

Special version "TL"

GEMÜ®

Diaphragm Valve, Metal

Construction

GEMÜ 650TL is a manual tapping valve with automatic closing function which is designed for use in sterile applications. This piston actuated diaphragm valve has a "keep-closed" override of manual operation. The valve can only be operated (opened / closed), if a control medium is applied to the actuator. When the control medium supply is switched off, the valve closes and can no longer be operated manually.

Example: If the flow velocity in a piping loop is reduced (e.g. if too many tapping points are open), flow may drop below a critical level. This special GEMÜ 650TL valve can be used to specifically close tapping points automatically via the central process control system in order to reduce the tapping quantity and thus to increase the piping loop flow velocity.

Features

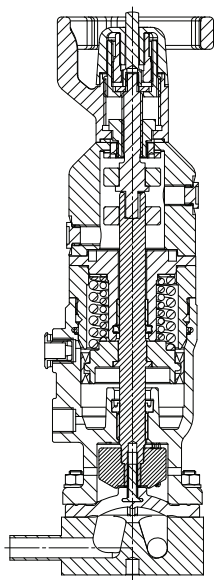
- Suitable for inert and corrosive* liquid and gaseous media
- Valve body and diaphragm available in various materials and designs
- Compact design (ideal when space is at a premium)
- Various connections available
- CIP/SIP cleaning and sterilizing capabilities
- Standard optical position indicator

Advantages

- Hermetic separation between medium and actuator
- Optional flow direction
- Installation for an optimized draining is possible
- Control air connectors positioned in-line with piping, 90° offset optional
- Feedback of closed position (pneumatic piston and/or handwheel) via optionally available proximity switches

* see information on working medium on page 2

Sectional view



GEMÜ® 650TL

Technical data

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).

Temperatures

Medium temperature 14 to 212 °F

Sterilisation temperature ⁽¹⁾

EPDM (code 13/3A)	max. 302 °F ⁽²⁾ , max. 60 min per cycle
EPDM (code 17)	max. 302 °F ⁽²⁾ , max. 180 min per cycle
EPDM (code 19)	max. 302 °C ⁽²⁾ , max. 180 min per cycle
EPDM (code 36)	max. 302 °C ⁽²⁾ , max. 60 min per cycle
PTFE/EPDM (code 54)	max. 302 °F ⁽²⁾ , no time limit per cycle
PTFE/EPDM (code 5M)	max. 302 °F ⁽²⁾ , no time limit per cycle

¹ The sterilisation temperature is valid for steam (saturated steam) or superheated water.

² If the sterilisation 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. This also applies to PTFE diaphragms exposed to high temperature fluctuations.

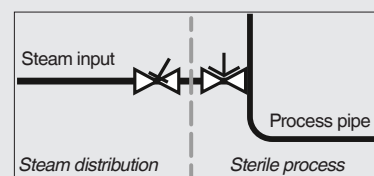
PTFE diaphragms can also be used as steam barriers; however, this will reduce their service life.

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 32 to 140 °F

Control medium

Inert gases

Max. permissible temperature of control medium 140 °F

Filling volume

Diaphragm size	DN	Actuator size	Piston diameter	Control function 1
8	4 ...15	0	1.26 in	0.61 cu in
10	10 ... 20	1	1.97 in	1.22 cu in
25	15 ...25	2	2.48 in	3.66 cu in

Actuator	MG	Operating pressure [psi]		Control pressure [psi]
		EPDM	PTFE	C.f.1
0	8	0 - 120	0 - 90	73 - 102
1	10	0 - 75	0 - 75	73 - 102
2	25	0 - 75	0 - 75	58 - 102

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

MG = diaphragm size

Order data

Nominal size		Code
DN 6	NPS 1/8"	6
DN 8	NPS 1/4"	8
DN 10	NPS 3/8"	10
DN 15	NPS 1/2"	15
DN 20	NPS 3/4"	20
DN 25	NPS 1"	25

Body configuration	Code
Tank bottom valve body	B**
2/2-way body	D
T body	T*
* For dimensions see T Valves brochure	
** Dimensions and versions on request	

Valve body material	Code
1.4435, investment casting	C3
1.4435 (316L), forged body	40
1.4435 (BN2), forged body Δ Fe<0.5%	42
1.4435 (316L), block material	41
1.4435 (BN2), block material Δ Fe<0.5%	43
1.4539, forged body	F4

Diaphragm material	Code
EPDM	13 3A*
EPDM	17
EPDM	19
EPDM	36
PTFE/EPDM, one-piece	54
PTFE/EPDM, two-piece	5M**
* for diaphragm size 8	
** Code 5M available from diaphragm size 10	
Material complies with FDA requirements	

Control function	Code
Normally closed (NC)	1

Actuator size	Code
Actuator size 0 (diaphragm size 8)	0
Actuator size 1 (diaphragm size 10)	1
Actuator size 2 (diaphragm size 25)	2

Connection	Code
Butt weld spigots	
Spigots DIN	0
Spigots EN 10357 series B (formerly DIN 11850 series 1)	16
Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A	17
Spigots DIN 11850 series 3	18
Spigots JIS-G 3447	35
Spigots JIS-G 3459	36
Spigots SMS 3008	37
Spigots BS 4825 Part 1	55
Spigot ASME BPE / DIN 11866 series C	59
Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B	60
Spigots ANSI/ASME B36.19M Schedule 10s	63
Spigots ANSI/ASME B36.19M Schedule 5s	64
Spigots ANSI/ASME B36.19M Schedule 40s	65
Threaded connections	
Threaded spigots DIN 11851	6
Cone spigot and union nut DIN 11851	6K
Aseptic unions on request	
Clamp connections	
Clamps ASME BPE for pipe ASME BPE, length ASME BPE	80
Clamps DIN 32676 series B for pipe EN ISO 1127, length EN 558, series 7	82
Clamps ASME BPE for pipe ASME BPE, length EN 558, series 7	88
Clamps DIN 32676 series A for pipe DIN 11850, length EN 558, series 7	8A
Clamps SMS 3017 for pipe SMS 3008, length EN 558, series 7	8E
Clamps DIN 32676 series C, length FTF ASME BPE	8P
Clamps DIN 32676 series C, length FTF EN 558 series 7	8T
Aseptic clamps on request	
For overview of available valve bodies for GEMÜ 650 TL see datasheet GEMÜ 650 standard	

Actuator version	Code
Control air connectors in flow direction	T
Control air connectors 90° offset to flow direction	R

Actuator function	Code
Pneumatically operated with "keep-closed" override of manual operation"	L

Order data

Internal surface finishes for forged and block material bodies ¹

Readings for Process Contact Surfaces	Mechanically polished ²		Electropolished	
	Hygienic class DIN 11866	Code	Hygienic 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

Readings for Process Contact Surfaces acc. to 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

Readings for Process Contact Surfaces	Mechanically polished ²	
	Hygienic class DIN 11866	Code
Ra ≤ 6,30 µm	-	1500
Ra ≤ 0,80 µm	H3	1502
Ra ≤ 0,60 µm ⁵	-	1507

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 1/4" (DN 8) BS 4825 Part 1 and ASME BPE is 15 µinch.

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.

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

Order data

Order example	650	25	T	60	41	17	1	2	T	L	25	60	1503
Type	650												
Nominal size		25											
Body configuration (code)			T										
Connection (code)				60									
Valve body material (code)					41								
Diaphragm material (code)						17							
Control function (code)							1						
Actuator size (code)								2					
Actuator version (code)									T				
Actuator function (code)										L			
Nominal size (inch)*											25		
Connection (code)*												60	
Surface finish (Code see page 4)													1503

* only in T-valve version

For querying the positions of the pneumatic actuator and the handwheel, a proximity switch each must be ordered separately:

Order example - Proximity switches		
Version	Connection	Order code
3 - wire - PNP, make contact IP67, 10 - 60 V DC, 100 mA	78.74 inch cable	1200 M08 Z 12 040 02M0 B J 001
	M12 x 1 plug	1200 M08 Z 12 060 M124 B J 002

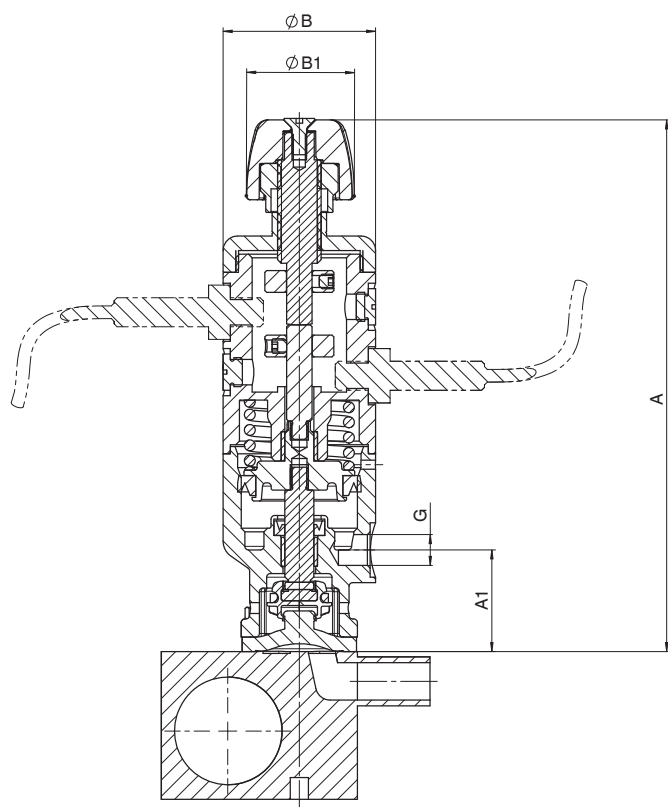
Other proximity switches on request

Dimensions

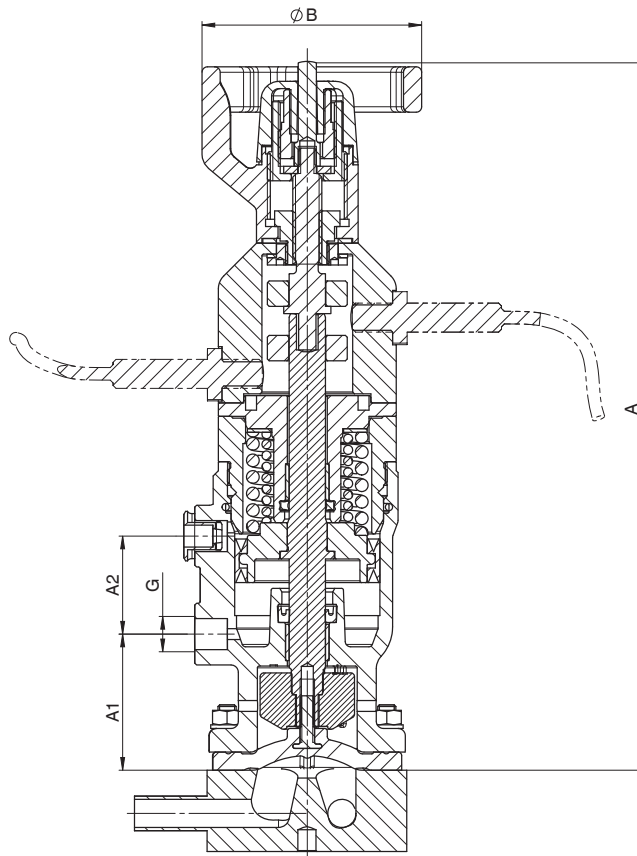
Actuator dimensions

Actuator size	Diaphragm size [mm]	A [in]	A1 [in]	A2 [in]	øB [in]	øB1 [in]	G
0	8	5.75	1.04	-	1.65	1.26	G 1/8
1	10	7.72	1.46	1.06	2.36	-	G 1/8
2	25	10.39	2.01	0.94	3.35	-	G 1/4

GEMÜ 650 0TL



GEMÜ 650 1TL / GEMÜ 650 2TL



Proximity switch M8x1 (flush mountable) not included in the scope of delivery (see bottom of page 4 GEMÜ type 1200)

Notes:

- For T body dimensions see brochures "T valves for sterile applications" (diaphragm size 8 - 25).
- 2/2-way bodies are also available for GEMÜ 650TL, see datasheet of type 650 (diaphragm size 8 - 25).
- GEMÜ 650TL can also be mounted to M600 and tank bottom valve bodies.

For further metal diaphragm valves, accessories and other products, please see our Product Range catalogue and Price List.
Contact GEMÜ.

GEMÜ VALVES, MEASUREMENT
AND CONTROL SYSTEMS

