

GEMÜ 653 / 654 BioStar

Manually operated diaphragm valve

EN

Operating instructions



GEMÜ 653



GEMÜ 654



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Contents

1 General information	4	17 Disposal	64
1.1 Information	4	18 Returns	64
1.2 Symbols used	4	19 EU Declaration of Conformity	65
1.3 Definition of terms	4		
1.4 Warning notes	4		
2 Safety information	5		
3 Product description	5		
3.1 Construction	5		
3.2 Description	6		
3.3 Function	6		
3.4 Product label	6		
4 GEMÜ CONEXO	7		
5 Correct use	7		
6 Order data	8		
6.1 Order codes	8		
6.2 Order example	12		
7 Technical data	13		
7.1 Medium	13		
7.2 Temperature	13		
7.3 Pressure	15		
7.5 Mechanical data	19		
8 Dimensions	20		
8.1 Actuator dimensions	20		
8.2 Body dimensions	22		
8.3 Aseptic connections	36		
9 Manufacturer's information	45		
9.1 Packaging	45		
9.2 Transport	45		
9.3 Storage	45		
9.4 Delivery	45		
10 Installation in piping	45		
10.1 Preparing for installation	45		
10.2 Installation position	46		
10.3 Installation with butt weld spigots	46		
10.4 Installation with clamp connections	46		
10.5 Installation with threaded spigots	46		
10.6 Installation with flanged connection	47		
10.7 After installation	47		
10.8 Operation	47		
10.9 Setting the seal adjuster	48		
11 Commissioning	53		
12 Operation	53		
13 Troubleshooting	54		
14 Inspection and maintenance	55		
14.1 Spare parts	55		
14.2 Fitting/removing spare parts	56		
14.3 Regreasing the threaded spindle	60		
15 Actuator versions	62		
15.1 Actuator versions with electrical locking device	62		
15.2 Actuator version with mechanical locking device	62		
15.3 Actuator version for mounting proximity switches	63		
16 Removal from piping	64		

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.

Diaphragm size

Uniform seat size of GEMÜ diaphragm valves for different nominal sizes.

1.4 Warning notes

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

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences in case of non-compliance ● Measures for avoiding danger

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

The following signal words and danger levels are used:

 DANGER	
	Imminent danger! ▶ Non-observance can cause death or severe injury
 WARNING	
	Potentially dangerous situation! ▶ Non-observance can cause death or severe injury

 CAUTION	
	Potentially dangerous situation! ▶ Non-observance can cause moderate to light injury

NOTICE	
	Potentially dangerous situation! ▶ Non-observance can cause damage to property

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

Symbol	Meaning
	The equipment is subject to pressure!
	Risk of crushing due to moving parts when the valve is not installed!
	Corrosive chemicals!
	Hot plant components!
	Maximum permissible pressure exceeded!
	Handwheel can become hot during operation!
	Damage to the diaphragm if installed incorrectly!

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 materials

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.

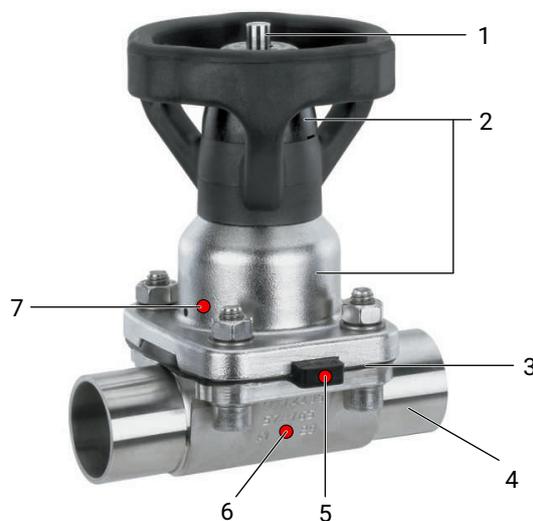
In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

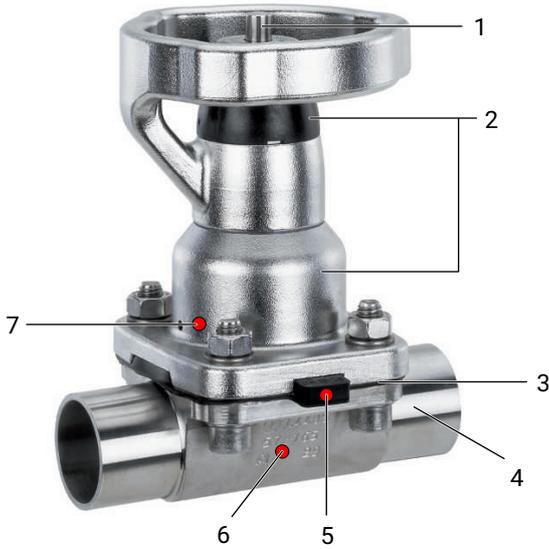
3.1 Construction

GEMÜ 653



Item	Name	Materials
1	Position indicator	
2	Manual actuator	Bonnet A4, stainless steel Cap (DN 10–DN 40), PEEK Cap (DN 50–DN 100), PES Handwheel, PPS, glass fibre reinforced
3	Diaphragm	EPDM FKM PTFE/EPDM (one-piece, two-piece) PTFE/PVDF/EPDM (three-piece)
4	Valve body	1.4408, investment casting 1.4435, investment casting 1.4408, PFA lined 1.4435 (F316L), forged body 1.4435 (BN2), forged body, Δ Fe < 0.5% 1.4539, forged body 2.4602, block material 3.7035, titanium
5	CONEXO diaphragm RFID chip (see Conexo information)	
6	CONEXO body RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	

GEMÜ 654



Item	Name	Materials
1	Position indicator	
2	Manual actuator	Bonnet A4, stainless steel Cap (DN 10–DN 40), PEEK Cap (DN 50–DN 100), PES Handwheel, A4, stainless steel
3	Diaphragm	EPDM FKM PTFE/EPDM (one-piece, two-piece) PTFE/PVDF/EPDM (three-piece)
4	Valve body	1.4408, investment casting 1.4435, investment casting 1.4408, PFA lined 1.4435 (F316L), forged body 1.4435 (BN2), forged body, Δ Fe < 0.5% 1.4539, forged body 2.4602, block material 3.7035, titanium
5	CONEXO diaphragm RFID chip (see Conexo information)	
6	CONEXO body RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	

3.2 Description

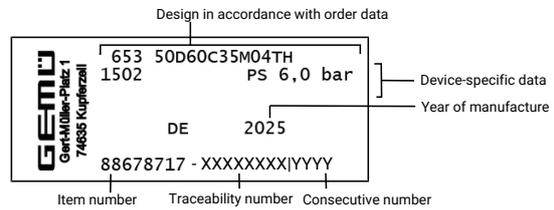
The GEMÜ 653 / 654 2/2-way diaphragm valve has a stainless steel bonnet and is manually operated. The valve is available in two versions - GEMÜ 653 has a handwheel in high temperature and chemically resistant plastic, GEMÜ 654 a stainless steel handwheel. An integrated optical position indicator is standard.

3.3 Function

The product controls a flowing medium by manual operation. The product has an optical position indicator as standard. The optical position indicator indicates the OPEN and CLOSED positions.

3.4 Product label

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



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

4 GEMÜ CONEXO

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



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

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

5 Correct use

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.

NOTICE

Explosion protection (ATEX)

- ▶ The product is free from potential ignition sources and does not fall under the ATEX Directive 2014/34/EU. It is suitable for use in potentially explosive areas. See the manufacturer's declaration.

The product is designed for installation in piping and for controlling a working medium. It controls a flowing medium by allowing it to be opened and/or closed by the user.

The valve is suitable for corrosive, neutral or gaseous media, which have no negative impact on the physical properties of the respective body and diaphragm material.

- 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, plastic handwheel, stainless steel distance piece electropolished, optical position indicator	653
Diaphragm valve, manually operated, stainless steel handwheel electropolished, optical position indicator	654

2 DN	Code
DN 4	4
DN 6	6
DN 8	8
DN 10	10
DN 12	12
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100

3 Body configuration	Code
Floor drain	B
Body configuration code B: Dimensions and designs on request	
2/2-way body	D
T body	T
Body configuration code T: Dimensions on request	

4 Connection type	Code
Spigot	
DIN spigot	0
Spigots 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
SMS 3008 spigot	37
Spigot BS 4825, Part 1	55
Spigot ASME BPE/DIN EN 10357 series C (from 2022 issue)/DIN 11866 series C	59
Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B	60
Spigot ANSI/ASME B36.19M Schedule 10s	63

4 Connection type	Code
Spigot ANSI/ASME B36.19M Schedule 5s	64
ANSI/ASME B36.19M Schedule 40s spigot	65
Threaded connection	
Threaded socket DIN ISO 228	1
Threaded spigot DIN 11851	6
Tapered connector and union nut DIN 11851	6K
Flange	
Flange EN 1092, PN 16, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	8
Flange JIS B2220, 10K, RF, Overall length FTF EN 558 Series 1, ISO 5752, basic series 1, Overall length only for enclosure type 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
Flange ANSI Class 125/150 FF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	41
Flange ANSI Class 125/150 FF, face-to-face dimension FTF MSS SP-88, length only for body configuration D	44
Clamp	
Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D	80
Clamp DIN 32676 series B, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	82
Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	88
Clamp DIN 32676 series A, face-to-face dimension FTF acc. to EN 558 series 7, length only for body configuration D	8A
Clamp ISO 2852 for pipe ISO 2037, Clamp SMS 3017 for pipe SMS 3008 Overall length FTF EN 558 Series 7, Overall length only for housing type 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

4 Connection type	Code
Aseptic connections	
Flange	
Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A1
Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A2
Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A4
Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A5
Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series C and ASME BPE, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A7
Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series C and ASME BPE, face-to-face dimension FTF EN 558 series 1, length only for body configuration D	A8
Threaded connection	
Aseptic threaded spigot DIN 11864-GS, for pipe DIN 11866 series A and EN 10357 series A	C1
Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series A and EN 10357 series A	C2
Aseptic threaded spigot DIN 11864-GS, for pipe DIN 11866 series B and EN ISO 1127	C4
Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series B and EN ISO 1127	C5
Aseptic threaded spigot DIN 11864-GS for pipe DIN 11866 series C and ASME BPE	C7
Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series C and ASME BPE	C8
Clamp	
Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E1
Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E2
Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E4
Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E5
Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series C/ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E7

4 Connection type	Code
Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series C/ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	E8

5 Valve body material	Code
Investment casting material	
1.4408, investment casting	37
1.4408, PFA lined	39
1.4435, investment casting	C3
Forged material	
1.4435 (F316L), forged body	40
1.4435 (BN2), forged body, Δ Fe < 0.5%	42
1.4539 / UNS N08904, forged body	F4
Block material	
1.4435 (316L), block material	41
1.4435 (BN2), block material, Δ Fe < 0.5%	43
1.4539/UNS N08904, block material	44
3.7035, titanium	A1
2.4602, Alloy 22 block material, (NiCr21Mo14W)	A3

6 Diaphragm material	Code
Elastomer	
EPDM	3A
FKM	4
FKM	4A
EPDM	13
EPDM	17
EPDM	19
Note: The EPDM diaphragms (code 3A, 4A) are only available for diaphragm size 8.	
PTFE	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
PTFE/EPDM two-piece for lining bodies	5Y
PTFE/PVDF/EPDM three-piece	71
Note: The PTFE/EPDM diaphragm (code 5M) is available from diaphragm size 10.	
Note: The PTFE/EPDM diaphragm (code 5Y) is available for diaphragm size 25 and can only be combined with PFA-lined valve bodies.	
Note: The PTFE/PVDF/EPDM diaphragm (code 71) can only be combined with PFA lined valve bodies.	

7 Control function	Code
Manually operated	0

8 Actuator version	Code
Design versions	
With diaphragm size 8	
With seal adjuster and stroke limiter	OTH
Without seal adjuster and stroke limiter	OTN
With seal adjuster and stroke limiter, for mounting for proximity switches, M8x1	OXA

8 Actuator version	Code
With seal adjuster and stroke limiter, locking device (both directions), for mounting for proximity switches, M8x1, correct setting of the seal adjuster absolutely essential	0XB
With seal adjuster and stroke limiter, locking device to prevent closing, for mounting for proximity switches, M8x1	0XF
With seal adjuster and stroke limiter, locking device to prevent opening, for mounting for proximity switches, M8x1	0XK
With diaphragm size 10	
Actuator size 1DH, for 2/2-way bodies, with seal adjuster and stroke limiter	1DH
Actuator size 1DN, for 2/2-way bodies	1DN
With seal adjuster and stroke limiter	1TH
With seal adjuster and stroke limiter, for mounting for proximity switches, M8x1	1XA
With seal adjuster and stroke limiter, locking device (both directions), for mounting for proximity switches, M8x1	1XB
With seal adjuster and stroke limiter, locking device to prevent closing, for mounting for proximity switches, M8x1	1XF
With seal adjuster and stroke limiter, locking device to prevent opening, for mounting for proximity switches, M8x1	1XK
With diaphragm size 25	
Actuator size 2DH, for 2/2-way bodies, with seal adjuster and stroke limiter	2DH
Actuator size 2DN, for 2/2-way bodies	2DN
With seal adjuster and stroke limiter	2TH
Without seal adjuster and stroke limiter	2TN
With seal adjuster and stroke limiter, for mounting for proximity switches, M8x1	2XA
With seal adjuster and stroke limiter, locking device (both directions), for mounting for proximity switches, M8x1	2XB
With seal adjuster and stroke limiter, locking device to prevent closing, for mounting for proximity switches, M8x1	2XF
With seal adjuster and stroke limiter, locking device to prevent opening, for mounting for proximity switches, M8x1	2XK
With diaphragm size 40	
Actuator size 3DH, for 2/2-way bodies, with seal adjuster and stroke limiter	3DH
Actuator size 3DN, for 2/2-way bodies	3DN
With seal adjuster and stroke limiter	3TH
Without seal adjuster and stroke limiter	3TN
With seal adjuster and stroke limiter, for mounting for proximity switches, M8x1	3XA

8 Actuator version	Code
With seal adjuster and stroke limiter, locking device (both directions), for mounting for proximity switches, M8x1	3XB
With seal adjuster and stroke limiter, locking device to prevent closing, for mounting for proximity switches, M8x1	3XF
With seal adjuster and stroke limiter, locking device to prevent opening, for mounting for proximity switches, M8x1	3XK
With diaphragm size 50	
Actuator size 4DH, for 2/2-way bodies, with seal adjuster and stroke limiter	4DH
Actuator size 4DN, for 2/2-way bodies	4DN
With seal adjuster and stroke limiter	4TH
Without seal adjuster and stroke limiter	4TN
With seal adjuster and stroke limiter, for mounting for proximity switches, M8x1	4XA
With seal adjuster and stroke limiter, locking device (both directions), for mounting for proximity switches, M8x1	4XB
With seal adjuster and stroke limiter, locking device to prevent closing, for mounting for proximity switches, M8x1	4XF
With seal adjuster and stroke limiter, locking device to prevent opening, for mounting for proximity switches, M8x1	4XK
With diaphragm size 80	
With seal adjuster and stroke limiter	5TH
Without seal adjuster and stroke limiter	5TN
With seal adjuster	5TS
With seal adjuster, for mounting for proximity switches, M12x1	5XA
With seal adjuster, locking device (both directions), for mounting for proximity switches, M12x1	5XB
With seal adjuster, locking device to prevent opening, for mounting for proximity switches, M12x1	5XK
Note: Code 5TH is only available for diaphragm valve 654.	
With diaphragm size 100	
Actuator size 6TH, with seal adjuster and stroke limiter	6TH
Without seal adjuster and stroke limiter	6TN
With seal adjuster	6TS
With seal adjuster, for mounting for proximity switches, M12x1	6XA
With seal adjuster, locking device (both directions), for mounting for proximity switches, M12x1	6XB
With seal adjuster, locking device to prevent opening, for mounting for proximity switches, M12x1	6XK
Note: Code 5TH is only available for diaphragm valve 654.	

9 Surface	Code
Ra ≤ 6.3 µm for surfaces in contact with media, mechanically polished on the inside	1500
Ra ≤ 0.8 µm for surfaces in contact with media, in accordance with DIN 11866 H3 mechanically polished on the inside	1502
Ra ≤ 0.8 µm for surfaces in contact with media, in accordance with DIN 11866 HE3, electropolished inside/outside	1503
Ra ≤ 0.6 µm for surfaces in contact with media, mechanically polished on the inside	1507
Ra ≤ 0.6 µm for surfaces in contact with media, electropolished inside/outside	1508
Ra ≤ 0.25 µm for surfaces in contact with media *), in accordance with DIN 11866 HE5, electropolished inside/outside, *) for pipe inner diameter < 6 mm, Ra ≤ 0.38 µm in the spigot	1516
Ra ≤ 0.25 µm for surfaces in contact with media *), in accordance with DIN 11866 H5, mechanically polished on the inside, *) for pipe inner Ø < 6 mm, Ra ≤ 0.38 µm in the spigot	1527
Ra ≤ 0.4 µm for surfaces in contact with media, in accordance with DIN 11866 H4, mechanically polished on the inside	1536
Ra ≤ 0.4 µm for surfaces in contact with media, in accordance with DIN 11866 HE4, electropolished inside/outside	1537
Ra max. 0.51 µm (20 µin.) for surfaces in contact with media, in accordance with ASME BPE SF1, internally mechanically polished	SF1
Ra max. 0.64 µm (25 µin.) for surfaces in contact with media, in accordance with ASME BPE SF2, internally mechanically polished	SF2
Ra max. 0.76 µm (30 µin.) for surfaces in contact with media, in accordance with ASME BPE SF3, mechanically polished interior	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 surfaces in contact with media, in accordance with ASME BPE SF5, electropolished inside/outside	SF5
Ra max. 0.64 µm (25 µin.) for surfaces in contact with media, in accordance with ASME BPE SF6, electropolished inside/outside	SF6
10 Special version	Code
Without	
Special version for 3A	M
Special design for oxygen, maximum medium temperature: 60°C	S
11 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Ordering option	Code	Description
1 Type	654	Diaphragm valve, manually operated, stainless steel handwheel electropolished, optical position indicator
2 DN	50	DN 50
3 Body configuration	D	2/2-way body
4 Connection type	60	Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/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	4DH	Actuator size 4DH, for 2/2-way bodies, with seal adjuster and stroke limiter
9 Surface	1503	Ra ≤ 0.8 µm for surfaces in contact with media, in accordance with DIN 11866 HE3, electropolished inside/outside
10 Special version		Without
11 CONEXO		Without

7 Technical data

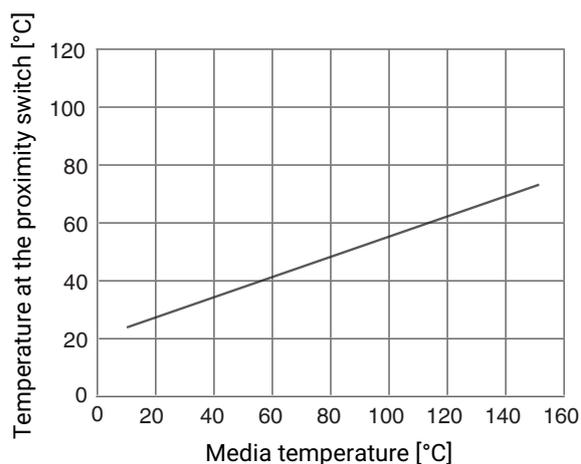
7.1 Medium

Working medium: Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm material.
The valve will seal in both flow directions up to full operating pressure (gauge pressure).
For special oxygen version (code S): only gaseous oxygen

7.2 Temperature

Media temperature:

Temperature development at the proximity switch depending on the media temperature



Data at room temperature

MG	Diaphragm material	Valve body material	Standard	Special version for oxygen
8, 10, 25, 40, 50, 80, 100	EPDM (code 3A/13)	1.4408, investment casting (code 37) 1.4435, investment casting (code C3) 1.4435, forged body (code 40, 42) 1.4539, forged body (code F4) 2.4602, Alloy 22 block material, (NiCr21Mo14W) (code A3) 3.7035, titanium (code A1)	-10 to 100 °C	0 to 60 °C
8, 10, 25, 40, 50, 80, 100	EPDM (code 17)	1.4408, investment casting (code 37) 1.4435, investment casting (code C3) 1.4435, forged body (code 40, 42) 1.4539, forged body (code F4) 2.4602, Alloy 22 block material, (NiCr21Mo14W) (code A3) 3.7035, titanium (code A1)	-10 to 100 °C	0 to 60 °C
8, 10, 25, 40, 50, 80, 100	EPDM (code 19)	1.4435, investment casting (code C3) 1.4539, forged body (code F4)	-10 to 100 °C	0 to 60 °C
8, 10, 25, 40, 50, 80, 100	EPDM (code 19)	1.4408, investment casting (code 37) 1.4435, forged body (code 40, 42) 2.4602, Alloy 22 block material, (NiCr21Mo14W) (code A3)	-20 to 130 °C*	0 to 60 °C
		3.7035, titanium (code A1)	-10 to 130 °C*	
25, 40, 50, 80, 100	EPDM (code 19)	1.4408, PFA lined (code 39)	-20 to 100 °C*	-

MG	Diaphragm material	Valve body material	Standard	Special version for oxygen
8, 10, 25, 40, 50, 80, 100	PTFE/EPDM (code 54)	1.4435, investment casting (code C3) 1.4539, forged body (code F4)	-10 to 100 °C	0 to 60 °C
8, 10, 25, 40, 50, 80, 100	PTFE/EPDM (code 54)	1.4408, investment casting (code 37)	-20 to 130 °C*	0 to 60 °C
		1.4435, forged body (code 40, 42) 2.4602, Alloy 22 block material, (NiCr21Mo14W) (code A3)	-30 to 130 °C*	0 to 60 °C
		3.7035, titanium (code A1)	-10 to 130 °C*	
25, 40, 50, 80, 100	PTFE/EPDM (code 54)	1.4408, PFA lined (code 39)	-20 to 100 °C*	-
25, 40, 50, 80, 100	PTFE/PVDF/EPDM (code 71)	1.4408, PFA lined (code 39)	-10 to 100 °C	-
10, 25, 40, 50, 80, 100	PTFE/EPDM (code 5M)	1.4435, investment casting (code C3) 1.4539, forged body (code F4) 1.4539, block material (code 44)	-10 to 100 °C	0 to 60 °C
10, 25, 40, 50, 80, 100	PTFE/EPDM (code 5M)	1.4408, investment casting (code 37)	-20 to 130 °C*	-
		1.4435, forged body (code 40, 42) 1.4435, block material (code 41, 43) 2.4602, Alloy 22 block material, (NiCr21Mo14W) (code A3)	-30 to 130 °C*	-
		3.7035, titanium (code A1)	-10 to 130 °C*	
25, 40, 50, 80, 100	PTFE/EPDM (code 5M)	1.4408, PFA lined (code 39)	-20 to 100 °C*	-
8, 10, 25, 40, 50, 80, 100	FKM (code 4/4A)	1.4408, investment casting (code 37) 1.4435, investment casting (code C3) 1.4435, forged body (code 40, 42) 1.4539, forged body (code F4) 1.4408, PFA lined (code 39)	-10 to 90 °C	-

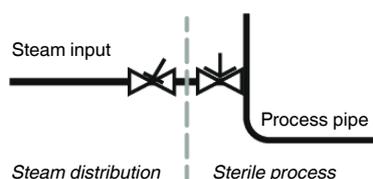
* The service life of the diaphragms is reduced at temperatures below -10 °C and above +100 °C. The maintenance cycles must be carried out in shorter time intervals accordingly.

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, 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:	-20 – 60 °C
	With electrical locking device (code MAG): 0 – 35 °C
Storage temperature:	0 – 40 °C
Autoclavability:	No limitations

7.3 Pressure

Operating pressure:

MG	DN	Diaphragm material			
		Elastomer	PTFE		Investment cast body
			Forged body*		
			Diaphragm material code 54	Diaphragm material code 5M	
8	4 - 15	0 - 10	0 - 10	-	0 - 6
10	10 - 20	0 - 10	0 - 10	-	0 - 6
25	15 - 25	0 - 10	0 - 10	0 - 10	0 - 6
40	32 - 40	0 - 10	0 - 10	0 - 10	0 - 6
50	50 - 65	0 - 10	0 - 10	0 - 10	0 - 6
80	65 - 80	0 - 10	0 - 10	-	0 - 6
100	100	0 - 10	0 - 10	-	0 - 6

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.

* For Code _ T _ and _ X _ actuator versions. Code _ D _ actuator versions: 0 - 6 bar

High vacuum: 0.05 mbar (absolute)*

* The service life of the diaphragms is reduced in a high vacuum. The maintenance cycles must be carried out in shorter time intervals accordingly.

Available under the following conditions:

- Diaphragm codes 54, 5M, 17 and 19
- Diaphragm sizes 8–100
- Valve body material codes 40, 41, 42, 43, 44, A1, A3, F4

Pressure rating: PN 16

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

Kv values:

MG	DN	Connection type code								
		0	16	17	18	37	59	60	1	31
8	4	0.5	-	-	-	-	-	-	-	-
	6	-	-	1.1	-	-	-	1.2	-	-
	8	-	-	1.3	-	-	0.6	2.2	1.4	-
	10	-	2.1	2.1	2.1	-	1.3	-	-	-
	15	-	-	-	-	-	2.0	-	-	-
10	10	-	2.4	2.4	2.4	-	2.2	3.3	-	-
	12	-	-	-	-	-	-	-	3.2	-
	15	3.3	3.8	3.8	3.8	-	2.2	4.0	3.4	-
	20	-	-	-	-	-	3.8	-	-	-
25	15	4.1	4.7	4.7	4.7	-	-	7.4	6.5	6.5
	20	6.3	7.0	7.0	7.0	-	4.4	13.2	10.0	10.0
	25	13.9	15.0	15.0	15.0	12.6	12.2	16.2	14.0	14.0
40	32	25.3	27.0	27.0	27.0	26.2	-	30.0	26.0	26.0
	40	29.3	30.9	30.9	30.9	30.2	29.5	32.8	33.0	33.0
50	50	46.5	48.4	48.4	48.4	51.7	50.6	55.2	60.0	60.0
	65	-	-	-	-	62.2	61.8	-	-	-
80	65	-	-	77.0	-	68.5	68.5	96.0	-	-
	80	-	-	111.0	-	80.0	87.0	111.0	-	-
100	100	-	-	194.0	-	173.0	188.0	214.0	-	-

MG = diaphragm size, Kv values in m³/h

Kv values determined in accordance with DIN EN 60534 standard, inlet pressure 5 bar, Δp 1 bar, stainless steel valve body and soft elastomer diaphragm. The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.

The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and term of use.

Kv values:**Kv values for plastic lining**

MG	DN	Material code 39
25	15	5.0
	20	9.0
	25	13.0
40	32	23.0
	40	26.0
50	50	47.0
	65	47.0
80	80	110
100	100	177

MG = diaphragm size, Kv values in m³/h

Kv values determined in accordance with DIN EN 60534, inlet pressure 5 bar, Δp 1 bar, with connection flange EN 1092 length EN 558 series 1 (or threaded socket DIN ISO 228 for body material GGG40.3) and soft elastomer diaphragm. The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.

The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and term of use.

7.4 Product conformity

Pressure Equipment Directive:	2014/68/EU
Food:	FDA* Regulation (EC) No. 1935/2004 (only for material code C3, 40, 42, 41, 43, A1, A3) Regulation (EC) No. 10/2011* USP* Class VI 3A (special version code M)
TA Luft (German Clean Air Act):	The product meets the following requirements under the maximum permissible operating conditions: - Tightness or compliance with the specific leak rate as defined in TA Luft (German Clean Air Act) and VDI 2440 and VDI 2290 - Compliance with the requirements in accordance with DIN EN ISO 15848-1, Table C.2, Class BH
Oxygen:	BAM compliant, the product is suitable for application with oxygen (special version code S)
BSE/TSE:	The product conforms to EMA/410/01 revision 3 and is free of animal substances
Explosion protection:	Explosion-proof design available on request

* depending on version and/or operating parameters

7.5 Mechanical data

Weight:

Actuator

MG	DN	Weight	
			Actuator version Code __ A, __ B, __ F, __ _ K
8	4 - 15	0.35	0.7
10	10 - 20	0.65	1.0
25	15 - 25	1.40	1.7
40	32 - 40	2.20	2.8
50	50 - 65	3.20	4.3
80	65 - 80	7.80	10.5
100	100	8.50	12.5

Weights in kg
MG = diaphragm size

Body

MG	DN	Spigot	Threaded socket	Threaded spigot, cone spigot	Flange	Clamp
		Connection type code				
		0, 16, 17, 18, 35, 36, 37, 55, 59, 60, 63, 64, 65	1	6, 6K	8, 38, 39	80, 82, 88, 8A, 8E, 8P, 8T
8	4	0.09	-	-	-	-
	6	0.09	-	-	-	-
	8	0.09	0.09	-	-	0.15
	10	0.09	-	0.21	-	0.18
	15	0.09	-	-	-	0.18
10	10	0.30	-	0.33	-	0.30
	12	-	0.17	-	-	-
	15	0.30	0.26	0.35	-	0.43
	20	-	-	-	-	0.43
25	15	0.62	0.32	0.71	1.50	0.75
	20	0.58	0.34	0.78	2.20	0.71
	25	0.55	0.39	0.79	2.80	0.63
40	32	1.45	0.88	1.66	3.40	1.62
	40	1.32	0.93	1.62	4.50	1.50
50	50	2.25	1.56	2.70	6.30	2.50
	65	2.20	-	-	10.30	2.30
80	65	8.60	-	9.22	10.20	8.90
	80	8.00	-	9.20	13.80	8.50
100	100	24.10	-	-	20.80	24.80

Weights in kg
MG = diaphragm size

Installation position:

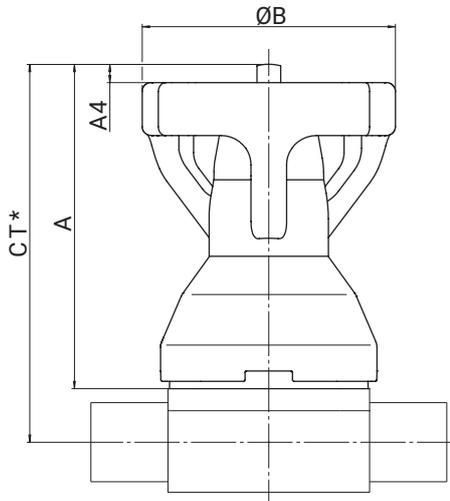
Optional

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

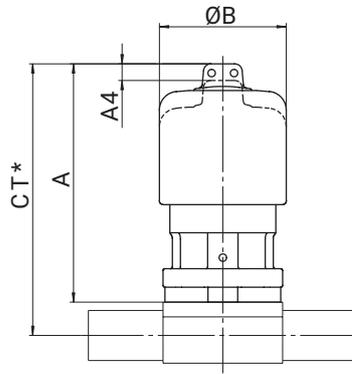
8 Dimensions

8.1 Actuator dimensions

8.1.1 GEMÜ 653, 654



MG 10-100



MG 8

MG	DN	A			A4			ØB
Actuator version		__ H	__ N	__ S	__ H	__ N	__ S	
8	4 - 15	85.0	65.0	-	4.5	4.5	-	36.0
10	10 - 20	86.0	86.0	-	2.0	2.0	-	63.0
25	15 - 25	108.0	108.0	-	5.0	5.0	-	92.0
40	32 - 40	145.0	145.0	-	9.0	9.0	-	114.0
50	50 - 65	171.0	171.0	-	21.0	21.0	-	132.0
80	65 - 80	231.0**	202.0	231.0	33.0**	18.0	33.0	211.0
100	100	255.0**	223.0	255.0	43.0**	28.0	43.0	211.0

Dimensions in mm

MG = diaphragm size

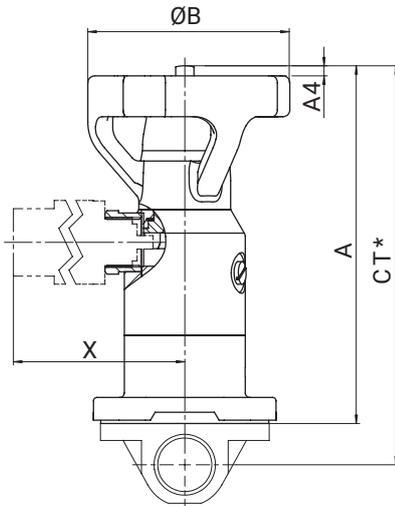
* CT = A + H1 (see body dimensions)

** only GEMÜ 654

A4: Protrusion of indicator spindle over highest point when actuator is in the open position (approximate values)

8.1.2 GEMÜ 653, 654 with actuator versions A, B, F, K

The actuator version can be found in the order data; see Actuator version (see Chapter 6.1.8, page 9). The actuator version corresponds to the last digit in the three-digit code, e.g.: __ A, __ B, __ F, __ K.



MG	DN	A	A4	ØB	Locking device X MAG	Locking device X LOC
8	4 - 15	123.0	1.0	63.0	107.0	73.0
10	10 - 20	124.0	2.0	63.0	107.0	73.0
25	15 - 25	159.0	5.0	92.0	112.0	78.0
40	32 - 40	192.0	9.0	114.0	119.0	85.0
50	50 - 65	236.0	21.0	132.0	125.0	91.0
80	65 - 80	290.0	33.0	211.0	142.0	108.0
100	100	323.0	43.0	211.0	152.0	118.0

Dimensions in mm

MG = diaphragm size

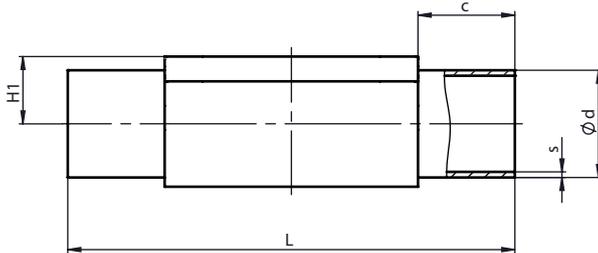
* CT = A + H1 (see body dimensions)

A4: Protrusion of indicator spindle over highest point when actuator is in the open position (approximate values)

X: Only with additional function __ B, __ F, __ K

8.2 Body dimensions

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



Connection type: Spigot DIN/EN/ISO (code 0, 16, 17, 18, 60)¹⁾, forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

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

Code 16: Spigots 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 issue)/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%

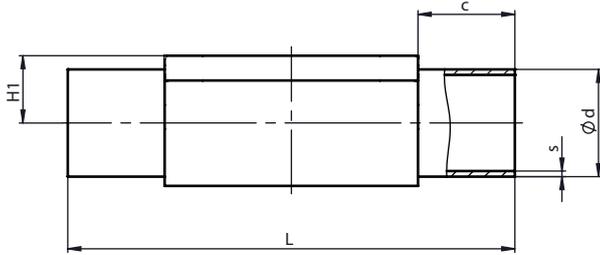
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.



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

MG	DN	NPS	c (min)	Ød			H1	L	s		
				Connection type					Connection type		
				0	17	60			0	17	60
8	4	-	20.0	6.0	-	-	8.5	72.0	1.0	-	-
	6	-	20.0	-	8.0	-	8.5	72.0	-	1.0	-
	8	1/4"	20.0	-	10.0	13.5	8.5	72.0	-	1.0	1.6
	10	3/8"	20.0	-	13.0	-	8.5	72.0	-	1.5	-
10	10	3/8"	25.0	-	13.0	17.2	12.5	108.0	-	1.5	1.6
	15	1/2"	25.0	-	19.0	21.3	12.5	108.0	-	1.5	1.6
25	15	1/2"	25.0	-	19.0	21.3	13.0	120.0	-	1.5	1.6
	20	3/4"	25.0	-	23.0	26.9	16.0	120.0	-	1.5	1.6
	25	1"	25.0	-	29.0	33.7	19.0	120.0	-	1.5	2.0
40	32	1 1/4"	25.0	-	35.0	42.4	24.0	153.0	-	1.5	2.0
	40	1 1/2"	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: DIN spigot

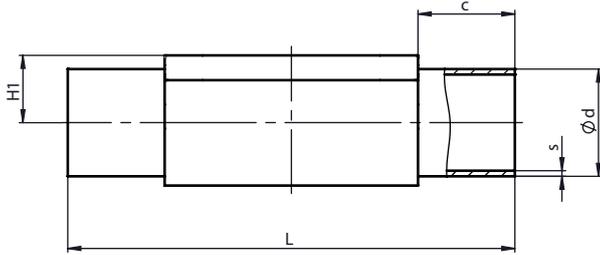
Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2

Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/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 DIN/EN/ISO (code 55, 59, 63, 64, 65)¹⁾, forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	NPS	c (min)	Ød					H1	L	s				
				Connection type							Connection type				
				55	59	63	64	65			55	59	63	64	65
8	6	-	20.0	-	-	10.3	-	10.3	8.5	72.0	-	-	1.24	-	1.73
	8	1/4"	20.0	6.35	6.35	13.7	-	13.7	8.5	72.0	1.2	0.89	1.65	-	2.24
	10	3/8"	20.0	9.53	9.53	-	-	-	8.5	72.0	1.2	0.89	-	-	-
	15	1/2"	20.0	12.70	12.70	-	-	-	8.5	72.0	1.2	1.65	-	-	-
10	10	3/8"	25.0	9.53	9.53	17.1	-	17.1	12.5	108.0	1.2	0.89	1.65	-	2.31
	15	1/2"	25.0	12.70	12.70	21.3	21.3	21.3	12.5	108.0	1.2	1.65	2.11	1.65	2.77
	20	3/4"	25.0	19.05	19.05	-	-	-	12.5	108.0	1.2	1.65	-	-	-
25	15	1/2"	25.0	-	-	21.3	21.3	21.3	19.0	120.0	-	-	2.11	1.65	2.77
	20	3/4"	25.0	19.05	19.05	26.7	26.7	26.7	19.0	120.0	1.2	1.65	2.11	1.65	2.87
	25	1"	25.0	-	25.40	33.4	33.4	33.4	19.0	120.0	-	1.65	2.77	1.65	3.38
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 issue)/DIN 11866 series C

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

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

Code 65: ANSI/ASME B36.19M Schedule 40s spigot

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

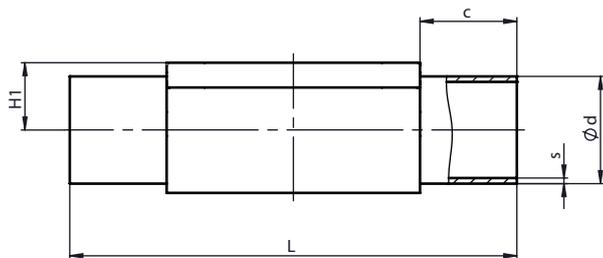
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.



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

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

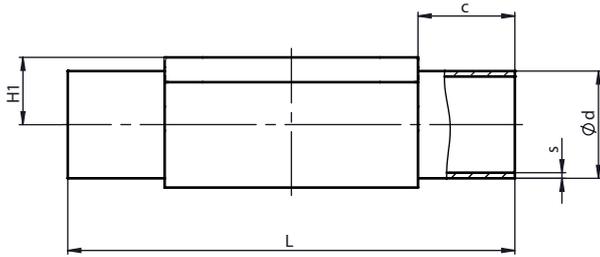
1) **Connection type**

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

2) **Valve body material**

Code C3: 1.4435, investment casting

8.2.3 Spigot JIS/SMS (code 35, 36, 37)



Connection type: Spigot JIS/SMS (code 35, 36, 37)¹⁾, forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	NPS	c (min)	Ød			H1	L	s		
				Connection type					Connection type		
				35	36	37			35	36	37
8	6	-	20.0	-	10.5	-	8.5	72.0	-	1.20	-
	8	1/4"	20.0	-	13.8	-	8.5	72.0	-	1.65	-
10	10	3/8"	25.0	-	17.3	-	12.5	108.0	-	1.65	-
	15	1/2"	25.0	-	21.7	-	12.5	108.0	-	2.10	-
25	15	1/2"	25.0	-	21.7	-	19.0	120.0	-	2.10	-
	20	3/4"	25.0	-	27.2	-	19.0	120.0	-	2.10	-
	25	1"	25.0	25.4	34.0	25.0	19.0	120.0	1.2	2.80	1.2
40	32	1 1/4"	25.0	31.8	42.7	33.7	26.0	153.0	1.2	2.80	1.2
	40	1 1/2"	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	2 1/2"	30.0	63.5	-	63.5	34.0	173.0	2.0	-	1.6
80	65	2 1/2"	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)¹⁾, investment casting material (code C3)³⁾

MG	DN	NPS	c (min)	Ød	H1	L	s
25	25	1"	25.0	25.0	19.0	120.0	1.2
40	40	1 1/2"	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: SMS 3008 spigot

2) Valve body material

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

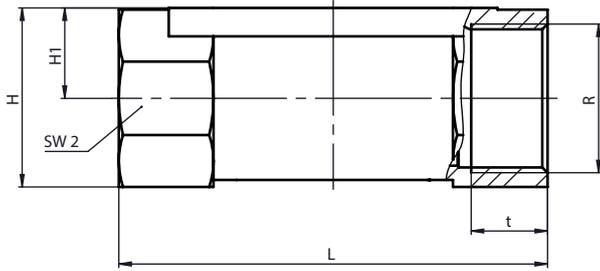
Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

3) Valve body material

Code C3: 1.4435, investment casting

Material code F4 only up to MG 50, from MG 80 material code 44.

8.2.4 Threaded socket DIN (code 1)



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

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

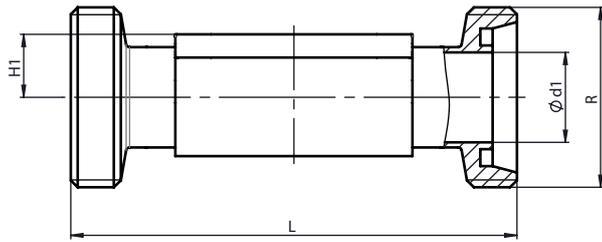
n = number of flats

1) **Connection type**

Code 1: Threaded socket DIN ISO 228

2) **Valve body material**

Code 37: 1.4408, investment casting

8.2.5 Threaded spigot DIN (code 6)

Connection type: Threaded spigot DIN (code 6)¹⁾, forged material (code 40, 42, F4), block material (44, A1, A3)²⁾

MG	DN	NPS	Ød1	H1	L	R
8	10	3/8"	10.0	8.5	92.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	118.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	118.0	Rd 34 x 1/8
25	15	1/2"	16.0	19.0	118.0	Rd 34 x 1/8
	20	3/4"	20.0	19.0	118.0	Rd 44 x 1/6
	25	1"	26.0	19.0	128.0	Rd 52 x 1/6
40	32	1¼"	32.0	26.0	147.0	Rd 58 x 1/6
	40	1½"	38.0	26.0	160.0	Rd 65 x 1/6
50	50	2"	50.0	32.0	191.0	Rd 78 x 1/6
80	65	2½"	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 6: Threaded spigot DIN 11851

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

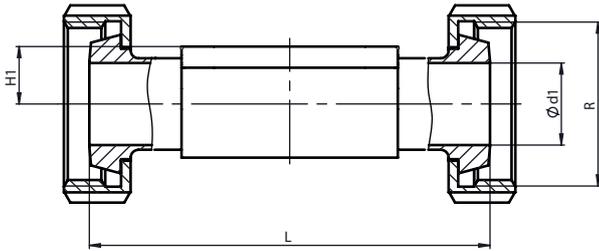
Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.2.6 Cone spigot DIN (code 6K)



Connection type: Cone spigot DIN (code 6)¹⁾, forged material (code 40, 42, F4), block material (44, A1, A3)²⁾

MG	DN	NPS	ød1	H1	L	R
8	10	3/8"	10.0	8.5	90.0	Rd 28 x 1/8
10	10	3/8"	10.0	12.5	116.0	Rd 28 x 1/8
	15	1/2"	16.0	12.5	116.0	Rd 34 x 1/8
25	15	1/2"	16.0	19.0	116.0	Rd 34 x 1/8
	20	3/4"	20.0	19.0	114.0	Rd 44 x 1/6
	25	1"	26.0	19.0	127.0	Rd 52 x 1/6
40	32	1¼"	32.0	26.0	147.0	Rd 58 x 1/6
	40	1½"	38.0	26.0	160.0	Rd 65 x 1/6
50	50	2"	50.0	32.0	191.0	Rd 78 x 1/6
80	65	2½"	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: Tapered connector 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%

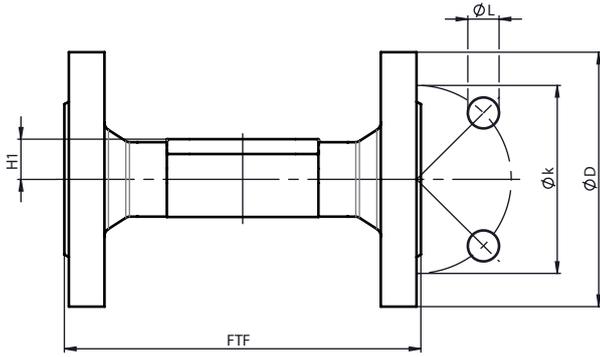
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.2.7 Flange EN (code 8)

Connection type: Flange, length EN 558 (code 8)¹⁾, investment casting material (code 39, C3), forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	NPS	øD	FTF			H1			øk	øL	n
				Material			Material					
				39	C3	40, 42, A1	39	C3	40, 42, A1			
25	15	1/2"	95.0	130.0	150.0	150.0	18.0	13.0	19.0	65.0	14.0	4
	20	3/4"	105.0	150.0	150.0	150.0	20.5	16.0	19.0	75.0	14.0	4
	25	1"	115.0	160.0	160.0	160.0	23.0	19.0	19.0	85.0	14.0	4
40	32	1 1/4"	140.0	180.0	180.0	180.0	28.7	24.0	26.0	100.0	19.0	4
	40	1 1/2"	150.0	200.0	200.0	200.0	33.0	26.0	26.0	110.0	19.0	4
50	50	2"	165.0	230.0	230.0	230.0	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	59.5	-	62.0	160.0	19.0	8
100	100	4"	220.0	350.0	-	350.0	73.0	-	76.0	180.0	19.0	8

Dimensions in mm

MG = diaphragm size

n = number of bolt holes

1) **Connection type**

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

2) **Valve body material**

Code 39: 1.4408, PFA lined

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

Code C3: 1.4435, investment casting

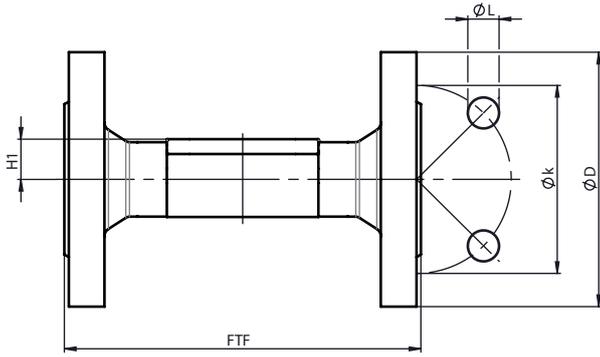
Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.2.8 Flange JIS (code 34)



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

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

Dimensions in mm

MG = diaphragm size

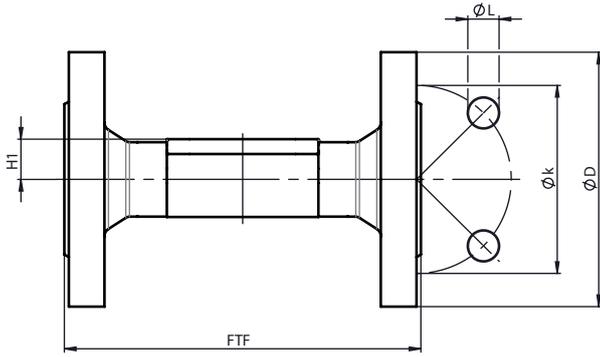
n = number of bolt holes

1) Connection type

Code 34: Flange JIS B2220, 10K, RF, Overall length FTF EN 558 Series 1, ISO 5752, basic series 1, Overall length only for enclosure type D

2) Valve body material

Code 39: 1.4408, PFA lined

8.2.9 Flange ANSI Class (code 38, 39)**Connection type flange, length MSS SP-88 (code 38)¹⁾, investment casting material (code 39)²⁾**

MG	DN	NPS	øD	FTF	H1	øk	øL	n
25	20	3/4"	100.0	146.0	20.5	69.9	15.9	4
	25	1"	110.0	146.0	23.0	79.4	15.9	4
40	40	1½"	125.0	175.0	33.0	98.4	15.9	4
50	50	2"	150.0	200.0	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	59.5	152.4	19.0	4
100	100	4"	230.0	327.0	73.0	190.5	19.0	8

Dimensions in mm

MG = diaphragm size

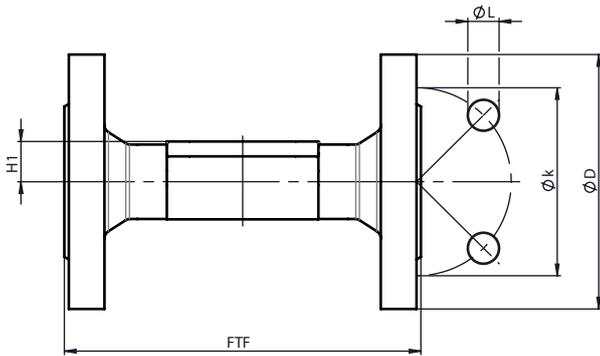
n = number of bolt holes

1) Connection type

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

2) Valve body material

Code 39: 1.4408, PFA lined



Connection type: Flange, length EN 558 (code 39)¹⁾, investment casting material (code 39, C3), forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	NPS	øD	FTF			H1			øk	øL	n
				Material			Material					
				39	C3	40, 42, A1	39	C3	40, 42, A1			
25	15	1/2"	90.0	130.0	150.0	150.0	-	13.0	19.0	60.3	15.9	4
	20	3/4"	100.0	150.0	150.0	150.0	20.5	16.0	19.0	69.9	15.9	4
	25	1"	110.0	160.0	160.0	160.0	23.0	19.0	19.0	79.4	15.9	4
40	32	1¼"	115.0	180.0	180.0	180.0	28.7	24.0	26.0	88.9	15.9	4
	40	1½"	125.0	200.0	200.0	200.0	33.0	26.0	26.0	98.4	15.9	4
50	50	2"	150.0	230.0	230.0	230.0	39.0	32.0	32.0	120.7	19.0	4
	65	2½"	180.0	290.0	-	-	51.0	-	-	139.7	19.0	4
80	65	2½"	180.0	-	-	290.0	-	-	62.0	139.7	19.0	4
	80	3"	190.0	310.0	-	310.0	59.5	-	62.0	152.4	19.0	4
100	100	4"	230.0	350.0	-	350.0	73.0	-	76.0	190.5	19.0	8

Dimensions in mm

MG = diaphragm size

n = number of bolt holes

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 39: 1.4408, PFA lined

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

Code C3: 1.4435, investment casting

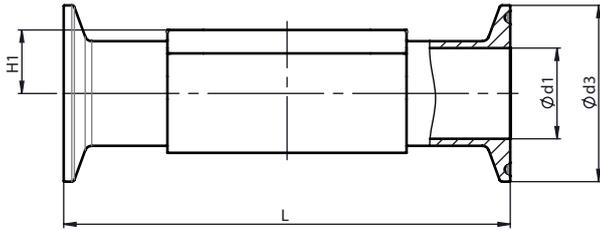
Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

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



Connection type: Clamp DIN/ASME (code 80, 88, 8P, 8T) ¹⁾, forged material (code 40, 42, F4), block material (code 44, A1, A3) ²⁾

MG	DN	NPS	ød1		ød3		H1	L	
			Connection type		Connection type			Connection type	
			80, 8P	88, 8T	80, 8P	88, 8T		80, 8P	88, 8T
8	8	1/4"	4.57	-	25.0	-	8.5	63.5	-
	10	3/8"	7.75	-	25.0	-	8.5	63.5	-
	15	1/2"	9.40	9.40	25.0	25.0	8.5	63.5	108.0
10	15	1/2"	9.40	9.40	25.0	25.0	12.5	88.9	108.0
	20	3/4"	15.75	15.75	25.0	25.0	12.5	101.6	117.0
25	20	3/4"	15.75	15.75	25.0	25.0	19.0	101.6	117.0
	25	1"	22.10	22.10	50.5	50.5	19.0	114.3	127.0
40	40	1 1/2"	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	2 1/2"	60.20	60.20	77.5	77.5	34.0	193.8	216.0
80	65	2 1/2"	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%

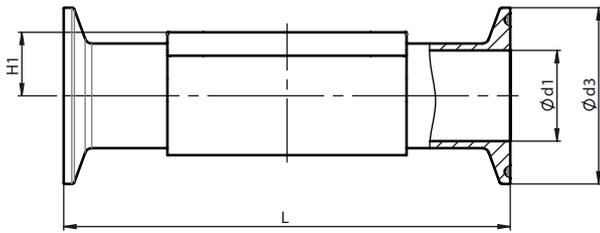
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.



Connection type: Clamp DIN/ISO (code 82, 8A, 8E)¹⁾, forged material (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	NPS	Ød1			Ød3			H1	L		
			Connection type			Connection type				Connection type		
			82	8A	8E	82	8A	8E		82	8A	8E
8	6	1/8"	7.0	6.0	-	25.0	25.0	-	8.5	63.5	63.5	-
	8	1/4"	10.3	8.0	-	25.0	25.0	-	8.5	63.5	63.5	-
	10	3/8"	-	10.0	-	-	34.0	-	8.5	-	88.9	-
10	10	3/8"	14.0	10.0	-	25.0	34.0	-	12.5	108.0	108.0	-
	15	1/2"	18.1	16.0	-	50.5	34.0	-	12.5	108.0	108.0	-
25	15	1/2"	18.1	16.0	-	50.5	34.0	-	19.0	108.0	108.0	-
	20	3/4"	23.7	20.0	-	50.5	34.0	-	19.0	117.0	117.0	-
	25	1"	29.7	26.0	22.6	50.5	50.5	50.5	19.0	127.0	127.0	127.0
40	32	1 1/4"	38.4	32.0	31.3	64.0	50.5	50.5	26.0	146.0	146.0	146.0
	40	1 1/2"	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	2 1/2"	-	-	60.3	-	-	77.5	34.0	-	-	216.0
80	65	2 1/2"	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 Overall length FTF EN 558 Series 7, Overall length only for housing type D

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

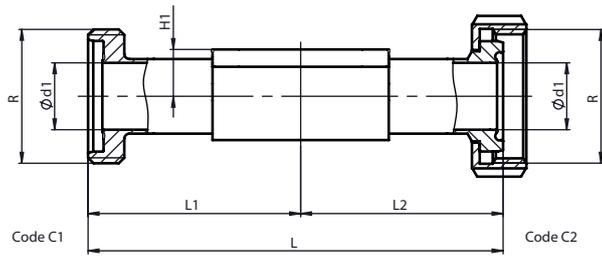
Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.3 Aseptic connections

8.3.1 Aseptic union DIN



Aseptic union end DIN, series A (code C1, C2)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Thread	Connection type (code)			
					C1		C2	
					R	L	L1, L2	L
8	10	8.5	10.0	RD 28 x 1/8	88.0	44.0	84.0	42.0
10	10	12.5	10.0	RD 28 x 1/8	120.0	60.0	116.0	58.0
	15	12.5	16.0	RD 34 x 1/8	120.0	60.0	116.0	58.0
25	15	19.0	16.0	RD 34 x 1/8	120.0	60.0	116.0	58.0
	20	19.0	20.0	RD 44 x 1/6	144.0	72.0	138.0	69.0
	25	19.0	26.0	RD 52 x 1/6	164.0	82.0	156.0	78.0
40	32	26.0	32.0	RD 58 x 1/6	192.0	96.0	182.0	91.0
	40	26.0	38.0	RD 65 x 1/6	214.0	107.0	204.0	102.0
50	50	32.0	50.0	RD 78 x 1/6	244.0	122.0	242.0	121.0
80	65	62.0	66.0	RD 95 x 1/6	314.0	157.0	310.0	155.0
	80	62.0	81.0	RD 110 x 1/4	342.0	171.0	334.0	167.0
100	100	76.0	100.0	RD 130 x 1/4	398.0	199.0	390.0	195.0

MG = diaphragm size
Dimensions in mm

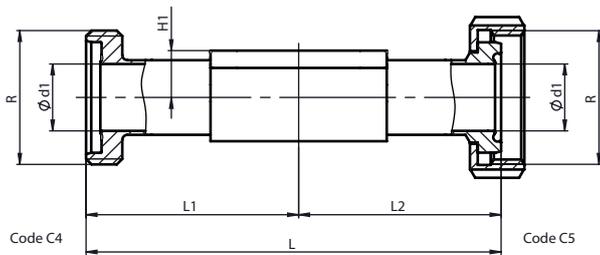
1) Connection type

Code C1: Aseptic threaded spigot DIN 11864-GS, for pipe DIN 11866 series A and EN 10357 series A
Code C2: Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series A and EN 10357 series A

2) Valve body material

Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code 44: 1.4539/UNS N08904, block material
Code F4: 1.4539 / UNS N08904, forged body
Code A1: 3.7035, titanium
Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.


Aseptic union end DIN, series B (code C4, C5)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Thread	Connection type (code)			
					C4		C5	
					R	L	L1, L2	L
8	8	8,5	10,3	RD 28 x 1/8	88,0	44,0	84,0	42,0
10	10	12,5	14,0	RD 34 x 1/8	120,0	60,0	116,0	58,0
	15	12,5	18,1	RD 44 x 1/6	120,0	60,0	116,0	58,0
25	15	19,0	18,1	RD 44 x 1/6	120,0	60,0	116,0	58,0
	20	19,0	23,7	RD 52 x 1/6	144,0	72,0	138,0	69,0
	25	19,0	29,7	RD 58 x 1/6	164,0	82,0	156,0	78,0
40	32	26,0	38,4	RD 65 x 1/6	192,0	96,0	182,0	91,0
	40	26,0	44,3	RD 78 x 1/6	214,0	107,0	204,0	102,0
50	50	32,0	56,3	RD 95 x 1/6	244,0	122,0	242,0	121,0
80	65	62,0	72,1	RD 110 x 1/4	314,0	157,0	310,0	155,0
	80	62,0	84,3	RD 130 x 1/4	342,0	171,0	334,0	167,0

MG = diaphragm size

Dimensions in mm

1) Connection type

Code C4: Aseptic threaded spigot DIN 11864-GS, for pipe DIN 11866 series B and EN ISO 1127

Code C5: Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series B and EN ISO 1127

2) Valve body material

Code 40: 1.4435 (F316L), forged body

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

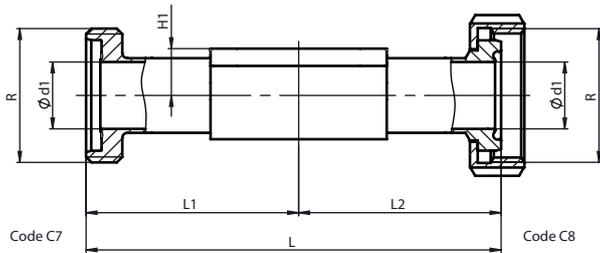
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.


Aseptic union end DIN, series C (code C7, C8)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Thread	Connection type (code)			
					C7		C8	
					R	L	L1, L2	L
8	15	8.5	9.4	RD 28 x 1/8	88.0	44.0	84.0	42.0
10	15	12.5	9.4	RD 28 x 1/8	120.0	60.0	116.0	58.0
	20	12.5	15.75	RD 34 x 1/8	144.0	72.0	138.0	69.0
25	15	19.0	9.4	RD 28 x 1/8	120.0	60.0	116.0	60.0
	20	19.0	15.75	RD 34 x 1/8	144.0	72.0	138.0	69.0
	25	19.0	22.1	RD 52 x 1/6	164.0	82.0	156.0	78.0
40	40	26.0	34.8	RD 65 x 1/6	214.0	107.0	204.0	102.0
50	50	32.0	47.5	RD 78 x 1/6	244.0	122.0	242.0	121.0
	65	32.0	60.2	RD 95 x 1/6	314.0	157.0	310.0	155.0
80	65	62.0	60.2	RD 95 x 1/6	314.0	157.0	310.0	155.0
	80	62.0	72.9	RD 110 x 1/4	342.0	171.0	334.0	167.0
100	100	76.0	97.38	RD 130 x 1/4	398.0	199.0	390.0	195.0

MG = diaphragm size

Dimensions in mm

1) Connection type

Code C7: Aseptic threaded spigot DIN 11864-GS for pipe DIN 11866 series C and ASME BPE

Code C8: Aseptic union nut with grooved union nut DIN 11864-BS, for pipe DIN 11866 series C and ASME BPE

2) Valve body material

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

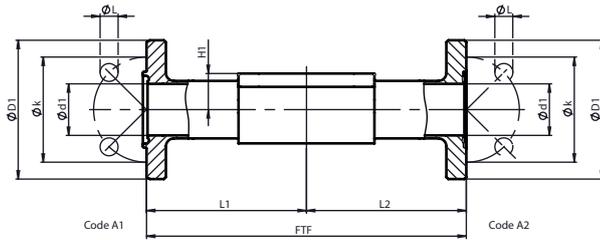
Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.3.2 Aseptic flange DIN



Aseptic flange DIN, series A (code A1, A2)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	ØD1	Øk	ØL	Connection type (code)			
							A1		A2	
							FTF	L1, L2	FTF	L1, L2
8	10	8.5	10.0	54.0	37.0	4 x 9	100.0	50.0	100.0	50.0
10	10	12.5	10.0	54.0	37.0	4 x 9	130.0	65.0	130.0	65.0
	15	12.5	16.0	59.0	42.0	4 x 9	130.0	65.0	130.0	65.0
25	15	19.0	16.0	59.0	42.0	4 x 9	130.0	65.0	130.0	65.0
	20	19.0	20.0	64.0	47.0	4 x 9	150.0	75.0	150.0	75.0
	25	19.0	26.0	70.0	53.0	4 x 9	160.0	80.0	160.0	80.0
40	32	26.0	32.0	76.0	59.0	4 x 9	180.0	90.0	180.0	90.0
	40	26.0	38.0	82.0	65.0	4 x 9	200.0	100.0	200.0	100.0
50	50	32.0	50.0	94.0	77.0	4 x 9	230.0	115.0	230.0	115.0
80	65	62.0	66.0	113.0	95.0	8 x 9	290.0	145.0	290.0	145.0
	80	62.0	81.0	133.0	112.0	8 x 11	310.0	155.0	310.0	155.0
100	100	76.0	100.0	159.0	137.0	8 x 11	350.0	175.0	350.0	175.0

MG = diaphragm size

Dimensions in mm

1) Connection type

Code A1: Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

Code A2: Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

2) Valve body material

Code 40: 1.4435 (F316L), forged body

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

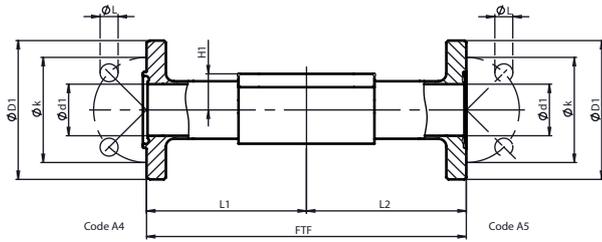
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.


Aseptic flange DIN, series B (code A4, A5)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	ØD1	Øk	ØL	Connection type (code)			
							A4		A5	
							FTF	L1, L2	FTF	L1, L2
8	8	8.5	10.3	54.0	37.0	4 x 9.0	100.0	50.0	100.0	50.0
10	10	12.5	14.0	59.0	42.0	4 x 9.0	130.0	65.0	130.0	65.0
	15	12.5	18.1	62.0	45.0	4 x 9.0	130.0	65.0	130.0	65.0
25	15	19.0	18.1	62.0	45.0	4 x 9.0	130.0	65.0	130.0	65.0
	20	19.0	23.7	69.0	52.0	4 x 9.0	150.0	75.0	150.0	75.0
	25	19.0	29.7	74.0	57.0	4 x 9.0	160.0	80.0	160.0	80.0
40	32	26.0	38.4	82.0	65.0	4 x 9.0	180.0	90.0	180.0	90.0
	40	26.0	44.3	88.0	71.0	4 x 9.0	200.0	100.0	200.0	100.0
50	50	32.0	56.3	103.0	85.0	4 x 9.0	230.0	115.0	230.0	115.0
80	65	62.0	72.1	125.0	104.0	8 X 11.0	290.0	145.0	290.0	145.0
	80	62.0	84.3	137.0	116.0	8 X 11.0	310.0	155.0	310.0	155.0
100	100	76.0	109.7	168.0	146.0	8 X 11.0	350.0	175.0	350.0	175.0

MG = diaphragm size

Dimensions in mm

1) **Connection type**

Code A4: Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

Code A5: Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

2) **Valve body material**

Code 40: 1.4435 (F316L), forged body

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

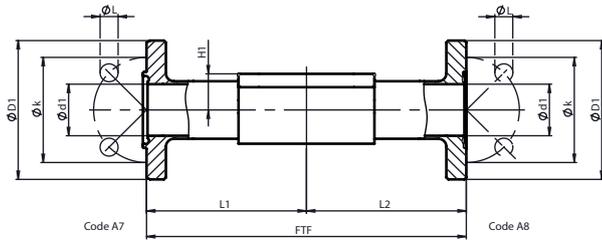
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.



Aseptic flange DIN, series C (code A7, A8)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	ØD1	Øk	ØL	Connection type (code)			
							A7		A8	
							FTF	L1, L2	FTF	L1, L2
8	15	8.5	9.40	54.0	37.0	4 x 9.0	100.0	50.0	100.0	50.0
10	15	12.5	9.40	54.0	37.0	4 x 9.0	130.0	65.0	130.0	65.0
	20	12.5	15.75	59.0	42.0	4 x 9.0	150.0	75.0	150.0	75.0
25	15	19.0	9.40	54.0	37.0	4 x 9.0	130.0	65.0	130.0	65.0
	20	19.0	15.75	59.0	42.0	4 x 9.0	150.0	75.0	150.0	75.0
	25	19.0	22.10	66.0	49.0	4 x 9.0	160.0	80.0	160.0	80.0
40	40	26.0	34.80	79.0	62.0	4 x 9.0	200.0	100.0	200.0	100.0
50	50	32.0	47.50	92.0	75.0	4 x 9.0	230.0	115.0	230.0	115.0
	65	32.0	60.20	107.0	89.0	8 x 9.0	290.0	145.0	290.0	145.0
80	65	62.0	60.20	107.0	89.0	8 x 9.0	290.0	145.0	290.0	145.0
	80	62.0	72.90	125.0	104.0	8 x 11.0	310.0	155.0	310.0	155.0
100	100	76.0	97.38	157.0	135.0	8 x 11.0	350.0	175.0	350.0	175.0

MG = diaphragm size

Dimensions in mm

1) Connection type

Code A7: Aseptic grooved flange DIN 11864-NF, for pipe DIN 11866 series C and ASME BPE, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

Code A8: Aseptic loose flange DIN 11864-BF, for pipe DIN 11866 series C and ASME BPE, face-to-face dimension FTF EN 558 series 1, length only for body configuration D

2) Valve body material

Code 40: 1.4435 (F316L), forged body

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

Code 44: 1.4539/UNS N08904, block material

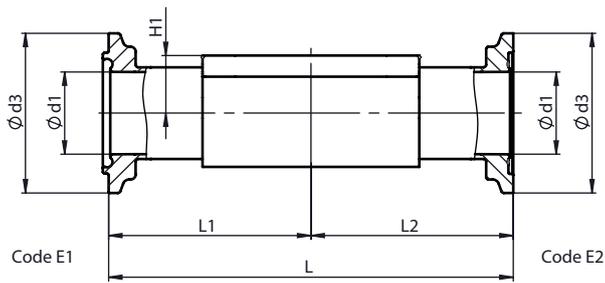
Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

8.3.3 Aseptic clamp DIN



Aseptic clamp DIN, series A (code E1, E2)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Ød3	Connection type (code)			
					E1		E2	
					L	L1, L2	L	L1, L2
8	10	8.5	10.0	34.0	88.9	44.45	88.9	44.45
10	10	12.5	10.0	34.0	108.0	54.0	108.0	54.0
	15	12.5	16.0	34.0	108.0	54.0	108.0	54.0
25	15	19	16.0	34.0	108.0	54.0	108.0	54.0
	20	19	20.0	50.5	117.0	58.5	117.0	58.5
	25	19	26.0	50.5	127.0	63.5	127.0	63.5
40	32	26	32.0	50.5	146.0	73.0	146.0	73.0
	40	26	38.0	64.0	159.0	79.5	159.0	79.5
50	50	32	50.0	77.5	190.0	95.0	190.0	95.0
80	65	62	66.0	91.0	216.0	108.0	216.0	108.0
	80	62	81.0	106.0	254.0	127.0	254.0	127.0
100	100	76	100.0	130.0	305.0	152.5	305.0	152.5

MG = diaphragm size
 Dimensions in mm

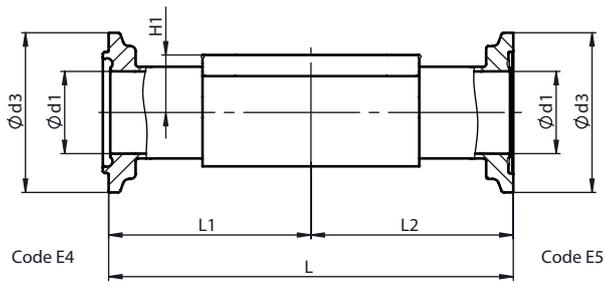
1) Connection type

Code E1: Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series A and EN 10357 series A, face-to-face dimension FTF EN 558 series 7, length only for body configuration D
 Code E2: Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series A and EN 10357 series A, 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 44: 1.4539/UNS N08904, block material
 Code F4: 1.4539 / UNS N08904, forged body
 Code A1: 3.7035, titanium
 Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.



Aseptic clamp DIN, series B (code E4, E5)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Ød3	Connection type (code)			
					E4		E5	
					L	L1, L2	L	L1, L2
8	8	8.5	10.3	34.0	88.9	44.45	88.9	44.45
10	10	12.5	14.0	34.0	108.0	54.0	108.0	54.0
	15	12.5	18.1	34.0	108.0	54.0	108.0	54.0
25	15	19.0	18.1	34.0	108.0	54.0	108.0	54.0
	20	19.0	23.7	50.5	117.0	58.5	117.0	58.5
	25	19.0	29.7	50.5	127.0	63.5	127.0	63.5
40	32	26.0	38.4	64.0	146.0	73.0	146.0	73.0
	40	26.0	44.3	64.0	159.0	79.5	159.0	79.5
50	50	32.0	56.3	91.0	190.0	95.0	190.0	95.0
80	65	62.0	72.1	106.0	216.0	108.0	216.0	108.0
	80	62.0	84.3	130.0	254.0	127.0	254.0	127.0

MG = diaphragm size

Dimensions in mm

1) Connection type

Code E4: Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series B and EN ISO 1127, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

Code E5: Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series B and EN ISO 1127, 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, $\Delta Fe < 0.5\%$

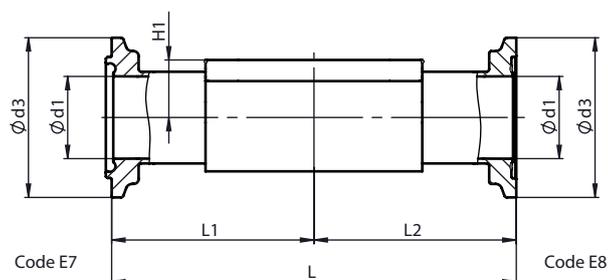
Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.


Aseptic clamp DIN, series C (code E7, E8)¹⁾, forged body (code 40, 42, F4), block material (code 44, A1, A3)²⁾

MG	DN	H1	Ød1	Ød3	Connection type (code)			
					E7		E8	
					L	L1, L2	L	L1, L2
8	15	8.5	9.4	34.0	88.9	44.45	88.9	44.45
10	15	12.5	9.4	34.0	108.0	54.0	108.0	54.0
	20	12.5	15.75	34.0	108.0	54.0	108.0	54.0
25	15	19.0	9.4	34.0	108.0	54.0	108.0	54.0
	20	19.0	15.75	34.0	117.0	58.5	117.0	58.5
	25	19.0	22.1	50.5	127.0	63.5	127.0	63.5
40	40	26.0	34.8	64.0	159.0	79.5	159.0	79.5
50	50	32.0	47.5	77.5	190.0	95.0	190.0	95.0
	65	32.0	60.2	91.0	216.0	108.0	216.0	108.0
80	65	62.0	60.2	91.0	216.0	108.0	216.0	108.0
	80	62.0	72.9	106.0	254.0	127.0	254.0	127.0
100	100	76.0	97.38	130.0	305.0	152.5	305.0	152.5

MG = diaphragm size

Dimensions in mm

1) **Connection type**

Code E7: Aseptic grooved clamp DIN 11864-NKS, for pipe DIN 11866 series C/ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

Code E8: Aseptic notched clamp DIN 11864-BKS, for pipe DIN 11866 series C/ASME BPE, 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, $\Delta Fe < 0.5\%$

Code 44: 1.4539/UNS N08904, block material

Code F4: 1.4539 / UNS N08904, forged body

Code A1: 3.7035, titanium

Code A3: 2.4602, Alloy 22 block material, (NiCr21Mo14W)

Material code F4 only up to MG 50, from MG 80 material code 44.

9 Manufacturer's information

9.1 Packaging

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

9.2 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

9.3 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.

9.4 Delivery

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

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

10 Installation in piping

10.1 Preparing for installation

WARNING



The equipment is subject to pressure!

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

WARNING



Risk of crushing due to moving parts when the valve is not installed!

- ▶ Upper limbs may get into the valve body openings while working on the valve.
- Ensure that the valve is in the respective end position.
- Do not reach into the crushing area through the valve body openings.

WARNING



Corrosive chemicals!

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

CAUTION



Hot plant components!

- ▶ Burns
- Only work on plant that has cooled down.
- Wear protective gear.

CAUTION



Maximum permissible pressure exceeded!

- ▶ Damage to the product!
- Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

CAUTION

Use as step!

- ▶ Damage to the product
- ▶ Risk of slipping-off
- Choose the installation location so that the product cannot be used as a foothold.
- Do not use the product as a step or a foothold.

NOTICE

Suitability of the product!

- ▶ The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions.

NOTICE

Tools!

- ▶ The tools required for installation and assembly are not included in the scope of delivery.
 - Use appropriate, functional and safe tools.
1. Ensure the product is suitable for the relevant application.
 2. Check the technical data of the product and the materials.
 3. Keep appropriate tools ready.
 4. Wear appropriate protective gear, as specified in the plant operator's guidelines.
 5. 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 cannot cause scalding.
 11. Correctly decontaminate, rinse and ventilate the plant or plant component.
 12. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
 13. Only install the product between matching aligned pipes (see chapters below).

10.2 Installation position

Installation position of the product (see "", page 19).

10.3 Installation with butt weld spigots

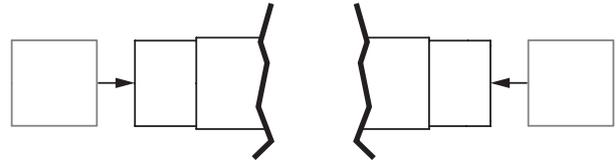


Fig. 1: Butt weld spigots

1. Carry out preparations for installation (see chapter "Preparing for installation").
2. Adhere to good welding practices!
3. Disassemble the actuator with the diaphragm before welding in the valve body (see "Removing the actuator" chapter).
4. Weld the body of the product in the piping.
5. Allow butt weld spigots to cool down.
6. Reassemble the valve body and the actuator with diaphragm (see "Mounting the actuator" chapter).
7. Re-attach or reactivate all safety and protective devices.
8. Flush the system.

10.4 Installation with clamp connections

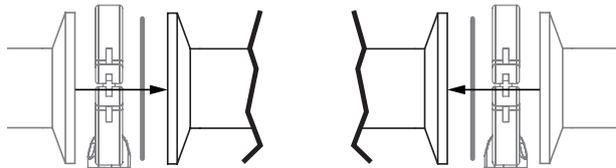


Fig. 2: Clamp connection

NOTICE

Gasket and clamp!

- ▶ The gasket and clamps for clamp connections are not included in the scope of delivery.
1. Keep ready gasket and clamp.
 2. Carry out preparation for installation (see chapter "Preparing for installation").
 3. Insert the corresponding gasket between the body of the product and the pipe connection.
 4. Connect the gasket between the body of the product and the pipe connection using clamps.
 5. Re-attach or reactivate all safety and protective devices.

10.5 Installation with threaded spigots

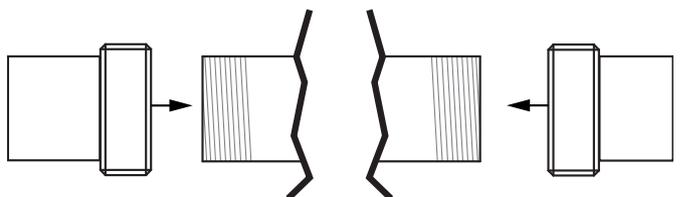


Fig. 3: Threaded spigots

NOTICE**Thread sealant!**

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

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

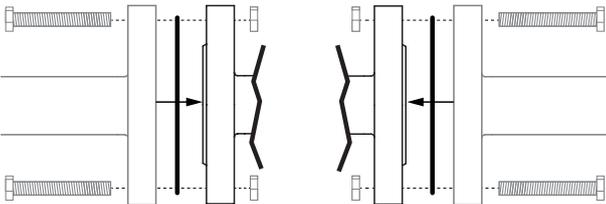
10.6 Installation with flanged connection

Fig. 4: Flanged connection

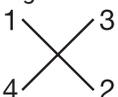
NOTICE**Sealing material!**

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

NOTICE**Connector elements!**

- ▶ The connector elements are not included in the scope of delivery.
- Only use connector elements made of approved materials.
- Observe permissible tightening torque of the bolts.

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

**10.7 After installation****NOTICE****Diaphragms set in the course of time!**

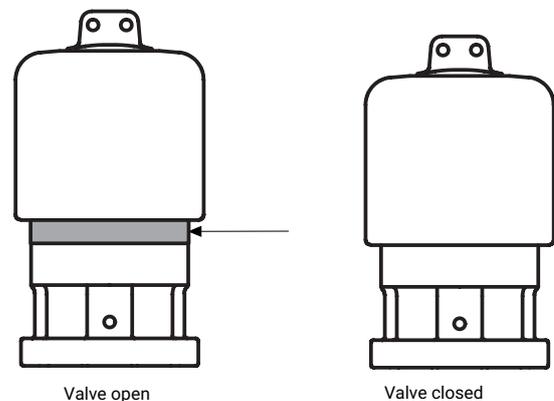
- ▶ Leakage
- After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.
- Retighten the bolts and nuts at the very latest after the first sterilization process.

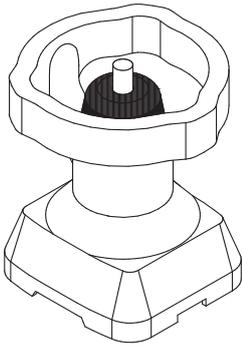
NOTICE**Check the seal adjuster and stroke limiter.**

- ▶ Tightening the screws or installing a new diaphragm may change the seal adjuster and stroke limiter.
- Check the seal adjuster and stroke limiter.
- If required, reset the seal adjuster and stroke limiter.
- Re-attach or reactivate all safety and protective devices.

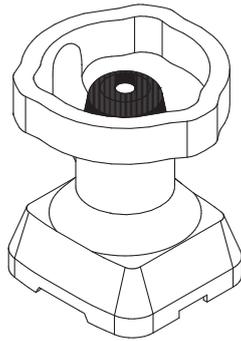
10.8 Operation**CAUTION****Handwheel can become hot during operation!**

- ▶ Risk of burns!
- Ensure protective gloves are worn when operating handwheel.

Optical position indicator**Diaphragm size 8****Diaphragm sizes 10–100**



Valve open



Valve closed

Max. permissible operating torques:

Diaphragm size	Nm
8	1
10	2
25	5
40	10
50	15
80	30
100	35

10.9 Setting the seal adjuster

Depending on the actuator version, the following options are available:

- Seal adjuster available
- Stroke limiter available
- Seal adjuster and stroke limiter available

The following settings can only be implemented if a seal adjuster and/or stroke limiter are available.

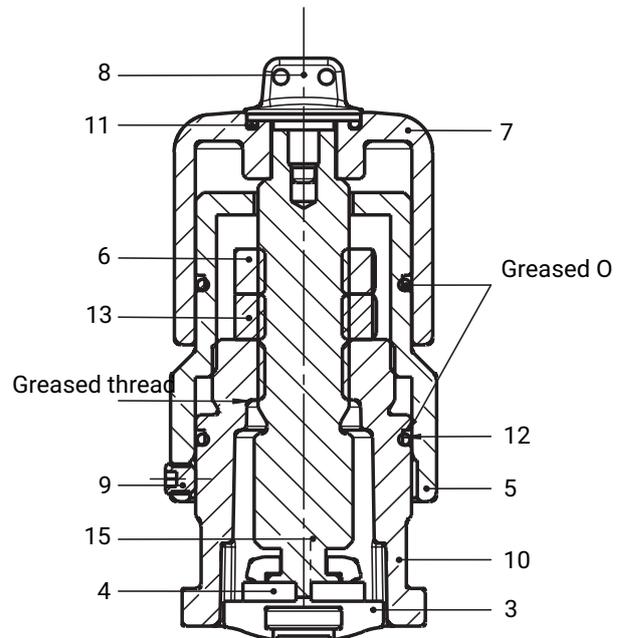
NOTICE

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

The valves in the GEMÜ 653/654 series come with a mechanical seal adjuster as standard to protect the sealing diaphragms.

GEMÜ 654 bonnet size 0TH

Diaphragm size 8



Item	Name
3	Compressor
4	Clamping ring
5	Stroke limiting sleeve

Item	Name
6	Lock nut
7	Handwheel
8	Locking screw
9	Locking screw
10	Bonnet
11	O-ring
12	O-ring
13	Seal adjuster nut
15	Threaded spindle

Setting the seal adjuster

1. Unscrew and remove the locking screw **8**.
 2. Pull off the handwheel **7**.
 3. Undo (do not fully unscrew) the locking screw **9** with a WAF 2 hexagon wrench.
 4. Unscrew the stroke limiting sleeve **5** by $\frac{1}{2}$ to $\frac{3}{4}$ of a turn and remove it.
 5. Undo the lock nut **6** with a WAF 19 open-end wrench and unscrew it by two to three turns.
 6. To deactivate the seal adjuster, undo the seal adjuster nut **13** using a WAF 19 open-end wrench, and unscrew it by two to three turns.
 7. Place the handwheel **7** upside down onto the square drive of threaded spindle **15** and carefully close the valve with the handwheel **7** ("closed position") (valve is tight).
 8. Screw in the seal adjuster nut **13** as far as it will go and secure it with the lock nut **6** (WAF 19 open-end wrench).
- ⇒ The seal adjuster has been set.

Setting the stroke limiter

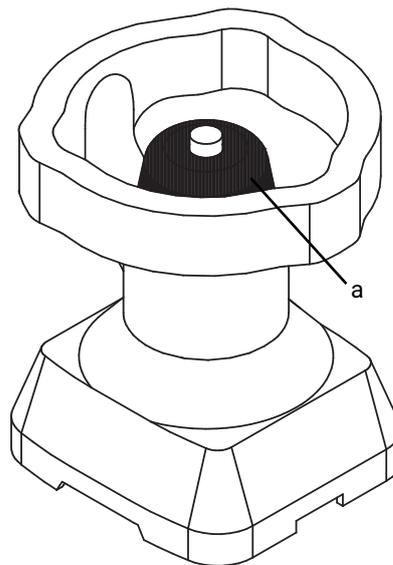
- ✓ The seal adjuster was set first.
If only the stroke limiter needs to be set, deactivate the seal adjuster. To do this, undo the lock nut **6**, undo the seal adjuster nut **13** using a WAF 19 open-end wrench and unscrew it by two to three turns. Secure both nuts afterwards so that they cannot move.
9. Turn the valve with the handwheel **7** (turned upside down) to the open position until it reaches the desired flow rate.
 10. Remove the handwheel **7** from the threaded spindle **15**.
 11. Unscrew the stroke limiting sleeve **5** as far as it will go.

NOTICE

- The threaded spindle **15** must **not** turn during this process. If necessary, hold it in place with a WAF 8 open-end wrench.

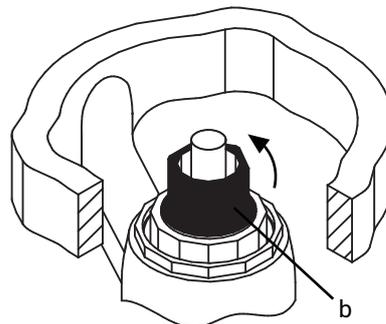
12. Secure the stroke limiting sleeve **5** with the locking screw **9** (WAF 2 hexagon wrench).
13. Place the handwheel **7** in the correct position on the square drive of the threaded spindle **15** and secure with the locking screw **8**.

Diaphragm sizes 10–50



Preparation for setting

14. Pull off the protective cap **a**.
If the protective cap **a** is difficult to remove, a flathead screwdriver can be inserted into the recess.
15. Move the actuator out of the end positions to enable the handwheel to be rotated in both directions.

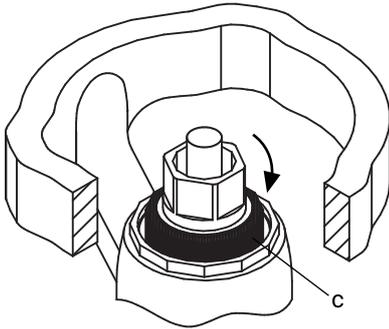


Releasing the stroke limiter

16. Turn the stroke limiter **b** (green) upwards in an anticlockwise direction until the male thread is visible.

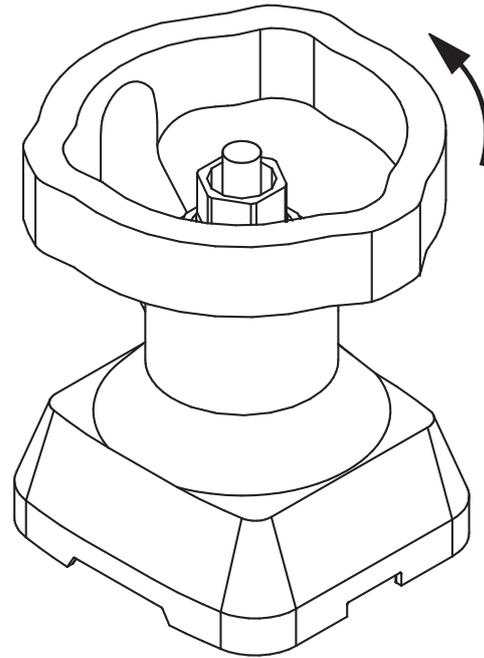
Releasing the seal adjuster

17. Turn the seal adjuster **c** downwards in a clockwise direction until it stops.

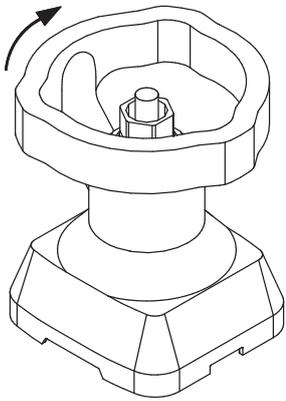


NOTICE

► By releasing the stroke limiter and/or the seal adjuster, these are disabled and can be set correctly afterwards.



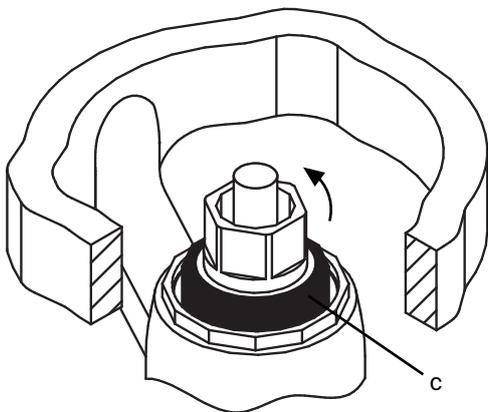
⇒ The seal adjuster is set.



Setting the seal adjuster

18. Move the actuator to the desired closed position by actuating the handwheel.

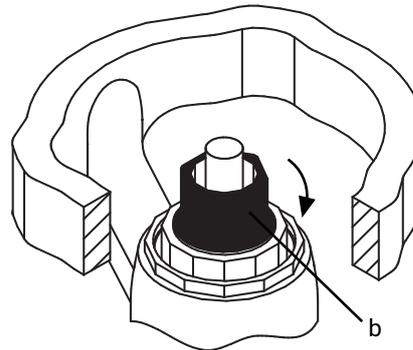
19. Observe the permissible operating torques.



20. Turn the seal adjuster **c** upwards in an anticlockwise direction as far as it will go.

Setting the stroke limiter

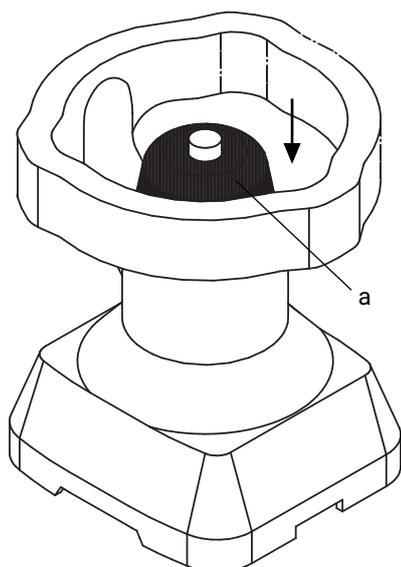
21. Move the actuator to the desired open position by actuating the handwheel.



22. Turn the stroke limiter **b** downwards in a clockwise direction as far as it will go.

NOTICE

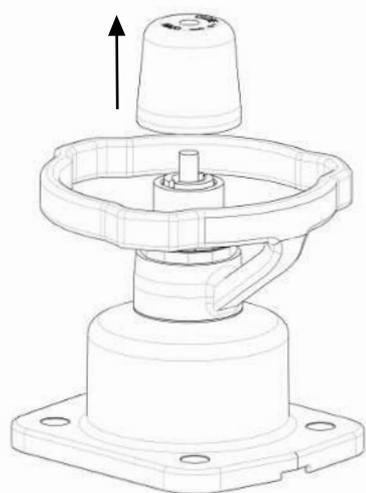
► The seal adjuster **c** must **not** turn with it during this process.



Completing the settings

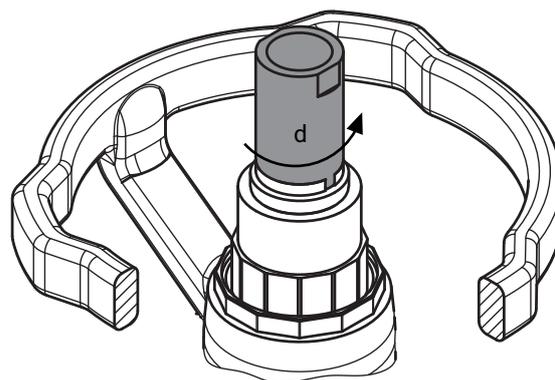
23. Put the protective cap **a** in place and align the flats by using a light twisting movement.
24. Press the protective cap **a** down.

Diaphragm sizes 80–100



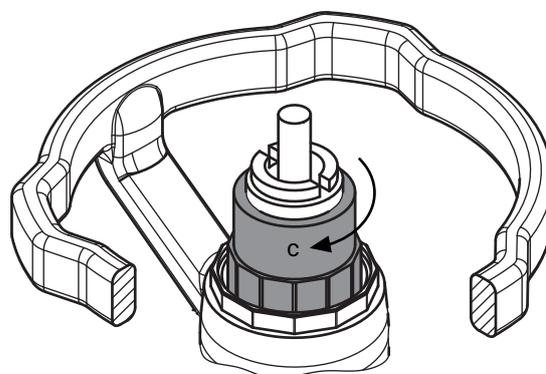
Preparation for setting

25. Pull off the protective cap **a**.
26. Move the actuator out of the end positions to enable the handwheel to be rotated in both directions.



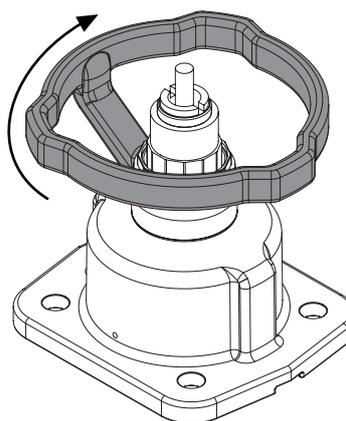
Setting the stroke limiter

27. Turn the stroke limiter anticlockwise using the supplied WAF 30 setting tool **d** until the male thread is visible.



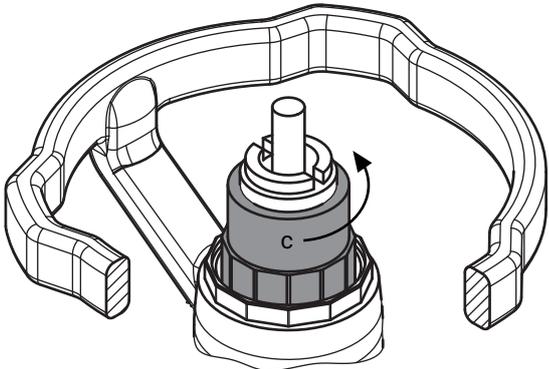
Releasing the seal adjuster

28. Turn the seal adjuster **c** downwards in a clockwise direction until it stops.



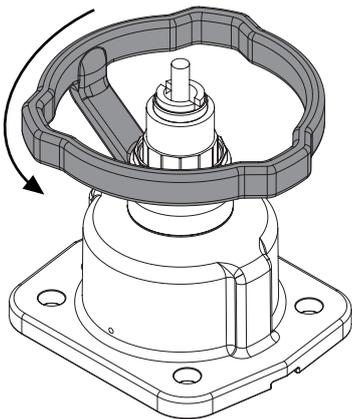
Setting the seal adjuster

- 29. Move the actuator to the desired closed position by actuating the handwheel.
- 30. Observe the permissible operating torques.

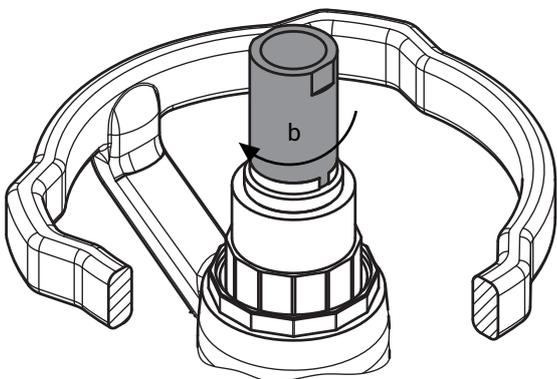


- 31. Turn the seal adjuster **c** upwards in an anticlockwise direction as far as it will go.

Setting the stroke limiter



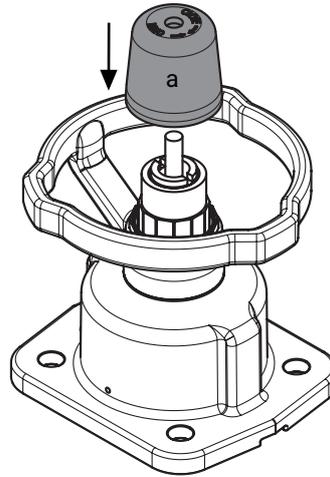
- 32. Move the actuator to the desired open position by actuating the handwheel.



- 33. Turn the stroke limiter clockwise and downwards as far as it will go using the setting tool **b** supplied with the product.

NOTICE

► The seal adjuster must **not** turn with it during this process.

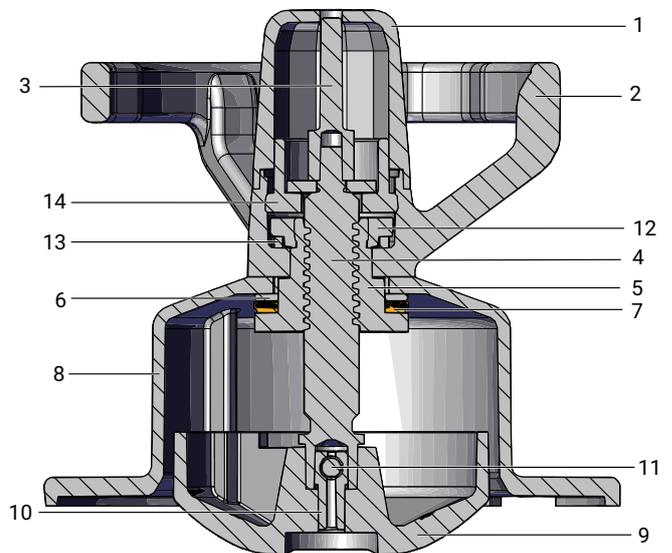


Completing the settings

- 34. Put the protective cap **a** in place and align the flats by using a light twisting movement.
- 35. Press the protective cap **a** down.

GEMÜ 653

Diaphragm size 80–100 (type S)



Item	Name
1	Protective cap
2	Handwheel
3	Indicator spindle
4	Threaded spindle
5	Coupling
6	Counter disc
7	Axial needle roller
8	Bonnet

Item	Name
9	Metal compressor
10	Adapter
11	Grooved pin
12	Two-hole nut
13	Wave spring
14	Distance piece/seal adjuster

11 Commissioning

WARNING



Corrosive chemicals!

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

CAUTION

Leakage

- ▶ Emission of dangerous substances.
- Provide for precautionary measures against exceeding the maximum permissible pressure.

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.
2. Flush the piping system of new plants and following repair work.
 - ⇒ Harmful foreign matter has been removed.
 - ⇒ The product is ready for use.
3. Commission the product.

12 Operation

The product is manually operated.

13 Troubleshooting

Error	Error cause	Troubleshooting
Working medium escaping from leak detection hole	Shut-off diaphragm faulty	Check the shut-off diaphragm for potential damage, replace the diaphragm if necessary
The product does not open or does not open fully	Actuator defective	Replace the actuator
	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Stroke limiter is incorrectly set	Readjust stroke limiter
	For additional function "K and B (MAG/LOC)", the locking device is closed	Unlock the locking device
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check diaphragm and valve body for potential damage, replace damaged parts if necessary
	Valve body leaks or is 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
	Seal adjuster is incorrectly set	Readjust the seal adjuster
	For additional function "F and B (MAG/LOC)", the locking device is closed	Unlock the locking device
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
	For additional function "B (MAG/LOC)", the locking device is closed	Unlock the locking device
	Threaded spindle seized	Depending on the operating conditions, regrease the threaded spindle, especially a valve that is autoclaved; replace the actuator if necessary.
	Release the seal adjuster and the stroke limiter	See "Setting the seal adjuster", point 5.
Proximity switch constantly responds	An incorrect proximity switch is being used	Only use proximity switches that can be flush-mounted

14 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.

⚠ WARNING



Risk of crushing due to moving parts when the valve is not installed!

- ▶ Upper limbs may get into the valve body openings while working on the valve.
- Ensure that the valve is in the respective end position.
- Do not reach into the crushing area through the valve body openings.

⚠ CAUTION



Hot plant components!

- ▶ Burns
- Only work on plant that has cooled down.
- Wear protective gear.

⚠ CAUTION

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

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

The operator must carry out regular visual examinations of the valves, depending on the operating conditions and the potentially hazardous situations, in order to prevent leakage and damage. The valve also has to be disassembled and checked for wear in the corresponding intervals. (see "Fitting/removing spare parts", page 56)

NOTICE

- ▶ Service and maintenance:
Depending on the operating conditions, regrease the threaded spindle, especially if a valve is autoclaved. GEMÜ recommends the grease Boss-Fluorine Y 108/00 (99099484). (see "Regreasing the threaded spindle", page 60)

14.1 Spare parts

Item	Name	Order designation
1	Valve body	K600...
2	Diaphragm	600...M
18	Bolt	653...S30...
19	Washer	654...S30...
20	Nut	
A	Actuator	9653... 9654...

14.2 Fitting/removing spare parts

14.2.1 Valve disassembly (removing the actuator from the body)

1. Move the actuator **A** to the open position.
2. Remove the actuator **A** from the valve body **1**.
3. Move the actuator **A** to the closed position.

NOTICE

- 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).

14.2.2 Removing the diaphragm

NOTICE

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

1. Unscrew the diaphragm or pull it out (diaphragm size 8).
2. Clean all parts so that they are free of remains of product and contaminants. Take care not to scratch or damage the parts in the process.
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

14.2.3 Mounting the diaphragm

14.2.3.1 General information

NOTICE

- Mount the correct diaphragm for the valve (suitable for medium, medium concentration, temperature and pressure). The shut-off diaphragm is a wearing part. Check the technical condition and function of the valve prior to commissioning and during the entire 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 valve. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the valve is no longer ensured.

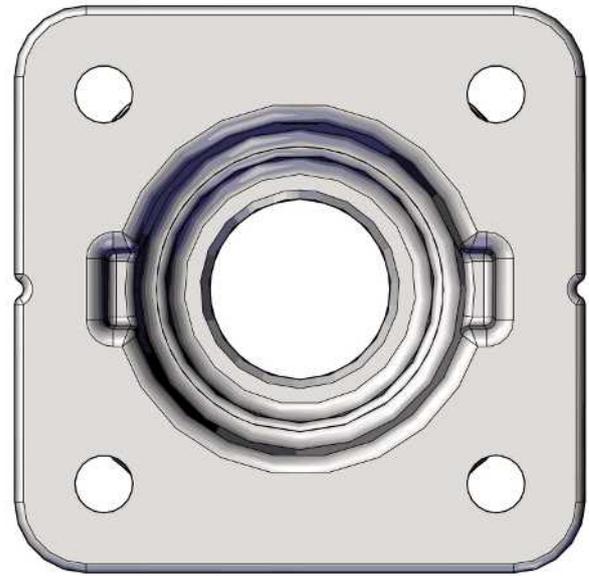
NOTICE

- An incorrectly mounted diaphragm may cause valve leakage/emission of medium. In this case, remove the diaphragm, check the complete valve and diaphragms and reassemble again in accordance with the following instructions.

Diaphragm size 8:

The compressor is fixed to the spindle.

Compressor and actuator flange seen from below:



Diaphragm size 10:

The compressor is loose.

Compressor and actuator flange seen from below:

Figure 1

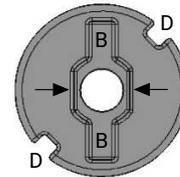
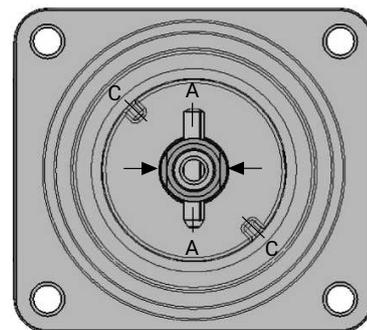


Figure 2



Anti-twist system of the spindle at the compressor

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

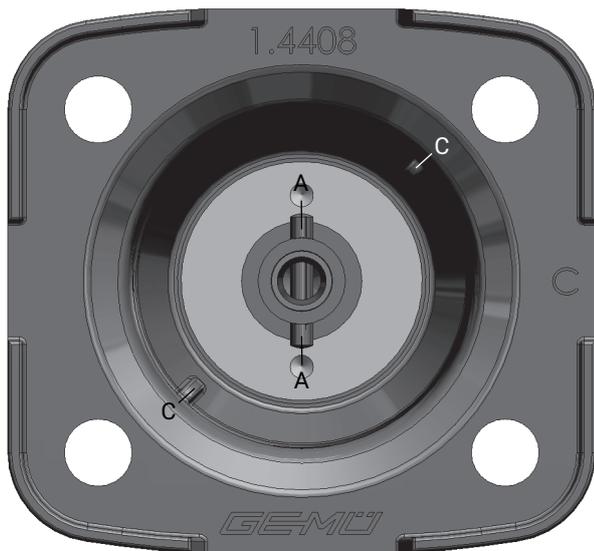
If the actuator spindle is not in the correct position, it must be turned to the correct position. The position of **A** is offset by 45° to the position of **C**.

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

Diaphragm sizes 25–80:

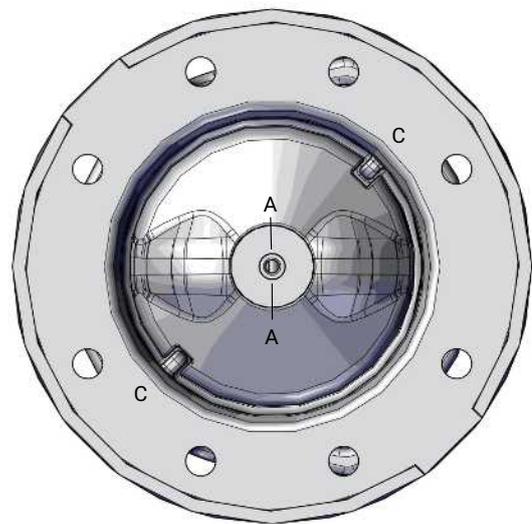
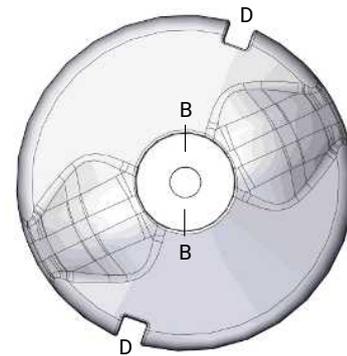
The compressor is loose.

Compressor and actuator flange seen from below:



Diaphragm size 100:

The diaphragm is round. Compressor and actuator flange seen from below:



Place the compressor loosely on the actuator spindle, fit **A** into **B** and **D** into **C**.

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

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

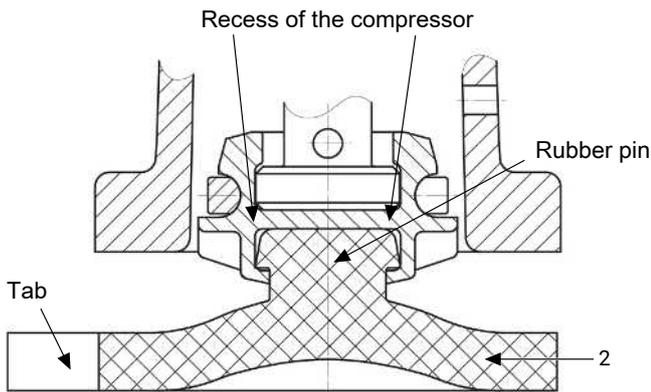
14.2.3.2 Mounting a concave diaphragm

⚠ CAUTION	
	Damage to the diaphragm if installed incorrectly!

NOTICE	
▶ To mount the diaphragm, the actuator must be removed.	

Diaphragm size 8

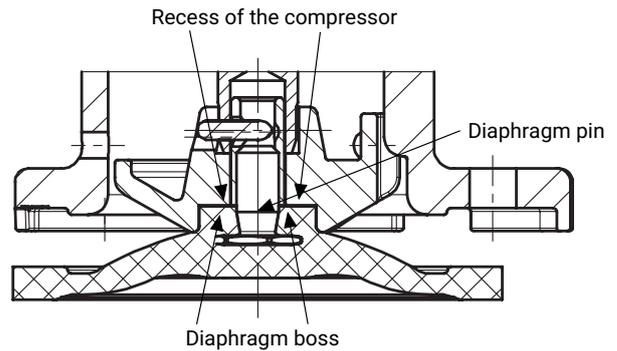
Push-fit diaphragm:



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

Diaphragm sizes 10–100

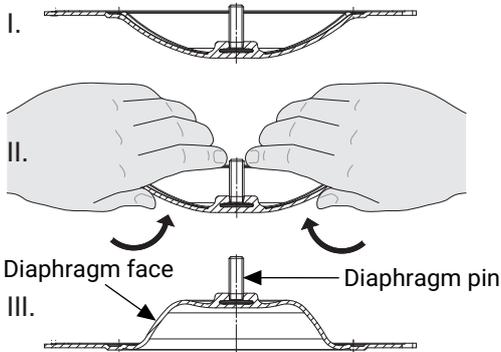
Threaded pin type diaphragm:



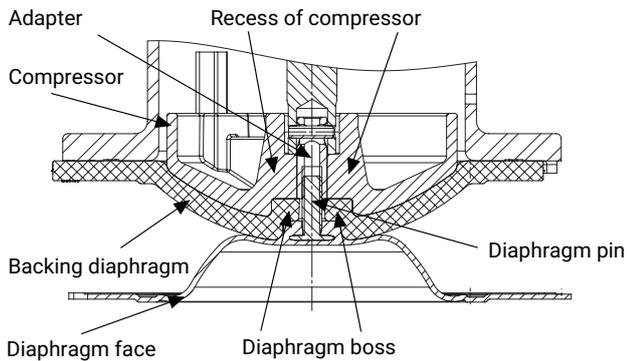
5. Move the actuator **A** to the closed position.
6. Place the compressor loosely on the actuator spindle, fit **A** into **B** and **D** into **C** (see "General information").
7. Check whether the compressor is resting in the guides.
8. Manually screw the new diaphragm into the compressor tightly.
9. Check whether the diaphragm boss is in the recess of the compressor.
10. If it is difficult to screw it in, check the thread and replace damaged parts (only use genuine parts from GEMÜ).
11. When clear resistance is felt, turn back the diaphragm anticlockwise only until its bolt holes are in correct alignment with the bolt holes of the actuator.

14.2.3.3 Mounting a convex diaphragm

1. Move the actuator **A** to the closed position.
2. Place the compressor loosely on the actuator spindle, fit **A** into **B** and **D** into **C** (see "General information").
3. Check whether the compressor is resting in the guides.
4. Invert the new diaphragm face manually; for larger diameters, use a clean, padded mat.



5. Position the new backing diaphragm on the compressor.
6. Position the diaphragm face on the backing diaphragm. In doing so, carefully guide the diaphragm pin through the recess in the centre of the backing diaphragm.
7. Manually screw the diaphragm face into the compressor tightly. The diaphragm boss must be in the recess of the compressor.



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

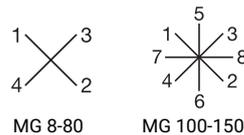
14.2.4 Mounting the actuator on the valve body

NOTICE

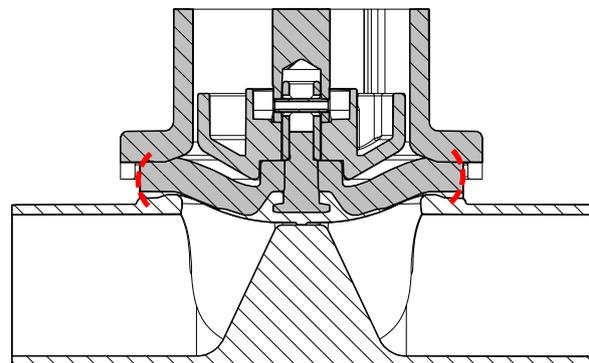
Diaphragms set in the course of time!

- ▶ 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 approx. 50% of 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. Tighten the bolts **18**, washers **19** and nuts **20** by hand (hand-tight only) (fastening elements may vary depending on the diaphragm size and/or valve body version).
4. Move the actuator **A** to the closed position.
5. Fully tighten the bolts **18** with nuts **20** diagonally.



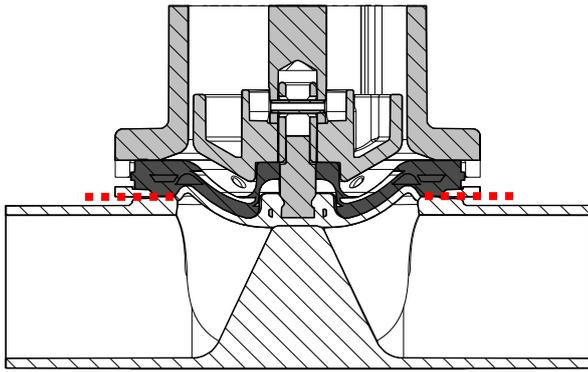
Diaphragm code 3A/13, 17, 19, 5Q, 54, 71



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

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

Diaphragm code 5M



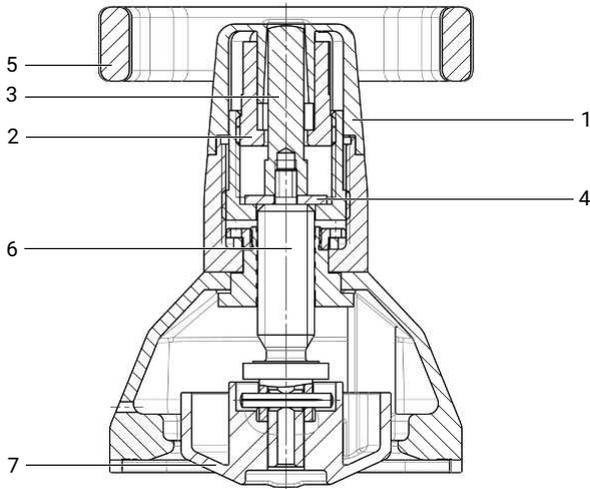
The diaphragm lies level with and parallel to the valve body.

7. **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.
8. With the valve fully assembled, check the function and tightness.

NOTICE

► Service and maintenance:
Diaphragms set over the course of time. After fitting and commissioning the valve, always retighten the bolts **18** or nuts **20** (see chapter "Spare parts").

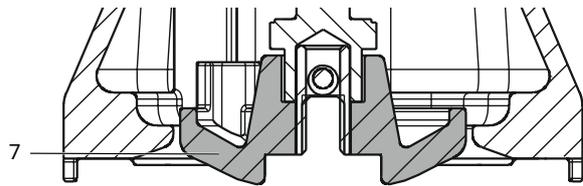
14.3 Regreasing the threaded spindle



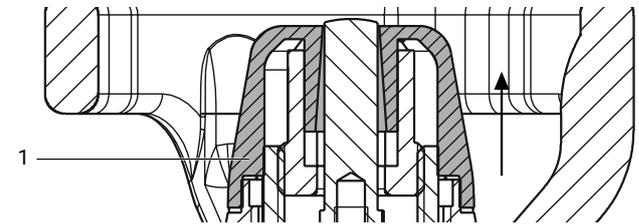
Item	Name
1	Black protective cap
2	Green stroke limiter
3	Optical position indicator
4	Washer
5	Handwheel
6	Threaded spindle
7	Compressor

Particularly for valves that are sterilized and/or autoclaved, it is necessary to regrease the threaded spindle according to the operating conditions.

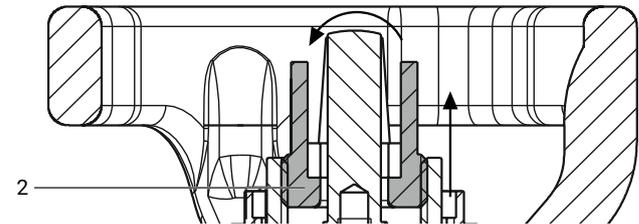
1. Remove the actuator from the valve body (see "Valve disassembly (removing the actuator from the body)", page 56).
2. Remove the diaphragm (see "Removing the diaphragm", page 56).
3. Leave the compressor **7** for the spindle lock in the actuator.



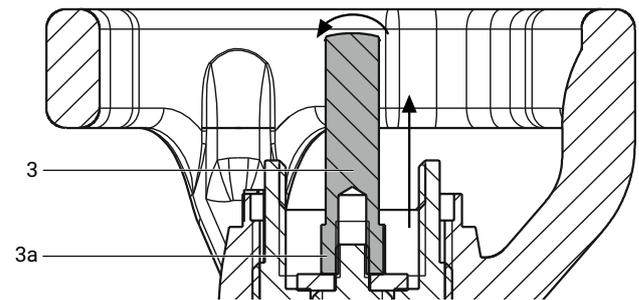
4. Pull off the black protective cap **1**.



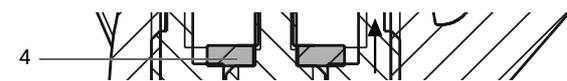
5. Unscrew and remove the green stroke limiter **2**.



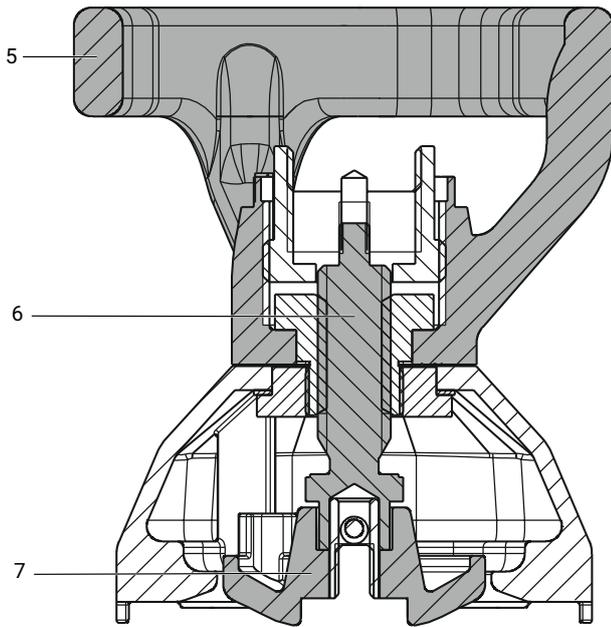
6. Unscrew the optical position indicator **3** using a suitable open-end wrench on the square drive **3a** and remove it.



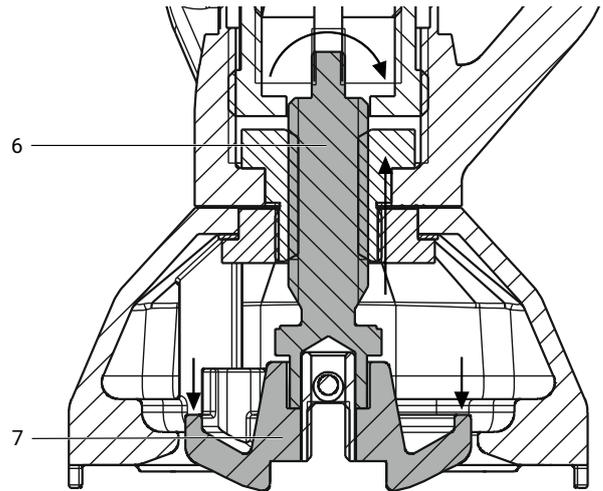
7. Remove the washer **4** underneath.



8. Use the handwheel **5** to move the actuator to the closed position. Fully unscrew the threaded spindle **6** with the compressor **7** from the hub.



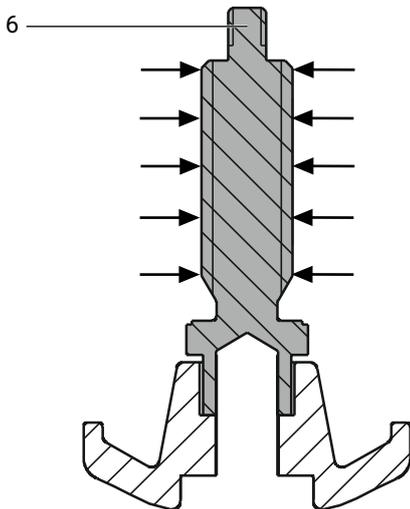
Screw in the threaded spindle **6** with the compressor **7** into the actuator. The compressor **7** must engage in the guide.



9. Degrease the threaded spindle **6** with suitable cleaner.

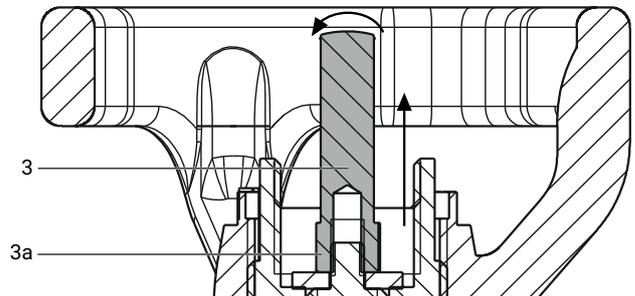
11. Move the actuator to the open position.

12. Insert the washer **4**.

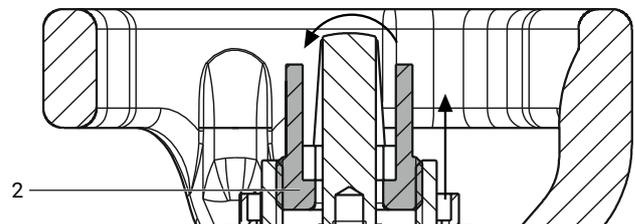
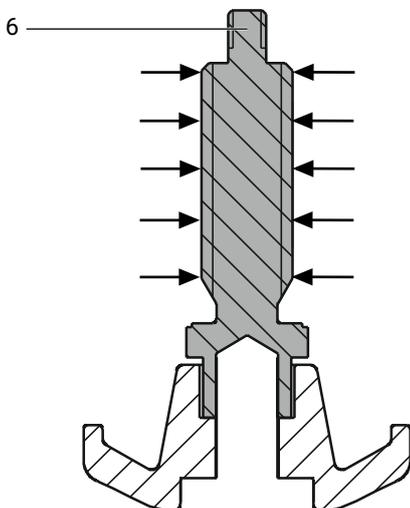


13. Coat the female thread of the optical position indicator **3** with medium-strength thread-locking compound (example: Loctite 242) and screw it onto the threaded spindle **6**. Tighten using a suitable open-end wrench on the square drive **3a**.

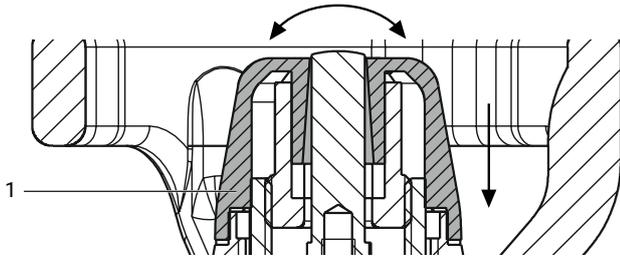
10. Lubricate the threaded spindle **6** (GEMÜ recommends the grease Boss-Fluorine Y 108/00 (99099484)).



14. Screw in the green stroke limiter **2** as far as it will go.



15. Fit the black protective cap **1** on it, align the flats to one another by twisting slightly, and then press down.



- 16. Mount the diaphragm (see "Mounting the diaphragm", page 56).
- 17. Mount the actuator on the valve body (see "Mounting the actuator on the valve body", page 59).

15 Actuator versions

15.1 Actuator versions with electrical locking device

With GEMÜ 653/654, the locking device is actuated by a magnet (see figure below).

With additional functions B, K, F (locking device), locking and unlocking is performed using electricity (magnet; order data: MAG).

Design in "normally closed (locking pin extended)" in 24 V= (see order code).

The locking device is also available with ATEX approval.



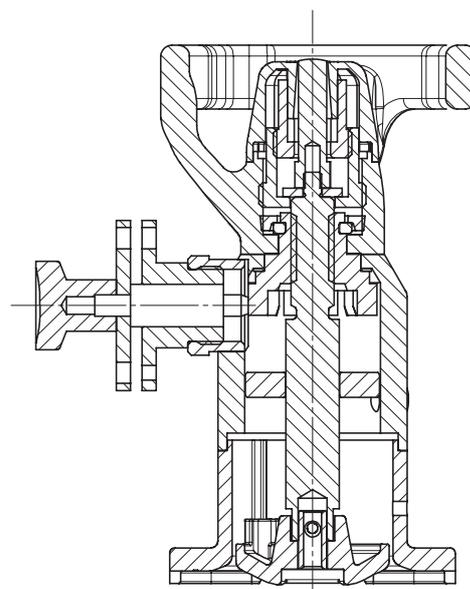
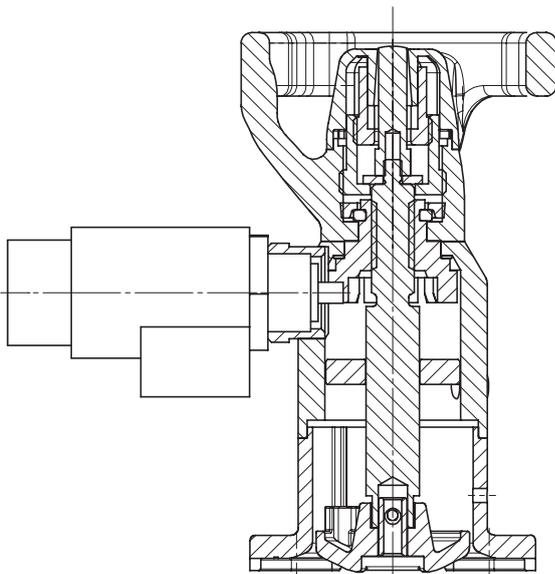
NOTICE	
▶	Depending on how it is operated, the magnet of the LOC locking device may become hot.

15.2 Actuator version with mechanical locking device

A mechanical locking device is available as an actuator version for GEMÜ 653/654.

The additional functions B, K, F (locking device) can be locked or unlocked mechanically (order data: LOC).

The delivery may include (L) or may not include (B) a padlock (see order code).



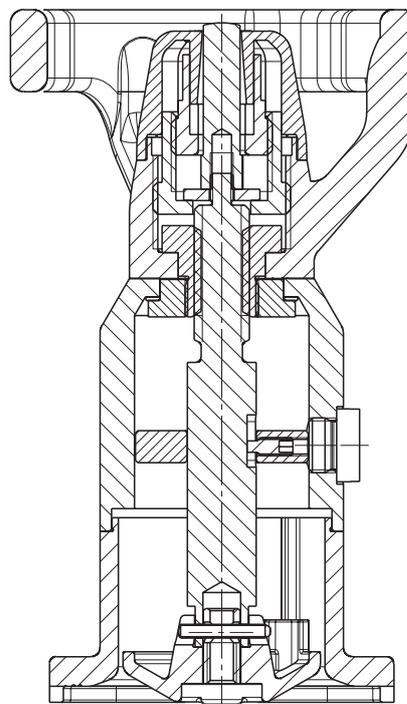
15.3 Actuator version for mounting proximity switches



NOTICE

► Only use proximity switches that can be mounted flush.

An actuator version for mounting proximity switches is available for GEMÜ 653/654 (additional function A, see order code). Proximity switches can also be mounted in combination with the additional function B, K, F (see order code).



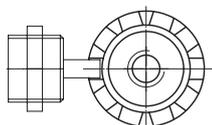
NOTICE

► Order the magnets, locks, etc. for the additional "locking" function separately as accessories. Only in conjunction with the additional actuator functions B, K, F.

Additional function B, K, F

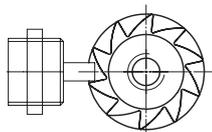
Types of locking devices:

B



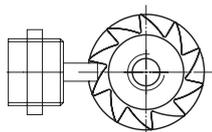
B
Attachment
Locking device (both directions),
Proximity switch possible

K

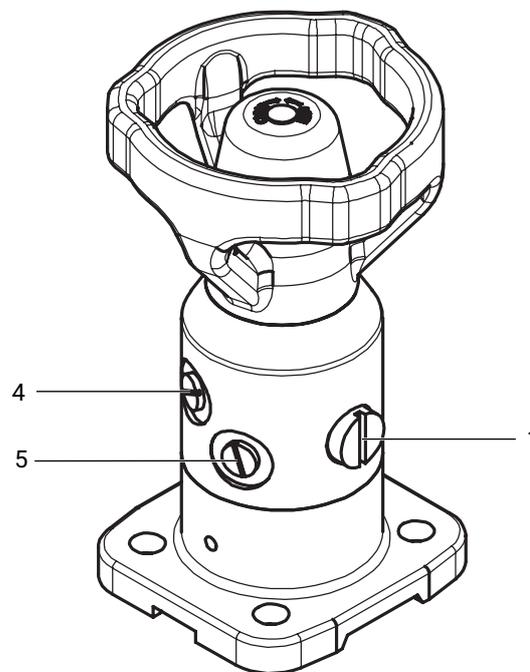


K
Attachment
Locking device to prevent opening,
Proximity switch possible

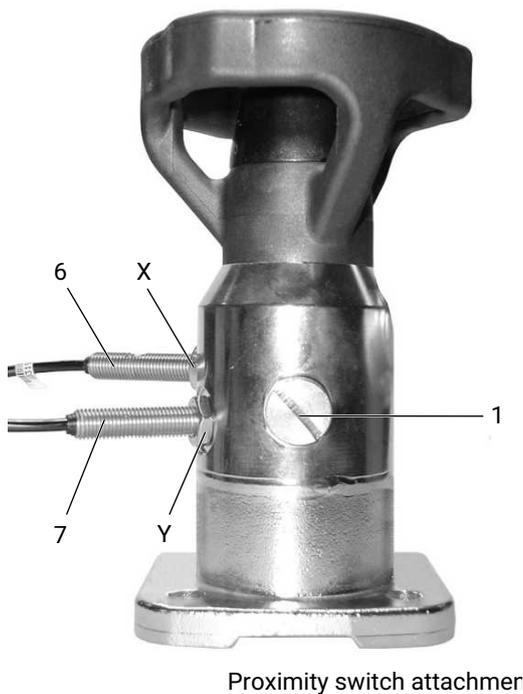
F



F
Attachment
Locking device to prevent closing,
Proximity switch possible



As supplied



Proximity switch attachmer

The proximity switches are set after complete assembly of the valve body.

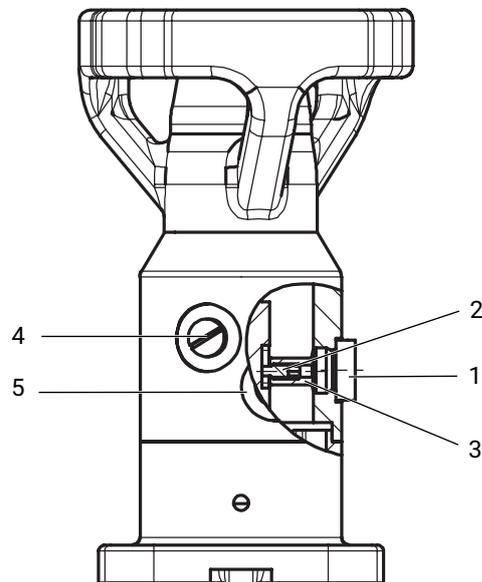
Setting the proximity switch for OPEN position:

1. Remove the upper screw 4 (see "As supplied") on the actuator.
2. Move the actuator to the open position.
3. At least two thirds of the damping cam 3 must be visible. Otherwise, proceed as follows:
 - Remove the threaded plug 1.
 - Undo the grub screw 2 by 1–1.5 turns. Do not unscrew the grub screw 2 any more. Otherwise it may fall inside the valve.
 - Correct the position of the damping cam 3.
 - Secure the position of the damping cam 2 with a grub screw.
 - Screw the threaded plug 1 back in.
4. Carefully turn the proximity switch 6 by hand until it rests against the damping cam 3.
5. Turn the proximity switch 6 back by $\frac{1}{2}$ to $\frac{3}{4}$ of a turn.
6. Secure this position by fixing it with the nut X.

Setting the proximity switch for CLOSED position:

7. Remove the lower screw 5 (see "As supplied") on the actuator.
8. Move the actuator to the closed position.
9. At least two thirds of the damping cam 3 must be visible. Otherwise, proceed as follows:
 - Remove the threaded plug 1.
 - Undo the grub screw 2 by 1–1.5 turns. Do not unscrew the grub screw 2 any more. Otherwise it may fall inside the valve.
 - Correct the position of the damping cam 3.

- Secure the position of the damping cam 2 with a grub screw 3.
 - Screw the threaded plug 1 back in.
10. Carefully turn the proximity switch 7 by hand until it rests against the damping cam 3.
 11. Turn the proximity switch 7 back by $\frac{1}{2}$ to $\frac{3}{4}$ of a turn.
 12. Secure this position by fixing it with the nut Y.



Damping cam setting

16 Removal from piping

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

17 Disposal

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

18 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

19 EU Declaration of Conformity



Version 1

GEMÜ**EU-Konformitätserklärung**
EU Declaration of Conformity

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1
74635 Kupferzell
Deutschland

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt: GEMÜ 653 / 654**Product:** GEMÜ 653 / 654**Produktname:** Manuell betätigtes Membranventil**Product name:** Manually operated diaphragm valve**Richtlinien/Verordnungen:****Directives/Regulations:**PED 2014/68/EU¹⁾**Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:****The following harmonized standards (or parts thereof) have been applied:**

EN 13397:2001

Weitere angewandte Normen:**Further applied norms:**

AD 2000

¹⁾ PED 2014/68/EU**Benannte Stelle:**
TÜV Rheinland Industrie Service GmbH
Am Grauen Stein 1
51105 Köln**Kennnummer der benannten Stelle:** 0035**Nr. des QS-Zertifikats:** 01 202 926/Q-02 0036**Angewandte(s) Konformitätsbewertungsverfahren:** Modul H**Hinweis für Produkte mit einer Nennweite ≤ DN 25:**

Die Produkte werden entwickelt und produziert nach GEMÜ eigenen Verfahrensangaben und Qualitätsstandards, welche die Forderungen der ISO 9001 und der ISO 14001 erfüllen. Die Produkte dürfen gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU keine CE-Kennzeichnung tragen.

Bemerkungen:

Der Einsatz des Produkts in Kategorie III gemäß Druckgeräterichtlinie 2014/68/EU sowie die Verwendung mit instabilen Gasen ist nicht zulässig.

¹⁾ PED 2014/68/EU**Notified body:**
TÜV Rheinland Industrie Service GmbH
Am Grauen Stein 1
51105 Cologne, Germany**ID number of the notified body:** 0035**No. of the QA certificate:** 01 202 926/Q-02 0036**Conformity assessment procedure(s) applied:** Module H**Information for products with a nominal size ≤ DN 25:**

The products are developed and produced according to GEMÜ's in-house process instructions and standards of quality which comply with the requirements of ISO 9001 and ISO 14001. According to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU, these products must not be identified by a CE-marking.

Remarks:

Use of the product in category III in accordance with Pressure Equipment Directive 2014/68/EU and use with unstable gases are not permissible.

i.V. M. Barghoorn
Leiter Globale Technik
Kupferzell, 17.12.2025GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
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Subject to alteration

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