GEMÜ 695

Pneumatically operated diaphragm valve

EN **Operating instructions**

further information
webcode: GW-695

Contents

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

Symbol	Meaning
	Imminent danger!
	Potentially dangerous situation!
	Danger of explosion!
	Corrosive chemicals!
	Actuator is under spring pressure!
	Hot plant components!
	Actuator top is under spring pressure
	Applied pressure is too high

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

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ 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

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.

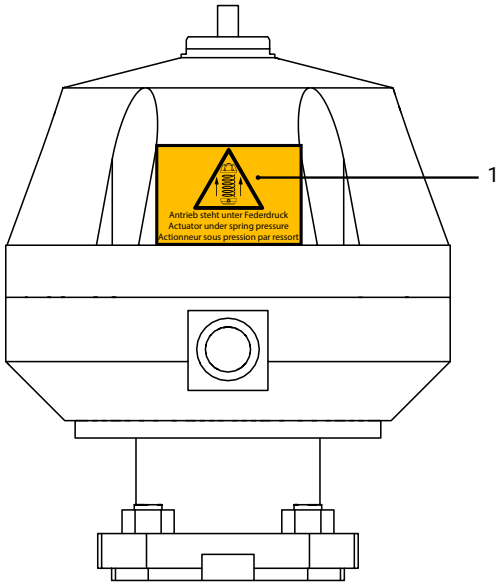
NOTICE

Potentially dangerous situation!

▶ Non-observance can cause damage to property.

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

1.5 Safety information on the product



Item	Symbol	Meaning
1		Actuator under spring pressure! - Only open the actuator under a press.

The adhesive label on the product is printed in German, English and French as supplied. If the product is used in a country where a different language is spoken, a label in the corresponding language must be attached. Missing or illegible adhesive labels on the product must be attached or replaced. If the adhesive label is required in other, not enclosed, languages, it must be produced and attached by the customer at their own responsibility.

The following adhesive labels with warning notes in other languages are enclosed:

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:

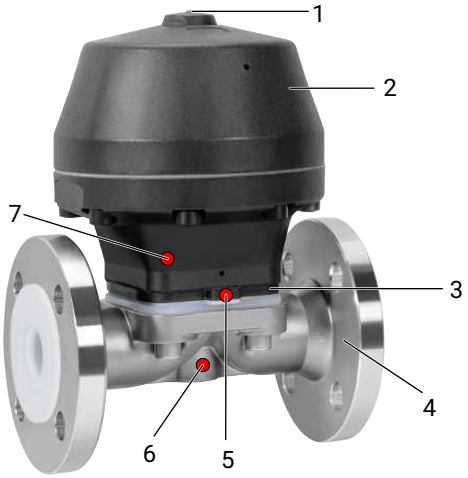
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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	Membrane actuator	PP, glass fibre reinforced
3	Diaphragm	EPDM FKM NBR PTFE/EPDM (one-piece, two-piece) PTFE/FKM (two-piece) PTFE/PVDF/EPDM (three-piece)
4	Valve body	EN-GJS-400-18-LT (GGG 40.3) EN-GJS-400-18-LT (GGG 40.3) PFA lined EN-GJS-400-18-LT (GGG 40.3) PP lined EN-GJS-400-18-LT (GGG 40.3) hard rubber lined 1.4408, investment casting 1.4408, PFA lined 1.4435 (F316L), forged body 1.4435 (BN2), forged body, Δ Fe < 0.5 % 1.4435, investment casting 1.4539, forged body
5	CONEXO diaphragm RFID chip (see Conexo information)	
6	CONEXO body RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	

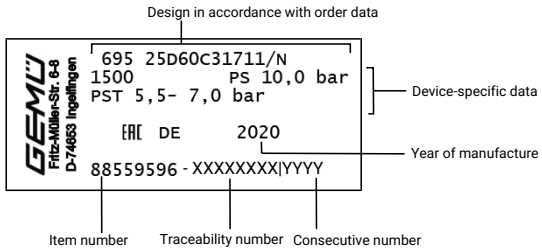
3.2 Description

The GEMÜ 695 2/2-way diaphragm valve has a low-maintenance membrane actuator and is pneumatically operated. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available.

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

4 GEMÜ CONEXO

The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.

Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the "installation qualification" process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides him with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

For further information on GEMÜ CONEXO please visit:
www.gemu-group.com/conexo

5 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.

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, plastic membrane actuator	695

2 DN	Code
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65

3 Body configuration	Code
2/2-way body	D

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
NPT female thread	31
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K
Flange	
Flange EN 1092, PN 16, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	8
Flange JIS B2220, 10K, RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	34

4 Connection type	Code
Flange ANSI Class 150 RF, face-to-face dimension FTF MSS SP-88, length only for body configuration D	38
Flange ANSI Class 125/150 RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	39
Clamp	
Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D	80
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
SG iron material	
EN-GJS-400-18-LT (GGG 40.3), PFA lined	17
EN-GJS-400-18-LT (GGG 40.3), PP lined	18
EN-GJS-400-18-LT (GGG 40.3), hard rubber lined	83
EN-GJS-400-18-LT (GGG 40.3)	90
Investment casting material	
1.4408, investment casting	37
1.4408, PFA lined	39
1.4435, investment casting	C3
Forged material	
1.4435 (F316L), forged body	40
1.4435 (BN2), forged body, Δ Fe < 0.5%	42
1.4539, forged body	F4

6 Diaphragm material	Code
Elastomer	
NBR	2
FKM	4
EPDM	13
EPDM	17
EPDM	19
EPDM	28
EPDM	29
PTFE	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
PTFE/FKM two-piece	5T
PTFE/PVDF/EPDM three-piece	71
Note: The PTFE/PVDF/EPDM diaphragm (code 71) can only be combined with PFA lined valve bodies.	

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

8 Actuator version	Code
DN 15 - 25, diaphragm size 25	
Actuator size FDM	FDM
Actuator size FDN	FDN
DN 32 - 40, diaphragm size 40	
Actuator size HDM	HDM
Actuator size HDN	HDN
DN 50–65, diaphragm size 50	
Actuator size JDM	JDM
Actuator size JDN	JDN

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

9 Surface	Code
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
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	
BELGAQUA certification	B
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	695	Diaphragm valve, pneumatically operated, plastic membrane actuator
2 DN	25	DN 25
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	C3	1.4435, investment casting
6 Diaphragm material	17	EPDM
7 Control function	1	Normally closed (NC)
8 Actuator version	FDN	Actuator size FDN
9 Surface	1500	Ra ≤ 6.3 µm (250 µin.) for media wetted surfaces, mechanically polished internal
10 Special version	S	Special version for oxygen, maximum medium temperature: 60 °C
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:

Diaphragm material	Standard	Special version for oxygen
NBR (code 2)	-10 — 80 °C	-
FKM (code 4)	-10 — 80 °C	-
EPDM (code 13)	-10 — 80 °C	0 — 60 °C
EPDM (code 17)	-10 — 80 °C	-
EPDM (code 19)	-10 — 80 °C	0 — 60 °C
EPDM (code 28)	-10 — 80 °C	-
EPDM (code 29)	-10 — 80 °C	-
PTFE/EPDM (code 54)	-10 — 80 °C	0 — 60 °C
PTFE/PVDF/EPDM (code 71)	-10 — 80 °C	-
PTFE/EPDM (code 5M)	-10 — 80 °C	0 — 60 °C
PTFE/FKM (code 5T)	-10 — 80 °C	-

Ambient temperature:

0 — 60 °C

Control medium temperature:

0 — 40 °C

Storage temperature:

0 — 40 °C

7.3 Pressure

Operating pressure:

MG	DN	Actuator version code	Control function 1		Control function 2 + 3	
			Diaphragm material			
			EPDM/ FKM	PTFE	EPDM/ FKM	PTFE
25	**15, 20, 25**	**FDM**	0 - 6	0 - 6	-	-
		FDN	0 - 10	0 - 10	0 - 10	0 - 10
40	**32, 40**	**HDM**	0 - 6	0 - 6	-	-
		HDN	0 - 10	0 - 10	0 - 10	0 - 10
50	**50, 65**	**JDM**	0 - 6	0 - 6	-	-
		JDN	0 - 10	0 - 10	0 - 10	0 - 10

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.

Pressure rating: PN 16

Leakage rate: Leakage rate A to P11/P12 EN 12266-1

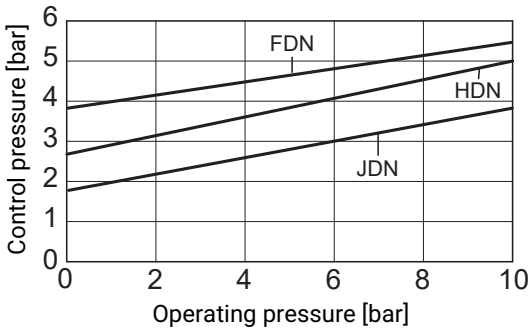
Control pressure:

MG	DN	Actuator version code	Control function 1	Control function 2	Control function 3
25	**15, 20, 25**	**FDM**	3.8 - 6.0	-	-
		FDN	5.5 - 7.0	max. 5.5	max. 5.5
40	**32, 40**	**HDM**	3.8 - 6.0	-	-
		HDN	5.5 - 7.0	max. 5.5	max. 5.5
50	**50, 65**	**JDM**	3.8 - 6.0	-	-
		JDN	5.5 - 7.0	max. 5.0	max. 5.0

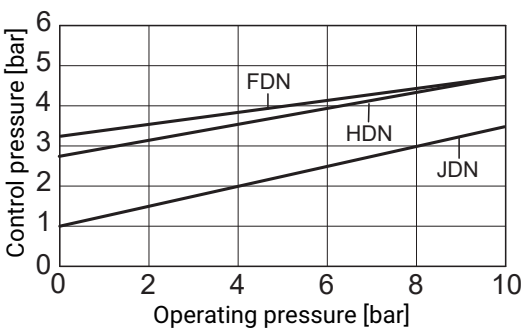
MG = diaphragm size
All pressures are gauge pressures.

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

PTFE diaphragm



Elastomer diaphragm



The values shown relate to control function 2 (with lifting spring).
For control function 3 (without lifting spring) control pressure is approx. 1 bar lower.
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
FDM	0.19	-
FDN	0.19	0.16
HDM	0.52	-
HDN	0.52	0.40
JDM	1.06	-
JDN	1.06	0.67

Filling volume in dm³
C.f. 3 = for filling volume in open position see c.f. 1, for filling volume in closed position see c.f. 2

Kv values:

MG	DN	Connection types code								
		0	16	17	18	37	59	60	1	31
25	**15**	4.1	4.7	4.7	4.7	-	-	7.4	6.5	6.5
	20	6.3	7.0	7.0	7.0	-	4.4	13.2	10.0	10.0
	25	13.9	15.0	15.0	15.0	12.6	12.2	16.2	14.0	14.0
40	**32**	25.3	27.0	27.0	27.0	26.2	-	30.0	26.0	26.0
	40	29.3	30.9	30.9	30.9	30.2	29.5	32.8	33.0	33.0
50	**50**	46.5	48.4	48.4	48.4	51.7	50.6	55.2	60.0	60.0
	65	-	-	-	-	62.2	61.8	-	-	-

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.

MG	DN	GGG 40.3 connection type 1, 31	GGG 40.3 connection type 8, 39	PFA / PP	Hard rubber
25	**15**	8.0	10.0	5.0	6.0
	20	11.5	14.0	9.0	11.0
	25	11.5	17.0	13.0	15.0
40	**32**	28.0	36.0	23.0	29.0
	40	28.0	40.0	26.0	32.0
50	**50**	60.0	68.0	47.0	64.0
	65	-	68.0	47.0	-

MG = diaphragm size, Kv values in m³/h
Kv values determined in accordance with DIN EN 60534, inlet pressure 5 bar, Δp 1 bar, with connection flange EN 1092 length EN 558 series 1 (or threaded socket DIN ISO 228 for body material GGG40.3) 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 conformity

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

Drinking water: Belgaqua*
* depending on version and/or operating parameters

7.5 Mechanical data

Weight:

Actuator

MG	DN	Actuator version code	Control function 1	Control function 1 and 2
25	**15, 20, 25**	**FDM, FDN**	1.6	1.0
40	**32, 40**	**HDM, HDN**	3.5	2.2
50	**50, 65**	**JDM, JDN**	5.7	3.8

Weights in kg
MG = diaphragm size

Connection type code		0, 16, 17, 18, 35, 36, 37, 55, 59, 60, 63, 64, 65	1, 31	1, 31	6, 6K	8, 38, 39	80, 82, 88, 8A, 8E, 8P, 8T
Valve body		Spigot	Threaded socket		Threaded spigot	Flange	Clamp
Material code			37	90			
MG	DN						
25	**15**	0.62	0.32	0.50	0.71	1.50	0.75
	20	0.58	0.34	0.60	0.78	2.20	0.71
	25	0.55	0.39	0.90	0.79	2.80	0.63
40	**32**	1.45	0.88	1.40	1.66	3.40	1.62
	40	1.32	0.93	1.90	1.62	4.50	1.50
50	**50**	2.25	1.56	2.70	2.70	6.30	2.50
	65	2.20	-	-	-	10.30	2.30

MG = diaphragm size, weight in kg

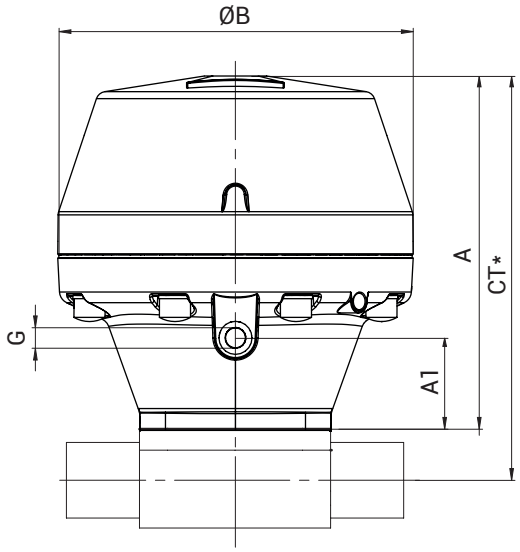
Installation position: Optional

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

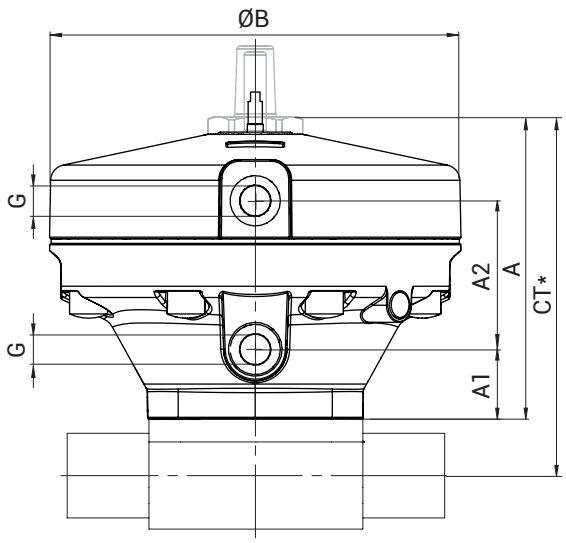
8.1.1 Actuator - Control function 1



MG	Actuator version code	ø B	A	A1	G
25	**FDM, FDN**	130.0	146.0	28.0	G 1/4
40	**HDM, HDN**	171.0	197.0	52.0	G 1/4
50	**JDM, JDN**	211.0	245.0	90.0	G 1/4

Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

8.1.2 Actuator - Control function 2 and 3

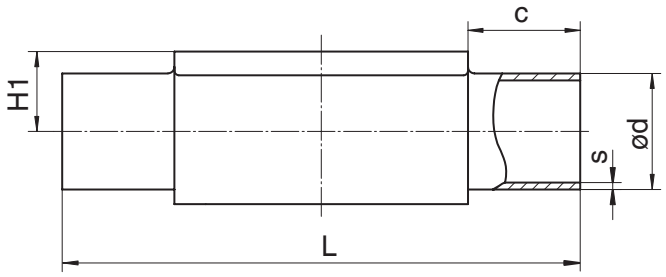


MG	Actuator version code	ø B	A	A1	A2	G
25	**FDM, FDN**	130.0	123.0	28.0	47.0	G 1/4
40	**HDM, HDN**	171.0	162.0	52.0	55.0	G 1/4
50	**JDM, JDN**	211.0	206.0	90.0	48.0	G 1/4

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
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
40	32	1¼"	25.0	34.0	34.0	35.0	36.0	42.4	26.0	153.0	1.5	1.0	1.5	2.0	2.0
	40	1½"	30.5	40.0	40.0	41.0	42.0	48.3	26.0	153.0	1.5	1.0	1.5	2.0	2.0
50	50	2"	30.0	52.0	52.0	53.0	54.0	60.3	32.0	173.0	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, Δ Fe < 0.5%
Code F4: 1.4539, forged body

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

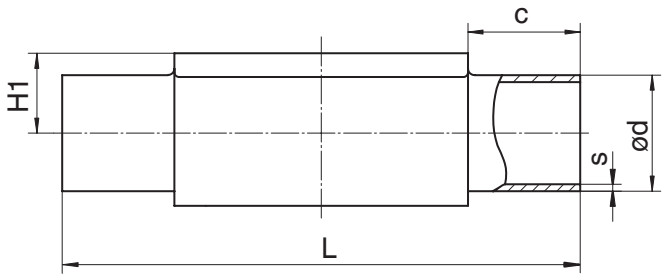
MG	DN	NPS	c (min)	ød		H1	L	s	
				Connection type				Connection type	
				17	60			17	60
25	15	1/2"	25.0	19.0	21.3	13.0	120.0	1.5	1.6
	20	3/4"	25.0	23.0	26.9	16.0	120.0	1.5	1.6
	25	1"	25.0	29.0	33.7	19.0	120.0	1.5	2.0
40	32	1¼"	25.0	35.0	42.4	24.0	153.0	1.5	2.0
	40	1½"	30.5	41.0	48.3	26.0	153.0	1.5	2.0
50	50	2"	30.0	53.0	60.3	32.0	173.0	1.5	2.0

Dimensions in mm
MG = diaphragm size

1) **Connection type**
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
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
40	**32**	**1¼"**	25.0	-	-	42.2	42.2	42.2	26.0	153.0	-	-	2.77	1.65	3.56
	40	**1½"**	30.5	-	38.10	48.3	48.3	48.3	26.0	153.0	-	1.65	2.77	1.65	3.68
50	**50**	**2"**	30.0	-	50.80	60.3	60.3	60.3	32.0	173.0	-	1.65	2.77	1.65	3.91
	65	**2½"**	30.0	-	63.50	-	-	-	34.0	173.0	-	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 F4: 1.4539, forged body

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

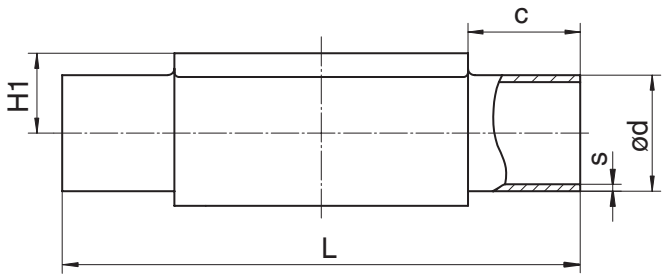
MG	DN	NPS	c (min)	ød	H1	L	s
25	**20**	**3/4"**	25.0	19.05	16.0	120.0	1.65
	25	**1"**	25.0	25.40	19.0	120.0	1.65
40	**32**	**1¼"**	25.0	-	-	153.0	-
	40	**1½"**	30.5	38.10	26.0	153.0	1.65
50	**50**	**2"**	30.0	50.80	32.0	173.0	1.65
	65	**2½"**	30.0	63.50	-	173.0	1.65

Dimensions in mm
MG = diaphragm size

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

2) **Valve body material**
Code C3: 1.4435, investment casting

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
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
40	**32**	**1¼"**	25.0	31.8	42.7	33.7	26.0	153.0	1.2	2.80	1.2
	40	**1½"**	30.5	38.1	48.6	38.0	26.0	153.0	1.2	2.80	1.2
50	**50**	**2"**	30.0	50.8	60.5	51.0	32.0	173.0	1.5	2.80	1.2
	65	**2½"**	30.0	63.5	-	63.5	34.0	173.0	2.0	-	1.6

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

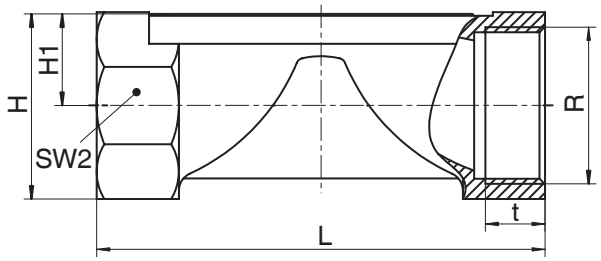
MG	DN	NPS	c (min)	ød	H1	L	s
25	**25**	**1"**	25.0	25.0	19.0	120.0	1.2
40	**40**	**1½"**	30.5	38.0	26.0	153.0	1.2
50	**50**	**2"**	30.0	51.0	32.0	173.0	1.2

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
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
40	**32**	**1¼"**	51.3	26.3	120.0	8	G 1¼	50.0	20.0
	40	**1½"**	56.3	28.8	140.0	8	G 1½	55.0	18.0
50	**50**	**2"**	71.3	36.0	165.0	8	G 2	70.0	26.0

Connection type threaded socket (code 1) [1], SG iron material (code 90) [2]

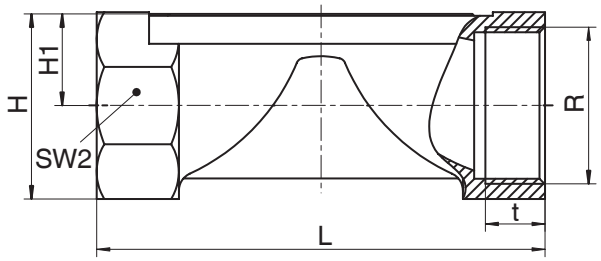
MG	DN	NPS	H	H1	L	n	R	SW 2	t
25	**15**	**1/2"**	32.7	16.7	85.0	6	G 1/2	32	15.0
	20	**3/4"**	42.0	21.5	85.0	6	G 3/4	41	16.3
	25	**1"**	46.7	23.7	110.0	6	G 1	46	19.1
40	**32**	**1¼"**	56.0	28.5	120.0	6	G 1¼	55	21.4
	40	**1½"**	66.0	33.5	140.0	6	G 1½	65	21.4
50	**50**	**2"**	76.0	38.5	165.0	6	G 2	75	25.7

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
Code 90: EN-GJS-400-18-LT (GGG 40.3)

8.2.5 Threaded socket NPT (code 31)



Connection type threaded socket NPT (code 31) [1], investment casting material (code 37) [2]

MG	DN	NPS	H	H1	L	n	R	SW 2	t
25	**15**	**1/2"**	28.3	14.8	85.0	6	NPT 1/2	27.0	14.0
	20	**3/4"**	33.3	17.3	85.0	6	NPT 3/4	32.0	14.0
	25	**1"**	42.3	21.8	110.0	6	NPT 1	41.0	17.0
40	**32**	**1¼"**	51.3	26.3	120.0	8	NPT 1¼	50.0	17.0
	40	**1½"**	56.3	28.8	140.0	8	NPT 1½	55.0	17.0
50	**50**	**2"**	71.3	36.3	165.0	8	NPT 2	70.0	18.0

Connection type threaded socket NPT (code 31) [1], SG iron material (code 90) [2]

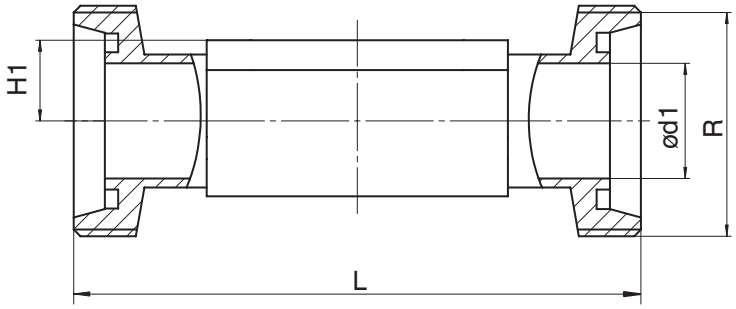
MG	DN	NPS	H	H1	L	n	R	SW 2	t
25	**15**	**1/2"**	32.7	16.7	85.0	6	NPT 1/2	32	13.6
	20	**3/4"**	42.0	21.5	85.0	6	NPT 3/4	41	14.1
	25	**1"**	46.7	23.7	110.0	6	NPT 1	46	16.8
40	**32**	**1¼"**	56.0	28.5	120.0	6	NPT 1¼	55	17.3
	40	**1½"**	66.0	33.5	140.0	6	NPT 1½	65	17.3
50	**50**	**2"**	76.0	38.5	165.0	6	NPT 2	75	17.7

Dimensions in mm
MG = diaphragm size
n = number of flats

1) **Connection type**
Code 31: NPT female thread

2) **Valve body material**
Code 37: 1.4408, investment casting
Code 90: EN-GJS-400-18-LT (GGG 40.3)

8.2.6 Threaded spigot DIN (code 6)



Connection type threaded spigot DIN (code 6) [1], forged material (code 40, 42) [2]

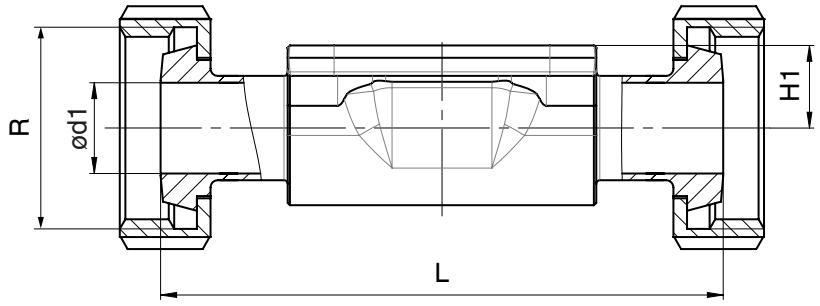
MG	DN	NPS	ød1	H1	L	R
25	**15**	**1/2"**	16.0	19.0	118.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	118.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	128.0	Rd 52 x 1/6
40	**32**	**1¼"**	32.0	26.0	147.0	Rd 58 x 1/6
	40	**1½"**	38.0	26.0	160.0	Rd 65 x 1/6
50	**50**	**2"**	50.0	32.0	191.0	Rd 78 x 1/6

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, Δ Fe < 0.5%

8.2.7 Cone spigot DIN (code 6K)



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

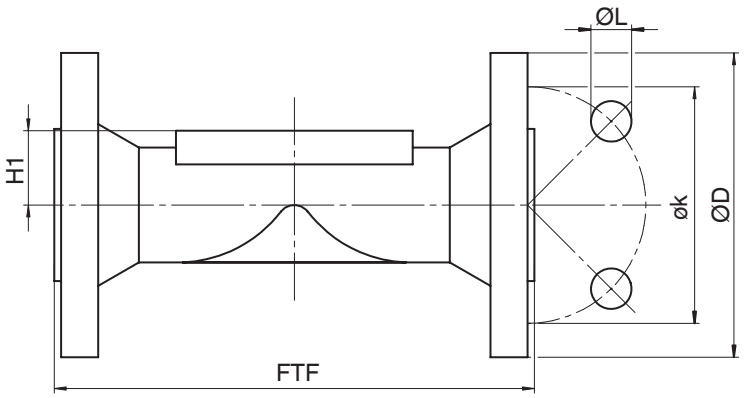
MG	DN	NPS	ød1	H1	L	R
25	**15**	**1/2"**	16.0	19.0	116.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	114.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	127.0	Rd 52 x 1/6
40	**32**	**1¼"**	32.0	26.0	147.0	Rd 58 x 1/6
	40	**1½"**	38.0	26.0	160.0	Rd 65 x 1/6
50	**50**	**2"**	50.0	32.0	191.0	Rd 78 x 1/6

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%

8.2.8 Flange EN (code 8)



Connection type flange, length EN 558 (code 8) [1], SG iron material (code 17, 18, 83, 90), investment casting material (code 39, C3), forged material (code 40, 42) [2]

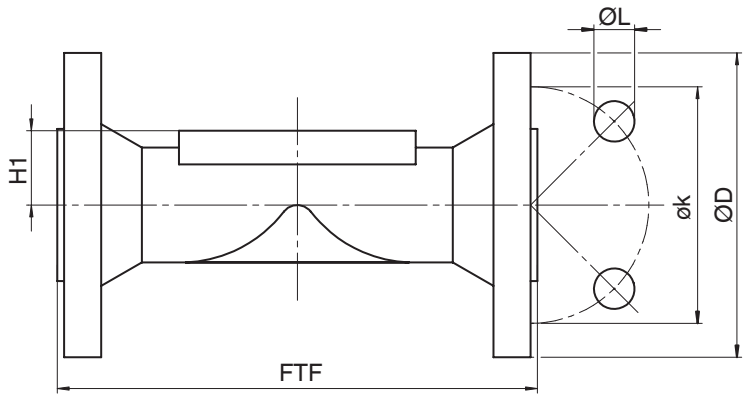
MG	DN	NPS	øD	FTF			H1					øk	øL	n
				Material			Material							
				17, 18, 39, 90	83	40, 42, C3	17, 18, 39	40, 42	C3	83	90			
25	**15**	**1/2"**	95.0	130.0	130.0	150.0	18.0	19.0	13.0	18.0	14.0	65.0	14.0	4
	20	**3/4"**	105.0	150.0	150.0	150.0	20.5	19.0	16.0	20.5	16.5	75.0	14.0	4
	25	**1"**	115.0	160.0	160.0	160.0	23.0	19.0	19.0	23.0	19.5	85.0	14.0	4
40	**32**	**1¼"**	140.0	180.0	180.0	180.0	28.7	26.0	24.0	28.7	23.0	100.0	19.0	4
	40	**1½"**	150.0	200.0	200.0	200.0	33.0	26.0	26.0	33.0	27.0	110.0	19.0	4
50	**50**	**2"**	165.0	230.0	230.0	230.0	39.0	32.0	32.0	39.0	32.0	125.0	19.0	4
	65	**2½"**	185.0	290.0	-	-	51.0	-	-	-	38.7	145.0	19.0	4

Dimensions in mm
MG = diaphragm size
n = number of bolt holes

1) **Connection type**
Code 8: Flange EN 1092, PN 16, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D

2) **Valve body material**
Code 17: EN-GJS-400-18-LT (GGG 40.3), PFA lined
Code 18: EN-GJS-400-18-LT (GGG 40.3), PP lined
Code 39: 1.4408, PFA lined
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code 83: EN-GJS-400-18-LT (GGG 40.3), hard rubber lined
Code 90: EN-GJS-400-18-LT (GGG 40.3)
Code C3: 1.4435, investment casting

8.2.9 Flange JIS (code 34)



Connection type flange, length 558 (code 34) [1], **investment casting material (code 39)** [2]

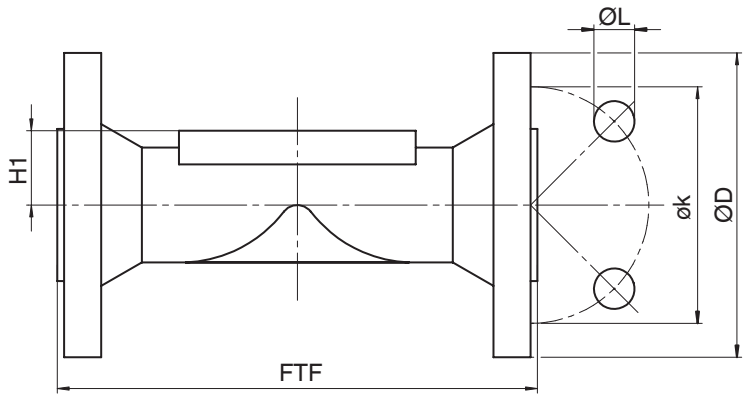
MG	DN	NPS	øD	FTF	H1	øk	øL	n
25	15	1/2"	95.0	130.0	18.0	70.0	15.0	4
	20	3/4"	100.0	150.0	20.5	75.0	15.0	4
	25	1"	125.0	160.0	23.0	90.0	19.0	4
40	32	1¼	135.0	180.0	28.7	100.0	19.0	4
	40	1½"	140.0	200.0	33.0	105.0	19.0	4
50	50	2"	155.0	230.0	39.0	120.0	19.0	4

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 34: Flange JIS B2220, 10K, RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D

2) **Valve body material**
Code 39: 1.4408, PFA lined

8.2.10 Flange ANSI Class (code 38, 39)



Connection type flange, length MSS SP-88 (code 38) [1], SG iron material (code 17, 18, 83), investment casting material (code 39) [2]

MG	DN	NPS	øD	FTF		H1	øk	øL	n
				Material					
				17, 18, 39	83				
25	20	3/4"	100.0	146.0	146.4	20.5	69.9	15.9	4
	25	1"	110.0	146.0	146.4	23.0	79.4	15.9	4
40	40	1½"	125.0	175.0	171.4	33.0	98.4	15.9	4
50	50	2"	150.0	200.0	197.4	39.0	120.7	19.0	4
	65	2½"	180.0	226.0	-	51.0	139.7	19.0	4

Connection type flange, length EN 558 (code 39) [1], SG iron material (code 17, 18, 83, 90), investment casting material (code 39, C3), forged material (code 40, 42) [2]

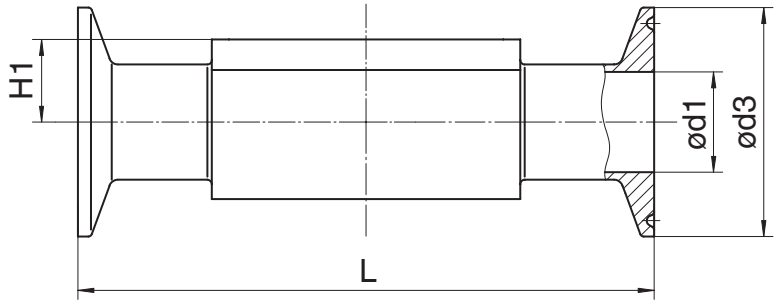
MG	DN	NPS	øD	FTF				H1					øk	øL	n
				Material				Material							
				17, 18, 39, 90	83	C3	40, 42	17, 18, 39	83	C3	40, 42	90			
25	15	1/2"	90.0	150.0	130.0	150.0	150.0	18.0	18.0	13.0	19.0	14.0	60.3	15.9	4
	20	3/4"	100.0	150.0	150.0	150.0	150.0	20.5	20.5	16.0	19.0	16.5	69.9	15.9	4
	25	1"	110.0	160.0	160.0	160.0	160.0	23.0	23.0	19.0	19.0	19.5	79.4	15.9	4
40	32	1¼"	115.0	180.0	180.0	180.0	180.0	28.7	28.7	24.0	26.0	23.0	88.9	15.9	4
	40	1½"	125.0	200.0	200.0	200.0	200.0	33.0	33.0	26.0	26.0	27.0	98.4	15.9	4
50	50	2"	150.0	230.0	230.0	230.0	230.0	39.0	39.0	32.0	32.0	32.0	120.7	19.0	4
	65	2½"	180.0	290.0	-	-	-	51.0	-	-	-	38.7	139.7	19.0	4

Dimensions in mm
MG = diaphragm size
n = number of bolt holes

1) **Connection type**
Code 38: Flange ANSI Class 150 RF, face-to-face dimension FTF MSS SP-88, length only for body configuration D
Code 39: Flange ANSI Class 125/150 RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D

2) **Valve body material**
Code 17: EN-GJS-400-18-LT (GGG 40.3), PFA lined
Code 18: EN-GJS-400-18-LT (GGG 40.3), PP lined
Code 39: 1.4408, PFA lined
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code 83: EN-GJS-400-18-LT (GGG 40.3), hard rubber lined
Code 90: EN-GJS-400-18-LT (GGG 40.3)
Code C3: 1.4435, investment casting

8.2.11 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
25	**20**	**3/4"**	15.75	15.75	25.0	250	19.0	101.6	117.0
	25	**1"**	22.10	22.10	50.5	50.5	19.0	114.3	127.0
40	**40**	**1½"**	34.80	34.80	50.5	50.5	26.0	139.7	159.0
50	**50**	**2"**	47.50	47.50	64.0	64.0	32.0	158.8	190.0
	65	**2½"**	60.20	60.20	77.5	77.5	34.0	193.8	216.0

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
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	1270	127.0	127.0
40	**32**	**1¼"**	38.4	32.0	31.3	64.0	50.5	50.5	26.0	146.0	146.0	146.0
	40	**1½"**	44.3	38.0	35.6	64.0	50.5	50.5	26.0	159.0	159.0	159.0
50	**50**	**2"**	56.3	50.0	48.6	77.5	64.0	64.0	32.0	190.0	190.0	190.0
	65	**2½"**	-	-	60.3	-	-	77.5	34.0	-	-	216.0

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 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.

Control function	Function	Condition as supplied to customer
1	Normally closed (NC)	closed
2	Normally open (NO)	open
3	Double acting (DA)	undefined

9.2 Packaging

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

9.3 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.

9.4 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.

10 Installation in piping

10.1 Preparing for installation

⚠ WARNING

The equipment is subject to pressure!

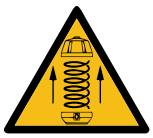
► Risk of severe injury or death
- Depressurize the plant or plant component.
- Completely drain the plant or plant component.

⚠ WARNING

Corrosive chemicals!

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

⚠ WARNING



Actuator is under spring pressure!

► Risk of severe injury or death!
- Only open the actuator under a press tool.

⚠ CAUTION

Hot plant components!

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

⚠ 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.

⚠ CAUTION

Leakage!

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

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").

10.2 Installation position

The installation position of the product is optional.

10.3 Installation with clamp connections

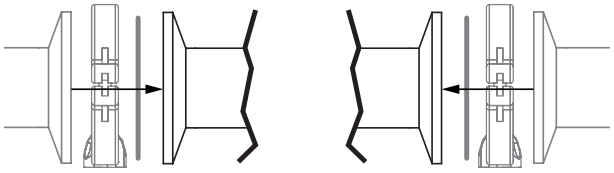


Fig. 1: Clamp connection

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.

10.4 Installation with flanged connection

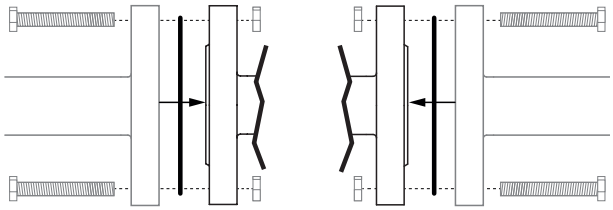


Fig. 2: Flanged connection

NOTICE

Sealing material!

► The sealing material is not included in the scope of delivery.

● Only use appropriate sealing material.

NOTICE

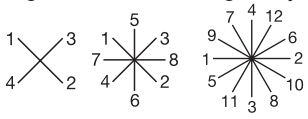
Connector elements!

► The connector elements are not included in the scope of delivery.

● Only use connector elements made of approved materials.

● Observe permissible tightening torque of the bolts.

1. Keep sealing material ready.
2. Carry out preparations for installation (see chapter "Preparing for installation").
3. Ensure clean, undamaged sealing surfaces on the connection flanges.
4. Align flanges carefully before installing them.
5. Clamp the product centrally between the piping with flanges.
6. Centre the gaskets.
7. Connect the valve flange and the piping flange using appropriate sealing materials and matching bolting.
8. Use all flange holes.
9. Tighten the bolts diagonally.



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

10.5 Installation with threaded sockets

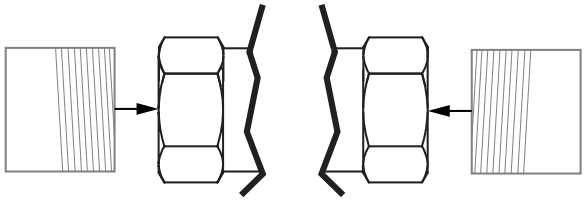


Fig. 3: Threaded socket

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.

10.6 Installation with threaded spigots

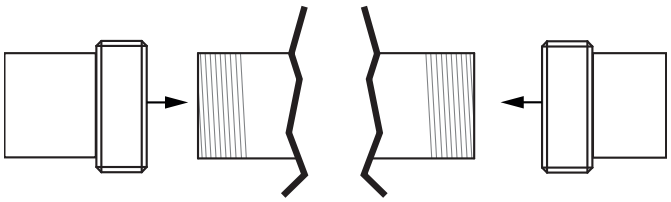


Fig. 4: Threaded spigots

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.

10.7 Installation with butt weld spigots

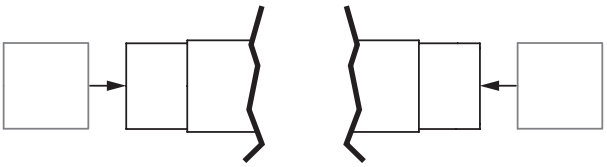


Fig. 5: Butt weld spigots

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.

10.8 After the installation

NOTICE

Diaphragms set in the course of time.

► Leakage

● After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.

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

11 Pneumatic connections

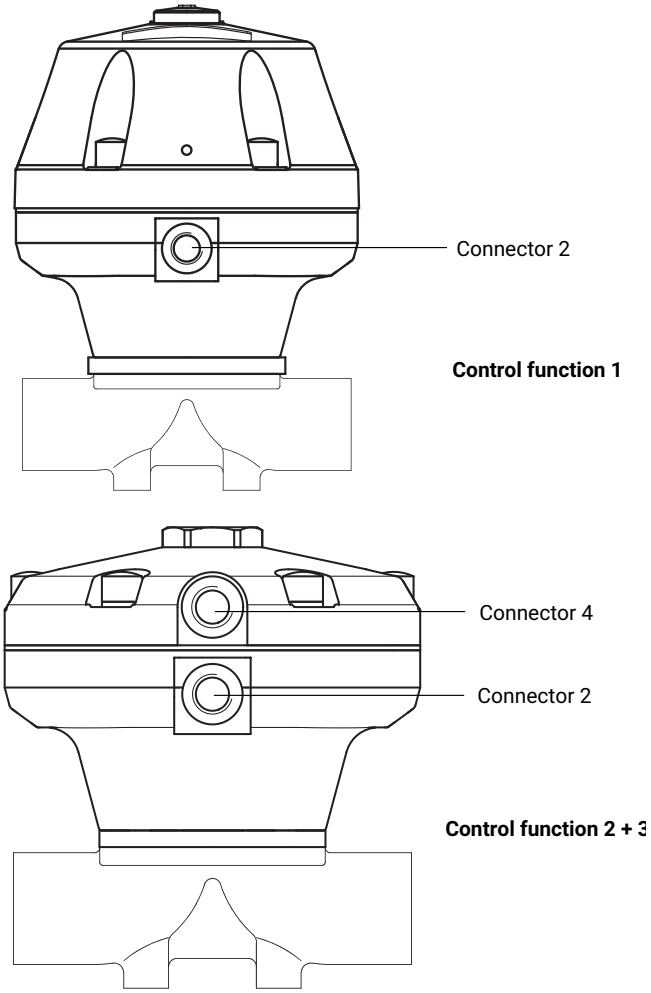
11.1 Control function

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).



The product has 2 control medium connectors.

Control function	Control medium connector 2 (open)	Control medium connector 4 (close)
1 (NC)	+	-
2 (NO)	–	+
3 (DA)	+	+

+ = available

– = not available

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: G1/4

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)
For connectors 2 / 4 see figure above		

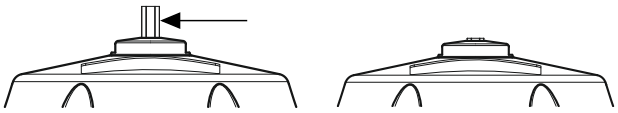
12 Operation

NOTICE

Optical position indicator

- ► Control function 1: As standard
- ► Control function 2+3: optional

Optical position indicator



Valve open Valve closed

13 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. Commission actuators in accordance with the enclosed instructions.

14 Operation

NOTICE

Flow direction

- ► The flow direction of the product is optional.

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

14.1 Control function 1

In its resting position, the product is closed by spring force.

1. Activate the actuator via control medium connector 2.
   ⇨ The product opens.
2. Vent the actuator via control medium connector 2.
   ⇨ The product closes.

14.2 Control function 2

In its resting position the product is opened by spring force.

1. Activate the actuator via control medium connector 4.
   ⇨ The product closes.
2. Vent the actuator via control medium connector 4.
   ⇨ The product opens.

14.3 Control function 3

In its resting position the product has no defined normal position.

1. Activate the actuator via control medium connector 2.
   ⇨ The product opens.
2. Activate the actuator via control medium connector 4.
   ⇨ The product closes.

15 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from vent hole* in the actuator cover for control function NC or control medium connector 2 for control function NO (see chapter "Control functions")	Actuator membrane faulty	Replace the actuator
Control medium escaping from leak detection hole* (only with control function NC and control function DA)	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
Control medium escaping to the outside at the actuator membrane*	Connecting bolts between actuator cover and base loose	Retighten bolts professionally diagonally
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 actuator if necessary
	Valve body weir leaking or damaged	Check valve body weir 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 leaking	Valve body leaking or corroded	Check valve body for damage, replace valve body if necessary

* see chapter "Spare parts"

16 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

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

⚠ 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.

NOTICE

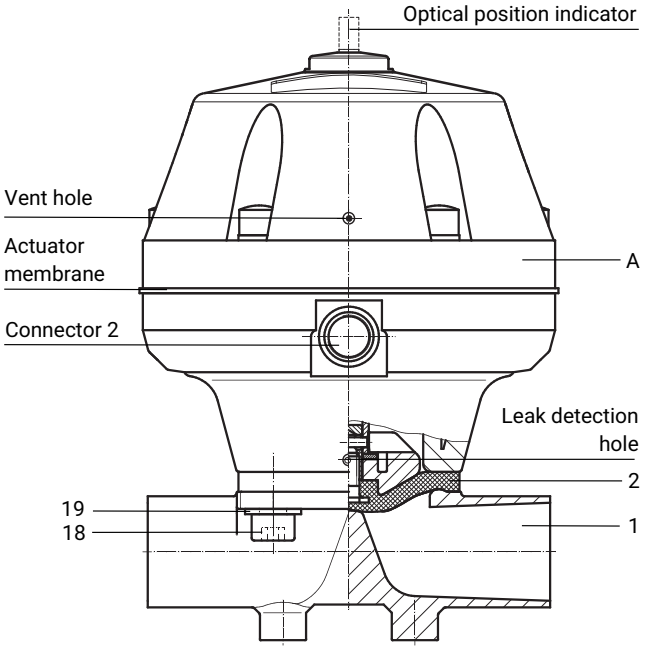
► The valve with a stainless steel body has CIP/SIP cleaning and sterilizing capabilities.

The operator must carry out regular visual examination of the GEMÜ products dependent on the operating conditions and the potential danger in order to prevent leakage and damage.

The product also must be disassembled and checked for wear in the corresponding intervals.

1. Have servicing and maintenance work performed by trained personnel.
2. Wear appropriate protective gear as specified in plant operator's guidelines.
3. Shut off plant or plant component.
4. Secure the plant or plant component against recommissioning.
5. Depressurize the plant or plant component.
6. Actuate GEMÜ products which are always in the same position four times a year.

16.1 Spare parts



Item	Name	Order designation
A	Actuator	9695
1	Body	K600
2	Diaphragm	Code 2 Code 4 Code 13 Code 17 Code 19 Code 28 Code 29 Code 36
18, 19, 20	Screw connection kit	695 S30

16.2 Fitting/removing spare parts

16.2.1 Valve disassembly (removing the actuator from the body)

1. Move the actuator **A** to the open position.
2. Remove actuator **A** from 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).

16.2.2 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.
   ⇨ Please note: Depending on the version, the compressor may fall out.
2. Clean all parts of contamination (do not damage parts during cleaning).
3. Check parts for potential damage, replace if necessary (only use genuine parts from GEMÜ).

16.2.3 Mounting the diaphragm

NOTICE

► Fit the diaphragms suitable for the product (suitable for medium, medium concentration, temperature and pressure). The diaphragm is a wearing part. Check the technical condition and function of the product before commissioning and during the whole term 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 product. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the product is no longer ensured.

NOTICE

► Incorrectly mounted diaphragms cause the product leakage and emission of medium. In this case, remove the diaphragms, check the complete valve and diaphragms and reassemble again proceeding as described above.

16.2.3.1 Mounting the compressor

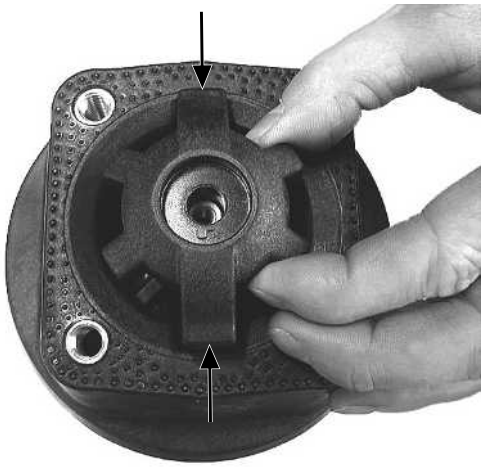
NOTICE

Compressor

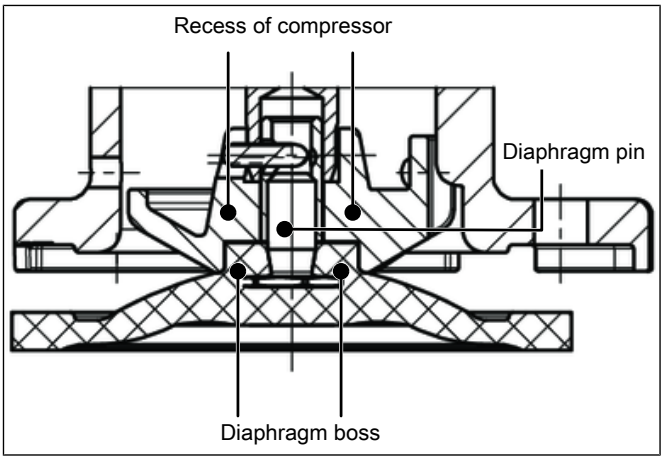
► The compressor is loose on all diaphragm sizes.

1. Place the washer (arrow) loosely on the actuator spindle.

2. Place the compressor loosely on the washer, fit the wings into the guides (arrows).



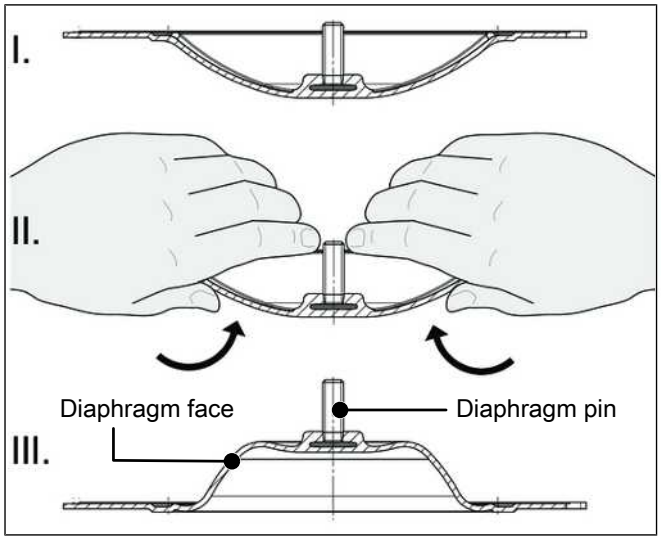
16.2.3.2 Mounting the concave diaphragm



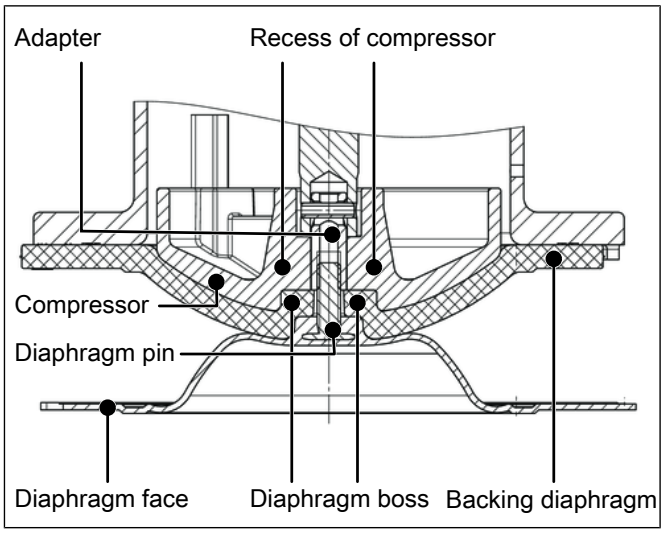
1. Move the actuator **A** to the closed position.
2. Mount the compressor (see "Mounting the compressor").
3. Check if the compressor is fitted in the guides.
4. Manually screw new diaphragm tightly into the compressor.
5. Check if the diaphragm boss fits closely in the recess of the compressor.
6. If it is difficult to screw it in, check the thread and replace damaged parts.
7. When definitive resistance is felt, turn back the diaphragm until its bolt holes are in correct alignment with the bolt holes of the actuator.

16.2.3.3 Mounting the convex diaphragm

1. Move the actuator **A** to the closed position.
2. Mount the compressor (see "Mounting the compressor").
3. Check if the compressor is fitted in the guides.
4. Invert the new diaphragm face manually (use a clean, padded mat with larger nominal sizes).



5. Position the new backing diaphragm onto the compressor.
6. Position the diaphragm face onto the backing diaphragm.
7. Screw diaphragm face tightly into the compressor manually.
   ⇨ The diaphragm boss must fit closely in the recess of the compressor.



8. If it is difficult to screw it in, check the thread and replace damaged parts.
9. When definitive resistance is felt, turn back the diaphragm until its bolt holes are in correct alignment with the bolt holes of the actuator.
10. Press the diaphragm face tightly onto the backing diaphragm manually so that it returns to its original shape and fits closely on the backing diaphragm.

16.2.4 Mounting the actuator on the valve body

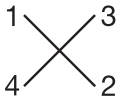
NOTICE

Diaphragms set in the course of time.

► Leakage

● After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.

1. Move the actuator **A** to the open position.
2. Position actuator **A** with the mounted diaphragm on the valve body **1**.
3. Take care to align the compressor weir and valve body weir.
4. Screw in the bolts with washers 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 diagonally.



7. Ensure even compression of the diaphragm (approx. 10 to 15%).
   ⇨ Even compression is detected by an even bulge to the outside.
   Please note: For a code 5M diaphragm (convex dia-

phragm), the PTFE diaphragm face and the EPDM backing diaphragm must be positioned level with and parallel to the valve body.

8. With the valve fully assembled, check the function and tightness.

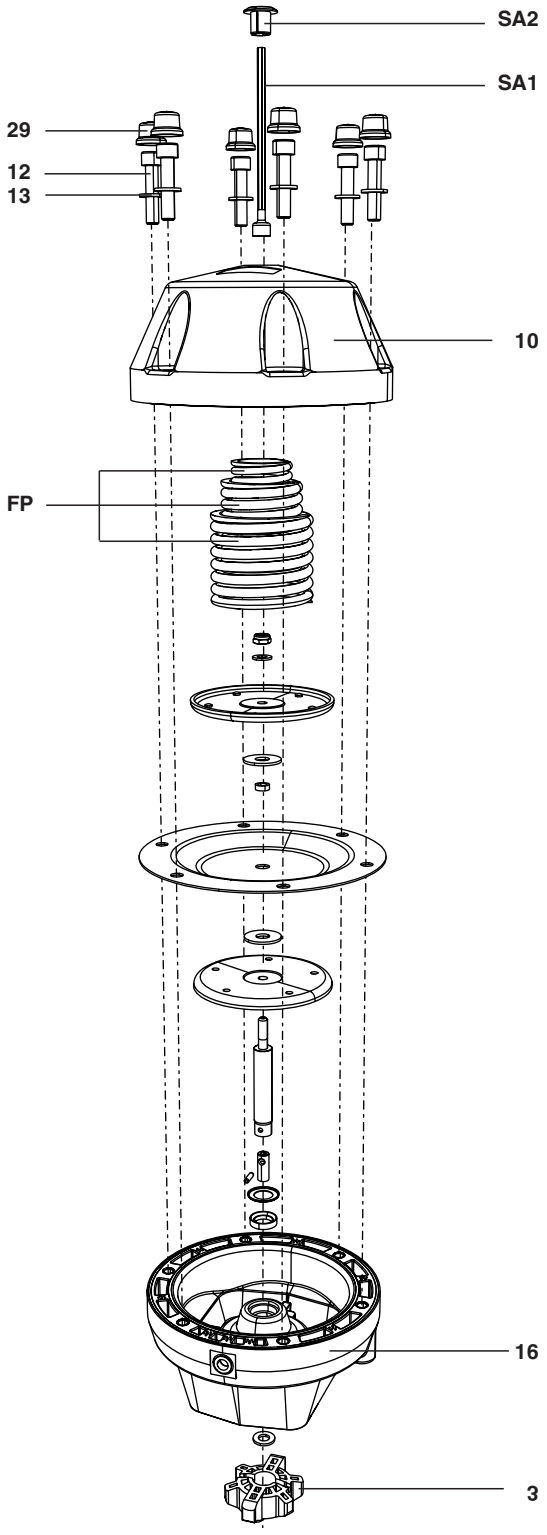
17 Removal from piping

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.

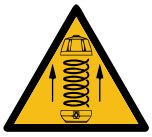
18 Disposal

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.

18.1 Disassembly for disposal for control function 1



⚠ WARNING



Actuator top is under spring pressure

► Risk of severe injury or death!

● Only open the actuator under a press.

1. Separate the actuator from the control medium.
2. Remove the loose compressor **3**.
3. Remove the protective cap **SA2**.
4. Remove the optical position indicator **SA1**.
5. Remove the protective caps **29**.
6. Clamp the actuator in a press.

⚠ CAUTION

Applied pressure is too high

► Risk of breakage of actuator top **10**!

● Only use minimum required pressure.

7. Diaphragm sizes 25 and 40:
   Undo and remove the bolts **12** together with the washers **13** between the actuator top **10** and the actuator base **16**.
8. Slowly release the press.
9. Remove actuator top **10**.
10. Remove the spring set **FP**, comprising 3 compression springs, from the actuator base **16**.

19 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.

20 Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II, 1.B

Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II, 1.B for partly completed machinery

Manufacturer:
GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Postfach 30
Fritz-Müller-Straße 6-8
D-74653 Ingelfingen-Criesbach

Description and identification of the partly completed machinery:

Make:	GEMÜ Diaphragm valve, pneumatically operated
Serial number:	from December 29, 2009
Project number:	MV-Pneum-2009-12
Commercial name:	Type 695

We hereby declare that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:
1.1.3.; 1.1.5.; 1.1.7.; 1.2.1.; 1.3.; 1.3.2.; 1.3.3.; 1.3.4.; 1.3.7.; 1.3.9.; 1.5.3.; 1.5.5.; 1.5.6.; 1.5.7.; 1.5.8.; 1.5.9.; 1.6.5.; 2.1.1.; 3.2.1.; 3.2.2.; 3.3.2.; 3.4.4.; 3.6.3.1.; 4.1.2.1.; 4.1.2.3.; 4.1.2.4.; 4.1.2.5.; 4.1.2.6. a); 4.1.2.6. b); 4.1.2.6. c); 4.1.2.6. d); 4.1.2.6. e); 4.1.3.; 4.2.1.; 4.2.1.4.; 4.2.2.; 4.2.3.; 4.3.1.; 4.3.2.; 4.3.3.; 4.4.1.; 4.4.2.; 5.3.; 5.4.; 6.1.1.; 6.3.3.; 6.4.1.; 6.4.3.

We also declare that the specific technical documentation has been compiled in accordance with part B of Annex VII.

We expressly declare that the partly completed machinery complies with the relevant provisions of the following EC directives:

2006/42/EC:2006-05-17:	(Machinery Directive) Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)

The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

electronically

This does not affect the intellectual property rights!

Important note! The partly completed machinery may be put into service only if it was determined, where appropriate, that the machinery into which the partly completed machinery is to be installed meets the provisions of this Directive.

Joachim Brien
Head of Technical Department

Ingelfingen-Criesbach, February 2013

21 Declaration of Conformity according of the Directive 2014/68/EU

Declaration of Conformity

According of the Directive 2014/68/EU

Hereby we, **GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG**
Fritz-Müller-Straße 6-8
D-74653 Ingelfingen

declare that the equipment listed below complies with the safety requirements of the Pressure Equipment Directive 2014/68/EU.

Description of the equipment - product type

Diaphragm Valve
GEMÜ 695

Notified body:	TÜV Rheinland Industrie Service GmbH
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Applied standards:	AD 2000

Conformity assessment procedure:
Module H1

Note for equipment with a nominal size ≤ DN 25:
The products are developped and produced according to GEMÜ process instructions and quality standards which comply with the requirements of ISO 9001 and of ISO 14001.

According to section 4, paragraph 3 of the Pressure Equipment Directive 2014/68/EU these products must not be identified by a CE-label.

Joachim Brien
Head of Technical Department

Ingelfingen-Criesbach, March 2019

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