending on the version. The LED display version boasts a rotatable 4-digit display.

Features

- Featuring a rotatable LED display and IO-Link interface, depending on version
- Suitable for highly viscous, contaminated and corrosive media
- Appropriate in-line housing optionally available
- ATEX and SIL2 design optionally available
- Accuracy 0.5% FSO (in accordance with IEC 60770)
- Optional installation position
- Ceramic sensor

Technical specifications

Measuring range:	0 to 40 bar
Error of measurement:	± 0.5 % of final value
Media temperature:	-40 to 125 °C
Operating pressure :	0 to 40 bar
Housing material:	1.4404
Body materials:	1.4404 | PVDF
Connection type:	Threaded connection
Output signals:	0 - 10 V | 0 - 20 mA | 4 - 20 mA | NPN | PNP
Conformities:	ATEX | EAC | SIL | UL

Go online!

GW-3140

GEMÜ 3240
Temperature transducer and temperature switch

The GEMÜ 3240 temperature transducer/switch is ideal for precise measurements in a wide temperature range. The sensor is suitable for both highly viscous, as well as contaminated media. It is also suitable for corrosive media thanks to the high-quality material selection. Furthermore, it stands out thanks to its extremely short installation length. The electrical output signals can optionally be changed over between power, current or switching outputs.

Features

- With rotatable LED display and IO-Link interface
- Suitable for highly viscous, contaminated and corrosive media
- Switching output as standard
- Switchable electrical output
- Accuracy in accordance with IEC60770: 0.35% FSO
- Extremely short installation length
- Temperature sensor PT1000 / class A

Technical specifications

Temperature measuring range:	-40 to 150 °C
Error of measurement:	± 0.35 % of final value
Media temperature:	-40 to 150 °C
Operating pressure :	0 to 160 bar
Housing material:	1.4404
Body materials:	1.4404 | PVDF
Connection type:	Threaded connection
Output signals:	0 - 10 V | 4 - 20 mA | NPN | PNP
Conformities:	EAC

Go online!

GW-3240

Connection technology

GEMÜ FlareStar
PFA fittings

Over 100 different types of fitting are produced under cleanroom conditions in compliance with DIN 16901-140. The fitting bodies are made of PFA, while the union nuts are made of PFA, PVDF or CPFA. We stock all the connections available on the market too.

Features

- For leak free performance with minimum dead space in ultra pure fluid applications
- High reliability, even in high vibration applications
- Simple operation
- Available as "Space saver version", for space-saving connection
- Over 1000 different versions for commonly available connections

Technical specifications

Media temperature:	20 to 200 °C
Operating pressure :	0 to 6 bar
Nominal sizes:	DN 4 to 32
Connection types:	Flare | Flare SpaceSaver | Spigot | Threaded connection
Materials:	PFA | PTFE | PVDF

GEMÜ TubeStar
Tube

TubeStar is a product range comprising ultra-pure and standard PFA tubing.
The tubes are particularly suitable for applications with high-purity media and other chemicals.

Features

- The values from the dynamic leach out tests are well below the SEMI F57 standard (high purity version)
- Outstanding chemical and physical properties
  - High-purity design, Teflon® PFA 450 HP (Chemours)
- Excellent pressure resistance
- Good flexural fatigue strength
- High transparency

Technical specifications

Media temperature:	-70 to 250 °C
Operating pressure :	2 to 20 bar
Tube sizes:	1/4" to 1¼"
Materials:	PFA

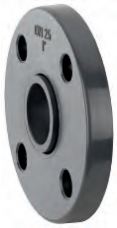
Accessories

Connection accessories

GEMÜ 1035
Union end

The GEMÜ 1035 union end can be used for GEMÜ plastic valves and flowmeters and is available in various materials (PVC-U, PP, PVDF) and nominal sizes (DN 10 to 100).

GEMÜ 1034
Full face flange with solvent cement socket



The GEMÜ 1034 plastic flange is suitable for GEMÜ plastic valves.

GEMÜ 1031
Threaded socket

The GEMÜ 1031 threaded socket is suitable for GEMÜ plastic valves with weld or solvent cement spigots.

GEMÜ CF
Union nut

The GEMÜ CF union nut is suitable for GEMÜ plastic valves with flare connection. It is available in PFA, PVDF or carbon fibre reinforced PFA. All parts are manufactured in cleanroom conditions and have extremely high chemical resistance.

GEMÜ 2023
Pneumatic fitting

We offer various pneumatic fittings under the GEMÜ 2023 model. Various connection sizes are available with female thread, male thread, connector, plug-in nipple or quick connectors.

GEMÜ 122x

Connection accessories

GEMÜ 1219
Cable socket / cable plug M12

The GEMÜ 1219 is a connector (cable socket / cable plug) M12, 5-pin. Straight and/or 90° angled plug type. Defined cable length or with threaded connection without cable. Various materials available for the fixing nut.

GEMÜ 1470
NAMUR control air adapter

The GEMÜ 1470 adapter makes it possible to connect the control air connector on the defined NAMUR interface.

GEMÜ 2022
Throttle valve

The GEMÜ 2022 throttle valves are available as throttle valve, throttle check valve and dual throttle check valve. In pneumatic actuators they are used to regulate the compressed air depending on the function for the supply or exhaust air. The operating time of the pneumatic actuator can be varied by reducing the compressed air. The throttle valves are used to adjust the compressed air, independent of the flow direction. When using throttle check valves, one direction of the supply or exhaust air is adjusted and the other direction remains unregulated. With the dual throttle check valves the compressed air of the supply and exhaust air can be adjusted independently of one another.

GEMÜ 1750
Silencer

The GEMÜ 1750 silencer can be used to reduce the noise caused by leaking compressed air. It is available either in brass or plastic.

GEMÜ 1755
Double threaded nipple

GEMÜ 1755 is a metal double nipple and is available in various materials and designs.

Commissioning and maintenance accessories

GEMÜ CFSTF
Service tool for flare union nuts

The GEMÜ CFSTF service tool is used for the assembly of GEMÜ CF flare union nuts in PFA, PVDF and carbon fibre reinforced PFA. A precisely defined torque can be achieved when using it in combination with a torque wrench.

GEMÜ 1098
Flaring mandrel

The GEMÜ 1098 flaring mandrel is an assembly tool for flare connections.

GEMÜ WG600
Angle gauge

To simplify the assembly of 2/2-way diaphragm valve bodies made from stainless steel, we have developed a patented angle gauge. The angle gauge allows the correct mounting position of a diaphragm valve body to be set quickly and easily.

GEMÜ PPF
Multifunction adapter

With the GEMÜ PPF multifunction adapter, the penetration of foreign particles during the installation of diaphragm valves can be prevented. It can also be used to conduct welding gas when welding the bodies onto the piping. It is also possible to supply and conduct passivation media or to carry out an endoscopic examination of the weld seams.

GEMÜ SERVICE-IO-LINK-KIT
Programming set

The GEMÜ service IO-Link set comprises an IO-Link master, an adapter and a cable gland. The programming set is suitable for all GEMÜ IO-Link interfaces.

GEMÜ 1434 000 Z IK
Initialisation kit

The GEMÜ 1434 000 Z IK initialization kit is intended for on-site initializing of GEMÜ 1434 µPos and GEMÜ 1436 eco cPos intelligent positioners. The initialization kit is connected to the system's connection cable on the one side and to the positioner's connector plug on the other. You can disconnect it again when initialization is complete.

Clamping devices

GEMÜ 1107
Tool to keep actuator open

The GEMÜ 1107 tool to keep the actuator open holds pneumatically operated diaphragm valves in the open position even if no control medium is applied to them. You can choose to secure it using a padlock. The GEMÜ 1107 tool to keep the actuator open can, for example, be used for autoclaving.

GEMÜ 1109
Tool to keep actuator closed

The GEMÜ 1109 tool to keep the actuator closed holds diaphragm valves in the closed position, even if a control medium is applied to them. You can choose to secure this using a padlock.

Position indicators and travel sensors

GEMÜ 1300
Optical position indicator with transparent cap

GEMÜ 1300 is a plastic optical position indicator with transparent cap for pneumatically operated globe and diaphragm valves.

GEMÜ 1310
Optical position indicator with transparent cap

GEMÜ 1310 is a plastic optical position indicator with transparent cap for pneumatically operated globe and diaphragm valves. It has an indicator spindle with metal core. There is also the option to connect two mounting brackets for proximity switches.

GEMÜ 4231
Travel sensor for quarter turn actuators

The GEMÜ 4231 travel sensor is intended for the attachment to valves with quarter turn actuators with 90° travel and is used to determine the valve position. It is used as a travel sensor for the GEMÜ 1434 µPos, GEMÜ 1435 ePos and GEMÜ 1436 cPos intelligent positioners, which can be connected using either the open cable ends or an M12 cable connector (depending on the design and/or selection of the controller).

GEMÜ 4232
Travel sensor for linear actuators

The GEMÜ 4232 travel sensor is intended for the attachment to valves with linear actuators and is used to determine the valve position. It is used as a travel sensor for the GEMÜ 1434 µPos, GEMÜ 1435 ePos and GEMÜ 1436 cPos intelligent positioners, which can be connected using either the open cable ends or an M12 cable connector (depending on the design and/or selection of the controller).

Stroke limiters

GEMÜ 1101 / 1104 / 1110 / 1114 / 1151 / 1152 / 1161 Opening stroke limiter

Pneumatic linear actuators of GEMÜ butterfly valves, ball valves, diaphragm valves and globe valves are not fully opened by opening stroke limiters. This limits the maximum flow through a valve. The opening stroke limiter is available either with handwheel, transparent cap, position indicator or manual override.

GEMÜ 1108 Closing stroke limiter

GEMÜ 1108 is a mechanical closing stroke limiter with integrated optical position indicator and transparent cap for pneumatically operated linear actuators. It is used when open/close valves should not be closed fully and a minimal flow should be ensured.

GEMÜ 1106 Opening stroke and closing stroke limiter

The GEMÜ 1106 stroke limiter limits both the opening and closing of a valve, thereby setting a minimum and maximum flow. It is available with or without a stainless steel or plastic protective cap.

GEMÜ 1118 Seal adjuster

The GEMÜ 1118 seal adjuster is a closing stroke limiter that can only be adjusted within the lower stroke range. In these cases, it reduces the compression of the diaphragm on the sealing weir, thereby increasing the diaphragm service life.

GEMÜ 1116 Opening stroke limiter with seal adjuster

The GEMÜ 1116 model combines an opening stroke limiter with a diaphragm protection function. This allows the opening stroke to be set as required. The closing stroke can only be adjusted within the lower stroke range.

Manual override

GEMÜ 1002
Handwheel

GEMÜ 1002 is a manual override for pneumatic linear actuators for diaphragm, globe and control valves. An integral optical position indicator is standard. The manual override cannot be used as a closing stroke limiter.

GEMÜ 1450
NAMUR mounting bracket

GEMÜ 1450 is a NAMUR mounting bracket for pneumatically operated diaphragm valves and globe valves. An integral optical position indicator is standard. The product is available either with or without handwheel as a manual override. It has height adjustable trip cams. The mounting parts are included.

GEMÜ 1460
NAMUR mounting bracket

GEMÜ 1460 is a NAMUR mounting bracket for pneumatically operated linear actuators. The product is available either with or without handwheel as a manual override. It has height adjustable trip cams. The mounting parts are included.

GEMÜ 1461
NAMUR mounting bracket

Sensor accessories

GEMÜ 1200
Proximity switch

The GEMÜ 1200 proximity switch is a sensor that detects the valve position contactlessly and displays it via an electrical signal.

GEMÜ 1210
Mounting bracket for proximity switches

The GEMÜ 1210 is an enclosed proximity switch mount in stainless steel for two proximity switches M8 x 1 or M12 x 1 (only suitable for GEMÜ 550 and GEMÜ 650). An integral optical position indicator is standard. The basic version does not contain any proximity switches.

GEMÜ 1216
Mounting bracket for proximity switches

GEMÜ 1216 is an open proximity switch mount for two proximity switches M8 x 1 for pneumatically operated linear actuators. It has two adjustable trip cams and can be ordered either with or without stroke limiter. The switching interval is dependent on the proximity switches used. The basic version does not contain any proximity switches.

GEMÜ 125x
Limit switches

Limit switches with bistable reed contact (change-over contact or make contact) can be combined with GEMÜ flowmeters with magnetic float. They can be easily mounted and adjusted by clamping them onto the flowmeter. The electrical connection is via a cable gland. An ATEX version is available on request.

GEMÜ 127x
Instrument sensor

Instrument sensors are suitable for continuous flow monitoring of GEMÜ flowmeters with magnetic float. They can be easily mounted and adjusted by clamping them onto the flowmeter. The electrical connection is via a cable gland.

GEMÜ 1276
Digital display unit

The GEMÜ 1276 digital display unit is available as types M11 (4-digit) and M21, M31 (5-digit). The device can be programmed at the front using a disconnectable keypad. Programming is made using the easy to understand menu guidance.

Valve knowledge

Surface processing

The requirements for functional surfaces are directly related to hygiene safety in pharmaceutical production systems. In the media-wetted area, it is essential that the valves used exhibit optimum cleaning behaviour and maximum corrosion resistance. On a macroscopic level, this is implemented by means of a design that meets the Hygienic Design criteria. Materials are selected according to the resistance criteria for the media and processes used. On a microscopic level, the focus for this functional surface is on an appropriate topography and morphology.

In addition to hygiene class DIN 11866 or ASME BPE, GEMÜ offers the appropriate grade of surface finish depending on customer requirements.

All manufacturing processes are involved in producing a functional surface. All mechanical machining measures from grinding through to electropolishing are precisely synchronized with each other.

Machining

The requirement for a defined surface must be taken into account as early as during the machining of the valve bodies with a geometrically defined cutting edge, for example during milling or turning.

Welding

Each welding procedure involves the manipulation of the structure and surface. The tempering colours that develop here must be considered and evaluated accordingly. Ultimately, you are providing information on the structural morphology. Tempering colours are removed using precisely defined pickling processes. The valve bodies are also electropolished if the customer requests this.

Grinding

The grinding processes have a significant impact on the quality of the surfaces. In addition to the manual grinding procedure, GEMÜ also employs alternative methods, such as slide machining and flow grinding.

Electropolishing

A key factor in producing a functional surface for stainless steels is the electropolishing process. With the surface technology centre, GEMÜ is integrating all capabilities from its own company and also has a great deal of expertise in manufacturing functional surfaces.

Passivation

So that the quality of the surface is also ensured long-term, it is passivated according to a defined procedure immediately after the manufacturing process. This ensures that there is a complete protective layer that prevents corrosion.

Highly automated butterfly valve manufacture

At GEMÜ, we place great importance on carrying out the most important production steps in-house, allowing us to monitor the processes that are decisive for quality. The high level of vertical integration of our automated butterfly valve manufacture is an example of this. With the help of state-of-the-art robot technology and a sophisticated transport system, the unmachined parts of our butterfly valves are then mechanically machined precisely. Using a whirl-sintering method, we also coat the butterfly valve bodies with an even layer of high-strength corrosion protection.

All manufacturing steps are involved in producing a robust coating. All mechanical machining measures, from sand blasting through to powder coating, are precisely synchronized with each other.

Mechanical processing

All butterfly valve bodies are milled in one clamping position in our state-of-the-art machining centre at GEMÜ Valves China. This allows us to achieve precise shape and positional tolerances.

Sand blasting

We take strict care in further processing that the moulded parts are free from oil, grease, salt and other impurities. Moulding sand, rust and casting flash from the unmachined part is removed from the surface by sand blasting.

Heating

To keep the workpiece at a uniform surface temperature without oxidation, a heating line passes through the butterfly valve body. To comply with our standards of quality, avoiding blue/purple oxidized cast iron is very much a priority.

Coating and hardening

Using the whirl-sintering method, the butterfly valve body is immersed in a basin with coating powder. The powder melts on to the hot butterfly valve body and therefore interconnects to form a robust and durable surface. The residual heat in the workpiece causes it to harden.

Inspection

GEMÜ always carries out a final inspection at the end of the manufacturing process.
Each GEMÜ butterfly valve is tested before delivery for quality features such as pressure, tightness and torque.

Connections

GEMÜ offers you a huge variety of connections for easily and properly connecting the valves with the piping.

Which connection type is most suitable depends on the operating requirements and parameters, such as pressure and temperature. Essentially, the connections in pipeline and system construction are subdivided into two categories:

- Detachable connection: The piping can be disconnected again, for example for maintenance purposes. This includes union ends, clamps, threads, flare connections and flanges.
- Non-detachable connection: The piping is connected without an additional seal, minimizing weak points and deadlegs. Examples include solvent cement sockets and spigots.

Union end

Union ends comprise a threaded spigot with male thread, a union nut with corresponding female thread, an insert as a union and a seal (O-ring). By replacing the insert, a variety of thread variants can be covered. Union ends are frequently used in plastic piping and for small nominal sizes.

Clamp

The clamp connection combines two clamp connectors with one intermediate gasket and is locked down with a hinged clip. Valves can therefore be replaced very quickly. Thanks to the minimal deadleg design, barely any waste materials remain in the seal area. This connection type is frequently used for stainless steel lines of small nominal sizes.

Flange

Grooved or loose flanges are joined together at the flange connection using nuts and bolts. They are sealed using a gasket. A liner is used as a gasket for wafer-type valves. This connection is suitable for large nominal sizes as well as high temperatures and operating pressures.

Flare

Flare connections are a type of clamp connection. They involve a flared tube being slipped over a fitting body equipped with male thread and fixed in place with a union nut. This type of connection is mainly used for high-purity applications.

Thread

Threaded connections have a female or male thread and can be bolted together with the appropriate counterpart. A special threaded connection is, for example, a union end. For hygienic and sterile connections, there are also aseptic unions, in which a female union and threaded spigot are bolted together with a union nut.

Spigot

With this connection type, the valve is connected to the piping by welding (butt weld spigot) or solvent cementing (solvent cement spigots). This minimizes the deadleg in the area around the connections. Whilst special tools are used for welding, plastics such as PVC can be solvent cemented easily and without the need for expensive tools.

Kv value

Kv value definition:

The Kv value is the flow coefficient of a valve.
It is used as a calculation basis for designing and planning processes. Valves of different designs and nominal sizes can be compared with each other using the Kv value.

As valves always have an influence on the volumetric flow, the correct selection of the valve in terms of the Kv value is very important.

Kv	Kv value of an individual valve in conjunction with a stroke reading
Kv_{100}	Kv value of an individual valve when open 100% (may deviate +/- 10% from Kv_s)
Kv_s	Kv value of a valve series at rated stroke

Kv value determination:

In order to compare the varied geometries, valve designs and nominal sizes of different valves, the Kv value is always determined under the same conditions.

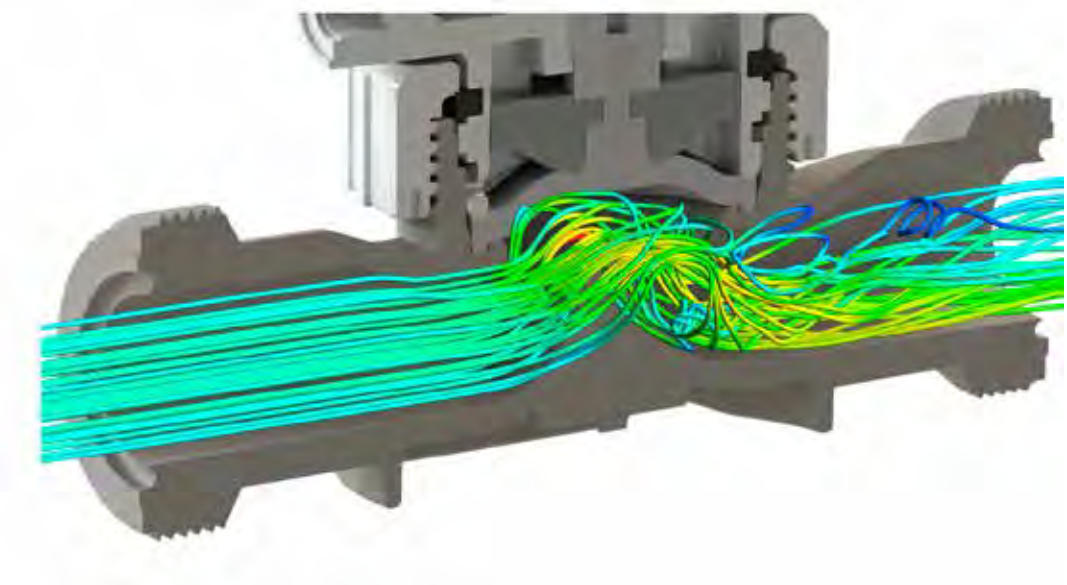
Medium:	Water (H_20)
Temperature:	5 to 40 °C
Pressure differential:	Δp between pressure inlet and pressure outlet side 1 bar
Measurement unit:	m^3/h

In the US market, the data is usually in US gallons per minute. This value is designated as the Cv value.

Cv value: Measured in US gallons per minute, at a differential pressure Δp of 1 PSI with water

Kv value: Measured in m^3 per hour, at a differential pressure Δp of 1 bar with water

1 Cv = 1.17 x Kv **1 Kv = 0.86 x Cv**

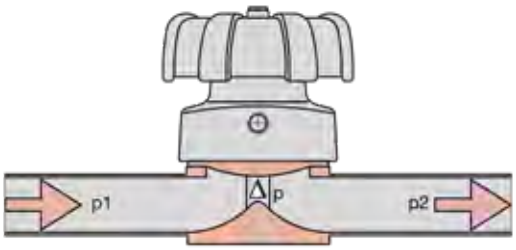


Diaphragm valve flow simulation

Calculation basis for Kv values:

Formulae are used here that take into account all the parameters and physical variables deviating from the test. Since liquids, gases and steam are subject to different laws, different formulae are also used.

The original calculation formulae are very extensive, so simplified standard formulae are used in most cases. Here, it is important that they cannot be fully abbreviated and that the units used for the Q value and the Kv value respectively are identical.



Pressure loss	Kv	for water	for liquid	for steam	for gases
$\Delta p < \frac{p_1}{2}$ $\left(p_2 > \frac{p_1}{2}\right)$	Kv	$= \frac{Q}{\sqrt{\Delta p}}$	$= \frac{Q}{31.6} \cdot \sqrt{\frac{\rho_1}{\Delta p}}$	$= \frac{\dot{m}}{31.6} \cdot \sqrt{\frac{v'}{\Delta p}}$	$= \frac{Q_N}{514} \cdot \sqrt{\frac{\rho_N \cdot T_1}{\Delta p \cdot p_2}}$
$\Delta p > \frac{p_1}{2}$ $\left(p_2 < \frac{p_1}{2}\right)$	Kv	$= \frac{Q}{\sqrt{\Delta p}}$	$= \frac{Q}{31.6} \cdot \sqrt{\frac{\rho_1}{\Delta p}}$	$= \frac{\dot{m}}{31.6} \cdot \sqrt{\frac{2 \cdot v''}{p_1}}$	$= \frac{Q_N}{257 \cdot p_1} \cdot \sqrt{\rho_N \cdot T_1}$

Kv	m³/h	Flow coefficient of the valve	ρ_1	kg/m³	Density of the material in the operating state T_1 and p_2
Q	m³/h	Volumetric flow	ρ_N	kg/m³	Density of the gas at 0 °C and 1014 mbar
Q_N	Nm³/h	Volumetric flow of the gas at 0 °C and 1014 mbar	v'	m³/kg	Spec. steam volume at T_1 and p_2
$\dot{m}_{max}/\dot{m}_{min}$	kg/h	Maximum/minimum mass flow to be regulated	v''	m³/kg	Spec. steam volume at $\frac{p_1}{2}$ and T_1
p_1	bar	Absolute pressure upstream of the positioning element (at Q)	$\dot{m}$	kg/h	Mass flow
p_2	bar	Absolute pressure downstream of the positioning element (at Q)	T_1	K	Media temperature
Δp	bar	(Δp) - pressure differential p_1 - p_2 at Q			

Configuration of a control circuit

According to DIN 19226, control or controlling is a process in which the variable to be controlled is continuously measured, compared with the reference variable and influenced in the sense of adjustment to the reference variable. The characteristic feature of control is the closed action circuit in which the controlled variable continuously influences itself within the control circuit.

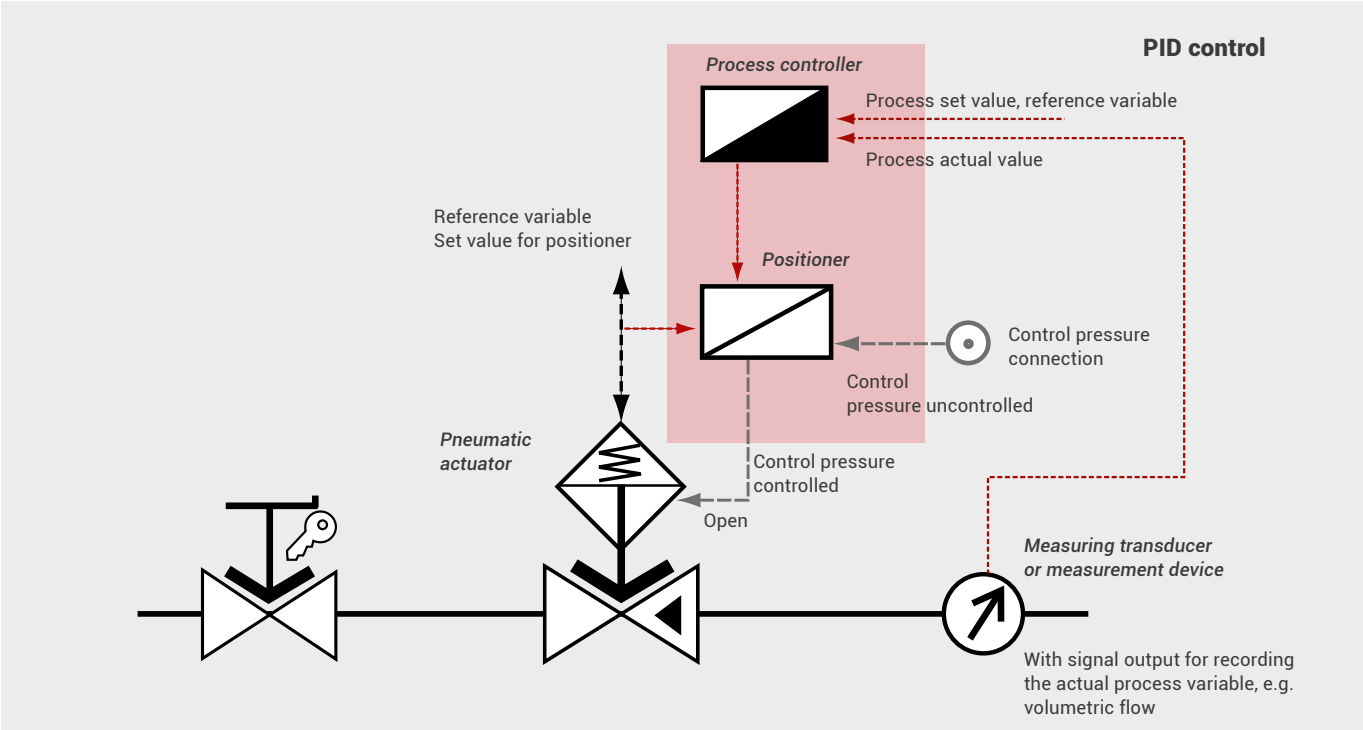
The right design of the control circuit is necessary for good, reliable functionality. The valve and the control or regulating device must be closely adapted to each other.

Example: Electro-pneumatic process control

Positioners and process controllers are available as single and "2 in 1" devices. If the travel is measured mechanically, the positioner must be mounted directly on the positioning element (valve). With electronic travel detection, the positioner can be positioned away from the positioning element.

The control is characterised by:

- Type of control/regulation
- Accuracy of the control
- Controlled system and its influential factors
- Controller type (2-point, 3-point, P, PI, PD, PID etc.)
- Control task (pressure, temperature, filling level, flow, pH value, etc.)
- Control range of the valve (Kv value)



The example shows a diaphragm valve with a pneumatic membrane actuator in control function "normally closed" (single acting) and a manually operated/lockable diaphragm valve. In the control of volumetric/mass flow, the measuring element (actual value transmitter) should be positioned upstream of the positioning element (valve).

In this way, the volumetric flow on the measurement device is damped so that the control does not experience sudden measuring step jumps. The actual value transmitter must be positioned downstream of the positioning element for pressure and temperature control.

Increase control accuracy, save costs – things to bear in mind

The greater the accuracy of the control, the higher the costs for the components and commissioning as a rule. Under certain process conditions, high-precision controls can only be implemented after substantial effort. This is why you should consider very carefully before planning how accurate the control must be.

The design of a control circuit, the corresponding system layout and the selection of all the necessary components also depends on the level of control accuracy that is sought. The tighter the tolerances of the control, the more precisely the components operate and the higher the reproducibility has to be. Tight tolerances for a control mean that the valve must be selected and designed very carefully:

- Exact calculation of the necessary minimum and maximum Kv value
- Design of the valve and the control fitting in line with this optimum control range
- Jolt-free actuator without slipping-sticking effect
- Long stroke distance, combined with small increase in cross-section at the valve seat
- How the valve controls depends on the design; for a shut-off function (close tight), an additional open/close valve may be required
- Selection of the right controller type and controller
- Precise coordination of process controller, positioner, valve, sensor system and measuring transducer

Basic terms relating to valve control

Open loop control

Control is to be understood as a process in which one or more process variables are influenced by one or more input variables of a system. The current state of the system is not normally taken into account. A control is an open action circuit without an automatic set-actual comparison. Faults are not detected by the system.

Example:
To fill a container with a constant drain, a valve – the positioning element – is opened. The filling level and the filling speed can be influenced by the position of the valve. When the desired filling level has been reached or the filling speed is to be changed, the valve must be actuated again. By monitoring the process over a certain period of time and repeatedly readjusting the valve position, it will be possible to keep the filling level constant after a certain time. However, this example works only if the process does not change.

Closed loop control

In a closed loop, the actual value and the controlled variable of a system are measured continuously and compared with the set value, the reference variable. This aims to ensure that the target variable is achieved and remains constant.

The difference between these two variables is the control difference or the control error. Depending on the measured difference, a positioning process is initiated to adapt the control difference to the reference variable. Regulation is therefore a closed loop process.

Example:
The fermentation of biomass is strongly influenced by the ambient conditions, as different bacterial groups favour certain temperature ranges. To optimize the gas return, a constant process temperature of between 50 and 57 °C should be maintained in the fermentation tanks. Disturbance variables, e.g. external temperature, can be compensated for through temperature control. Control action is consequently taken if the target variable is exceeded or fallen short of. This is a closed action path.

Discontinuous control

A process which takes place in several steps is known as discontinuous control. The correcting variable on the controller jumps back and forth between discrete values. Depending on how many states the correcting variable can adopt, it refers to two, three or multi-point controllers. A two-point controller has only two switching states, "OPEN" and "CLOSED".

Due to the erratic switching of the controller, the controlled variable fluctuates within a certain range around the set value. By installing energy stores and through the correct setting of time constants, the controlled variable can be kept constant without too great a fluctuation even in discontinuous control.
However, this also strongly depends on the controlled system to be designed, any disturbance variables and the selection of the positioning elements and sensors.

The fluctuation width of the controlled variable depends on different factors (e.g. reaction time of the control circuit, characteristic of the valve).

Closed loop control

Continuous controllers intervene continuously in the process and influence the positioning element accordingly. The positioning process runs permanently. The correcting variable of the controller can adopt any value within the given fluctuation width.

A sensor continuously measures the process variable and passes on the signal to the positioner. This compares it with the set value and influences the valve position accordingly.

Basic terms relating to valve control

Controlled variable x (actual value):
The variable to be controlled in a process is referred to as x. Controlled variables in plant engineering are, for example, temperature, pressure, flow, pH value, hardness.

Reference variable w (set value):
The reference variable indicates the value which the process variable should adopt. Its value in the form of an electrical variable (current or voltage), for example, is compared with the controlled variable x.

Control difference e = w-x
The control difference is the difference between the controlled variable and the reference variable. It is the input variable for the controlled element. The control error is exactly the same size as the control difference but with the inverse sign.

Correcting variable y
The correcting variable is the output variable of the controller and has a direct influence on the positioning element. It depends on the control parameters of the controller and the control error.

Disturbance variable z
Factors which have an undesirable influence on a process and therefore change the controlled variables are referred to as disturbance variables.

Positioning range yh
The correcting variable y of a controller is within the positioning range. This can be defined accordingly depending on the controller used.

Positioning element
The positioning element influences the process to match the controlled variable to the reference variable. Positioning elements in plant engineering are, for example, valves, pumps and heat transfer elements.

Controlled element
The controlled element creates the correcting variable from the control difference. The controlled element is part of the controller.

Dead zone
If a controlled variable only reacts to the changes at the positioning element after a certain time, we refer to controlled systems with dead zone. Examples of such controlled systems are compressible media pressure control or the continuing flow of a medium from a pipe into a container after a valve has been closed.

Energy store
Control processes may run with delays due to the energy stores occurring in every controlled system. This is clearly seen in heating processes in systems. Pipes, containers and valves also have to achieve a temperature increase. At the same time, the energy loss to the environment increases with rising Δt. Energy stores have a damping effect on the temperature rise in the system in this case.

Controlled systems are basically characterised by their time behaviour. This determines the effort and the accuracy with which a control task can be tackled.
The jump response of the controlled system is used to represent this system dynamic. The jump response shows how the controlled variable reacts to changes in the correcting variable. Controlled systems are divided into four basic types by their timing. At the same time, a distinction must be made between systems with compensation and systems without compensation. In systems with compensation, a new end value is set whilst systems without compensation do not achieve a new equilibrium.

P controlled systems

In P controlled systems, the controlled variable always changes proportionally to the correcting variable. Adaptation takes place without a time delay.

I controlled systems

An I controlled system exhibits an integral behaviour and has no compensation. The controlled system does not achieve an equilibrium if the correcting variable is not zero. The correcting variable changes continuously so that the controlled variable rises or falls permanently.

Systems with dead zone

In controlled systems with dead zone, the controlled variable only reacts to the positioning intervention after a certain delay. This frequently leads to oscillations, especially when the controlled variable and the correcting variable change periodically in relation to each other and offset to the dead zone. Dead zones are usually caused in the process sequence or in the plant design (lead times, lag times, positioning of the sensor, controller and positioning element, etc.). Many of these influential variables can be optimized by appropriate plant design for control-specific requirements. Everything else must be influenced by an appropriate design of the control circuit.

Systems with energy stores

Control processes may run with delays due to the use of energy stores occurring in every controlled system. This is clearly seen in heating processes in systems. Pipes, containers and valves also have to achieve a temperature increase. At the same time, the energy loss to the environment increases with rising Δt. Energy stores have a damping effect on the temperature change in this case. Compensation vessels and bladder accumulators in hydraulic systems, for example, have the same effect, they delay the change in pressure.

Whether and to what extent the energy stores influence the control dynamic is different in every system. It may be ignored in the design of the control circuit depending on the influence on the control circuit.

Complex controlled systems are usually a mixture of the four basic types above with and without compensation. For this reason, the most common positioners are also combinations of the types described above.

Basic terms relating to valve control

Controller selection and controller design

It is important to conduct an exact analysis of the controlled system in order to design the control circuit and its components. Make sure that valves are only assigned one function in a control circuit to guarantee perfect design and operation. The selection of the controller depends on the controlled system (integral or proportional), the delays and energy stores, the desired speed of the control and whether a remaining control error is acceptable.

The following brief characteristics can be used as a rough guideline:

- P controllers are used in easy to control systems in which a remaining control difference is acceptable.
- I controllers are suitable for systems with a low control dynamic. The systems should not contain any long delays.
- Proportional derivation controllers are suitable for systems with major delays in which a remaining control error is not a problem.
- PI controllers achieve a dynamic control behaviour. They can also be used for systems with delays.
- PID controllers are always used when the operating time of a PI controller is insufficient in systems with longer delays. PID controllers are the fastest and most accurate controllers for complex control tasks.

Controlled element	Control error	Actuating speed
P	permanent	fast
I	idle	slow
PD	permanent	very fast
PI	idle	fast
PID	idle	very fast

Control tasks

The following table gives you an initial idea of which controls are to be preferred for different applications. It is only a rough guide; every controlled system must be designed to meet the requirements of the actual plant.

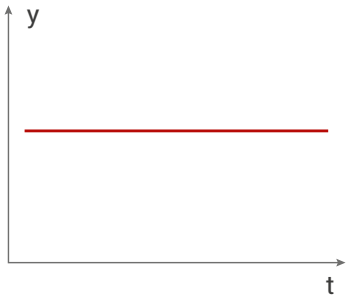
Application	Controller type		
	P	PI	PID
Pressure	○	●	●
Flow	–	●	○
Filling level	●	–	–
Temperature	○	●	●
pH value	○	●	●

● Very suitable
○ Conditionally suitable
– Not suitable

P controller

A P controller is a proportionally acting controller. The initial variable (correcting variable y) is always proportional to the control difference. P controllers respond very quickly and have an immediate positioning effect. but they have a permanent control difference between the reference variable and the controlled variable.

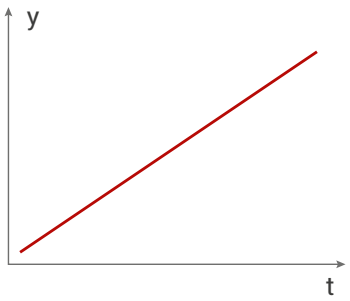
The proportional action factor Kp to be set on the controller influences the reaction of the controller to a control error. A large Kp leads to a stronger control intervention and lower control errors. Too high a proportional action factor can, however, lead to oscillations.



I controllers

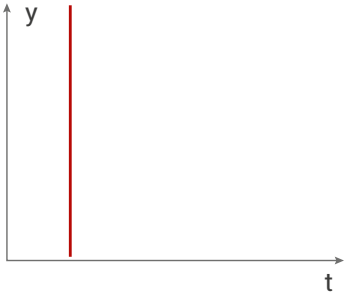
I controllers are integrally acting controllers. A proportional relation exists between control error and actuating speed. I controllers are slower than P controllers but eliminate the control difference completely. The I component in a controller therefore leads to an increase in the accuracy.

The speed of the controller depends on the integral action time Tn. The greater the integral action time, the slower the controller responds. This is because the correcting variable y only rises slowly. If too small an integral action time Tn is selected so that the controller reaches the specified reference variable faster, oscillations may occur.



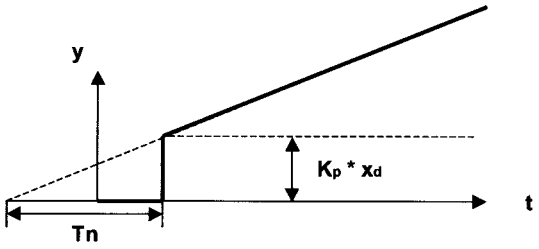
D controllers

D controllers are controllers with a differentiating action. D controllers only affect the speed with which the control difference changes. They therefore react very quickly independently of the control difference. High positioning amplitudes are achieved even at low control difference. It does not recognise a constant control error. D controllers are only used in practice in connection with P and I controllers.



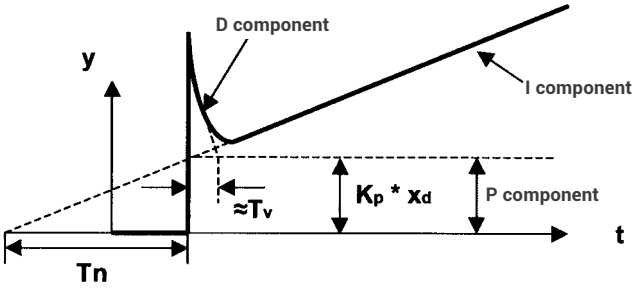
PI controllers

A P and an I controller are connected in parallel in a PI controller. It reacts very quickly and leads to a full control without remaining control error. The control behaviour is influenced by the proportional action factor Kp and the integral action time Tn. PI controllers are very variable in their control.



PID controller

In the PID controller, a D component is connected to the PI controller. This leads to faster transient oscillation of the control, i.e. reaching the idle state. PID controllers are particularly suitable for controlled systems with large energy stores, i.e. for higher order systems.



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