GEMÜ 658

Pneumatically operated diaphragm valve

EN **Operating instructions**

further information
webcode: GW-658

Contents

1 General information

1.1 Notes

- 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	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:

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:

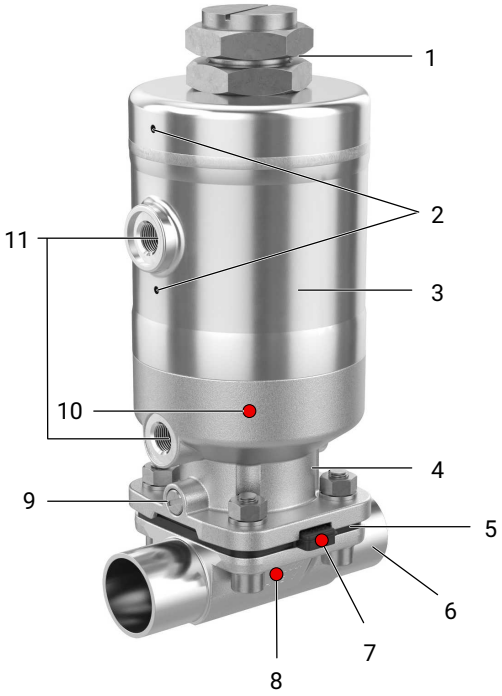
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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 Design



Item	Name	Materials
1	Opening stroke limiter	
2	Vent hole	
3	Two-stage actuator	1.4404 / 1.4408
4	Distance piece with leak detection hole	1.4408
5	Diaphragm	EPDM, FKM, PTFE/EPDM
6	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
7	CONEXO diaphragm RFID chip (see Conexo information)	
8	CONEXO body RFID chip* (see Conexo information)	
9	Mounting for OPEN and CLOSED proximity switches	
10	CONEXO actuator RFID chip (see Conexo information)	

Item	Name	Materials
11	Pneumatic connections	

* Body material 1.4408, investment casting – without chip

3.2 Description

The GEMÜ 658 2/2-way diaphragm valve has a two-stage actuator. In addition to full stroke, a partial stroke can be set via two pistons working independently of each other. (see "Pneumatic connections", page 30)

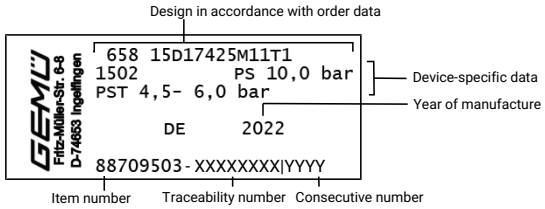
All actuator parts including closing springs (except seals) are made from stainless steel. The valve is available with a Normally Closed control function.

An opening stroke limiter for setting the partial stroke is integrated as standard.

3.3 Function

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

3.4 Product label



The 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

For electronic identification purposes, each replaceable component contained in the product you have purchased is equipped with an RFID chip (1). Where you can find the RFID chip differs from product to product.

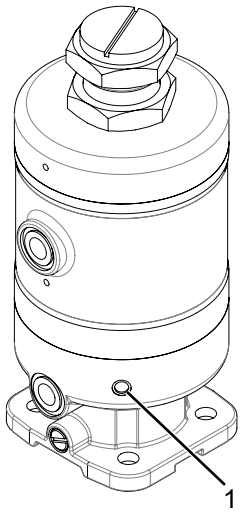


Fig. 1: Actuator RFID chip

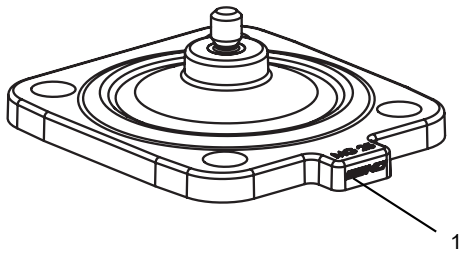


Fig. 2: Diaphragm RFID chip

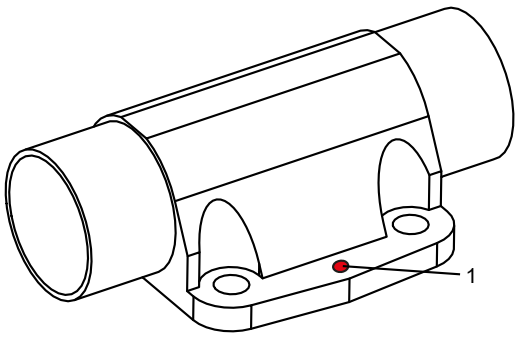
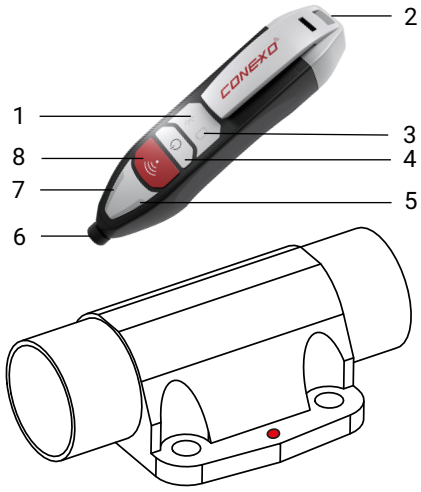


Fig. 3: Valve body RFID chip

The CONEXO pen helps read out information stored in these RFID chips. The CONEXO app or CONEXO portal is required to view this information.

5 Reading out the RFID chip



1. Press the On/Off key **4** on the CONEXO pen.

⇨ The CONEXO pen has been switched on.

⇨ LED **1** flashes.

2. Connect the CONEXO pen to the tablet.

✓ The user finds themselves in a menu within the CONEXO app where a scanning operation is requested.

3. Hold the CONEXO pen directly against the RFID chip of a component or functional location and press the scan key **8**.

⇨ If an RFID chip has been scanned correctly, the LED **7** turns green.

⇨ If an RFID chip has not been scanned correctly, the LED **5** turns red.

⇨ An audible signal is emitted during a correct scan process.

⇨ The data that is read out is transferred to the CONEXO app.

4. Scan as many components as required.
5. Hold down the On/Off key **4** for at least three seconds.

⇨ The CONEXO pen has been switched off.

6 Intended use

⚠ DANGER

Danger of explosion!

► 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

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.

1. Use the product in accordance with the technical data.
2. Follow the supplement according to ATEX, provided that it was ordered in accordance with ATEX.

7 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 two-stage actuator	658

2 DN	Code
DN 10	10
DN 12	12
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
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 EN 10357 series B, 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 11866 series C	59
Spigot ISO 1127/EN 10357 series C/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
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

4 Connection type	Code
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
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, Δ Fe < 0.5%	42
1.4539, forged body	F4

6 Diaphragm material	Code
Elastomer	
FKM	4
EPDM	13
EPDM	17
EPDM	19
EPDM	36
PTFE	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M

7 Control function	Code
Normally closed (NC)	1

8 Actuator version	Code
Actuator size 1T1	1T1
Actuator size 2T1	2T1

8 Actuator version	Code
Actuator size 3TA	3TA
Actuator size 4T1	4T1

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
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
Integrated RFID chip for electronic identification and traceability	C

11 CONEXO	Code
Without	

Order example

Ordering option	Code	Description
1 Type	658	Diaphragm valve, pneumatically operated, stainless steel two-stage actuator
2 DN	25	DN 25
3 Body configuration	D	2/2-way body
4 Connection type	60	Spigot ISO 1127/EN 10357 series C/DIN 11866 series B
5 Valve body material	40	1.4435 (F316L), forged body
6 Diaphragm material	5M	PTFE/EPDM two-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

8 Technical data

8.1 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

8.2 Temperature

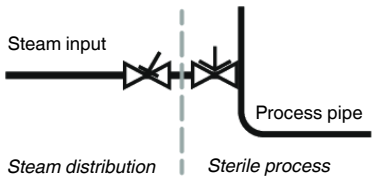
Media temperature:

Diaphragm material	Standard	Special version for oxygen
FKM (code 4)	-10 — 90 °C	-
EPDM (code 13)	-10 — 100 °C	0 — 60 °C
EPDM (code 17)	-10 — 100 °C	-
EPDM (code 19)	-10 — 100 °C	0 — 60 °C
EPDM (code 36)	-10 — 100 °C	-
PTFE/EPDM (code 54)	-10 — 100 °C	0 — 60 °C
PTFE/EPDM (code 5M)	-10 — 100 °C	0 — 60 °C

Sterilization temperature:

FKM (code 4)	not applicable
EPDM (code 13)	max. 150 °C, max. 60 min per cycle
EPDM (code 17)	max. 150 °C, max. 180 min per cycle
EPDM (code 19)	max. 150 °C, max. 180 min per cycle
EPDM (code 36)	max. 150 °C, max. 60 min per cycle
PTFE/EPDM (code 54)	max. 150 °C, permanent temperature per cycle
PTFE/EPDM (code 5M)	max. 150 °C, permanent 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:

max. 60 °C

Storage temperature:

0 — 40 °C

8.3 Pressure

Operating pressure:

MG	Diaphragm material		
	EPDM/FKM	PTFE (code 5M)	PTFE (code 54)
10	0 - 10.0	0 - 10.0	0 - 8.0
25	0 - 10.0	0 - 10.0	0 - 8.0
40	0 - 10.0	0 - 10.0	0 - 8.0
50	0 - 10.0	0 - 10.0	0 - 8.0

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.

Pressure rating: PN 16

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

Control pressure:

MG	Control pressure
10	4.5 - 6.0
25	5.5 - 7.0
40	3.5 - 7.0
50	5.5 - 7.0

MG = diaphragm size
All pressures are gauge pressures.

Filling volume:

MG	lower piston	upper piston
10	0.04	0.03
25	0.11	0.04
40	0.52	0.42
50	0.54	0.42

Filling volume in dm^3

Kv values:

MG	DN	Connection types (code)							
		0	16	17	18	37	59	60	1
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
40	**32**	25.3	27.0	27.0	27.0	26.2	-	30.0	26.0
	40	29.3	30.9	30.9	30.9	30.2	29.5	32.8	33.0
50	**50**	46.5	48.4	48.4	48.4	51.7	50.6	55.2	60.0
	65	-	-	-	-	62.2	61.8	-	-

MG = diaphragm size
Kv values in m^3/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.

8.4 Product conformity

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food:
FDA*
Regulation (EC) No. 1935/2004*
Regulation (EC) No. 10/2011*
Regulation (EC) No. 2023/2006*
FDA 21 CFR 177.2600*
USP* Class VI Titel 87
USP* Class VI Title 88 (50 °C and 121 °C)
3A*

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

BSE/TSE: The product conforms to EMA/410/01 revision 3 and is free of animal substances*

* depending on version and/or operating parameters

8.5 Mechanical data

Weight:

Actuator

MG	Actuator version	Weight
10	**1T1**	1.75
25	**2T1**	4.20
40	**3TA**	14.50
50	**4T1**	16.20

Weights in kg
MG = diaphragm size

Weight:

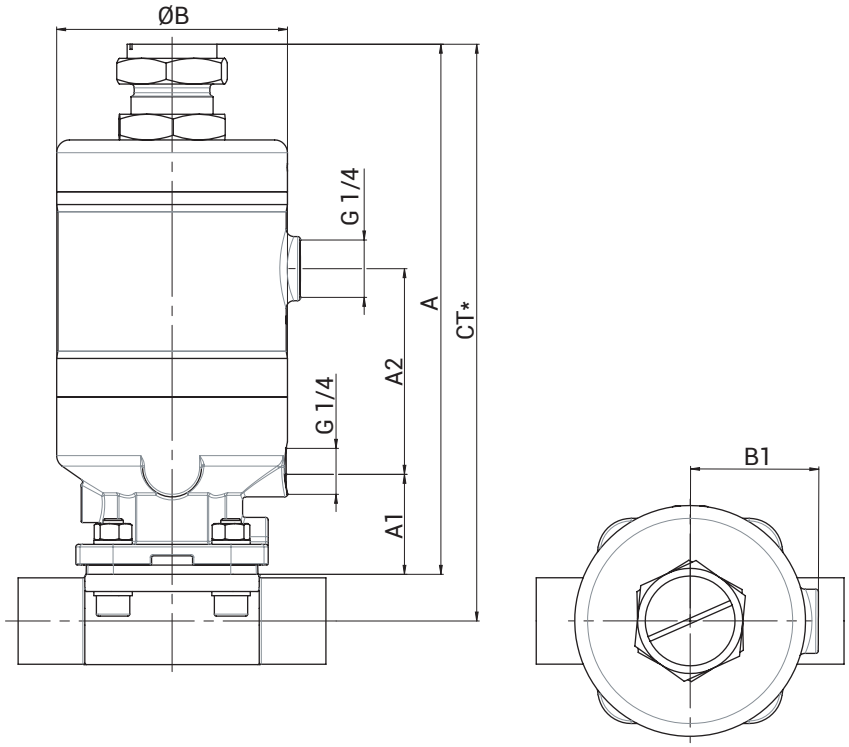
Body

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

Weights in kg
MG = diaphragm size

9 Dimensions

9.1 Actuator dimensions

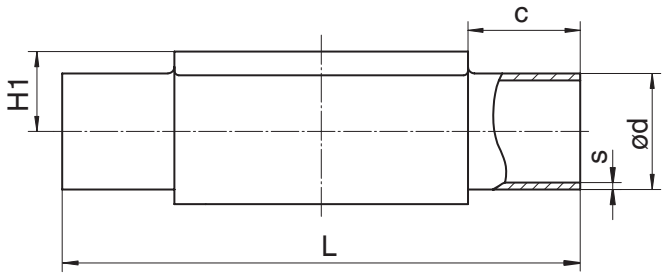


MG	Actuator version	A	A1	A2	ØB	B1
10	**1T1**	169.0	35.0	63.0	61.0	35.5
25	**2T1**	208.0	42.0	77.5	90.0	50.0
40	**3TA**	331.0	52.0	149.5	144.0	77.0
50	**4T1**	331.0	54.0	148.0	144.0	77.0

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

9.2 Body dimensions

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



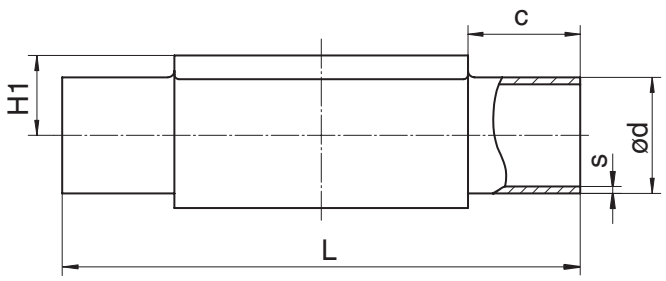
Connection type spigot DIN/EN/ISO (code 0, 16, 17, 18, 60) [1], forged material (code 40, 42, F4) [2]

MG	DN	NPS	c (min)	ød					H1	L	s				
				Connection type							Connection type				
				0	16	17	18	60			0	16	17	18	60
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
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"**	25.0	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]

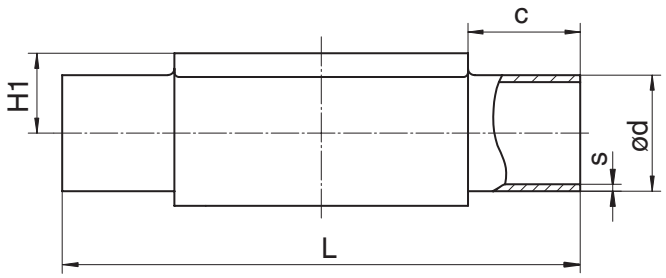
MG	DN	NPS	c (min)	ød		H1	L	s	
				Connection type				Connection type	
				17	60			17	60
10	**10**	**3/8"**	25.0	13.0	17.2	12.5	108.0	1.5	1.6
	15	**1/2"**	25.0	19.0	21.3	12.5	108.0	1.5	1.6
25	**15**	**1/2"**	25.0	19.0	21.3	13.0	120.0	1.5	1.6
	20	**3/4"**	25.0	23.0	26.9	16.0	120.0	1.5	1.6
	25	**1"**	25.0	29.0	33.7	19.0	120.0	1.5	2.0
40	**32**	**1¼"**	25.0	35.0	42.4	24.0	153.0	1.5	2.0
	40	**1½"**	25.0	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

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



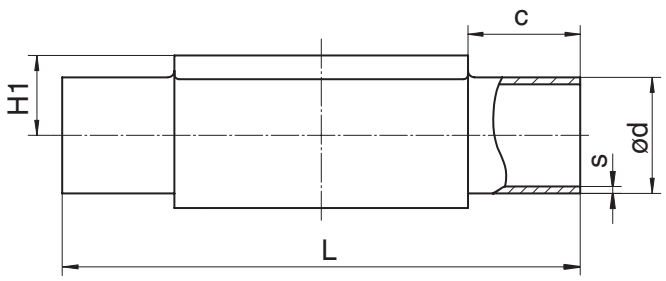
Connection type spigot ASME/BS (code 55, 59, 63, 64, 65)[1], forged material (code 40, 42, F4)[2]

MG	DN	NPS	c (min)	ød					H1	L	s				
				Connection type							Connection type				
				55	59	63	64	65			55	59	63	64	65
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
40	**32**	**1¼"**	25.0	-	-	42.2	42.2	42.2	26.0	153.0	-	-	2.77	1.65	3.56
	40	**1½"**	25.0	-	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]

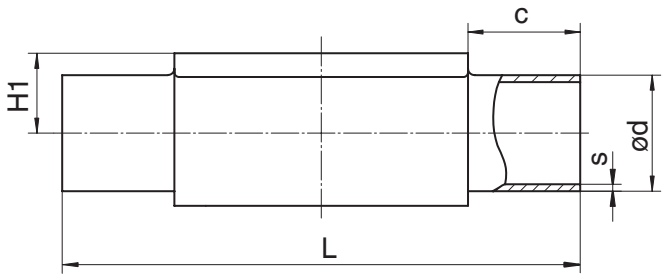
MG	DN	NPS	c (min)	ød	H1	L	s
10	**20**	**3/4"**	25.0	19.05	12.5	108.0	1.65
25	**20**	**3/4"**	25.0	19.05	16.0	120.0	1.65
	25	**1"**	25.0	25.40	19.0	120.0	1.65
40	**40**	**1½"**	25.0	38.10	26.0	153.0	1.65
50	**50**	**2"**	30.0	50.80	32.0	173.0	1.65

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

9.2.3 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
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
40	**32**	**1¼"**	25.0	31.8	42.7	33.7	26.0	153.0	1.2	2.80	1.2
	40	**1½"**	25.0	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), investment casting material (code C3) [2]

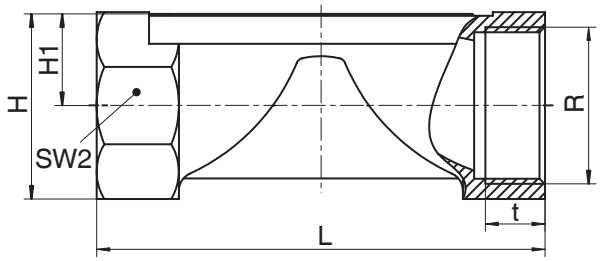
MG	DN	NPS	c (min)	ød	H1	L	s
25	**25**	**1"**	25.0	25.0	19.0	120.0	1.2
40	**40**	**1½"**	30.5	38.0	26.0	153.0	1.2
50	**50**	**2"**	30.0	51.0	32.0	173.0	1.2

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

9.2.4 Threaded socket DIN (code 1)



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

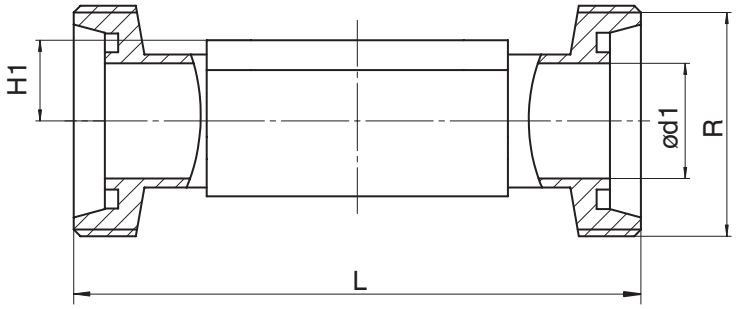
MG	DN	NPS	H	H1	L	n	R	SW 2	t
10	**12**	**3/8"**	25.0	13.0	55.0	2	G 3/8	22.0	12.0
	15	**1/2"**	30.0	15.0	68.0	2	G 1/2	27.0	15.0
25	**15**	**1/2"**	28.3	14.8	85.0	6	G 1/2	27.0	15.0
	20	**3/4"**	33.3	17.3	85.0	6	G 3/4	32.0	16.0
	25	**1"**	42.3	21.8	110.0	6	G 1	41.0	13.0
40	**32**	**1¼"**	51.3	26.3	120.0	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

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

9.2.5 Threaded spigot DIN (code 6)



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

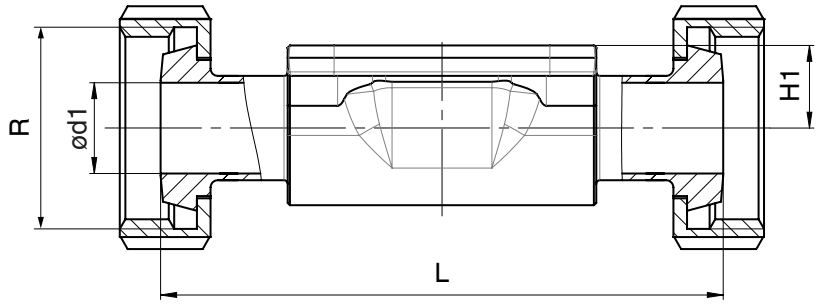
MG	DN	NPS	ød1	H1	L	R
10	**10**	**3/8"**	10.0	12.5	118.0	Rd 28 x 1/8
	15	**1/2"**	16.0	12.5	118.0	Rd 34 x 1/8
25	**15**	**1/2"**	16.0	19.0	118.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	118.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	128.0	Rd 52 x 1/6
40	**32**	**1¼"**	32.0	26.0	147.0	Rd 58 x 1/6
	40	**1½"**	38.0	26.0	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%

9.2.6 Cone spigot DIN (code 6K)



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

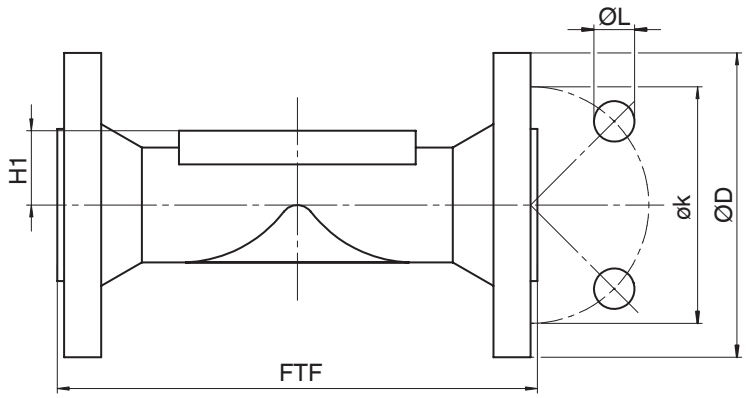
MG	DN	NPS	ød1	H1	L	R
10	**10**	**3/8"**	10.0	12.5	116.0	Rd 28 x 1/8
	15	**1/2"**	16.0	12.5	116.0	Rd 34 x 1/8
25	**15**	**1/2"**	16.0	19.0	116.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	114.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	127.0	Rd 52 x 1/6
40	**32**	**1¼"**	32.0	26.0	147.0	Rd 58 x 1/6
	40	**1½"**	38.0	26.0	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%

9.2.7 Flange EN (code 8)



Connection type flange, length EN 558 (code 8) [1], investment casting material (code C3), forged material (code 40, 42) [2]

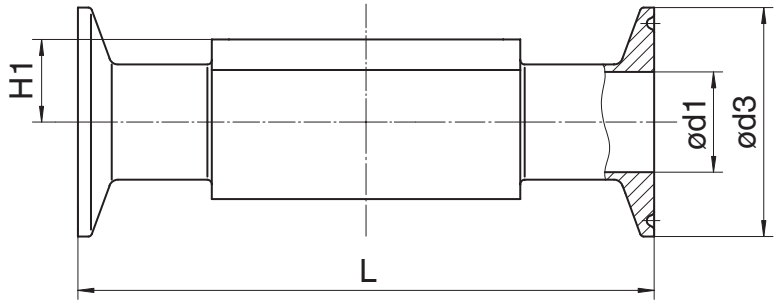
MG	DN	NPS	øD	FTF		H1		øk	øL	n
				Material						
				40, 42	C3	40, 42	C3			
25	**15**	**1/2"**	95.0	130.0	150.0	19.0	13.0	65.0	14.0	4
	20	**3/4"**	105.0	150.0	150.0	19.0	16.0	75.0	14.0	4
	25	**1"**	115.0	160.0	160.0	19.0	19.0	85.0	14.0	4
40	**32**	**1¼"**	140.0	180.0	180.0	26.0	24.0	100.0	19.0	4
	40	**1½"**	150.0	200.0	200.0	26.0	26.0	110.0	19.0	4
50	**50**	**2"**	165.0	230.0	230.0	32.0	32.0	125.0	19.0	4

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

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 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting

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



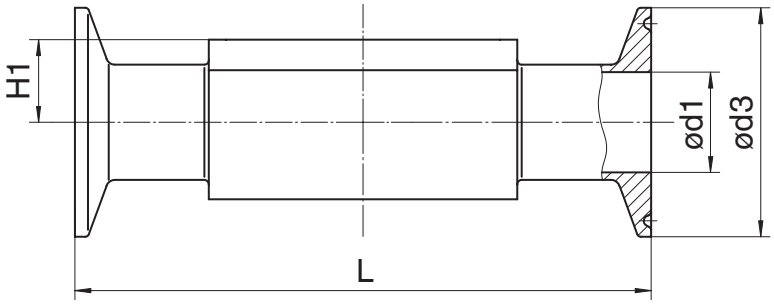
Connection type clamp DIN/ASME (code 80, 88, 8P, 8T) [1], forged material (code 40, 42, F4) [2]

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
10	**15**	**1/2"**	9.40	940	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	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

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 88: Clamp ASME BPE, for pipe ASME BPE, 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



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
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	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 82: Clamp DIN 32676 series B, 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

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

10 Manufacturer's information

10.1 Packaging

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

10.2 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.

10.3 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.

10.4 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.

11 Installation in piping

11.1 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).

11.2 Installation position

The installation position of the product is optional.

11.3 Installation with butt weld spigots

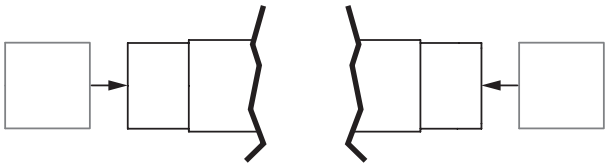


Fig. 4: Butt weld spigots

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.

11.4 Installation with clamp connections

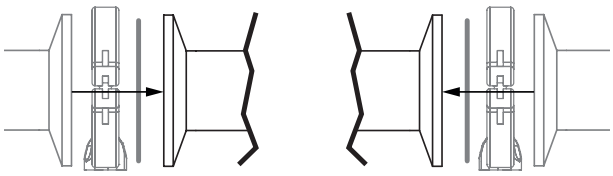


Fig. 5: Clamp connection

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.

11.5 Installation with threaded spigots

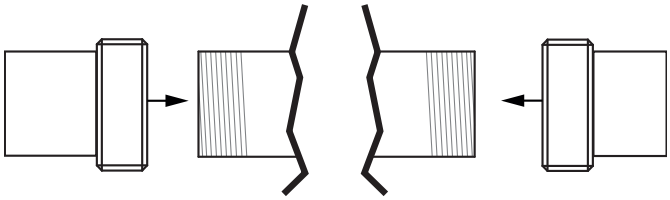


Fig. 6: Threaded spigots

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.

11.6 Installation with flanged connection

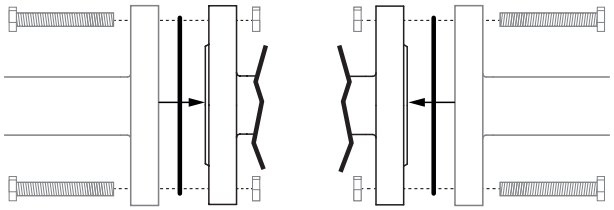


Fig. 7: Flanged connection

NOTICE

Sealing material

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

● Only use appropriate sealing material.

NOTICE

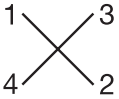
Connector elements

► 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.

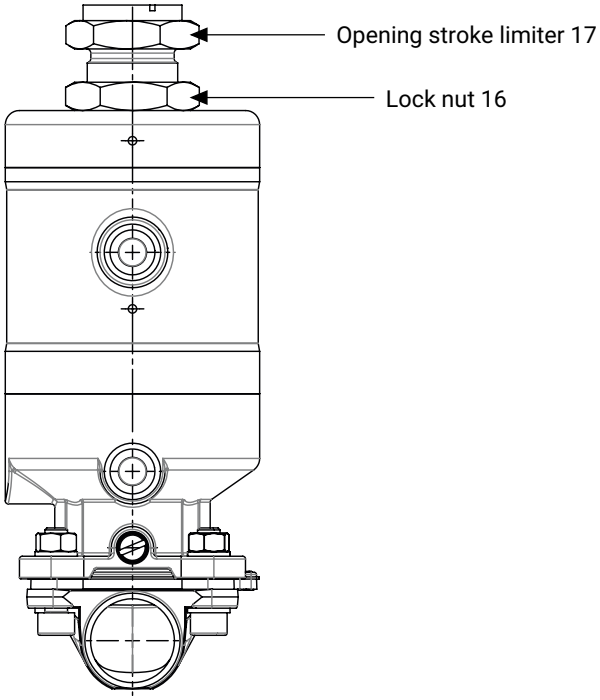
1. Keep sealing material ready.
2. Carry out preparations for installation (see chapter "Preparing for installation").
3. Ensure clean, undamaged sealing surfaces on the connection flanges.
4. Align flanges carefully before installing them.
5. Clamp the product centrally between the piping with flanges.
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. Re-attach or reactivate all safety and protective devices.
10. Tighten the bolts diagonally.



11.7 After the installation

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

11.8 Setting the opening stroke limiter



Variant 1:

1. Loosen the lock nut **16** of the opening stroke limiter **17**
2. Move the actuator to the open position.
3. Screw in the opening stroke limiter **17** clockwise until you feel resistance (100% stroke).
4. Move the actuator to the closed position.
5. Turning the opening stroke limiter **17** clockwise reduces the stroke (approx. 1 mm/rotation).
6. Once you have reached the valve stroke that you require, turn the lock nut **16** to the stop on the actuator and tighten it.

Variant 2:

7. Loosen the lock nut **16** of the opening stroke limiter **17**
8. Move the actuator to the closed position.
9. Screw in the opening stroke limiter **17** clockwise until you feel resistance (0% stroke).
10. Turning the opening stroke limiter **17** anticlockwise releases a stroke of approx. 1 mm per rotation (from the closed to the open position).
11. Once you have reached the valve stroke that you require, turn the lock nut **16** to the stop on the actuator and tighten it.

11.9 Mounting the proximity switches M8x1 (diaphragm size 25-50)

⚠ CAUTION

Incorrect mounting / incorrect setting of the proximity switches!

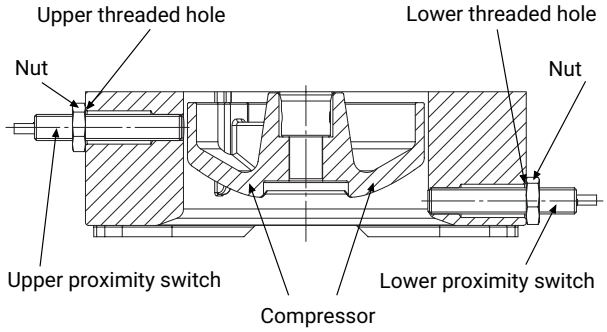
- ► Actuator blockage.
- ► Destruction of the switch.
- ● Mount the proximity switches according to the instructions.

NOTICE

Important:

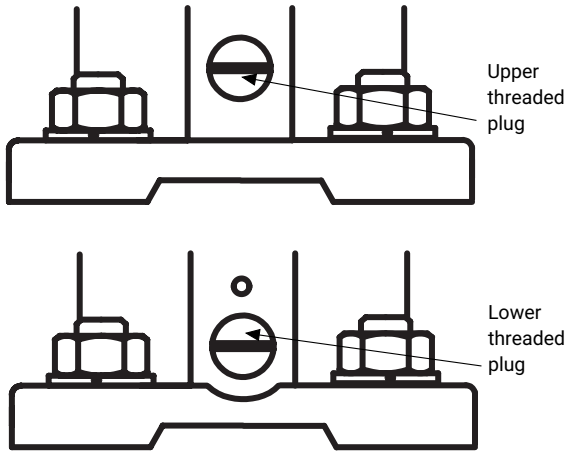
- ► Only use proximity switches which can be mounted flush.
- ► The proximity switches are mounted on the fully assembled valve (with valve body).
- ► For diaphragm sizes 40 and 50 proximity switches with at least 35 mm thread length are required.

The function of the proximity switches is only guaranteed with full stroke. For partial stroke (upper piston), the damping of the proximity switches is not defined.



Setting the proximity switches:

1. Remove both threaded plugs M8x1 from the distance piece:



2. Move the actuator to the open position.
3. Screw the upper proximity switch into the upper threaded hole as far as it will go.
4. Then turn back the upper proximity switch by approx. 1 rotation.
5. Secure this position by fixing it with the nut.
6. Move the actuator to the closed position.
7. Screw the lower proximity switch into the lower threaded hole as far as it will go.
8. Then turn back the lower proximity switch by approx. 1 rotation.
9. Secure this position by fixing it with the nut.
10. Move the actuator to the open and closed position to check the function of the proximity switches.

12 Pneumatic connections

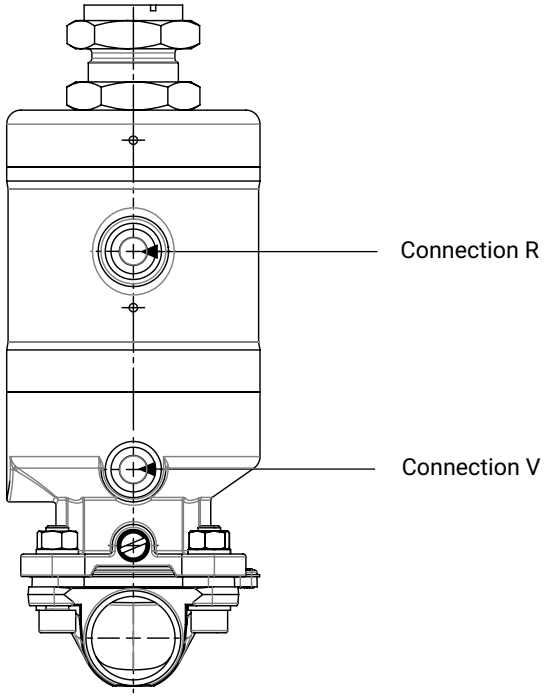
12.1 Control function

The following control functions are available:

Control function 1

Normally closed (NC):

Valve resting position: Closed by spring force. When control pressure (connection V) is applied, the lower actuator piston strokes 100%. By contrast, the upper part of the actuator's stroke (connection R) can be continuously limited between 0% and 100% using the opening stroke limiter **17** and the lock nut **16**. When an opening stroke limiter is used, the piston moves against the opening stroke limiter **17** and the medium is therefore released only partially (connection R). If the lower part of the actuator (connection V) is under control pressure, the valve fully opens, pushing the spindle upwards through the upper piston.



Control function	Connections	
	V	R
1 (NC)	Full stroke	Reduced stroke
(Connections V/R, see figure above)		

12.2 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

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

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

15 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from a vent hole in the actuator	Lip ring faulty	Replace the actuator
Control medium escaping from leak detection hole	Spindle seal leaking	Replace the actuator and check control medium for impurities
Working medium escaping from leak detection hole	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
The product does not open or does not open fully	Control pressure too low (for control function NC)	Operate the product with the control pressure specified in the datasheet
	Pilot valve faulty (for NC control function)	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
	Opening stroke limiter is incorrectly adjusted	Readjust the opening stroke limiter
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
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check shut-off diaphragm and valve body for potential damage, replace actuator and/or valve body if necessary
	Valve body leaking or damaged	Check valve body for potential damage, replace valve body if necessary
	Shut-off diaphragm is defective	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator spring faulty	Replace the actuator
The product is leaking between actuator and valve body	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Bolting between valve body and actuator loose	Tighten bolting between valve body and actuator
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
	Sealing material faulty	Replace sealing material
Valve body is leaking	Valve body is leaking	Check valve body for damage, replace valve body if necessary

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.

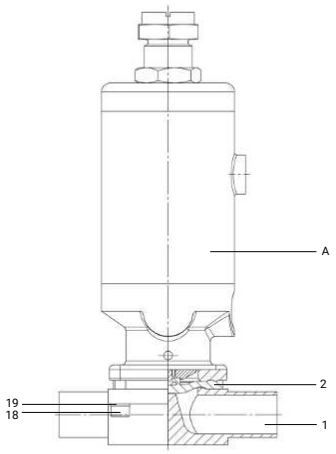
⚠ CAUTION

- 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.

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

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

16.1 Spare parts



Item	Name	Order designation
A	Actuator	9658
1	Body	K600
2	Diaphragm	Code 13 Code 17 Code 19 Code 36 Code 4 Code 54 Code 5M
18, 19	Screw connection kit	658 S30

16.2 Fitting/removing spare parts

16.2.1 Valve disassembly (removing actuator from 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).

16.2.2 Removing the diaphragm

NOTICE

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

1. Unscrew 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).

16.2.3 Mounting the diaphragm

16.2.3.1 General information

NOTICE

► Fit the diaphragm suitable for 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

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

NOTICE

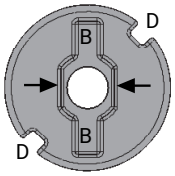
► Follow the assembly instructions of the relevant diaphragms.

The compressor is loose on all diaphragm sizes.

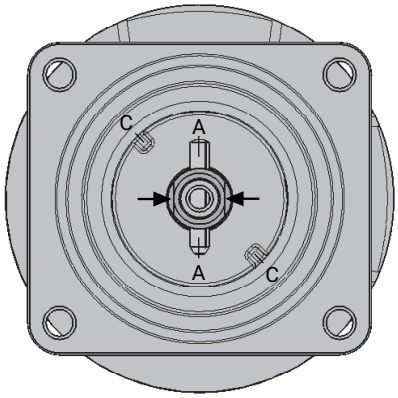
Diaphragm size 10 (DN 10–15):

Compressor and actuator flange seen from below:

Picture 1



Picture 2



Anti-twist system of the spindle at the compressor

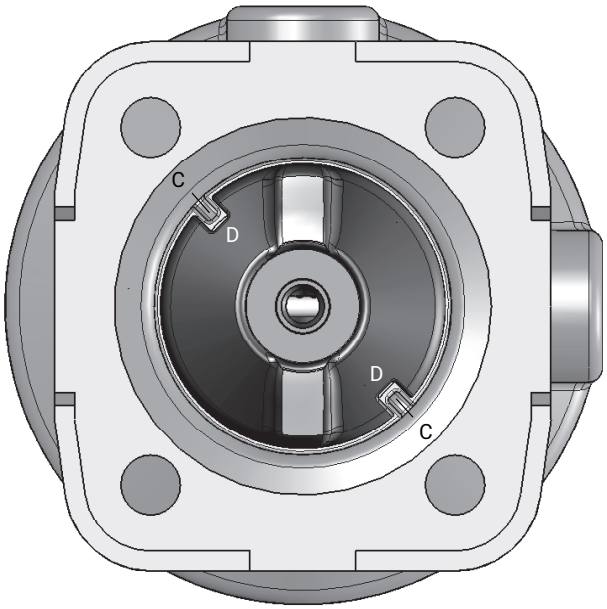
A double flat (arrows in figure 2) is fitted at the end of the actuator spindle to protect the actuator spindle against twisting. When mounting the compressor, the double flat must be in correct alignment with the recess of the compressor back (arrows in figure 1).

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

Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C** and **A** into **B**. The compressor must be able to be moved freely between the guides.

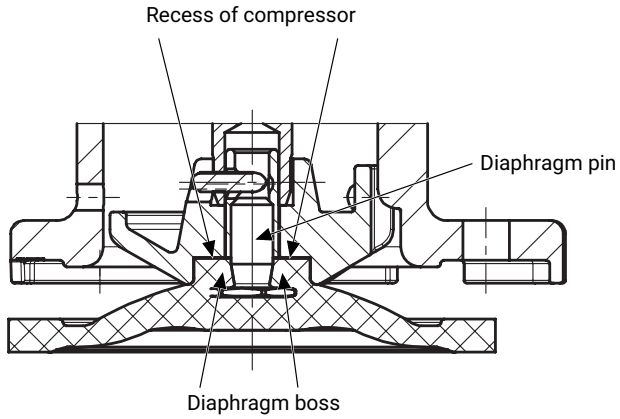
Diaphragm size 25–50 (DN 15–50):

Compressor and actuator flange seen from below:



Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C**. The compressor must be able to be moved freely between the guides.

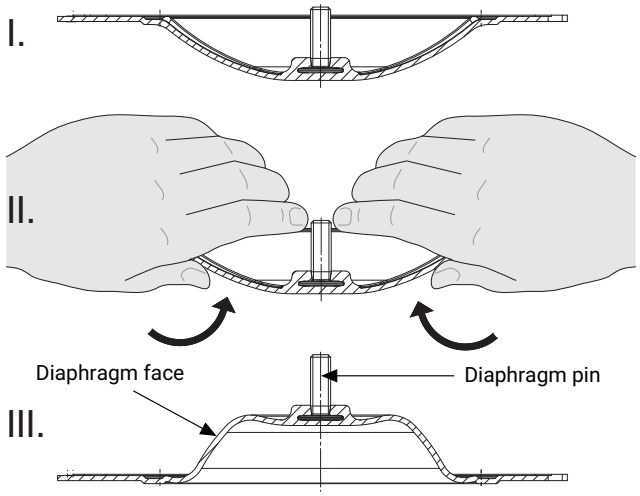
16.2.3.2 Mounting a concave diaphragm



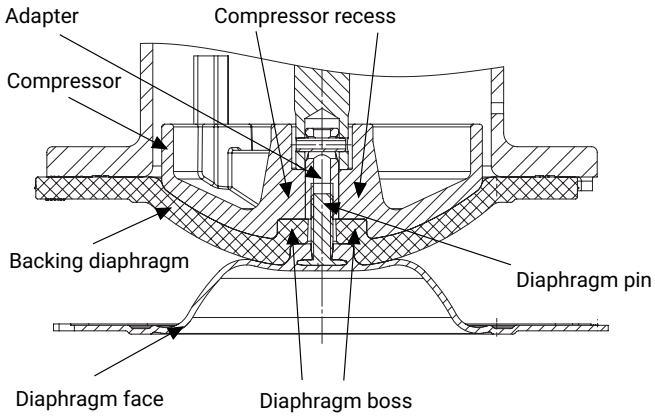
1. Move the actuator **A** to the closed position.
2. Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C** (see "General information" chapter).
3. Diaphragm size 10: Ensure that the anti-twist system is engaged.
4. Check if the compressor fits closely in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

16.2.3.3 Mounting a convex diaphragm

1. Move the actuator **A** to the closed position.
2. Diaphragm sizes 25–50: Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C** (see "General information" chapter).
3. Check if the compressor fits closely in the guides.
4. Invert the new diaphragm face manually; use a clean, padded mat with bigger nominal sizes.



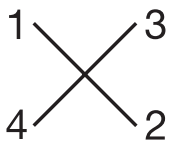
5. Position the new backing diaphragm onto the compressor.
6. Position the diaphragm face onto the backing diaphragm.
7. Manually screw the diaphragm face into the compressor tightly. The diaphragm boss must fit closely in the recess of the compressor.



8. If it is difficult to screw it in, check the thread and replace damaged parts.
9. When clear resistance is felt, turn back the diaphragm anticlockwise 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

1. Move the actuator **A** to the open position.
2. Position the actuator **A** with the mounted diaphragm **2** on the valve body **1**. Take care to align the diaphragm weir and valve body weir.
3. GEMÜ 658 MG10: Insert bolts **18** and washers **19** from the body side.
   GEMÜ 658 MG25–MG50: Insert washers **19** and bolts **18** from the body side and insert washers **19** and nuts **20** from the actuator side.
   Tighten them so that they are hand-tight initially.
4. Move the actuator **A** to the closed position.
5. Fully tighten the bolts **18** or nuts **20** diagonally.



6. 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 diaphragm), the PTFE diaphragm face and the EPDM backing diaphragm must be positioned level with and parallel to the valve body.
7. Check the tightness of the fully assembled valve.

NOTICE

► Service and maintenance:
Diaphragms set in the course of time. After installing and commissioning the valve, always retighten the bolts **18** or nuts **20** (see Chapter 16.1 "Spare parts") (after the first sterilization process, at the latest).

16.3 Cleaning and sterilizing the product

The valve can be cleaned (CIP) and sterilized (SIP) without being removed. **The conditions in the "Technical data" chapter (operating, cleaning and sterilization media, temperatures) must be complied with.** During cleaning and sterilization, the valve must be permanently open.

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.

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 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 658
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, 03/02/2023

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21 EU Declaration of Conformity in accordance with 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

in accordance with 2014/68/EU (Pressure Equipment Directive)

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 regulations of the above-mentioned Directive.

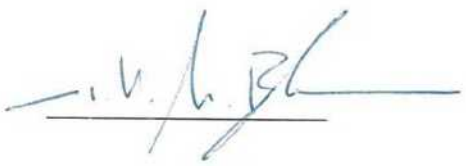
Product:	GEMÜ 658
Product name:	Pneumatically operated diaphragm valve
Notified body:	TÜV Rheinland Industrie Service GmbH Am Grauen Stein 1 51105 Cologne, Germany
ID number of the notified body:	0035
No. of the QA certificate:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H1
The following harmonized standards (or parts thereof) have been applied:	EN 13397:2001

Information for products with a nominal size ≤ DN 25:

The products are 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, these products must not be identified by a CE-marking.

Other applied technical standards / Remarks:

- AD 2000



M. Barghoorn
Head of Global Technics

Ingelfingen, 03/02/2023

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