

GEMÜ F40

Pneumatically operated filling valve



Features

- Hermetic separation between medium and actuator due to PD sealing technology
- Long service life with over 10 million cycle duties
- Designed according to Hygienic Design guidelines
- FDA compliant as standard and suitable for contact with food according to Regulation (EC) No. 1935/2004
- Very fast and easy maintenance thanks to quick locking system and innovative cartridge spare parts system
- Suitable for vacuum up to 20 mbar (a)

Description

The GEMÜ F40 2/2-way filling valve is designed for filling processes in aseptic and hygienic applications. Flow rates of up to 18,500 l/h are possible, depending on the design. The sealing concept of the valve is based on the GEMÜ PD design, whereby the actuator is hermetically separated from the medium. All actuator parts (except the seals) are made from stainless steel. The "Normally closed" and "Normally open" control functions are available.

Technical specifications

- **Media temperature:** -10 to 140 °C
- **Ambient temperature:** -10 to 60 °C
- **Operating pressure:** 0 to 7 bar
- **Nominal sizes:** DN 8 to 25
- **Body configurations:** 2/2-way body | Multi-port body
- **Connection types:** Clamp | Spigot
- **Connection standards:** ASME | DIN | EN
- **Body materials:** 1.4435 (316L), block material | 1.4435, investment casting material
- **Seat seal materials:** PTFE
- **Conformities:** 3A | ATEX | EAC | FDA | Reg. (EU) No. 10/2011 | Regulation (EC) No. 1935/2004 | Regulation (EC) No. 2023/2006 | USP

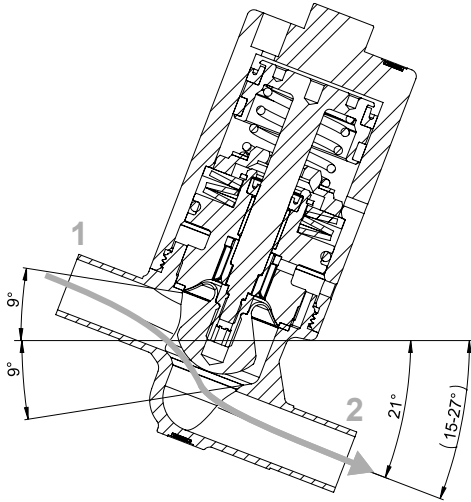
Technical data depends on the respective configuration



Product description

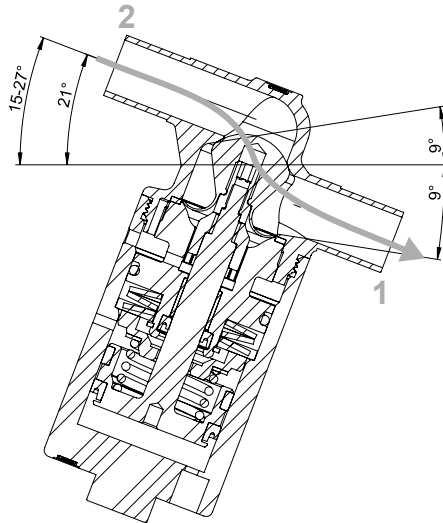
Flow direction

over the seat



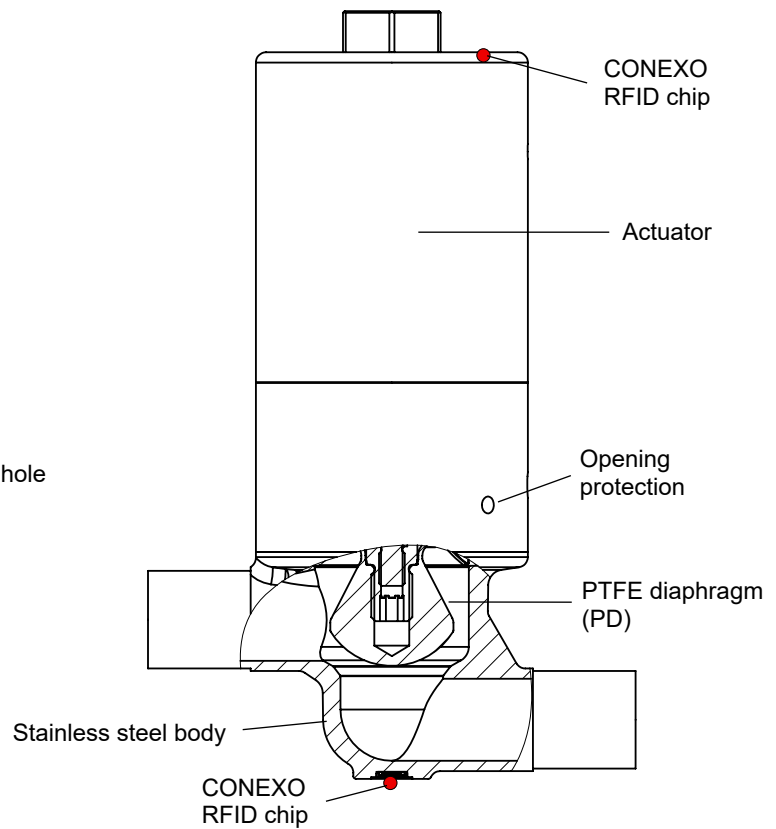
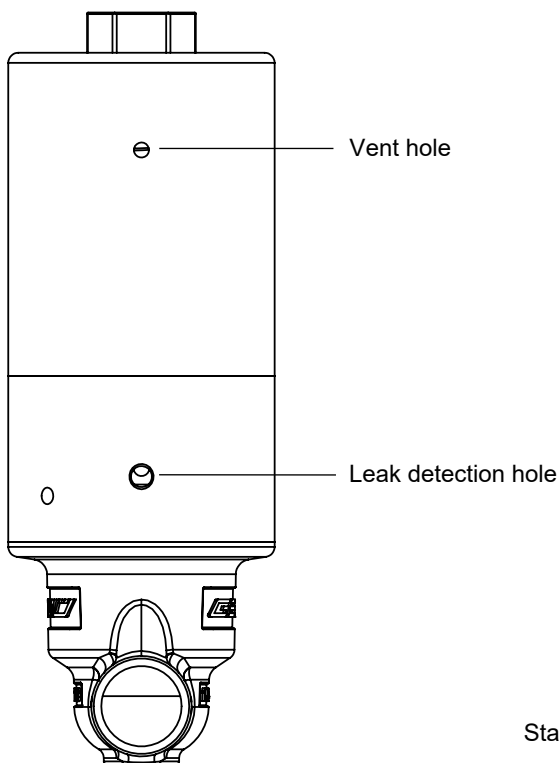
1 → 2, optimal draining and filling properties

under the seat



2 → 1, better pressure stability and higher flow

PD seal system



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" (see order data).

Availability

Availability of grades of surface finish

Internal surface finishes for block material bodies ¹⁾

Readings for Process Contact Surfaces	Mechanically polished ²⁾		Electropolished	
	Hygienic class DIN 11866	Code	Hygienic class DIN 11866	Code
Ra ≤ 0.40 µm	H4	1536	HE4	1537

Internal surface finishes for investment cast bodies

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	-	-
Ra ≤ 0.80 µm	-	-	H3	1503

Readings for Process Contact Surfaces according to ASME BPE 2016 ³⁾	Mechanically polished ²⁾	
	ASME BPE surface designation	Code
Ra Max. = 0.76 µm (30 µinch)	SF3	SF3

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) 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.

Availability of valve bodies

Spigot

DN	AG	Connection types code ¹⁾	
		17	59
		Material code 41, 43, C3 ²⁾	
8	1	X	-
10	1	-	X
	3	X	-
15	3	X	X
20	3	-	X
	4	X	-
25	4	X	X

AG = actuator size

X = Standard

1) Connection type, spigot 1

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

Code 59: Spigot ASME BPE / DIN 11866 series C

2) Valve body material

Code 41: 1.4435 (316L), block material

Code 43: 1.4435 (BN2), block material, $\Delta Fe < 0.5\%$

Code C3: 1.4435, investment casting

Clamp

DN	AG	Connection types code ¹⁾	
		86	88
		Material code 41, 43, C3 ²⁾	
8	1	X	-
10	1	-	X
	3	X	-
15	3	X	X
20	3	-	X
	4	X	-
25	4	X	X

AG = actuator size

X = Standard

1) Connection type, spigot 1

Code 86: Clamp DIN 32676 series A

Code 88: Clamp ASME BPE

2) Valve body material

Code 41: 1.4435 (316L), block material

Code 43: 1.4435 (BN2), block material, $\Delta Fe < 0.5\%$

Code C3: 1.4435, investment casting

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
Stainless steel PD valve, pneumatic	F40

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

3 Body configuration	Code
2/2-way body	D
Angle valve body	E
Linearized body	G
T body	T

4 Connection type, spigot 1	Code
Spigot	
Spigot EN 10357 series A (formerly DIN 11850 series 2)/DIN 11866 series A	17
Spigot ASME BPE / DIN 11866 series C	59
Clamp	
Clamp DIN 32676 series A	86
Clamp ASME BPE	88

5 Valve body material	Code
1.4435 (316L), block material	41
1.4435 (BN2), block material, Δ Fe < 0.5%	43
1.4435, investment casting	C3

6 Seal material	Code
PTFE	5

7 Valve body adaptor	Code
Adaptor for PD size 1	1
Adaptor for PD size 3	3
Adaptor for PD size 4	4

8 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2

9 Actuator version	Code
Actuator without accessories, with standard spring set	0N
Actuator with M12x1 thread for accessories with standard spring set	1N

10 Bypass	Code
1.5 mm bypass bore	15
3.0 mm bypass bore	30
3.5 mm bypass bore	35
4.0 mm bypass bore	40
5.2 mm bypass bore	52
6.0 mm bypass bore	60
7.0 mm bypass bore	70

11 Surface	Code
Investment casting	
Ra \leq 0.8 μ m (30 μ in.) for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1502
Ra \leq 0.8 μ m (30 μ in.) for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external	1503
Ra max. 0.76 μ m (30 μ in.) for media wetted surfaces, in accordance with ASME BPE SF3, mechanically polished internal	SF3
Block material	
Ra \leq 0.4 μ m (15 μ in.) for media wetted surfaces, in accordance with DIN 11866 H4, mechanically polished internal	1536
Ra \leq 0.4 μ m (15 μ in.) for media wetted surfaces, in accordance with DIN 11866 HE4, electropolished internal/external	1537

12 Seat diameter	Code
11 mm	F
20 mm	H
34 mm	M

13 Regulating cone	Code
Without	
Equal-percentage, Kv value: 1.3m ³ /h	F
Equal-percentage, Kv value: 4.7m ³ /h	H
Equal-percentage, Kv value: 12m ³ /h	M

14 Special version	Code
Special version for 3A	M

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

Order example

Ordering option	Code	Description
1 Type	F40	Stainless steel PD valve, pneumatic
2 DN	15	DN 15
3 Body configuration	D	2/2-way body
4 Connection type, spigot 1	17	Spigot EN 10357 series A (formerly DIN 11850 series 2)/DIN 11866 series A
5 Valve body material	C3	1.4435, investment casting
6 Seal material	5	PTFE
7 Valve body adaptor	3	Adaptor for PD size 3
8 Control function	1	Normally closed (NC)
9 Actuator version	0N	Actuator without accessories, with standard spring set
10 Bypass	70	7.0 mm bypass bore
11 Surface	1502	Ra ≤ 0.8 µm (30 µin.) for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal
12 Seat diameter	H	20 mm
13 Special version	M	Special version for 3A
14 Regulating cone		Without
15 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 – 140 °C

Sterilization temperature: Hot water max. 4 bar at 140 °C, max. 60 min
 Steam max. 2 bar at 140 °C, max. 60 min

Control medium temperature: max. 60 °C

Ambient temperature: -10 – 60 °C

Storage temperature: 0 – 40 °C

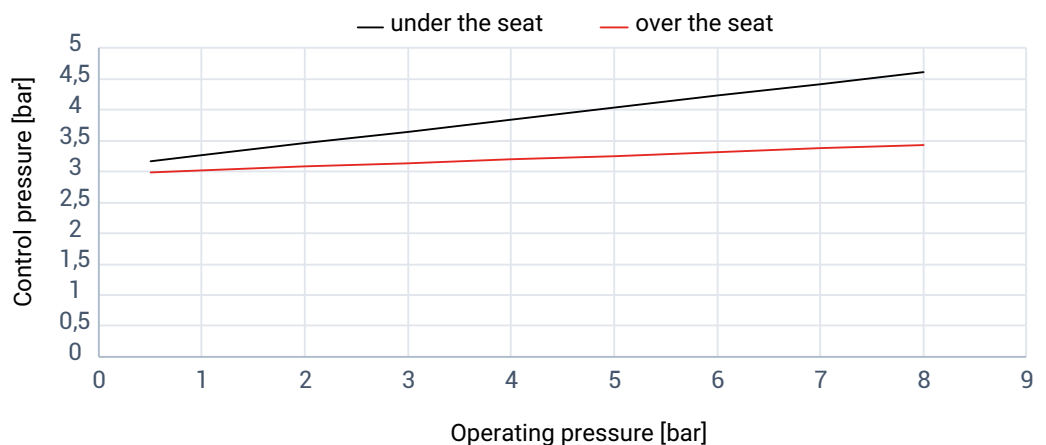
Pressure

Operating pressure: Control function 1 over the seat max. 7 bar (1 → 2)
 Control function 1 under the seat max. 6 bar (2 → 1)
 Control function 2 max. 7 bar

For applications with flow direction "over the seat" [1 > 2], the flow velocity must be limited to a maximum of 1.8 m/s for all nominal sizes. Otherwise a reduced life expectancy of the valve can be expected. For higher velocities the flow direction "under the seat" [2 > 1] is recommended.

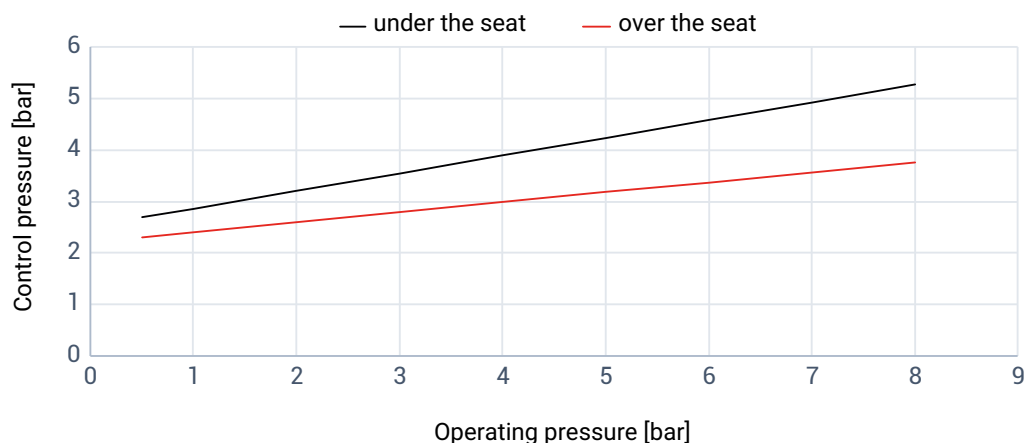
Control pressure: Control function 1 6 to 7 bar
 Control function 2 max. 6 bar

Control pressure – Operating pressure characteristic control function 2, F40, actuator size 1

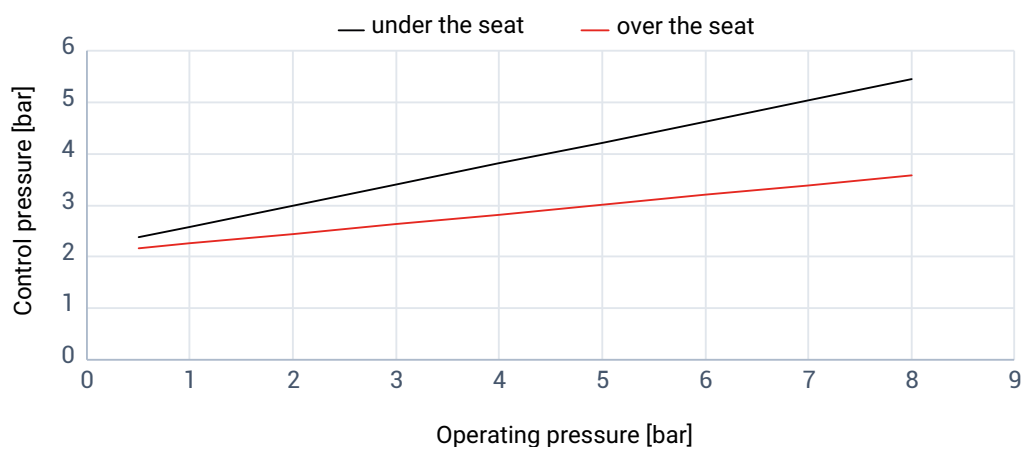


Control pressure:

Control pressure – Operating pressure characteristic control function 2, F40, actuator size 3



Control pressure – Operating pressure characteristic control function 2, F40, actuator size 4



Control air connection:

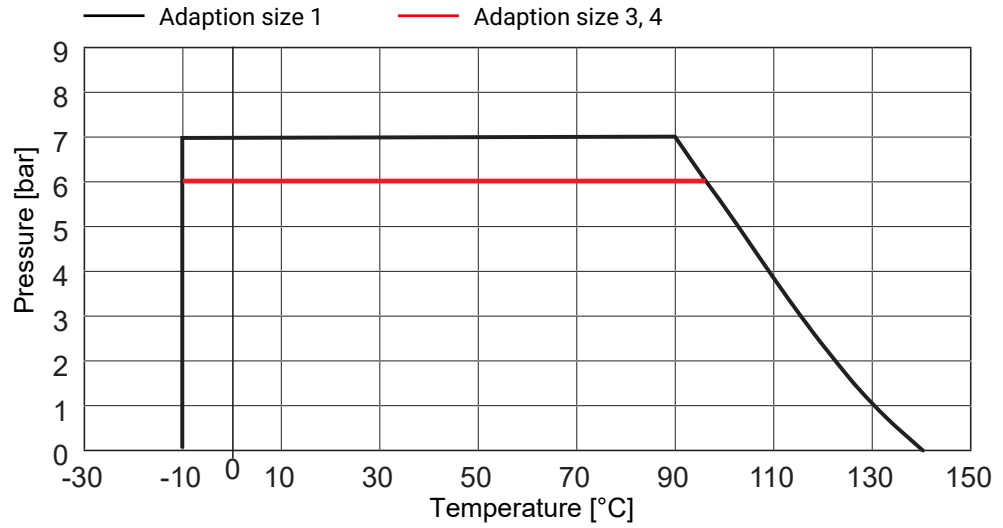
G 1/8

Filling volume:

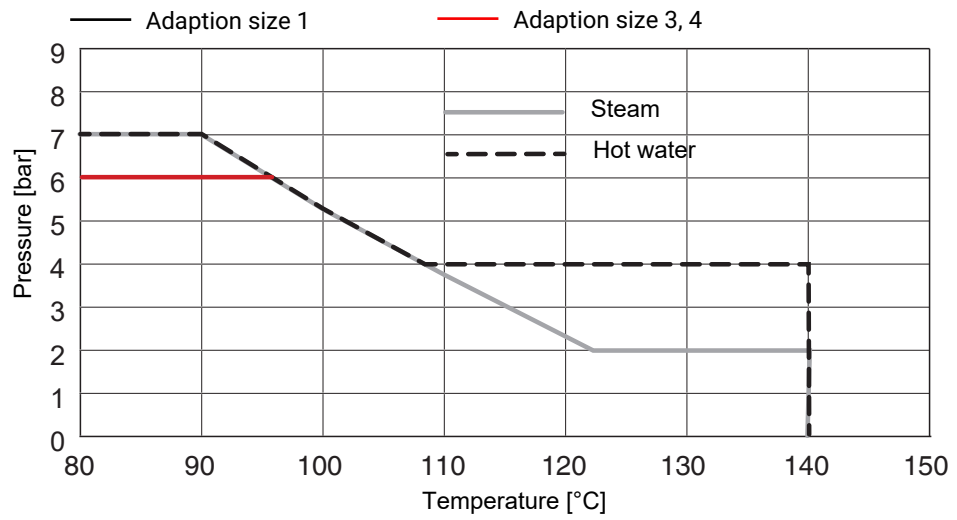
Actuator size 1, control function 1	0.0069 dm ³
Actuator size 1, control function 2	0.0043 dm ³
Actuator size 3, control function 1	0.017 dm ³
Actuator size 3, control function 2	0.010 dm ³
Actuator size 4, control function 1	0.0425 dm ³
Actuator size 4, control function 2	0.0368 dm ³

Pressure/temperature correlation:

Process:



Hot water, steam



Hot water
Steam

max. 4 bar at 140 °C, max. 60 min
max. 2 bar at 140 °C, max. 60 min

Leakage rate:

Open/Close valve

Seat seal	Standard	Test procedure	Leakage rate	Test medium
PTFE	DIN EN 12266-1	P12	A	Air

Kv values:
Connection code 17 and 86 to DIN EN 60534

Actuator size	DN	over the seat (1→2)	under the seat (2→1)
1	8	1.5	1.5
3	10	2.7	2.8
3	15	6.0	6.8
4	20	10.0	10.4
4	25	16.3	18.5

Kv values in m³/h

Connection code 59 and 88 to DIN EN 60534

Actuator size	DN	over the seat (1→2)	under the seat (2→1)
1	10 [3/8"]	1.5	1.5
3	15 [1/2"]	2.4	2.5
3	20 [3/4"]	5.9	6.7
4	25 [1"]	11.7	12.9

Kv values in m³/h

For flow direction see product description on page 2

Product compliance

Machinery Directive: 2006/42/EC

Food: FDA
 USP Class VI
 Regulation (EC) No. 1935/2004
 Regulation (EC) No. 10/2011

Mechanical data

Cycle duties: Cycle duties (over 10 million)

The cycle duties and start-ups depend on the operating parameters. High pressures and media temperatures can lead to a shorter service life.

Weight:
Actuator

Actuator size 1, control function 1	0.66 kg
Actuator size 1, control function 2	0.56 kg
Actuator size 3, control function 1	1.24 kg
Actuator size 3, control function 2	1.10 kg
Actuator size 4, control function 1	3.07 kg
Actuator size 4, control function 2	2.29 kg

Valve body

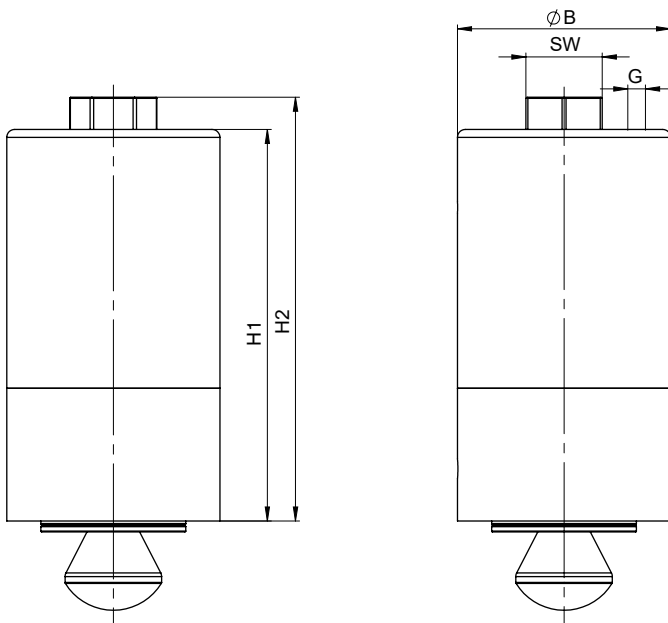
	Actuator size 1	Actuator size 3	Actuator size 4
Spigot	0.10	0.22	0.60
Clamp	0.13	0.30	0.72

Weights in kg

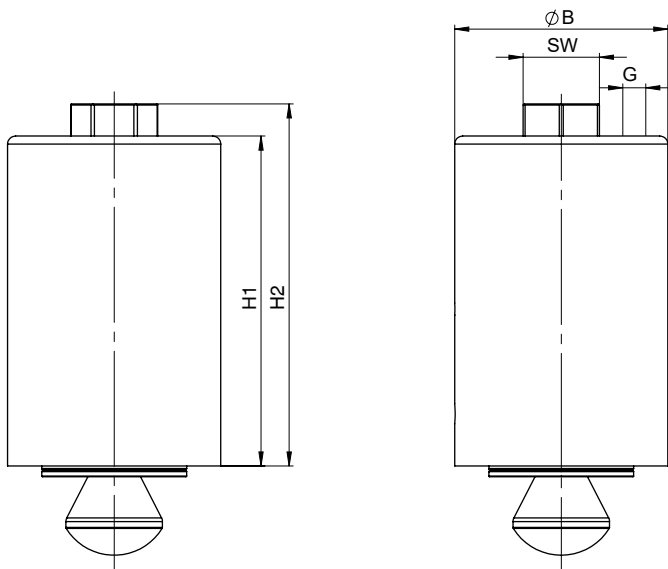
Dimensions

Actuator dimensions

Control function 1



Control function 2

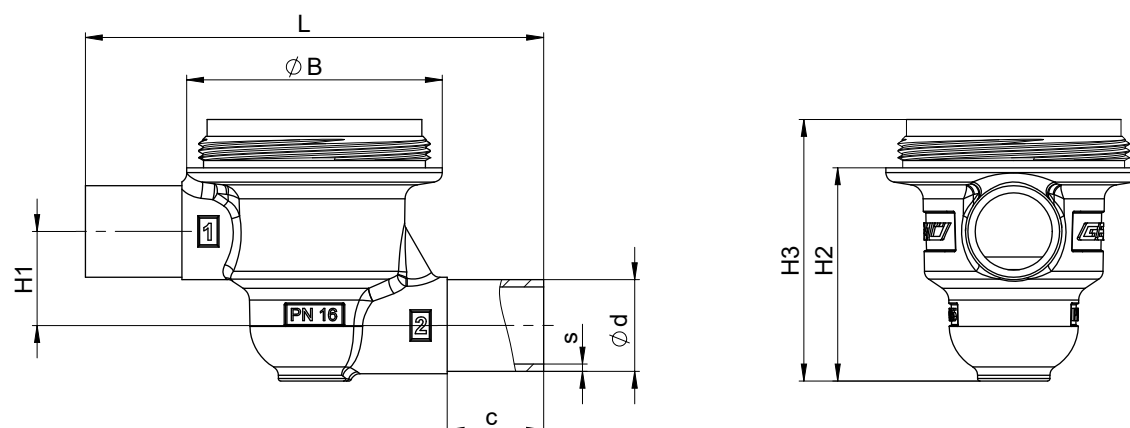


Actuator size	G	Control function	ØB	H1	H2	SW
1	M5	1	40.8	80.6	88.6	19
		2	40.8	68.0	76.0	19
3	G 1/8	1	53.0	97.4	105.4	19
		2	53.0	82.0	90.0	19
4	G 1/8	1	76.0	124.6	135.6	27
		2	76.0	80.8	98.8	27

Dimensions in mm

Body dimensions

Spigot



Connection type code 17

DN	AG	Connection type code 17 ¹⁾							
		Material code 41, 43, C3 ²⁾							
		L	B	c	H1	H2	H3	d	s
8	1	82.0	40.8	20.0	14.5	30.5	39.7	10.0	1.0
10	3	95.0	53.0	20.0	21.5	41.2	51.2	13.0	1.5
15	3	95.0	53.0	20.0	19.5	44.2	54.2	19.0	1.5
20	4	131.0	76.0	25.0	31.5	61.0	71.0	23.0	1.5
25	4	131.0	76.0	25.0	31.5	67.0	77.0	29.0	1.5

Connection type code 59

DN	AG	Connection type code 59 ¹⁾							
		Material code 41, 43, C3 ²⁾							
		L	B	c	H1	H2	H3	d	s
10	1	82.0	40.8	20.0	14.5	30.5	39.7	9.53	0.89
15	3	95.0	53.0	20.0	21.5	41.2	51.2	12.70	1.65
20	3	95.0	53.0	20.0	19.5	44.2	54.2	19.05	1.65
25	4	131.0	76.0	25.0	31.5	65.0	75.0	25.40	1.65

Dimensions in mm

AG = actuator size

1) Connection type, spigot 1

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

Code 59: Spigot ASME BPE / DIN 11866 series C

2) Valve body material

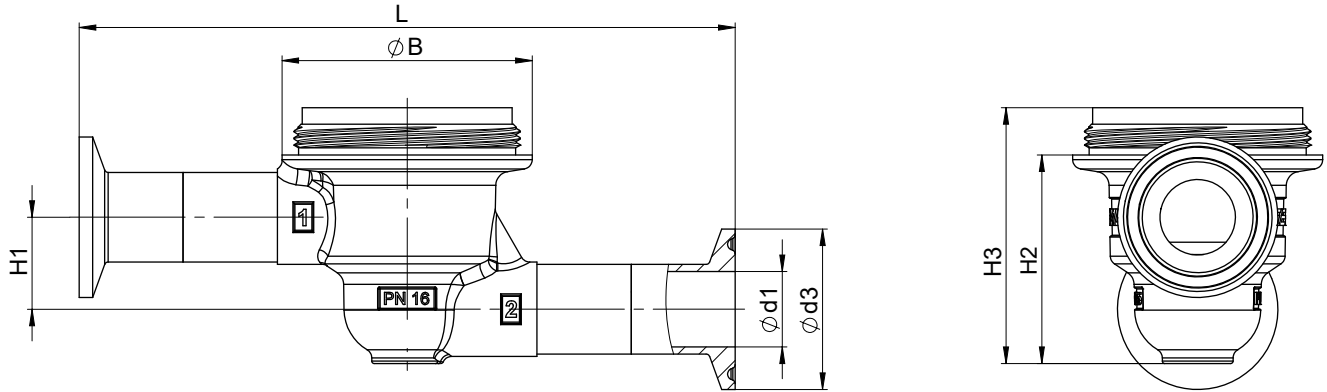
Code 41: 1.4435 (316L), block material

Code 43: 1.4435 (BN2), block material, $\Delta Fe < 0.5\%$

Code C3: 1.4435, investment casting

Dimensions

Clamp



Connection type code 86

DN	AG	Connection type code 86 ¹⁾							
		Material code 41, 43, C3 ²⁾							
		L	B	H1	H2	H3	d1	d3	s
8	1	108.0	40.8	14.5	30.5	39.7	8.0	25.0	1.0
10	3	121.0	53.0	21.5	41.2	51.2	10.0	34.0	1.5
15	3	121.0	53.0	19.5	44.2	54.2	16.0	34.0	1.5
20	4	157.0	76.0	31.5	61.0	71.0	20.0	34.0	1.5
25	4	157.0	76.0	31.5	67.0	77.0	26.0	50.5	1.5

Connection type code 88

DN	AG	Connection type code 88 ¹⁾							
		Material code 41, 43, C3 ²⁾							
		L	B	H1	H2	H3	d1	d3	s
10	1	108.0	40.8	14.5	30.5	39.7	7.75	25.0	0.89
15	3	121.0	53.0	19.5	41.2	51.2	9.40	25.0	1.65
20	3	121.0	53.0	19.5	44.2	54.2	15.75	25.0	1.65
25	4	157.0	76.0	31.5	65.0	75.0	22.10	50.5	1.65

Dimensions in mm

AG = actuator size

1) **Connection type, spigot 1**

Code 86: Clamp DIN 32676 series A

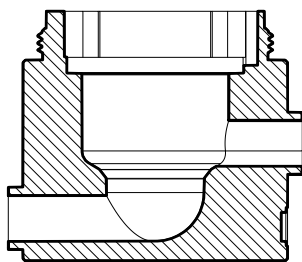
Code 88: Clamp ASME BPE

2) **Valve body material**

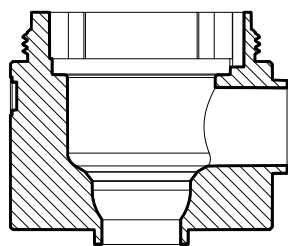
Code 41: 1.4435 (316L), block material

Code 43: 1.4435 (BN2), block material, Δ Fe < 0.5%

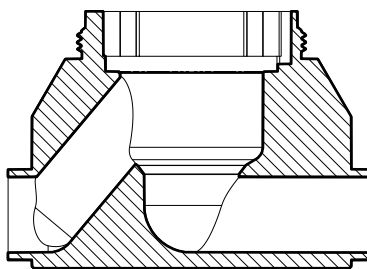
Code C3: 1.4435, investment casting

Special body

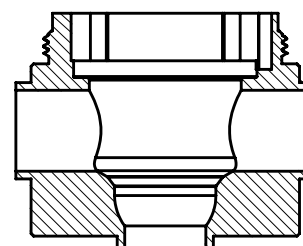
Body configuration D



Body configuration E

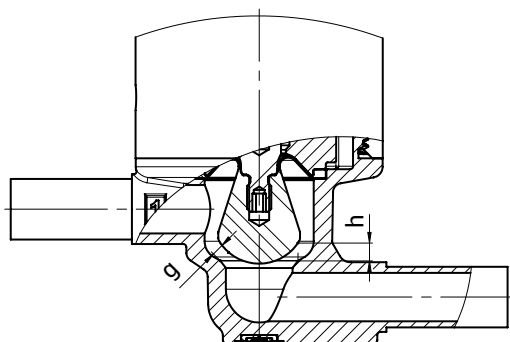


Body configuration G



Body configuration T

Dimensions and installation dimensions of the special bodies on request

Gap dimensions

Actuator size	Maximum stroke [h]	Max. gap with complete opening [g]
1	2.8	1.8
3	6.0	4.0
4	8.0	5.7



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