

## GEMÜ F40

### Pneumatically operated filling valve



#### Features

- Designed for filling processes with fast and frequent switching cycles
- Hermetic separation of the actuator from the medium thanks to excellent GEMÜ
- PD sealing technology for filling applications in the pharmaceutical and food industries
- Durable and very fast maintenance thanks to quick locking and innovative cartridge spare parts system
- FDA compliant as standard and suitable for contact with food according to Regulation (EC) No. 1935/2004
- Optionally available with oxygen and ATEX version
- Can be integrated into P500 M multi-ports

#### 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:** Multi-port body | Straight through 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



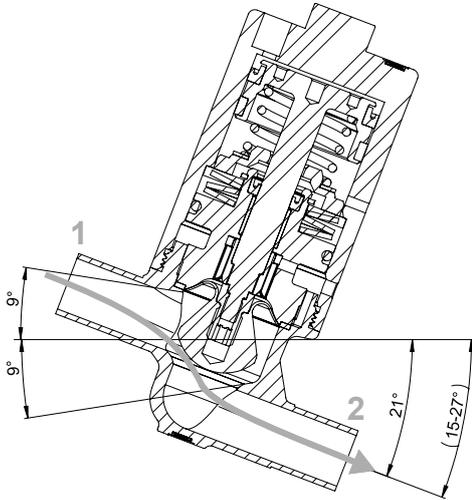
further information  
webcode: GW-F40



## Product description

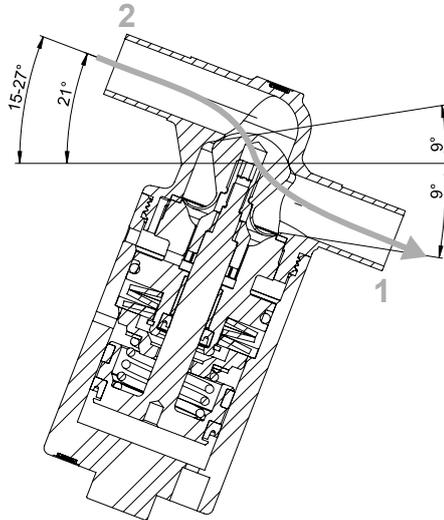
### Flow direction

over the seat



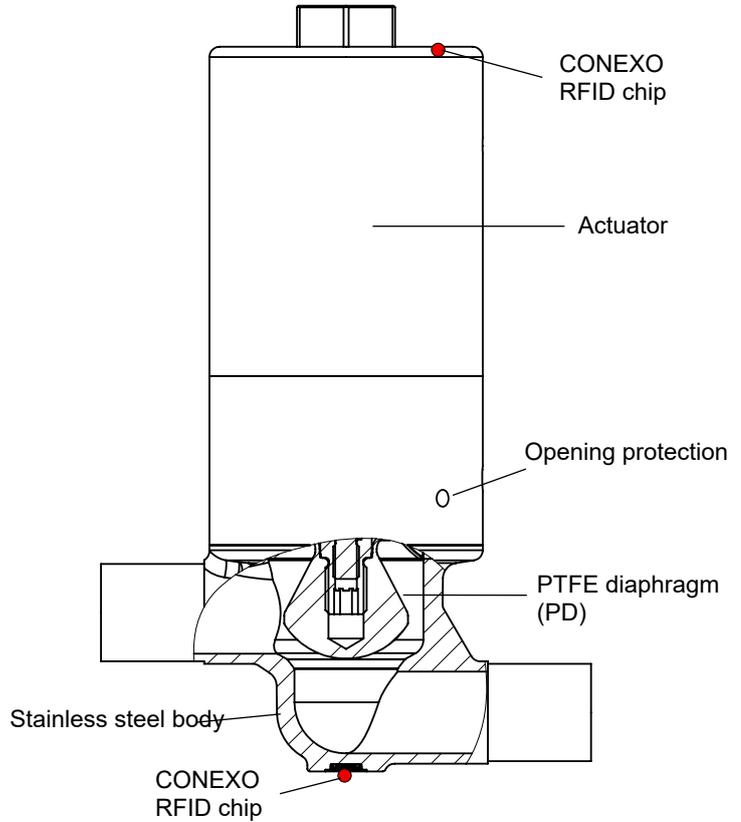
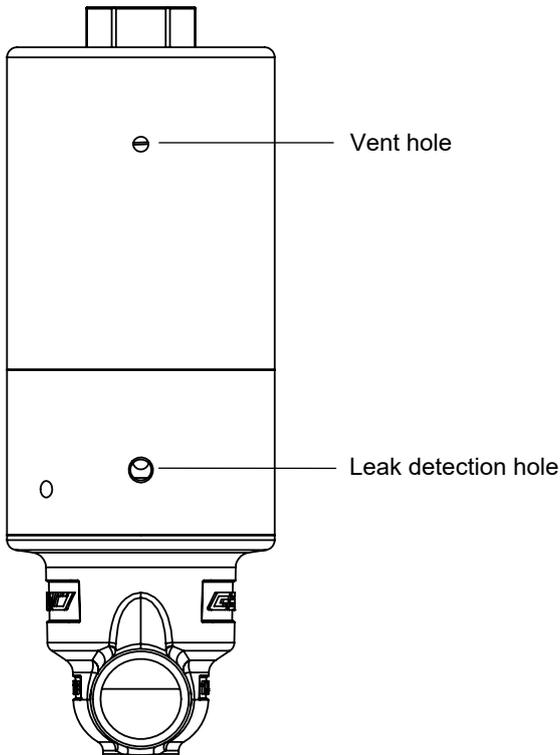
1 → 2, optimal draining and filling properties

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](http://www.gemu-group.com/conexo)

### Ordering

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

## Availability

### Availability of grades of surface finish

#### Internal surface finishes for block material bodies <sup>1)</sup>

Readings for Process Contact Surfaces	Mechanically polished <sup>2)</sup>		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 <sup>2)</sup>		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 <sup>3)</sup>	Mechanically polished <sup>2)</sup>	
	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 <sup>1)</sup>	
		17	59
		Material code 41, 43, C3 <sup>2)</sup>	
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 <sup>1)</sup>	
		86	88
		Material code 41, 43, C3 <sup>2)</sup>	
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-1	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
Linearised body	G
Needle valve body	N
T body	T
<b>Note:</b> N body only available in conjunction with seal material T, adaptor for PD size 3 and seat diameter 20 mm H.	

4 Connection type, spigot 1	Code
<b>Spigot</b>	
Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2	17
Spigot ASME BPE/DIN EN 10357 series C (from 2022 edition)/DIN 11866 series C	59
<b>Clamp</b>	
Clamp DIN 32676 series A	86
Clamp ASME BPE, for pipe ASME BPE	88

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

6 Seal material	Code
PTFE	5
PTFE actuator seal/stainless steel adaption thread	T
<b>Note:</b> Seal material T only available in conjunction with body configuration N, adaptor for PD size 3 and seat diameter 20 mm H.	

7 Adaptor for valve body	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
<b>Investment casting</b>	
Ra $\leq$ 0.8 $\mu$ m for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1502
Ra $\leq$ 0.8 $\mu$ m for media wetted surfaces, in accordance with DIN 11866 HE3, electropolished internal/external	1503
Ra max. 0.76 $\mu$ m (30 $\mu$ in.) for media wetted surfaces, in accordance with ASME BPE SF3, mechanically polished internal	SF3
<b>Block material</b>	
Ra $\leq$ 0.4 $\mu$ m for media wetted surfaces, in accordance with DIN 11866 H4, mechanically polished internal	1536
Ra $\leq$ 0.4 $\mu$ m 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: 1.3 m <sup>3</sup> /h	F
Equal-percentage Kv value: 4.7 m <sup>3</sup> /h	H
Equal-percentage Kv value: 12 m <sup>3</sup> /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-1	15	DN 15
3 Body configuration	D	2/2-way body
4 Connection type, spigot 1	17	Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2
5 Valve body material	C3	1.4435, investment casting
6 Seal material	5	PTFE
7 Adaptor for valve body	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 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

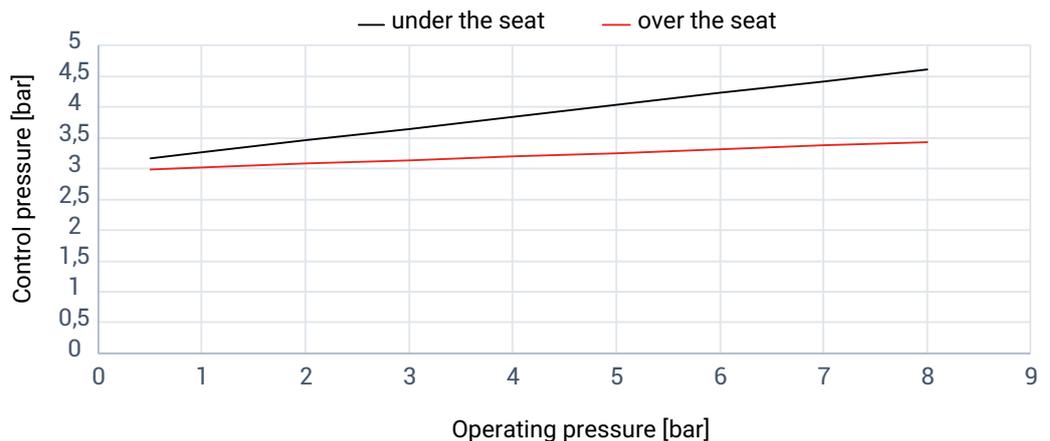
### Pressure

**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.

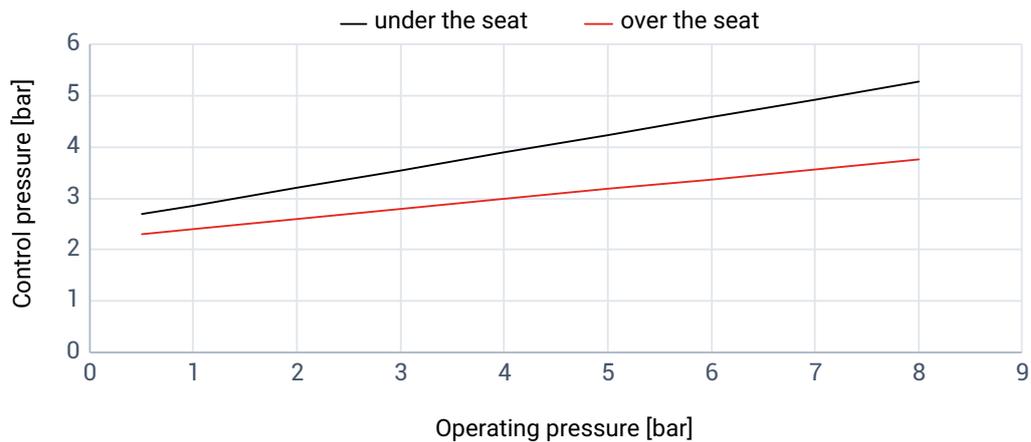
**Control pressure:** Control function 1 6 to 7 bar  
 Control function 2 max. 6 bar

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

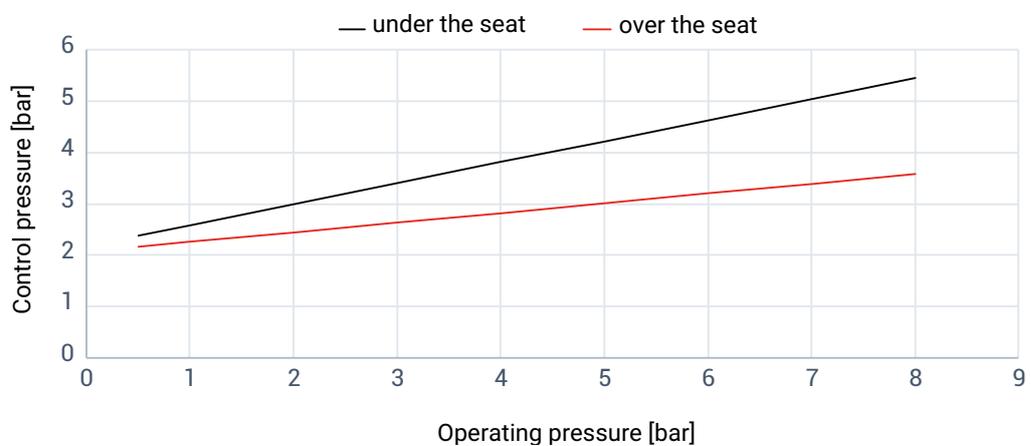


**Control pressure:**

**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:**

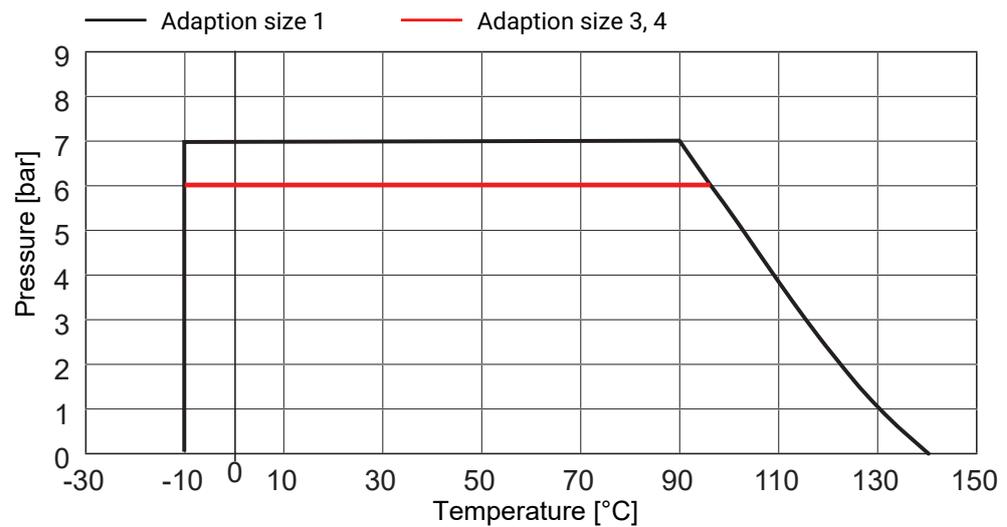
G 1/8

**Filling volume:**

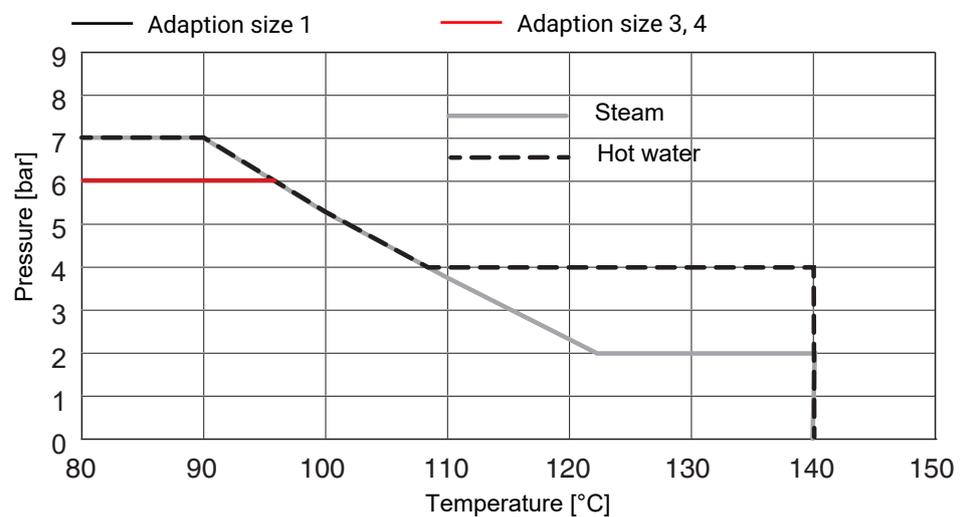
Actuator size 1, control function 1	0.0069 dm <sup>3</sup>
Actuator size 1, control function 2	0.0043 dm <sup>3</sup>
Actuator size 3, control function 1	0.017 dm <sup>3</sup>
Actuator size 3, control function 2	0.010 dm <sup>3</sup>
Actuator size 4, control function 1	0.0425 dm <sup>3</sup>
Actuator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

**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**

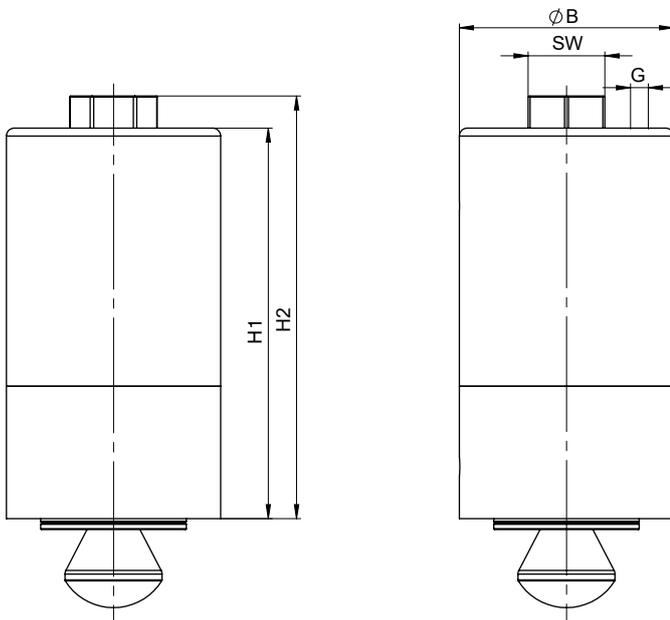
	Actuator size 1	Actuator size 3	Actuator size 4
Spigot	0.10	0.22	0.60
Clamp	0.13	0.30	0.72

Weights in kg

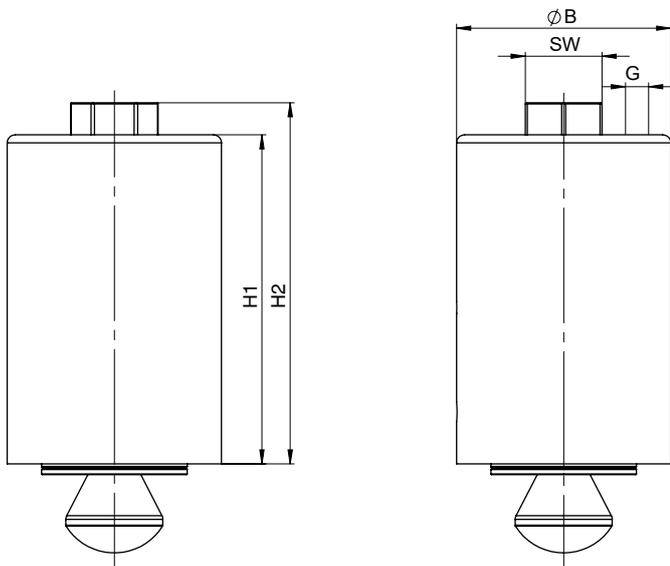
## Dimensions

### Actuator dimensions

#### Control function 1



#### Control function 2

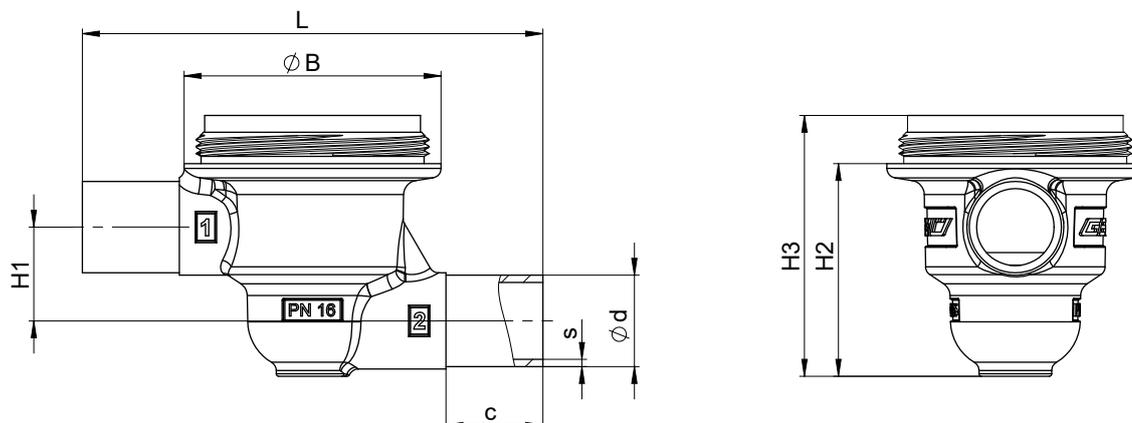


Actuator size	G	Control function	ØB	H1	H2	SW
1	M5	1	40.8	80.6	88.6	19
		2	40.8	68.0	76.0	19
3	G 1/8	1	53.0	97.4	105.4	19
		2	53.0	82.0	90.0	19
4	G 1/8	1	76.0	124.6	135.6	27
		2	76.0	80.8	98.8	27

Dimensions in mm

## Body dimensions

### Spigot



#### Connection type code 17

DN	AG	Connection type code 17 <sup>1)</sup>							
		Material code 41, 43, C3 <sup>2)</sup>							
		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 <sup>1)</sup>							
		Material code 41, 43, C3 <sup>2)</sup>							
		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/DIN 11866 series A, formerly DIN 11850 series 2

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

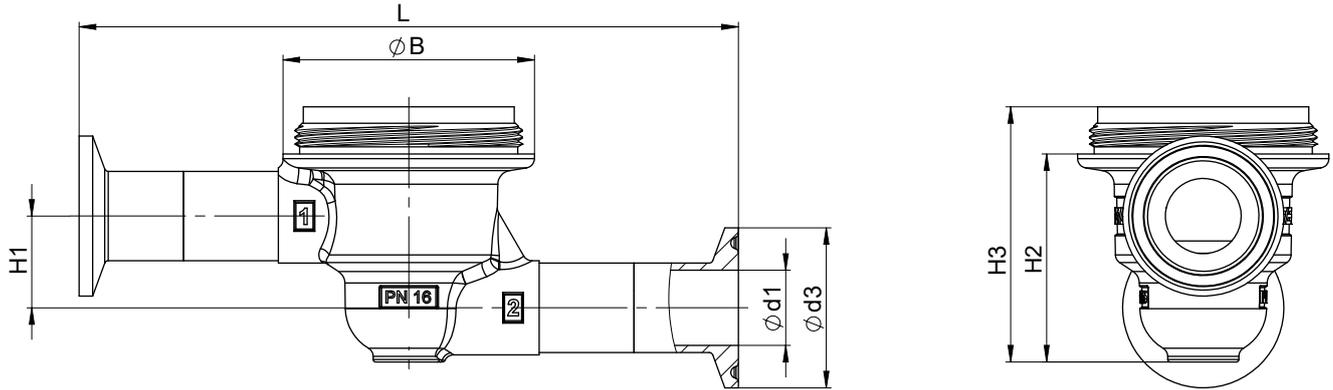
#### 2) Valve body material

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**



**Connection type code 86**

DN	AG	Connection type code 86 <sup>1)</sup>							
		Material code 41, 43, C3 <sup>2)</sup>							
		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 <sup>1)</sup>							
		Material code 41, 43, C3 <sup>2)</sup>							
		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, for pipe ASME BPE

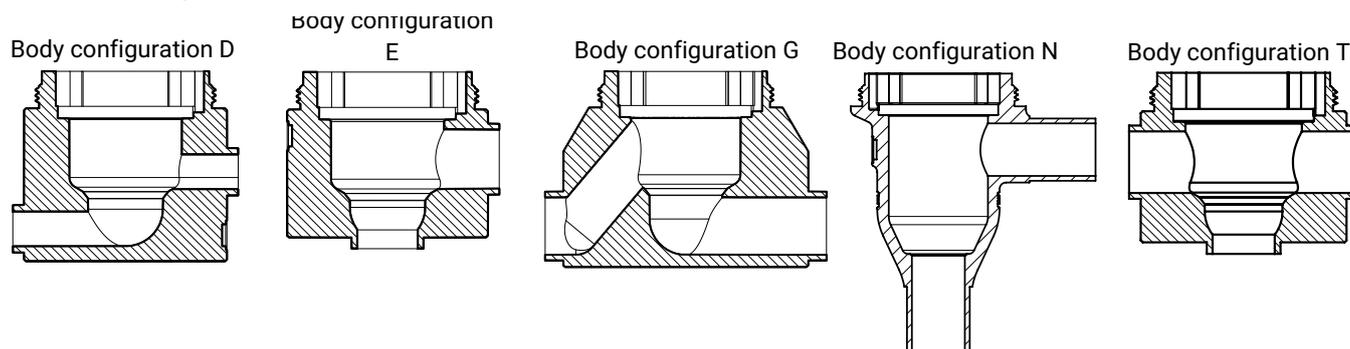
2) **Valve body material**

Code 41: 1.4435 (316L), block material

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

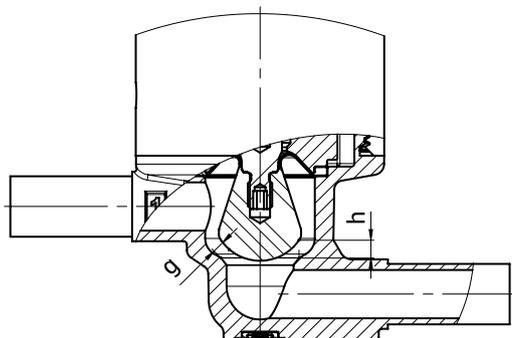
Code C3: 1.4435, investment casting

## Special body



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



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