

GEMÜ 610

Pneumatically operated diaphragm valve

EN

Operating instructions



further information
webcode: GW-610



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1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
▶	Response(s) to tasks
–	Lists

1.3 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

Control function

The possible actuation functions of the GEMÜ product.

Control medium

The medium whose increasing or decreasing pressure causes the GEMÜ product to be actuated and operated.

1.4 Warning notes

Wherever possible, warning notes are organized according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶Possible consequences in case of non-compliance ●Measures for avoiding danger

Warning notes are always labelled with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER	
	Imminent danger! ▶ Non-observance can cause death or severe injury

⚠ WARNING	
	Potentially dangerous situation! ▶ Non-observance can cause death or severe injury

⚠ CAUTION	
	Potentially dangerous situation! ▶ Non-observance can cause moderate to light injury

NOTICE	
	Potentially dangerous situation! ▶ Non-observance can cause damage to property

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger of explosion!
	Actuator is under spring tension!
	The equipment is subject to pressure!
	Corrosive chemicals!
	Risk of crushing due to moving parts when the valve is not installed!
	Hot plant components!
	Leakage!
	Note the weight of the product!
	Danger from pressure surges or excessive pressure!

Symbol	Meaning
	Corrosion from media that attack the valve body, seals or diaphragm

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects
- Hazard to nearby equipment
- Failure of important functions
- Hazard to the environment due to the leakage of dangerous materials

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

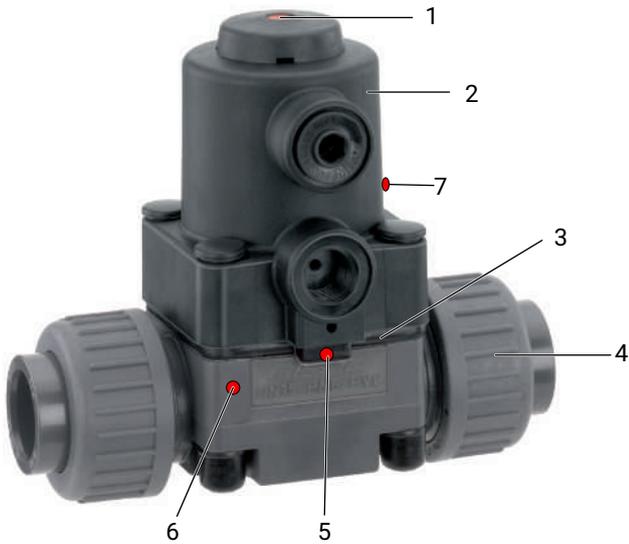
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



Item	Name	Materials
1	Optical position indicator	
2	Membrane actuator	
3	Diaphragm	NBR, FKM, EPDM, PTFE/EPDM, one-piece
4	Valve body	PVC-U, grey PP, glass fibre reinforced PVDF PP-H natural
5	CONEXO diaphragm RFID chip (see Conexo information)	
6	CONEXO body RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	

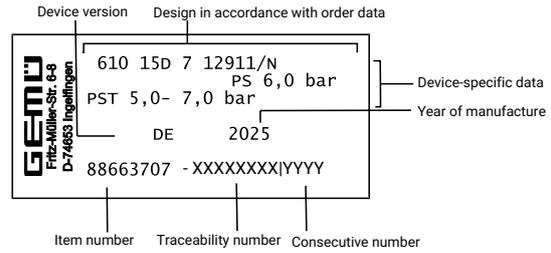
3.2 Description

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

3.3 Function

The product is designed for use in piping. It controls a flowing medium by being closed or opened by a control medium.

3.4 Product label



The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

4 Correct use

DANGER



Danger of explosion!

- ▶ Risk of death or severe injury
- Do **not** use the product in potentially explosive zones.

WARNING

Improper use of the product!

- ▶ Risk of severe injury or death
- ▶ Manufacturer liability and guarantee will be void.
- Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

The product is designed for installation in piping systems and for controlling a working medium.

The product is not intended for use in potentially explosive areas.

- Use the product in accordance with the technical data.

5 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code
Diaphragm valve, pneumatically operated, plastic piston actuator, optical position indicator	610

2 DN	Code
DN 12	12
DN 15	15
DN 20	20

3 Body configuration	Code
2/2-way body	D

4 Connection type	Code
Threaded socket DIN ISO 228	1
Solvent cement socket DIN	2
Fitting screw connection with insert (socket) – DIN	7
Spigot for IR butt welding, WNF	28
Fitting screw connection with insert inch - BS (socket)	33
Flare connection with union nut PVDF	75
Fitting screw connection with insert (IR butt welding) – DIN	78
Threaded spigot for fitting screw connection	7X

5 Valve body material	Code
PVC-U, grey	1
PP, reinforced	5
PVDF	20
PP-H, natural	N5

6 Diaphragm material	Code
Elastomer	
NBR	2
FKM	4
EPDM	17
EPDM	29
PTFE	
PTFE/EPDM one-piece	54

7 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2
Double acting (DA)	3

8 Actuator version	Code
Actuator size 1/N control air connector 90° offset to flow direction	1/N
Actuator size 1RN control air connector in-line with flow direction	1RN

9 Mounting plate	Code
including mounting plate	M

9 Mounting plate	Code
Without mounting plate	0
Without	

10 Special version	Code
Drinking water hygiene suitability according to system 1+, UBA-BWGL for plastics and other organic materials, Cold and hot water (23 °C–60 °C)	1

11 CONEXO	Code
Integrated RFID chip for electronic identification and traceability	C
Without	

Order codes

Ordering option	Code	Description
1 Type	610	Diaphragm valve, pneumatically operated, plastic piston actuator, optical position indicator
2 DN	15	DN 15
3 Body configuration	D	2/2-way body
4 Connection type	7	Fitting screw connection with insert (socket) – DIN
5 Valve body material	1	PVC-U, grey
6 Diaphragm material	17	EPDM
7 Control function	1	Normally closed (NC)
8 Actuator version	1/N	Actuator size 1/N control air connector 90° offset to flow direction
9 Mounting plate		Without
10 Special version	1	Drinking water hygiene suitability according to system 1+, UBA-BWGL for plastics and other organic materials, Cold and hot water (23 °C–60 °C)
11 CONEXO		Without

6 Technical data

6.1 Medium

Working medium: Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm material.

Control medium: Inert gases

6.2 Temperature

Media temperature:

Valve body material	
PVC-U, grey (code 1)	10 – 60 °C
PP, reinforced (code 5)	5 – 80 °C
PVDF (code 20)	-10 – 80 °C
PP-H, natural (code N5)	5 – 80 °C

Ambient temperature:

Valve body material	
PVC-U, grey (code 1)	10 – 50 °C
PP, reinforced (code 5)	5 – 50 °C
PVDF (code 20)	-10 – 50 °C
PP-H, natural (code N5)	5 – 50 °C

Storage temperature: 0 – 40 °C

Control medium temperature: max. 40 °C

6.3 Pressure

Operating pressure: 0 – 6 bar

Pressure rating: PN 6

Pressure/temperature correlation:

MG	Valve body		Temperatures in °C										
	Material	Code	-10	0	5	10	20	30	40	50	60	70	80
10	PVC-U	1	-	-	-	6.0	6.0	6.0	6.0	3.5	1.5	-	-
	PP-H	5	-	-	6.0	6.0	6.0	6.0	6.0	5.5	4.0	2.7	1.5
	PVDF	20	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.4	4.7
	PP-H-Natur	N5	-	-	6.0	6.0	6.0	6.0	6.0	5.5	4.0	2.7	1.5

All pressures are gauge pressures.

The permissible operating pressure depends on the working medium temperature.

Data for extended temperature ranges on request. Please note that the ambient temperature and media temperature generate a combined temperature at the valve body which must not exceed the above values.

Filling volume: 0.02 dm³

Kv values:

MG	DN	Kv values
10	12	2.8
	15	3.5
	20	3.5

MG = diaphragm size, Kv values in m³/h

Kv values determined acc.to DIN EN 60534 standard, inlet pressure 5 bar, Δp 1 bar, PVC-U valve body and soft elastomer diaphragm.

The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.

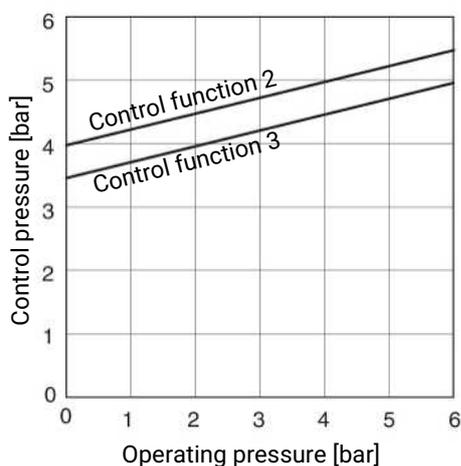
The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and term of use.

Control pressure:

MG	DN	Control function 1	Control function 2	Control function 3
10	12 - 20	5.0–7.0	max. 5.5 see diagram	Max. 5.0

MG = diaphragm size

All pressures are gauge pressures.

Control pressure/operating pressure diagram – Control function 2 and 3

The control pressure depending on the prevailing operating pressure, as shown in the diagram, is intended as a guide for operating the system with low wear on the diaphragm.

6.4 Product conformity

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food: FDA*

EAC: TR CU 010/2011

Drinking water: Drinking water hygiene suitability according to system 1+ (special function 1)
UBA-BWGL for plastics and other organic materials,
Cold and hot water (23 °C–60 °C)
System 1+

6.5 Materials**Materials:**

Diaphragm material	O-ring material
PTFE	FKM
NBR	EPDM
FKM	FKM
EPDM	EPDM

6.6 Mechanical data**Weight:****Actuator**

0.18 kg

Valve body

MG	DN	Spigot	Union end				Threaded socket	Solvent cement socket	Flare
			Connection type code						
			28	7	33	78			
10	12	-	-	-	-	0.08	0.06	-	
	15	0.13	0.18	0.13	0.20	-	-	0.08	
	20	-	-	-	-	-	-	0.125	

MG = diaphragm size, weight in kg

Installation position:

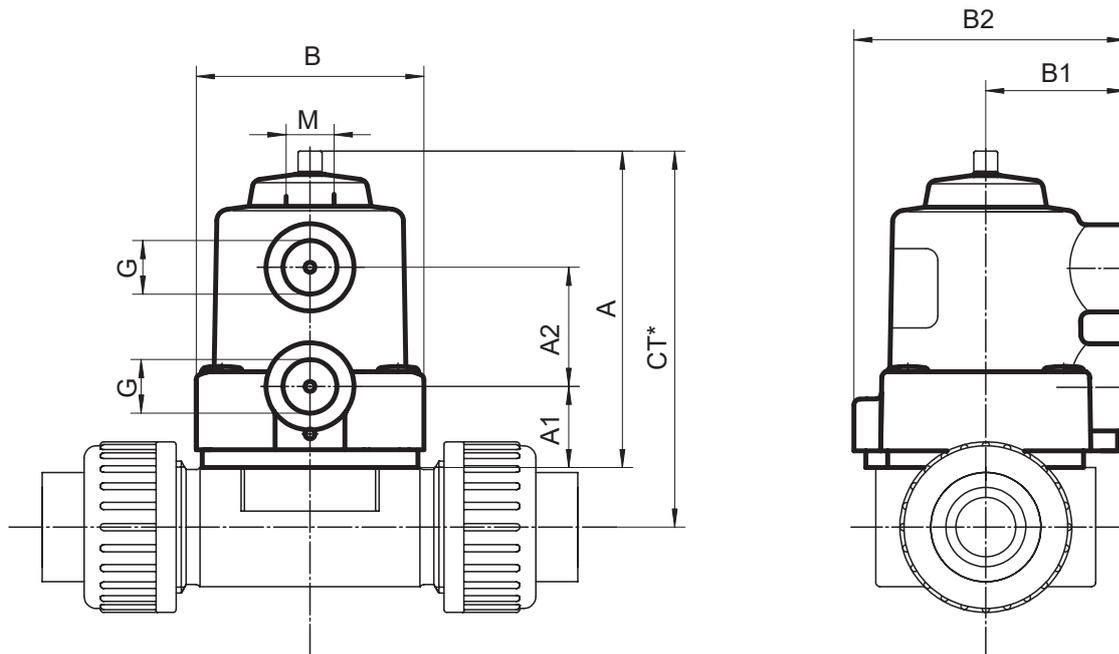
Optional

Flow direction:

Optional

7 Dimensions

7.1 Actuator dimensions



MG	A	A1	A2	B	B1	B2	G	M
10	82	21	30.0	57.0	35.0	68.0	G 1/4	M12x1

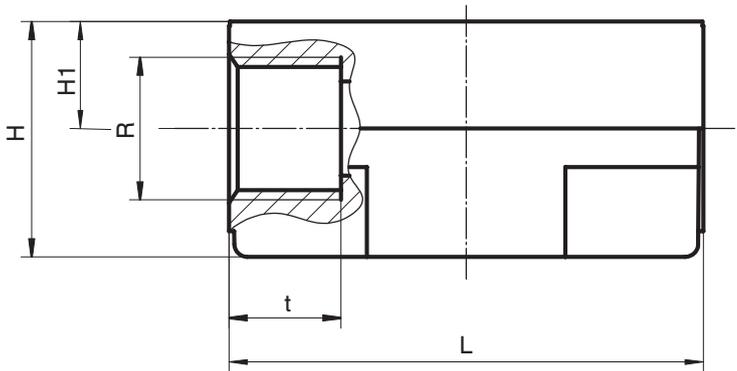
MG = diaphragm size

Dimensions in mm

* CT = A + H1 (see body dimensions)

7.2 Body dimensions

7.2.1 Threaded socket (code 1)



Connection type threaded socket (code 1)¹⁾, body materials PVC-U (code 1), PP (code 5), PVDF (code 20)²⁾

MG	DN	NPS	H		H1	L	R	t
			Material					
			1, 5	20				
10	12	3/8"	27.5	31.5	12.5	55.0	G3/8	13.0

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 1: Threaded socket DIN ISO 228

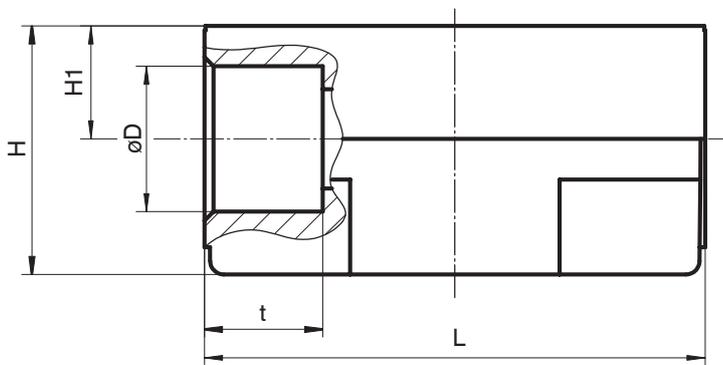
2) Valve body material

Code 1: PVC-U, grey

Code 5: PP, reinforced

Code 20: PVDF

7.2.2 Solvent cement socket (code 2)



Connection type solvent cement socket (code 2)¹⁾, body material PVC-U (code 1)²⁾

MG	DN	NPS	ø D	H	H1	L	t
10	12	3/8"	16.0	27.5	12.5	55.0	13.0

Dimensions in mm

MG = diaphragm size

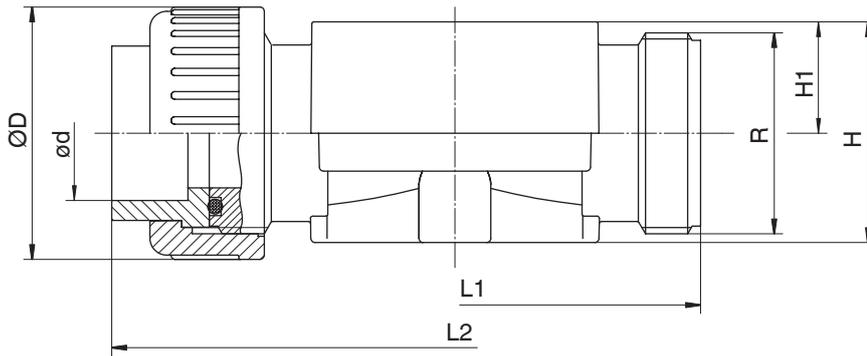
1) Connection type

Code 2: Solvent cement socket DIN

2) Valve body material

Code 1: PVC-U, grey

7.2.3 DIN union end (code 7)



Connection type union end DIN (code 7)¹⁾, body material PVC-U (code 1), PP (code 5), PVDF (code 20), PP-H (code N5)²⁾, diaphragm size 10

MG	DN	NPS	ød	ØD	H		H1		L1	L2		R
					Material		Material			Material		
					1, 20	5, N5	1, 20	5, N5		1, 20	5, N5	
10	15	1/2"	20.0	43.0	30.0	41.0	15.0	16.0	90.0	128.0	125.0	G 1

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 7: Fitting screw connection with insert (socket) – DIN

2) Valve body material

Code 1: PVC-U, grey

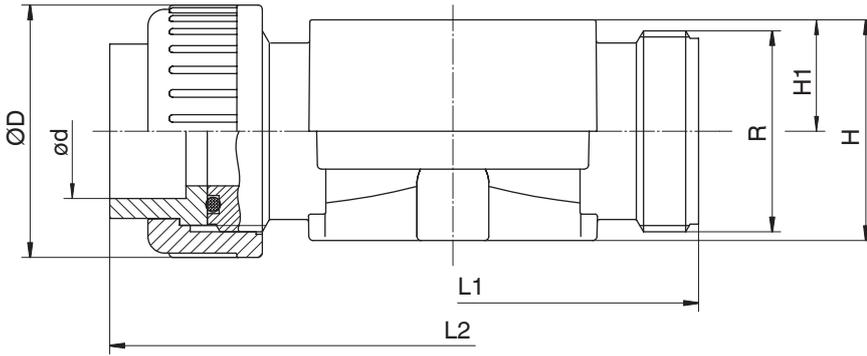
Code 5: PP, reinforced

Code 20: PVDF

Code N5: PP-H, natural

Valve body material PVDF (code 20), PP-H (code N5) with integrated mounting plate (code M), observe dimension HM (see "Mounting plate", page 19)

7.2.4 Inch union end (code 33)



Connection type inch union end (code 33)¹⁾, body material PVC-U (code 1)²⁾, diaphragm size 10

MG	DN	NPS	ød	øD	H	H1	L1	L2	R
10	15	1/2"	21.4	43.0	30.0	15.0	90.0	128.0	G1

Dimensions in mm

MG = diaphragm size

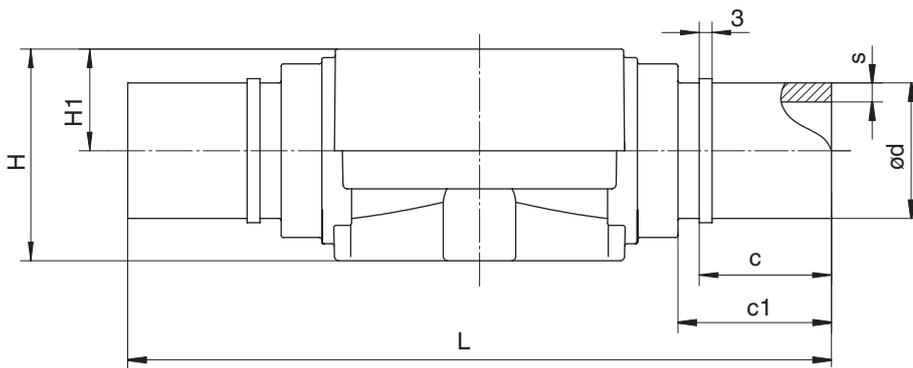
1) Connection type

Code 33: Fitting screw connection with insert inch - BS (socket)

2) Valve body material

Code 1: PVC-U, grey

7.2.5 Spigot (code 28)



Connection type spigot (code 28)¹⁾, body material PVDF (code 20)²⁾

MG	DN	NPS	c	c1	ød	H	H1	L	s
10	15	1/2"	31.0	37.0	20.0	41.0	16.0	134.0	1.9

Dimensions in mm

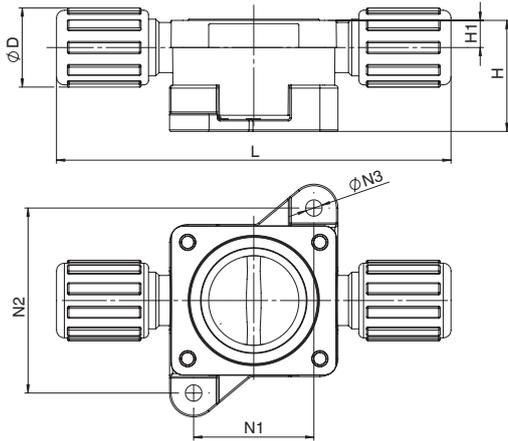
MG = diaphragm size

1) Connection type

Code 28: Spigot for IR butt welding, WNF

2) Valve body material

Code 20: PVDF

7.2.6 Flare (code 75)**Connection type flare (code 75)¹⁾, body material PP-H (code N5)²⁾**

MG	DN	NPS	$\varnothing D$	H	H1	L	N1	N2	$\varnothing N3$
10	15	1/2"	26.5	38.1	10.0	132.0	40.0	62.0	5.5
	20	3/4"	26.5	44.5	15.0	134.0	40.0	62.0	5.5

Dimensions in mm

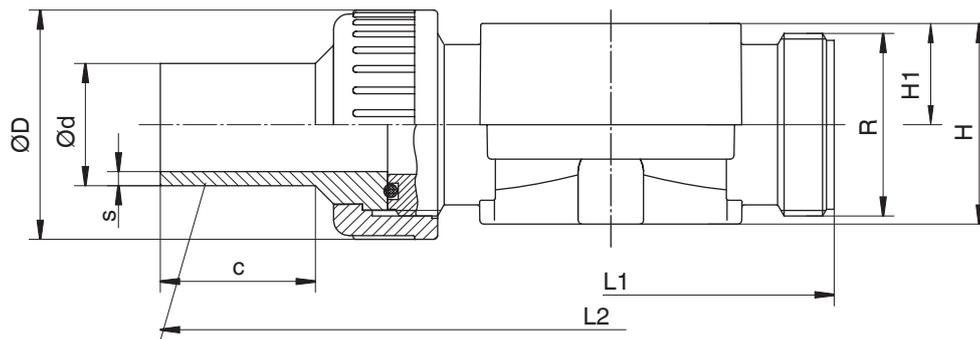
MG = diaphragm size

1) Connection type

Code 75: Flare connection with union nut PVDF

2) Valve body material

Code N5: PP-H, natural

7.2.7 DIN union end, IR butt welding (code 78)**Connection type DIN union end, IR butt welding (code 78)¹⁾, body materials PP (code 5), PVDF (code 20), PP-H (code N5)²⁾**

MG	DN	NPS	c	ød	øD	H		H1		L1	L2	R	s
						Material		Material					
						5	20, N5	5	20, N5				
10	15	1/2"	36.0	20.0	42.0	30.0	41.0	15.0	16.0	90.0	196.0	G 1	1.9

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 78: Fitting screw connection with insert (IR butt welding) – DIN

2) Valve body material

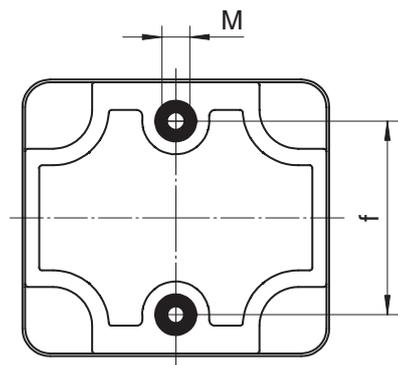
Code 5: PP, reinforced

Code 20: PVDF

Code N5: PP-H, natural

Valve body material PVDF (code 20), PP-H (code N5) with integrated mounting plate (code M), observe dimension HM (see "Mounting plate", page 19)

7.3 Valve body mounting

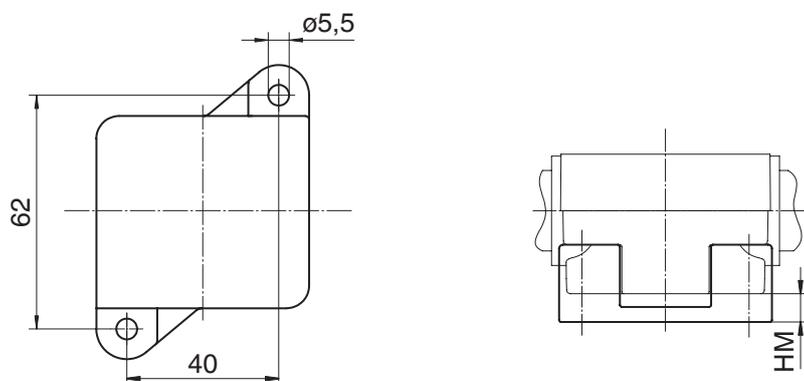


Diaphragm size	DN	M	f
10	10 - 20	M5	35.0

Dimensions in mm

MG = diaphragm size

7.4 Mounting plate



MG	DN	HM
10	12	5.0
	15	4.5
	20	4.5

Dimensions in mm

MG = diaphragm size

8 Manufacturer's information

8.1 Packaging

The product is packaged in a cardboard box which can be recycled as paper.

8.2 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

8.3 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.
5. Close the compressed air connections with protection caps or sealing plugs.

8.4 Delivery

- Check that all parts are present and check for any damage immediately upon receipt.

The product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

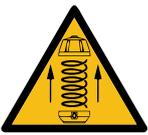
8.5 Condition as supplied to customer

Condition of the product as supplied to customer:

	Control function	Status
1	Normally closed (NC)	Closed
2	Normally open (NO)	Open
3	Double acting (DA)	Undefined

9 Installation in piping

9.1 Preparing for installation

⚠ WARNING	
	<p>Actuator is under spring tension!</p> <ul style="list-style-type: none"> ▶ Risk of severe injury or death ● The actuator must not be opened; the valve must be returned to GEMÜ for maintenance purposes.

⚠ WARNING	
	<p>The equipment is subject to pressure!</p> <ul style="list-style-type: none"> ▶ Risk of severe injury or death ● Depressurize the plant or plant component. ● Completely drain the plant or plant component.

⚠ WARNING	
	<p>Corrosive chemicals!</p> <ul style="list-style-type: none"> ▶ Risk of caustic burns ● Wear appropriate protective gear. ● Completely drain the plant.

⚠ WARNING	
	<p>Risk of crushing due to moving parts when the valve is not installed!</p> <ul style="list-style-type: none"> ▶ Upper limbs may get into the valve body openings while working on the valve. ● Ensure that the valve is in the respective end position (closed for NC or open for NO). ● Do not reach into the crushing area through the valve body openings.

⚠ CAUTION	
	<p>Hot plant components!</p> <ul style="list-style-type: none"> ▶ Burns ● Only work on plant that has cooled down. ● Wear protective gear.

⚠ CAUTION	
Use as step!	
<ul style="list-style-type: none"> ▶ Damage to the product ▶ Risk of slipping-off ● Choose the installation location so that the product cannot be used as a foothold. ● Do not use the product as a step or a foothold. 	

⚠ CAUTION	
	<p>Leakage!</p> <ul style="list-style-type: none"> ▶ Emission of dangerous materials ● Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

⚠ CAUTION	
	<p>Note the weight of the product!</p> <ul style="list-style-type: none"> ▶ If necessary, use suitable lifting equipment.

NOTICE**Suitability of the product!**

- ▶ The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions.

NOTICE**Tools!**

- ▶ The tools required for installation and assembly are not included in the scope of delivery.
 - Use appropriate, functional and safe tools.
1. Ensure the suitability of the product for each respective use.
 2. Check the technical data of the product and the materials.
 3. Keep appropriate tools ready.
 4. Ensure appropriate protective gear as specified in the plant operator's guidelines.
 5. Observe appropriate regulations for connections.
 6. Have installation work carried out by trained personnel.
 7. Shut off plant or plant component.
 8. Secure plant or plant component against recommissioning.
 9. Depressurize the plant or plant component.
 10. Completely drain the plant (or plant component) and let it cool down until the temperature is below the media vaporization temperature and scalding can be ruled out.
 11. Correctly decontaminate, rinse and ventilate the plant or plant component.
 12. Lay piping so that the product is protected against transverse and bending forces, and also vibrations and tension.
 13. Only install the product between matching aligned pipes (see chapters below).
 14. Pay attention to the installation position (see chapter "Installation position").

9.2 Installation position

The installation position of the product is optional.

9.3 Flow direction

You can choose the flow direction of the product.

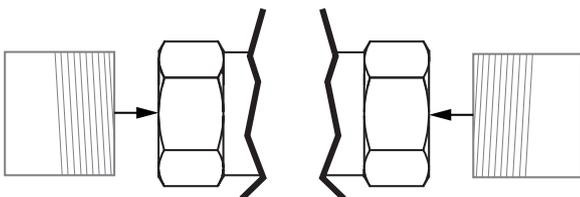
9.4 Installation with threaded sockets

Fig. 1: Threaded socket

NOTICE**Sealing material!**

- ▶ The sealing material is not included in the scope of delivery.
 - Only use appropriate sealing material.
1. Keep thread sealant ready.
 2. Carry out preparations for installation (see chapter "Preparing for installation").
 3. Screw the threaded connections into the pipe in accordance with valid standards.
 4. Screw the body of the product onto the piping using appropriate thread sealant.
 5. Re-attach or reactivate all safety and protective devices.

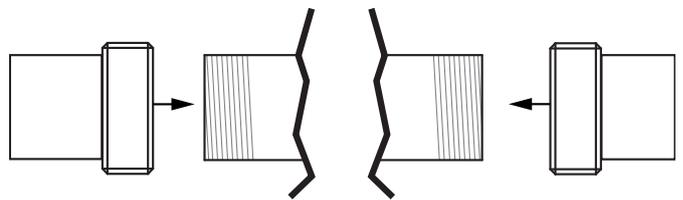
9.5 Installation with threaded spigots

Fig. 2: Threaded spigots

NOTICE**Thread sealant!**

- ▶ The thread sealant is not included in the scope of delivery.
 - Only use appropriate thread sealant.
1. Keep thread sealant ready.
 2. Carry out preparations for installation (see chapter "Preparing for installation").
 3. Screw the pipe into the threaded connection of the valve body in accordance with valid standards.
 - ⇒ Use appropriate thread sealant.
 4. Re-attach or reactivate all safety and protective devices.

9.6 Installation with solvent cement sockets**NOTICE**

- ▶ The solvent cement is not included in the scope of delivery.
 - Only use suitable solvent cement!
1. Carry out preparations for installation (see chapter "Preparations for installation").
 2. Apply solvent cement on the inside of the valve body and on the outside of the piping as specified by the solvent cement manufacturer.
 3. Connect the body of the product with the piping.
 4. Reactivate all safety and protective devices.

9.7 Installation with butt weld spigots

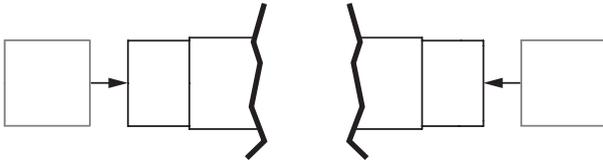


Fig. 3: Butt weld spigots

1. Carry out preparations for installation (see chapter "Preparing for installation").
2. Adhere to good welding practices!
3. Disassemble the actuator with the diaphragm before welding in the valve body (see "Removing the actuator" chapter).
4. Weld the body of the product in the piping.
5. Allow butt weld spigots to cool down.
6. Reassemble the valve body and the actuator with diaphragm (see "Mounting the actuator" chapter).
7. Re-attach or reactivate all safety and protective devices.
8. Flush the system.

9.8 Installation with flare connection

NOTICE
<p>Fittings!</p> <ul style="list-style-type: none"> ▶ For preparation and connection of the flare connections, please refer to the GEMÜ FlareStar® brochure and the GEMÜ flare and assembly instructions. ● Depending on the ambient conditions, use resistant and suitable connection fittings.

1. Carry out preparations for installation (see chapter "Preparing for installation").
2. Push the flared PFA tubing onto the flare fitting body.
3. Screw the union nut over it.
4. Re-attach or reactivate all safety and protective devices.

9.9 Installation with union ends

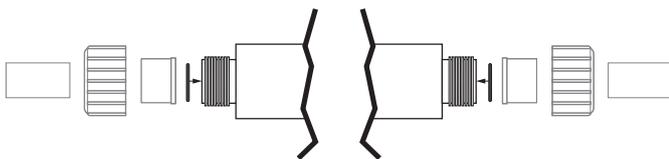


Fig. 4: Union end with insert

NOTICE

- | |
|---|
| <ul style="list-style-type: none"> ▶ The solvent cement is not included in the scope of delivery. ● Only use suitable solvent cement! |
|---|

1. Carry out preparation for installation (see chapter "Preparing for installation").
2. Depending on the application, comply with the welding standards and the specifications of the solvent cement manufacturer for adhesive bonds.
3. Screw the threaded connections into the piping in accordance with valid standards.
4. Unscrew the union nut from the product body.
5. Reinsert the O-ring if necessary.
6. Push the union nut over the piping.
7. Connect the insert with the piping by solvent cementing/welding.
8. Screw the union nut back onto the product body.
9. Connect the other side of the product body with the piping in the same way.
10. Re-attach or reactivate all safety and protective devices.

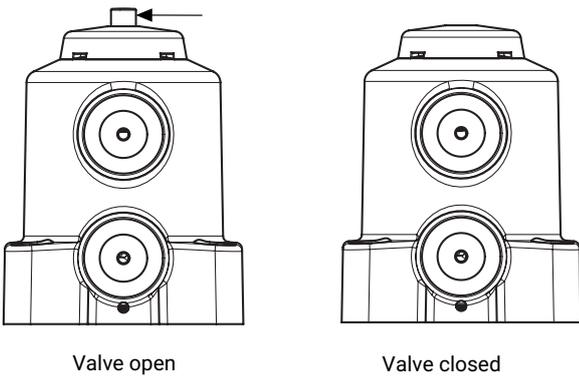
9.10 After the installation

NOTICE
<p>Diaphragms set in the course of time!</p> <ul style="list-style-type: none"> ▶ Leakage ● After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required. ● Retighten the bolts and nuts at the very latest after the first sterilization process.

- Re-attach or reactivate all safety and protective devices.

9.11 Operation

Optical position indicator



Valve open

Valve closed

10 Pneumatic connections

10.1 Control function

The following control functions are available:

Control function 1: Normally closed (NC)

Valve resting position: Closed by spring force.

Activating the actuator (control medium connector 2) opens the valve. When the actuator is vented, the valve is closed by spring force.

Control function 2: Normally open (NO)

Valve resting position: Opened by spring force.

Activating the actuator (control medium connector 4) closes the valve. When the actuator is vented, the valve is opened by spring force.

Control function 3: Double acting (DA)

Valve resting position: No defined normal position.

The valve is opened and closed by activating the respective control medium connectors (control medium connector 2: Open/control medium connector 4: Close).



For control function 1, control medium connector 4 is closed with a blanking plug.

For control function 2, control medium connector 2 is closed with a blanking plug.

Control function	Control medium connectors	
	2	4
1 (NC)	+	-

Control function	Control medium connectors	
	2	4
2 (NO)	-	+
3 (DA)	+	+
+ = available / - = not available (see figure for control medium connectors 2/4)		

10.2 Connecting the control medium

1. Use suitable connectors.
2. Connect the control medium lines tension-free and without any bends or knots.

Thread size of the control medium connectors: G1/4

NOTICE		
▶ For control air connectors made of plastic, no screw-in connectors with a tapered thread R1/4" may be used.		
Control function	Connectors	
1	Normally closed (NC)	2: Control medium (open)
2	Normally open (NO)	4: Control medium (close)
3	Double acting (DA)	2: Control medium (open) 4: Control medium (close)
See figure for connectors 2 / 4		

11 Commissioning

⚠ DANGER

Danger from pressure surges or excessive pressure!

- ▶ Serious injury or death due to penetration of pressurized media
- Ensure that the valve can be dismantled for maintenance purposes.

⚠ WARNING

Corrosive chemicals!

- ▶ Risk of caustic burns
- Wear appropriate protective gear.
- Completely drain the plant.

⚠ CAUTION

Leakage!

- ▶ Emission of dangerous materials
- Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

⚠ CAUTION**Note the weight of the product!**

- ▶ If necessary, use suitable lifting equipment.

⚠ CAUTION**Corrosion from media that attack the valve body, seals or diaphragm**

- ▶ Damage to the product.
- Prior to commissioning, the operator must carry out a material compatibility test.
- Only operate the product with suitable media.

⚠ CAUTION**Cleaning agent!**

- ▶ Damage to the GEMÜ product
- The plant operator is responsible for selecting the cleaning material and performing the procedure.

1. Check the tightness and the function of the product (close and reopen the product).
2. Flush the piping system for new plants and after repair work (the product must be fully open).
 - ⇒ Harmful foreign matter has been removed.
 - ⇒ The product is ready for use.
3. Commission the product.
4. Commission the actuators in accordance with the enclosed instructions.

12 Operation

Operate the product according to the control function (see also chapter "Pneumatic connections").

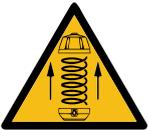
13 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from connector 4* (control function NC) or from connector 2* (control function NO)	Piston faulty	Replace the actuator
Control medium escaping from leak detection hole*	Spindle seal leaking	Replace the actuator and check control medium for impurities
Working medium escaping from leak detection hole*	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
The product does not open or does not open fully	Control pressure too low (for control function NC)	Operate the product with the control pressure specified in the datasheet
	Pilot valve faulty (for NC control function and DA control function)	Check and replace pilot valve
	Control medium not connected	Connect control medium
	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Actuator spring faulty (for control function NO)	Replace the actuator
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Control pressure too low (for control function NO and control function DA)	Operate the product with the control pressure specified in the datasheet
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check diaphragm and valve body for potential damage, replace damaged parts if necessary
	Valve body leaking or damaged	Check valve body for damage, replace valve if necessary
	Shut-off diaphragm is defective	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator spring faulty (for control function NC)	Replace actuator
The product is leaking between actuator and valve body	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Bolting between valve body and actuator loose	Tighten bolting between valve body and actuator
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
	Sealing material faulty	Replace sealing material
Valve body is leaking	Valve body is leaking	Check valve body for damage, replace valve body if necessary

* see chapter "Spare parts"

14 Inspection and maintenance

⚠ WARNING



Actuator is under spring tension!

- ▶ Risk of severe injury or death
- The actuator must not be opened; the valve must be returned to GEMÜ for maintenance purposes.

⚠ WARNING



Risk of crushing due to moving parts when the valve is not installed!

- ▶ Upper limbs may get into the valve body openings while working on the valve.
- Ensure that the valve is in the respective end position (closed for NC or open for NO).
- Do not reach into the crushing area through the valve body openings.

⚠ WARNING



The equipment is subject to pressure!

- ▶ Risk of severe injury or death
- Depressurize the plant or plant component.
- Completely drain the plant or plant component.

⚠ CAUTION



Hot plant components!

- ▶ Burns
- Only work on plant that has cooled down.
- Wear protective gear.

⚠ CAUTION



Note the weight of the product!

- ▶ If necessary, use suitable lifting equipment.

⚠ CAUTION



Corrosion from media that attack the valve body, seals or diaphragm

- ▶ Damage to the product.
- Prior to commissioning, the operator must carry out a material compatibility test.
- Only operate the product with suitable media.

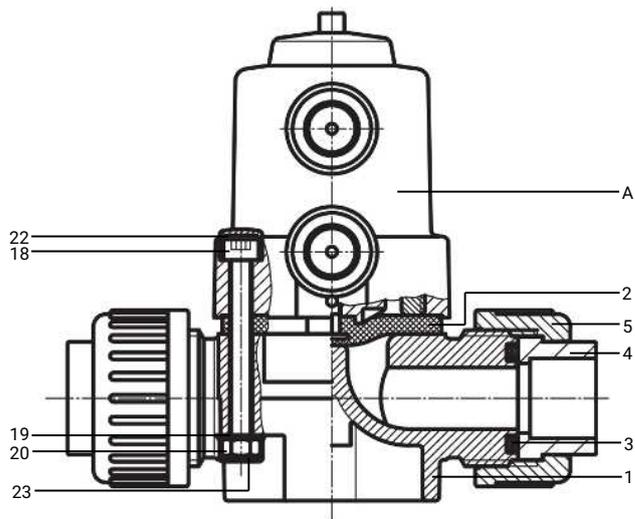
⚠ CAUTION

- Servicing and maintenance work must only be performed by trained personnel.
- Do not extend hand lever. GEMÜ shall assume no liability for damages caused by improper handling or third-party actions.
- In case of doubt, contact GEMÜ prior to commissioning.

1. Wear appropriate protective gear in accordance with the plant operator's guidelines.
2. Shut off the plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

The operator must carry out regular visual examinations of the valves, depending on the operating conditions and the potentially hazardous situations, in order to prevent leakage and damage. The valve also has to be disassembled in corresponding intervals and checked for wear (see "Fitting/removing spare parts").

14.1 Spare parts



Item	Name	Order designation
A	Actuator	9610
2	Diaphragm	Code 2 Code 17 Code 4A Code 4 Code 29 Code 54 Code 56 Code 5M
1	Body	K610
18, 19	Screw connection kit	610 S30

14.2 Fitting/removing spare parts

14.2.1 Valve disassembly (removing the actuator from the body)

1. Move the actuator **A** to the open position.
2. Remove the actuator **A** from the valve body **1**.
3. Move the actuator **A** to the closed position.

⚠ WARNING



Risk of crushing due to moving parts when the valve is not installed!

- ▶ Upper limbs may get into the valve body openings while working on the valve.
- Ensure that the valve is in the respective end position (closed for NC or open for NO).
- Do not reach into the crushing area through the valve body openings.

NOTICE

- ▶ Clean all parts of contamination (do not damage the parts during cleaning) following removal. Check parts for potential damage, replace if necessary (only use genuine parts from GEMÜ).

14.2.2 Removing the diaphragm

NOTICE

- ▶ Before removing the diaphragm, please remove the actuator, see "Valve disassembly (removing the actuator from the body)".

1. Unscrew the diaphragm.
2. Clean all parts of remains of product and contaminants. Do not scratch or damage parts during cleaning!
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

14.2.3 Mounting the diaphragm

14.2.3.1 General information

NOTICE

- ▶ Mount the correct diaphragm that suits the valve (suitable for medium, medium concentration, temperature and pressure). The shut-off diaphragm is a wearing part. Check the technical condition and function of the valve before commissioning and during the whole duration of use. Carry out checks regularly and determine the check intervals in accordance with the conditions of use and/or the regulatory codes and provisions applicable for this application.

NOTICE

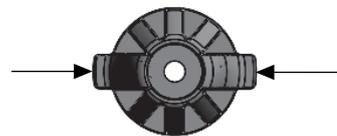
- ▶ If the diaphragm is not screwed into the adapter far enough, the closing force is transmitted directly onto the diaphragm pin and not via the compressor. This will cause damage and early failure of the diaphragm and thus leakage of the valve. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the valve is no longer ensured.

NOTICE

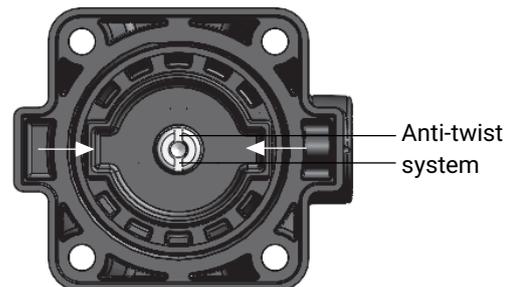
- ▶ An incorrectly mounted diaphragm may cause valve leakage/emission of medium. In this case, remove the diaphragm, check the complete valve and diaphragm and re-assemble, proceeding as in the instructions above.

The compressor is loose.

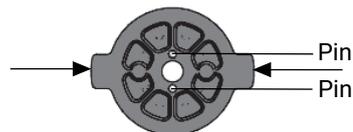
Compressor and actuator flange seen from below:



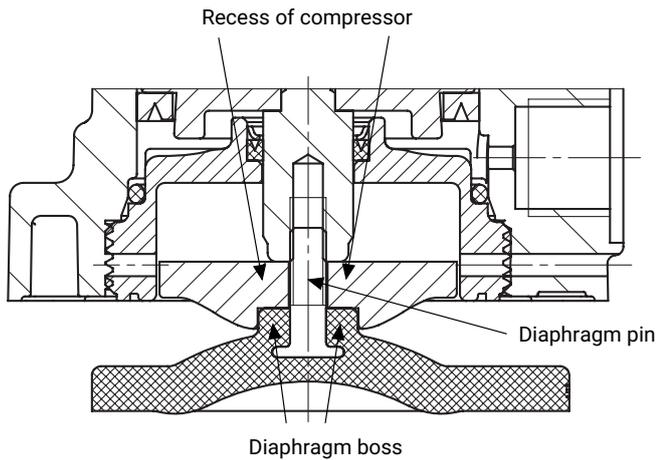
Compressor – view from diaphragm side



Compressor control function NO and DA



- Place the compressor loosely on the actuator spindle, fit the wings into the guides (arrows).

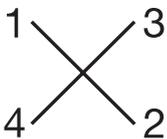
14.2.3.2 Mounting a concave diaphragm**NOTICE**

- Service and maintenance:
Diaphragms set over the course of time. After fitting/removing the valve, check that the bolts **18** on the body are mechanically secured and retighten if necessary.

1. Move the actuator **A** to the closed position.
2. Place the compressor loosely on the actuator spindle, fit the wings into the guides (see "General information" chapter). Control function NO and DA: ensure that the pins are engaged in the anti-twist system.
3. Check if the compressor fits closely in the guides.
4. Manually screw the new diaphragm into the compressor tightly.
5. Check if the diaphragm boss fits closely in the recess of the compressor.
6. If it is difficult to screw it in, check the thread, replace damaged parts (only use genuine parts from GEMÜ).
7. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.

14.2.4 Mounting the actuator on the valve body

1. Move the actuator **A** to the open position.
2. Place the actuator **A** with the mounted diaphragm **2** on the valve body **1**. Take care to align the compressor weir and valve body weir (see sectional views).
3. Tighten the bolts **18**, washers **19** and nuts **20** by hand.
4. Move actuator **A** to the closed position.
5. Tighten the nuts **20** diagonally.



6. Put protective caps **22** and **23** back on.
7. Ensure that the diaphragm **2** is compressed evenly (approx. 10–15%, visible by an even outer bulge).
8. Using the hammer, knock the optical position indicator down into the actuator **A** so that it is flush.
9. Check the fully assembled valve for leaks.

15 Removal from piping

1. Remove in reverse order to installation.
2. Deactivate the control medium.
3. Disconnect the control medium line(s).
4. Disassemble the product. Observe warning notes and safety information.

16 Disposal

1. Pay attention to adhered residual material and gas diffusion from penetrated media.
2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.

17 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

18 EU Declaration of Incorporation

Version 1.0



Original EU-Einbauerklärung
EU Declaration of Incorporation

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1
74635 Kupferzell
Deutschland

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt: GEMÜ 610

Product: GEMÜ 610

Produktname: Pneumatisch betätigtes Membranventil

Product name: Pneumatically operated diaphragm valve

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

The partly completed machinery may be commissioned only if it has been determined, if necessary, that the machinery into which the partly completed machinery is to be installed meets the provisions of the Machinery Directive 2006/42/EC.

Richtlinien/Verordnungen:

Directives/Regulations:

MD 2006/42/EG¹⁾

Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:

The following harmonized standards (or parts thereof) have been applied:

EN ISO 12100:2010

Folgende grundlegenden Sicherheits- und Gesundheitsschutzanforderungen der EG-Maschinenrichtlinie 2006/42/EG, Anhang I wurden angewandt und eingehalten:

The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:

1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.3.; 1.3.4.; 1.3.7.; 1.5.13.; 1.5.3.; 1.5.4.; 1.5.5.; 1.5.8.; 1.5.9.; 1.6.1.; 1.6.5.; 1.7.1.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.; 2.1.1.; 2.1.2.

1) MD 2006/42/EG

1) MD 2006/42/EG

Bemerkungen:

Ferner wird erklärt, dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B erstellt wurden.

Remarks:

We also declare that the specific technical documents have been created in accordance with part B of Annex VII.

Der Hersteller verpflichtet sich, einzelstaatlichen Stellen auf begründetes Verlangen die speziellen technischen Unterlagen zu der unvollständigen Maschine zu übermitteln. Diese Übermittlung erfolgt elektronisch.

The manufacturer undertakes to transmit relevant technical documents on the partly completed machinery to the national authorities in response to a reasoned request. This communication takes place electronically.

Die gewerblichen Schutzrechte bleiben hiervon unberührt!

This does not affect the industrial property rights.

[Handwritten signature]

i.V. M. Barghoorn
Leiter Globale Technik
Ingelfingen, 26.01.2026

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1, 74635 Kupferzell, Deutschland

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19 Manufacturer's declaration

Version 1.0

GEMÜ

Herstellererklärung Manufacturer's declaration

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1
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Deutschland

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt: GEMÜ 610**Product:** GEMÜ 610**Produktname:** Pneumatisch betätigtes Membranventil**Product name:** Pneumatically operated diaphragm valve**Richtlinien/Verordnungen:****Directives/Regulations:**PED 2014/68/EU¹⁾¹⁾ PED 2014/68/EU

Das Produkt wurde gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU in Übereinstimmung mit der guten Ingenieurspraxis ausgelegt und hergestellt.

Das Produkt wurde entwickelt und produziert nach Qualitätsstandards, welche die Forderungen der ISO 9001 und der ISO 14001 erfüllen. Das Produkt darf gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU keine CE Kennzeichnung tragen.

¹⁾ PED 2014/68/EU

The mentioned product is designed and manufactured in compliance with sound engineering practice according to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU.

The product has been developed and produced according to standards of quality which comply with the requirements of ISO 9001 and ISO 14001. According to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU, this product must not be identified by a CE-marking.



i.v. M. Barghoorn
Leiter Globale Technik
Kupferzell, 26.01.2026

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Subject to alteration

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