

## GEMÜ 687

Pneumatically operated diaphragm valve

EN **Operating instructions**



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## 1 General information

### 1.1 Information

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

### 1.2 Symbols used

The following symbols are used in this document:

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

### 1.3 Definition of terms

#### Working medium

The medium that flows through the GEMÜ product.

#### Control function

The possible actuation functions of the GEMÜ product.

#### Control medium

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


### 1.4 Warning notes


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


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


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

The following signal words and danger levels are used:






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

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

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

NOTICE	
	<p><b>Potentially dangerous situation!</b></p> <ul style="list-style-type: none"> <li>▶ Non-observance can cause damage to property.</li> </ul>

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

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

## 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	Control air connector	
4	Diaphragm	EPDM FKM PTFE/EPDM (one-piece, two-piece) PTFE/PVDF/EPDM (three-piece)
5	Valve body	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
6	CONEXO diaphragm RFID chip (see Conexo information)	
7	CONEXO body RFID chip (see Conexo information)	

Item	Name	Materials
8	CONEXO actuator RFID chip (see Conexo information)	

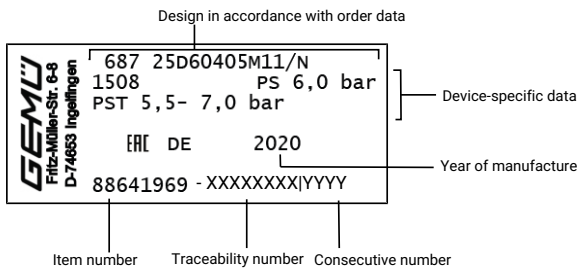
**3.2 Description**

The GEMÜ 687 2/2-way diaphragm valve has a low-maintenance plastic membrane actuator and is pneumatically operated. The valve has a metal distance piece. 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](http://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 actuator, stainless steel distance piece	687

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
DN 80	80
DN 100	100

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
<b>Spigot</b>	
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
<b>Threaded connection</b>	
Threaded socket DIN ISO 228	1
NPT female thread	31
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K

4 Connection type	Code
<b>Flange</b>	
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
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
<b>Clamp</b>	
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
<b>SG iron material</b>	
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
<b>Investment casting material</b>	
1.4408, investment casting	37
1.4408, PFA lined	39
1.4435, investment casting	C3

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

6 Diaphragm material	Code
Elastomer	
FKM	4
EPDM	13
EPDM	17
EPDM	19
EPDM	28
EPDM	29
PTFE	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
PTFE/PVDF/EPDM three-piece	71
<b>Note:</b> The PTFE/EPDM diaphragm (code 5M) is available from diaphragm size 25.	
<b>Note:</b> 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
<b>DN 10–20, diaphragm size 10</b>	
Actuator size B/N	B/N
<b>DN 15–25, diaphragm size 25</b>	
Actuator size F/M	F/M
Actuator size F/N	F/N
Actuator size FRM	FRM
Actuator size FRN	FRN
<b>DN 32 - 40, diaphragm size 40</b>	
Actuator size H/M	H/M
Actuator size H/N	H/N
Actuator size HRM	HRM
Actuator size HRN	HRN
<b>DN 50–65, diaphragm size 50</b>	
Actuator size J/M	J/M
Actuator size J/N	J/N
Actuator size JRM	JRM
Actuator size JRN	JRN
<b>DN 65–80, diaphragm size 80</b>	
Actuator size 4/N	4/N
Actuator size 4RN	4RN
Actuator size 6A	6A
Actuator size 6A2	6A2
<b>DN 100, diaphragm size 100</b>	
Actuator size 5/N	5/N
Actuator size 5RN	5RN

8 Actuator version	Code
Actuator size 7A	7A
Actuator size 7A3	7A3

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	
BELGAQUA certification	B
Special version for 3A	M
Special version for oxygen, maximum medium temperature: 60 °C	S

11 CONEXO	Code
Without	



11 CONEXO	Code
Integrated RFID chip for electronic identification and traceability	C

**Order example**

Ordering option	Code	Description
1 Type	687	Diaphragm valve, pneumatically operated, plastic actuator, stainless steel distance piece
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	40	1.4435 (F316L), forged body
6 Diaphragm material	5M	PTFE/EPDM two-piece
7 Control function	1	Normally closed (NC)
8 Actuator version	F/N	Actuator size F/N
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	M	Special version for 3A
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.

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
EPDM (code 3A/13)	-10 – 100 °C	0 – 60 °C
FKM (code 4/4A)	-10 – 90 °C	-
EPDM (code 17)	-10 – 100 °C	-
EPDM (code 19)	-10 – 100 °C	0 – 60 °C
EPDM (code 28)	-10 – 85 °C	-
EPDM (code 29)	-10 – 100 °C	-
PTFE/EPDM (code 54)	-10 – 100 °C	0 – 60 °C
PTFE/PVDF/EPDM (code 71)	-10 – 100 °C	-
PTFE/EPDM (code 5M)	-10 – 100 °C	0 – 60 °C

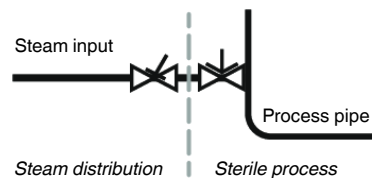
**Sterilization temperature:**

EPDM (code 3A/13)	max. 150 °C, max. 60 min per cycle
FKM (code 4/4A)	not applicable
EPDM (code 17)	max. 150 °C, max. 180 min per cycle
EPDM (code 19)	max. 150 °C, max. 180 min per cycle
EPDM (code 28)	not applicable
EPDM (code 29)	not applicable
PTFE/EPDM (code 54)	max. 150 °C, constant temperature per cycle
PTFE/PVDF/EPDM (code 71)	not applicable
PTFE/EPDM (code 5M)	max. 150 °C, constant temperature per cycle

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

If the sterilization temperatures listed above are applied to the EPDM diaphragms for longer periods of time, the service life of the diaphragms will be reduced. In these cases, maintenance cycles must be adapted accordingly.

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



**Ambient temperature:** 0 – 60 °C

**Control medium temperature:** 0 – 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
10	10, 15, 20	B/N	0 - 10	0 - 6	0 - 6	0 - 6
25	15, 20, 25	F/M, FRM	0 - 6	0 - 6	-	-
		F/N, FRN	0 - 10	0 - 10	0 - 10	0 - 10
40	32, 40	H/M, HRM	0 - 6	0 - 6	-	-
		H/N, HRN	0 - 10	0 - 10	0 - 10	0 - 10
50	50, 65	J/M, JRM	0 - 6	0 - 6	-	-
		J/N, JRN	0 - 10	0 - 10	0 - 10	0 - 10
80	65, 80	4/N, 4RN	0 - 8	0 - 5	0 - 8	0 - 6
		6A	-	-	-	0 - 10
		6A2	-	0 - 10	-	-
100	100	5/N, 5RN	0 - 6	0 - 4	0 - 6	0 - 4
		7A	-	-	-	0 - 10
		7A3	-	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:

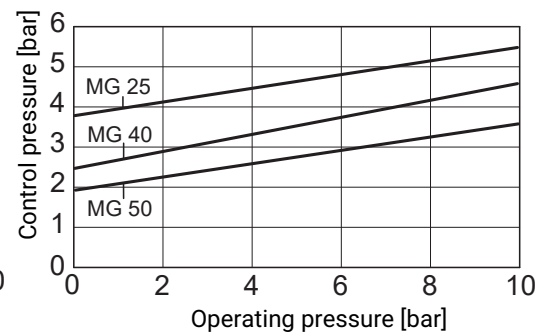
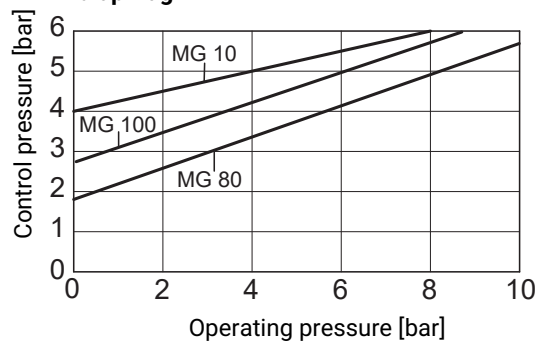
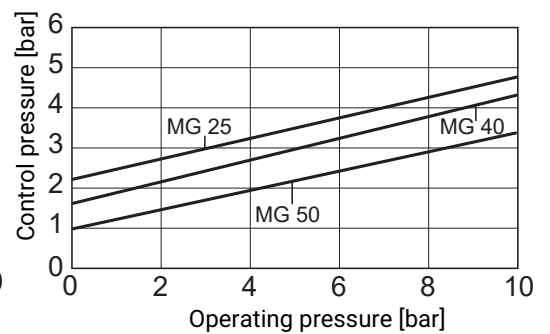
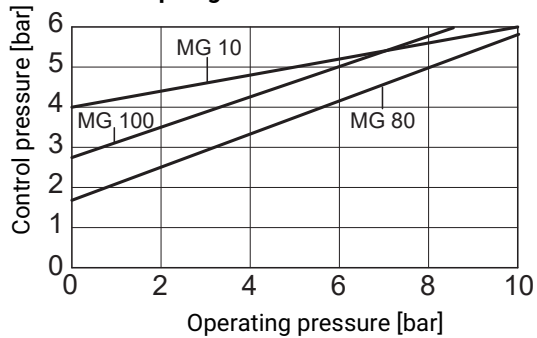
Leakage rate A to P11/P12 EN 12266-1

#### Control pressure:

MG	DN	Actuator version code	Control function 1	Control function 2	Control function 3
10	10, 15, 20	B/N	3.5 - 7.0	max. 6.0	max. 5.0
25	15, 20, 25	F/M, FRM	3.8 - 6.0	-	-
		F/N, FRN	5.5 - 7.0	max. 5.5	max. 5.5
40	32, 40	H/M, HRM	3.8 - 6.0	-	-
		H/N, HRN	5.5 - 7.0	max. 5.5	max. 5.5
50	50, 65	J/M, JRM	3.8 - 6.0	-	-
		J/N, JRN	5.5 - 7.0	max. 5.0	max. 5.0
80	65, 80	4/N, 4RN	5.5 - 7.0	max. 5.0	max. 4.5
		6A	-	max. 3.0	max. 3.0
		6A2	4.0 - 7.0	-	-
100	100	5/N, 5RN	5.5 - 7.0	max. 5.0	max. 4.5
		7A	-	max. 3.5	max. 3.5
		7A3	4.5 - 7.0	-	-

MG = diaphragm size

All pressures are gauge pressures.

**Control pressure:****GEMÜ 687: Control pressure/operating pressure diagram – Control function 2 and 3****PTFE diaphragm****Elastomer diaphragm**

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
<b>B/N</b>	0.03	0.02
<b>F/M, FRM</b>	0.20	-
<b>F/N, FRN</b>	0.20	0.16
<b>H/M, HRM</b>	0.42	-
<b>H/N, HRN</b>	0.42	0.40
<b>J/M, HRM</b>	0.79	-
<b>J/N, JRN</b>	0.79	0.69
<b>4/N, 4RN</b>	2.30	1.87
<b>5/N, 5RN</b>	2.30	2.00

Filling volume in dm<sup>3</sup>

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 type code								
		0	16	17	18	37	59	60	1	31
<b>10</b>	<b>10</b>	-	2.4	2.4	2.4	-	2.2	3.3	-	-
	<b>12</b>	-	-	-	-	-	-	-	3.2	-
	<b>15</b>	3.3	3.8	3.8	3.8	-	2.2	4.0	3.4	-
	<b>20</b>	-	-	-	-	-	3.8	-	-	-
<b>25</b>	<b>15</b>	4.1	4.7	4.7	4.7	-	-	7.4	6.5	6.5
	<b>20</b>	6.3	7.0	7.0	7.0	-	4.4	13.2	10.0	10.0
	<b>25</b>	13.9	15.0	15.0	15.0	12.6	12.2	16.2	14.0	14.0
<b>40</b>	<b>32</b>	25.3	27.0	27.0	27.0	26.2	-	30.0	26.0	26.0
	<b>40</b>	29.3	30.9	30.9	30.9	30.2	29.5	32.8	33.0	33.0
<b>50</b>	<b>50</b>	46.5	48.4	48.4	48.4	51.7	50.6	55.2	60.0	60.0
	<b>65</b>	-	-	-	-	62.2	61.8	-	-	-
<b>80</b>	<b>65</b>	-	-	77.0	-	68.5	68.5	96.0	-	-
	<b>80</b>	-	-	111.0	-	80.0	87.0	111.0	-	-
<b>100</b>	<b>100</b>	-	-	194.0	-	173.0	188.0	214.0	-	-

MG = diaphragm size

Kv values in m<sup>3</sup>/h

Kv values determined in accordance with DIN EN 60534 standard, inlet pressure 5 bar,  $\Delta p$  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	PFA/PP	Hard rubber
<b>25</b>	<b>15</b>	8.0	5.0	6.0
	<b>20</b>	11.5	9.0	11.0
	<b>25</b>	11.5	13.0	15.0
<b>40</b>	<b>32</b>	28.0	23.0	29.0
	<b>40</b>	28.0	26.0	32.0
<b>50</b>	<b>50</b>	60.0	47.0	64.0
	<b>65</b>	-	47.0	-
<b>80</b>	<b>80</b>	-	110.0	128.0
<b>100</b>	<b>100</b>	-	177.0	190.0

MG = diaphragm size, Kv values in m<sup>3</sup>/h

Kv values determined in accordance with DIN EN 60534, inlet pressure 5 bar,  $\Delta p$  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**SIL:**  
**Product description:** GEMÜ diaphragm valve 687  
**Type of valve:** A  
**Safety function:** Due to the safety function, the diaphragm valve is placed in the closed position (with control function 1) or in the open position (with control function 2).  
**HFT (Hardware Fault Tolerance):** 0  
**MTTR (Mean Time To Restoration):** 24 hours**7.5 Mechanical data****Weight:** Actuator

MG	DN	Actuator version (code)	Control function 1	Control function 2 and 3
10	10, 15, 20	B/N	0.53	-
25	15, 20, 25	F/M, F/N, FRM, FRN	2.2	1.7
40	32, 40	H/M, H/N, HRM, HRN	4.7	3.1
50	50, 65	J/M, J/N, JRM, JRN	6.9	5.2
80	65, 80	4/N, 4RN	15.0	-
	65, 80	6A	-	-
	65, 80	6A2	52.0	-
100	100	5/N, 5RN	16.1	-
	100	7A	-	-
	100	7A3	63.0	-

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, 31	6, 6K	8, 38, 39	80, 82, 88, 8A, 8E, 8P, 8T
<b>10</b>	<b>10</b>	0.30	-	0.33	-	0.30
	<b>12</b>	-	0.17	-	-	-
	<b>15</b>	0.30	0.26	0.35	-	0.43
	<b>20</b>	-	-	-	-	0.43
<b>25</b>	<b>15</b>	0.62	0.32	0.71	1.50	0.75
	<b>20</b>	0.58	0.34	0.78	2.20	0.71
	<b>25</b>	0.55	0.39	0.79	2.80	0.63
<b>40</b>	<b>32</b>	1.45	0.88	1.66	3.40	1.62
	<b>40</b>	1.32	0.93	1.62	4.50	1.50
<b>50</b>	<b>50</b>	2.25	1.56	2.70	6.30	2.50
	<b>65</b>	2.20	-	-	10.30	2.30
<b>80</b>	<b>65</b>	8.60	-	9.22	10.20	8.90
	<b>80</b>	8.00	-	9.20	13.80	8.50
<b>100</b>	<b>100</b>	24.10	-	-	20.80	24.80

Weights in kg

MG = diaphragm size

**Installation position:**

Optional

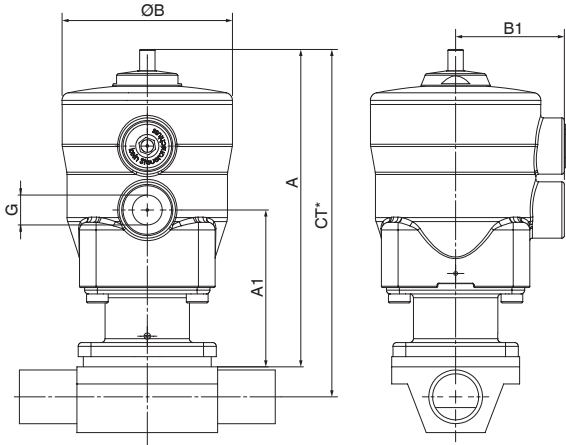
Observe the angle of rotation for optimized draining when it comes to installation. See separate document, "Angle of rotation technical information".

**8 Dimensions**

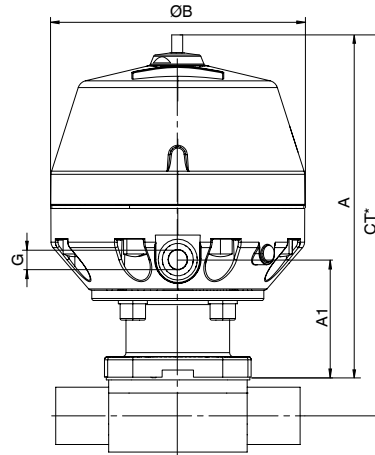
**8.1 Actuator dimensions**

**8.1.1 Actuator - Control function 1**

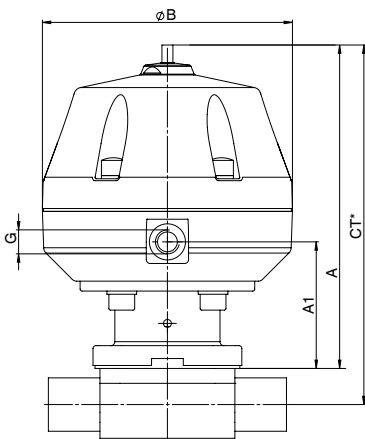
Control function 1 – diaphragm size 10  
Actuator size B/N



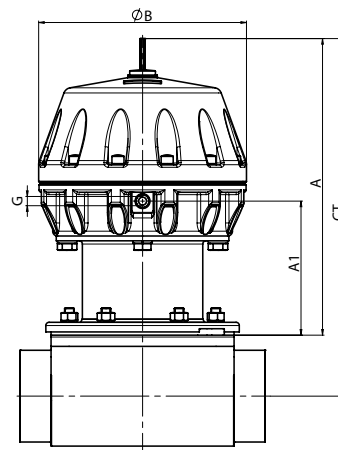
Control function 1 – diaphragm size 25–50  
Actuator sizes  
F/M, F/N, FRM, FRN, H/M, H/N, HRM, HRN, J/M, J/N, JRM, JRN



Control function 1 – diaphragm size 80  
Actuator sizes  
4/N, 4RN, 6A2



Control function 1 – diaphragm size 100  
Actuator sizes  
5/N, 5RN, 7A3



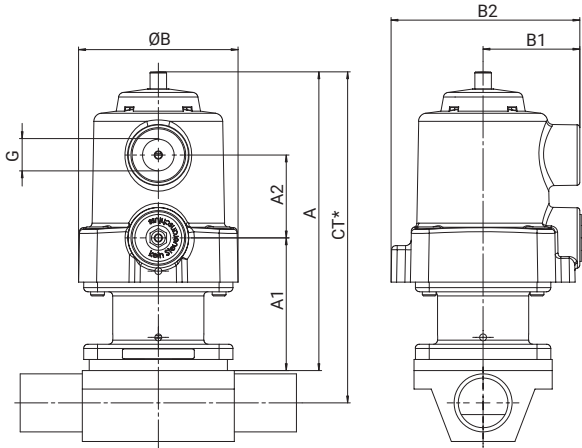
MG	Actuator size	$\varnothing B$	A	A1	B1	G
10	B/N	67.0	125.0	62.0	44.0	G 1/4
25	F/M, F/N, FRM, FRN	130.0	170.0	59.0	-	G 1/4
40	H/M, H/N, HRM, HRN	171.0	208.0	75.0	-	G 1/4
50	J/M, J/N, JRM, JRN	211.0	244.0	90.0	-	G 1/4
80	4/N, 4RN	259.0	368.0	173.0	-	G 1/4
	6A2	360.0	475.0	158.0	-	G 1/4
100	5/N, 5RN	259.0	372.0	169.0	-	G 1/4
	7A3	360.0	477.0	154.0	-	G 1/4

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



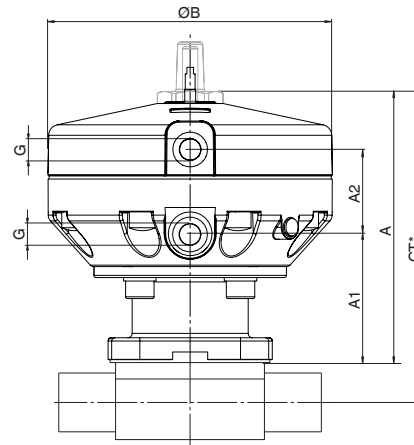
### 8.1.2 Actuator - Control function 2 and 3

Control function 2 + 3 – diaphragm size 10  
Actuator size B/N

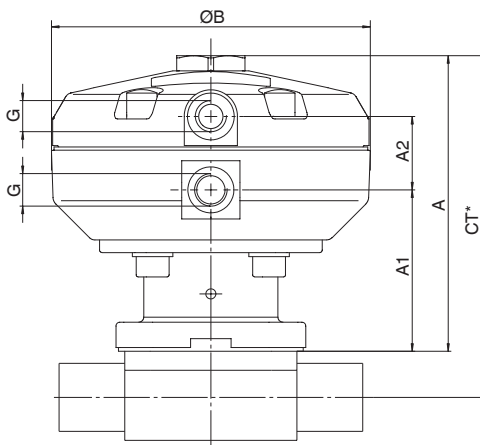


Control function 2 + 3 – diaphragm size 25–50  
Actuator sizes

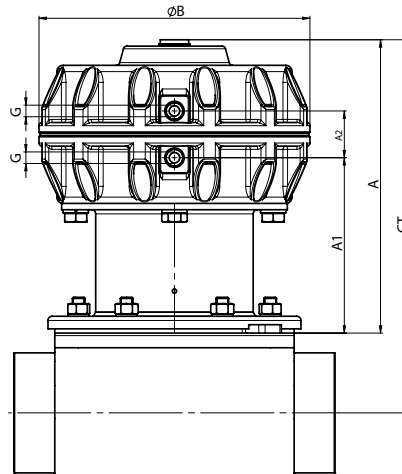
F/M, F/N, FRM, FRN, H/M, H/N, HRM, HRN, J/M, J/N, JRM, JRN



Control function 2 + 3 – diaphragm size 80  
Actuator sizes  
4/N, 4RN, 6A2



Control function 2 + 3 – diaphragm size 100  
Actuator sizes  
5/N, RN, 7A3



MG	Actuator size	ø B	A	A1	A2	B1	B2	G
10	B/N	57.0	110.0	49.0	30.0	35.0	68.0	G 1/4
25	F/M, F/N, FRM, FRN	130.0	147.0	59.0	39.0	-	-	G 1/4
40	H/M, H/N, HRM, HRN	171.0	173.0	75.0	42.0	-	-	G 1/4
50	J/M, J/N, JRM, JRN	211.0	206.0	90.0	47.0	-	-	G 1/4
80	4/N, 4RN	258.0	282.0	170.0	45.0	-	-	G 1/4
	6A	360.0	323.0	158.0	110.0	-	-	G 1/4
100	5/N, 5RN	258.0	278.0	165.0	45.0	-	-	G 1/4
	7A	360.0	319.0	154.0	110.0	-	-	G 1/4

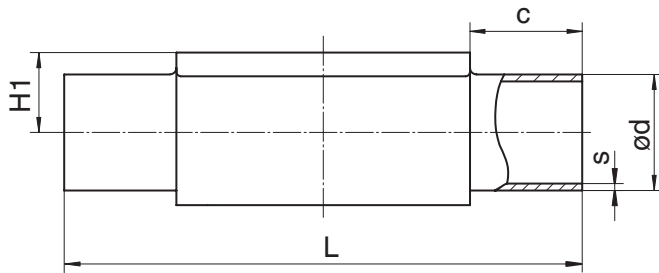
Dimensions in mm

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)<sup>1)</sup>, forged material (code 40, 42, F4)<sup>2)</sup>

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	1 1/4"	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	1 1/2"	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
80	65	2 1/2"	30.0	-	-	70.0	-	76.1	62.0	216.0	-	-	2.0	-	2.0
	80	3"	30.0	-	-	85.0	-	88.9	62.0	254.0	-	-	2.0	-	2.3
100	100	4"	30.0	-	-	104.0	-	114.3	76.0	305.0	-	-	2.0	-	2.3

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

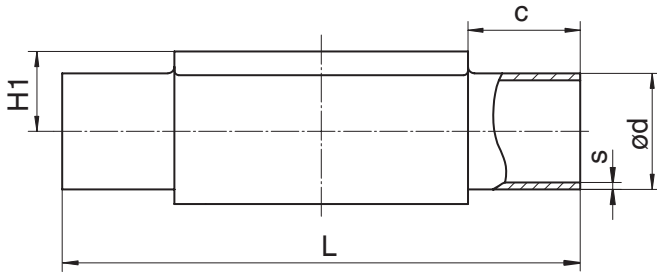
Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B

#### 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 0, 17, 60)<sup>1)</sup>, investment casting material (code C3)<sup>2)</sup>

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

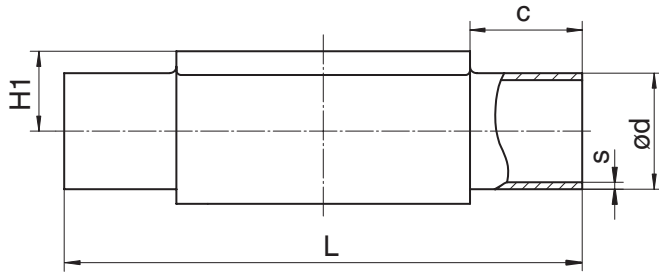
Code 0: Spigot DIN

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

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

2) **Valve body material**

Code C3: 1.4435, investment casting

**8.2.2 Spigot ASME/BS (code 55, 59, 63, 64, 65)****Connection type spigot ASME/BS (code 55, 59, 63, 64, 65)<sup>1)</sup>, forged material (code 40, 42, F4)<sup>2)</sup>**

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	1 1/4"	25.0	-	-	42.2	42.2	42.2	26.0	153.0	-	-	2.77	1.65	3.56
	40	1 1/2"	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	2 1/2"	30.0	-	63.50	-	-	-	34.0	173.0	-	1.65	-	-	-
80	65	2 1/2"	30.0	-	63.50	73.0	73.0	73.0	62.0	216.0	-	1.65	3.05	2.11	5.16
	80	3"	30.0	-	76.20	88.9	88.9	88.9	62.0	254.0	-	1.65	3.05	2.11	5.49
100	100	4"	30.0	-	101.60	114.3	114.3	114.3	76.0	305.0	-	2.11	3.05	2.11	6.02

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

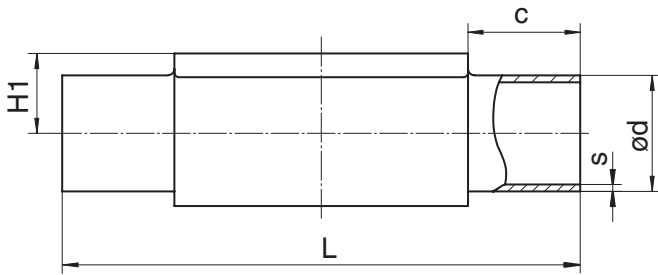
Code 65: Spigot ANSI/ASME B36.19M schedule 40s

**2) Valve body material**

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe &lt; 0.5%

Code F4: 1.4539, forged body



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

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"	30.5	38.10	26.0	153.0	1.65
50	50	2"	30.0	50.80	32.0	173.0	1.65

Dimensions in mm

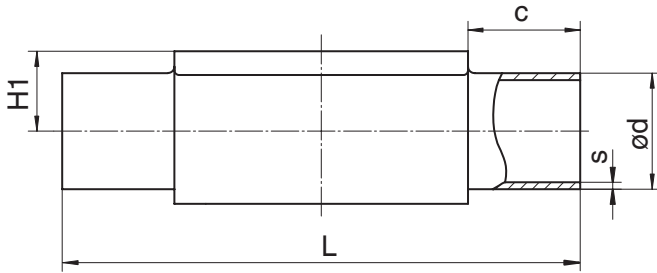
MG = diaphragm size

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

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

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"	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
80	65	2½"	30.0	63.5	76.3	63.5	62.0	216.0	2.0	3.00	1.6
	80	3"	30.0	76.3	89.1	76.1	62.0	254.0	2.0	3.00	1.6
100	100	4"	30.0	101.6	114.3	101.6	76.0	305.0	2.0	3.00	2.0

**Connection type spigot SMS (code 37)<sup>1)</sup>, investment casting material (code C3)<sup>2)</sup>**

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**

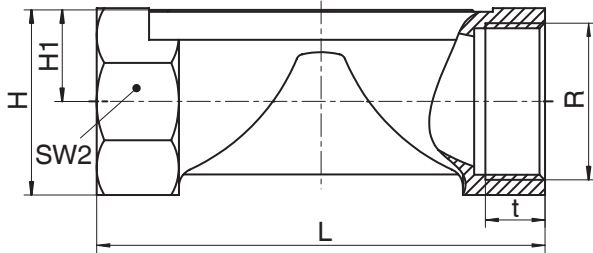
Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe &lt; 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)<sup>1)</sup>, investment casting material (code 37)<sup>2)</sup>

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	1 1/4"	51.3	26.3	120.0	8	G 1 1/4	50.0	20.0
	40	1 1/2"	56.3	28.8	140.0	8	G 1 1/2	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

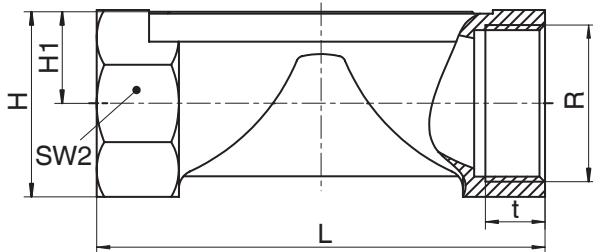
1) **Connection type**

Code 1: Threaded socket DIN ISO 228

2) **Valve body material**

Code 37: 1.4408, investment casting

### 8.2.5 Threaded socket NPT (code 31)



Connection type threaded socket NPT (code 31)<sup>1)</sup>, investment casting material (code 37)<sup>2)</sup>

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	1 1/4"	51.3	26.3	120.0	8	NPT 1 1/4	50.0	17.0
	40	1 1/2"	56.3	28.8	140.0	8	NPT 1 1/2	55.0	17.0
50	50	2"	71.3	36.3	165.0	8	NPT 2	70.0	18.0

Dimensions in mm

MG = diaphragm size

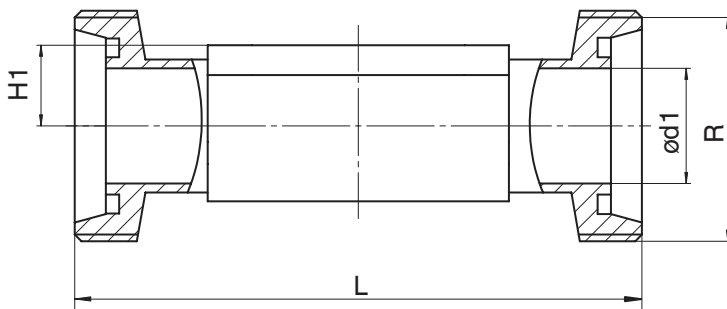
n = number of flats

1) **Connection type**

Code 31: NPT female thread

2) **Valve body material**

Code 37: 1.4408, investment casting

**8.2.6 Threaded spigot DIN (code 6)****Connection type threaded spigot DIN (code 6)<sup>1)</sup>, forged material (code 40, 42)<sup>2)</sup>**

MG	DN	NPS	ød1	H1	L	R
<b>10</b>	<b>10</b>	<b>3/8"</b>	10.0	12.5	118.0	Rd 28 x 1/8
	<b>15</b>	<b>1/2"</b>	16.0	12.5	118.0	Rd 34 x 1/8
<b>25</b>	<b>15</b>	<b>1/2"</b>	16.0	19.0	118.0	Rd 34 x 1/8
	<b>20</b>	<b>3/4"</b>	20.0	19.0	118.0	Rd 44 x 1/6
	<b>25</b>	<b>1"</b>	26.0	19.0	128.0	Rd 52 x 1/6
<b>40</b>	<b>32</b>	<b>1¼"</b>	32.0	26.0	147.0	Rd 58 x 1/6
	<b>40</b>	<b>1½"</b>	38.0	26.0	160.0	Rd 65 x 1/6
<b>50</b>	<b>50</b>	<b>2"</b>	50.0	32.0	191.0	Rd 78 x 1/6
<b>80</b>	<b>65</b>	<b>2½"</b>	66.0	62.0	246.0	Rd 95 x 1/6
	<b>80</b>	<b>3"</b>	81.0	62.0	256.0	Rd 110 x 1/4

Dimensions in mm

MG = diaphragm size

**1) Connection type**

Code 6: Threaded spigot DIN 11851

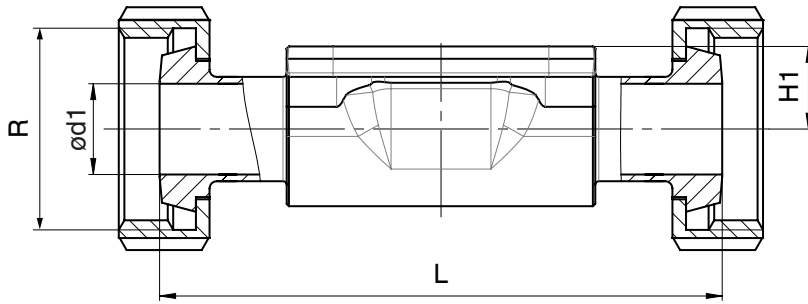
**2) Valve body material**

Code 40: 1.4435 (F316L), forged body

Code 42: 1.4435 (BN2), forged body, Δ Fe &lt; 0.5%



### 8.2.7 Cone spigot DIN (code 6K)



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

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	1 1/4"	32.0	26.0	147.0	Rd 58 x 1/6
	40	1 1/2"	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
80	65	2 1/2"	66.0	62.0	246.0	Rd 95 x 1/6
	80	3"	81.0	62.0	256.0	Rd 110 x 1/4

Dimensions in mm

MG = diaphragm size

1) **Connection type**

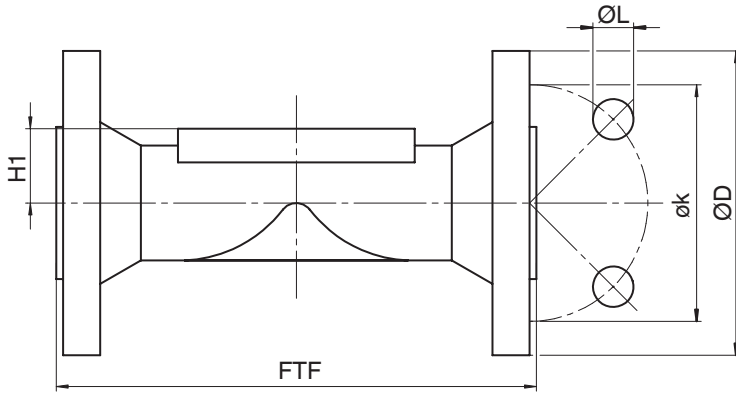
Code 6K: Cone spigot and union nut DIN 11851

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)<sup>1)</sup>, SG iron material (code 17, 18, 83), investment casting material (code 39, C3), forged material (code 40, 42)<sup>2)</sup>

MG	DN	NPS	øD	FTF				H1				øk	øL	n
				Material				Material						
				17, 18, 39	83	C3	40, 42	17, 18, 39	83	C3	40, 42			
25	15	1/2"	95.0	150.0	130.0	150.0	150.0	18.0	18.0	13.0	19.0	65.0	14.0	4
	20	3/4"	105.0	150.0	150.0	150.0	150.0	20.5	20.5	16.0	19.0	75.0	14.0	4
	25	1"	115.0	160.0	160.0	160.0	160.0	23.0	23.0	19.0	19.0	85.0	14.0	4
40	32	1 1/4"	140.0	180.0	180.0	180.0	180.0	28.7	28.7	24.0	26.0	100.0	19.0	4
	40	1 1/2"	150.0	200.0	200.0	200.0	200.0	33.0	33.0	26.0	26.0	110.0	19.0	4
50	50	2"	165.0	230.0	230.0	230.0	230.0	39.0	39.0	32.0	32.0	125.0	19.0	4
	65	2 1/2"	185.0	290.0	-	-	-	51.0	-	-	-	145.0	19.0	4
80	65	2 1/2"	185.0	-	-	-	290.0	-	-	-	62.0	145.0	19.0	4
	80	3"	200.0	310.0	310.0	-	310.0	59.5	59.5	-	62.0	160.0	19.0	8
100	100	4"	220.0	350.0	350.0	-	350.0	73.0	73.0	-	76.0	180.0	19.0	8

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 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

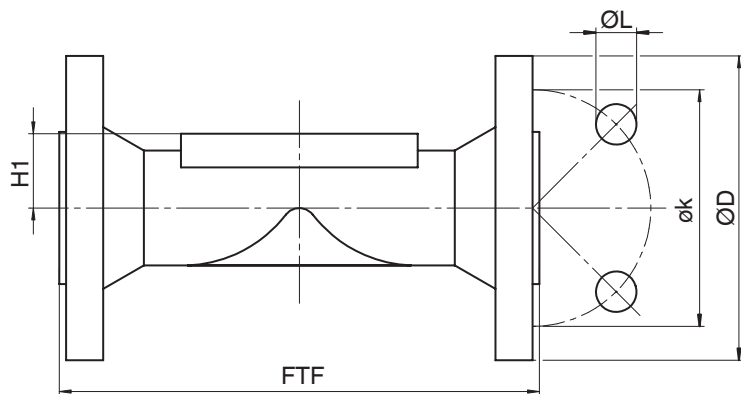
Code 40: 1.4435 (F316L), forged body

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 C3: 1.4435, investment casting

### 8.2.9 Flange JIS (code 34)



#### Connection type flange, length 558 (code 34)<sup>1)</sup>, investment casting material (code 39)<sup>2)</sup>

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

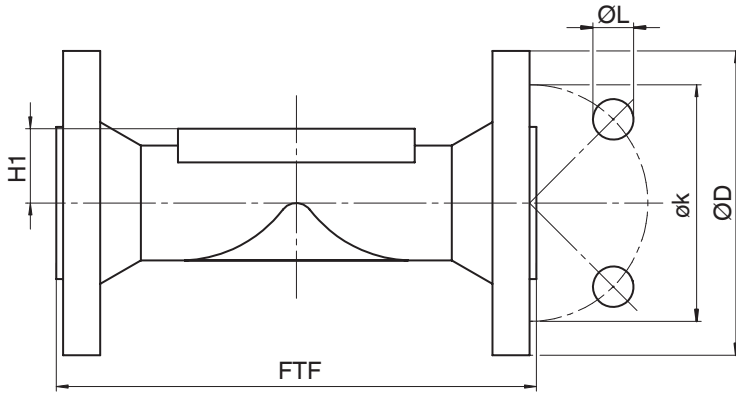
#### 1) Connection type

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)<sup>1)</sup>, SG iron material (code 17, 18, 83), investment casting material (code 39)<sup>2)</sup>

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
80	80	3"	190.0	260.0	260.4	59.5	152.4	19.0	4
100	100	4"	230.0	327.0	324.4	73.0	190.5	19.0	8

Dimensions in mm

MG = diaphragm size

n = number of bolts

**1) Connection type**

Code 38: Flange ANSI Class 150 RF, face-to-face dimension FTF MSS SP-88, length only for body configuration D

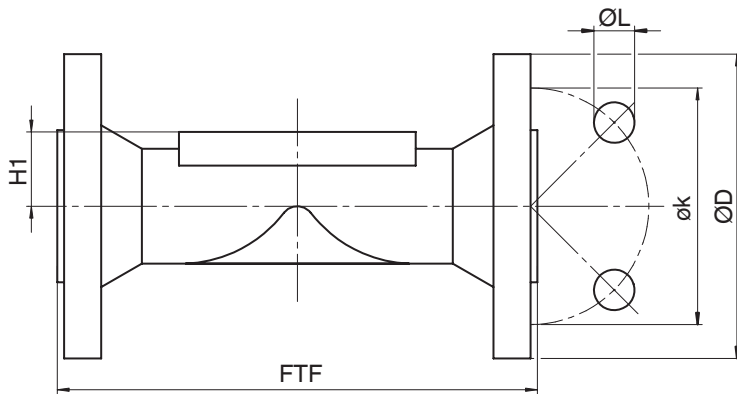
**2) Valve body material**

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 83: EN-GJS-400-18-LT (GGG 40.3), hard rubber lined



Connection type flange, length EN 558 (code 39)<sup>1)</sup>, SG iron material (code 17, 18, 83), investment casting material (code 39, C3), forged material (code 40, 42)<sup>2)</sup>

MG	DN	NPS	øD	FTF				H1				øk	øL	n
				Material				Material						
				17, 18, 39	83	C3	40, 42	17, 18, 39	83	C3	40, 42			
25	15	1/2"	90.0	130.0	130.0	150.0	150.0	18.0	18.0	13.0	19.0	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	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	79.4	15.9	4
40	32	1 1/4"	115.0	180.0	180.0	180.0	180.0	28.7	28.7	24.0	26.0	88.9	15.9	4
	40	1 1/2"	125.0	200.0	200.0	200.0	200.0	33.0	33.0	26.0	26.0	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	120.7	19.0	4
	65	2 1/2"	180.0	290.0	-	-	290.0	51.0	-	-	-	139.7	19.0	4
80	65	2 1/2"	180.0	-	-	-	290.0	-	-	-	62.0	139.7	19.0	4
	80	3"	190.0	310.0	310.0	-	310.0	59.5	59.5	-	62.0	152.4	19.0	4
100	100	4"	230.0	350.0	350.0	-	350.0	73.0	73.0	-	76.0	190.5	19.0	8

Dimensions in mm

MG = diaphragm size

n = number of bolts

#### 1) Connection type

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

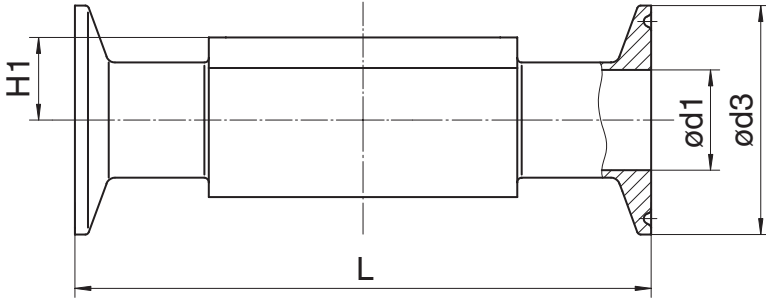
Code 40: 1.4435 (F316L), forged body

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 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)<sup>1)</sup>, forged material (code 40, 42, F4)<sup>2)</sup>**

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	9.40	25.0	25.0	12.5	88.9	108.0
	20	3/4"	15.75	15.75	25.0	25.0	12.5	101.6	117.0
25	20	3/4"	15.75	15.75	25.0	25.0	19.0	101.6	117.0
	25	1"	22.10	22.10	50.5	50.5	19.0	114.3	127.0
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
80	65	2½"	60.20	60.20	77.5	77.5	62.0	193.8	216.0
	80	3"	72.90	72.90	91.0	91.0	62.0	222.3	254.0
100	100	4"	97.38	97.38	119.0	119.0	76.0	292.1	305.0

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

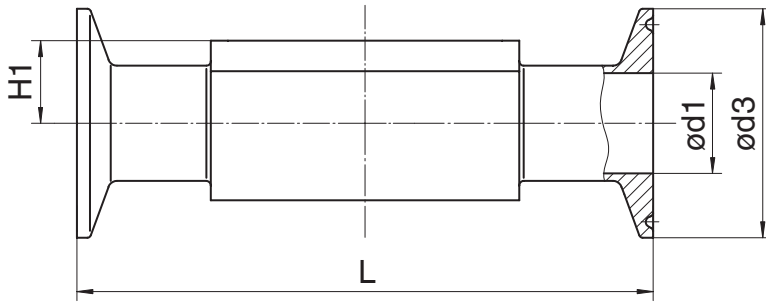
Code 8T: Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

**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)<sup>1)</sup>, forged material (code 40, 42, F4)<sup>2)</sup>

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	127.0	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
80	65	2½"	72.1	66.0	60.3	91.0	91.0	77.5	62.0	216.0	216.0	216.0
	80	3"	84.3	81.0	72.9	106.0	106.0	91.0	62.0	254.0	254.0	254.0
100	100	4"	109.7	100.0	97.6	130.0	119.0	119.0	76.0	305.0	305.0	305.0

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

## 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.
- 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

##### 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

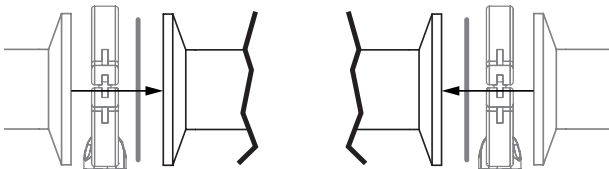


Fig. 1: Clamp connection

#### 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

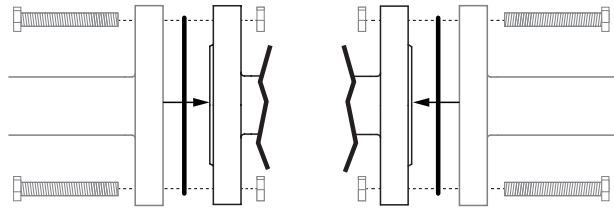


Fig. 2: Flanged connection

#### NOTICE

##### Sealing material

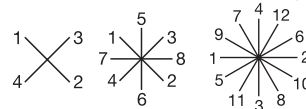
- The sealing material is not included in the scope of delivery.
- Only use appropriate sealing material.

#### 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

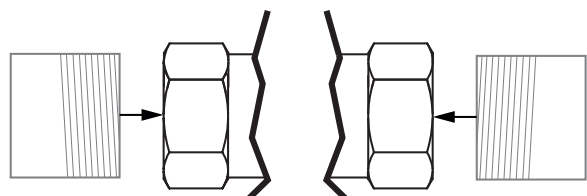


Fig. 3: Threaded socket

**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**

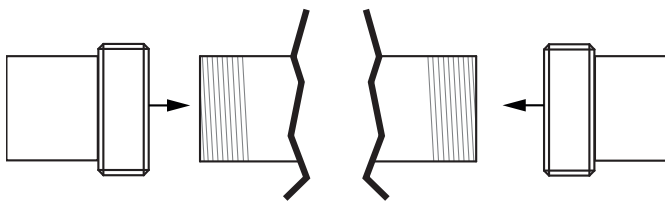


Fig. 4: Threaded spigots

**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**

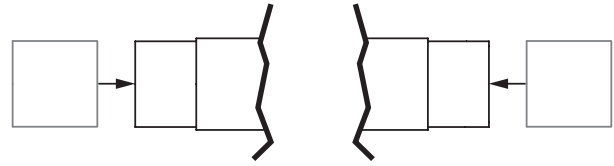


Fig. 5: Butt weld spigots

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.
- Retighten the bolts and nuts at the very latest after the first sterilization process.

- 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**

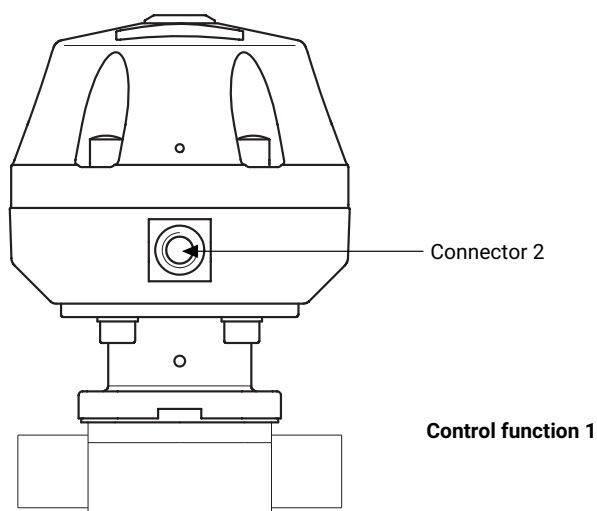
Normally open (NO):

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.

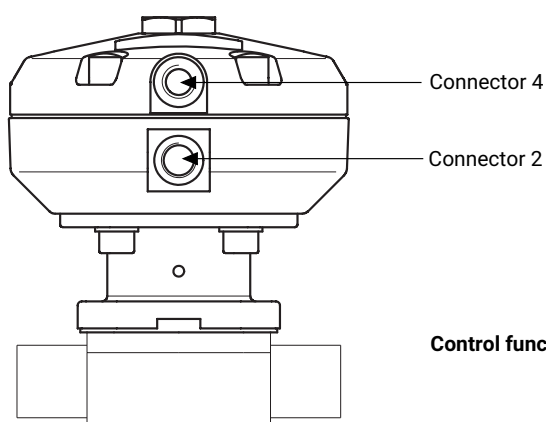
**Control function 3**

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).



Control function 1



Control function 2 + 3

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

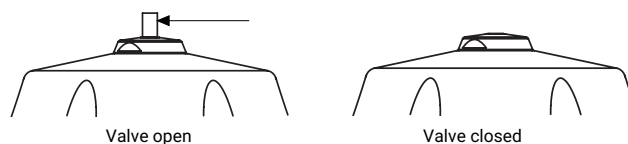
## 12 Operation

### NOTICE

#### Optical position indicator

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

#### Optical position indicator



## 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*	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 damaged parts 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 or plant component.
- Completely drain the plant or plant component.

### ⚠ CAUTION



**Hot plant components!**

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

### ⚠ CAUTION

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

### NOTICE

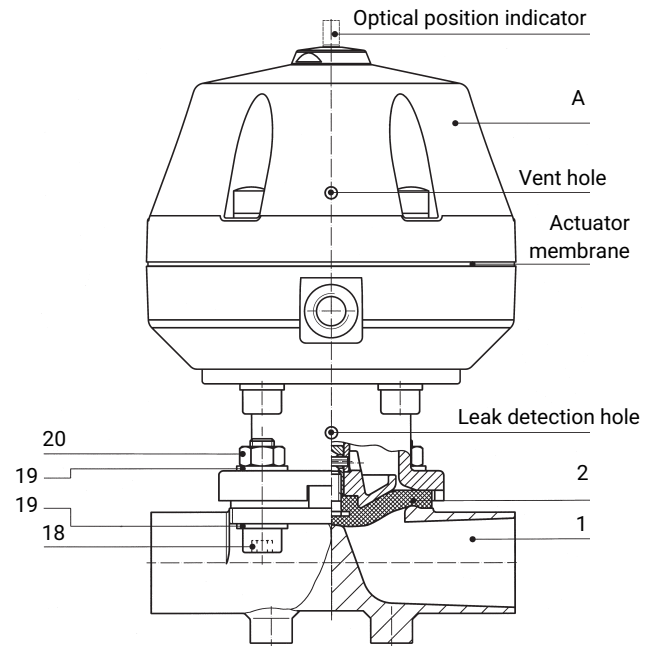
- ▶ The valve with a stainless steel body has CIP/SIP cleaning and sterilizing capabilities.

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	9687
1	Body	K600
2	Diaphragm	Code 13 Code 4 Code 17 Code 19 Code 29 Code 36 Code 54 Code 5M
18, 19, 20	Screw connection kit	687 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 remains of product and contaminants. Do not scratch or damage parts during cleaning!
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

### 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

#### 16.2.3.1.1 Diaphragm size 10-80 (DN 10-80)

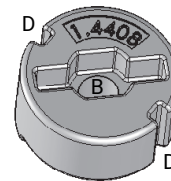
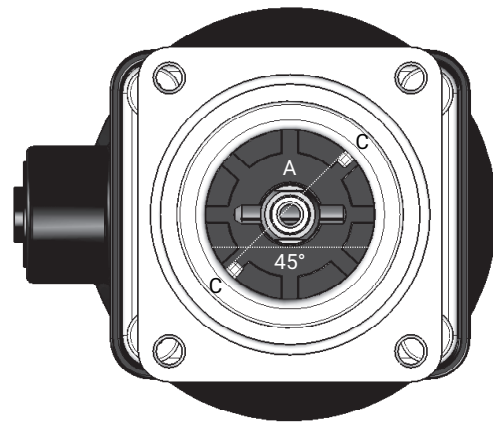
#### NOTICE

##### Compressor

- ▶ Diaphragm sizes 10-80: the compressor is loose.

##### Diaphragm size 10 (DN 10-20)

Compressor and actuator flange seen from below:



#### Anti-twist system of the spindle at the compressor

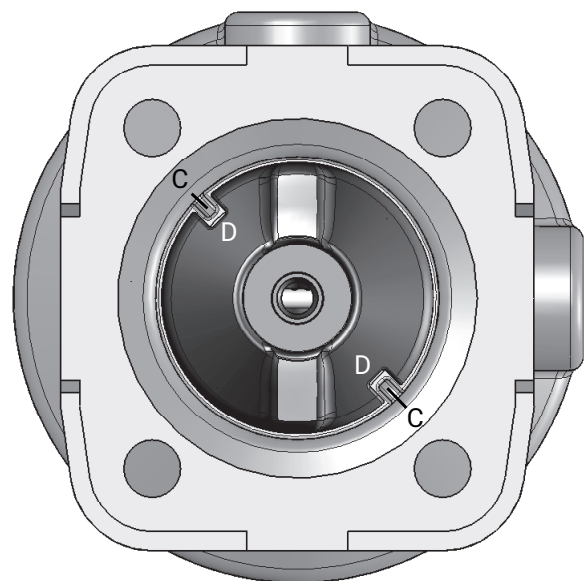
A double flat (A) is fitted at the end of the actuator spindle to protect the spindle against twisting. When mounting the compressor, the double flat must be in correct alignment with the recess of the compressor back (B).

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. The compressor must be able to be moved freely between the guides.

#### Diaphragm size 25-80 (DN 15-80)

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.

**16.2.3.1.2 Diaphragm size 100 (DN 100)**

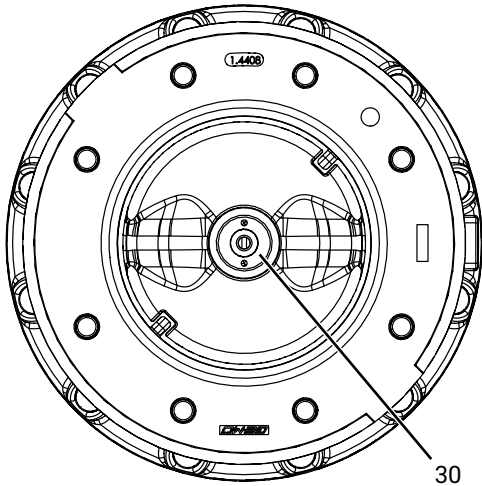
**NOTICE**

**Compressor!**

► For diaphragm size 100, the compressor is fixed to the spindle.

The compressor is fastened with a two hole nut **30**.

Compressor and actuator flange seen from below:



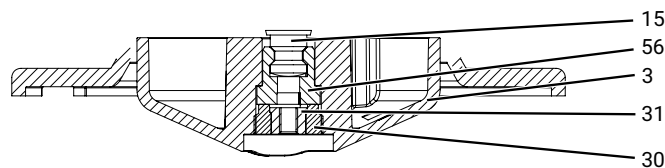
**Mounting the compressor**

**NOTICE**

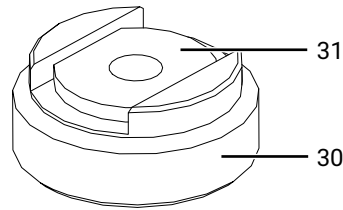
**Compressor mounting!**

► For diaphragm size 100, the step "Mounting the compressor" is only necessary in special cases, such as a repair or if the two hole nut has become loose. The compressor is permanently installed, and does not usually need to be replaced (not a wearing part).

1. Before starting the mounting process, the actuator should be placed in an upright position (flange/distance piece directed downwards).

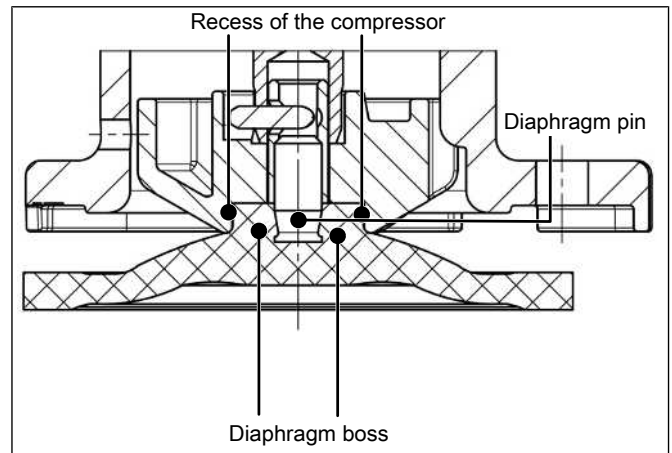


2. Push the compressor **3** over the actuator spindle **15** and hold it in place with one hand.
3. With the other hand, place the two half shells **56** on the actuator spindle **15** and let the compressor **3** slide down over the two half shells **56**.  
⇒ The compressor **3** is held in place by the two half shells **56**.
4. Insert the threaded pin **31** into the milled groove of the two hole nut **30**.



5. Wet the thread of the two hole nut **30** with "medium strength thread locking compound" (for example Loctite 242).
6. Screw the two hole nut **30** (including the threaded pin **31**) into the compressor **3** and tighten it with an appropriate tool.

**16.2.3.2 Mounting the concave diaphragm (code 4, 13, 17, 19, 29, 36, 54)**

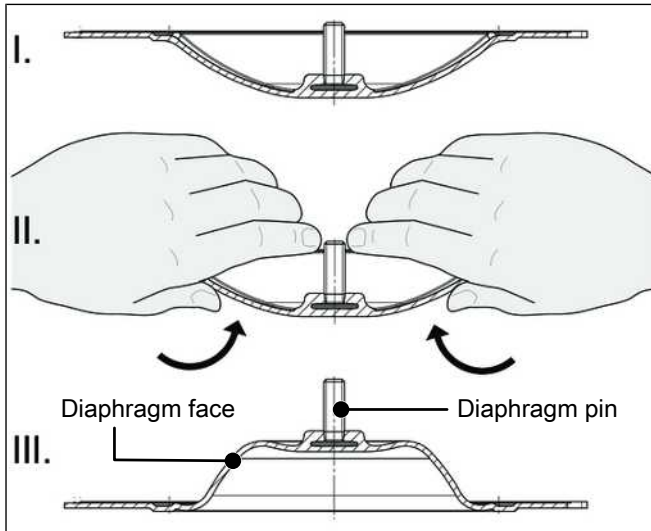


1. Move the actuator **A** to the closed position.
2. Mount the compressor (see "Mounting the compressor").
3. Ensure that the anti-twist system is engaged.
4. Check if the compressor is fitted in the guides.
5. Manually screw new diaphragm tightly into the compressor.
6. Check if the diaphragm boss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

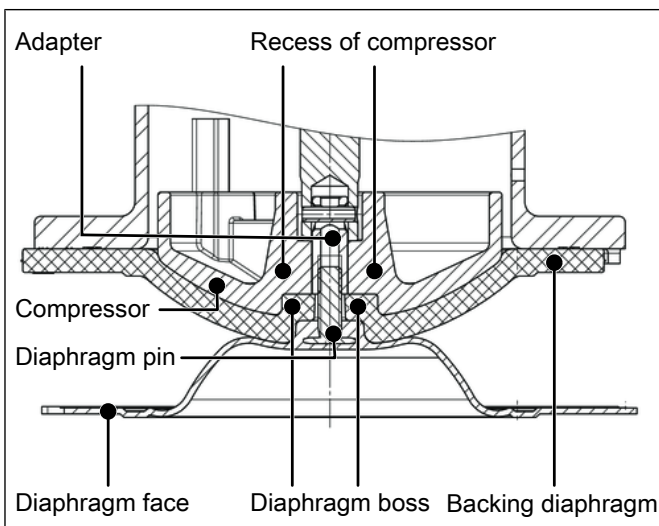


### 16.2.3.3 Mounting the convex diaphragm (code 5E, 5M)

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.

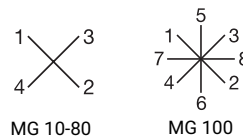
### 16.2.4 Mounting the actuator on the valve body

#### NOTICE

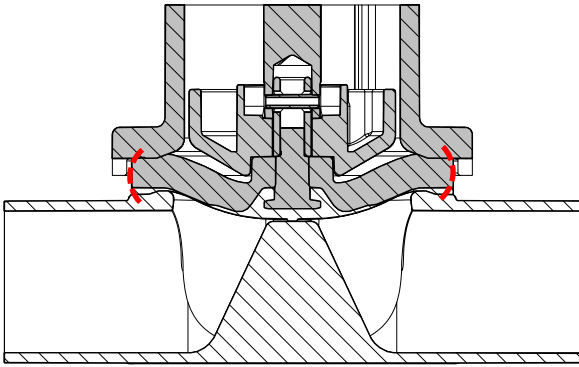
##### Diaphragms set in the course of time.

- ▶ Leakage
- After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.
- Retighten the bolts and nuts at the very latest after the first sterilization process.

1. Move the actuator **A** to the open position.
2. Place actuator **A** with the mounted diaphragm on valve body **1**.
  - ⇒ Take care that the diaphragm is in the correct orientation.
3. Take care to align the compressor weir, diaphragm weir and valve body weir.
4. Screw in bolts, washers and nuts hand tight.
  - ⇒ 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 with nuts diagonally.



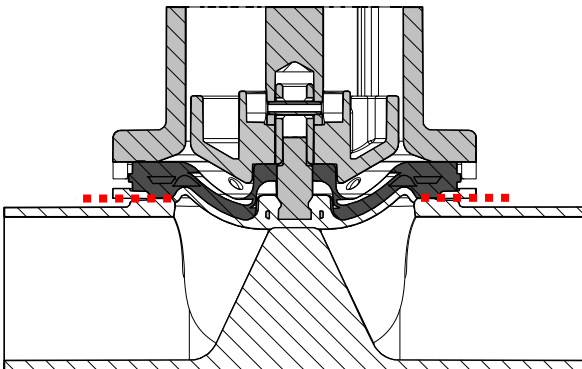
**Diaphragm code 4, 13, 17, 19, 29, 36, 54, 5E**



The diaphragm is tightened until a slight bulge can be seen.

- 7. Ensure even compression of the diaphragm (approx. 10 to 15%).  
⇒ Even compression is detected by an even outer bulge.

**Diaphragm code 5M**



The diaphragm lies level with and parallel to the valve body

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

**17 Removal from piping**

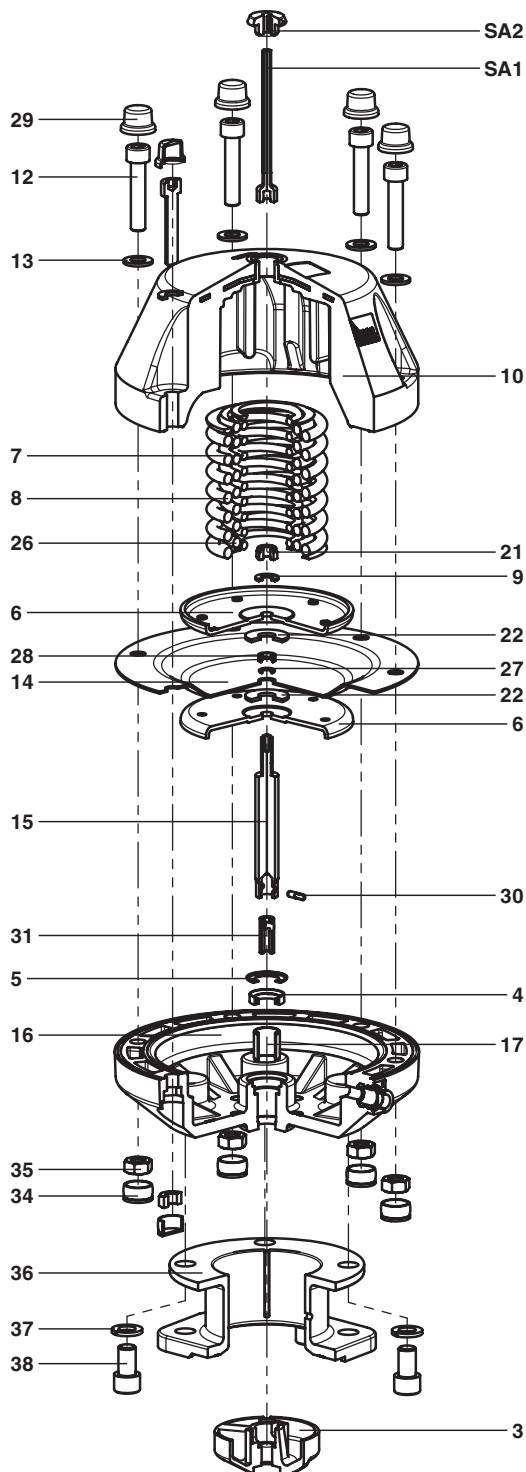
- 1. Remove in reverse order to installation.
- 2. Deactivate the control medium.
- 3. Disconnect the control medium line(s).
- 4. Disassemble the product. Observe warning notes and safety information.

**18 Disposal**

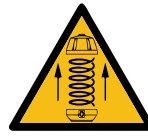
- 1. Pay attention to adhered residual material and gas diffusion from penetrated media.
- 2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.

### 18.1 Disassembly for disposal for control function 1

The drawing is only provided as an example.



#### ⚠ WARNING



**Actuator top is under spring pressure**

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

1. Disconnect the actuator from the control medium.
2. Remove the loose compressor **3**.
  - ⇒ From MG 100 and above, the compressor is screwed with a two hole nut.
3. Remove the protective cap **SA2**.
4. Remove the optical position indicator **SA1**.
5. Remove the protective caps **29**.
6. For diaphragm size 50:  
Remove the protective caps **34**.
7. Clamp the actuator in a press.

#### ⚠ CAUTION



**Applied pressure is too high**

- ▶ Risk of breakage of actuator top **10**!
- Only use minimum required pressure.

8. For diaphragm sizes 10:  
Undo and remove the bolts **12** with the washers **13** between the actuator top **10** and the actuator base **16**.
9. For diaphragm sizes 25 and 40:  
Undo and remove the bolts **12** with the washers **13** between the actuator top **10** and the actuator base **16**.
10. For diaphragm size 50:  
Undo and remove the bolts **12** with the washers **13** and the nuts **35** between the actuator top **10** and the actuator base **16**.
11. For diaphragm size 100:  
Undo and remove the bolts **12** with the washers **13** and the nuts **35** between the actuator top **10** and the actuator base **16**. Remove the compressor with a tool that is appropriate for the two hole nut.
12. Slowly release the press.
13. Remove the actuator top **10**.
14. Remove the spring set comprising the compression springs **7**, **8** and **26** 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 687

**We hereby declare that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:**

1.1.3.; 1.1.5.; 1.2.1.; 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.

**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 to 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 687

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 $\leq$ DN 25:

The products are developed 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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www.gemu-group.com

Subject to alteration

02.2024 | 88245875