

# GEMÜ 616

Manually operated diaphragm valve

EN **Operating instructions**



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31.08.2023

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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.

### 1.4 Warning notes


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


SIGNAL WORD	
Possible symbol for the specific danger	<b>Type and source of the danger</b> ▶ 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:

<b>⚠ DANGER</b>	
	<b>Imminent danger!</b> ▶ Non-observance can cause death or severe injury.
<b>⚠ WARNING</b>	
	<b>Potentially dangerous situation!</b> ▶ Non-observance can cause death or severe injury.

<b>⚠ CAUTION</b>	
	<b>Potentially dangerous situation!</b> ▶ Non-observance can cause moderate to light injury.

<b>NOTICE</b>	
	<b>Potentially dangerous situation!</b> ▶ Non-observance can cause damage to property.

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

Symbol	Meaning
	Danger of explosion!
	Corrosive chemicals!
	Hot plant components!

## 2 Safety information

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

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

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

The safety information does not take into account:

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

### Prior to commissioning:

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

### During operation:

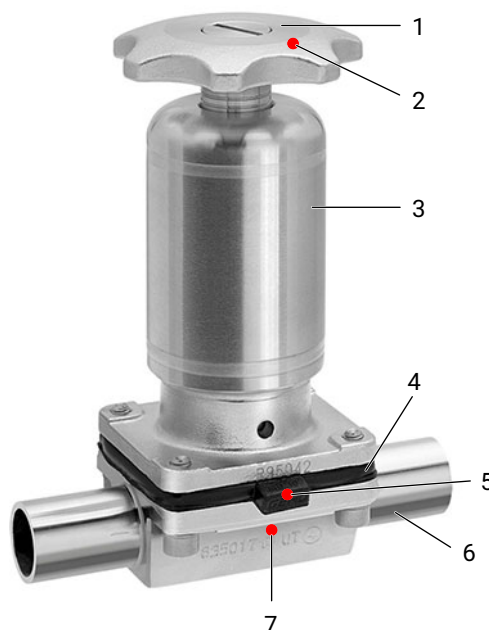
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not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

### In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

## 3 Product description

### 3.1 Construction



Item	Name	Materials
1	Handwheel	
2	CONEXO RFID chip (see Conexo information)	
3	Actuator	Stainless steel
4	Diaphragm	FKM, EPDM, PTFE/EPDM
5	CONEXO RFID chip (see Conexo information)	
6	Valve body	1.4435 (F316L), forged body 1.4435 (BN2), forged body, $\Delta Fe < 0.5 \%$ 1.4435, investment casting 1.4539, forged body
7	CONEXO RFID chip (see Conexo information)	

### 3.2 Description

The GEMÜ 616 2/2-way diaphragm valve is designed for use in sterile applications.

The compression springs installed in the actuator close the valve with consistent force, regardless of the manual force applied. This extends the service life of the diaphragm. Setting a seal adjuster is no longer required.

### 3.3 Function

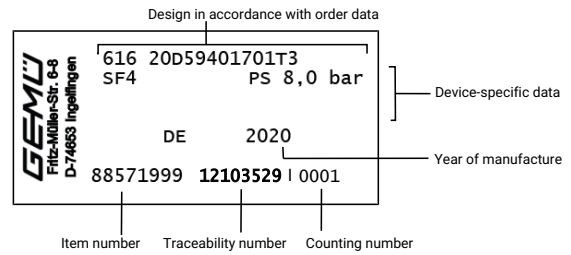
The product is made of metal and is equipped with a stainless steel actuator housing. GEMÜ 616 has a stainless steel hand-wheel. An optical position indicator is located on the spindle (milled rings). Two actuator housings are available: for 2/2-way bodies and for T-bodies or multi-port bodies. The valve body and the diaphragm are available in various designs as shown in the datasheet. The product can be continuously opened or closed.

### 3.4 Optical position indicator

The product has an optical position indicator as standard. The optical position indicator indicates the OPEN, MIDDLE and CLOSED position due to the milled rings.

### 3.5 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.

#### 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, manually operated, stainless steel handwheel, stainless steel bonnet, defined closing force	616

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

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 3459 schedule 10s	36
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
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K
<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

4 Connection type	Code
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 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>Investment casting material</b>	
1.4435, investment casting	C3
<b>Forged material</b>	
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
<b>Elastomer</b>	
FKM	4
FKM	4A
EPDM	3A
EPDM	13
EPDM	17
EPDM	19
<b>PTFE</b>	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
<b>Note:</b> The PTFE/EPDM diaphragm (code 5M) is available from diaphragm size 10.	

7 Control function	Code
Manually operated	0

8 Actuator version	Code
Actuator size 0TA	0TA
Actuator size 1T3	1T3

9 Surface	Code
$Ra \leq 6.3 \mu m$ (250 $\mu in.$ ) for media wetted surfaces, mechanically polished internal	1500
$Ra \leq 0.8 \mu m$ (30 $\mu in.$ ) for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1502
$Ra \leq 0.8 \mu m$ (30 $\mu in.$ ) for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external	1503



9 Surface	Code
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 ≤ 0.4 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 ≤ 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 ≤ 0.25 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 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 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

**Order example**

Ordering option	Code	Description
1 Type	616	Diaphragm valve, manually operated, stainless steel handwheel, stainless steel bonnet, defined closing force
2 DN	15	DN 15
3 Body configuration	D	2/2-way body
4 Connection type	60	Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/DIN 11866 series B
5 Valve body material	40	1.4435 (F316L), forged body
6 Diaphragm material	5M	PTFE/EPDM two-piece
7 Control function	0	Manually operated
8 Actuator version	1T3	Actuator size 1T3
9 Surface	1508	Ra ≤ 0.6 µm (25 µin.) for media wetted surfaces, electropolished internal/external
10 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.

### 7.2 Temperature

**Media temperature:**

Diaphragm material	Standard
EPDM (code 3A/13)	-10 – 100 °C
FKM (code 4/4A)	-10 – 90 °C
EPDM (code 17)	-10 – 100 °C
EPDM (Code 19)	-10 – 100 °C
PTFE/EPDM (Code 54)	-10 – 100 °C
PTFE/EPDM (code 5M)	-10 – 100 °C

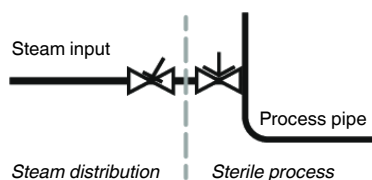
**Sterilization temperature:**

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
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

**Storage temperature:** 0 – 40 °C

### 7.3 Pressure

**Operating pressure:**

MG	DN	Elastomer	PTFE
8	4 - 15	0 - 10	0 - 10
10	10 - 20	0 - 8	0 - 8

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

**Kv values:**

MG	DN	Connection types code					
		0	16	17	18	59	60
<b>8</b>	<b>4</b>	0.5	-	-	-	-	-
	<b>6</b>	-	-	1.1	-	-	1.2
	<b>8</b>	-	-	1.3	-	0.6	2.2
	<b>10</b>	-	2.1	2.1	2.1	1.3	-
	<b>15</b>	-	-	-	-	2.0	-
<b>10</b>	<b>10</b>	-	2.4	2.4	2.4	2.2	3.3
	<b>15</b>	3.3	3.8	3.8	3.8	2.2	4.0
	<b>20</b>	-	-	-	-	3.8	-

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.

**7.4 Product conformity**

**Pressure Equipment Directive:** 2014/68/EU

**Machinery Directive:** 2006/42/EC

## 7.5 Mechanical data

### Weight:

#### Actuator

Actuator version 0TA	0.70 kg
Actuator version 1T3	0.75 kg

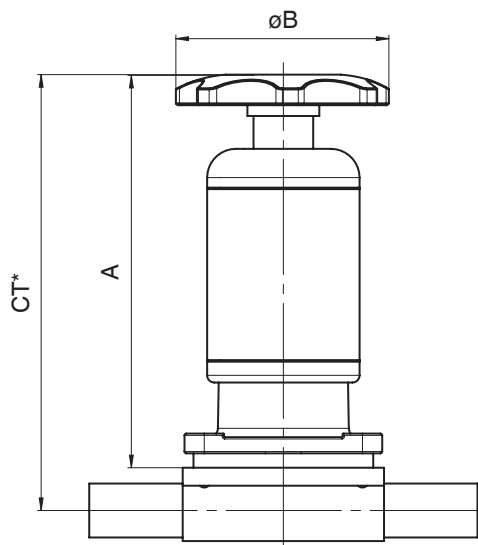
#### Body

Connection types code		0, 16, 17, 18, 35, 36, 55, 59, 60, 63, 64, 65	1	6, 6K	80, 82, 88, 8A, 8T, 8P
Valve body		Spigot	Threaded socket	Threaded spigot, cone spigot	Clamp
MG	DN				
<b>8</b>	<b>4</b>	0.09	-	-	-
	<b>6</b>	0.09	-	-	-
	<b>8</b>	0.09	0.09	-	0.15
	<b>10</b>	0.09	-	0.21	0.18
	<b>15</b>	0.09	-	-	0.18
<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

MG = diaphragm size, weight in kg

## 8 Dimensions

### 8.1 Installation dimensions



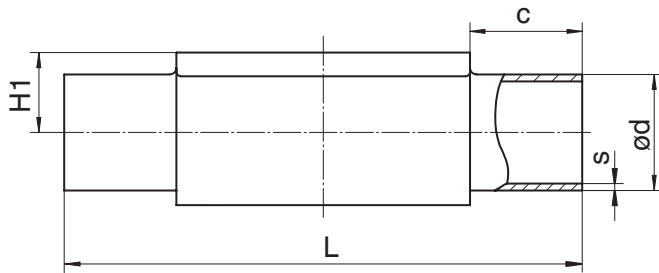
MG	DN	Actuator version	A	øB
<b>8</b>	<b>4 - 15</b>	0TA	106.0	60.0
<b>10</b>	<b>10 - 20</b>	1T3	111.0	60.0

Dimensions in mm, MG = diaphragm size

\* CT = A + H1 (see body dimensions)

## 8.2 Body dimensions

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



Connection type spigot DIN/EN/ISO (code 0, 16, 17, 18, 60)<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
8	4	-	20.0	6.0	-	-	-	-	8.5	72.0	1.0	-	-	-	-
	6	-	20.0	-	-	8.0	-	10.2	8.5	72.0	-	-	1.0	-	1.6
	8	1/4"	20.0	-	-	10.0	-	13.5	8.5	72.0	-	-	1.0	-	1.6
	10	3/8"	20.0	-	12.0	13.0	14.0	-	8.5	72.0	-	1.0	1.5	2.0	-
10	10	3/8"	25.0	-	12.0	13.0	14.0	17.2	12.5	108.0	-	1.0	1.5	2.0	1.6
	15	1/2"	25.0	18.0	18.0	19.0	20.0	21.3	12.5	108.0	1.5	1.0	1.5	2.0	1.6

Connection type spigot DIN/EN/ISO (code 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	
				17	60			17	60
8	6	-	20.0	8.0	10.2	8.5	72.0	1.0	-
	8	1/4"	20.0	10.0	13.5	8.5	72.0	1.0	1.6
	10	3/8"	20.0	13.0	-	8.5	72.0	1.5	-
10	10	3/8"	25.0	13.0	17.2	12.5	108.0	1.5	1.6
	15	1/2"	25.0	19.0	21.3	12.5	108.0	1.5	1.6

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

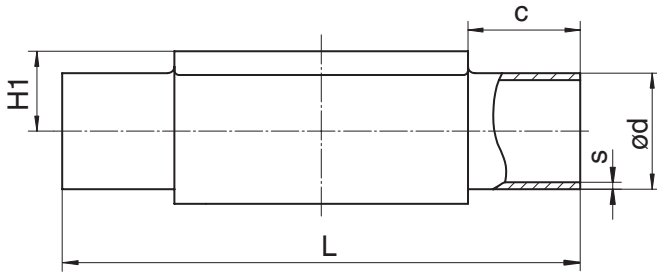
Code 40: 1.4435 (F316L), forged body

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

Code C3: 1.4435, investment casting

Code F4: 1.4539, forged body

### 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
8	6	-	20.0	-	-	10.3	-	10.3	8.5	72.0	-	-	1.24	-	1.73
	8	1/4"	20.0	6.35	6.35	13.7	-	13.7	8.5	72.0	1.2	0.89	1.65	-	2.24
	10	3/8"	20.0	9.53	9.53	-	-	-	8.5	72.0	1.2	0.89	-	-	-
	15	1/2"	20.0	12.70	12.70	-	-	-	8.5	72.0	1.2	1.65	-	-	-
10	10	3/8"	25.0	9.53	9.53	17.1	-	17.1	12.5	108.0	1.2	0.89	1.65	-	2.31
	15	1/2"	25.0	12.70	12.70	21.3	21.3	21.3	12.5	108.0	1.2	1.65	2.11	1.65	2.77
	20	3/4"	25.0	19.05	19.05	-	-	-	12.5	108.0	1.2	1.65	-	-	-

#### 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
8	8	1/4"	20.0	6.35	8.5	72.0	0.89
	10	3/8"	20.0	9.53	8.5	72.0	0.89
	15	1/2"	20.0	12.70	8.5	72.0	1.65
10	20	3/4"	25.0	19.05	12.5	108.0	1.65

Dimensions in mm

MG = diaphragm size

#### 1) Connection type

Code 55: Spigot BS 4825, part 1

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

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

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

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

#### 2) Valve body material

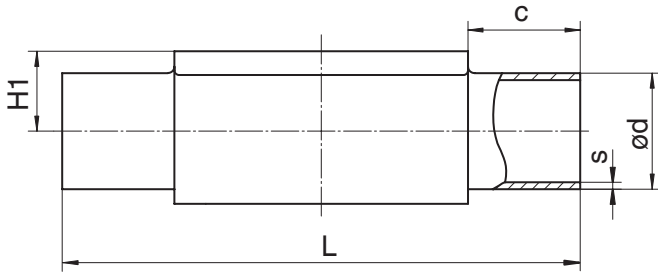
Code 40: 1.4435 (F316L), forged body

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

Code C3: 1.4435, investment casting

Code F4: 1.4539, forged body

**8.2.3 Spigot JIS (code 36)**



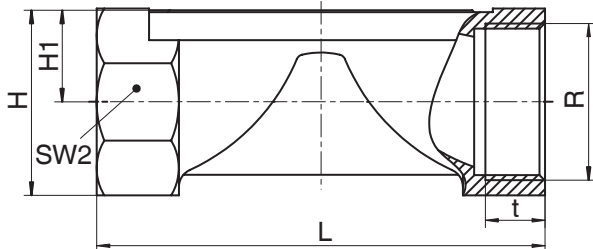
Connection type spigot JIS/SMS (code 36)<sup>1)</sup>, forged material (code 40, 42, F4)<sup>2)</sup>

MG	DN	NPS	c (min)	ød	H1	L	s
8	6	-	20.0	10.5	8.5	72.0	1.20
	8	1/4"	20.0	13.8	8.5	72.0	1.65
10	10	3/8"	25.0	17.3	12.5	108.0	1.65
	15	1/2"	25.0	21.7	12.5	108.0	2.10

Dimensions in mm  
 MG = diaphragm size

- 1) **Connection type**  
 Code 36: Spigot JIS-G 3459 schedule 10s
- 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

**8.2.4 Threaded socket (code 1)**



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

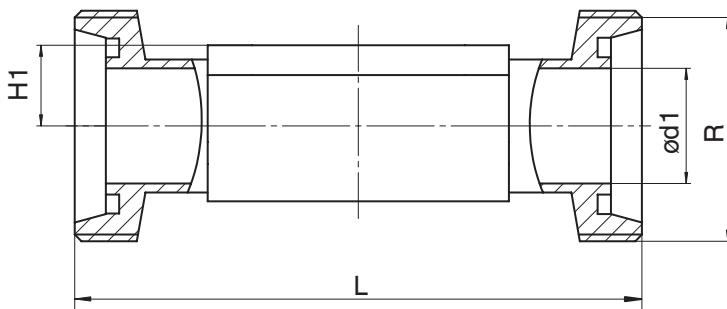
MG	DN	NPS	H	H1	L	n	R	SW 2	t
8	8	1/4"	19.0	9.0	72.0	6	G 1/4	18.0	11.0
10	12	3/8"	25.0	13.0	55.0	2	G 3/8	22.0	12.0
	15	1/2"	30.0	15.0	68.0	2	G 1/2	27.0	15.0

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

- 1) **Connection type**  
 Code 1: Threaded socket DIN ISO 228
- 2) **Valve body material**  
 Code 37: 1.4408, investment casting



### 8.2.5 Threaded spigot (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
8	10	3/8"	10.0	8.5	92.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	118.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	118.0	Rd 34 x 1/8

Dimensions in mm

MG = diaphragm size

1) **Connection type**

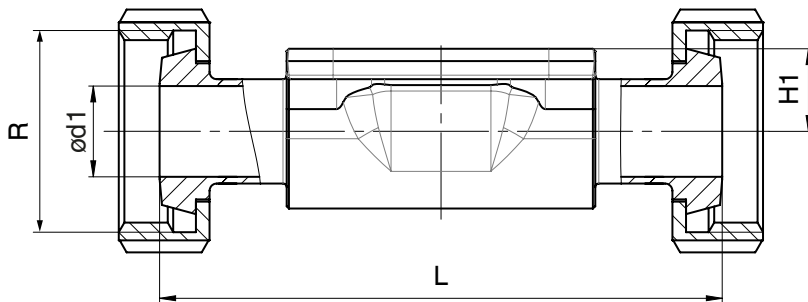
Code 6: Threaded spigot DIN 11851

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

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



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

MG	DN	NPS	ød1	H1	L	R
8	10	3/8"	10.0	8.5	90.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	116.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	116.0	Rd 34 x 1/8

Dimensions in mm

MG = diaphragm size

1) **Connection type**

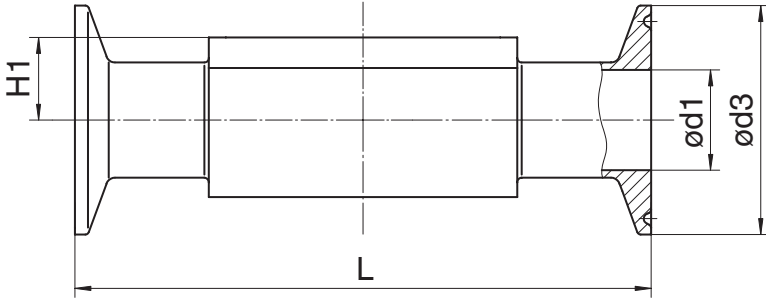
Code 6K: Cone spigot and union nut DIN 11851

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

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



**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	82	8A		82	8A
8	6	1/8"	7.0	6.0	25.0	25.0	8.5	63.5	63.5
	8	1/4"	10.3	8.0	25.0	25.0	8.5	63.5	63.5
	10	3/8"	-	10.0	-	34.0	8.5	-	88.9
10	10	3/8"	14.0	10.0	25.0	34.0	12.5	108.0	108.0
	15	1/2"	18.1	16.0	50.5	34.0	12.5	108.0	108.0

**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
8	8	1/4"	4.57	-	25.0	-	8.5	63.5	-
	10	3/8"	7.75	-	25.0	-	8.5	63.5	-
	15	1/2"	9.40	9.40	25.0	25.0	8.5	63.5	108.0
10	15	1/2"	9.40	9.40	25.0	25.0	12.5	88.9	108.0
	20	3/4"	15.75	15.75	25.0	25.0	12.5	101.6	117.0

Dimensions in mm

MG = diaphragm size

**1) Connection type**

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

**2) Valve body material**

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

## 9 Manufacturer's information

### 9.1 Delivery

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

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

### 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.
5. Store the product in the "open" position.

## 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 Optional installation position

The installation position of the product is optional.

**NOTICE**

**Observe the angle of rotation!**

- ▶ Observe the rotation angle table (for horizontal installation).

**10.3 Installation with butt weld spigots**

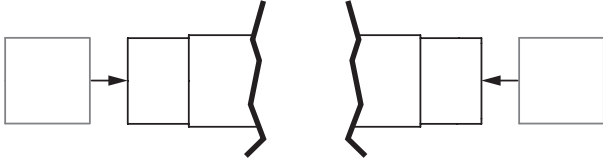


Fig. 1: Butt weld spigots

1. Carry out preparation for installation (see chapter "Preparing for installation").
2. Adhere to good welding practices!
3. Remove the actuator and diaphragm from the valve body.
4. Weld the body of the product in the piping.
5. Allow butt weld spigots to cool down.
6. Mount the actuator and diaphragm on the valve body.
7. Re-attach or reactivate all safety and protective devices.

**10.4 Installation with clamp connections**

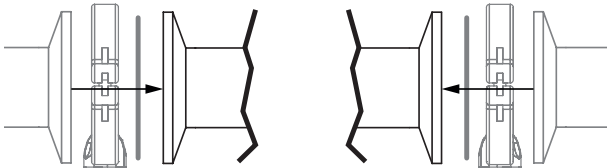


Fig. 2: Clamp connection

**NOTICE**

**Gasket and clamp**

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

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

**10.5 Installation with threaded spigots**

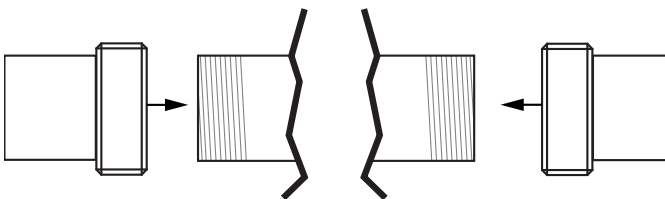


Fig. 3: Threaded spigots

**NOTICE**

**Thread sealant**

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

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

**10.6 Installation with threaded sockets**

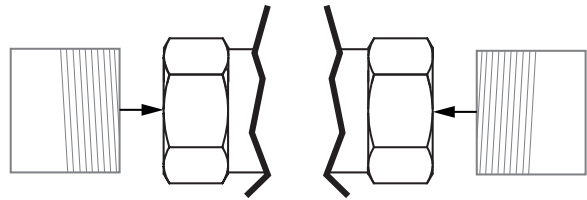


Fig. 4: Threaded socket

**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.

**10.7 After the installation**

1. Mount the actuator (see the enclosed actuator instructions).
2. Re-attach or reactivate all safety and protective devices.

## 11 Commissioning

1. Check the tightness and function of the product (close and reopen the product). Due to the setting behaviour of elastomers, the bolts may need to be retightened following the installation and commissioning of the valve.
2. If the plant is new and after repairs, we recommend flushing the piping system with the product fully open.
  - ⇒ Harmful foreign matter has been removed.
  - ⇒ The product is ready for use.
3. Commission the product.

**12 Troubleshooting**

Error	Possible cause	Troubleshooting
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	Actuator defective	Replace the actuator
The product doesn't open or doesn't open fully	Shut off diaphragm incorrectly mounted	Remove actuator, check diaphragm mounting, replace diaphragm if necessary
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
	Valve body leaking or damaged	Check valve body for potential damage, replace valve body if necessary
	Shut off diaphragm faulty	Check shut off diaphragm for potential damage, replace the shut off diaphragm if necessary
The product leaks downstream (doesn't close or doesn't close fully)	Foreign matter between shut off diaphragm and valve body weir	Remove the actuator, remove foreign matter, check diaphragm and valve body weir for potential damage, replace diaphragm, valve body and actuator if necessary
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 the shut off 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
Handwheel cannot be turned	Handwheel faulty	Replace the actuator
	Threaded spindle seized	Replace the actuator

## 13 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

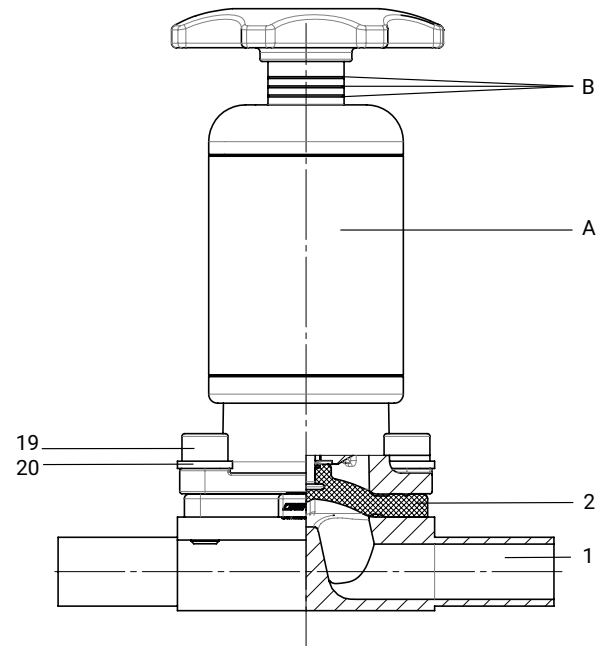
- Servicing and maintenance work must only be performed by trained personnel.
- Do not extend hand lever. GEMÜ shall assume no liability whatsoever for damages caused by improper handling or third-party actions.
- In case of doubt, contact GEMÜ prior to commissioning.

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.

## 13.1 Spare parts



Item	Name	Order designation
1	Valve body	K600...
2	Diaphragm	600...M...
19	Bolt	616...S30...
20	Washer	
A	Actuator	9616...
B	Optical position indicator * upper line = CLOSED middle line = MIDDLE position lower line = OPEN	

\* Optical position indicator:  
all 3 lines = open position  
upper and middle line = middle position  
upper line = closed position

### 13.2 Removing the actuator

1. Move the actuator **A** to the open position.
2. Loosen the fastening elements between actuator **A** and valve body **1** diagonally and remove them.
3. Lift actuator **A** off valve body **1**.
4. Move the actuator **A** to the closed position.
5. Clean all parts of contamination (do not damage parts during cleaning).
6. Check parts for potential damage, replace if necessary (only use genuine parts from GEMÜ).

### 13.3 Removing the diaphragm

1. Remove actuator **A** (see chapter "Removing the actuator").
2. Unscrew the diaphragm.

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

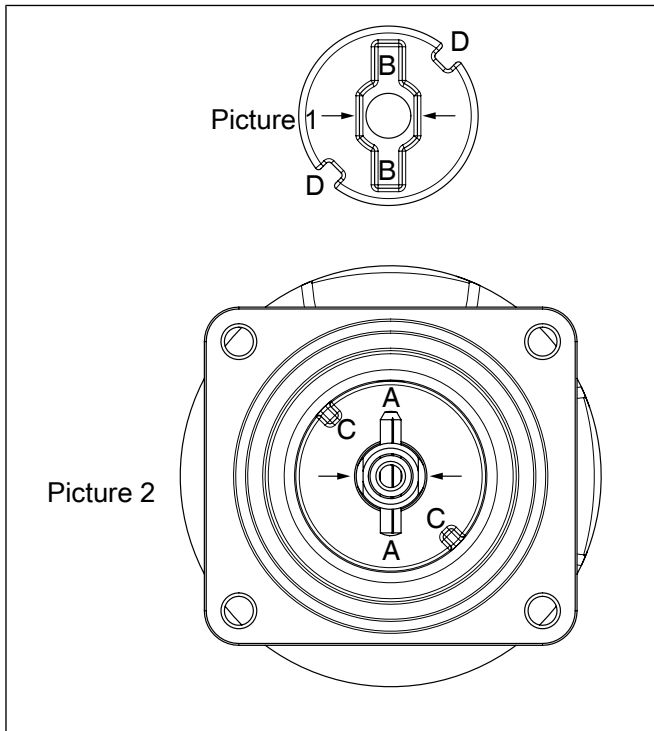
**13.4 Mounting the compressor**

**NOTICE**

**Compressor mounting**

- ▶ Compressor mounting only concerns diaphragm size 10. With diaphragm size 8, the compressor is fixed to the spindle.
- If the compressor was also removed when the diaphragm was removed, it must be remounted before the new diaphragm is mounted.

**13.4.1 Diaphragm size 10**



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

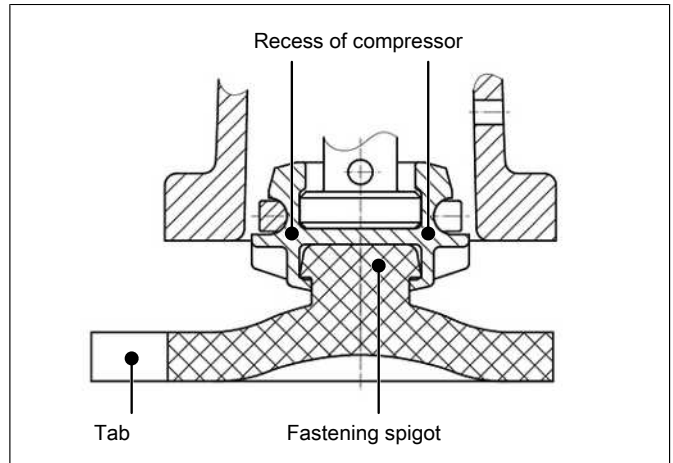
A double flat (arrows picture 2) is fitted at the end of the actuator spindle to protect the actuator spindle against twisting. When mounting the compressor, the double flat must be in correct alignment with the recess of the compressor back (arrows picture 1). If the actuator spindle is not in the correct position, it must be turned to the correct position. The position of **A** is offset by 45° to the position of **C**.

1. Place the compressor loosely on the actuator spindle.
  2. Insert the recesses **D** into the guides **C** and the double flats into the recess of the compressor back **B**.
- ⇒ The compressor must be able to be moved freely between the guides.

**13.5 Mounting the diaphragm**

**13.5.1 Mounting the concave diaphragm**

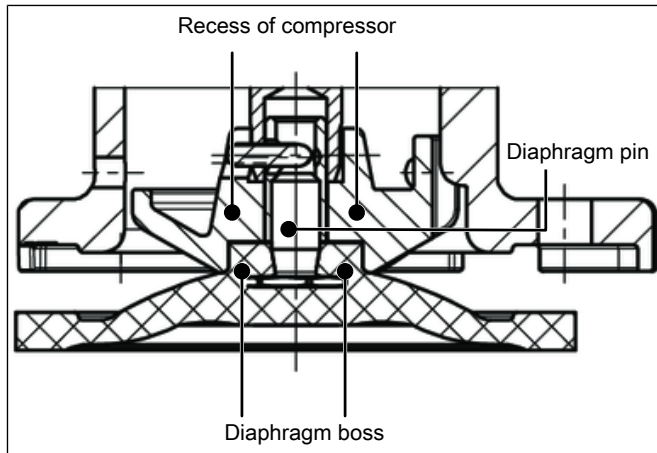
**13.5.1.1 Diaphragm size 8 (push-fit diaphragm)**



1. Move the actuator **A** to the closed position.
2. Check if the compressor is fitted in the guides.
3. Place the diaphragm with the rubber pin in an inclined position at the recess of the compressor.
  - ⇒ Do not use greases or lubricants.
4. Manually screw/press the new diaphragm into the compressor.
5. Align the weir of compressor and body in parallel.
6. Align the flange holes of the shut off diaphragm and the valve actuator.

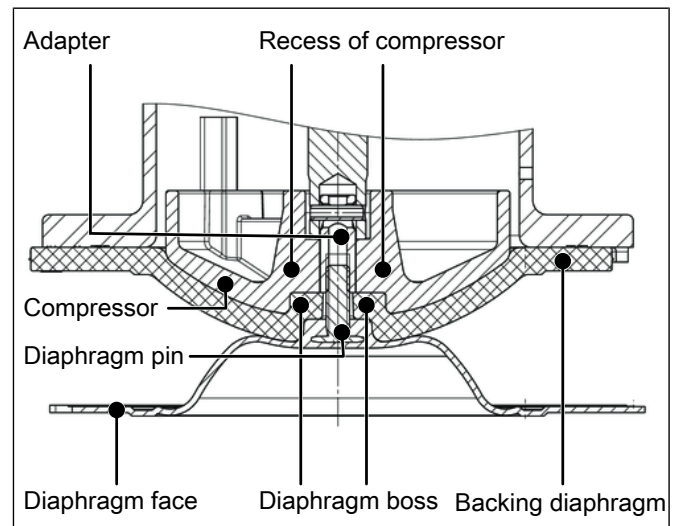
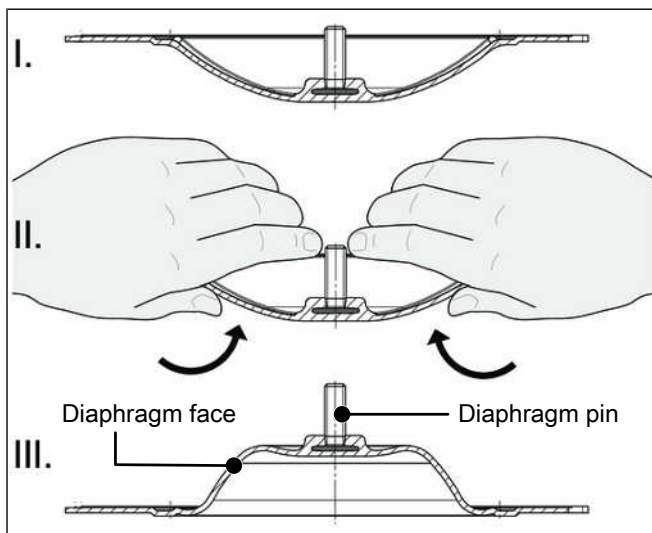


### 13.5.1.2 Diaphragm size 10 (threaded pin type diaphragm)



1. Move the actuator **A** to the closed position.
2. Mount the compressor (see "Mounting the compressor").
3. Check if the anti-twist system is in correct alignment.
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.

### 13.5.2 Mounting the convex diaphragm



1. Move the actuator **A** to the closed position.
2. Mount the compressor (see "Mounting the compressor").
3. Check if the compressor is fitted in the guides.
4. Invert the new diaphragm face manually (use a clean, padded mat with larger nominal sizes).
5. Position the new backing diaphragm onto the compressor.
6. Position the diaphragm face onto the backing diaphragm.
7. Screw diaphragm face tightly into the compressor manually.
  - ⇒ The diaphragm boss must fit closely in the recess of the compressor.
8. If it is difficult to screw it in, check the thread and replace damaged parts.
9. When definitive resistance is felt, turn back the diaphragm until its bolt holes are in correct alignment with the bolt holes of the actuator.
10. Press the diaphragm face tightly onto the backing diaphragm manually so that it returns to its original shape and fits closely on the backing diaphragm.
11. Align the weir of compressor and diaphragm in parallel.

### 13.6 Mounting the actuator

#### NOTICE

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

- After valve disassembly / assembly check that the fastening elements on the body are tight and retighten as necessary (at the very latest after the first sterilization process).
1. Move the actuator **A** to the open position.
  2. Position actuator **A** with the mounted diaphragm on the valve body.
    - ⇒ Diaphragm size 8: Take care to align the compressor weir and valve body weir.
  3. Tighten fastening elements by hand (hand tight only) (fastening elements may vary dependent on diaphragm size and / or valve body version).
  4. Move actuator **A** to a half closed position.
  5. Fully tighten fastening elements 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. With the valve fully assembled, check the function and tightness.

### 14 Removal from piping

1. Disassemble the product. Observe warning notes and safety information.
2. Remove in reverse order to installation.

### 15 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.

### 16 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.

**17 Declaration of conformity according to 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

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

**Description of the pressure equipment:** GEMÜ 616  
**Notified body:** TÜV Rheinland Industrie Service GmbH  
**Number:** 0035  
**Certificate no.:** 01 202 926/Q-02 0036  
**Conformity assessment procedure:** Module H1  
**Technical standard used:** EN 1983, AD 2000

**Note for products 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 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-label.

2021-11-08



Joachim Brien  
Head of Technical Department



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Subject to alteration

08.2023 | 88756519