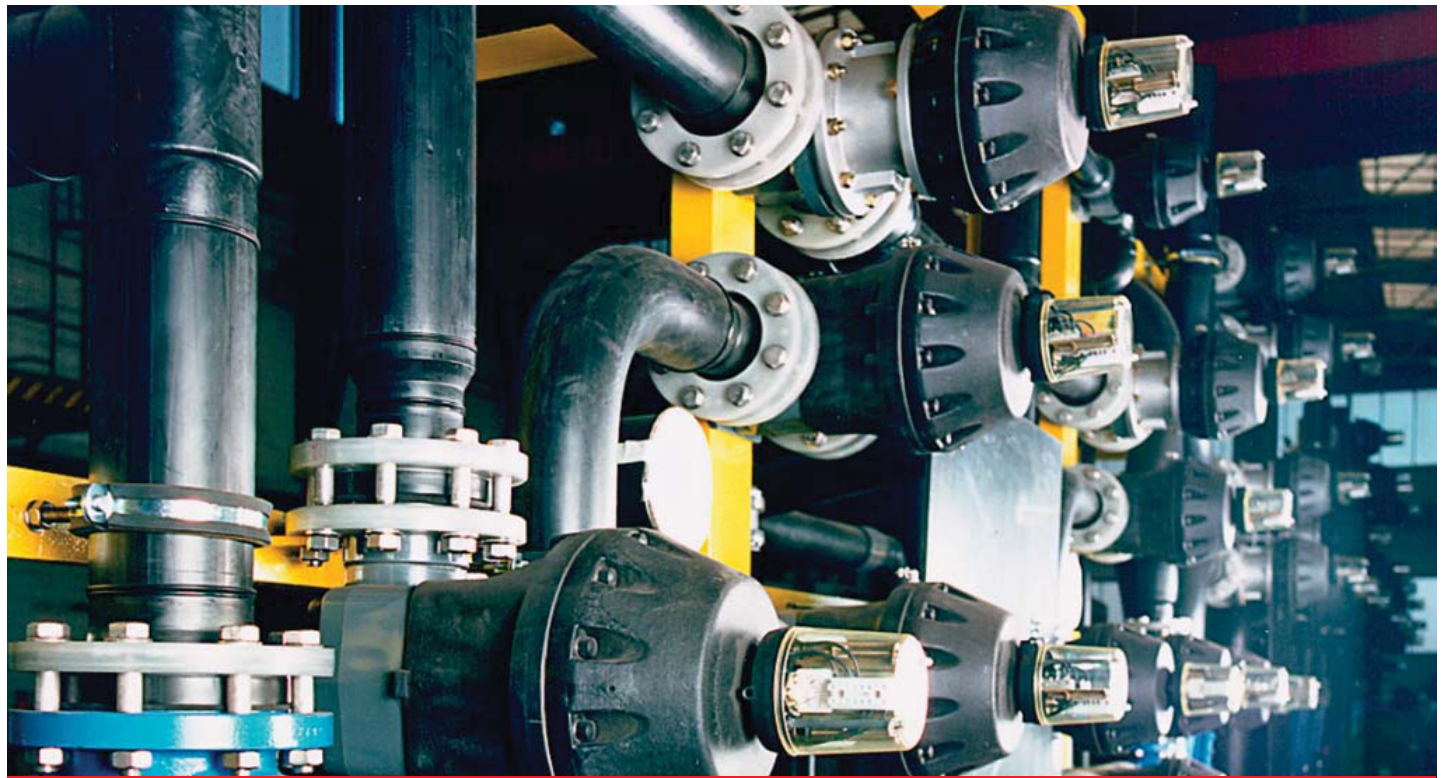


GEMU



**Industrial Metal
Diaphragm Valves**



The correct valve selection creates security

Within the various areas of application, valves are subject to widely different requirements. Chemical and physical properties of the working media have a direct influence on material selection of the components. Moreover, both mechanical and process-specific requirements have an immediate effect on the valve. To do justice to the given operating conditions on an individual basis, GEMÜ offers its customers a wide range of valve types as well as many material, connection and actuation options. Basically, the manufacturer's information and the interaction between the operating pressure / temperature must be taken into account.

GEMÜ is your valve and instrumentation partner. State-of-the-art factory equipment and machinery plus a motivated team ensure the best service. A world-wide network of distributors and sales subsidiaries guarantee that products and services reach you quickly and directly. We are constantly making investments in order to optimise our existing products and to develop new products. Thus we can provide technical solutions for individual applications.

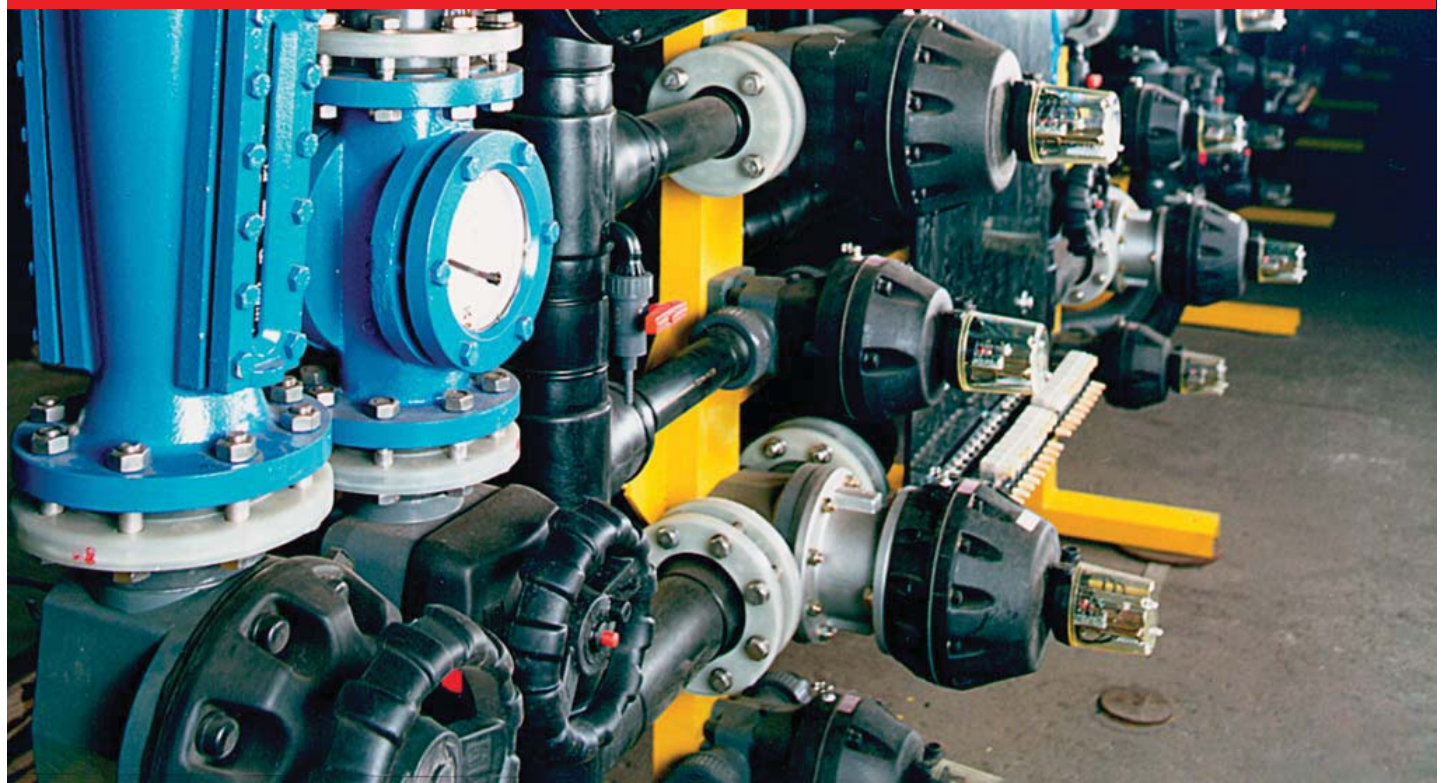


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The correct valve selection creates security

Weir-type diaphragm valves

Features

- Depending on diameter and materials of construction, up to 10 bar operating pressure and 150 °C operating temperature
- Good flow characteristics
- All mechanical components are located outside the media wetted area. The working medium only comes into contact with the inner valve body and diaphragm surfaces
- Suitable for higher cycle duties

Areas of use

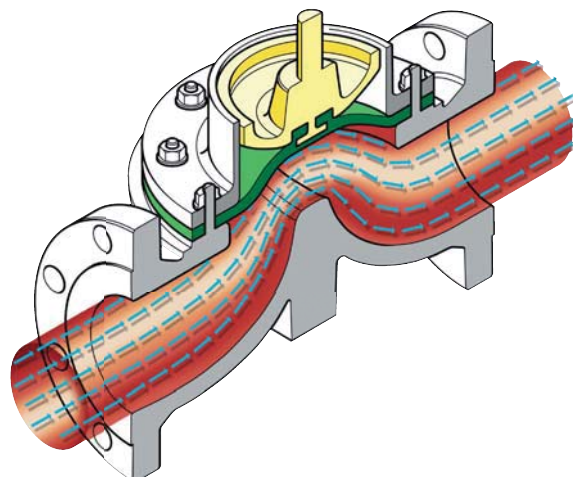
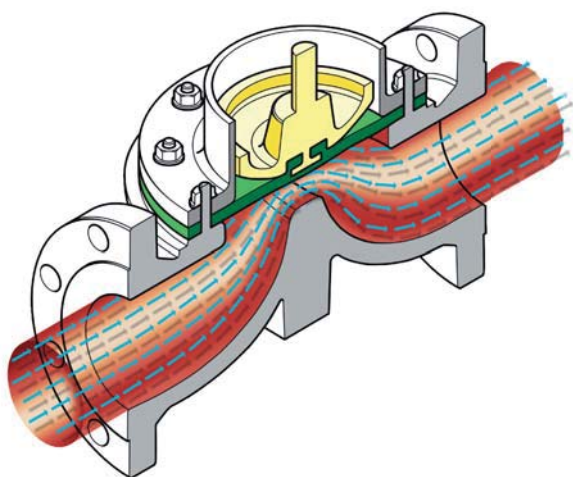
- Suitable for clean to heavily contaminated liquid, gaseous inert and corrosive media
- Slurries, powder and dust
- Abrasive media
- Controlling liquid media

Typical areas of application

- Waste water, sewage, sea water, cooling water, service water and drinking water treatment
- Woodpulp and paper manufacturing/processing
- Dyestuff and paint manufacturing / processing
- Gemstone and metal extraction and processing, mining
- Fertiliser production
- Preparation of / processing plaster, cement, sulphur and lime
- Brine and salt extraction
- Power plants
- Sewage clarification plants
- Dyeing
- Granulate manufacture
- Sugar production

Advantages

- Diaphragm can be exchanged with the valve in-line
- Requires no additional gaskets or gland packing
- Bubble-tight shut-off



Full bore diaphragm valves

Features

- Depending on diameter and materials of construction, up to 7 bar operating pressure and 100 °C operating temperature
- Very good flow characteristics
- All mechanical components are located outside the media wetted area. The working medium only comes into contact with the inner valve body and diaphragm surfaces

Areas of use

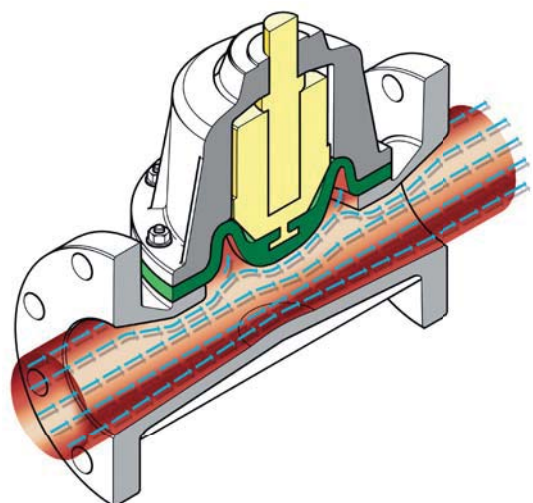
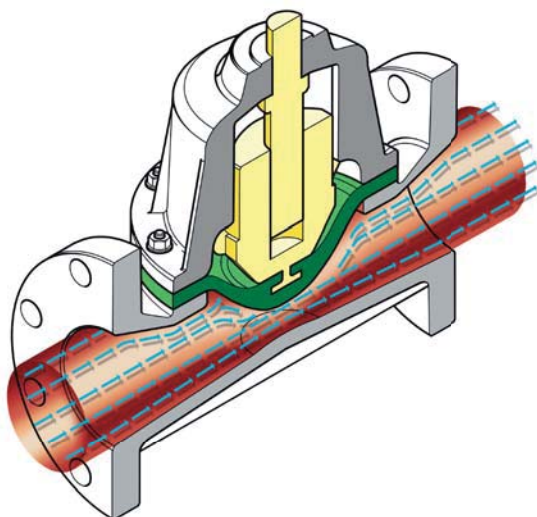
- Suitable for heavily and extremely contaminated liquid, inert and corrosive media
- Heavily contaminated waste water and slurries
- Granular materials
- Abrasive media

Typical areas of application

- Woodpulp and paper manufacturing/processing
- Gemstone and metal extraction and processing, mining
- Fertiliser production / phosphate processing
- Preparation of / processing plaster, cement, sulphur and lime
- Sewage clarification plants
- Granulate manufacture

Advantages

- Diaphragm can be exchanged with the valve in-line
- Requires no additional gaskets or gland packing



Weir-type diaphragm valves

Product overview

	manually operated			pneumatically operated	
					
Type	GEMÜ 675	GEMÜ 653	GEMÜ 671	GEMÜ 620	GEMÜ 687
Operator	Metal bonnet with metal handwheel, optical position indicator	Stainless steel bonnet with plastic handwheel, optical position indicator	Plastic bonnet with optical position indicator	Plastic/metal actuator with SG iron distance piece	Plastic actuator with stainless steel distance piece
Nominal size	DN 15 to 300	DN 15 to 100	DN 15 to 100	DN 15 to 150	DN 15 to 100
Connection type	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available
Valve body material *	EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, EN-GJS-500-7 (GGG 50) with PFA or PP lining	Stainless steel 1.4435, 1.4408, PFA lining available	Stainless steel 1.4435, 1.4408, EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining	EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, EN-GJS-500-7 (GGG 50) with PFA or PP lining	EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, stainless steel 1.4435, 1.4408, PFA lining available
Media temperature *	-10 to 150 °C	-10 to 150 °C	-10 to 80 °C	-10 to 150 °C	-10 to 150 °C
Operating pressure *	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar
Diaphragm material	NBR, FPM, CR, EPDM, PTFE	FPM, EPDM, PTFE	FPM, EPDM, PTFE	NBR, FPM, CR, EPDM, PTFE	FPM, EPDM, PTFE
Voltage	-	-	-	-	-

* dependent on diaphragm material and/or body material, ** other versions on request

Diaphragms

diaphragm sizes 10 - 300

choice of EPDM, FPM, CR, IIR, NBR



Valve bodies made of cast iron (GG 25)



Valve bodies made of stainless steel



pneumatically operated		motorized	
			
			
GEMÜ 695	GEMÜ 698	GEMÜ 648 SideStep®	GEMÜ 628
Plastic actuator	Plastic actuator with stainless steel distance piece, on/off	Plastic control actuator with optical position indicator	AUMA linear actuator for on/off and regulating duties
DN 15 to 50	DN 15 to 50	DN 15 to 100	DN 32 to 150
Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available	Threaded connections, flanges, different standards and designs available
EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, stainless steel 1.4435, 1.4408, PFA lining available	EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, stainless steel 1.4435, 1.4408, PFA lining available	EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, EN-GJS-500-7 (GGG 50) with PFA or PP lining	EN-GJL-250 (GG 25), EN-GJS-400-18-LT (GGG 40.3) with PFA, PP or hard rubber lining, EN-GJS-500-7 (GGG 50) with PFA or PP lining
-10 to 80 °C	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C
0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar
FPM, EPDM, PTFE	FPM, EPDM, PTFE	NBR, FPM, CR, EPDM, PTFE	NBR, FPM, CR, EPDM, PTFE
-	24 V DC, 120 V AC, 230 V AC 50/60Hz	24 V DC, 120 V AC, 230 VAC 50/60Hz	According to AUMA product range

Diaphragms

diaphragm sizes 10 - 200

PTFE/EPDM fully laminated, PTFE/EPDM two-layer, loose



Valve bodies made of SG iron (GGG 40.3) / ductile iron (GGG 50) and stainless steel, with lining



Halar coated

Hard rubber lined

PP lined

PFA lined

Stainless steel
PFA lined

Coated and lined bodies are only available with flange connections.

Weir-type diaphragm valves

Product overview

motorized



Type	GEMÜ 618
Operator	Compact plastic control actuator with optical position indicator
Nominal size	DN 4 to 20
Connection type	Threaded connections, different standards and designs available
Valve body material	Brass, stainless steel 1.4435, 1.4408
Media temperature *	-10 to 150 °C
Operating pressure *	0 to 10 bar
Diaphragm material	FPM, EPDM, PTFE
Voltage	24 VDC, 120 VAC, 230 VAC 50/60Hz

* dependent on diaphragm material and/or body material

Note:

For small nominal sizes types GEMÜ 601, 605, 611 and 615 are also available (refer to the respective datasheet for their designs).

Diaphragms

diaphragm sizes 8 - 10

choice of EPDM, FPM, PTFE

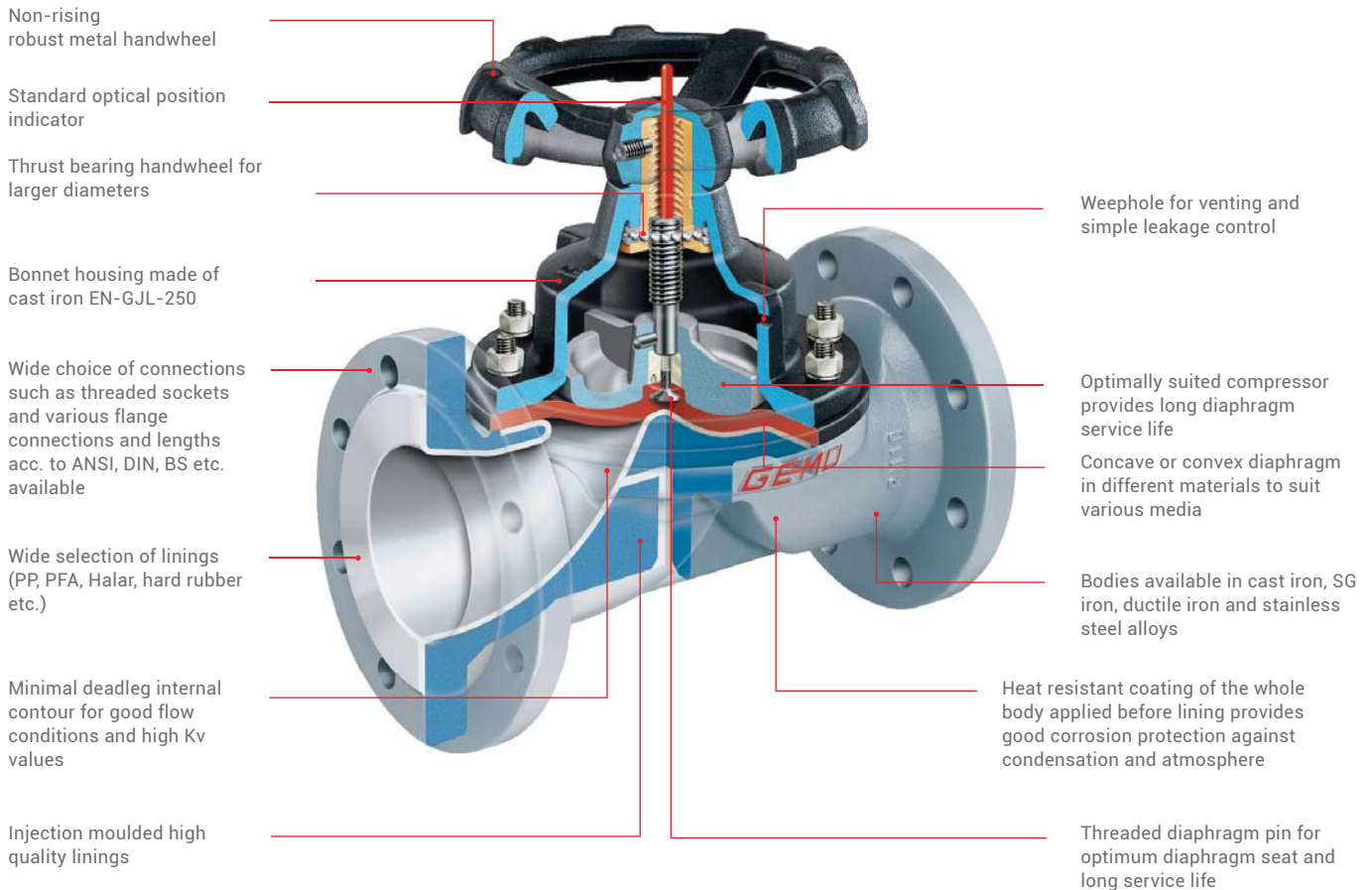


Valve bodies made of brass or stainless steel



GEMÜ 675

manually operated, DN 15 to 300



Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Various connections available
- Compact design for tight spaces



GEMÜ 653

manually operated, DN 15 to 100

Ergonomic, non-rising plastic handwheel made of glass fibre reinforced PPS

Various connections in ANSI and DIN available

Minimal deadleg internal contour for good flow conditions and high Kv values



Optical position indicator

Stainless steel bonnet for operating temperatures up to max. 150 °C

Concave or convex diaphragm in different materials to suit various media

Valve bodies in stainless steel and PFA lined stainless steel

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Surface finishes down to 0.25 µm, electropolished (for stainless steel version)
- Numerous options available: Seal adjuster, stroke limiter, handwheel clamp, lockable handwheel, mounting facility for proximity switches etc.

GEMÜ 671

manually operated, DN 15 to 100

Option: lockable handwheel

Optical position indicator

Ergonomic, non-rising plastic handwheel made of PP

Robust plastic bonnet made of PP, high chemical resistance

Wide choice of connections such as threaded sockets and various flange connections in ANSI, DIN, etc. available

Concave or convex diaphragm in different materials to suit various media

Minimal deadleg internal contour for good flow conditions and high Kv values

Bodies available in cast iron, SG iron (with various linings) and stainless steel alloys

Operating temperature: max. 80 °C

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of bonnet
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces



GEMÜ 620

pneumatically operated, DN 15 to 150

Connection thread for positioners and accessories

Variable spring sets for optimum adaptation to various operating pressures

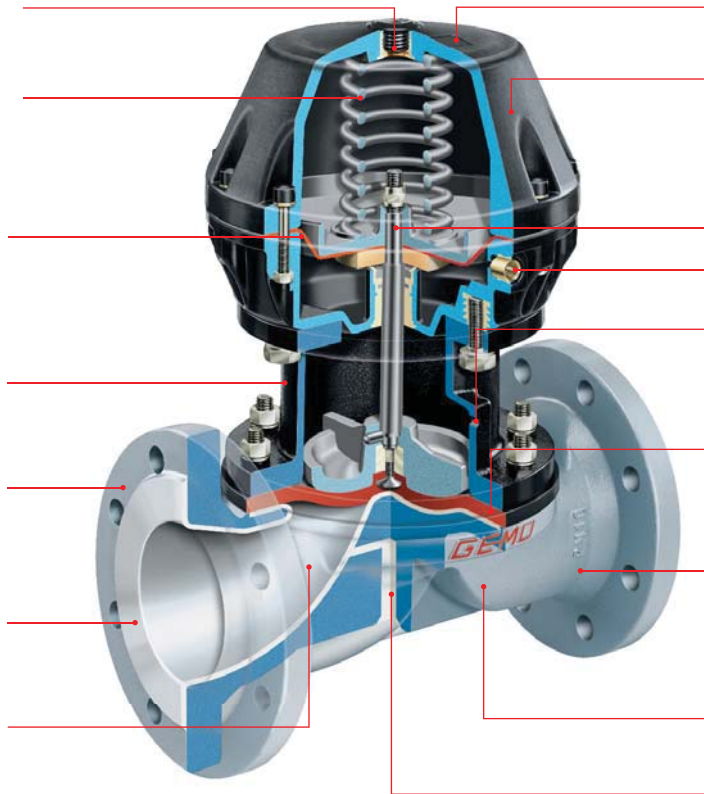
Long life actuator membrane with optimised support

SG iron distance piece for operating temperatures up to max. 150 °C

Wide choice of connections such as threaded sockets and various flange connections and lengths in ANSI, DIN, BS etc. available

Wide selection of linings (PP, PFA, Halar, hard rubber etc.)

Minimal deadleg internal contour for good flow conditions and high Kv values



Robust plastic or metal housing

Actuator available in 3 control functions:
- Normally closed (NC)
- Normally open (NO)
- Double acting (DA)

Roller burnished valve spindle

Control air connector G $\frac{1}{4}$

Weephole for venting and simple leakage control

Concave or convex diaphragm in different materials to suit various media

Heat resistant coating of the whole body applied before lining provides good corrosion protection against condensation and atmosphere

Bodies available in cast iron, SG iron and ductile iron

Injection moulded high quality linings

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Versions according to ATEX on request



GEMÜ 620, DN 100, with directly mounted GEMÜ 1435 ePos positioner

GEMÜ 687

pneumatically operated, DN 15 to 150

Connection thread for
positioners and accessories

Variable spring sets for
optimum adaptation to various
operating pressures

Long life actuator membrane
with optimized support

Stainless steel distance piece
for operating temperatures up
to max. 150 °C

Wide choice of connections
such as threaded sockets and
various flange connections
and lengths in ANSI, DIN, BS
etc. available

Wide selection of linings (PP,
PFA, hard rubber etc.)

Minimal deadleg internal contour
for good flow conditions and
high Kv values

Robust plastic housing

Actuator available in
3 control functions:
- Normally closed (NC)
- Normally open (NO)
- Double acting (DA)

Control air connector G $\frac{1}{4}$

Weephole for venting and
simple leakage control

Concave or convex diaphragm
in different materials to suit
various media

Heat resistant coating of the whole
body (only SG iron) applied before
lining provides good corrosion
protection against condensate and
atmosphere

Bodies available in SG iron and
stainless steel alloys

Injection moulded high quality
linings



Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of actuator
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Various connections available
- Surface finishes down to 0.25 µm, electropolished (for stainless steel version)
- Versions according to ATEX on request



GEMÜ 695

pneumatically operated, DN 15 to 150

Connection thread for
positioners and accessories

Variable spring sets for
optimum adaptation to various
operating pressures

Long life actuator membrane
with optimized support

Wide choice of connections
such as threaded sockets and
various flange connections in
ANSI, DIN, etc. available

Minimal deadleg internal contour
for good flow conditions and
high Kv values

Operating temperature: max. 80 °C

Robust plastic housing

Actuator available
in 3 control functions:
- Normally closed (NC)
- Normally open (NO)
- Double acting (DA)

Control air connector for control
function "Normally closed" (NC)

Concave or convex diaphragm in
different materials to suit various
media

Bodies available in cast iron, SG
iron and stainless steel alloys,
optionally with plastic lining, for
SG iron bodies further linings are
available

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Surface finishes down to 0.25 µm, electropolished (for stainless steel version)
- Versions according to ATEX on request



GEMÜ 695, DN 50,
with remotely
mounted
GEMÜ 1436 cPos
positioner

GEMÜ 698

motorized, DN 15 to 50

Optical position indicator

Limit switch for valve stroke limitation

Stainless steel distance piece for operating temperatures up to max. 150 °C

Wide choice of connections such as threaded sockets and various flange connections and lengths in ANSI, DIN, BS etc. available

Injection moulded high quality linings

Minimal deadleg internal contour for good flow conditions and high Kv values

Weephole for venting and simple leakage control

Concave or convex diaphragm in different materials to suit various media

Heat resistant coating of the whole body (only SG iron) applied before lining provides good corrosion protection against condensate and atmosphere

Bodies available in cast iron, SG iron and stainless steel alloys, optionally with plastic lining, for SG iron bodies further linings are available

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of actuator
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- The valve stroke can be limited by adjustable limit switches
- Suitable for use as a control valve (with GEMÜ 1283)



GEMÜ 648 SideStep

motorized, DN 15 to 100

Optical position indicator

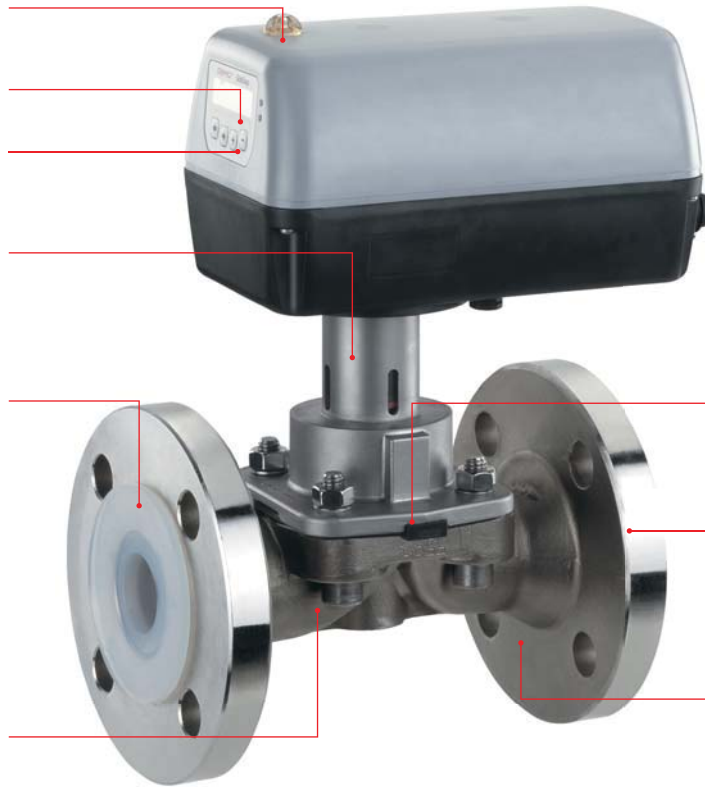
Plain text display

Operating keys

Stainless steel distance piece 1.4301 for operating temperatures up to 150 °C

Injection moulded high quality linings

Minimal deadleg internal contour for good flow conditions and high Kv values



- Torque limitation
- Electronic limitation of opening and closing stroke
- Option: Integrated emergency power supply module
- Fieldbus interface
- e.sy-com interface for Bluetooth connection

Concave or convex diaphragm in different materials to suit various media

Heat resistant coating of the whole body (only SG iron) applied before lining provides good corrosion protection against condensate and atmosphere

Bodies available in cast iron, SG iron and stainless steel alloys, optionally with plastic lining, for SG iron bodies further linings are available

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Open/Close function or control version
- Actuating speed and control parameters easily adjustable
- Optimised initialisation and valve control
- Parameterisation during operation
- Torque limitation
- Electronic limitation of opening and closing stroke
- Positioner and process controller are synchronised with each other
- Optional integrated emergency power supply module with selectable fail-safe condition
- Setting of functions via display

Features of the different actuator versions			
Features	SideStep economy Open/Close control	SideStep industrial Open/Close control	SideStep industrial control system
	Code A	Code C, D	Code S, T, P, R
2-line display	-	•	•
Automatic initialisation	•	•	•
4 fascia keys	•	•	•
Position indication by LED	•	•	•
Operating indication by LED	•	-	-
e.SY-com interface	-	•	•
Axial force (adjustable)	-	•	•
Actuating speed (adjustable)	-	•	•
Option Profibus	-	•	•
Positioner	-	-	•
Option process controller	-	-	•
Option digital inputs	-	•	•
Extended diagnostic facilities	-	•	•
Alarm outputs (adjustable)	-	•	•
Analogue output	-	-	•
Min / Max position (adjustable)	-	-	•



GEMÜ 628

motorized, DN 32 to 150

Electric motor

Control unit

Gearbox

Manual override

Wide choice of connections such as threaded sockets and various flange connections and lengths in ANSI, DIN, BS etc. available

Linear thrust unit

Wide selection of linings (PP, PFA, Halar, hard rubber etc.)

Actuator adapter

Injection moulded high quality linings

Heat resistant coating of the whole body applied before lining provides good corrosion protection against condensation and atmosphere

Minimal deadleg internal contour for good flow conditions and high Kv values

Concave or convex diaphragm in different materials to suit various media

Bodies available in cast iron, SG iron and ductile iron

All versions of the AUMA actuators (SA 07.2/SA 07.6), as well as associated control systems are available. Other types on request.

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Valve bodies and diaphragms available in various materials and designs
- Motorized actuators for on/off and regulating duties, including various control units can be supplied
- Various actuator versions are available according to the AUMA product range

Full bore diaphragm valves

Product overview

	manually operated	pneumatically operated	motorized
			
Type	GEMÜ 655	GEMÜ 656	GEMÜ 638
Operator	Metal bonnet with metal handwheel	Metal actuator with SG iron metal distance piece	AUMA linear actuator for on/off and regulating duties
Nominal size	DN 25 to 300	DN 25 to 250	DN 25 to 150
Connection type	Various flanges acc. to EN and ANSI, lengths acc. to EN and MSS	Various flanges acc. to EN and ANSI, lengths acc. to EN and MSS	Various flanges acc. to EN and ANSI, lengths acc. to EN and MSS
Valve body material	EN-GJL-250 (GG 25), EN-GJL-250 (GG 25) with hard and soft rubber lining	EN-GJL-250 (GG 25), EN-GJL-250 (GG 25) with hard and soft rubber lining	EN-GJL-250 (GG 25), EN-GJL-250 (GG 25) with hard and soft rubber lining
Media temperature *	-10 to 100 °C	-10 to 100 °C	-10 to 100 °C
Operating pressure **	0 to 7 bar	0 to 7 bar	0 to 7 bar
Diaphragm material	NBR, IIR, CR, NR, EPDM	NBR, IIR, CR, NR, EPDM	NBR, IIR, CR, EPDM
Voltage	-	-	According to AUMA product range

* dependent on diaphragm material

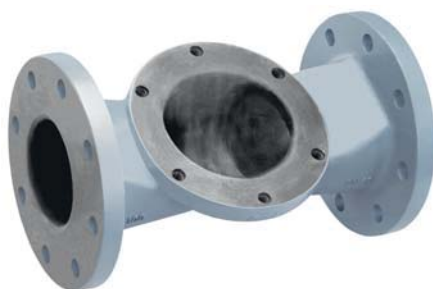
Diaphragm

choice of NBR, IIR, CR, EPDM



Valve body made of cast iron

with DIN or ANSI flanges, length EN 558, series 7



Valve body made of cast iron

with hard rubber lining, with DIN or ANSI flanges, length EN 558, series 7



GEMÜ 655

manually operated, DN 25 to 300

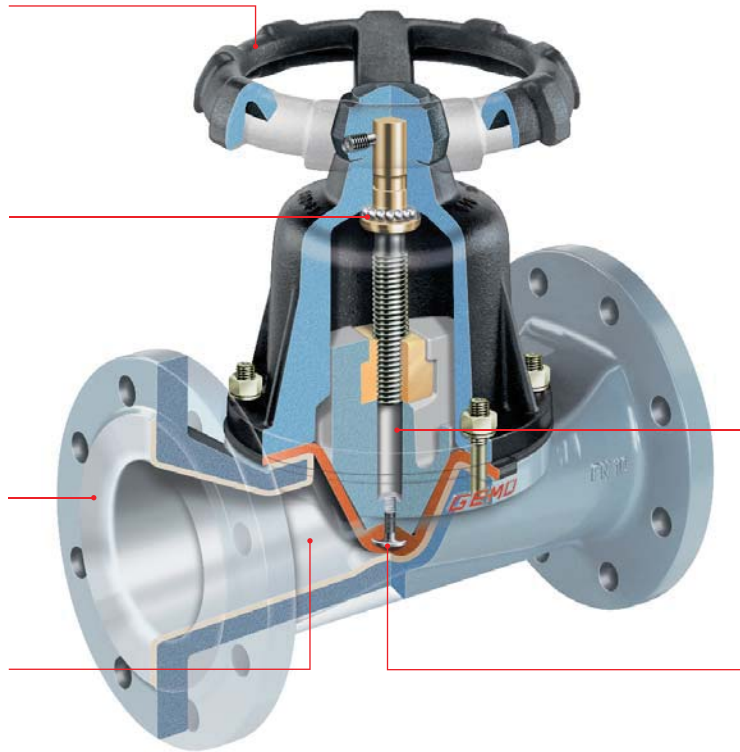
Non-rising
robust metal handwheel

Thrust bearing handwheel for
larger diameters

Body available with
hard or soft rubber lining

Minimal deadleg internal contour
for good flow conditions and high
Kv values. Particularly suitable
for media with a high solid matter
content.

Operating temperature: max. 100 °C, depending on version
Operating pressure: max. 7 bar, depending on version (no vacuum applications)



Optimally suited compressor

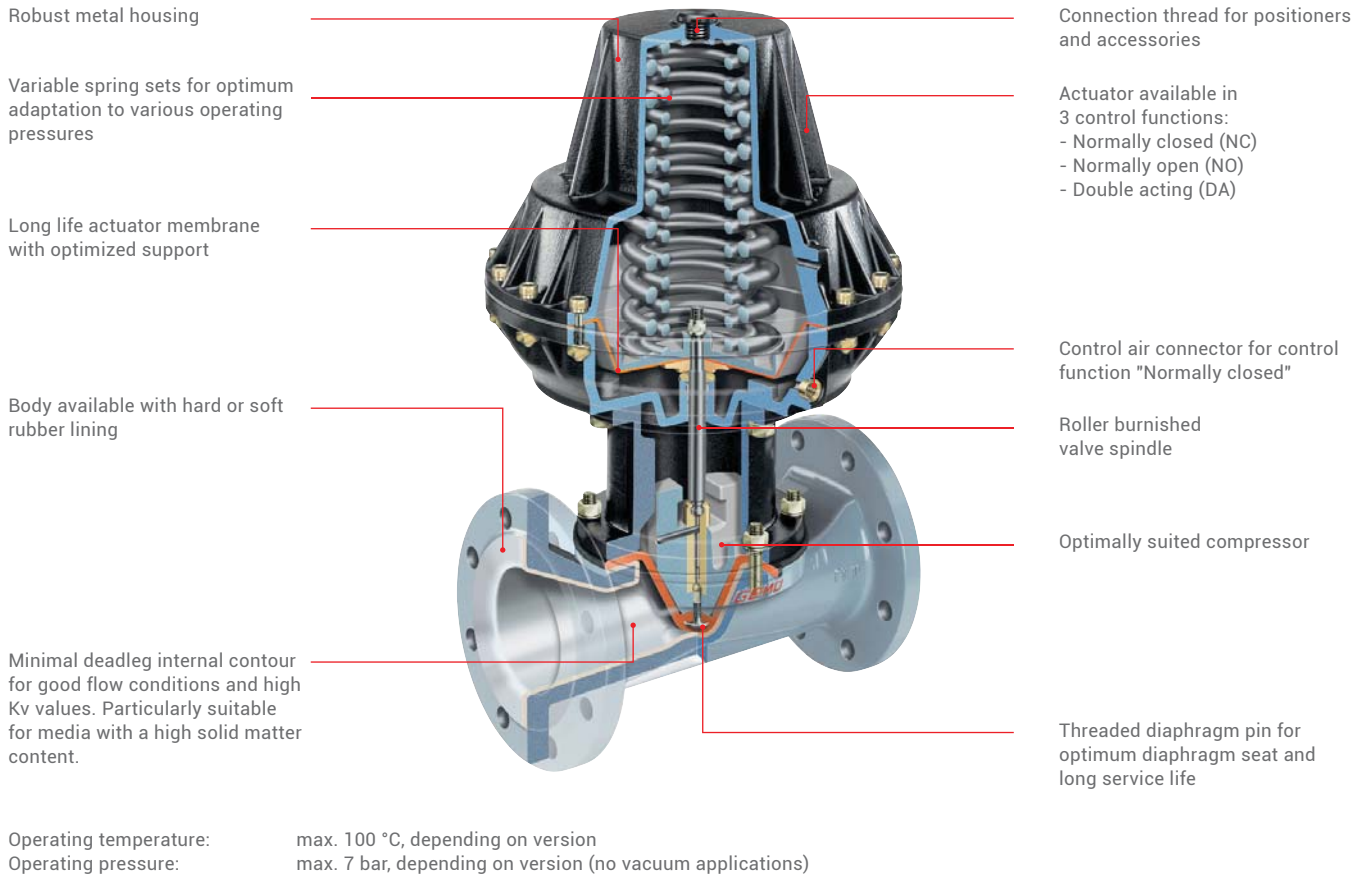
Threaded diaphragm pin for
optimum diaphragm seat and
long service life

Features

- With rubber lining, suitable for applications with particulate media, e.g.:
 - Mining
 - Paper and woodpulp industry
 - Water treatment
 - Ceramics industry
 - Chemical industry and dyestuff industry
- Valve bodies and diaphragms available in various materials and designs

GEMÜ 656

pneumatically operated, DN 25 to 250



Features

- With rubber lining, particularly suitable for applications with particulate media, e.g.:
 - Mining
 - Paper and woodpulp industry
 - Water treatment
 - Ceramics industry
 - Chemical industry and dyestuff industry
- Valve bodies and diaphragms available in various materials and designs

GEMÜ 638

motorized, DN 25 to 150

Electric motor

Control unit

Gearbox

Manual override

Linear thrust unit

Actuator adapter

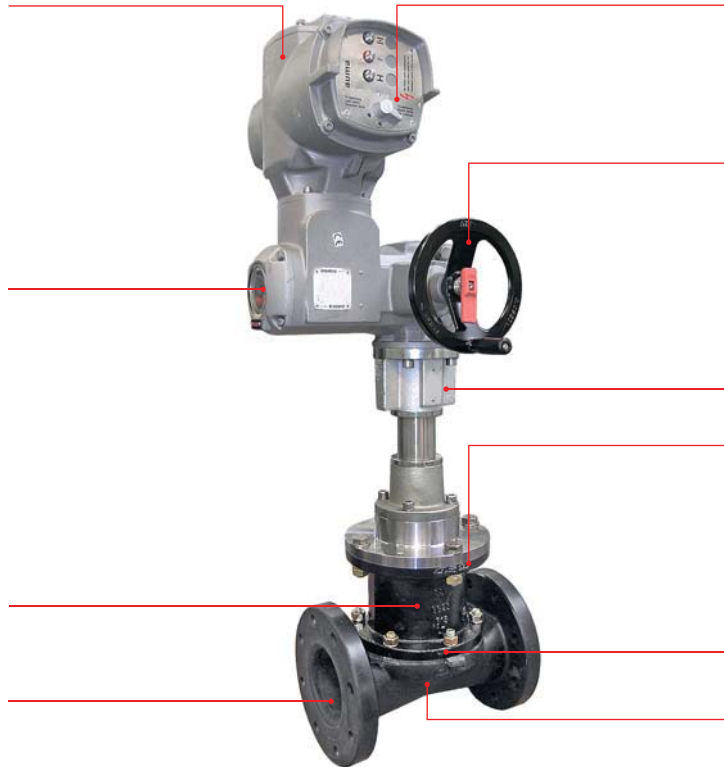
Threaded diaphragm pin for optimum diaphragm seat and long service life

Optimally suited compressor

Body available with hard or soft rubber lining

Minimal deadleg internal contour for good flow conditions and high Kv values. Particularly suitable for media with a high solid matter content.

Operating temperature: max. 100 °C, depending on version
Operating pressure: max. 7 bar, depending on version (no vacuum applications)



Features

- With rubber lining, particularly suitable for applications with particulate media, e.g.:
 - Mining
 - Desulphurisation plants
 - Paper and woodpulp industry
 - Water treatment
 - Ceramics industry
 - Chemical industry and dyestuff industry
- Valve bodies and diaphragms available in various materials and designs
- Motorized actuators for on/off and regulating duties, including various control units can be supplied
- No auxiliary air pressure supply required

Lined GEMÜ valve bodies

There is no other area in which the demands on valve bodies are as varied as in industrial applications. General experience and application experience over the course of several decades have been applied to our valve designs. This experience is the design and material selection benchmark. Our special manufacturing processes and sophisticated coordination of production materials make GEMÜ valve bodies a lasting, high-quality application solution.

- GEMÜ valve bodies are only manufactured from high-quality materials
- Individual inspection ensures a high degree of user safety
- Only selected, certified foundries supply our metal bodies
- GEMÜ itself manufactures the injection moulding tools for the plastic material linings
- GEMÜ injects the valve body linings subject to strict quality controls, e.g. spark testing
- Injection moulding is made at a central point below the valve weir, preventing the plastic layer from detaching in vacuum operation
- At the pipe connections, the metal/plastic material transition is designed so that the liner is fixed axially and no stress damage can occur as a result of heat expansion
- A temperature resistant coating on the metal bodies provides corrosion protection even underneath the lining

Coating:

- Metal, paint or synthetic powder coating
- Coating applied by galvanisation, painting or immersion/enamelling
- Thin coating, less material coating
- Coating materials e.g. zinc, chrome, epoxy-phenol resin, nylon, fluoroplastics
- Preferred application:
Simple corrosion protection for slightly corrosive media

Lining/Injection moulding:

- Fluid thermoplastics and elastomers are injected with an extruder into the metal body and metal injection tools. The lining thickness can be defined exactly, thus maintaining consistent high quality
- The injection moulding materials are most often polypropylene (PP) and fluoroplastics (PVDF and PFA) as well as hard rubber
- Preferred application:
Corrosive and highly corrosive media such as those in the chemical industry



Areas of use

for valve body materials and diaphragms

Valve body material	Areas of use	Temperature range
Cast iron	General industrial applications, water, alkaline and inert media, gas and oil	limited by diaphragm material
Cast iron with Halar lining (ECTFE)	Very suitable for strong mineral acids, oxidative acids and alkalis. Should not be used for particulate and abrasive media.	limited by diaphragm material
Cast iron and SG iron with IIR lining (Butyl)	Good resistance to diluted inorganic acids, alkalis and saline solutions. Good weather resistance and very suitable for water and ozone. Low gas permeability. Unsuitable for oils and hydrocarbons.	limited by diaphragm material
Cast iron with CR lining (chloroprene rubber)	Resistant to various chemicals, diluted solutions of inorganic acids, alkalis and salts. Ozone and weather resistant. Very suitable for abrasive media. Not resistant to aromatic hydrocarbons.	-10 to 100 °C
SG iron	General industrial applications, water, alkaline and inert media, gas and oil	limited by diaphragm material
Cast iron and SG iron with hard rubber lining	Can be used for weak acids, waste water, brine, water treatment and cleaning, surface finishing, pickling and galvanising, sodium hydroxide, sodium chloride	limited by diaphragm material
SG iron or ductile iron with PP lining	Can be used for acids, waste water, brine, water treatment and cleaning, surface finishing, pickling and galvanising	-10 to 80 °C
SG iron or ductile iron with PFA lining	Very suitable for strong mineral, oxidative and inorganic acids. Resistant to bases, halogens, metal salts, organic acids, hydrocarbons, alcohols and aldehydes, ketones, ester and ammonia. PFA also has a higher resistance than other lining materials at higher temperatures.	limited by diaphragm material
Stainless steel 1.4408	Can be used for pure media with limited aggressive chemicals and environments	limited by diaphragm material
Stainless steel 1.4435	Can be used for pure media, meets the requirements of the pharmaceutical and food industry as well as biotechnology, resistance to aggressive fluids for the external cleaning of the valves	limited by diaphragm material
Stainless steel 1.4408 with PFA lining	See SG iron with PFA lining. An additional advantage is the resistance of the valve body to an aggressive environment	limited by diaphragm material

The temperature data are recommendations for the material and refer to water above freezing point. The actual application temperatures of the valves depend on the working medium, the operating pressure, the nominal size, the diaphragms and the actuator. The plant operator is responsible for careful selection of valves and materials for their processes.

Areas of use	Medium*	Valve body material	Diaphragm material
Aluminium oxide manufacture	Thick slurries* with 50% caustic soda or 10% sulphuric acid	Cast iron/SG iron with soft rubber (Butyl) or hard rubber lining.	Butyl
	Industrial water, light slurries or treated water	Cast iron/SG iron or with soft rubber (Butyl)	Butyl
Steelworks, metalwork, pickling and surface treatment	Chromic acid (H_2CrO_4)	Cast iron or SG iron with ECTFE or PFA lining	PTFE
	Caustic soda rinse (NaOH)	Cast iron, SG iron or ductile iron with PP or hard rubber lining	EPDM, PTFE
	Hydrochloric acid solution (HCl), iron chloride ($FeCl_3$), contaminated solution	Cast iron or SG iron with ECTFE or PFA lining	PTFE, FPM/FKM
	Hydrochloric acid (HCl), sulphuric acid (H_2SO_4)	Cast iron or SG iron with ECTFE or PFA lining	PTFE
	Hydrochloric acid (HCl) regeneration	Cast iron or SG iron with ECTFE or PFA lining	PTFE
Fertiliser industry/ phosphate production/ phosphoric acid manufacture	Acidulated gypsum*	Cast iron, SG iron or ductile iron with Butyl or Neoprene lining	Butyl, EPDM, CR
	Phosphoric acid* (H_3PO_4)	Cast iron/SG iron with hard rubber, Butyl or Neoprene lining	Butyl, EPDM, CR
	Process slurry* ($CaSO_4$)	Cast iron, SG iron or ductile iron with Butyl or Neoprene lining	Butyl, EPDM, CR
	Pure phosphoric acid (H_3PO_4 85%)	Cast iron or SG iron with ECTFE or PFA lining	PTFE
	Sulphuric acid (H_2SO_4)	Cast iron or SG iron with ECTFE or PFA lining	PTFE
Mining, ore processing and hydrometallurgy gold/platinum/silver/zinc	Highly abrasive slurries* and slightly corrosive media	Cast iron, SG iron with soft rubber lining	CR, Butyl, EPDM, natural rubber
	Highly corrosive media	Cast iron or SG iron with ECTFE or PFA lining	PTFE
	Industrial water, treated water, slightly abrasive slurries	Cast iron, SG iron with soft rubber lining	EPDM, Butyl, CR, natural rubber
Copper mining and processing, hydrometallurgy, electrolysis	Abrasive, corrosive media*	Cast iron or SG iron with soft rubber lining or stainless steel	CR, Butyl, EPDM, natural rubber
	Highly corrosive media	Cast iron or SG iron with ECTFE or PFA lining	PTFE
Nickel ore processing	Nickel slurry*	Stainless steel 1.4408 (AISI 316)	CR
	Nickel-sulphate ($NiSO_4$)	Stainless steel 1.4408, (AISI 316) / 1.4435 (AISI 316L)	PTFE
Soda/chlorine manufacture	Chlorine brine ($NaCl$ mit Cl_2)	Cast iron or SG iron with ECTFE, hard rubber or PFA lining	PTFE, FPM/FKM
	Sodium chloride lye ($NaCl$)	Cast iron, SG iron or ductile iron, with PP, hard rubber or PFA lining	CR, EPDM
	Sodium hypochloride ($NaOCl$)	Cast iron or SG iron with ECTFE, hard rubber or PFA lining	PTFE, EPDM
	Caustic soda (NaOH)	Cast iron, SG iron or ductile iron with PP or hard rubber lining	CR, EPDM
	Hydrochloric acid (HCl)	Cast iron, SG iron or ductile iron, with PP, hard rubber or PFA lining	PTFE, EPDM
Titanium ore processing, titanium dioxide manufacture for the paint, paper and plastic industry	Titanium dioxide slurry*	Cast iron, SG iron with hard rubber, Butyl or Hypalon lining	Butyl

Areas of use

for valve body materials and diaphragms

Areas of use	Medium*	Valve body material	Diaphragm material
Water treatment	Aluminium sulphate ($\text{Al}_2(\text{SO}_4)_3$)	Cast iron, SG iron or ductile iron with PP or hard rubber lining	EPDM, Butyl
	Ferric trichloride (FeCl_3)	Cast iron, SG iron or ductile iron, with PP, hard rubber or PFA lining	Butyl, EPDM
	Caustic soda (NaOH) diluted or concentrate	SG iron or ductile iron with PP or PFA lining	EPDM, CR
	Hydrochloric acid (HCl) 10% and 30% concentration	Cast iron or SG iron with PP, ECTFE or PFA lining	FPM, PTFE
	Fully desalinated water	Cast iron, SG iron or ductile iron, with PP, hard rubber or PFA lining	EPDM, CR
	Water in general (H_2O)	Cast iron, SG iron with hard rubber lining	EPDM, CR
Cellulose, paper	Chlorine oxides and sodium chlorates (Cl)	Cast iron or SG iron with ECTFE or PFA lining	PTFE
	Dyes	Cast iron or SG iron with ECTFE or PFA lining	CR, EPDM
	Hydrogen peroxide (H_2O_2)	Stainless steel	EPDM
	Kaolin slurry	Cast iron, SG iron with Neoprene or Butyl lining	CR, EPDM
	Sodium hypochloride (NaOCl)	Cast iron or SG iron with ECTFE or hard rubber lining	EPDM
	Caustic soda (NaOH)	Cast iron, SG iron or ductile iron with PP or hard rubber lining	CR, EPDM, PTFE
Cement industry	Industrial water, treated water with cement residue	Cast iron, SG iron with hard rubber lining	CR, Butyl, EPDM
	Cement slurry*	Cast iron, SG iron with natural rubber lining	Natural rubber
Sugar and alcohol industry	Filtering, cleaning and demineralisation	SG iron or ductile iron with PFA lining (to avoid fluoride contamination and corrosion)	PTFE
	Sugar slurry, sugar solution, syrup	Hard rubber lining	CR

The applications listed above refer to experience of our customers who have had positive experience with them in their plant.

The suitability of the materials depends primarily on the process parameters and the manufacturing method used.

* Full bore diaphragm valves can be used with a high percentage of solids and low cycle duties.

The plant operator is responsible for careful selection of valves and materials for their processes.

Selection of diaphragms

Each application must be analysed before the selection of the diaphragm material. Since the most varied operating conditions often prevail within a plant at different locations, it can be necessary to use different valves and materials. In particular, the chemical characteristics and the temperature of the working media often lead to different interactions. The suitability of the materials used must therefore always be examined individually with regard to the current resistance list or checked by an authorised specialist. Only this procedure guarantees that the application will operate safely and economically for a longer period.

Diaphragms are wearing parts. They need to be regularly inspected and replaced otherwise malfunctions can occur, possibly resulting in hazardous situations.

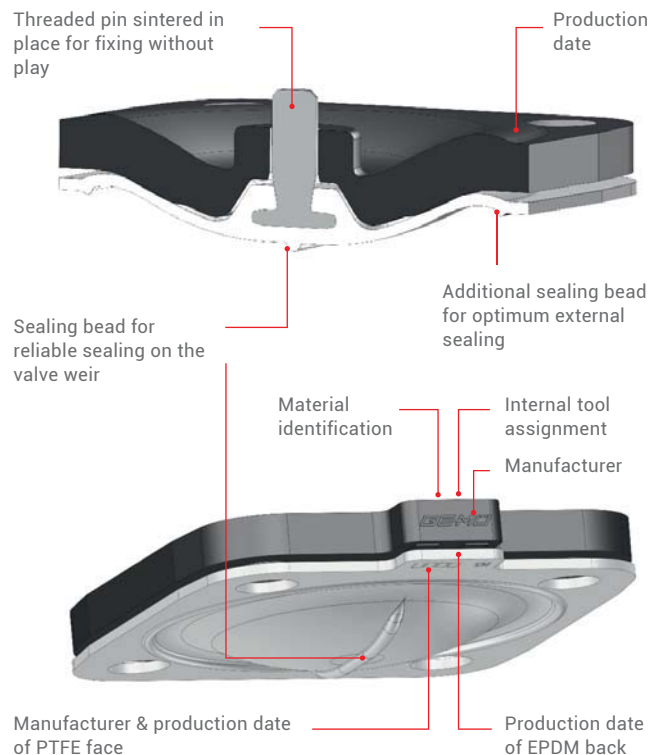
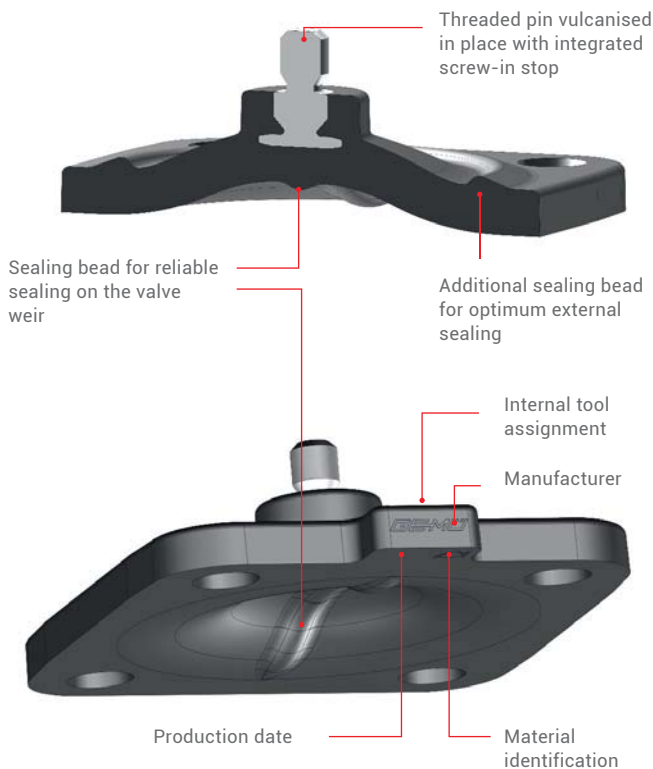
Please note: The maintenance intervals for inspecting and replacing diaphragms are application-dependent. In order to determine a suitable maintenance interval, the maintenance history and the stresses placed on the parts due to frequent sterilisation or frequent cycle duties must be taken into account.

Note

Since plastics and elastomers are subject to natural aging, we recommend observing the GEMÜ storage conditions for shut-off diaphragms. You thereby guarantee maximum storage and service life of the diaphragms.

The specified temperatures (see page 30) are merely the permissible temperature ranges for the respective diaphragm. The permissible temperature ranges of the valve must always be taken into account for the overall valve design. These can be found in the respective datasheets.

The temperature values are indicated irrespective of operating pressure and diaphragm size and apply to water and/or inert gases. The permissible operating pressure decreases with rising temperature and nominal size. Only specially designated diaphragms should be used for steam. The permissible operating pressure results from the general steam pressure diagram. We will be pleased to provide you with the GEMÜ steam pressure diagram on request.



The marking of the diaphragm may vary depending on the manufacturer.

GEMÜ diaphragms

Soft elastomer

Soft elastomer diaphragms consist of EPDM rubber mixtures, which are peroxidically cross-linked (vulcanised) with each other. The diaphragms are provided with different technical features according to the mixture used, the duration of the cross-linking process, the vulcanisation temperature as well as the vulcanisation pressure. The following statement applies in principle to soft elastomer materials: the higher the temperature load capability, the lower the service life is in relationship to the mechanical stress. Therefore both the temperature load and the deformability of diaphragms must be optimally adjusted

to the application. Different constructional designs are available to achieve this. Soft elastomer diaphragms are characterised by a high insensitivity in the case of mechanically contaminated working media, e.g. cellular lumps, solid matter or catalytic solid matter. Slurries usually do not affect the function of the valve or the seal on the valve weir. Different EPDM rubber mixtures can be selected according to the operating/sterilisation temperatures and the chemical characteristics of the working media.



Diaphragm sizes 10 - 300

GEMÜ diaphragms

PTFE

The GEMÜ PTFE/EPDM diaphragms comprise a PTFE face and an EPDM back. These two components are either firmly (Code 5A/52) or flexibly (Code 5E) connected with each other.

The flexible PTFE diaphragm unites all the advantages of PTFE with the flexibility of elastomer diaphragms in one product. In order to optimise the entire system again, both the PTFE face as well as the diaphragm back are compounded for GEMÜ and produced by GEMÜ in house.

Features

- Special compounding and production by the GEMÜ Group
- High chemical resistance due to PTFE face
- Defined assembly due to sintered (Code 5E) or vulcanised (Code 5A/52) threaded pin with integrated screw-in stop

Technical data and features

- -10 to 100 °C continuous operation with liquid media
- Max. 150 °C in continuous operation with steam
- Available in diaphragm sizes 8 to 150



Diaphragm sizes 10 - 150



GEMÜ diaphragms

Selection

Diaphragm material	Code	Temperature range liquid media [° C]		Typical areas of application
		Min.	Max.	
NBR (nitrile rubber, Perbunan)	2	-10	100	Good resistance to mineral oils, greases and petrol. Unsuitable for oxidative media.
FPM /FKM (fluorinated rubber)	4	-10	90	Resistant to hydrocarbons and strong acids, aromatic solvents, ozone, chlorine in gas form and chlorinated solvents. Performs well at high temperatures. Not resistant to ketones and strong alkalis.
IIR (Butyl)	6	-5	100	Good resistance to diluted inorganic acids, alkalis and saline solutions. Good weather resistance and very suitable for water and ozone. Low gas permeability. Unsuitable for oils and hydrocarbons.
CR (chloroprene rubber)	8	-10	100	Resistant to various chemicals, diluted solutions of inorganic acids, alkalis and salts. Ozone and weather resistant. Very suitable for abrasive media. Not resistant to aromatic hydrocarbons.
EPDM (ethylene-propylene-diene rubber)	14	-10	90	Very suitable for aggressive media, diluted acids, alkalis and saline solutions. Ozone and weather resistant. Very suitable for demineralised and deionised cold/hot water. Unsuitable for oils and greases.
PTFE */ EPDM (fully laminated diaphragm with EPDM back)	52	-10	100	Resistant to almost all chemicals such as strong acids, alkalis and salts also at high temperatures. Good resistance to solvents, chlorine and aromatic hydrocarbons.
PTFE */EPDM (convex two-piece diaphragm with loose EPDM back)	5E	-10	100	Resistant to almost all chemicals such as strong acids, alkalis and salts also at high temperatures. Good resistance to solvents, chlorine and aromatic hydrocarbons. Low gas permeability.
NR (natural rubber)	15	-10	60	Resistant to diluted inorganic acids, alkalis and saline solutions. High abrasion resistance. Unfavourable in oxidising media and oils.

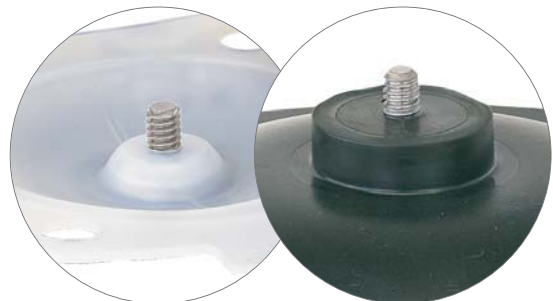
The temperature values are maximum values. With increasing operating pressure the temperature application limit drops.

* Chemically modified second generation PTFE (TFMTM); for code 52 only up to and including diaphragm size 100.

GEMÜ flexible diaphragm fixing

The diaphragm is uniformly fixed in the compressor by means of a threaded pin. The only exception is the smallest diaphragm size (diaphragm size 8), which is pushed in with a rubber pin. The uniform fixing method applies both to soft elastomer and PTFE diaphragms.

The largest advantage of fixing by means of a threaded pin, e.g. in comparison to a bayonet fitting, is that the force transfer is distributed onto the large area of the flanks of the screw thread. This prevents damage to the mechanical connection between compressor and diaphragm especially under vacuum operating conditions. The uniform fixing of elastomer and PTFE diaphragms permits subsequent replacement of the diaphragms at any time without having to exchange the actuator because its mounting is different like other manufacturers.



Diaphragms for weir-type valves

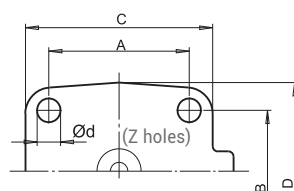
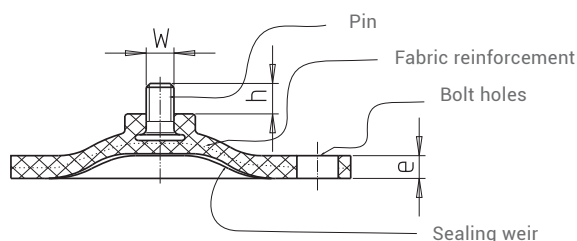
Dimensions

DN	NPS	MG+	A	B	C	D	ød	e	h	W	α	β	γ	Y	Number of bolt holes
15 - 25	½" - 1"	25	54	46	71.7	66.7	9	6	8	¼"	-	-	-	-	4
32 - 40	1¼" - 1½"	40	70	65	100	90	11.5	7	8	¼"	-	-	-	-	4
50	2"	50	82	78	124	106	13	7	7	¼"	-	-	-	-	4
65	2½"	65 ¹	102	95	145	133	14	8	7.5	5/16"	-	-	-	-	4
80	3"	80	127	114	186	156	18	9	8	5/16"	-	-	-	-	4
100	4"	100	194	-	228	-	13	10	9	5/16"	28°	42°	40°	-	8
125	5"	125	222	-	260	-	17	10	10.7	¾"	25°	43.5°	43.5°	-	8
150	6"	150	273	-	305	-	17	11.3	11	¾"	20°	35°	35°	-	10
200	8"	200	381	-	410	-	19	12	22	7/8"	18°	27°	22.5°	22.5°	14
250	10"	250	-	-	-	-	24	12	25	7/8"	22.5°	22.5°	22.5°	22.5°	14
300	12"	300	507	-	563	-	24	14	25	7/8"	18°	24°	24°	24°	14

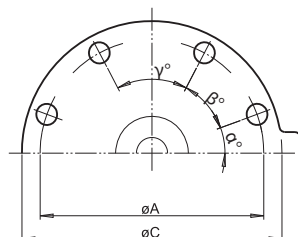
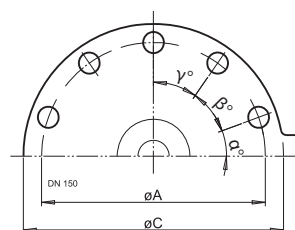
* Diaphragm size

The thread of the diaphragm pin "W" corresponds to Whitworth standard.

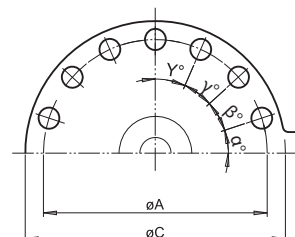
¹ Only GEMÜ 620 and 675.



DN 15 to DN 80



DN 100 to DN 125



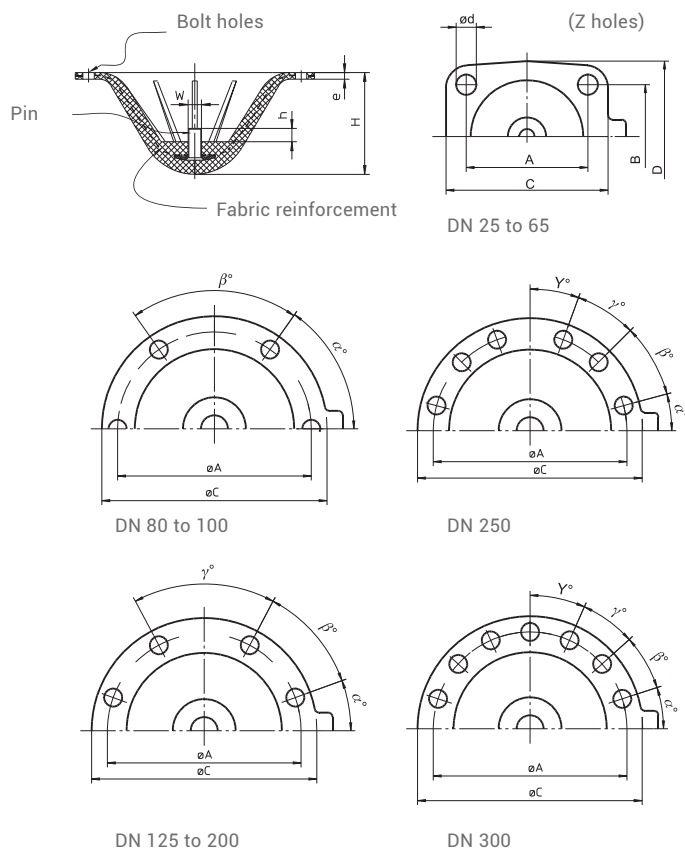
DN 200 to DN 300

Diaphragms for full bore valves

Dimensions

DN	NPS	A	B	C	D	d	e	h	W	H	α	β	γ	γ	Number of bolt holes
15	½"	54	30	69	54	7	3.5	6	3/16"	22	-	-	-	-	4
20	¾"	54	30	69	54	7	3.5	6	3/16"	22	-	-	-	-	4
25	1"	64	51	90	70	9	5	8	¼"	36	-	-	-	-	4
40	1½"	64	51	90	70	9	5	8	¼"	36	-	-	-	-	4
50	2"	101	82	159	128	13.5	6	10	5/16"	64	-	-	-	-	4
65	2½"	101	82	159	128	13.5	6	10	5/16"	64	-	-	-	-	4
80	3"	175	-	223	-	13.5	6	12	5/16"	80	56°	34°	-	-	6
100	4"	175	-	223	-	13.5	6	12	5/16"	80	56°	34°	-	-	6
125	5"	255	-	287	-	13.5	8	16	⅝"	115	20°	40°	60°	-	8
150	6"	255	-	287	-	13.5	8	16	⅝"	115	20°	40°	60°	-	8
200	8"	305	-	341	-	18.5	8	20	⅝"	145	30°	40°	40°	-	8
250	10"	381	-	410	-	17	10	20	⅝"	178	15°	30°	25°	20°	12
300	12"	528	-	576	-	22	12	25	1"	280	18°	24°	24°	24°	14

The thread of the diaphragm pin "W" corresponds to Whitworth standard.



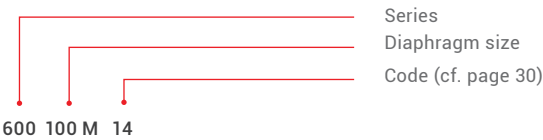
Replacement diaphragms

Replacement diaphragms can be ordered as loose items using the following item numbers. The table below is just an example of diaphragm size 100.

The composition of the item designation is identical for all other diaphragm sizes and series.

Diaphragm size	Item designation Series 600-698	Item designation Series 655, 656, 638
100	600 100 M 2	655 100 M 2
	600 100 M 4	655 100 M 6
	600 100 M 8	655 100 M 8
	600 100 M 14	655 100 M 14
	600 100 M 52	655 100 M 15
	600 100 M 5E	

Example:



Elastomer components

Storage and service life

Correct storage, such as that described in DIN 7716, is essential for a product to achieve its specified service life. Please use the relevant standards.

Our customers can continue to make full use of elastomer products manufactured by us and our qualified suppliers as long as the elapsed time since production has not exceeded the period stated in the table (max. storage time in years). The date of manufacture is stamped on the diaphragm (see below).

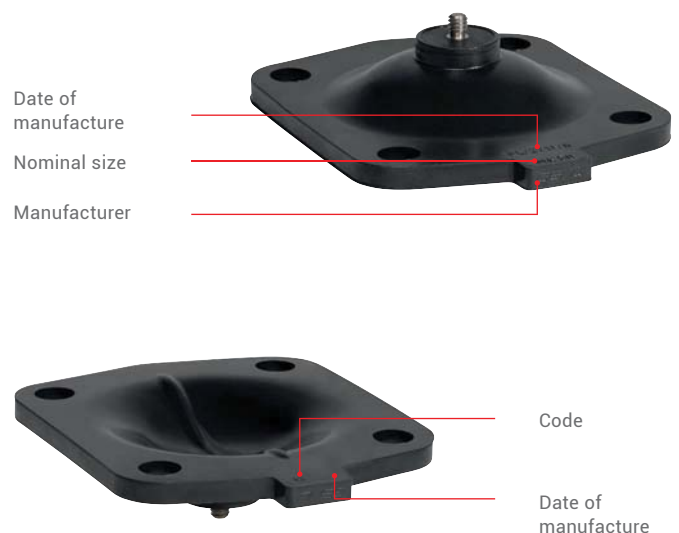
Diaphragm material	Code	Max. storage time in years	Max. recommended operating time in years*
NBR	2	5	3
EPDM	3A / 12 / 13 / 14 / 16A / 16 / 17 / 36	5	3
FPM	4A / 4	5	4
PTFE/EPDM	5A / 5E / 52	5	4
Butyl	6	5	3
CR (chloroprene)	8	6	3
NR (natural rubber)	15	2	1
PTFE/FPM	56 / 5F	5	4

* In addition it is recommended that diaphragms that are in service are replaced at the latest after the operating times listed above. These values are to be understood as guidelines and there can be strong deviations from these according to the actual operating conditions (temperature, pressure, media, switching frequency etc.).

For diaphragms made of a combination of materials, the shorter storage time should be applied. Specific measures must be implemented in order to store the diaphragms.

- Temperature below 25 °C, preferably 15 °C, but not below -10 °C
- Protection from light, in particular from light with a high UV component (e.g. sunlight)
- Relative humidity below 65 %
- The storage space must not contain any ozone-producing equipment (e.g. electric motors), or solvents, fuels, chemicals, etc.
- Do not use films containing plasticizers for packaging
- The diaphragms must be stored stress-free, i.e. without tension, pressure or other deformation; for example, they must not be suspended from any part of the edge of their circumference

Elastomers are organic materials; they can be damaged by external influences such as oxygen, ozone, heat, etc. The measures listed above are necessary for achieving the maximum storage time. At GEMÜ, diaphragms are stored under optimum conditions and never for longer than six months.



Valve instrumentation options



GEMÜ 620
with directly mounted
GEMÜ 1435 ePos
positioner



GEMÜ 620
with directly mounted
GEMÜ 1436 cPos
positioner and process
controller



GEMÜ 695
with remotely mounted
GEMÜ 1436 cPos
positioner and process
controller



GEMÜ 687
with directly mounted
GEMÜ 1434 µPos
positioner



GEMÜ 695
with remotely mounted
GEMÜ 1435 ePos
positioner

Positioners and process controllers

Positioners and process controllers - Overview



Function / Features		GEMÜ 1434 µPos	GEMÜ 1435 ePos	GEMÜ 1436 cPos	GEMÜ 1436 cPos eco
Controller type	Positioner	•	•	•	•
	Process controller			•	
Operation	Local display / keypad		•	•	
	Status display	•	•	•	•
	Web browser user			•	
	Fieldbus option (Profibus DP, Device Net)			•	
Housing	Plastic	•		•	•
	Aluminium		•		
Functions	Automatic initialisation (speed-AP)	•	•	•	•
	Alarm / error outputs		•	•	
	Min/max positions adjustable		•	•	
Mounting	Direct mounting to linear actuators	•	•	•	•
	Remote mounting to linear actuators	•	•	•	•
	Direct mounting to quarter turn actuators		•	•	•
	Remote mounting to quarter turn actuators		•	•	•
Control function of valve actuator	Control function 1, normally closed (NC)	•	•	•	•
	Control function 2, normally open (NO)	•	•	•	•
	Control function 3, double acting (DA)		•	•	
Air output		15 NI/min.	50 NI/min. 90 NI/min.	150 NI/min. 200 NI/min. 300 NI/min.	150 NI/min. 200 NI/min.

Accessories

Accessories for pneumatic actuators GEMÜ 620, 687, 695



GEMÜ 0322 - 0324, 8303

Pilot valves



GEMÜ 1434, 1435, 1436

Electro-pneumatic positioners and process controllers



GEMÜ 1201 - 1235

Electrical position indicators



GEMÜ 1106 - 1161

Optical position indicator, stroke limiter, seal adjuster, manual override



GEMÜ 1450 - 1460

NAMUR mounting bracket with/without handwheel

Accessories

Accessories for pneumatic actuators GEMÜ 620, 656, 687, 695

			GEMÜ 620	GEMÜ 656	GEMÜ 687	GEMÜ 695
Optical position indicators	Optical position indicator with stroke limiter and manual override, control function "Normally closed"	GEMÜ 1114	●	●	●	●
	Optical position indicator with stroke limiter for control function "Normally open"	GEMÜ 1151-1161	●	●	●	●
	Optical position indicator variants for all control functions available	GEMÜ 1300	●	●	●	●
	Optical position indicator for mounting of proximity switches, control function "Normally closed"	GEMÜ 1310	●	●	●	●
Stroke limiters, seal adjuster	Stroke limiter with seal adjuster for control function "Normally open"	GEMÜ 1106	●	●	●	●
	Stroke limiter for control function "Normally closed"	GEMÜ 1151	●	●	●	●
	Stroke limiter for control function "Normally open"	GEMÜ 1110-1161	●	●	●	●
	Proximity switches mounted and adjustable	GEMÜ 1216	●	●	●	●
Electrical position indicators	Electrical position indicator (indication: valve open and/or closed)	GEMÜ 1201-1214	●	●	●	●
	Electrical position indicator ATEX	GEMÜ 1205, 1211	●	●	●	●
	Electrical position indicator (indication: valve open)	GEMÜ 1215	●	●	●	●
	Electrical position indicator (indication: valve open and/or closed)	GEMÜ 1230, 1232	●	●	●	●
	Electrical position indicator ATEX	GEMÜ 1231	●	●	●	●
	Electrical position indicator (programmable)	GEMÜ 1235	●	●	●	●
	Combi switchbox with integrated 3/2-way pilot valve for direct automation connection	GEMÜ 4222	●	●	●	●
	Combi switchbox with integrated pilot valve	GEMÜ 4242			●	●
Positioners	Electro-pneumatic positioner for direct mounting to pneumatically operated valves ($\leq$ DN 25)	GEMÜ 1434 μ Pos			●	●
	Electro-pneumatic positioner for direct or remote mounting to pneumatically operated valves	GEMÜ 1435 ePos	●	●	●	●
	Electro-pneumatic positioner with integrated process controller for direct or remote mounting to pneumatically operated valves	GEMÜ 1436 cPos	●	●	●	●
Manual override, pilot valves	Pilot valves for direct mounting to pneumatically operated valves	GEMÜ 0324, 334	●	●	●	●
	Manual override with optical position indicator	GEMÜ 1002	●	●	●	●
	NAMUR mounting bracket with/without handwheel	GEMÜ 1450, 1460	●	●	●	●

● optional

Other options and combinations of several accessories are possible, please enquire.

Accessories

Accessories for pneumatic full bore diaphragm valve GEMÜ 656



GEMÜ 0322 - 0324

Pilot valves



GEMÜ 1435, 1436

Electro-pneumatic positioners and process controllers



GEMÜ 1201 - 1235

Electrical position indicators



GEMÜ 1300

Optical position indicator



GEMÜ 1450 - 1460

NAMUR mounting bracket with/without handwheel

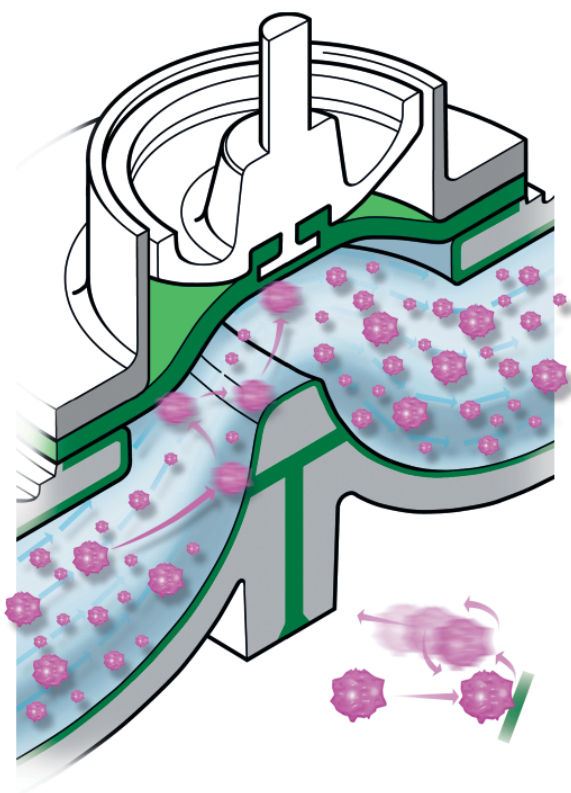
Terms and installation hints

Abrasive

A working medium is abrasive if it removes material from the components / devices (e.g. the valve) it flows through. Example: Sulphur crystals (powder) are transported by compressed air in a piping system. The more abrasive a medium is, the lower the flow velocity ought to be.

Measure / installation hint:

Appropriate countermeasures include reducing flow velocity and protecting the components, either with an extremely hard surface or a soft surface.

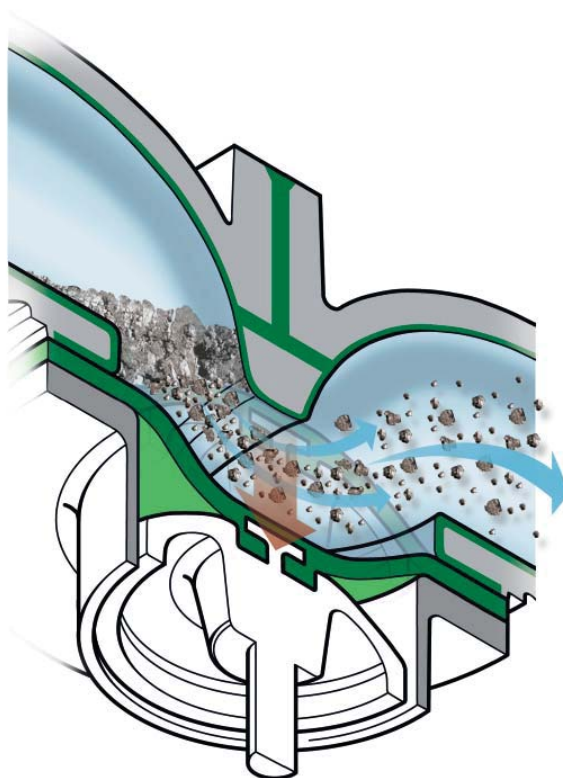


Plugging caused by in-line solids:

If the medium consists of gas or liquid with a high content of relatively heavy particles, the heavy components sink to the bottom when pipeline sections or valves are closed or when there are only very low flow velocities. This condition may cause plugs which can only be removed with difficulty or not at all. The cross-section of the pipe diminishes - valves are clogged.

Measure / installation hint:

Install the diaphragm valve upside-down. The particles are deposited at the closed diaphragm. When the valve is opened, it is unclogged by the diaphragm movement and washed out by the flowing medium.

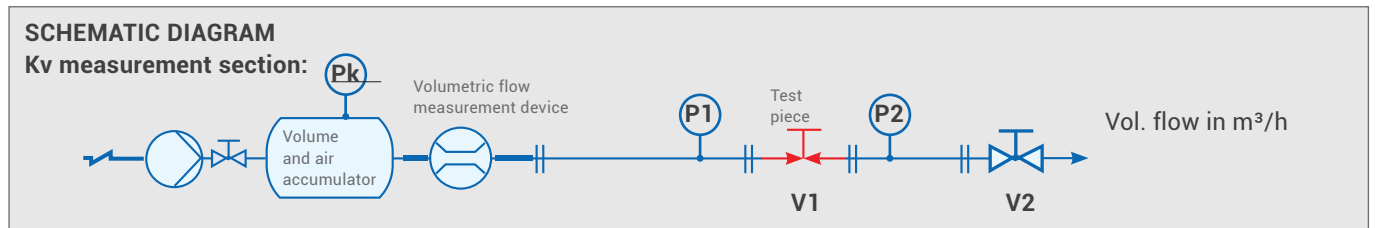


Kv value

Test method for Kv value determination based on DIN EN 60534

Medium: Water

Testing order according to the schematic diagram below:



Kv value calculation:

$$K_v = \text{Volume flow} \times \sqrt{1 / \Delta p}$$

Δp = pressure differential $p_1 - p_2$ (upstream pressure minus downstream pressure)

Kv value definition:

The Kv value is the flow coefficient of valves based on water, in m^3/h , with a pressure differential of 1 bar at the valve

Cv value definition:

The Cv value is the flow coefficient of valves based on water, in gallons per minute, with a pressure differential of 1 psi at the valve

For US gallons: (Kv) $1 \text{ m}^3/\text{h} = 1.1576$ gal/min as a Cv value

For UK gallons: (Kv) $1 \text{ m}^3/\text{h} = 0.9639$ gal/min as a Cv value

Definition of valve stroke:
Calculation of

100 % stroke means: Valve in "OPEN" position

resistance correction
value z (zeta)

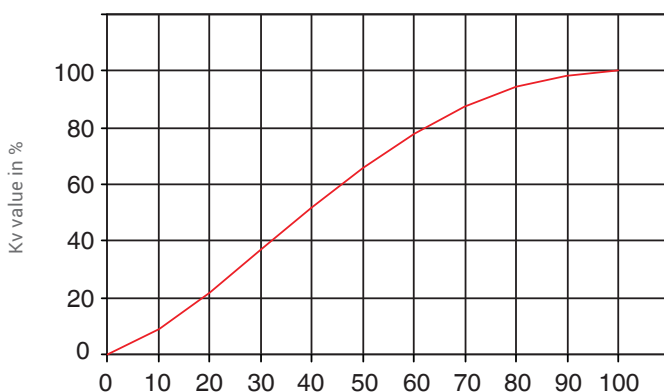
The resistance correction value z (zeta) can be calculated using the connection diameter or inner pipe diameter

$$z = 0.0016 \times D^4 / K_v^2$$

Kv value in m^3/h

pipe diameter D in mm

Example Kv value diagram



The diagram shown is an approximation of the course of the Kv value curves. Dependent on the valve body, nominal size, diaphragm, valve stroke and operating pressure, the curves may differ.

Conformities and approvals

The following certificates are available for many of our products.
Please contact us for detailed information.

"TA Luft" (German Clean Air Act)

We are the first manufacturer world-wide whose diaphragm valves comply with the "TA-Luft" (leakage check) according to VDI 2440, edition November 2000.

RoHS

GEMÜ diaphragms comply with the RoHS Directive 2011/65 EC and the WEEE Directive 2002/96 EC.

Pressure Equipment Directive

As all diaphragm valves are pressure bearing components and as the diaphragm is the central sealing element in addition to the valve body, all diaphragms also comply with the European Pressure Equipment Directive 2014/68/EU Art. 3 § 3. If no original GEMÜ shut-off diaphragms are installed, GEMÜ cannot accept any responsibility.

BAM certificate for use in oxygen applications

Materials and valves are suitable for oxygen service and comply with the bulletin M934 (BGI 617) with regard to burn-out safety when used with gaseous oxygen.

Quality Management System

GEMÜ is certified to DIN EN ISO 9001:2000.

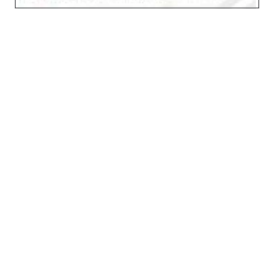
EAC

Certificate of conformity with the applicable standards, quality and safety regulations of the Customs Union between Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan.

As some of the approvals/certificates only relate to specific product and material versions, please ask your GEMÜ consultant for further details.

Explosion protection

You will receive information on the ATEX classification of valves on request.



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subsidiaries, GEMÜ has a
global partner network.

Contact details:

https://www.gemu-group.com/en_GB/kontakte/



 GEMÜ manufacturing site

 GEMÜ subsidiary

GEMU



**Stainless Steel Diaphragm Valves
for Aseptic and Sterile Applications**



Leading the world in pharmaceutical and biotechnology industry sterilisation processes

GEMÜ is one of the leading manufacturers of valves, measurement and control systems for sterile applications in the pharmaceutical and biotechnology industries. This position is based on GEMÜ's comprehensive investments in application-oriented research & development, amounting to more than 5% of the company's turnover. The versatile product range is supplemented with a wide range of advisory services provided by industry specialists and application experts.

Customized solutions for your project business

GEMÜ provides the optimal solution from a single source. As a system supplier of isolation, actuator and control technology, we can respond very flexibly to your individual project-specific needs.

Our worldwide sales network provides fast reaction times, customer oriented service and a committed project management team.



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GEMÜ 615			
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Diaphragm valves DN 4 to 100

Product overview

					
Type	GEMÜ 601	GEMÜ 602	GEMÜ 612	GEMÜ 673	GEMÜ 673P9
Operation	Manual	Manual	Manual	Manual	Manual
Operator	Stainless steel operator top, plastic handwheel, with optical position indicator and seal adjuster	Stainless steel operator top, stainless steel handwheel, with optical position indicator and seal adjuster	Stainless steel operator top, plastic handwheel, with optical position indicator and seal adjuster	Stainless steel operator top, plastic handwheel, with optical position indicator and seal adjuster	Stainless steel operator top, plastic handwheel, with optical position indicator and seal adjuster, special external sealing
DN	4 to 15	4 to 15	10 to 20	15 to 50	4 to 50
Autoclavable	•	•	•	•	•
Operating temperature *	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C
Operating pressure *	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar	0 to 10 bar
Voltage	-	-	-	-	-
Diaphragm size 8	•	•	-	-	•
Diaphragm size 10	-	-	•	-	•
Diaphragm size 25	-	-	-	•	•
Diaphragm size 40	-	-	-	•	•
Diaphragm size 50	-	-	-	•	•
Diaphragm size 80	-	-	-	-	-
Diaphragm size 100	-	-	-	-	-

* dependent on diaphragm material, see technical datasheet

Diaphragms

Elastomer diaphragms
EPDM



Valve body versions


2/2-way body
investment casting
2/2-way version to all international
standard butt weld connections


2/2-way body
forged version
2/2-way version to all international
standard butt weld connections


i-body
2/2-way body with
integrated valve seat

Connections


Clamps
to all common standards


Aseptic clamps
to all common standards


Aseptic unions
to all common standards


Aseptic flanges
to all common standards

					
GEMÜ 653	GEMÜ 654	GEMÜ 611	GEMÜ 671	GEMÜ 618	GEMÜ 698
Manual	Manual	Manual	Manual	Motorized	Motorized
Stainless steel operator top, plastic handwheel, with optical position indicator, stroke limiter/seal adjuster, lockable, mounting for electrical position indicator	Stainless steel operator top, stainless steel handwheel, with optical position indicator, stroke limiter/seal adjuster, lockable, mounting for electrical position indicator	Plastic operator top, plastic handwheel, with optical position indicator, lockable	Plastic operator top, plastic handwheel, with optical position indicator, optional electrical position indicator, lockable	Plastic operator top with/without stainless steel distance piece, with optical position indicator	Plastic operator top with stainless steel distance piece, with optical position indicator and manual override
10 to 100	4 to 100	10 to 20	15 to 100	4 to 15	15 to 50
•	•	-	-	-	-
-10 to 150 °C	-10 to 150 °C	-10 to 80 °C	-10 to 80 °C	0 to 130 °C (without distance piece 15 bis 50 °C)	-10 to 150 °C
0 to 10 bar	0 to 10 bar	0 to 10 bar	0 bis 10 bar	0 to 6 bar	0 to 10 bar
-	-	-	-	24 VAC, 120 VAC, 230 VAC, 50/60Hz	24 VAC, 120 VAC, 230 VAC, 50/60Hz
-	•	-	-	•	-
•	•	•	-	•	-
•	•	-	•	-	•
•	•	-	•	-	•
•	•	-	•	-	•
•	•	-	•	-	-
•	•	-	•	-	-

PTFE diaphragms
PTFE/EPDM, PTFE/FPM



W600
Valve configurations



T valves
e.g. for minimal deadleg ring mains



B600 Tank valves
for stainless steel containers
and tanks



M600 Multi-port valve blocks
application-specific

Diaphragm valves DN 4 to 100

Product overview

					
Type	GEMÜ 605	GEMÜ 615	GEMÜ 625	GEMÜ 687	GEMÜ 695
Operation	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Operator	Plastic operator top with stainless steel distance piece, with optical position indicator	Plastic operator top, with optical position indicator	Plastic operator top with stainless steel distance piece, with optical position indicator	Plastic operator top with stainless steel distance piece, with optical position indicator	Plastic operator top
DN	4 to 15	10 to 20	10 to 20	10 to 100	15 to 50
Autoclavable	-	-	-	-	-
Operating temperature	-10 to 150 °C	-10 to 80 °C	-10 to 150 °C	-10 to 150 °C	-10 to 80 °C
Operating pressure *	0 to 8 bar	0 to 6 bar	0 to 6 bar	0 to 10 bar	0 to 10 bar
Diaphragm size 8	●	-	-	-	-
Diaphragm size 10	-	●	●	●	-
Diaphragm size 25	-	-	-	●	●
Diaphragm size 40	-	-	-	●	●
Diaphragm size 50	-	-	-	●	●
Diaphragm size 80	-	-	-	●	-
Diaphragm size 100	-	-	-	●	-

* dependent on diaphragm material, see technical datasheet

Diaphragms

Elastomer diaphragms
EPDM



Valve body versions


2/2-way body
investment casting
2/2-way version to all international
standard butt weld connections


2/2-way body
forged version
2/2-way version to all international
standard butt weld connections


i-body
2/2-way body with
integrated valve seat

Connections


Clamps
to all common standards


Aseptic clamps
to all common standards


Aseptic unions
to all common standards


Aseptic flanges
to all common standards

				
GEMÜ 650	GEMÜ 650TL	GEMÜ 651	GEMÜ 658/688	GEMÜ 660
Pneumatic	Manual / pneumatic	Pneumatic	Pneumatic	Pneumatic
Stainless steel operator top, with optical position indicator, optionally autoclavable	Stainless steel operator top, optical position indicator, automatic closing function	Stainless steel operator top, with integrated automation module	Stainless steel operator top, two-stage actuator	Stainless steel operator top, with optical position indicator, filling valve
4 to 100	4 to 25	4 to 25	10 to 50	4 to 25
● (DN 4 to 25)	-	-	-	-
-10 to 150 °C	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C	-10 to 150 °C
0 to 10 bar	0 to 8 bar	0 to 10 bar	0 to 10 bar	0 to 5 bar
●	●	●	-	●
●	●	●	●	●
●	●	●	●	●
●	-	-	●	-
●	-	-	●	-
●	-	-	-	-
●	-	-	-	-

PTFE diaphragms
PTFE/EPDM, PTFE/FPM



W600
Valve configurations



T valves
e.g. for minimal deadleg ring mains



B600 Tank valves
for stainless steel containers
and tanks



M600 Multi-port valves
application-specific

Sterile valves in stainless steel

Health-essential cleanliness

The purity and quality of our food and medicines have improved tremendously over recent years. In addition to the stricter regulations and approval conditions, GEMÜ has made an important contribution to these developments, too.

Our diaphragm valves find just as much use in yoghurt or toothpaste manufacture as in eye ointment, insulin or monoclonal antibodies production.

Ultra pure media for the semiconductor and microelectronics industries use aseptic stainless steel valves as well as, for example, fine chemicals. Depending on the version selected, the valves are suitable for ultra pure water (WFI), ultra high purity chemicals and intermediate or final products in the pharmaceutical, biotechnology and foodstuffs processing industries. The valve technical design makes them sterilisable and autoclavable. By virtue of being retrofitted with optionally available automation components, GEMÜ diaphragm valves can also perform control tasks.

Alongside standard components, GEMÜ additionally offers a variety of customized solutions, such as tank valves, valves for sterile sampling or multi-port valve blocks.

State-of-the-art factory equipment and machinery plus a motivated team ensure the best service. A worldwide network of distributors and an internal sales and logistics network guarantee that products and services reach you quickly and directly. GEMÜ continuously invests in product optimization and new product developments. Continuous dialogue with customers from a wide variety of industrial sectors is one of the factors in developing ideas for application-specific solutions of all types.



T valve bodies made from block material

Description of use

T valve bodies are preferably welded into ring mains with the outlet in a vertical direction. This allows the working medium to be drawn off or fed almost deadleg free.

Features

- Tried and tested GEMÜ seal system
- Made from block material, no welds in the media wetted area (reduction of validation times)
- Compact design, GMP-compliant design
- Grades of surface finish: Internal contour mechanically polished and/or electropolished down to Ra 0.25 µm
- Standard valve body material 1.4435 (316L), other materials on request
- Fitted with butt weld spigots as standard; clamps, union ends and flanges on request
- Available with manual, pneumatic or motorized operators

T valve bodies for sampling, body version „A“

This particular design is used to take samples from large ring mains ($\geq$ DN 50). A very good deadleg ratio is achieved as a result of the optimized contour. In comparison to the ring main cross section, the outlet branch has a small nominal size ($\leq$ DN 15) and is provided with a diaphragm valve with a diaphragm size of 8 or 10.

Features

- Cavity fully shaped, deadleg ratio $< 1 \times D$
- Compact design
- Optimal draining if installed at an angle



The original GEMÜ seal system

As a recognised diaphragm valve specialist, GEMÜ are familiar with almost all industrial sectors and applications. We are the leading supplier of stainless steel valves for aseptic and sterile applications in the pharmaceutical industry, biotechnology industry, as well as the foodstuff and beverage industries. As well as this, our valves also stand for reliability and a high standard of quality in the chemical and processing industries. The diaphragm, a central sealing element in the piping system is of major importance. Only the diaphragm and the valve body are in contact with the medium. At the same time, they also guarantee external hermetic sealing of the pipeline.

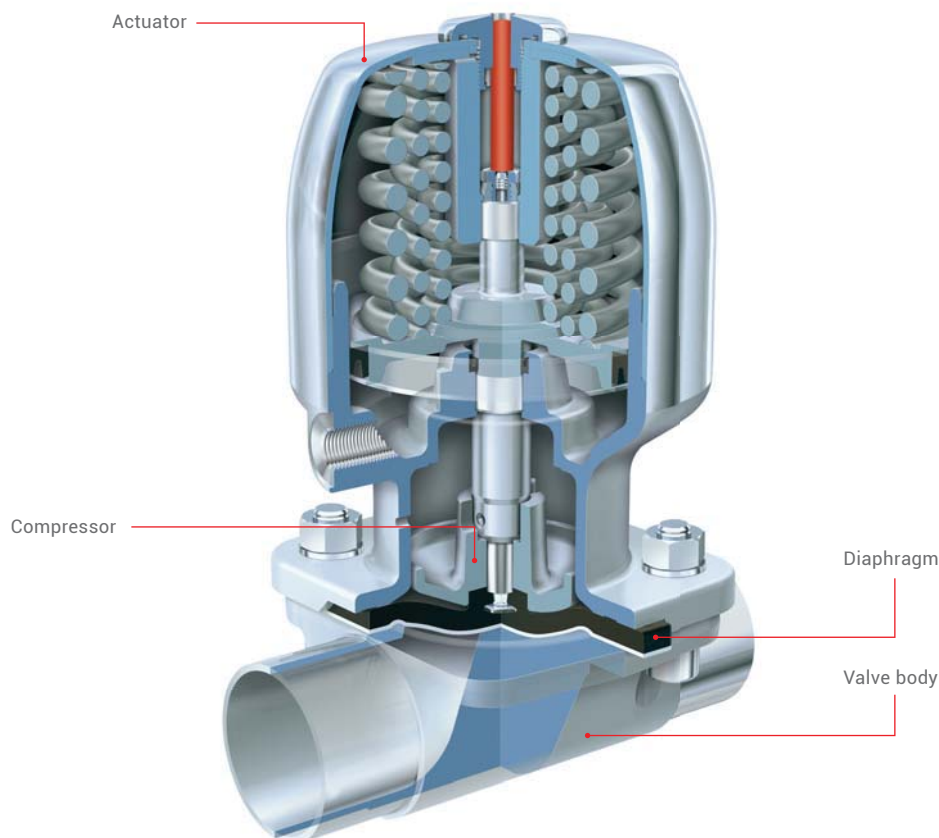
The system is more than the sum of the individual parts

The outstanding characteristics of the diaphragm valve are the result of the perfect interaction of tuned components. These are the valve body, the shut-off diaphragm, the diaphragm fixing, the compressor as well as the actuator. Our many years of experience and intensive dialogue with plant operators has enabled us to continue optimising the diaphragm valve design and its individual components.

Diaphragm and valve body are „inseparable“

GEMÜ valve bodies have a raised circular sealing bead on the inside diameter, in contrast to the valve bodies of other manufacturers. This results in a defined sealing edge. 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. We also consider this crucial design and functional characteristic, which was developed by GEMÜ more than three decades ago and constantly refined, during the development of our diaphragms. Only this ensures 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 do not recommend or guarantee 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.

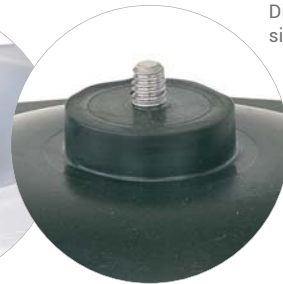


Flexible diaphragm fixing

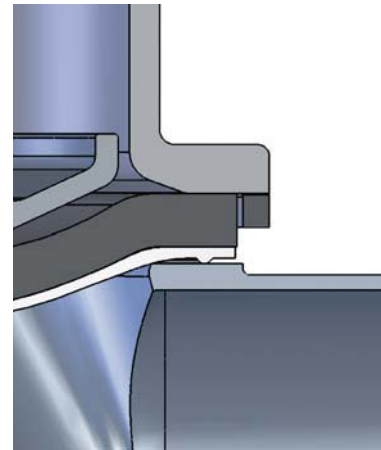
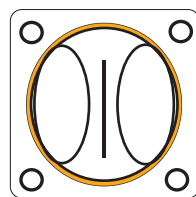
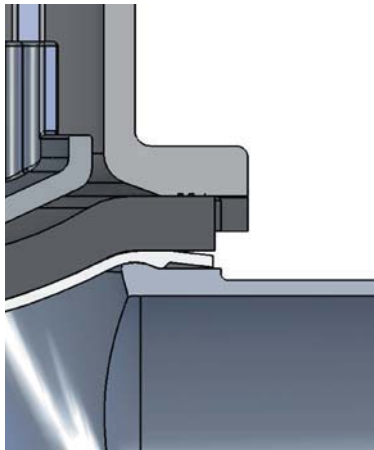
The diaphragm is uniformly fixed in the compressor by means of a threaded pin. The only exception is the smallest diaphragm size (diaphragm size 8), which is pushed in with a rubber pin. The uniform fixing method applies both to soft elastomer and PTFE diaphragms. The largest advantage of fixing by means of a threaded pin, e.g. in comparison to a bayonet fitting, is the even transfer of forces onto the large area of the flanks of the screw thread. This prevents damage to the mechanical connection between compressor and diaphragm especially under vacuum operating conditions. The uniform fixing of elastomer and PTFE diaphragms enables subsequent replacement of the diaphragm while using the same actuator.



Diaphragm size 8



Diaphragm sizes 10 - 100



GEMÜ seal system



Conventional seal systems

GEMÜ diaphragms

Soft elastomer and PTFE

Soft elastomer diaphragms

Soft elastomer diaphragms consist of EPDM rubber mixtures, which are peroxidically cross-linked (vulcanised) with each other. This enables the diaphragms to be used safely, even at high media temperatures. The diaphragms are provided with different technical features dependent on the mixture used and on the processing conditions such as the duration of the cross-linking process, the vulcanisation temperature as well as the vulcanisation pressure. The following statement applies in principle to soft elastomer materials: the higher the temperature load capability, the lower the service life is in relationship to the mechanical stress. Therefore both the temperature load and the deformability of diaphragms must be optimally adjusted to the application. Different constructional designs are available to achieve this. Soft elastomer diaphragms are characterised by a high insensitivity in the case of mechanically contaminated working media, e.g. cellular lumps, solid matter or catalytic solid matter. Slurries usually do not affect the function of the valve or the seal on the valve weir. Different EPDM rubber mixtures can be selected according to the operating/sterilisation temperatures and the chemical characteristics or the working media.



Code 17, diaphragm size 25

PTFE diaphragms-Membranen

The GEMÜ PTFE diaphragms are made of a chemically modified second-generation PTFE (TFMTM*) and provide maximum chemical resistance. Even under steam conditions, PTFE diaphragms wear much more slowly than soft elastomer diaphragms. In the case of highly permeating media the structure of PTFE materials requires appropriately larger bonding thicknesses, stiffening this diaphragm version compared to pure soft elastomer diaphragms. Due to the higher rigidity the service life of the diaphragm may be reduced on high cycle duties depending on the application.



Code 5E, diaphragm size 25

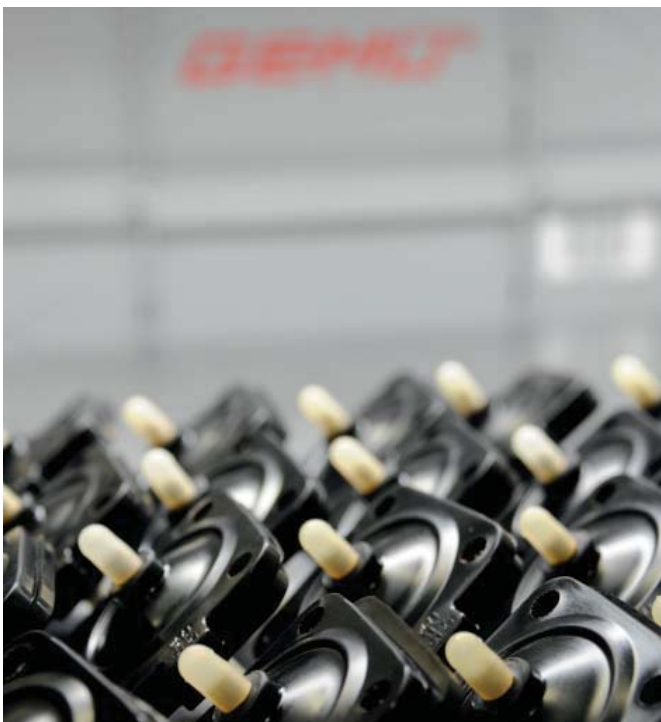
Diaphragm expertise

Manufacture and documentation

GEMÜ leaves nothing to chance in the development and manufacture of diaphragms. As well as many years of experience in the field of diaphragm valves, GEMÜ can draw on the group's ever increasing expertise in the field of diaphragm production. In addition to developing compounds, this also includes producing and permanent controlling 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 (includes special test cycles for the pharmaceutical industry)



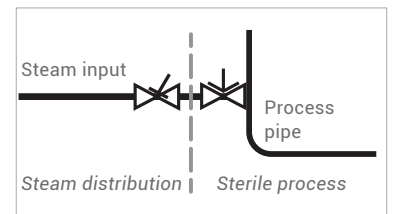
GEMÜ diaphragms

Selection

			Temperature range [°C]			
Diaphragm	Material/Design	Diaphragm size	Liquid media			
			Min.	Max.	Sterilisation ¹	Code
EPDM	Ethylene-propylene-diene rubber	8 - 100	-10	100	max. 150 °C ² max. 60 min. per cycle	13/3A
EPDM	Ethylene-propylene-diene rubber	8 - 100	-10	100	max. 150 °C ² max. 180 min. per cycle	17
PTFE/EPDM	Fully laminated PTFE diaphragm with EPDM back	8, 10, 100	-10	100	max. 150 °C ² , no time limit per cycle	52/5A
PTFE/EPDM	Convex two-piece PTFE diaphragm with loose EPDM back	25, 40, 50, 80	-10	100	max. 150 °C ² , no time limit per cycle	5E

¹ The sterilisation temperature is valid for steam (saturated steam) or superheated water.

² If the sterilisation temperatures listed above are applied to the EPDM diaphragms for longer periods of time, the service life of the diaphragms will be reduced. In these cases, maintenance cycles must be adapted accordingly. This also applies to PTFE diaphragms exposed to high temperature fluctuations. PTFE diaphragms can also be used as moisture barriers; however, this will reduce their service life. The maintenance cycles must be adapted accordingly. GEMÜ 555 and 505 globe valves are particularly suitable for use in the area of steam generation and distribution. The following valve arrangement for interfaces between steam pipes and process pipes has proven itself over time: A globe valve for shutting off steam pipes and a diaphragm valve as an interface to the process pipes.



Each application must be analysed before the selection of the diaphragm material. Since the most varied operating conditions often prevail within a plant at different locations, it can be necessary to use different valves and materials. In particular, the chemical characteristics and the temperature of the working media often lead to different interactions. The suitability of the materials used must therefore always be examined individually with regard to the current resistance list or checked by an authorised specialist. Only this procedure guarantees that the application will operate safely and economically for a longer period. Diaphragms are wearing parts. They need to be regularly inspected and replaced otherwise malfunctions can occur, possibly resulting in hazardous situations. Please note: The maintenance intervals for inspecting and replacing diaphragms are application-dependent. In order to determine a suitable maintenance interval, the maintenance history and the stresses placed on the parts due to frequent sterilisation or frequent cycle duties must be taken into account.

Note

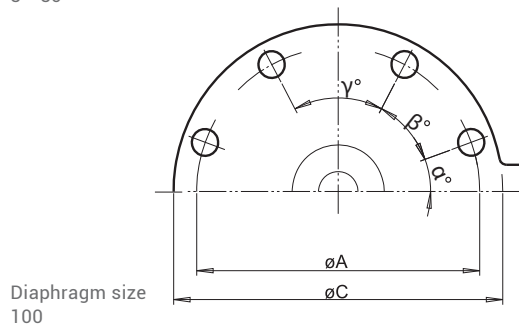
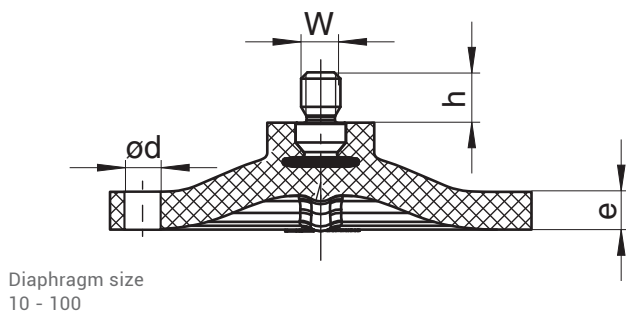
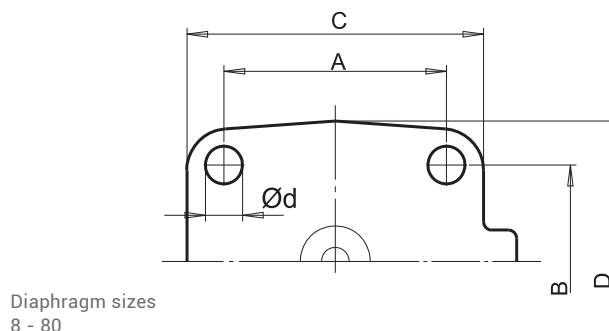
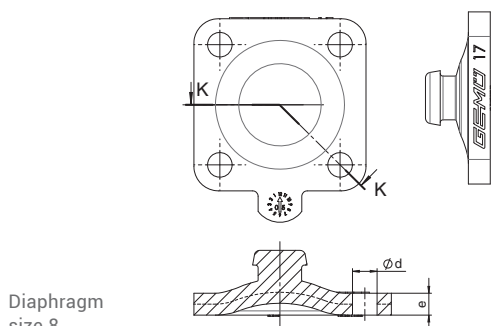
Since plastics and elastomers are subject to natural aging, we recommend observing the GEMÜ storage conditions for shut-off diaphragms. You thereby guarantee maximum storage and service life of the diaphragms. The temperatures specified above are merely the permissible temperature ranges for the respective diaphragm. The permissible temperature ranges of the valve must always be taken into account for the overall valve design. These can be found in the respective datasheets. The temperature values are indicated irrespective of operating pressure and diaphragm size and apply to water and/or inert gases. When using water vapour or saturated steam, observe the steam pressure diagram.

Certificates and approvals					Compatibility with media	Special features
FDA compliant	USP Class VI	EHEDG	TA Luft (German Clean Air Act)	O ₂ BAM		
•	•	•	•	•	Very good all-round elastomer, resistant to many acidic and alkaline media, demineralised and deionised hot water, inert and many other industrial gases.	Suitable for vacuum, low gas permeability, applicable for steam sterilisation.
•	•	•	•	•		Compound and construction of the diaphragm have been specially optimised for steam applications, clearly improved service life.
•	•	•	•	•	Resistant to nearly all chemicals, such as strong acids, alkalis and salts, also at high temperatures, steam, WFI as well as pharmaceuticals. Good resistance to solvents, chlorine, and aromatic hydrocarbons.	Fully laminated diaphragm, can be used in steam. Low gas permeability.
•	•	•	•	•		Convex two-piece diaphragm with loose PTFE face for higher switching cycles, can be used for permanent steam application. Special compounding and production by GEMÜ. Special seal contour for external sealing on the bottom of the diaphragm. Low gas permeability.

EPDM diaphragm dimensions [mm]															
MG*	DN	NPS	A	B	C	D	ød	e	h	W	α	β	γ	Y	Number of bolt holes
8	4 - 15	¼" - ½"	22	22	31,5	31,5	4,5	4	5,6	-	-	-	-	-	4
10	10 - 20	⅜" - ¾"	39	44	48	53	5,2	5	9	M4	-	-	-	-	4
25	15 - 25	½" - 1"	54	46	71,7	66,7	9	6	8	¼"	-	-	-	-	4
40	32 - 40	1¼" - 1½"	70	65	100	90	11,5	7	8	¼"	-	-	-	-	4
50	50	2"	82	78	124	106	13	7	7	¼"	-	-	-	-	4
80	80	3"	127	114	186	156	18	9	8	5/16"	-	-	-	-	4
100	100	4"	194	-	228	-	13	10	9	5/16"	28°	42°	40°	-	8

* Diaphragm size

The thread of the diaphragm pin „W" corresponds to Whitworth standard.



Certificates and approvals

There is no universal diaphragm for all applications, hence we use different rubber mixtures and materials for our diaphragms. The different diaphragms have been certified according to their main fields of application so that we can certify conformity with the international regulations and rules below.

FDA (U.S. Food and Drug Administration)

FDA Extraction according to 21CFR 177.2600 for elastomers and 21CFR 177.1550 for PTFE.

USP (United States Pharmacopeia)

An independent institution has tested our diaphragms according to the regulations of the USP Class VI Chapter 87 In-Vitro and Chapter 88 In-Vivo. Furthermore, our diaphragms are free from animal ingredients.

RoHS

GEMÜ diaphragms comply with the RoHS Directive 2011/65 EC and the WEEE Directive 2002/96 EC.

Pressure Equipment Directive

As all diaphragm valves are pressure bearing components and as the diaphragm is the central sealing element in addition to the valve body, all diaphragms also comply with the European Pressure Equipment Directive 2014/68/EU Art. 3 § 3. If no original GEMÜ shut-off diaphragms are installed, GEMÜ cannot accept any responsibility.

EAC

Certification of conformity with the standards, quality and safety standards of the customs union between Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan.

EHEDG

Hygiene standards in the foodstuff and beverage industry are continuously increasing and are approaching those of the pharmaceutical industry in sensitive areas. For this reason, the EHEDG was established some years ago (European Hygienic Engineering and Design Group). GEMÜ was the first diaphragm valve manufacturer worldwide to be granted certification for its diaphragm valve system. The examination took place in 2002.



Management systems

GEMÜ is certified according to quality standard DIN EN ISO 9001:2008. This does not only apply to the German sites in Ingelfingen-Criesbach, Niedernhall-Waldzimmern and Kupferzell but also to our plant in Switzerland and the diaphragm manufacturing site in France. All German plants are also certified to the international environmental standard DIN EN ISO 14001:2004.

All valves and diaphragms are intensively tested on our own test rigs under realistic conditions. They are subjected to several static and dynamic tests because the service life of diaphragms depends on numerous interactions. To this end, there is a wide range of testing devices available, such as a state-of-the-art steam and a CIP/SIP* test rig.

Statistical tests are generally used to test external leak tightness and leak tightness across the weir. These involve checking the leak tightness at the maximum operating pressure and determining the operating pressure at which the first leaks occur. Dynamic tests are continuous stress tests where the limit values are determined depending on the diaphragm material and diaphragm size. The operating pressure for diaphragm valves, which we permit and recommend, is considerably less than the pressure at which the valves start leaking. This means additional safety for your plant. Our shut-off diaphragms sometimes achieve several million switching cycles depending upon application, material, and diaphragm size.

Depending on diaphragm type and material, dynamic vacuum tests (70 mbar absolute) are additionally carried out at ambient pressure. After the diaphragms have passed these internal tests without problems, field tests are carried out at selected customers. The diaphragms are only released for final series production and worldwide marketing after these field tests have been completed successfully.

All compounding for GEMÜ shut-off diaphragms are carried out exclusively for and according to the specifications of GEMÜ. Production is likewise carried out according to strict quality criteria within the GEMÜ Group or at selected partners with whom we have a close partnership spanning many years.



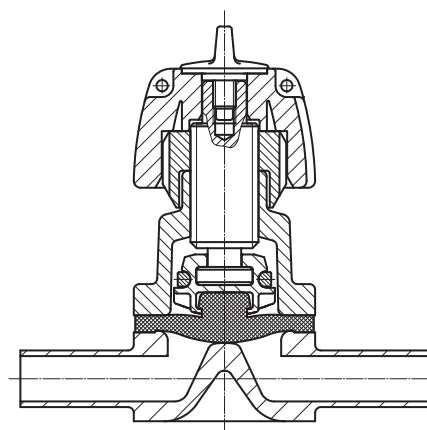
* CIP = Cleaning in Place, SIP = Sterilisation in Place

GEMÜ 601

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- Autoclavable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Stepless minimum flow regulation due to seal adjuster



Operator	Plastic handwheel, with seal adjuster and optical position indicator
Nominal size	DN 4 to 15 (diaphragm size MG 8)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

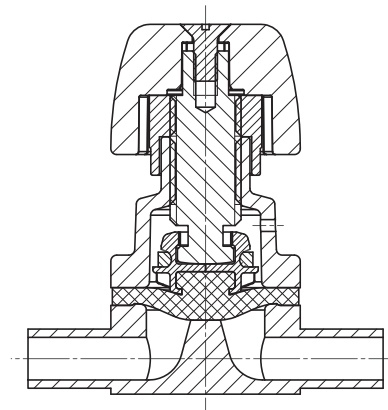
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 602

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- Autoclavable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Stepless minimum flow regulation due to seal adjuster



Operator	Stainless steel handwheel, with seal adjuster and optical position indicator
Nominal size	DN 4 to 15 (diaphragm size MG 8)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

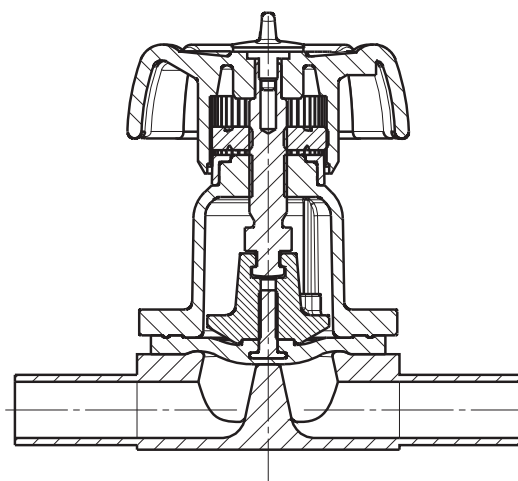
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 612

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- Autoclavable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Stepless minimum flow regulation due to seal adjuster



Operator	Plastic handwheel, with seal adjuster and optical position indicator
Nominal size	DN 10 to 20 (diaphragm size MG 10)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

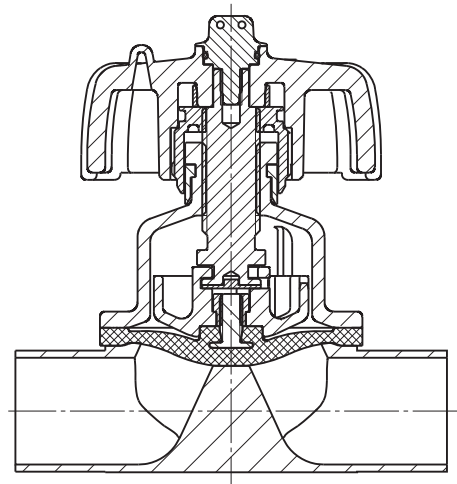
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 673

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- Autoclavable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Stepless minimum flow regulation due to seal adjuster



Operator	Plastic handwheel, with seal adjuster and optical position indicator
Nominal size	DN 15 to 50 (diaphragm size MG 25 to 50)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Membranwerkstoff	EPDM, PTFE/EPDM

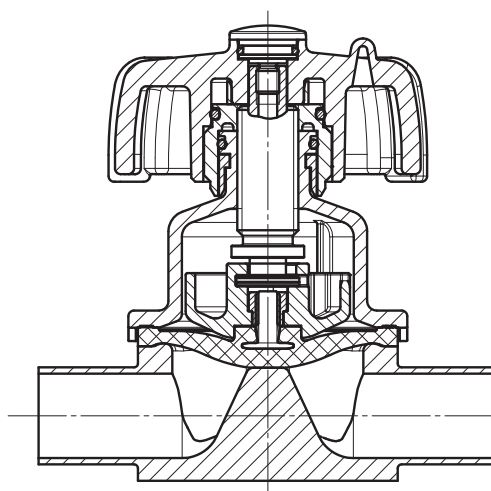
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 673P9

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP/COP capable and autoclavable
- Suitable for particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Stepless minimum flow regulation due to seal adjuster
- External sealing by O-rings made of silicone



Operator	Plastic handwheel, with seal adjuster and optical position indicator
Nominal size	DN 4 to 50 (diaphragm size MG 8 to 50)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 653 BioStar

Diaphragm valve, manually operated

Features

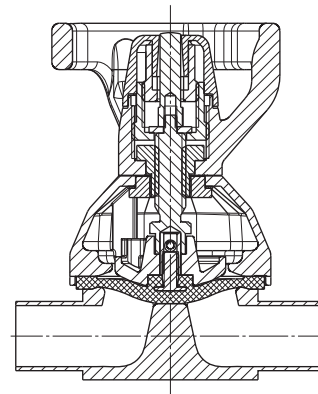
- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable and autoclavable
- Insensitive to particulate media
- Surface finishes down to 0.25 µm, electropolished
- Designed according to GMP (Good Manufacturing Practice)
- Extensive range of accessories
- Option:
 - Seal adjuster and stroke limiter
 - Handwheel locking device (electrical or mechanical)
 - Mounting facility for proximity switches



T operator
shown with optional manual locking device



D operator



Operator	Plastic handwheel, with optical position indicator (from diaphragm size MG 10)
Nominal size	DN 10 to 100 (diaphragm size MG 10 to 100)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

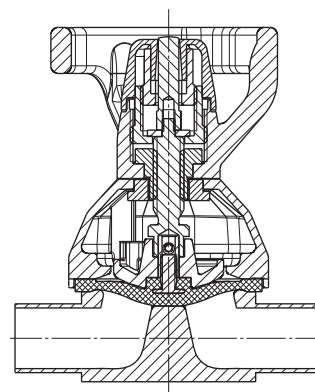
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 654 BioStar

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable and autoclavable
- Insensitive to particulate media
- Surface finishes down to 0.25 µm, electropolished
- Designed according to GMP (Good Manufacturing Practice)
- Extensive range of accessories
- Option:
 - Seal adjuster and stroke limiter
 - Handwheel locking device (electrical or mechanical)
 - Mounting facility for proximity switches



Operator	Stainless steel handwheel, with optical position indicator
Nominal size	DN 4 to 100 (diaphragm size MG 8 to 100)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

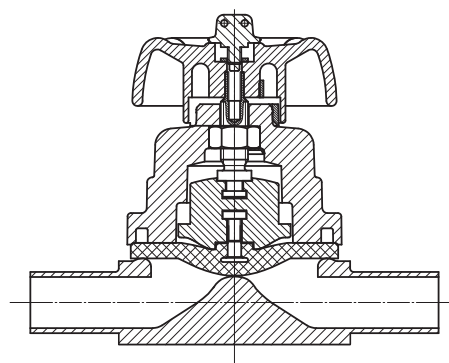
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 611

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of operator
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces



Operator	Plastic handwheel, with optical position indicator
Nominal size	DN 10 to 20 (diaphragm size MG 10)
Body configuration	2/2-way body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 80 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

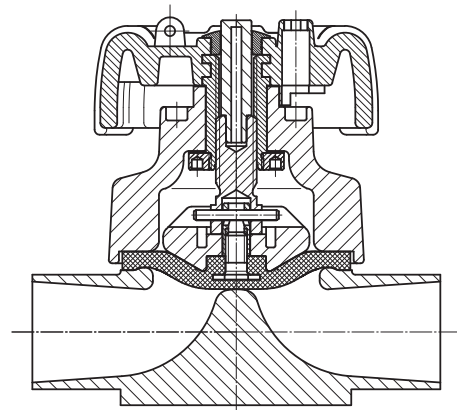
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 671

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of operator
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Option:
 - Electrical remote indication of „open“ handwheel position
 - Lockable handwheel clamp



Operator	Plastic handwheel, with optical position indicator
Nominal size	DN 15 to 100 (diaphragm size MG 25 to 100)
Body configuration	2/2-way body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated, manually operated (lockable)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 80 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 643

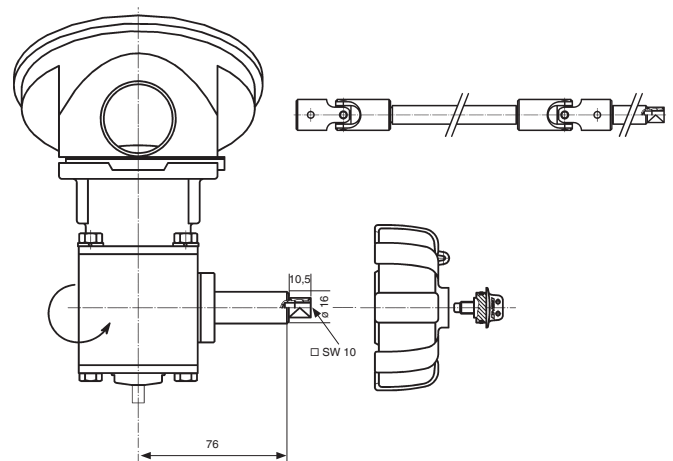
Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- Tanks can be optimally drained, cleaned and sterilized by using the GEMÜ 643
- Tank bottom valve with side mounted gear operator
- Compact design for tight spaces
- The temperature resistant plastic handwheel prevents burns injuries at high operating temperatures
- Operator rotatable through 360°



Shaft extension (by user)



Operator	Angular gear with plastic handwheel
Nominal size	DN 15 to 40 (diaphragm size MG 25 to 40)
Body configuration	Tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated
Valve body material	1.4435 Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

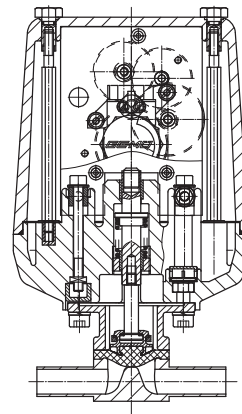
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 618

Diaphragm valve, motorized

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of operator
- Insensitive to particulate media
- The motor will withstand being stalled under full voltage
- Valve bodies and diaphragms available in various materials and designs
- Suitable for use as a control valve (with integrated control module)



Operator	Plastic actuator with optical position indicator
Nominal size	DN 4 to 20 (diaphragm size MG 8 to 10)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Voltage	24 VAC, 120 VAC, 230 VAC, 50/60Hz
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C (without distance piece 15 to 50 °C)
Operating pressure **	0 to 6 bar
Diaphragm material	EPDM, PTFE/EPDM

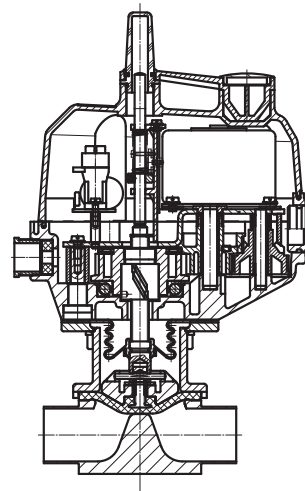
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 698

Diaphragm valve, motorized

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of operator
- CIP/SIP capable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- The valve stroke can be limited by adjustable limit switches
- Suitable for use as a control valve (with GEMÜ 1283)



Operator	Plastic actuator with optical position indicator and manual override
Nominal size	DN 15 to 50 (diaphragm size MG 25 to 50)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Voltage	24 VAC, 120 VAC, 230 VAC, 50/60Hz
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

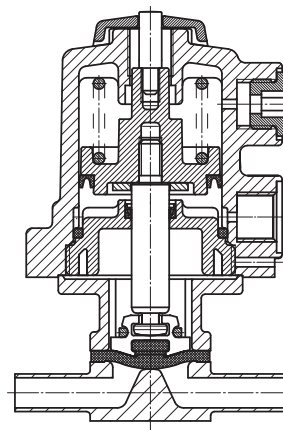
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 605

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- CIP/SIP capable
- Versions according to ATEX on request



Operator	Plastic piston actuator, with optical position indicator
Nominal size	DN 4 to 15 (diaphragm size MG 8)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 8 bar
Diaphragm material	EPDM, PTFE/EPDM

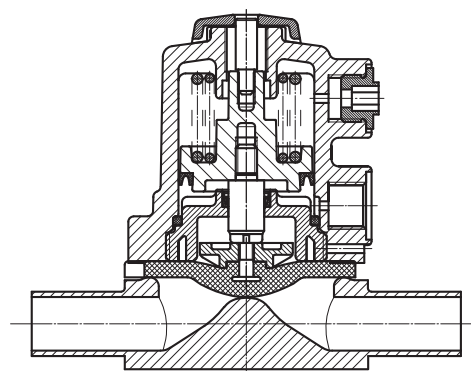
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 615

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Versions according to ATEX on request



Operator	Plastic piston actuator, with optical position indicator
Nominal size	DN 10 to 20 (diaphragm size MG 10)
Body configuration	2/2-way body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 80 °C
Operating pressure **	0 to 6 bar
Diaphragm material	EPDM, PTFE/EPDM

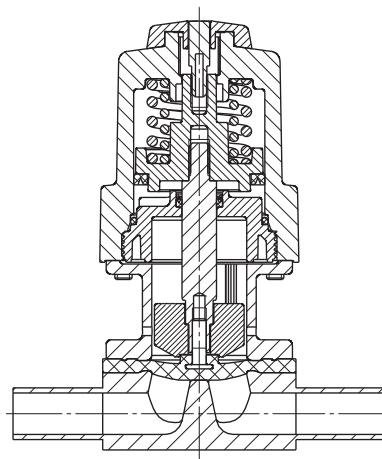
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 625

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- CIP/SIP capable
- Versions according to ATEX on request



Operator	Plastic piston actuator, with optical position indicator
Nominal size	DN 10 to 20 (diaphragm size MG 10)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 6 bar
Diaphragm material	EPDM, PTFE/EPDM

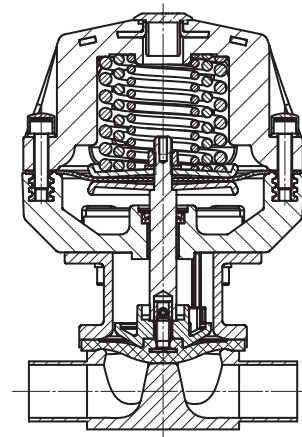
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 687

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Chemical resistance of operator
- CIP/SIP capable
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Various connections available
- Versions according to ATEX on request



Operator	Plastic membrane actuator, with optical position indicator
Nominal size	DN 10 to 100 (diaphragm size MG 10 to 100)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Membranwerkstoff	EPDM, PTFE/EPDM

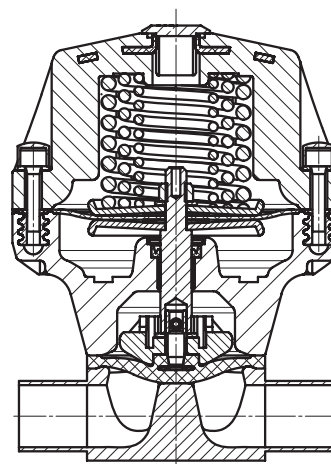
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 695

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Insensitive to particulate media
- Valve bodies and diaphragms available in various materials and designs
- Versions according to ATEX on request



Operator	Plastic membrane actuator, with optical position indicator
Nominal size	DN 15 to 50 (diaphragm size MG 25 to 50)
Body configuration	2/2-way body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 80 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 650 BioStar

Diaphragm valve, pneumatically operated

Features

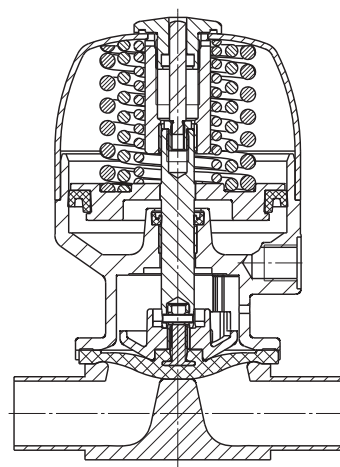
- Suitable for inert, corrosive, liquid and gaseous media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Insensitive to particulate media
- CIP/SIP capable
- Autoclave-capable, depending on version
- Surface finishes down to 0.25 µm, electropolished
- Versions according to ATEX on request



T operator



D operator



Operator	Stainless steel piston actuator, electropolished, with optical position indicator
Nominal size	DN 8 to 100 (diaphragm size MG 8 to 100)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

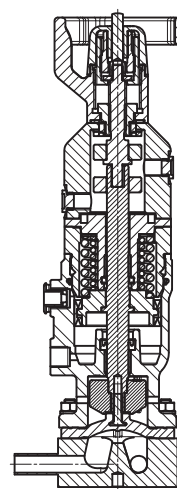
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 650TL

Diaphragm valve, manually operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Proximity switches can be fitted
- CIP/SIP capable
- Versions according to ATEX on request
- Standard optical position indicator
- Tapping valve with automatic closing function



Operator	Stainless steel handwheel and piston actuator, electropolished, with optical position indicator
Nominal size	DN 4 to 25 (diaphragm size MG 8 to 25)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Manually operated, Normally closed (NC)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 8 bar
Diaphragm material	EPDM, PTFE/EPDM

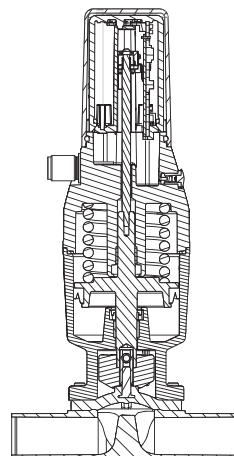
* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 651

Diaphragm valve, pneumatically operated

Features

- Suitable for inert, corrosive, liquid and gaseous media
- Compact design for tight spaces
- CIP capable
- Integrated automation module as either combi switchbox or electro-pneumatic positioner
- Integrated travel and system control
- AS-Interface field bus connection (option for combi switchbox)
- Speed^{-AP} function for fast commissioning



Operator	Stainless steel piston actuator, with fully integrated automation module, pilot valves and position feedback for e.g. AS-Interface
Nominal size	DN 4 to 25 (diaphragm size MG 8 to 25)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 658 / 688

Diaphragm valve, pneumatically operated

Features

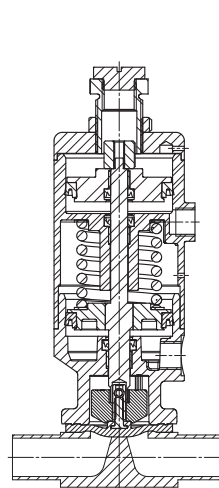
- Suitable for inert, corrosive, liquid and gaseous media
- CIP/SIP capable
- An adjusting screw in the actuator enables the setting of the opening and closing function and also the setting of a part stroke (for reduced flow)
- Both fast on/off operation and the possibility for precision dosing of the working medium
- Two-stage actuator
- Valve bodies and diaphragms available in various materials and designs
- Compact design
- Versions according to ATEX on request



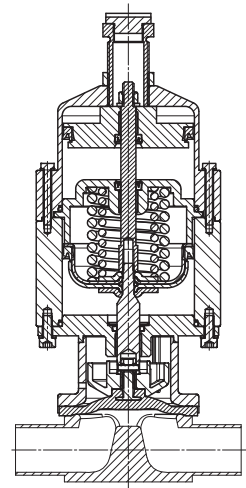
GEMÜ 658



GEMÜ 688



GEMÜ 658



GEMÜ 688

Operator	Stainless steel two-stage actuator
Nominal size	GEMÜ 658: DN 10 to 20 (diaphragm size MG 10) GEMÜ 688: DN 15 to 50 (diaphragm size MG 25 to 50)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 10 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

GEMÜ 660

Diaphragm valve, pneumatically operated

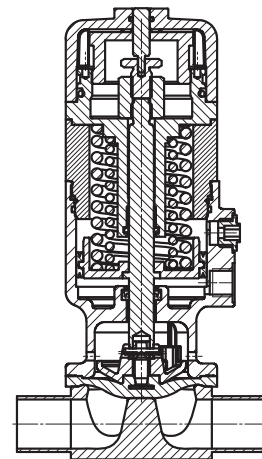
Features

- Suitable for inert, corrosive, liquid and gaseous media
- Valve bodies and diaphragms available in various materials and designs
- Compact design for tight spaces
- Various connections available
- CIP/SIP capable
- Versions according to ATEX on request
- Specially optimized for dosing and filling applications



Operator size 2
Control function 2 (NO)

Operator size 1
Control function 1 (NC)



Operator	Stainless steel piston actuator, electropolished, with optical position indicator and integrated stroke limiter/seal adjuster
Nominal size	DN 4 to 25 (diaphragm size MG 8 to 25)
Body configuration	2/2-way body, T body, multi-port body, tank valve body
Connection	Butt weld spigots, threaded connections, clamp connections. Different standards and designs available
Control function	Normally closed (NC), Normally open (NO), Double acting (DA)
Valve body material	1.4435, 1.4539 (optional) Different standards and designs available
Media temperature *	-10 to 100 °C
Operating pressure **	0 to 5 bar
Diaphragm material	EPDM, PTFE/EPDM

* dependent on diaphragm material; ** depending von version and/or operating parameters

Controllable single-use diaphragm valve

Single-use technology is becoming increasingly important, as it helps avoid cross-contamination risks and simplifies plant design. Secondary processes once required for cleaning and sterilizing (CIP/SIP) are virtually no longer necessary at all in single-use systems and processes. The necessary purity is guaranteed through the sterilisation by gamma rays of all the process components used.

The key difference in comparison to the conventional stainless steel plant design primarily lies in the lower initial investment costs and faster availability of the components for single-use systems. These advantages really come to the fore when working with small batch sizes, such as those typically required when developing new active substances in pilot systems. Although systems can be automated to some extent with the valve designs used to date in the single-use sector, their control accuracy is very limited. In addition, the process for documenting and validating the processes is rather complex. With GEMÜ SUMONDO®, the customer is now able to manufacture their products in an even simpler and safer manner. This makes pharmaceutical processes in the development of active substances reproducible, documentable and, as a result of the higher level of automation, less susceptible to faults.

Due to an innovative new diaphragm bonding technology, it is now possible to use an actuator unit and thus a control module that have been tried and tested in the field of conventional plant engineering for single-use processes. As is also the case with internal welded diaphragms, the valve body comes with extensive approvals, such as those required in the pharmaceutical and medical industries.

Currently, three valve body versions are offered in the nominal sizes from ¼" to 1" with a hose barb or with a clamp connection. These are implemented in the form of through flow, T and angle valve bodies.

The GEMÜ single-use diaphragm valve SUMONDO® comprises a pneumatic actuator and a distance piece with a mounting plate made of stainless steel, as well as a valve body made of plastic. It is equipped with an internally welded diaphragm, it is gamma-sterilizable and is manufactured in the cleanroom under controlled conditions. During assembly, a pin located on the diaphragm of the single-use diaphragm valve body is introduced into the compressor of the pneumatic actuator and locked in place using an indexing plunger. After use, the valve body and its diaphragm can be removed from the actuator and disposed of. The actuator and mounting plate can be used multiple times and remain in the plant.



Positioners and process controllers

Overview

GEMÜ pneumatic actuators can usually be paired with our electro-pneumatic positioners and process controllers.

In addition to the process parameters and the control system for which a positioner must be suitable, other technical functions and properties also play an important part in the selection of the right positioner.

To make your choice easier, we have placed the four GEMÜ positioners in a comparison based on important features.



Function / Features		GEMÜ 1434 µPos	GEMÜ 1435 ePos	GEMÜ 1436 cPos	GEMÜ 1436 cPos eco
Controller type	Positioner	•	•	•	•
	Process controller			•	
Operation	Local display / keypad		•	•	
	Status display	•	•	•	•
	Web browser user			•	
	Fieldbus option (Profibus DP, Device Net)			•	
Housing	Plastic	•		•	•
	Aluminium		•		
Functions	Automatic initialisation (speed-AP)	•	•	•	•
	Alarm / error outputs		•	•	
	Min/max positions adjustable		•	•	
Mounting	Direct mounting to linear actuators	•	•	•	•
	Remote mounting to linear actuators	•	•	•	•
	Direct mounting to quarter turn actuators		•	•	•
	Remote mounting to quarter turn actuators		•	•	•
Control function of valve actuator	Control function 1, normally closed (NC)	•	•	•	•
	Control function 2, normally open (NO)	•	•	•	•
	Control function 3, double acting (DA)		•	•	
Air output		15 NI/min.	50 NI/min. 90 NI/min.	150 NI/min. 200 NI/min. 300 NI/min.	150 NI/min. 200 NI/min.

Combi switchboxes and electrical position indicators for pneumatically operated linear valves

Our devices detect the valve stroke in any installation position without play and are tension-free. The sensor base of the GEMÜ 1234, 1235 and 4242 series is positively connected to the valve spindle by means of a preloaded spring so that possible tangential forces of the valve actuator do not negatively affect the position indicator. The position indicators can be quickly and easily assembled and are safe and uncomplicated to handle.

They can be adapted to pneumatic actuators of GEMÜ globe and diaphragm valves. Due to its special design, the GEMÜ 9415 quarter turn actuator may likewise be combined with this type of position indicator.



Device type	Combi switchbox										
	Electrical position indicators										
	4242	1215	1230	1231	1232	1201	1211	1214	1234	1235/ 1236	1242
Valve stroke (in mm)	2 - 75		2 - 20	2 - 20	2 - 20	2 - 70	2 - 70	2 - 70	1 - 10	2 - 30 4 - 50 5 - 75	2 - 46
Electrical connection	M12	¹⁾	¹⁾	²⁾	¹⁾	²⁾	²⁾	¹⁾	M12	M12	M12
Programmable	•								•	•	•
With integrated pilot valve	•										
Ex design		• ³⁾		•			•				
NEC 500 version	•										•
Fieldbus interface	•								•		•
Mechanically adjustable switches			•	•	•	•	•	•			
Mechanically adjustable (microswitches)			•			•					
UL version	•		•								•
SIL version										•	
Optical position indicator (LEDs)	•		•		•			•	•	•	•
Optical position indicator (mechanical)	• ⁴⁾	•									
Feedback (OPEN and CLOSED)	•		•	•	•	•	•	•	•	•	•
Feedback (OPEN)		•									

¹⁾ cable gland, M12 (optional)

²⁾ cable gland

³⁾ not with optional M12 plug

⁴⁾ for size 2 only

Grades of surface finish

2/2-way valve bodies

Modern, ergonomically shaped workstations and trained polishing staff give us the ability to provide high quality surface finishes. Depending on the required application, surface finishes from Ra 0.8 µm down to 0.25 µm can be achieved by polishing, electro polishing or a special process, we call "elysieren".

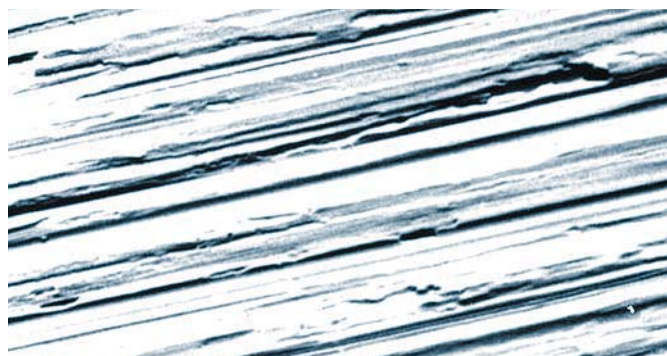
Mechanical hand polishing is carried out at our works to ensure our high quality standard.

Valve body surface finish, internal contour			
	Forged body - Codes 40, 42 Block material - Codes 41, 43	Investment casting Codes 32, 34	Code
Ra ≤ 0.8 µm, mechanically polished internal, blasted external	X	X	1502
Ra ≤ 0.8 µm, electropolished internal/external	X	-	1503
Ra ≤ 0.6 µm, mechanically polished internal, blasted external	X ¹	X ¹	1507
Ra ≤ 0.6 µm, electropolished internal/external	X ¹	-	1508
Ra ≤ 0.4 µm, mechanically polished internal, blasted external	X ¹	-	1536
Ra ≤ 0.4 µm, electropolished internal/external	X ¹	-	1537
Ra ≤ 0.25 µm, mechanically polished internal, blasted external	X ¹	-	1527
Ra ≤ 0.25 µm, electropolished internal/external	X ¹	-	1516

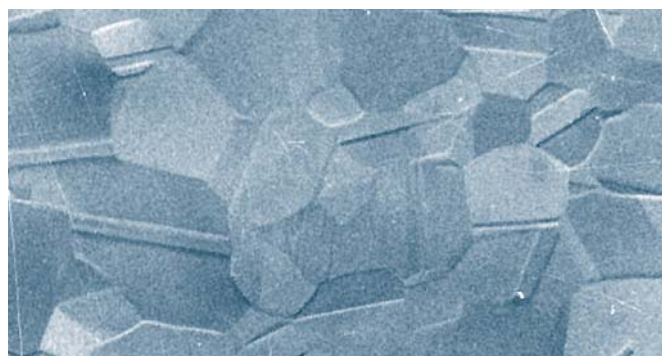
Ra acc. to DIN 4768; at defined reference points. Surface finish data refers to media wetted surfaces.

¹ Not possible for connections DN 8 code 55 and 59, DN 4 code 0 and all other connections Ø < 6 mm.

GEMÜ Germany		GEMÜ US	DIN 11866	ASME BPE (2014)			
Code	Ra µm	Ra _{max} µinch	Hygienic class	Ra µm	Designation	Ra _{max} µinch	Ra µm - onverted
1502	≤ 0,8	30	H3	≤ 0,8	SF3	30	0,76
1503	≤ 0,8	30	HE3c	≤ 0,8	-	-	-
1508	≤ 0,6	25	-	-	SF6	25	0,64
1507	≤ 0,6	25	-	-	SF2	25	0,64
1537	≤ 0,4	20	HE4c	≤ 0,4	SF5	20	0,51
1536	≤ 0,4	20	H4	≤ 0,4	SF1	20	0,51
1527	≤ 0,25	15	H5	≤ 0,25	-	-	-
1516	≤ 0,25	15	HE5c	≤ 0,25	SF4	15	0,38



Material 1.4435 polished with 400 grit.
Magnification = 650fold.



Material 1.4435 polished with 400 grit and electropolished.
Magnification = 650fold.

Butt weld spigot bodies

In addition to the ISO butt weld spigots, the ASME BPE butt weld spigots are also standard connections in the GEMÜ aseptic valve range. Furthermore, other common standard butt weld spigots, such as DIN series 0, DIN 11850 series 1 to 3, BS-OD tubing, JIS and SMS 3008, are also available as standard.

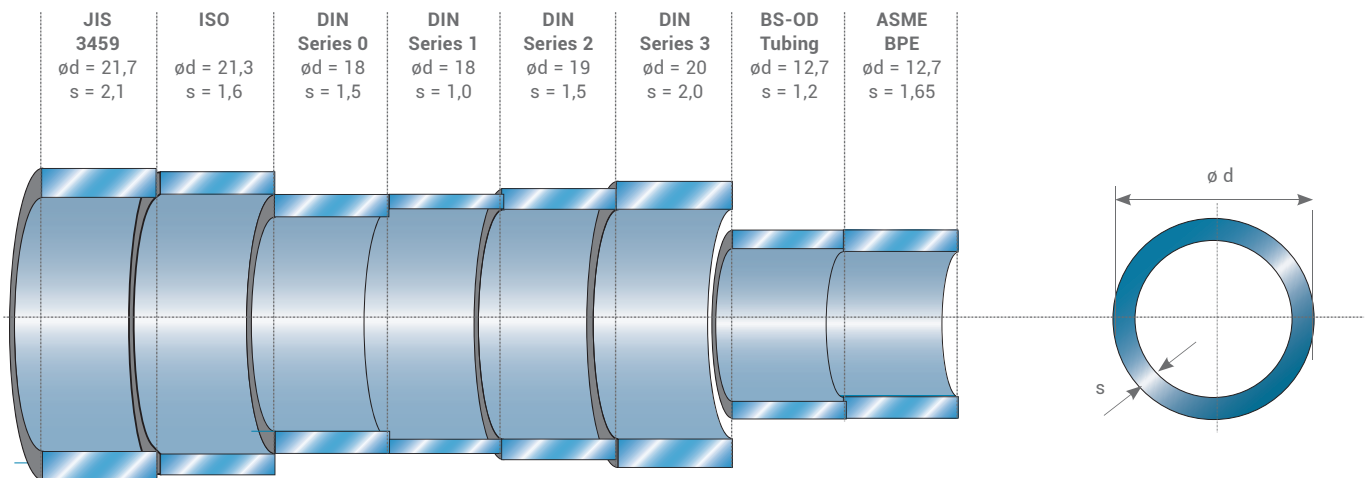
The lengths of our butt weld spigot bodies are designed to provide the optimum for automatic orbital welding.

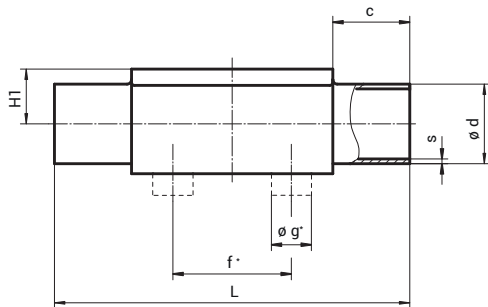
The butt weld spigot lengths guarantee trouble-free mounting and welding in an orbital welding machine using the collets and welding heads commonly used in the Biopharm industry. We recommend using this welding process to achieve the best possible weld quality and the process should be carried out by suitably qualified and certified welders.



Butt weld spigots	Code
Butt weld spigots DIN	0
Butt weld spigots DIN 11850, series 1	16
Butt weld spigots DIN 11850, series 2	17
Butt weld spigots DIN 11850, series 3	18
Butt weld spigots DIN 11866, series A	1A
Butt weld spigots DIN 11866, series B	1B
Butt weld spigots JIS-G 3459 5s	32
Butt weld spigots JIS-G 3447	35
Butt weld spigots JIS-G 3459 10s	36
Butt weld spigots SMS 3008	37
Butt weld spigots BS 4825 Part 1	55
Butt weld spigots ASME BPE	59
Butt weld spigots EN ISO 1127	60
Butt weld spigots ANSI/ASME B36.19M, Schedule 10s	63
Butt weld spigots ANSI/ASME B36.19M, Schedule 40s	65

The difference between tube specifications (Example DN 15)





* only for investment cast body
Optimum draining angle see brochure "2/2-Way and T Valve Bodies in Stainless Steel"

Dimensions in mm

Dimensions in mm									DIN		DIN 11850						DIN 11866				EN ISO 1127	
									Series 0 / Code 0		Series 1 / Code 16		Series 2 / Code 17		Series 3 / Code 18		Series A / Code 1A		Series B / Code 1B		Code 60	
MG	DN	NPS	f*	øg*	L	LS	H1*	H1**	ød	s	ød	s	ød	s	ød	s	ød	s	ød	s	ød	s
8	4	-	-	-	72	20	8.5	6	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	72	20	8.5	8	1.0	-	-	-	-	-	-	8	1.0	10.2	1.6	10.2	1.6	
	8	¼"	-	-	72	20	8.5	10	1.0	-	-	-	-	-	-	10	1.0	13.5	1.6	13.5	1.6	
	10	⅜"	-	-	72	20	8.5	-	-	12	1.0	13	1.5	14	2.0	13	1.5	-	-	-	-	
	15	½"	-	-	72	20	8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	10	⅜"	30	13.5	108	25	12.5	-	-	12	1.0	13	1.5	14	2.0	13	1.5	17.2	1.6	17.2	1.6	
	15	½"	30	13.5	108	25	12.5	18	1.5	18	1.0	19	1.5	20	2.0	19	1.5	21.3	1.6	21.3	1.6	
	20	¾"	30	13.5	108	25	12.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	15	½"	40	13.5	120	25	13.0	19.0	18	1.5	18	1.0	19	1.5	20	2.0	19	1.5	21.3	1.6	21.3	1.6
	20	¾"	40	13.5	120	25	16.0	19.0	22	1.5	22	1.0	23	1.5	24	2.0	23	1.5	26.9	1.6	26.9	1.6
	25	1"	40	13.5	120	25	19.0		28	1.5	28	1.0	29	1.5	30	2.0	29	1.5	33.7	2.0	33.7	2.0
40	32	1 ¼"	68	13.5	153	25	24.0	26.0	34	1.5	34	1.0	35	1.5	36	2.0	35	1.5	42.4	2.0	42.4	2.0
	40	1 ½"	75	13.5	153	25	26.0		40	1.5	40	1.0	41	1.5	42	2.0	41	1.5	48.3	2.0	48.3	2.0
50	50	2"	90	13.5	173	30	32.0		52	1.5	52	1.0	53	1.5	54	2.0	53	1.5	60.3	2.0	60.3	2.0
80	65	2 ½"	-	-	216	30	-	62.0	-	-	-	-	70	2.0	-	-	70	2.0	76.1	2.0	76.1	2.0
	80	3"	-	-	254	30	-	62.0	-	-	-	-	85	2.0	-	-	85	2.0	88.9	2.3	88.9	2.3
100	100	4"	-	-	305	30	-	76.0	-	-	-	-	104	2.0	-	-	104	2.0	114.3	2.3	114.3	2.3

MG = diaphragm size * only for investment cast design ** only for forged design

Dimensions in mm

Dimensions in mm									JIS-G 3447 Code 35	JIS-G 3459 Code 36		SMS 3008 Code 37		BS 4825 Code 55		ASME BPE Code 59		ANSI/ASME B36.19M 10s Code 63		ANSI/ASME B36.19M 40s Code 65		
MG	DN	NPS	f*	øg*	L	LS	H1*	H1**	ød	s	ød	s	ød	s	ød	s	ød	s	ød	s	ød	s
8	4	-	-	-	72	20	8,5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	72	20	8,5		-	-	10,5	1,20	-	-	-	-	-	-	10,3	1,24	10,3	1,73
	8	¼"	-	-	72	20	8,5		-	-	13,8	1,65	-	-	6,35	1,2	6,35	0,89	13,7	1,65	13,7	2,24
	10	⅜"	-	-	72	20	8,5		-	-	-	-	-	-	9,53	1,2	9,53	0,89	-	-	-	-
	15	½"	-	-	72	20	8,5		-	-	-	-	-	-	12,70	1,2	12,70	1,65	-	-	-	-
10	10	⅜"	30	13,5	108	25	12,5		-	-	17,3	1,65	-	-	9,53	1,2	9,53	0,89	17,1	1,65	17,1	2,31
	15	½"	30	13,5	108	25	12,5		-	-	21,7	2,10	-	-	12,70	1,2	12,70	1,65	21,3	2,11	21,3	2,77
	20	¾"	30	13,5	108	25	12,5		-	-	-	-	-	-	19,05	1,2	19,05	1,65	-	-	-	-
25	15	½"	40	13,5	120	25	13,0	19,0	-	-	21,7	2,10	-	-	-	-	-	-	21,3	2,11	21,3	2,77
	20	¾"	40	13,5	120	25	16,0	19,0	-	-	27,2	2,10	-	-	19,05	1,2	19,05	1,65	26,7	2,11	26,7	2,87
	25	1"	40	13,5	120	25	19,0		25,4	1,2	34,0	2,80	25,0	1,2	-	-	25,40	1,65	33,4	2,77	33,4	3,38
40	32	1 ¼"	68	13,5	153	25	24,0	26,0	31,8	1,2	42,7	2,80	33,7	1,2	-	-	-	-	42,2	2,77	42,2	3,56
	40	1 ½"	75	13,5	153	25	26,0		38,1	1,2	48,6	2,80	38,0	1,2	-	-	38,10	1,65	48,3	2,77	48,3	3,68
50	50	2"	90	13,5	173	30	32,0		50,8	1,5	60,5	2,80	51,0	1,2	-	-	50,80	1,65	60,3	2,77	60,3	3,91
80	65	2 ½"	-	-	216	30	-	62,0	63,5	2,0	76,3	3,00	63,5	1,6	-	-	63,50	1,65	73,0	3,05	73,0	5,16
	80	3"	-	-	254	30	-	62,0	76,3	2,0	89,1	3,00	76,1	1,6	-	-	76,20	1,65	88,9	3,05	88,9	5,49
100	100	4"	-	-	305	30	-	76,0	101,6	2,0	114,3	3,00	101,6	2,0	-	-	101,60	2,11	114,3	3,05	114,3	6,02

MG = diaphragm size * only for investment cast design ** only for forged design

Clamp bodies

All clamp connections are machined according to the spigot dimensions e.g. to DIN 11850, SMS 3008 or ASME BPE. We ask our customers to state which version or standard the connections shall comply with.

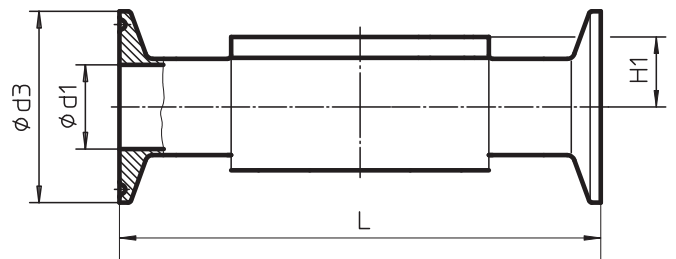
Depending on the version, clamps are machined from the solid forged body or welded on. Investment cast bodies have welded on clamps as standard.

Welding is carried out by specially qualified and certified welders utilising state-of-the art welding technology. In principle, special connections requested by customers can be provided on GEMÜ butt weld spigot bodies. Thus it is also possible to have different connections on one body.



Clamp connections for forged 2/2-way bodies		Code
Clamps ASME BPE for pipe ASME BPE, short design		80
Clamps following ASME BPE for pipe EN ISO 1127, length EN 558-1, series 7		82
Clamps ASME BPE for pipe ASME BPE, length EN 558-1, series 7		88
Clamps DIN 32676 for pipe DIN 11850 length EN 558-1, series 7		8A
Clamps SMS 3017 for pipe SMS 3008 length EN 558-1, series 7		8E
Clamps IDF/ISO for pipe JIS-G 3447 length EN 558-1, series 7		8F
Clamps IDF/ISO for pipe JIS-G 3459 length EN 558-1, series 7		8H

Other versions on request



Optimum draining angle see brochure "2/2-Way and T Valve Bodies in Stainless Steel"

Pipe			Code 59 ASME-BPE				Code 60 EN ISO 1127				Code 59 ASME-BPE				Code 16,17,18 DIN 11850				Code 37 SMS 3008				Code 35 JIS-G3447				Code 36 JIS-G3459			
Clamp connection			Code 80				Code 82				Code 88*				Code 8A				Code 8E				Code 8F				Code 8H			
DN	NPS	MG	H1	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L	$\varnothing d1$	$\varnothing d3$	L
8	1/4"	8	8	4,57	25	63,5	10,30	25,0	63,5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	3/8"		8	7,75	25	63,5	-	-	-	-	-	-	10,00	34	88,9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"		8	9,40	25	63,5	-	-	-	9,40	25	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	3/8"	10	12,5	-	-	-	14,00	25,4	108	-	-	-	10,00	34	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"		12,5	9,40	25	88,9	18,10	50,5	108	9,40	25	108	16,00	34	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	3/4"		12,5	15,75	25	101,6	-	-	-	15,75	25	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"	25	19	9,40	25	101,6	18,10	50,5	108	9,40	25	108	16,00	34	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	3/4"		19	15,75	25	101,6	23,70	50,5	117	15,75	25	117	20,00	34	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	1"		19	22,10	50,5	114,3	29,70	50,5	127	22,10	50,5	127	26,00	50,5	127	22,60	50,5	127	23,00	50,5	127	-	-	-	-	-	-	-	-	-
32	1 1/4"	40	26	-	-	-	38,40	64	146	-	-	-	32,00	50,5	146	31,30	50,5	146	29,40	50,5	146	-	-	-	-	-	-	-	-	-
40	1 1/2"		26	34,80	50,5	139,7	44,30	64	159	34,80	50,5	159	38,00	50,5	159	35,60	50,5	159	35,70	50,5	159	-	-	-	-	-	-	-	-	-
50	2"		32	47,50	64	158,75	56,30	77,5	190	47,50	64	190	50,00	64	190	48,60	64	190	47,80	64	190	-	-	-	-	-	-	-	-	-
65	2 1/2"	80	62	60,20	77,5	193,68	72,10	91	216	60,20	77,5	216	66,00	91	216	60,30	77,5	216	59,50	77,5	216	-	-	-	-	-	-	-	-	-
80	3"		62	72,90	91	222,25	84,30	106	254	72,90	91	254	81,00	106	254	72,90	91	254	72,30	91	254	-	-	-	-	-	-	-	-	-
100	4"		76	97,38	119	292,1	109,70	144,5	305	97,38	119	305	100,00	119	305	97,60	119	305	97,60	119	305	-	-	-	-	-	-	-	-	-

Dimensions in mm

MG = diaphragm size

* Code 88 and Code 80 have different lengths

Aseptic clamps

Aseptic clamping connections to DIN 11864-3-A complement the existing clamping connection options. Either grooved clamps or notched clamps are welded onto the base of the DIN or ISO butt weld spigot body on both sides. If the valve is to have a grooved clamp on one side and a notched clamp on the other side, this is defined by the corresponding code. Other types of connection, such as the combination of an aseptic clamp and butt weld spigot, are possible in principle and are each individually defined depending on requirements.

Aseptic clamping connection DIN 11864-3-A	Code	
	Pipe DIN	ISO
Grooved aseptic clamp on both sides	E1	E4
Notched aseptic clamp on both sides	E2	E5
One side grooved aseptic clamp, other side notched aseptic clamp	E3	E6



Dairy pipe and aseptic unions

The dairy pipe union to DIN 11851 and the aseptic pipe union to DIN 11864-1-A are also standard connections. If the valve is to have a threaded spigot at one connection and a conical coupling or liner with union nuts at the other side, this is defined by the corresponding code. Furthermore, other versions customary on the market can also be adapted.

Unions to DIN 11851	Code
Threaded spigot on both sides	6
Threaded spigot on one side, cone spigot with union nut on the other side	62

Aseptic pipe union DIN 11864-1-A	Code	
	Pipe DIN	ISO
Aseptic threaded spigot on both sides	C1	C4
Aseptic unions with union nuts on both sides	C2	C5
One side aseptic threaded spigot, other side aseptic union with union nut	C3	C6



Aseptic flanges

Aseptic flanges to DIN 11864 -2 complement the existing standard connection options. Either grooved flanges on both sides or loose flanges are welded onto the base of the DIN or ISO butt weld spigot body. If the valve is to have a grooved flange at one connection and a loose flange at the other side, this is defined by the corresponding code. Other connections, such as the combination of an aseptic flange and butt weld spigot, are possible in principle and are each individually defined depending on requirements.

Aseptic flange DIN 11864-2-A	Code	
	Pipe DIN	ISO
Grooved aseptic flange on both sides	A1	A4
Loose aseptic flange on both sides	A2	A5
One side grooved aseptic flange, other side loose aseptic flange	A3	A6



Materials and certificates

The table below provides an overview of the possible certificates which are generally available. The type of certificate and its content must be specified exactly before ordering to be able to provide the required documents. Later requests of certificates may not be possible or possible only under certain conditions.

Our specialists are happy to answer any questions you might have.

Type	Designation of the test certificate in accordance with EN 10204	Content of the certificate	Confirmation of the certificate by
2.1	Certificate of compliance with the order	Confirmation of compliance with the order	the manufacturer
2.2	Test report	Confirmation of compliance with the order with specification of results of non-specific testing	the manufacturer
3.1	Inspection certificate 3.1	Confirmation of compliance with the order with specification of results of specific testing	the manufacturer acceptance officer independent of the production division
3.2	Inspection certificate 3.2	Confirmation of compliance with the order with specification of results of specific testing	the manufacturer acceptance officer independent of the production division and the acceptance officer commissioned by the purchaser or the acceptance officer named in the official regulations



How to order / Type key

Order example for manual diaphragm valves:

Valve type	Nominal size DN	Body configuration	Connection (body)	Valve body material	Diaphragm material	Control function	Operator size	Additional data
A	B	C	D	E	F	G	H	K
673	25	D	60	40	17	0	2TS	1503



Order example for pneumatic diaphragm valves:

Valve type	Nominal size DN	Body configuration	Connection (body)	Valve body material	Diaphragm material	Control function	Operator size	Design (operator)	Spring set	Additional data
A	B	C	D	E	F	G	H	I*	J*	K
650	25	D	60	40	17	1	2	D	1	1503

* only for T valves



Order example for motorized diaphragm valves:

Valve type	Nominal size DN	Body configuration	Connection (body)	Valve body material	Diaphragm material	Supply voltage	Mains frequency	Type of design	Additional data
A	B	C	D	E	F	G	H	I	K
698	25	D	60	40	17	L	4	AE	1503



Kv value

Kv value

In order to be able to compare the extremely varied geometries, valve designs and nominal sizes of different equipment and valves, they are always tested and measured under the same conditions. As a result of test conditions such as these, a flow rate that is specific to each valve is obtained and this flow rate can also serve as a calculation basis for planning a plant, for example.

The Kvs values stated below are only valid for 2/2-way valves.

Kvs value

The KVS value is the KV value when the valve is fully open (100%). The KVS value (nominal flow coefficient) corresponds to the KV100 value with a tolerance of $\pm 10\%$ (to DIN EN 60534).

Medium: Water (H₂O)

Temperature: 5 to 30 °C

Flow rate: The differential pressure Δp between the pressure input and pressure output side is 1 bar.

Measurement unit: measured in m³/h

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

$$1 \text{ Cv} = 1,17 \times \text{Kv}$$

$$1 \text{ Kv} = 0,86 \times \text{Cv}$$

Butt weld spigots according to pipe standard									
Diaphragm size	DN	Size	DIN Code 0 Kvs [m ³ /h]	DIN 11850 Series 1 Code 16 Kvs [m ³ /h]	DIN 11850 Series 2 Code 17 Kvs [m ³ /h]	DIN 11850 Series 3 Code 18 Kvs [m ³ /h]	SMS 3008 Code 37 Kvs [m ³ /h]	ASME BPE Code 59 Kvs [m ³ /h]	EN ISO 1127 Code 60 Kvs [m ³ /h]
MG 8	4	1/8"	0,5	-	-	-	-	-	-
	6	1/6"	1,1	-	-	-	-	-	1,2
	8	1/4"	1,3	-	-	-	-	0,6	2,2
	10	3/8"	-	2,1	2,1	2,1	-	1,3	-
	15	1/2"	-	-	-	-	-	2	-
MG 10	10	3/8"	-	2,4	2,4	2,4	-	2,2	3,3
	15	1/2"	3,3	3,8	3,8	3,8	-	2,2	4
	20	3/4"	-	-	-	-	-	3,8	-
MG 25	15	1/2"	4,1	4,7	4,7	4,7	-	-	7,4
	20	3/4"	6,3	7	7	7	-	4,4	13,2
	25	1"	13,9	15	15	15	12,6	12,2	16,2
MG 40	32	1 1/4"	25,3	27	27	27	26,2	-	30
	40	1 1/2"	29,3	30,9	30,9	30,9	30,2	29,5	32,8
MG 50	50	2"	46,5	48,4	48,4	48,4	51,7	50,6	55,2
MG 80	65	2 1/2"	-	-	77	-	68,5	68,5	96
	80	3"	-	-	111	-	80	87	111
MG 100	100	4"	-	-	194	-	173	188	214

Notes:

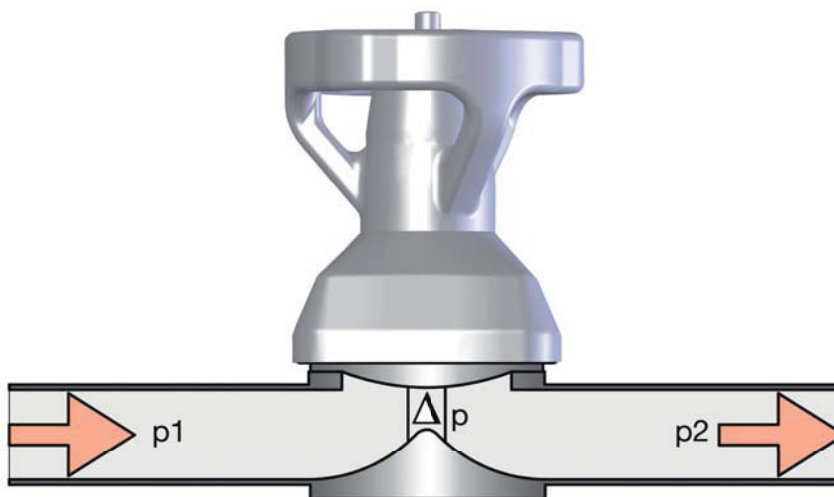
For BS 4825 (Code 55) the Kvs values are the same or slightly higher than ASME BPE as the pipe internal diameters are almost identical. For JIS-G 3459 (Code 36) the Kvs values are the same or slightly lower than EN ISO 1127 as the pipe internal diameters are almost identical. Kvs values for clamp connections always refer to the corresponding pipe standard. Kvs values were determined with water at 20°C, P1 = 6bar, P2 = 5bar, EPDM Code 13 diaphragm, tolerance $\pm 10\%$.

Kvs values for PTFE diaphragms may be lower especially at lower operating pressures as the material is stiffer.

The operating pressure influences the Kv value.

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	flow rate	ρ_n	kg/m³	density of the gas at 0 °C and 1014 mbar
Qn	m³/h	volumetric flow of the gas at 0 °C and 1014 mbar	v'	m³/kg	spec. steam volume at T_1 and p_2
M_{max}	kg/h	(M_{min}) - maximum (minimum) weight flow to be controlled	v''	m³/kg	spec. steam volume at $\frac{p_1}{2}$ and T_1
p_1	bar	absolute pressure before the valve (at Q)	$\dot{M}$	kg/h	mass flow
p_2	bar	absolute pressure after the valve (at Q)	T_1	K	medium temperature
Δp	bar	(Δp) - pressure differential $p_1 - p_2$ at Q			



GEMÜ angle gauge

GEMÜ has developed a patented angle gauge to simplify mounting 2/2-way stainless steel diaphragm valve bodies. The angle gauge enables quick and simple determination of the correct mounting position of a diaphragm valve body. The angle gauge is placed on the valve body so that its location spigots engage in the holes intended for actuator fixing. It is then locked by an eccentric cam at one of the location spigots. The flow direction is clearly identified to prevent incorrect positioning. The correct installation angle, dependent on the valve body type, is indicated in the brochure „2/2-Way and T Valve Bodies in Stainless Steel“. The given angle is set on the angle gauge. The valve body is rotated until the spirit is level. Then the body can be installed in the piping. The angle gauge is available for diaphragm sizes MG 8 to 100.

Please use the article numbers listed below when ordering:

Angle gauge for diaphragm size 8:	88278996
Angle gauge for diaphragm size 10:	88277372
Angle gauge for diaphragm size 25:	88277373
Angle gauge for diaphragm size 40:	88277374
Angle gauge for diaphragm size 50:	88277375
Angle gauge for diaphragm size 80:	88277376
Angle gauge for diaphragm size 100:	88379424

