GEMÜ 650TL

Manually operated diaphragm valve

Features

- Fail safe function (closed)
- CIP/SIP capable
- Proximity switches can be fitted for recording the valve position
- Closing stroke limiter (MG 8)
- Opening and closing stroke limiter (MG 10 + 25)

Description

Diaphragm valve GEMÜ 650TL is a manually operated diaphragm valve with a pneumatic fail safe function. The valve can only be operated manually (opened/closed) if the actuator is supplied with compressed air. If this supply is interrupted, the valve closes due to the force of the spring and can no longer be opened manually.

Technical specifications

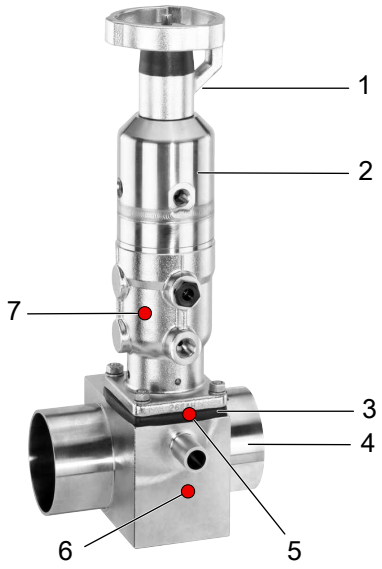
- **Media temperature :** -10 to 100 °C
- **Sterilization temperature:** Max. 150 °C
- **Ambient temperature:** 0 to 60 °C
- **Operating pressure :** 0 to 10 bar
- **Nominal sizes:** DN 4 to 25
- **Body configurations:** 2/2-way body I i-body I Multi-port body I Tank valve body I T-body I Welding configuration
- **Connection types:** Clamp I Flange I Spigot I Threaded connection
- **Connection standards:** ANSI I ASME I BS I DIN I EN I ISO I JIS I SMS
- **Body materials:** 1.4435 (316L), block material I 1.4435 (316L), forged material I 1.4435 (BN2), block material I 1.4435 (BN2), forged material I 1.4435, investment casting material I 1.4539 (904L), forged material
- **Diaphragm materials:** EPDM I PTFE/EPDM
- **Conformities:** 3A I CRN I EAC I FDA I Oxygen I Reg. (EU) No. 10/2011 I Regulation (EC) No. 1935/2004 I Regulation (EC) No. 2023/2006 I TA Luft (German Clean Air Act) I USP

Technical data depends on the respective configuration

further information
webcode: GW-650TL

Product description

Construction



Item	Name	Materials
1	Handwheel	Stainless steel
2	Membrane actuator	Stainless steel
3	Diaphragm	EPDM PTFE/EPDM (one-piece, two-piece)
4	Valve body	1.4408, investment casting 1.4408, PFA lined 1.4435, investment casting 1.4435 (F316L), forged body 1.4435 (F316L), block material 1.4435 (BN2), forged body, Δ Fe < 0.5% 1.4435 (BN2), block material, Δ Fe < 0.5% 1.4539, forged body
5	CONEXO diaphragm RFID chip (see Conexo information)	
6	CONEXO body RFID chip (see Conexo information)	
7	CONEXO actuator RFID chip (see Conexo information)	

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

Ordering

GEMÜ Conexo must be ordered separately with the ordering option "CONEXO".

Availabilities

Availability of grades of surface finish

Internal surface finishes for forged and block material bodies [1)]

Process contact surfaces	Mechanically polished [2)]		Electropolished	
	Hygiene class DIN 11866	Code	Hygiene class DIN 11866	Code
Ra ≤ 0.80 µm	H3	1502	HE3	1503
Ra ≤ 0.60 µm	-	1507	-	1508
Ra ≤ 0.40 µm	H4	1536	HE4	1537
Ra ≤ 0.25 µm [3)]	H5	1527	HE5	1516

Media wetted internal surface finishes in accordance with ASME BPE 2016 [4)]	Mechanically polished [2)]		Electropolished	
	ASME BPE surface designation	Code	ASME BPE surface designation	Code
Ra max. = 0.76 µm (30 µinch)	SF3	SF3	-	-
Ra max. = 0.64 µm (25 µinch)	SF2	SF2	SF6	SF6
Ra max. = 0.51 µm (20 µinch)	SF1	SF1	SF5	SF5
Ra max. = 0.38 µm (15 µinch)	-	-	SF4	SF4

Internal surface finishes for investment cast bodies

Process contact surfaces	Mechanically polished [2)]	
	Hygiene class DIN 11866	Code
Ra ≤ 6.30 µm	-	1500
Ra ≤ 0.80 µm	H3	1502
Ra ≤ 0.60 µm [5)]	-	1507

Ra acc. to DIN EN ISO 4288 and ASME B46.1

1) Surface finishes of customized valve bodies may be limited in special cases.

2) Or any other finishing method that meets the Ra value (acc. to ASME BPE).

3) The smallest possible Ra finish for pipe connections with an internal pipe diameter < 6 mm is 0.38 µm.

4) When using these surfaces, the bodies are marked according to the specifications of ASME BPE.
The surfaces are only available for valve bodies which are made of materials (e.g. GEMÜ material codes 40, 41, F4, 44)) and use connections (e.g. GEMÜ connection codes 59, 80, 88) according to ASME BPE.

5) Not possible for GEMÜ connection code 59, DN 8 and GEMÜ connection code 0, DN 4.

Availability of valve bodies

Spigot

MG	DN	Connection type code [1]																	
		0		16	17		18	35	36	37		55	59		60		63	64	65
		Material code [2]																	
		C3	40, 42, F4	40, 42, F4	C3	40, 42, F4	40, 42, F4	40, 42, F4	40, 42, F4	C3	40, 42, F4	40, 42, F4	C3	40, 42, F4	C3	40, 42, F4	40, 42, F4	40, 42, F4	40, 42, F4
8	**4**	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	X	X	-	-	X	-	-	-	-	-	-	X	X	-	X
	8	-	-	-	X	X	-	-	X	-	-	X	X	X	X	X	X	-	X
	10	-	-	X	X	X	X	-	-	-	-	X	X	X	-	-	-	-	-
	15	-	-	-	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-
10	**10**	-	-	X	X	X	X	-	X	-	-	X	-	X	X	X	X	-	X
	15	-	X	X	X	X	X	-	X	-	-	X	-	X	X	X	X	X	X
	20	-	-	-	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-
25	**15**	-	X	X	X	X	X	-	X	-	-	-	-	-	X	X	X	X	X
	20	-	X	X	X	X	X	-	X	-	-	X	X	X	X	X	X	X	X
	25	-	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X

MG = diaphragm size
X = Standard

1) **Connection type**
Code 0: Spigot DIN
Code 16: Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)
Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2
Code 18: Spigot DIN 11850 series 3
Code 35: Spigot JIS-G 3447
Code 36: Spigot JIS-G 3459 schedule 10s
Code 37: Spigot SMS 3008
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 60: Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B
Code 63: Spigot ANSI/ASME B36.19M schedule 10s
Code 64: Spigot ANSI/ASME B36.19M schedule 5s
Code 65: Spigot ANSI/ASME B36.19M schedule 40s

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting
Code F4: 1.4539 / UNS N08904, forged body

Threaded connection

MG	DN	Connection type code [1]
		6, 6K
		Material code [2]
		40, 42
8	8	-
	10	W
10	10	W
	12	-
	15	W
25	15	W
	20	W
	25	W

MG = diaphragm size
W = welded assembly

1) **Connection type**
Code 6: Threaded spigot DIN 11851
Code 6K: Cone spigot and union nut DIN 11851

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%

Flange

Diaphragm size	DN	Connection type code [1]						
		8			38	39		
		Material code [2]						
		C3	39	40, 42	39	C3	39	40, 42
25	15	W	X	W	-	W	X	W
	20	W	X	W	X	W	X	W
	25	W	X	W	X	W	X	W

MG = diaphragm size
X = Standard
W = welded assembly

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

2) **Valve body material**
Code 39: 1.4408, PFA lined
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting

Clamp

MG	DN	Connection type code [1]						
		80	82	88	8A	8E	8P	8T
		Material code [2]						
		40, 42, F4						
8	6	-	K	-	K	-	-	-
	8	K	K	-	K	-	K	-
	10	K	-	-	W	-	K	-
	15	K	-	W	-	-	K	W
10	10	-	K	-	K	-	-	-
	15	K	W	K	K	-	K	K
	20	K	-	K	-	-	K	K
25	15	-	W	-	K	-	-	-
	20	K	K	K	K	-	K	K
	25	K	K	K	K	K	K	K

MG = diaphragm size
K = connections completely machined (not welded)
W = welded assembly

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

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code F4: 1.4539 / UNS N08904, forged body

Availability of product conformity

Foodstuff	Diaphragm material code [1]
3A	54, 5M

Code 54 only for diaphragm size 8, 10
Code 5M only for diaphragm size 10, 25

1) **Diaphragm material**
Code 54: PTFE/EPDM one-piece
Code 5M: PTFE/EPDM two-piece

Order data

Order codes

1 Type	Code
Diaphragm valve, pneumatically operated, stainless steel piston actuator electropolished, optical position indicator	650

2 DN	Code
DN 4	4
DN 6	6
DN 8	8
DN 10	10
DN 15	15
DN 20	20
DN 25	25

3 Body configuration	Code
Tank bottom valve body	B
2/2-way body	D
T body	T
Body configuration code B: Dimensions and designs on request	
Body configuration code T: Dimensions on request	

4 Connection type	Code
Spigot	
Spigot DIN	0
Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)	16
Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2	17
Spigot DIN 11850 series 3	18
Spigot JIS-G 3447	35
Spigot JIS-G 3459 schedule 10s	36
Spigot SMS 3008	37
Spigot BS 4825, Part 1	55
Spigot ASME BPE/DIN EN 10357 series C (from 2022 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
Spigot ANSI/ASME B36.19M schedule 5s	64
Spigot ANSI/ASME B36.19M schedule 40s	65
Threaded connection	
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K
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

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

5 Valve body material	Code
1.4408, PFA lined	39
1.4435 (F316L), forged body	40
1.4435 (316L), block material	41
1.4435 (BN2), forged body, Δ Fe < 0.5%	42
1.4435 (BN2), block material, Δ Fe < 0.5%	43
1.4435, investment casting	C3
1.4539 / UNS N08904, forged body	F4

6 Diaphragm material	Code
EPDM	13
EPDM	3A
EPDM	17
EPDM	19
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
Note: The PTFE/EPDM diaphragm (code 5M) is available from diaphragm size 10.	
Note: The EPDM diaphragm (code 3A) is only available for diaphragm size 8.	

7 Control function	Code
Normally closed (NC)	1

8 Actuator version	Code
DN 4 - 15, diaphragm size 8	
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned 90° offset to flow direction	0LL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned in-line with flow direction	0TL

8 Actuator version	Code
Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction	0RL
DN 10–20, diaphragm size 10	
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned in-line with flow direction	1HL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned 90° offset to flow direction	1LL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned 90° offset to flow direction	1ML
Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction	1RL
Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction	1SL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned in-line with flow direction	1TL
DN 15 - 25, diaphragm size 25	
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned in-line with flow direction	2HL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned 90° offset to flow direction	2LL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned 90° offset to flow direction	2ML
Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction	2RL
Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction	2SL
Manually operated with automatic closing function, control air connector and connections for proximity switches positioned in-line with flow direction	2TL

9 DN-2	Code
DN 4	4

9 DN-2	Code
DN 6	6
DN 8	8
DN 10	10
DN 15	15
DN 20	20
DN 25	25

10 Connection type for T body	Code
Spigot	
Spigot DIN	0
Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)	16
Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2	17
Spigot DIN 11850 series 3	18
Spigot JIS-G 3447	35
Spigot JIS-G 3459 schedule 10s	36
Spigot SMS 3008	37
Spigot BS 4825, Part 1	55
Spigot ASME BPE/DIN EN 10357 series C (from 2022 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
Spigot ANSI/ASME B36.19M schedule 5s	64
Spigot ANSI/ASME B36.19M schedule 40s	65
Threaded connection	
Threaded spigot DIN 11851	6
Cone spigot and union nut DIN 11851	6K
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, clamps SMS 3017 for pipe SMS 3008, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	8E
Clamp DIN 32676 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D	8P
Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	8T

11 Surface	Code
Ra ≤ 6.3 µm for media wetted surfaces, mechanically polished internal	1500

11 Surface	Code
Ra ≤ 0.8 µm for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1502
Ra ≤ 0.8 µm for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external	1503
Ra ≤ 0.6 µm for media wetted surfaces, mechanically polished internal	1507
Ra ≤ 0.6 µm for media wetted surfaces, electropolished internal/external	1508
Ra ≤ 0.25 µm for media wetted surfaces *), in accordance with DIN 11866 HE5, electropolished internal/external, *) for inner pipe diameter ≤ 6 mm, in spigot Ra ≤ 0.38 µm	1516
Ra ≤ 0.25 µm for media wetted surfaces *), in accordance with DIN 11866 H5, mechanically polished internal, *) for inner pipe diameter < 6 mm, in spigots Ra ≤ 0.38 µm	1527
Ra ≤ 0.4 µm for media wetted surfaces, in accordance with DIN 11866 H4, mechanically polished internal	1536
Ra ≤ 0.4 µm for media wetted surfaces, in accordance with DIN 11866 HE4, electropolished internal/external	1537
Ra max. 0.51 µm (20 µin.) for media wetted surfaces, in accordance with ASME BPE SF1, mechanically polished internal	SF1

11 Surface	Code
Ra max. 0.64 µm (25 µin.) for media wetted surfaces, in accordance with ASME BPE SF2, mechanically polished internal	SF2
Ra max. 0.76 µm (30 µin.) for media wetted surfaces, in accordance with ASME BPE SF3, mechanically polished internal	SF3
Ra max. 0.38 (15 µin.) µm for media wetted surfaces, in accordance with ASME BPE SF4, electropolished internal/external	SF4
Ra max. 0.51 µm (20 µin.) for media wetted surfaces, in accordance with ASME BPE SF5, electropolished internal/external	SF5
Ra max. 0.64 µm (25 µin.) for media wetted surfaces, in accordance with ASME BPE SF6, electropolished internal/external	SF6

12 Special version	Code
Without	
Special version for 3A	M
Special version for oxygen, maximum medium temperature: 60 °C	S

13 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Ordering option	Code	Description
1 Type	650	Diaphragm valve, pneumatically operated, stainless steel piston actuator electropolished, optical position indicator
2 DN	25	DN 25
3 Body configuration	T	T body
4 Connection type	60	Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B
5 Valve body material	41	1.4435 (316L), block material
6 Diaphragm material	17	EPDM
7 Control function	1	Normally closed (NC)
8 Actuator version	2SL	Manually operated with automatic closing function, control air connector positioned 90° offset to flow direction, connections for proximity switches in-line with flow direction
9 DN-2	25	DN 25
10 Connection type for T body	60	Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B
11 Surface	1503	Ra ≤ 0.8 µm for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external
12 Special version	M	Special version for 3A
13 CONEXO		Without

Technical data

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.

Control medium: Inert gases

Temperature

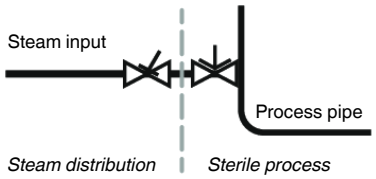
Media temperature: -10 — 100 °C

For special function S: 0 — 60 °C

Sterilization temperature:

EPDM (code 3A/13)	max. 150 °C, max. 60 min per cycle
EPDM (code 17)	max. 150 °C, max. 180 min per cycle
EPDM (code 19)	max. 150 °C, max. 180 min per cycle
PTFE/EPDM (code 54)	max. 150 °C, constant temperature per cycle
PTFE/EPDM (code 5M)	max. 150 °C, constant temperature per cycle

The sterilization temperature is only valid for steam (saturated steam) or superheated water.
If the sterilization temperatures listed above are applied to the EPDM diaphragms for longer periods of time, the service life of the diaphragms will be reduced. In these cases, maintenance cycles must be adapted accordingly.
PTFE diaphragms can also be used as steam barriers; however, this will reduce their service life. This also applies to PTFE diaphragms exposed to high temperature fluctuations. The maintenance cycles must be adapted accordingly. GEMÜ 555 and 505 globe valves are particularly suitable for use in the area of steam generation and distribution. The following valve arrangement for interfaces between steam pipes and process pipes has proven itself over time: A globe valve for shutting off steam pipes and a diaphragm valve as an interface to the process pipes.



Ambient temperature: 0 — 60 °C

Control medium temperature: max. 60 °C

Storage temperature: 0 — 40 °C

Pressure

Operating pressure:

Actuator version	DN	MG	Operating pressure	
			EPDM	PTFE
0TL, 0RL, 0LL	**4 - 15**	**8**	0 - 8	0 - 6
1TL, 1RL, 1LL	**10 - 20**	**10**	0 - 5	0 - 5
1HL, 1ML, 1SL			0 - 10	0 - 10
2TL, 2RL, 2LL	**15 - 25**	**25**	0 - 5	0 - 5
2HL, 2ML, 2SL			0 - 10	0 - 10

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.

Control pressure:

Control function 1

Actuator version	DN	MG	Control pressure
0TL, 0RL, 0LL	**4 - 15**	**8**	5.0 - 7.0
1TL, 1RL, 1LL	**10 - 20**	**10**	5.0 - 7.0
1HL, 1ML, 1SL			5.0 - 8.0
2TL, 2RL, 2LL	**15 - 25**	**25**	4.0 - 7.0
2HL, 2ML, 2SL			5.0 - 8.0

All pressures are gauge pressures.
MG = diaphragm size

Filling volume:

Control function 1

Actuator version	DN	MG	Filling volume [dm³]
0TL, 0RL, 0LL	**4 - 15**	**8**	0.01
1TL, 1RL, 1LL, 1HL, 1ML, 1SL	**10 - 20**	**10**	0.02
2TL, 2RL, 2LL, 2HL, 2ML, 2SL	**15 - 25**	**25**	0.06

Product conformity

Pressure Equipment Directive: 2014/68/EU

Machinery Directive: 2006/42/EC

Food:
FDA
Regulation (EC) No. 1935/2004
Regulation (EC) No. 10/2011
Regulation (EC) No. 2023/2006
USP Class VI
CRN
* depending on version and/or operating parameters

Oxygen: BAM compliant, the product is suitable for application with oxygen (special version code S)

TA Luft (German Clean Air Act): The product complies with the equivalence requirements of section 5.2.6.4 of the German Clean Air Act (TA Luft / VDI 2440 according to section 3.3.1.3)

FMEDA:

Product description: GEMÜ diaphragm valve 650TL
Device type: A
Fail safe function: Due to the fail safe function, the diaphragm valve is placed in the closed position (with control function 1).
HFT (Hardware Fault Tolerance): 0
MTTR (Mean Time To Restoration): 24 hours

Product description: GEMÜ diaphragm valve 650TLwith GEMÜ 032x pilot solenoid valve
Device type: A
Fail safe function: Due to the fail safe function, the diaphragm valve is placed in the closed position (with control function 1).
HFT (Hardware Fault Tolerance): 0
MTTR (Mean Time To Restoration): 24 hours

EAC: The product is certified according to EAC.

Mechanical data

Installation position: Optional

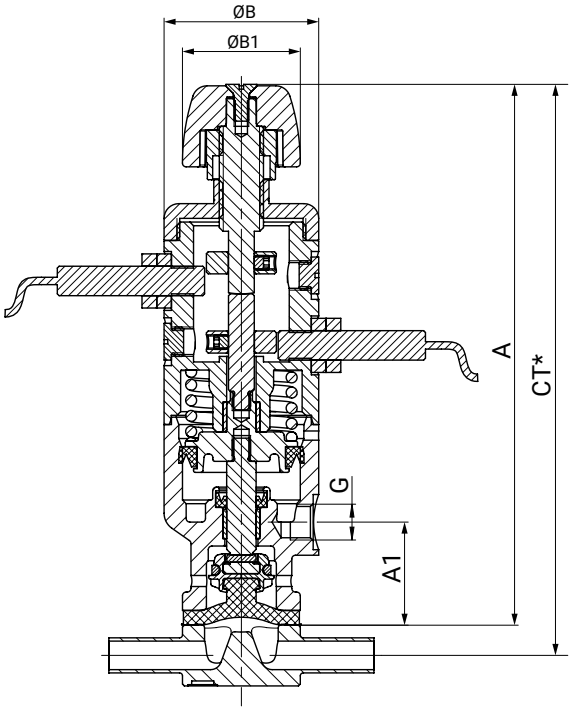
Observe the angle of rotation for optimized draining when it comes to installation.
See separate document, "Angle of rotation technical information".

Dimensions

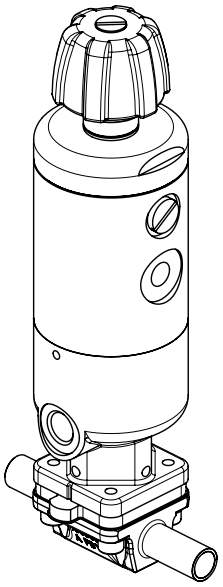
Actuator dimensions

Actuator version 0TL, 0RL, 0LL

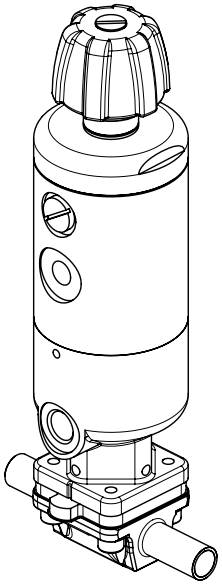
Actuator version 0TL
control air connector and connections for proximity switches positioned in-line with flow direction



Actuator version 0RL
control air connector positioned 90° offset to flow direction, connections for proximity switches positioned in-line with flow direction



Actuator version 0LL
control air connector and connections for proximity switches positioned 90° offset to flow direction

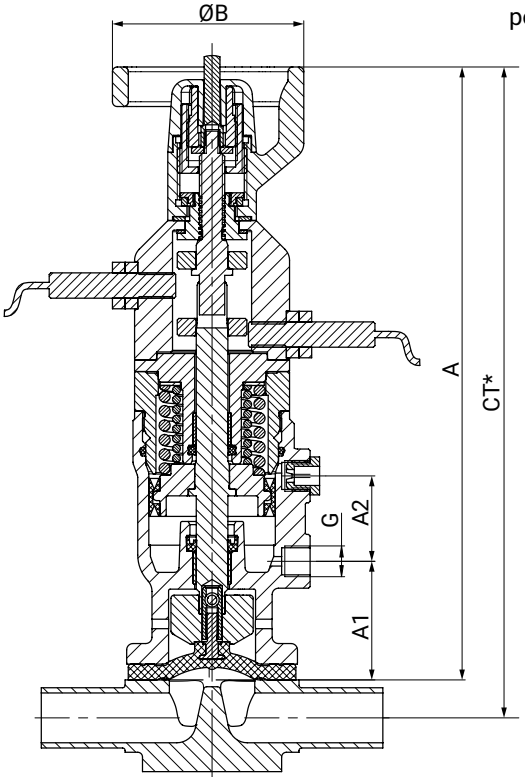


Actuator version	MG	A	A1	A2	ØB	ØB1	G
0TL, 0RL, 0LL	**8**	146.0	26.5	-	42.0	32.0	G 1/8

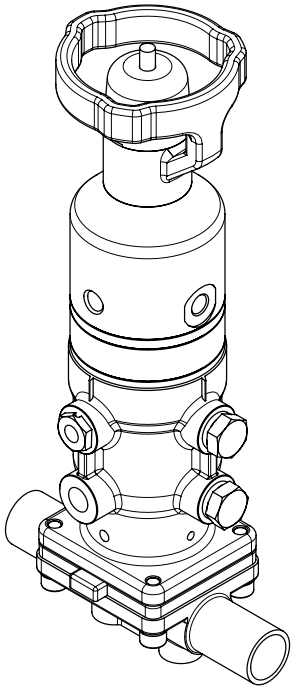
Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

Actuator version 1TL, 1HL, 1RL, 1SL, 1LL, 1ML

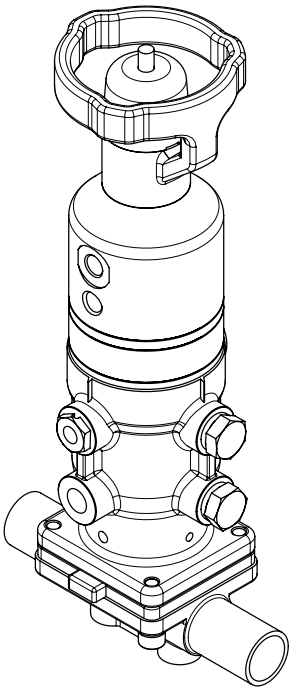
Actuator version 1TL, 1HL
control air connector and connections for proximity switches positioned in-line with flow direction



Actuator version 1RL, 1SL
control air connector positioned 90° offset to flow direction,
connections for proximity switches positioned in-line with flow direction



Actuator version 1LL,1ML
control air connector and connections for proximity switches positioned 90° offset to flow direction

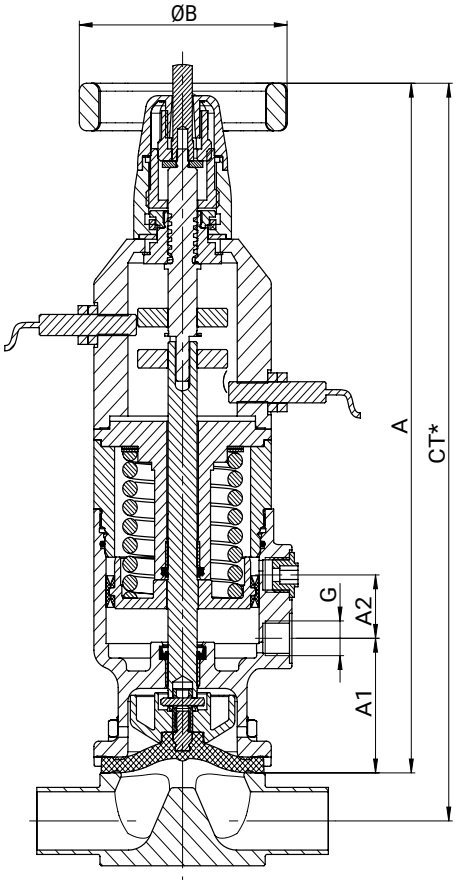


Actuator version	MG	A	A1	A2	ØB	ØB1	G
1TL, 1RL, 1LL, 1HL, 1ML, 1SL	**10**	196.0	37.0	27.0	60.0	-	G 1/8

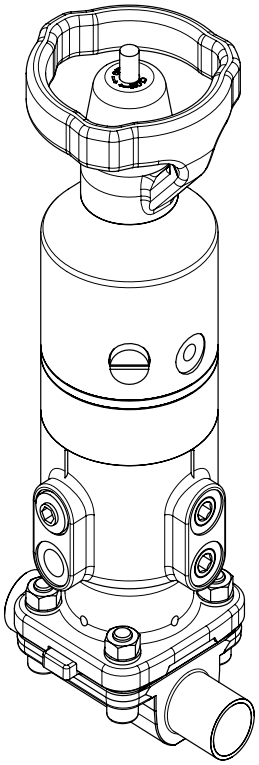
Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

Actuator version 2TL, 2HL, 2RL, 2SL, 2LL, 2ML

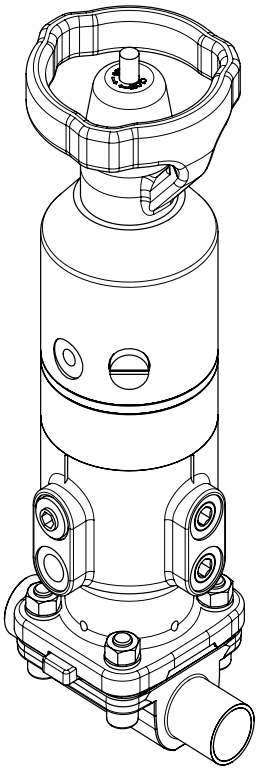
Actuator version 2TL, 2HL
Pilot air connection and connections for proximity switches in flow direction



Actuator version 2RL, 2SL
Pilot air connection 90° to the direction of flow, Connections for proximity switches in flow direction



Actuator version 2LL, 2ML
Control air connection and connections for proximity switches 90° to the flow direction

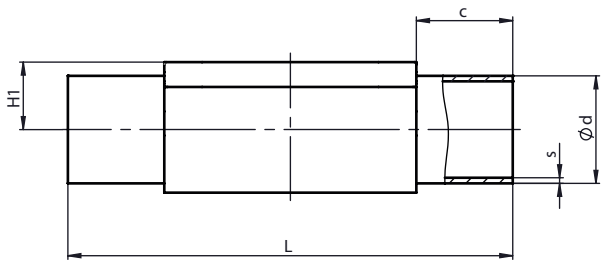


Actuator version	MG	A	A1	A2	ØB	ØB1	G
2TL, 2RL, 2LL, 2HL, 2ML, 2SL	**25**	264.0	51.0	24.0	85.0	-	G 1/4

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

Body dimensions of 2/2-way body

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



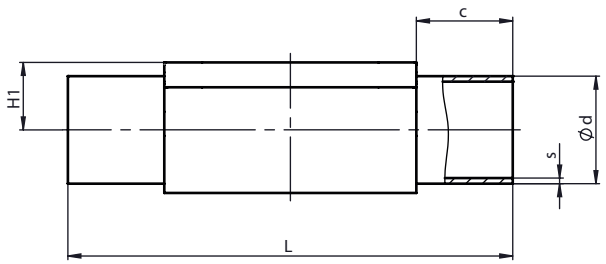
Connection type spigot DIN/EN/ISO (code 0, 16, 17, 18, 60) [1], forged material (code 40, 42, F4) [2]

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

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 0: Spigot DIN
Code 16: Spigot DIN EN 10357 series B (2014 edition; formerly DIN 11850 series 1)
Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2
Code 18: Spigot DIN 11850 series 3
Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 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 F4: 1.4539 / UNS N08904, forged body



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

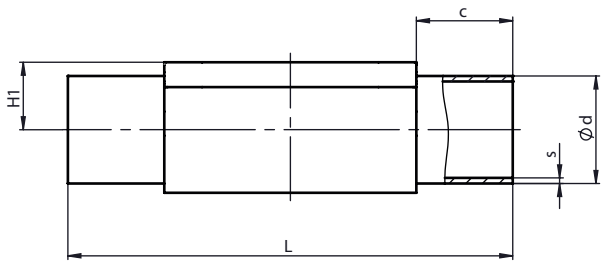
MG	DN	NPS	c (min)	ød			H1	L	s		
				Connection type					Connection type		
				0	17	60			0	17	60
8	**4**	**-**	20.0	6.0	-	-	8.5	72.0	1.0	-	-
	6	**-**	20.0	-	8.0	-	8.5	72.0	-	1.0	-
	8	**1/4"**	20.0	-	10.0	13.5	8.5	72.0	-	1.0	1.6
	10	**3/8"**	20.0	-	13.0	-	8.5	72.0	-	1.5	-
10	**10**	**3/8"**	25.0	-	13.0	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

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 0: Spigot DIN
Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2
Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B

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

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



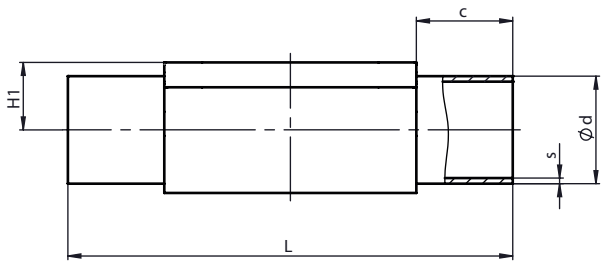
Connection type spigot ASME/BS (code 55, 59, 63, 64, 65)[1], forged material (code 40, 42, F4)[2]

MG	DN	NPS	c (min)	ød					H1	L	s				
				Connection type							Connection type				
				55	59	63	64	65			55	59	63	64	65
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

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

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code F4: 1.4539 / UNS N08904, forged body



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

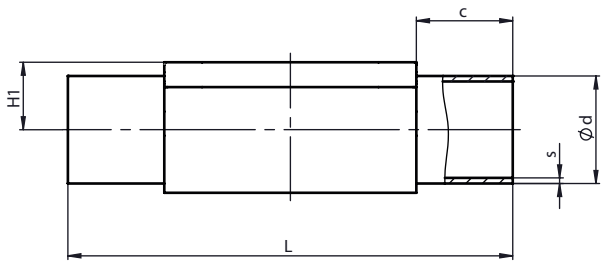
MG	DN	NPS	c (min)	ød	H1	L	s
8	**8**	**1/4"**	20.0	6.35	8.5	72.0	0.89
	10	**3/8"**	20.0	9.53	8.5	72.0	0.89
	15	**1/2"**	20.0	12.70	8.5	72.0	1.65
10	**20**	**3/4"**	25.0	19.05	12.5	108.0	1.65
25	**20**	**3/4"**	25.0	19.05	16.0	120.0	1.65
	25	**1"**	25.0	25.40	19.0	120.0	1.65

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

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



Connection type spigot JIS/SMS (code 35, 36, 37) [1], forged material (code 40, 42, F4) [2]

MG	DN	NPS	c (min)	ød			H1	L	s		
				Connection type					Connection type		
				35	36	37			35	36	37
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

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

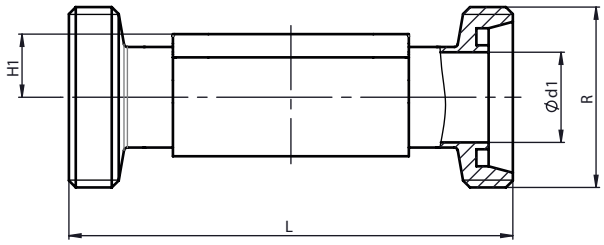
MG	DN	NPS	c (min)	ød	H1	L	s
25	**25**	**1"**	25.0	25.0	19.0	120.0	1.2

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 35: Spigot JIS-G 3447
Code 36: Spigot JIS-G 3459 schedule 10s
Code 37: Spigot SMS 3008

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting
Code F4: 1.4539 / UNS N08904, forged body

Threaded spigot DIN (code 6)



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

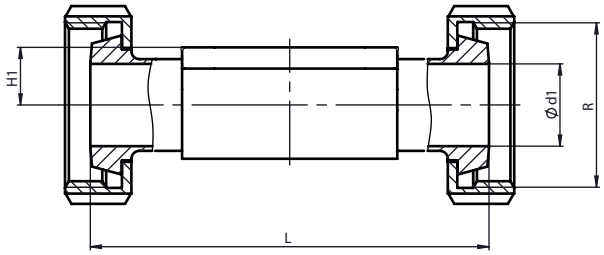
MG	DN	NPS	ød1	H1	L	R
8	**10**	**3/8"**	10.0	8.5	92.0	Rd 28 x 1/8
10	**10**	**3/8"**	10.0	12.5	118.0	Rd 28 x 1/8
	15	**1/2"**	16.0	12.5	118.0	Rd 34 x 1/8
25	**15**	**1/2"**	16.0	19.0	118.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	118.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	128.0	Rd 52 x 1/6

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%

Cone spigot DIN (code 6K)



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

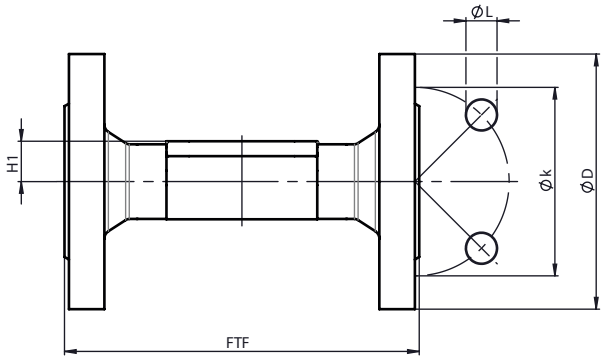
MG	DN	NPS	ød1	H1	L	R
8	**10**	**3/8"**	10.0	8.5	90.0	Rd 28 x 1/8
10	**10**	**3/8"**	10.0	12.5	116.0	Rd 28 x 1/8
	15	**1/2"**	16.0	12.5	116.0	Rd 34 x 1/8
25	**15**	**1/2"**	16.0	19.0	116.0	Rd 34 x 1/8
	20	**3/4"**	20.0	19.0	114.0	Rd 44 x 1/6
	25	**1"**	26.0	19.0	127.0	Rd 52 x 1/6

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 6K: Cone spigot and union nut DIN 11851

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%

Flange EN (code 8)



Connection type flange, length EN 558 (code 8) [1], investment casting material (code 39, C3), forged material (code 40, 42) [2]

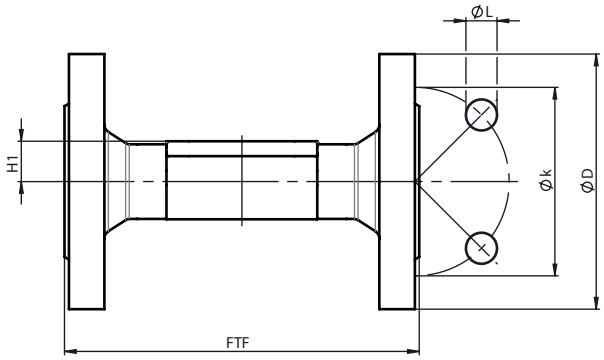
MG	DN	NPS	øD	FTF			H1			øk	øL	n
				Material			Material					
				39	C3	40, 42	39	C3	40, 42			
25	**15**	**1/2"**	95.0	130.0	150.0	150.0	18.0	13.0	19.0	65.0	14.0	4
	20	**3/4"**	105.0	150.0	150.0	150.0	20.5	16.0	19.0	75.0	14.0	4
	25	**1"**	115.0	160.0	160.0	160.0	23.0	19.0	19.0	85.0	14.0	4

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

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

2) **Valve body material**
Code 39: 1.4408, PFA lined
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting

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

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

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

2) **Valve body material**
Code 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) [2]

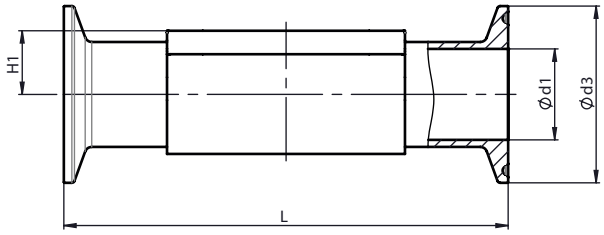
MG	DN	NPS	øD	FTF		H1			øk	øL	n
				Material		Material					
				39, 40, 42	C3	39	C3	40, 42			
25	**15**	**1/2"**	90.0	130.0	150.0	-	13.0	19.0	60.3	15.9	4
	20	**3/4"**	100.0	150.0	150.0	20.5	16.0	19.0	69.9	15.9	4
	25	**1"**	110.0	160.0	160.0	23.0	19.0	19.0	79.4	15.9	4

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

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

2) **Valve body material**
Code 39: 1.4408, PFA lined
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code C3: 1.4435, investment casting

Clamp DIN/ISO/ASME (code 80, 82, 88, 8A, 8E, 8P, 8T)



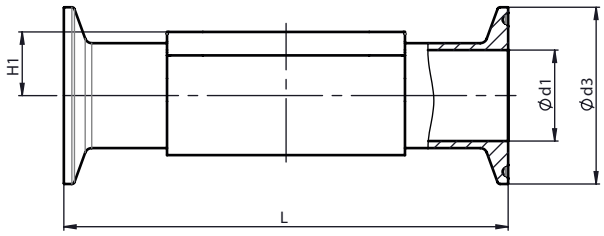
Connection type clamp DIN/ASME (code 80, 88, 8P, 8T) [1], forged material (code 40, 42, F4) [2]

MG	DN	NPS	ød1		ød3		H1	L	
			Connection type		Connection type			Connection type	
			80, 8P	88, 8T	80, 8P	88, 8T		80, 8P	88, 8T
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

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 80: Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D
Code 88: Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D
Code 8P: Clamp DIN 32676 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D
Code 8T: Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code F4: 1.4539 / UNS N08904, forged body



Connection type clamp DIN/ISO (code 82, 8A, 8E) [1], forged material (code 40, 42, F4) [2]

MG	DN	NPS	ød1			ød3			H1	L		
			Connection type			Connection type				Connection type		
			82	8A	8E	82	8A	8E		82	8A	8E
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	1270	127.0	127.0

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, clamps SMS 3017 for pipe SMS 3008, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

2) **Valve body material**
Code 40: 1.4435 (F316L), forged body
Code 42: 1.4435 (BN2), forged body, Δ Fe < 0.5%
Code F4: 1.4539 / UNS N08904, forged body

Body dimensions of tank bottom valve body and T body

Tank bottom valve body and T body: Dimensions and designs on request

Accessories

GEMÜ 1200

Proximity switch

The GEMÜ 1200 proximity switch is a sensor that detects the valve position contactlessly and displays it via an electrical signal.

For querying the closed position of the pneumatic actuator and the handwheel, a proximity switch each must be ordered separately.

Only use M8x1 proximity switches which can be mounted flush.

Design	Connection type	Order code
3-wire PNP, make contact, IP67, 10–60 V DC, 100 mA	2 m cable	1200M08Z1204002M0BJ079
	M12x1 plug	1200M08Z12060M124BJ077

Other proximity switches on request

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8, 74653 Ingelfingen-Criesbach, Germany
Phone +49 (0) 7940 1230 · info@gemue.de
www.gemu-group.com

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