

GEMÜ 660

Pneumatically operated diaphragm valve

EN

Operating instructions



further information
webcode: GW-660



All rights including copyrights or industrial property rights are expressly reserved.

Keep the document for future reference.

© GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
25.04.2024

Contents

1	General information	4
1.1	Information	4
1.2	Symbols used	4
1.3	Definition of terms	4
1.4	Warning notes	4
2	Safety information	5
3	Product description	5
3.1	Construction	5
3.2	Description	6
3.3	Function	6
3.4	Product label	6
4	GEMÜ CONEXO	6
5	Correct use	6
6	Order data	7
6.1	Order codes	7
6.2	Order example	8
7	Technical data	9
8	Dimensions	14
8.1	Actuator dimensions	14
8.2	Body dimensions	15
9	Manufacturer's information	23
9.1	Packaging	23
9.2	Transport	23
9.3	Storage	23
9.4	Delivery	23
10	Installation in piping	23
10.1	Preparing for installation	23
10.2	Installation position	23
10.3	Installation with butt weld spigots	24
10.4	Installation with clamp connections	24
10.5	Installation with threaded spigots	24
10.6	After the installation	24
10.7	Operation	24
10.8	Setting the seal adjuster and the stroke limiter	25
11	Pneumatic connections	27
11.1	Control function	27
11.2	Connecting the control medium	27
12	Commissioning	27
13	Operation	27
14	Troubleshooting	28
15	Inspection and maintenance	29
15.1	Spare parts	29
15.2	Fitting/removing spare parts	29
16	Removal from piping	33
17	Disposal	33
18	Returns	33
19	EU Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B ...	34
20	Manufacturer's declaration according to the Pressure Equipment Directive 2014/68/EU	35

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 organised according to the following scheme:


SIGNAL WORD	
Possible symbol for the specific danger	<p>Type and source of the danger</p> <ul style="list-style-type: none"> ▶ Possible consequences of non-observance. ● Measures for avoiding danger.


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

The following signal words and danger levels are used:




⚠ DANGER	
	<p>Imminent danger!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ WARNING	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ CAUTION	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause moderate to light injury.

NOTICE	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ 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!
	Corrosive chemicals!
	Hot plant components!

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 substances.

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:

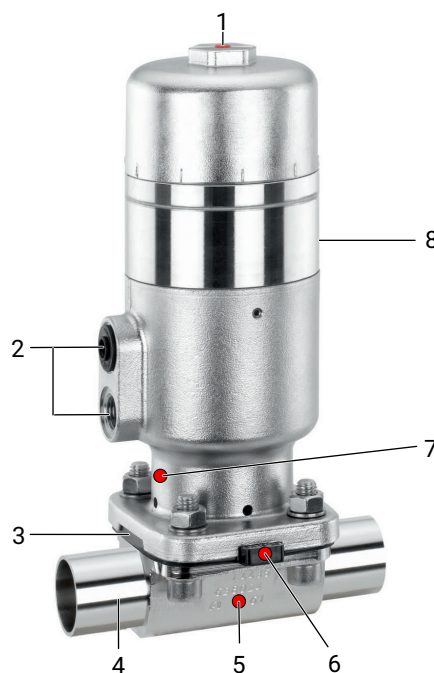
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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	Position indicator	
2	Control air connectors	
3	Diaphragm	EPDM PTFE/EPDM (one-piece)
4	Valve body	1.4408, investment casting 1.4435, investment casting 1.4435 (F316L), forged body 1.4435 (BN2), forged body, Δ Fe < 0.5% 1.4539, forged body
5	CONEXO body RFID chip (see Conexo information)	
6	CONEXO diaphragm RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	
8	Pneumatic actuator	Stainless steel

3.2 Description

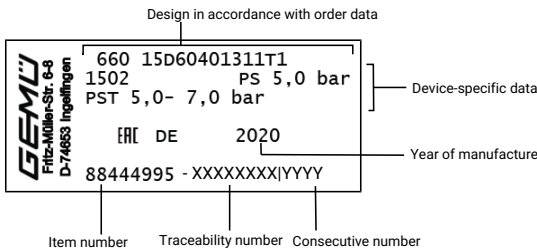
The GEMÜ 660 2/2-way diaphragm valve has a stainless steel piston actuator and is pneumatically operated. The valve was designed for dosing and filling a wide range of products. All actuator parts are made from stainless steel (except seals). Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available. An opening stroke and closing stroke limiter and an optical position indicator are integrated as standard.

3.3 Function

The product is designed for use in piping. It can be closed or opened by a control medium, which is how it controls the flow.

3.4 Product label

The product label is located on the actuator. Product label data (example):



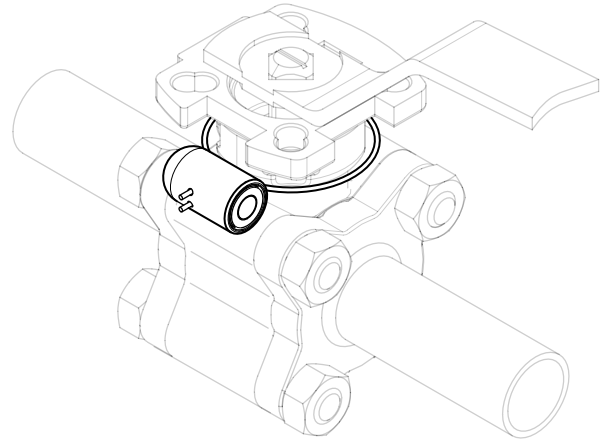
The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

The operating pressure stated on the product label applies to a media temperature of 20 °C. The product can be used up to the maximum stated media temperature. You can find the pressure/temperature correlation in the technical data.


4 GEMÜ CONEXO

Installing the RFID chip

In the corresponding design with CONEXO, this product has an RFID chip for electronic identification purposes. The position of the RFID chip can be seen below.



5 Correct use

⚠ DANGER	
	<p>Danger of explosion!</p> <ul style="list-style-type: none"> ▶ Risk of severe injury or death ● Do not use the product in potentially explosive zones. ● Only use the product in potentially explosive zones confirmed in the declaration of conformity.

⚠ WARNING	
<p>Improper use of the product!</p> <ul style="list-style-type: none"> ▶ 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.

1. Use the product in accordance with the technical data.
2. Please note the flow direction on the valve body.

NOTICE
<p>Note on Directive 2014/34/EU (ATEX Directive):</p> <ul style="list-style-type: none"> ▶ A supplement to Directive 2014/34/EU is included with the product if it was ordered according to ATEX.

6 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, stainless steel piston actuator, stroke limiter and seal adjuster	660

2 DN	Code
DN 4	4
DN 6	6
DN 8	8
DN 10	10
DN 12	12
DN 15	15
DN 20	20
DN 25	25

3 Body configuration	Code
Tank bottom valve body	B
Body configuration code B: Dimensions and designs on request	
2/2-way body	D
T-body	T
Body configuration code T: Dimensions on request	

4 Connection type	Code
Spigot	
Spigot DIN	0
Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)	16
Spigot EN 10357 series A/DIN 11866 series A formerly DIN 11850 series 2	17
Spigot DIN 11850 series 3	18
Spigot JIS-G 3447	35
Spigot JIS-G 3459 schedule 10s	36
Spigot SMS 3008	37
Spigot BS 4825, part 1	55
Spigot ASME BPE/DIN EN 10357 series C (from 2022 edition)/DIN 11866 series C	59
Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B	60
Spigot ANSI/ASME B36.19M schedule 10s	63
Spigot ANSI/ASME B36.19M schedule 5s	64
Spigot ANSI/ASME B36.19M schedule 40s	65
Threaded connection	
Threaded socket DIN ISO 228	1
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K
Clamp	
Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D	80

4 Connection type	Code
Clamp DIN 32676 series B, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	82
Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	88
Clamp DIN 32676 series A, face-to-face dimension FTF acc. to EN 558 series 7, length only for body configuration D	8A
Clamp ISO 2852 for pipe ISO 2037, clamp SMS 3017 for pipe SMS 3008 face-to-face dimension FTF EN 558 series 7, length only for body configuration D	8E
Clamp DIN 32676 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D	8P
Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	8T

5 Valve body material	Code
Investment casting material	
1.4408, investment casting	37
1.4435, investment casting	C3
Forged material	
1.4435 (F316L), forged body	40
1.4435 (BN2), forged body, $\Delta Fe < 0.5\%$	42
1.4539, forged body	F4

6 Diaphragm material	Code
Elastomer	
EPDM	3A
EPDM	13
Note: The EPDM diaphragm (code 3A) is only available in diaphragm size 8.	
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
Control air connector 90° offset to flow direction, piston diameter 32 mm (standard)	0R1
Control air connector in flow direction (standard), piston diameter 32 mm (standard)	0T1
Actuator size 1T1	1T1
Actuator version 1R1	1R1
Actuator size 2T1	2T1

8 Actuator version	Code
Actuator size 2R1	2R1

9 Surface	Code
Ra ≤ 6.3 µm (250 µin.) for media wetted surfaces, mechanically polished internal	1500
Ra ≤ 0.8 µm (30 µin.) for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1502
Ra ≤ 0.8 µm (30 µin.) for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external	1503
Ra ≤ 0.6 µm (25 µin.) for media wetted surfaces, mechanically polished internal	1507
Ra ≤ 0.6 µm (25 µin.) for media wetted surfaces, electropolished internal/external	1508
Ra ≤ 0.25 µm (10 µin.) for media wetted surfaces *), in accordance with DIN 11866 HE5, electropolished internal/external, *) for inner pipe diameters < 6 mm, in the spigot Ra ≤ 0.38 µm	1516
Ra ≤ 0.25 µm (10 µin.) for media wetted surfaces *), in accordance with DIN 11866 H5, mechanically polished internal, *) for inner pipe diameters < 6 mm, in the spigot Ra ≤ 0.38 µm	1527
Ra ≤ 0.4 µm (15 µin.) for media wetted surfaces, in accordance with DIN 11866 H4, mechanically polished internal	1536
Ra ≤ 0.4 µm (15 µin.) for media wetted surfaces, in accordance with DIN 11866 HE4, electropolished internal/external	1537

9 Surface	Code
Ra max. 0.51 µm (20 µin.) for media wetted surfaces, in accordance with ASME BPE SF1, mechanically polished internal	SF1
Ra max. 0.64 µm (25 µin.) for media wetted surfaces, in accordance with ASME BPE SF2, mechanically polished internal	SF2
Ra max. 0.76 µm (30 µin.) for media wetted surfaces, in accordance with ASME BPE SF3, mechanically polished internal	SF3
Ra max. 0.38 µm (15 µin.) for media wetted surfaces, in accordance with ASME BPE SF4, electropolished internal/external	SF4
Ra max. 0.51 µm (20 µin.) for media wetted surfaces, in accordance with ASME BPE SF5, electropolished internal/external	SF5
Ra max. 0.64 µm (25 µin.) for media wetted surfaces, in accordance with ASME BPE SF6, electropolished internal/external	SF6

10 Special version	Code
Without	
Special version for 3A	M
Special version for oxygen, maximum medium temperature: 60 °C	S

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

Order example

Ordering option	Code	Description
1 Type	660	Diaphragm valve, pneumatically operated, stainless steel piston actuator, stroke limiter and seal adjuster
2 DN	15	DN 15
3 Body configuration	D	2/2-way body
4 Connection type	60	Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B
5 Valve body material	40	1.4435 (F316L), forged body
6 Diaphragm material	54	PTFE/EPDM one-piece
7 Control function	1	Normally closed (NC)
8 Actuator version	2T1	Actuator size 2T1
9 Surface	1503	Ra ≤ 0.8 µm (30 µin.) for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external
10 Special version		Without
11 CONEXO		Without

7 Technical data

7.1 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.
The valve will seal in both flow directions up to full operating pressure (gauge pressure).
For special oxygen version (code S): only gaseous oxygen

Control medium: Inert gases

7.2 Temperature

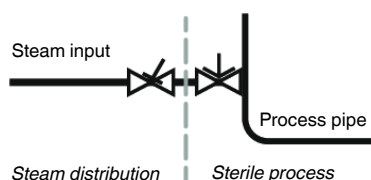
Media temperature: Drinks filling -10 – 85 °C
Other applications -10 – 100 °C

Diaphragm material	Standard	Special version for oxygen
EPDM (code 3A/13)	-10 – 100 °C	0 – 60 °C
PTFE/EPDM (code 54)	-10 – 100 °C	0 – 60 °C

Sterilization temperature: EPDM (code 3A/13) max. 150 °C, max. 60 min per cycle
PTFE/EPDM (code 54) max. 150 °C, constant temperature per cycle

The sterilization temperature is only valid for steam (saturated steam) or superheated water. If the sterilization 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.

PTFE diaphragms can also be used as steam barriers; however, this will reduce their service life. This also applies to PTFE diaphragms exposed to high temperature fluctuations. 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.



Ambient temperature: 0 – 60 °C

Control medium temperature: 0 – 60 °C

Storage temperature: 0 – 40 °C

7.3 Pressure

Operating pressure:

MG	DN	Actuator version (code)	Diaphragm material	
			EPDM	PTFE
8	4 - 15	0T1, 0R1	0 - 5	0 - 5
10	10 - 20	1T1, 1R1	0 - 5	0 - 5
25	15 - 25	2T1, 2R1	0 - 5	0 - 5

MG = diaphragm size

All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values.

Information on operating pressures applied on both sides and for high purity media on request.

Observe control pressure / operating pressure diagram

Pressure rating:

PN 16

Leakage rate:

Leakage rate A to P11/P12 EN 12266-1

Control pressure:

MG	DN	Actuator version (code)	Control function 1	Control function 2 + 3
8	4 - 15	0T1, 0R1	5.0 - 7.0	max. 5.5
10	10 - 20	1T1, 1R1	5.0 - 7.0	max. 7.0
25	15 - 25	2T1, 2R1	4.0 - 7.0	max. 7.0

MG = diaphragm size

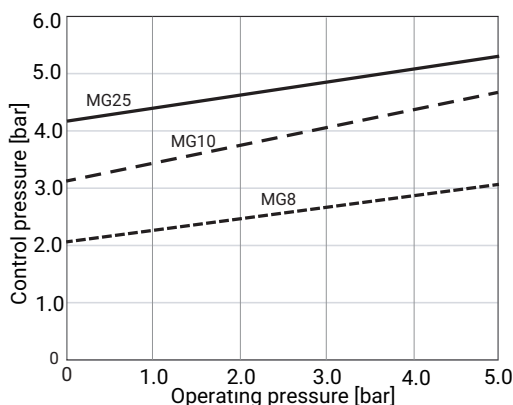
All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values.

Information on operating pressures applied on both sides and for high purity media on request.

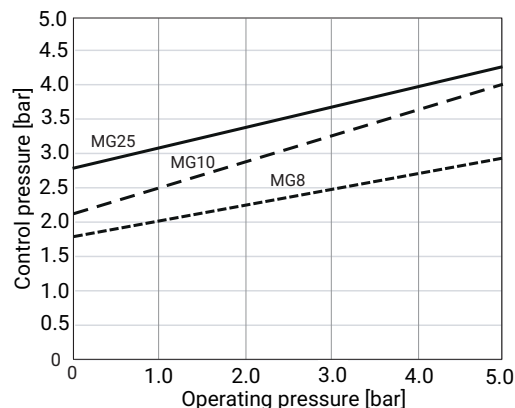
Control pressure/operating pressure diagram:

GEMÜ 660: Control pressure/operating pressure diagram – Control function 2 and 3

Control function 2



Control function 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.

Filling volume:

Actuator version (code)	Control function 1	Control function 2 + 3
0T1, 0R1	0.007	0.006
1T2, 1R1	0.021	0.010
2T1, 2R1	0.060	0.038

Filling volume in dm³

Kv values:

MG	DN	Connection type (code)							
		0	16	17	18	37	59	60	1
8	4	0.5	-	-	-	-	-	-	-
	6	-	-	1.1	-	-	-	1.2	-
	8	-	-	1.3	-	-	0.6	2.2	1.4
	10	-	2.1	2.1	2.1	-	1.3	-	-
	15	-	-	-	-	-	2.0	-	-
10	10	-	2.4	2.4	2.4	-	2.2	3.3	-
	12	-	-	-	-	-	-	-	3.2
	15	3.3	3.8	3.8	3.8	-	2.2	4.0	3.4
	20	-	-	-	-	-	3.8	-	-
25	15	4.1	4.7	4.7	4.7	-	-	7.4	6.5
	20	6.3	7.0	7.0	7.0	-	4.4	13.2	10.0
	25	13.9	15.0	15.0	15.0	12.6	12.2	16.2	14.0

MG = diaphragm size, Kv values in m³/h

Kv values determined in accordance with DIN EN 60534 standard, inlet pressure 5 bar, Δp 1 bar, stainless steel 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 duration of use.

7.4 Product compliance

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food: Regulation (EC) No. 1935/2006
Regulation (EC) No. 10/2011*
FDA*
USP* Class VI

TA Luft (German Clean Air Act): The product meets the following requirements under the max. permissible operating conditions:
-Tightness or compliance with the specific leak rate within the sense of TA-Luft as well as VDI 2440 and VDI 2290
-Compliance with the requirements in accordance with DIN EN ISO 15848-1, Table C.2, Class BH
* depending on version and/or operating parameters

7.5 Mechanical data

Weight:

Actuator

MG	DN	Weight
8	4 – 15	0.65
10	10 – 20	1.30
25	15 – 25	3.60

Weights in kg
MG = diaphragm size

Body

MG	DN	Spigot	Threaded socket	Threaded spigot, cone spigot	Clamp
		Connection type code			
		0, 16, 17, 18, 35, 36, 37, 55, 59, 60, 63, 64, 65	1	6, 6K	80, 82, 88, 8A, 8E, 8P, 8T
8	4	0.09	-	-	-
	6	0.09	-	-	-
	8	0.09	0.09	-	0.15
	10	0.09	-	0.21	0.18
	15	0.09	-	-	0.18
10	10	0.30	-	0.33	0.30
	12	-	0.17	-	-
	15	0.30	0.26	0.35	0.43
	20	-	-	-	0.43
25	15	0.62	0.32	0.71	0.75
	20	0.58	0.34	0.78	0.71
	25	0.55	0.39	0.79	0.63

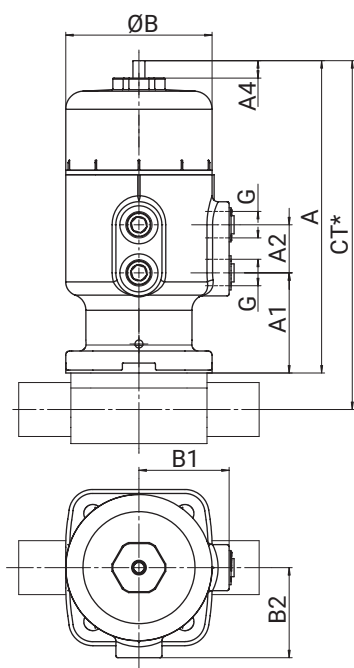
Weights in kg
MG = diaphragm size

Installation position: Optional

Installation position: Observe the angle of rotation for optimized draining when it comes to installation.
See separate document, "Angle of rotation technical information".

8 Dimensions

8.1 Actuator dimensions



MG	Control function	Actuator version	A	A1	A2	A4	B	B1	B2	G
8	1	T	109.0	50.0	21.0	4.5	38.0	28.0	28.0	M5
		R								
	2 + 3	T	92.0	50.0	21.0	4.5	38.0	28.0	28.0	
		R								
10	1	T	139.0	37.0	27.0	6.5	50.0	34.0	26.0	G 1/8
		R							37.0	
	2 + 3	T	120.0	37.0	27.0	6.5	50.0	34.0	26.0	
		R							37.0	
25	1	T	183.0	50.0	24.0	9.0	73.0	45.0	39.0	G 1/4
		R							51.0	
	2 + 3	T	148.0	50.0	24.0	9.0	73.0	45.0	39.0	
		R							51.0	

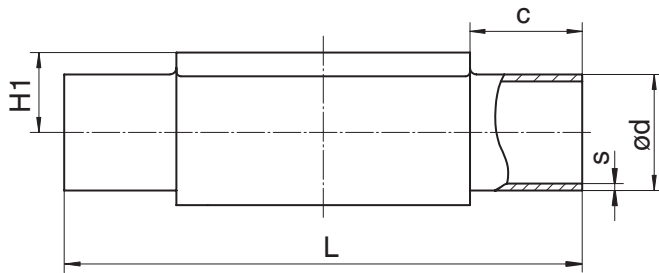
Dimensions in mm

MG = diaphragm size

* CT = A + H1 (see body dimensions)

8.2 Body dimensions

8.2.1 Spigot DIN/EN/ISO (code 0, 16, 17, 18, 60)



Connection type spigot DIN/EN/ISO (code 0, 16, 17, 18, 60)¹⁾, forged material (code 40, 42, F4)²⁾

MG	DN	NPS	c (min)	ød					H1	L	s				
				Connection type							Connection type				
				0	16	17	18	60			0	16	17	18	60
8	4	-	20.0	6.0	-	-	-	-	8.5	72.0	1.0	-	-	-	-
	6	-	20.0	-	-	8.0	-	10.2	8.5	72.0	-	-	1.0	-	1.6
	8	1/4"	20.0	-	-	10.0	-	13.5	8.5	72.0	-	-	1.0	-	1.6
	10	3/8"	20.0	-	12.0	13.0	14.0	-	8.5	72.0	-	1.0	1.5	2.0	-
10	10	3/8"	25.0	-	12.0	13.0	14.0	17.2	12.5	108.0	-	1.0	1.5	2.0	1.6
	15	1/2"	25.0	18.0	18.0	19.0	20.0	21.3	12.5	108.0	1.5	1.0	1.5	2.0	1.6
25	15	1/2"	25.0	18.0	18.0	19.0	20.0	21.3	19.0	120.0	1.5	1.0	1.5	2.0	1.6
	20	3/4"	25.0	22.0	22.0	23.0	24.0	26.9	19.0	120.0	1.5	1.0	1.5	2.0	1.6
	25	1"	25.0	28.0	28.0	29.0	30.0	33.7	19.0	120.0	1.5	1.0	1.5	2.0	2.0

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 0: Spigot DIN

Code 16: Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)

Code 17: Spigot EN 10357 series A/DIN 11866 series A formerly DIN 11850 series 2

Code 18: Spigot DIN 11850 series 3

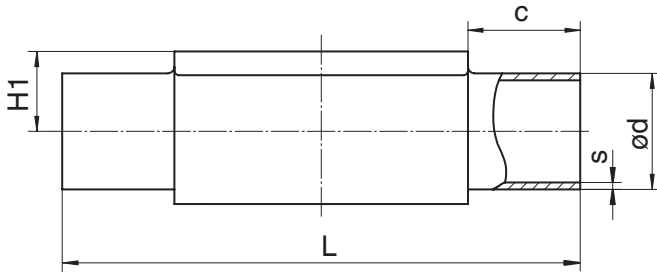
Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B

2) Valve body material

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, $\Delta Fe < 0.5\%$

Code F4: 1.4539, forged body



Connection type spigot DIN/EN/ISO (code 0, 17, 60)¹⁾, investment casting material (code C3)²⁾

MG	DN	NPS	c (min)	ød			H1	L	s		
				Connection type					Connection type		
				0	17	60			0	17	60
8	4	-	20.0	6,0	-	-	8.5	72.0	1,0	-	-
	6	-	20.0	-	8.0	10.2	8.5	72.0	-	1.0	-
	8	1/4"	20.0	-	10.0	13.5	8.5	72.0	-	1.0	1.6
	10	3/8"	20.0	-	13.0	-	8.5	72.0	-	1.5	-
10	10	3/8"	25.0	-	13.0	17.2	12.5	108.0	-	1.5	1.6
	15	1/2"	25.0	-	19.0	21.3	12.5	108.0	-	1.5	1.6
25	15	1/2"	25.0	-	19.0	21.3	13.0	120.0	-	1.5	1.6
	20	3/4"	25.0	-	23.0	26.9	16.0	120.0	-	1.5	1.6
	25	1"	25.0	-	29.0	33.7	19.0	120.0	-	1.5	2.0

1) **Connection type**

Code 0: Spigot DIN

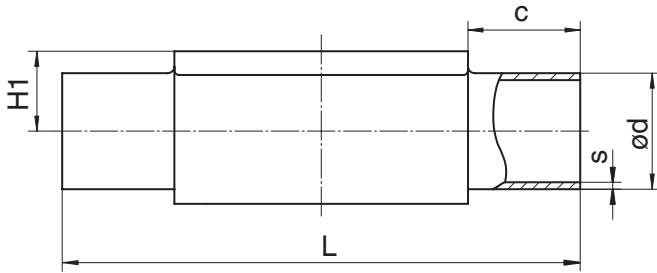
Code 17: Spigot EN 10357 series A/DIN 11866 series A formerly DIN 11850 series 2

Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B

2) **Valve body material**

Code C3: 1.4435, investment casting

8.2.2 Spigot ASME/BS (code 55, 59, 63, 64, 65)



Connection type spigot ASME/BS (code 55, 59, 63, 64, 65)¹⁾, forged material (code 40, 42, F4)²⁾

MG	DN	NPS	c (min)	ød					H1	L	s				
				Connection type							Connection type				
				55	59	63	64	65			55	59	63	64	65
8	6	-	20.0	-	-	10.3	-	10.3	8.5	72.0	-	-	1.24	-	1.73
	8	1/4"	20.0	6.35	6.35	13.7	-	13.7	8.5	72.0	1.2	0.89	1.65	-	2.24
	10	3/8"	20.0	9.53	9.53	-	-	-	8.5	72.0	1.2	0.89	-	-	-
	15	1/2"	20.0	12.70	12.70	-	-	-	8.5	72.0	1.2	1.65	-	-	-
10	10	3/8"	25.0	9.53	9.53	17.1	-	17.1	12.5	108.0	1.2	0.89	1.65	-	2.31
	15	1/2"	25.0	12.70	12.70	21.3	21.3	21.3	12.5	108.0	1.2	1.65	2.11	1.65	2.77
	20	3/4"	25.0	19.05	19.05	-	-	-	12.5	108.0	1.2	1.65	-	-	-
25	15	1/2"	25.0	-	-	21.3	21.3	21.3	19.0	120.0	-	-	2.11	1.65	2.77
	20	3/4"	25.0	19.05	19.05	26.7	26.7	26.7	19.0	120.0	1.2	1.65	2.11	1.65	2.87
	25	1"	25.0	-	25.40	33.4	33.4	33.4	19.0	120.0	-	1.65	2.77	1.65	3.38

Connection type spigot ASME BPE (code 59)¹⁾, investment casting material (code C3)²⁾

MG	DN	NPS	c (min)	ød	H1	L	s
8	8	1/4"	20.0	6.35	8.5	72.0	0.89
	10	3/8"	20.0	9.53	8.5	72.0	0.89
	15	1/2"	20.0	12.70	8.5	72.0	1.65
10	20	3/4"	25.0	19.05	12.5	108.0	1.65
25	20	3/4"	25.0	19.05	16.0	120.0	1.65
	25	1"	25.0	25.40	19.0	120.0	1.65

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 55: Spigot BS 4825, part 1

Code 59: Spigot ASME BPE/DIN EN 10357 series C (from 2022 edition)/DIN 11866 series C

Code 63: Spigot ANSI/ASME B36.19M schedule 10s

Code 64: Spigot ANSI/ASME B36.19M schedule 5s

Code 65: Spigot ANSI/ASME B36.19M schedule 40s

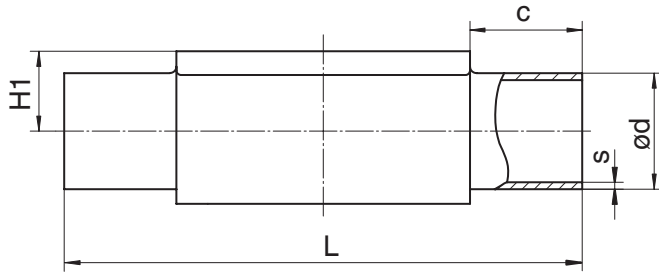
2) Valve body material

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%

Code C3: 1.4435, investment casting

Code F4: 1.4539, forged body

8.2.3 Spigot JIS/SMS (code 35, 36, 37)**Connection type spigot JIS/SMS (code 35, 36, 37)¹⁾, forged material (code 40, 42, F4)²⁾**

MG	DN	NPS	c (min)	ød			H1	L	s		
				Connection type					Connection type		
				35	36	37			35	36	37
8	6	-	20.0	-	10.5	-	8.5	72.0	-	1.20	-
	8	1/4"	20.0	-	13.8	-	8.5	72.0	-	1.65	-
10	10	3/8"	25.0	-	17.3	-	12.5	108.0	-	1.65	-
	15	1/2"	25.0	-	21.7	-	12.5	108.0	-	2.10	-
25	15	1/2"	25.0	-	21.7	-	19.0	120.0	-	2.10	-
	20	3/4"	25.0	-	27.2	-	19.0	120.0	-	2.10	-
	25	1"	25.0	25.4	34.0	25.0	19.0	120.0	1.2	2.80	1.2

Connection type spigot SMS (code 37)¹⁾, investment casting material (code C3)²⁾

MG	DN	NPS	c (min)	ød	H1	L	s
25	25	1"	25.0	25.0	19.0	120.0	1.2

Dimensions in mm

MG = diaphragm size

1) Connection type

Code 35: Spigot JIS-G 3447

Code 36: Spigot JIS-G 3459 schedule 10s

Code 37: Spigot SMS 3008

2) Valve body material

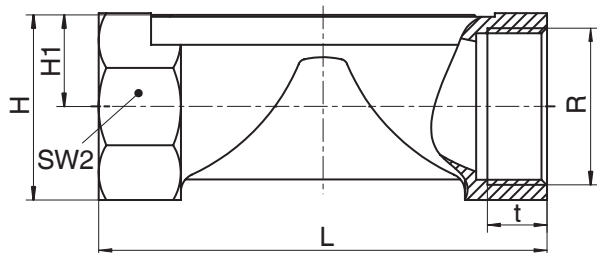
Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%

Code C3: 1.4435, investment casting

Code F4: 1.4539, forged body

8.2.4 Threaded socket DIN (code 1)



Connection type threaded socket (code 1)¹⁾, investment casting material (code 37)²⁾

MG	DN	NPS	H	H1	L	n	R	SW 2	t
8	8	1/4"	19.0	9.0	72.0	6	G 1/4	18.0	11.0
10	12	3/8"	25.0	13.0	55.0	2	G 3/8	22.0	12.0
	15	1/2"	30.0	15.0	68.0	2	G 1/2	27.0	15.0
25	15	1/2"	28.3	14.8	85.0	6	G 1/2	27.0	15.0
	20	3/4"	33.3	17.3	85.0	6	G 3/4	32.0	16.0
	25	1"	42.3	21.8	110.0	6	G 1	41.0	13.0

Dimensions in mm

MG = diaphragm size

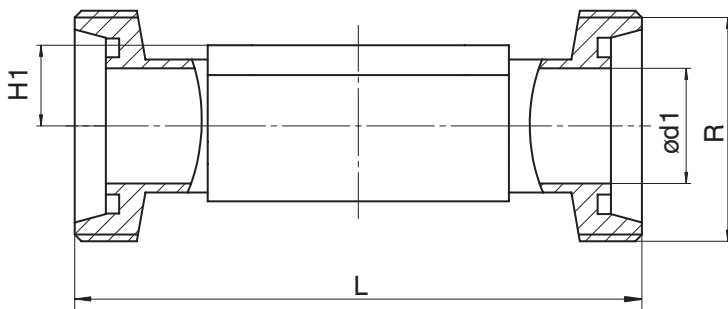
n = number of flats

1) **Connection type**

Code 1: Threaded socket DIN ISO 228

2) **Valve body material**

Code 37: 1.4408, investment casting

8.2.5 Threaded spigot DIN (code 6)**Connection type threaded spigot DIN (code 6)¹⁾, forged material (code 40, 42)²⁾**

MG	DN	NPS	ød1	H1	L	R
8	10	3/8"	10.0	8.5	92.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	118.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	118.0	Rd 34 x 1/8
25	15	1/2"	16.0	19.0	118.0	Rd 34 x 1/8
	20	3/4"	20.0	19.0	118.0	Rd 44 x 1/6
	25	1"	26.0	19.0	128.0	Rd 52 x 1/6

Dimensions in mm

MG = diaphragm size

1) Connection type

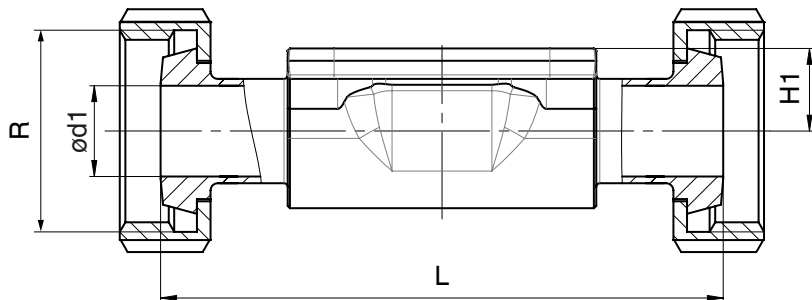
Code 6: Threaded spigot DIN 11851

2) Valve body material

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, $\Delta Fe < 0.5\%$

8.2.6 Cone spigot DIN (code 6K)



Connection type cone spigot DIN (code 6K)¹⁾, forged material (code 40, 42)²⁾

MG	DN	NPS	ød1	H1	L	R
8	10	3/8"	10.0	8.5	90.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	116.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	116.0	Rd 34 x 1/8
25	15	1/2"	16.0	19.0	116.0	Rd 34 x 1/8
	20	3/4"	20.0	19.0	114.0	Rd 44 x 1/6
	25	1"	26.0	19.0	127.0	Rd 52 x 1/6

Dimensions in mm

MG = diaphragm size

1) **Connection type**

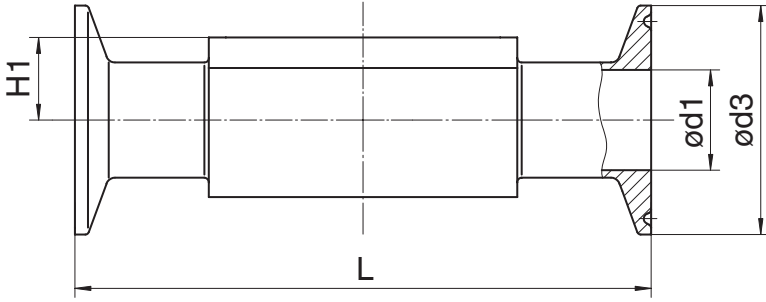
Code 6K: Cone spigot and union nut DIN 11851

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%

8.2.7 Clamp (code 80, 82, 88, 8A, 8E, 8P, 8T)



Connection type clamp DIN/ASME (code 80, 88, 8P, 8T)¹⁾, forged material (code 40, 42, F4)²⁾

MG	DN	NPS	ød1		ød3		H1	L	
			Connection type		Connection type			Connection type	
			80, 8P	88, 8T	80, 8P	88, 8T		80, 8P	88, 8T
8	8	1/4"	4.57	-	25.0	-	8.5	63.5	-
	10	3/8"	7.75	-	25.0	-	8.5	63.5	-
	15	1/2"	9.40	9.40	25.0	25.0	8.5	63.5	108.0
10	15	1/2"	9.40	9.40	25.0	25.0	12.5	88.9	108.0
	20	3/4"	15.75	15.75	25.0	25.0	12.5	101.6	117.0
25	20	3/4"	15.75	15.75	25.0	25.0	19.0	101.6	117.0
	25	1"	22.10	22.10	50.5	50.5	19.0	114.3	127.0

Dimensions in mm
MG = diaphragm size

Connection type clamp DIN/ISO (code 82, 8A, 8E)¹⁾, forged material (code 40, 42, F4)²⁾

MG	DN	NPS	ød1			ød3			H1	L		
			Connection type			Connection type				Connection type		
			82	8A	8E	82	8A	8E		82	8A	8E
8	6	1/8"	7.0	6.0	-	25.0	25.0	-	8.5	63.5	63.5	-
	8	1/4"	10.3	8.0	-	25.0	25.0	-	8.5	63.5	63.5	-
	10	3/8"	-	10.0	-	-	34.0	-	8.5	-	88.9	-
10	10	3/8"	14.0	10.0	-	25.0	34.0	-	12.5	108.0	108.0	-
	15	1/2"	18.1	16.0	-	50.5	34.0	-	12.5	108.0	108.0	-
25	15	1/2"	18.1	16.0	-	50.5	34.0	-	19.0	108.0	108.0	-
	20	3/4"	23.7	20.0	-	50.5	34.0	-	19.0	117.0	117.0	-
	25	1"	29.7	26.0	22.6	50.5	50.5	50.5	19.0	127.0	127.0	127.0

Dimensions in mm
MG = diaphragm size

1) Connection type

- Code 80: Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D
- Code 82: Clamp DIN 32676 series B, face-to-face dimension FTF EN 558 series 7, length only for body configuration D
- Code 88: Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D
- Code 8A: Clamp DIN 32676 series A, face-to-face dimension FTF acc. to EN 558 series 7, length only for body configuration D
- Code 8E: Clamp ISO 2852 for pipe ISO 2037, clamp SMS 3017 for pipe SMS 3008 face-to-face dimension FTF EN 558 series 7, length only for body configuration D
- Code 8P: Clamp DIN 32676 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D
- Code 8T: Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

2) Valve body material

- Code 40: 1.4435 (F316L), forged body
- Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
- Code F4: 1.4539, forged body

9 Manufacturer's information

9.1 Packaging

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

9.2 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.

9.3 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.

9.4 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.

10 Installation in piping

10.1 Preparing for installation

WARNING

The equipment is subject to pressure!

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

WARNING



Corrosive chemicals!

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

CAUTION



Hot plant components!

- ▶ Risk of burns
- Only work on plant that has cooled down.

CAUTION

Exceeding the maximum permissible pressure!

- ▶ Damage to the product
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

CAUTION

Use as step!

- ▶ 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.

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 product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. Keep appropriate tools ready.
4. Wear appropriate protective gear as specified in the plant operator's guidelines.
5. Comply with appropriate regulations for the connections.
6. Installation work must be performed by trained personnel.
7. Shut off the plant or plant component.
8. Secure the plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant or plant component and allow it to cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
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 "Installation position" chapter).

10.2 Installation position

The installation position of the product is optional.

10.3 Installation with butt weld spigots

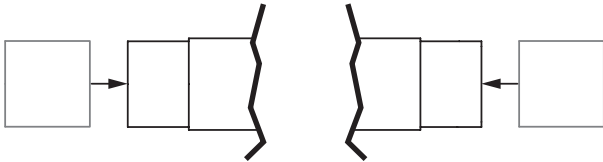


Fig. 1: Butt weld spigots

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.

10.4 Installation with clamp connections

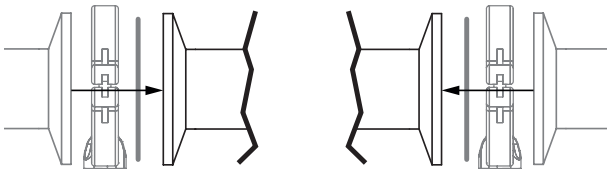


Fig. 2: Clamp connection

NOTICE

Gasket and clamp!

► The gasket and clamps for clamp connections are not included in the scope of delivery.

1. Keep ready gasket and clamp.
2. Carry out preparation for installation (see chapter "Preparing for installation").
3. Insert the corresponding gasket between the body of the product and the pipe connection.
4. Connect the gasket between the body of the product and the pipe connection using clamps.
5. Re-attach or reactivate all safety and protective devices.

10.5 Installation with threaded spigots

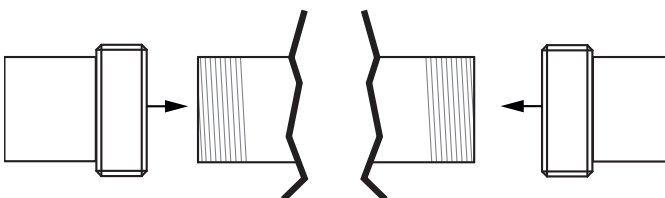


Fig. 3: Threaded spigots

NOTICE

Thread sealant!

- The thread sealant is not included in the scope of delivery.
- Only use appropriate thread sealant.

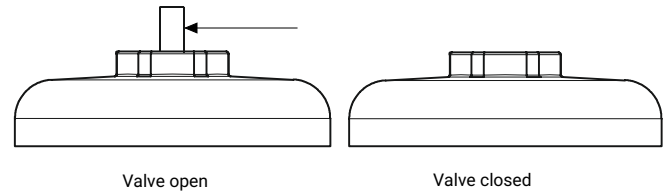
1. Keep thread sealant ready.
2. Carry out preparations for installation (see chapter "Preparing for installation").
3. Screw the pipe into the threaded connection of the valve body in accordance with valid standards.
 - ⇒ Use appropriate thread sealant.
4. Re-attach or reactivate all safety and protective devices.

10.6 After the installation

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

10.7 Operation

Optical position indicator



Valve open

Valve closed

10.8 Setting the seal adjuster and the stroke limiter

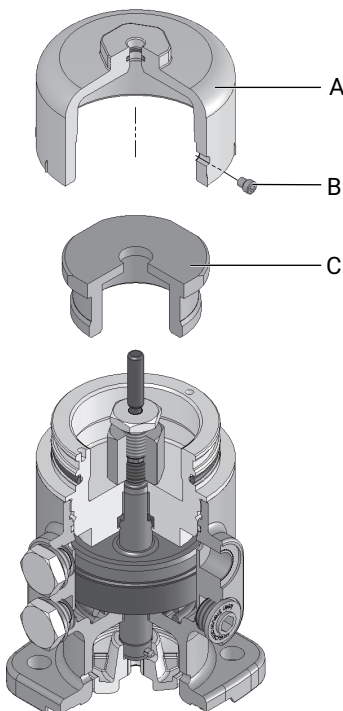
NOTICE

- Only set the seal adjuster when the valve is completely assembled (with diaphragm and valve body) and in a cold condition.

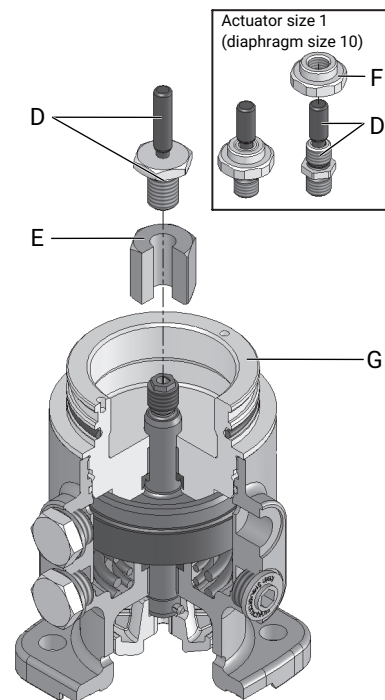
10.8.1 Setting the seal adjuster

(seal adjuster serves to protect the diaphragm)

1. Move the actuator to the closed position.
2. On the outside of the protective cap **A**, undo the grub screw **B** with a hexagon wrench and remove the protective cap **A**.
3. Unscrew the stroke limiter **C**.



4. Move the actuator to the open position.
5. Unscrew the special bush with the indicator spindle **D** (do not pull the indicator spindle out of the special bush).
6. **Special note for actuator size 1 (diaphragm size 10):** Undo the nut **F** of the special bush **D**.



7. Move the actuator to the closed position (for the NO and DA control functions, pay attention to the max. control pressure specifications).
8. Screw down the hexagon nut **C** with a ring wrench until it fits closely to the contact surface of the housing cover **G**.
9. Depending on the diaphragm size, continue to turn the hexagon nut **E**.
10. The values below are approx. reference values which may be different depending on the local process parameters.

NOTICE

- If the hexagon nut **E** is tightened too much, the diaphragm lifts off from the sealing weir and the valve leaks downstream.

Diaphragm size 8: 1/16 rotation

Diaphragm size 10: 1/8 rotation

Diaphragm size 25: 1/8 rotation

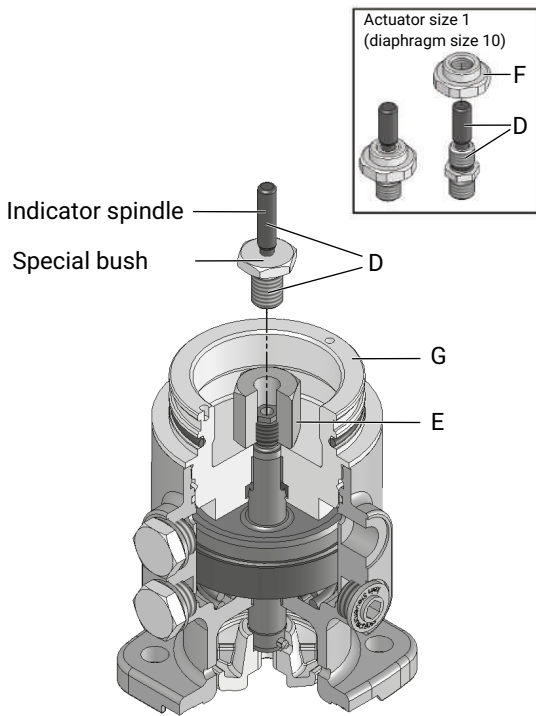
11. Further tightening of the hexagon nut **E** may increase the service life of the diaphragm but it must be checked whether the valve is still leak-tight. Screw the special bush **D** into the hexagon nut **E** (secure the adjustment of the hexagon nut **E**).

NOTICE

- Ensure that the hexagon nut **E** does not move while securing it.

Special note for actuator size 1 (diaphragm size 10):

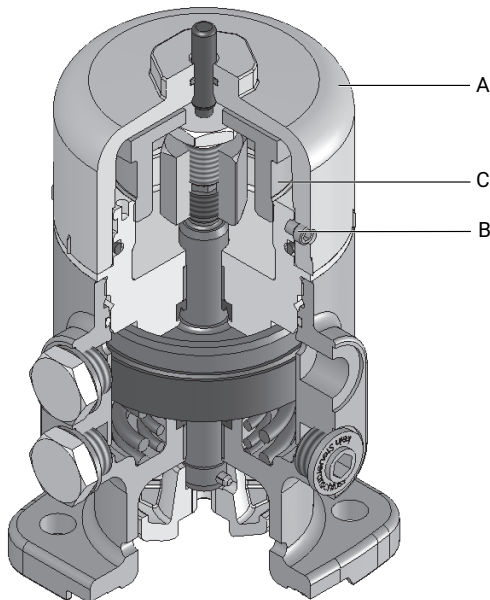
It is easier to secure the hexagon nut **E** with the special bush **D** if the actuator is moved to the open position. The nut **F** must then be secured on the special bush **D**.



NOTICE

► After changing or replacing the diaphragm, the seal adjuster must be checked and readjusted if necessary. The diaphragm may set, so it may be necessary to readjust the seal adjuster.

10.8.2 Adjusting the stroke limiter



Variant 1:

1. On the outside of the protective cap **A**, undo the grub screw **B** with a hexagon wrench and remove the protective cap **A**.
2. Move the actuator to the open position.
3. Screw in the stroke limiter **C** clockwise until you feel resistance (100% stroke).
4. Attach the protective cap **A**.
5. Move the actuator to the closed position.
6. Turning the protective cap **A** clockwise reduces the stroke (1 mm/rotation).
7. After reaching the required valve stroke, tighten the grub screw **B**.
8. Press in the indicator spindle **D** so that it is flush with the protective cap **A**.

Variant 2:

9. On the outside of the protective cap **A**, undo the grub screw **B** with a hexagon wrench and remove the protective cap **A**.
10. Move the actuator to the closed position.
11. Screw in the stroke limiter **C** clockwise until you feel resistance (0% stroke).
12. Attach the protective cap **A**.
13. Turning the protective cap **A** anticlockwise increases the stroke (1 mm/rotation).
14. After reaching the required valve stroke, tighten the grub screw **B**.
15. Press in the indicator spindle **D** so that it is flush with the protective cap **A**.

NOTICE

► Due to the tolerances, the same stroke may cause different flow rate values.

11 Pneumatic connections

11.1 Control function

The following control functions are available:

Control function 1

Normally closed (NC):

Valve resting position: Closed by spring force. Activation of the actuator (connector 2) opens the valve. When the actuator is vented, the valve is closed by spring force.

Control function 2

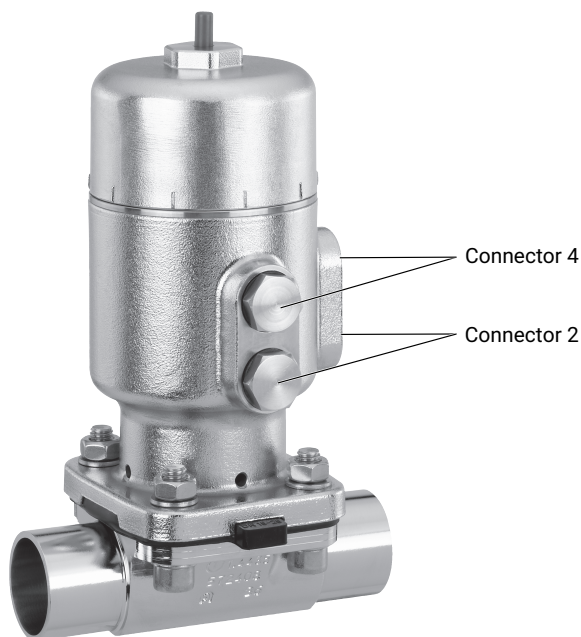
Normally open (NO):

Valve resting position: Opened by spring force. Activation of the actuator (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 (connector 2: open/connector 4: close).



Control function	Connections	
	2	4
1 (NC)	+	-
2 (NO)	-	+
3 (DA)	+	+

+ = available / - = not available
(see figures for connectors 2/4)

11.2 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:

Diaphragm size 8: M5

Diaphragm size 10: G1/8

Diaphragm size 25: G1/4

Control function		Connections
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)

For connectors 2/4 see figure on the left

It is possible to control actuator version R via the connections offset by 90°.

12 Commissioning

⚠ WARNING



Corrosive chemicals!

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

⚠ CAUTION

Leakage!

- ▶ Emission of dangerous materials
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ 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 of new plant and following 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. Commissioning of actuators in accordance with the enclosed instructions.

13 Operation

The product is pneumatically operated.

- Observe the enclosed actuator instructions.

14 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from connector 2* (control function NC) or from connector 4* (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
	Actuator defective	Replace the actuator
	Stroke limiter is incorrectly set	Readjust stroke limiter
	Pilot valve faulty	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
The product is leaking downstream (does not close or does not close fully)	Actuator spring faulty (for control function NO)	Replace the actuator
	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
	Shut-off diaphragm is defective	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Seal adjuster is incorrectly set	Readjust the seal adjuster
The product is leaking in the passage (does not close or does not close completely).	Actuator spring faulty (for control function NC)	Replace actuator
The product is leaking between actuator and valve body	Valve body leaking or damaged	Carry out initialisation, check valve body for damage, replace valve body if necessary.
	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
Connection between valve body and piping leaking	Actuator/valve body damaged	Replace actuator/valve body
	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
Valve body is leaking	Sealing material faulty	Replace sealing material
	Valve body is leaking	Check valve body for damage, replace valve body if necessary

* see chapter "Spare parts"

15 Inspection and maintenance

⚠ 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!

- ▶ Risk of burns
- Only work on plant that has cooled down.

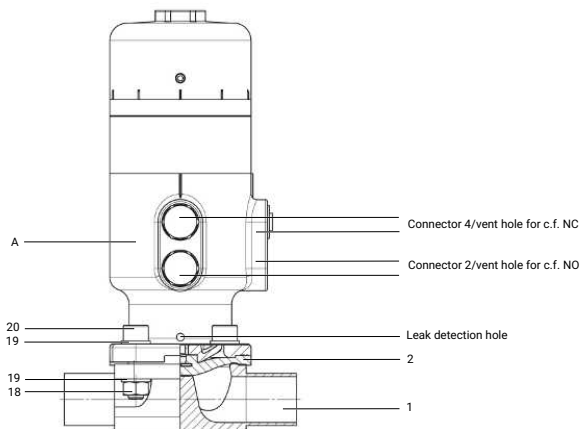
⚠ CAUTION

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

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

The operator must carry out regular visual examination of the valves dependent on the operating conditions and the potential danger 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").

15.1 Spare parts



Item	Name	Order designation
A	Actuator	9660
1	Body	K601 K612 K600
2	Diaphragm	Code 54 Code 3A/13
18, 19	Screw connection kit	660 S30

15.2 Fitting/removing spare parts

15.2.1 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.

NOTICE

Important:

- ▶ 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).

15.2.2 Removing the diaphragm

NOTICE

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

1. Pull out the diaphragm.
2. Clean all parts of remains of product and contaminants. Take care not to scratch or damage the parts in the process.
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

15.2.3 Mounting the diaphragm

15.2.3.1 General information

NOTICE

- ▶ Insert the loose distance sleeves. Pay attention to the position of the collar of the distance sleeves.

The diaphragms have distance sleeves as standard.

The collar of the distance sleeves must point to the diaphragm pin (actuator side).



Exception:

Diaphragm code 52 diaphragm size 25

The collar of the distance sleeves must point to the diaphragm weir (body side).

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 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.

Diaphragm size 8:

The compressor is fixed to the spindle.

Compressor and actuator flange seen from below:



Diaphragm size 10:

The compressor is loose.

Compressor and actuator flange seen from below:

Figure 1

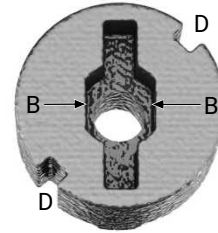
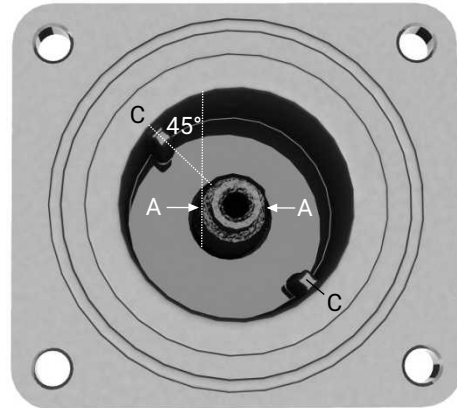


Figure 2



A double flat **A** (arrows in figure 2) is fitted at the end of the actuator spindle to protect the piston against twisting. When mounting the compressor, the double flat **A** must be in correct alignment with the recess **B** of the compressor back (arrows in figure 1).

If the actuator piston is not in the correct position, it must be turned to the correct position. The position of the double flat **A** is offset by 45° to the position of **C**.

Place the compressor loosely on the actuator piston, fit the recesses **D** into the guides **C** and **A** into **B**. It must be possible to move the compressor freely in the guides.

Diaphragm size 25:

The compressor is loose.

Compressor and actuator flange seen from below:

New version

Figure 1

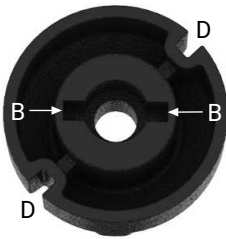


Figure 2



A grooved pin **A** (arrows in figure 2) is fitted at the end of the actuator spindle to protect the piston against twisting. When mounting the compressor, the grooved pin **A** must be in correct alignment with the recess **B** of the compressor back (arrows in figure 1).

If the actuator piston is not in the correct position, it must be turned to the correct position. The position of the grooved pin **A** is offset by 45° to the position of **C**.

Place the compressor loosely on the actuator piston, fit the recesses **D** into the guides **C** and **A** into **B**. It must be possible to move the compressor freely in the guides.

Old version

Figure 1

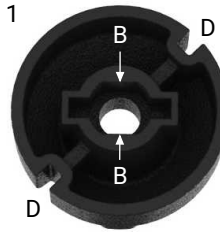
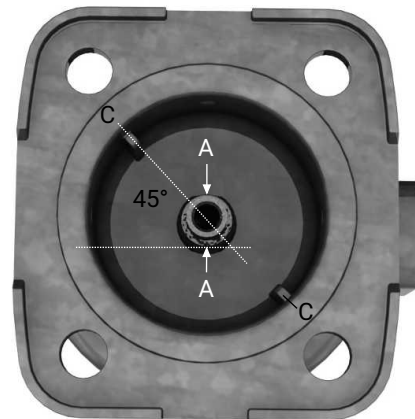


Figure 2

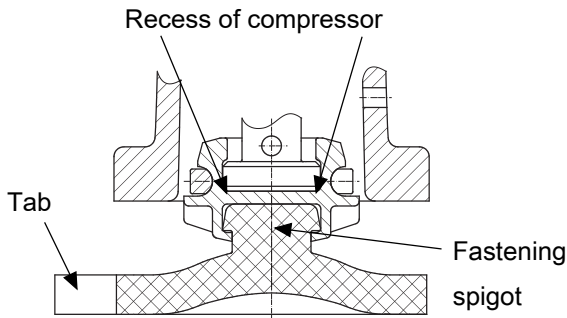


A double flat **A** (arrows in figure 2) is fitted at the end of the actuator spindle to protect the piston against twisting. When mounting the compressor, the double flat **A** must be in correct alignment with the recess **B** of the compressor back (arrows in figure 1).

If the actuator piston is not in the correct position, it must be turned to the correct position. The position of the double flat **A** is offset by 45° to the position of **C**.

Place the compressor loosely on the actuator piston, fit the recesses **D** into the guides **C** and **A** into **B**. It must be possible to move the compressor freely in the guides.

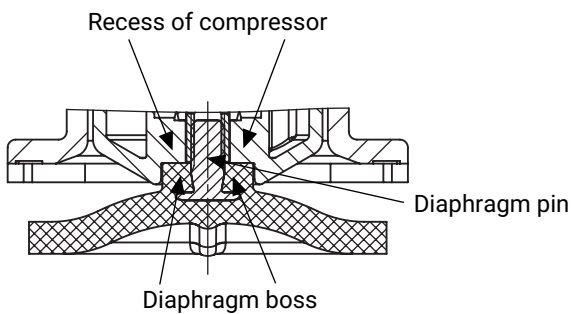
15.2.3.2 Mounting a concave diaphragm



1. Move the actuator **A** to the closed position.
2. Place the diaphragm **2** with the formed fastening spigot in an inclined position at the recess of the compressor.
3. Turn the diaphragm as manual force is applied to push the spigot into the compressor.
4. Align diaphragm tab with identifying manufacturer and material in parallel to compressor weir.

Diaphragm sizes 10 and 25

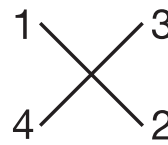
Threaded pin type diaphragm:



5. Move the actuator **A** to the closed position.
6. Place the compressor loosely on the actuator spindle, fit the recesses into the guides (see "General information" chapter). Ensure that the anti-twist system is engaged.
7. Check if the compressor fits closely in the guides.
8. Manually screw the new diaphragm into the compressor tightly.
9. Check if the diaphragm boss fits closely in the recess of the compressor.
10. If it is difficult to screw it in, check the thread, replace damaged parts (only use genuine parts from GEMÜ).
11. 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.

15.2.4 Mounting the actuator on the valve body

1. Move the actuator **A** to the open position.
2. Check if all the distance sleeves have been inserted. If necessary, insert the distance sleeves into the bolt holes of the diaphragm **2**. Pay attention to the position of the collar of the distance sleeves (see "General information" chapter).
3. Position the actuator **A** with the mounted diaphragm **2** on the valve body **1**, take care to align the compressor weir and valve body weir (for diaphragm size 8 only).
4. Tighten the bolts **18**, washers **19** and nuts **20** by hand (hand tight only) (fastening elements may vary depending on the diaphragm size and/or valve body version).
5. Move the actuator **A** to the closed position.
6. Fully tighten the bolts **18** with nuts **20** diagonally.



7. Ensure that the diaphragm **2** is compressed evenly (approx. 10–15%, visible by an even bulge to the outside).
8. Check the tightness of the fully assembled valve.

NOTICE	
▶	Service and maintenance: Diaphragms set in the course of time. After valve disassembly/assembly, check that the bolts 18 and nuts 20 on the body are tight and retighten as necessary (at the very latest after the first sterilization process).

16 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.

17 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.

18 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.

19 EU Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B



EU Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II B

We, the company GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6-8
74653 Ingelfingen-Criesbach, Germany

hereby declare under our sole responsibility that the below-mentioned product complies with the relevant essential health and safety requirements in accordance with Annex I of the above-mentioned Directive.

Product: GEMÜ 660
Product name: Pneumatically operated diaphragm valve
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.
The following harmonized standards (or parts thereof) have been applied: EN ISO 12100:2010

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

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.

This does not affect the industrial property rights.

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.

M. Barghoorn
Head of Global Technics
Ingelfingen, 21/08/2023

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8 D-74653 Ingelfingen-Criesbach

www.gemu-group.com
info@gemue.de

20 Manufacturer's declaration according to the Pressure Equipment Directive 2014/68/EU



Manufacturer's declaration

according to the Pressure Equipment Directive 2014/68/EU

We, the company
GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6-8
74653 Ingelfingen-Criesbach, Germany

declare that the below-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.

Product: GEMÜ 660
Product name: Pneumatically operated diaphragm valve

The product has been developed and produced according to GEMÜ's in-house process instructions and 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.

A handwritten signature in blue ink, appearing to read "M. Barghoorn", written over a horizontal line.

M. Barghoorn
Head of Global Technics
Ingelfingen, 21/08/2023



GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8, 74653 Ingelfingen-Criesbach, Germany
Phone +49 (0) 7940 1230 · info@gemue.de
www.gemu-group.com

Subject to alteration

04.2024 | 88856987