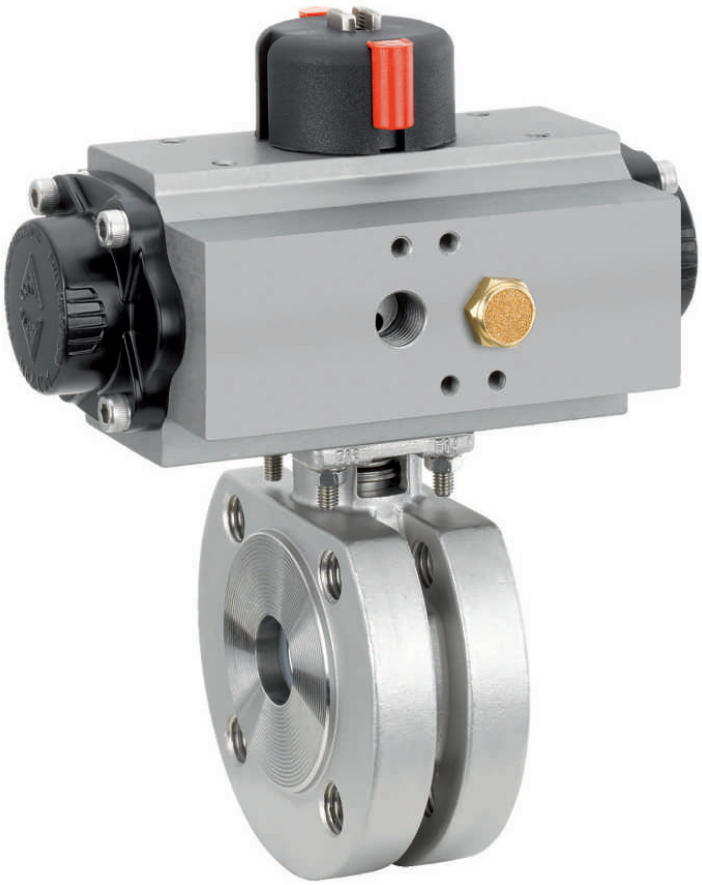
GEMÜ B46

Pneumatically operated compact flanged ball valve

EN **Operating instructions**



further information
webcode: GW-B46

Contents

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.

1.4 Warning notes

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

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences of non-observance. ● Measures for avoiding danger.

Warning notes are always marked 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
	Danger of explosion
	Corrosive chemicals!
	Hot plant components!
	Do not open the actuator!

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 substances.

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:

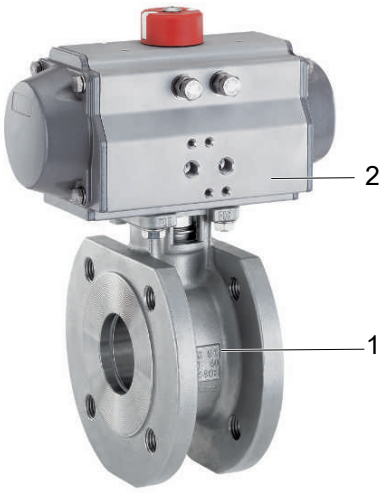
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

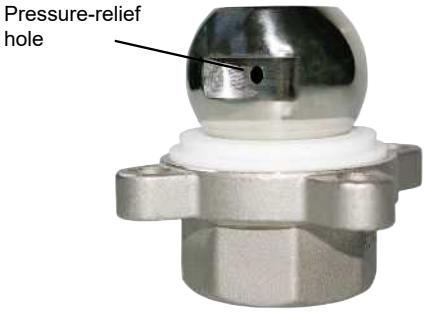
15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



Item	Name	Materials
1	Ball valve body	1.4408 investment casting (316)
2	Pneumatic actuator	Aluminium
	Ball	1.4401 investment casting (316)
	Seal material	PTFE



3.2 Description

The GEMÜ B46 2/2-way metal ball valve is pneumatically operated. The seat seal is made of PTFE.

3.3 Function

The product is designed for use in piping. It controls a flowing medium after a pneumatic actuator has been mounted.

4 GEMÜ CONEXO

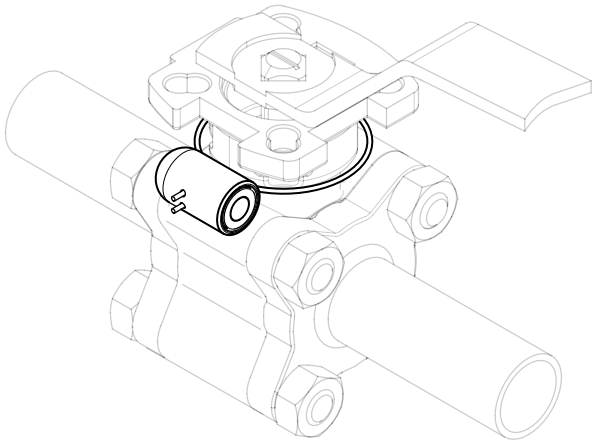
The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.

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

Installing the RFID chip

In the corresponding design with CONEXO, this product has an RFID chip (1) for electronic recognition. The position of the RFID chip can be seen below.



5 Correct use

Ball valves are used to isolate media flows.

Only clean, liquid or gaseous media must be used, and the body and seal materials used must be resistant to and suitable for this. Contaminated media and / or applications outside of the pressure and temperature data may lead to damage to the body and, in particular, to the seals on the ball valve.

The "Technical data" chapter describes the permissible pressure / temperature range for these ball valves.

⚠ DANGER

Danger of explosion

- ► Danger of death or severe injury.
- ● Only use the product in potentially explosive zones confirmed in the declaration of conformity.

⚠ 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.

The product GEMÜ B46 is intended for use in potentially explosive areas of zones 1 and 2 with gases, mists or vapours and zones 21 and 22 with combustible dusts in accordance with EU directive 2014/34/EU (ATEX).

The product has the following explosion protection marking:

Up to DN 65
Gas: Ⓔx II 2G Ex h IIC T6 ... T2 Gb X
Dust: Ⓔx II -/2D Ex h -/IIIC T180 °C -/Db X

DN 80 and 100
Gas: Ⓔx II 2G Ex h IIB T6 ... T2 Gb X
Dust: Ⓔx II -/2D Ex h -/IIIC T180 °C -/Db X

The product has been developed in compliance with the following harmonised standards:

- EN IEC 60079-0:2019 (IEC 60079-0, edition 7)
- EN 60079-11:2012 (IEC 60079-11, edition 6)

Use of the product is permissible in the following ambient temperature ranges: -20 °C to +60 °C

Due to the design, in the open and closed position, a low volume of medium may be trapped within the ball or between the ball and the body.

Expansion of the medium due to temperature differences, change in state or a chemical response may lead to a high pressure build-up. In order to prevent unacceptable pressure increases, a special version with pressure-relief hole in the ball is available on request for this case.

NOTICE

Build-up of lint!

- For soft-seated ball valves, due to the relative rotations of the stainless steel ball valve to the seat seal, slight wear of the PTFE seals must always be anticipated. Despite this, the safety of the ball valve is not affected by any potential build-up of lint and the seal materials are compliant in accordance with FDA directives.

6 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Products ordered with **bold marked ordering options** are so-called preferred series. Depending on the nominal size, these are available more quickly.

Order codes

1 Type	Code
Ball valve, metal, pneumatically operated, one-piece body, compact flange, aluminium double piston actuator, low-maintenance spindle seal and blow-out proof shaft, with anti-static unit	B46

2 DN	Code
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/ball configuration	Code
2/2-way body	**D**
2/2-way body, V-ball 30° (for Kv value see datasheet)	U
2/2-way body, V-ball 60° (for Kv value see datasheet)	Y
2/2-way body, V-ball 90° (for Kv value see datasheet)	W

4 Connection type	Code
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 EN 1092, PN16/PN40, form B DN15 to DN50, flange EN1092, PN 16, form B DN65 to DN100	**68**

5 Ball valve material	Code
1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)	**37**

6 Seal material	Code
PTFE	**5**

7 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2
Double acting (DA)	3

8 Actuator version	Code
Actuator GEMÜ GDR	
Actuator, pneumatic, double acting, clockwise rotation, GDR0050 F03/05 S11	HR05AW
Actuator, pneumatic, double acting, clockwise rotation, GDR0065 F05/07 S14	HR06AP
Actuator, pneumatic, double acting, clockwise rotation, GDR0085 F05/07 S17	HR08AC
Actuator, pneumatic, double acting, clockwise rotation, GDR0115 F07/10 S17	HR11AE
Actuator GEMÜ GSR	
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0065 SC5F04 S11	GR06SO
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0075 SC5F05/07 S17	GR07SC
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0085 SC5F05/07 S14	GR08SP
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0115 SC5F07/10 S17	GR11SE
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0125 SC5F07/10 S17	GR12SE
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0140 SC5F10/12 S22	GR14SA
Actuator, pneumatic, single acting, clockwise rotation, spring closing, GSR0180 S14F10/14 S27	GR18KB
Actuator GEMÜ ADA	
Actuator, pneumatic, double acting, clockwise rotation, ADA0020U F04 S14S11	BU02AA
Actuator, pneumatic, double acting, clockwise rotation, ADA0040U F05 S14S11	BU04AB
Actuator, pneumatic, double acting, clockwise rotation, ADA0080U F05/07S17S14	BU08AC
Actuator, pneumatic, double acting, clockwise rotation, ADA0200U F07/10S17S14	BU20AE
Actuator GEMÜ ASR	
Actuator, pneumatic, single acting, clockwise rotation, spring closing, ASR0020US08F04 S14S11	AU02FA
Actuator, pneumatic, single acting, clockwise rotation, spring closing, ASR0040US14F05 S14S11	AU04KB
Actuator, pneumatic, single acting, clockwise rotation, spring closing, ASR0080US14F05/07S17S14	AU08KC
Actuator, pneumatic, single acting, clockwise rotation, spring closing, ASR0200US14F07/10S17S14	AU20KE

8 Actuator version	Code
Actuator, pneumatic, single acting, clockwise rotation, spring closing, ASR0500US14F07/10 S22	AU50KD
Actuator GEMÜ DR	
Actuator, pneumatic, double acting, clockwise rotation, DR0015U F04 S11	DU01AO
Actuator, pneumatic, double acting, clockwise rotation, DR0030U F05/07 S14	DU03AP
Actuator, pneumatic, double acting, clockwise rotation, DR0060U F05/07 S17	DU06AC
Actuator, pneumatic, double acting, clockwise rotation, DR0150U F07/10 S22	DU15AD
Actuator, pneumatic, double acting, clockwise rotation, DR0220U F07/10 S22	DU22AD
Actuator GEMÜ SC	
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0030U 6F04 S11	SU03KO
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0060U 6F05/07 S14	SU06KP
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0100U 6F05/07S17D11	SU10KC
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0150U 6F05/07 S17	SU15KC

8 Actuator version	Code
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0220U 6F07/10 S22	SU22KD
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0300U 6F07/10 S22	SU30KD
Actuator, pneumatic, single acting, clockwise rotation, spring closing, SC0450U 6F10/12 S27	SU45KG

9 Actuator particulars	Code
Gen. industrial version, body alu, anodising layer 25-35µm, end caps alu, powder coated, shaft C steel + ENP, bolts A2	0

10 Type of design	Code
Standard	
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via mounting kit, mounting kit and mounting parts in stainless steel	5227

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

Order example

Ordering option	Code	Description
1 Type	B46	Ball valve, metal, pneumatically operated, one-piece body, compact flange, aluminium double piston actuator, low-maintenance spindle seal and blow-out proof shaft, with anti-static unit
2 DN	25	DN 25
3 Body/ball configuration	D	2/2-way body
4 Connection type	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
5 Ball valve material	37	1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)
6 Seal material	5	PTFE
7 Control function	1	Normally closed (NC)
8 Actuator version	HR05AW	Actuator, pneumatic, double acting, clockwise rotation, GDR0050 F03/05 S11
9 Actuator particulars	0	Gen. industrial version, body alu, anodising layer 25-35µm, end caps alu, powder coated, shaft C steel + ENP, bolts A2
10 Type of design		Standard
11 CONEXO		Without Integrated RFID chip for electronic identification and traceability

7 Technical data

7.1 Medium

Working medium: Corrosive, inert, gaseous and liquid media and steam which have no negative impact on the physical and chemical properties of the body and seal material.

7.2 Temperature

Media temperature: -20 — 180 °C

For media temperatures > 100 °C , we recommend using a mounting kit with adapter between the ball valve and the actuator.

Ambient temperature: -20 — 60 °C

Higher temperatures on request

Storage temperature: -60 — 60 °C

7.3 Pressure

Operating pressure: 0 — 40 bar

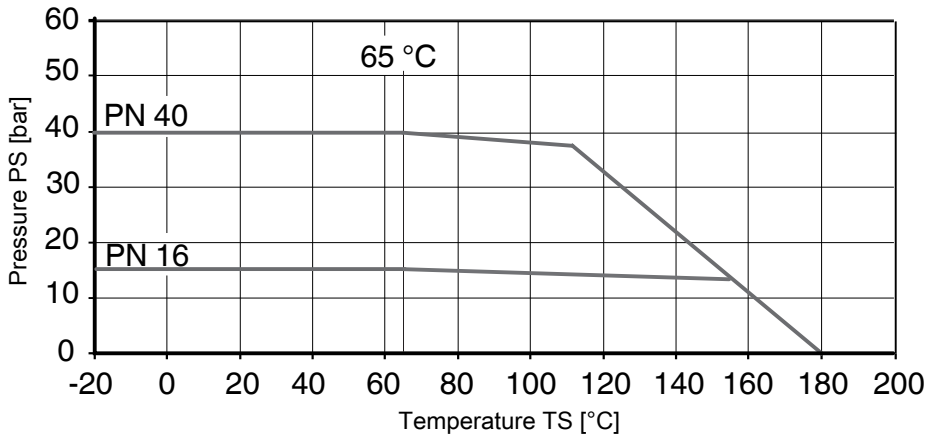
Vacuum: Can be used up to a vacuum of 50 mbar (absolute)

These values apply to room temperature and air. The values may deviate for other media and other temperatures.

Leakage rate: Leakage rate according to ANSI FCI70 – B16.104

Leakage rate according to EN12266, 6 bar air, leakage rate A

Pressure/temperature diagram:



Pressure/temperature data according to the diagram refer to static operating conditions. Strongly fluctuating parameters or parameters that change quickly over time can lead to a reduction in service life. Special applications are to be discussed with your technical contact in advance.

Pressure rating: DN 15 – 50: PN40
DN 65 – 100: PN16

Kv values:

DN	NPS	Kv values
15	1/2"	13.0
20	3/4"	34.0
25	1"	60.0
32	1¼"	94.0
40	1½"	213.0
50	2"	366.0
65	2½"	595.0
80	3"	935.0
100	4"	1700.0

Kv values in m³/h

V-ball 30° (code U)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15	**1/2"**	0	0.085	0.085	0.170	0.255	0.425	0.680	0.935	1.360	1.870	2.210
20	**3/4"**	0	0.085	0.170	0.425	0.595	0.935	1.530	2.040	2.805	3.825	4.590
25	**1"**	0	0.085	0.255	0.680	1.105	1.955	2.975	4.335	5.961	8.128	8.500
32	**1¼"**	0	0.170	0.340	0.935	1.700	3.145	4.675	6.800	8.500	11.050	12.750
40	**1½"**	0	0.255	0.510	1.360	2.550	4.250	6.375	9.350	11.900	14.450	17.000
50	**2"**	0	0.340	1.020	3.230	5.100	8.500	12.75	19.550	26.350	36.550	51.000
65	**2½"**	0	0.340	0.850	3.400	6.800	10.200	15.300	23.800	31.450	52.70	63.750
80	**3"**	0	0.425	1.020	3.400	6.800	11.900	19.550	28.050	39.100	55.250	69.700
100	**4"**	0	0.510	1.700	5.100	12.750	24.650	40.800	60.350	85.000	110.50	135.20

Kv values in m³/h

V-ball 60° (code Y)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15	**1/2"**	0	0.085	0.085	0.255	0.425	0.765	1.190	1.700	2.805	3.740	5.100
20	**3/4"**	0	0.085	0.170	0.595	0.850	1.445	2.380	3.400	5.525	7.650	10.200
25	**1"**	0	0.170	0.340	0.935	1.530	2.890	4.505	6.715	10.46	13.010	17.850
32	**1¼"**	0	0.170	0.510	1.530	2.550	4.675	8.075	10.880	16.15	22.100	33.150
40	**1½"**	0	0.340	0.680	2.125	3.400	6.800	11.050	16.150	22.95	34.000	44.200
50	**2"**	0	0.340	1.275	3.910	7.650	14.030	22.950	33.150	46.75	70.550	93.500
65	**2½"**	0	0.340	1.275	4.250	8.500	17.850	28.900	45.050	63.75	87.550	127.50
80	**3"**	0	0.425	2.125	5.100	11.900	21.250	34.000	55.250	77.35	108.80	140.30
100	**4"**	0	0.595	2.550	9.350	21.250	34.000	50.150	76.500	119.9	180.20	302.60

Kv values in m³/h

Kv values:

V-ball 90° (code W)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15	**1/2"**	0	0.085	0.170	0.340	0.510	0.765	1.275	1.870	3.230	4.590	5.865
20	**3/4"**	0	0.170	0.340	0.680	1.020	1.700	2.635	3.910	6.800	9.605	11.900
25	**1"**	0	0.170	0.510	1.530	2.890	4.335	6.885	9.690	13.600	17.850	24.650
32	**1¼"**	0	0.255	0.680	1.700	4.250	6.800	11.900	16.150	23.800	33.150	46.750
40	**1½"**	0	0.425	0.765	2.975	5.950	11.050	17.000	26.350	35.700	53.550	66.300
50	**2"**	0	0.595	1.700	5.100	10.200	18.700	29.750	38.250	59.500	89.250	114.80
65	**2½"**	0	0.425	1.445	5.950	11.900	23.800	40.800	59.500	90.100	136.00	185.30
80	**3"**	0	0.595	2.975	6.800	15.300	29.750	51.000	76.500	114.80	174.30	263.50
100	**4"**	0	0.850	2.975	13.600	34.000	63.750	106.30	161.50	250.80	375.70	569.50

Kv values in m³/h

Control pressure: 6 — 8 bar

7.4 Product conformities

Machinery Directive: 2006/42/EC

Food: FDA
Regulation (EC) No. 10/2011
Regulation (EC) No. 1935/2006

Pressure Equipment Directive: 2014/68/EU

Explosion protection: ATEX (2014/34/EU) and IECEx, order code Special version X

ATEX marking: The ATEX marking of the product depends on the respective product configuration with valve body and actuator. It can be found in the product-specific ATEX documentation and the ATEX type plate.

7.5 Mechanical data

Torques:

DN	NPS	Breakaway torque
15	**1/2"**	7
20	**3/4"**	8
25	**1"**	10
32	**1¼"**	14
40	**1½"**	29
50	**2"**	58
65	**2½"**	62
80	**3"**	120
100	**4"**	174

Torques in Nm

Weight:

Ball valve

DN	NPS	Weight
15	**1/2"**	1.3
20	**3/4"**	2.0
25	**1"**	2.8
32	**1¼"**	4.2
40	**1½"**	5.3
50	**2"**	6.7
65	**2½"**	11.9
80	**3"**	14.9
100	**4"**	20.4

Weights in kg

Actuator type GDR/GSR

Type	GDR	GSR
0050	1.1	1.2
0065	1.5	1.8
0075	2.6	3.2
0085	3.4	4.3
0100	5.1	6.6
0115	8.0	10.6
0125	10.0	13.4
0140	11.0	17.2
0160	19.5	24.4
0180	26.0	37.5

Weights in kg

Actuator type ADA/ASR

Type	ADA Double acting	ASR Single acting
0020U	1.4	1.5
0040U	2.1	2.3
0080U	3.0	3.7
0130U	3.8	4.8
0200U	5.6	7.3
0300U	8.5	10.8
0500U	11.2	15.4

Weights in kg

Weight:

Actuator type DR/SC

Type	DR Double acting	SC Single acting
0015U	1.0	1.1
0030U	1.6	1.7
0060U	2.7	3.1
0100U	3.7	4.3
0150U	5.2	6.1
0220U	8.0	9.3
0300U	9.8	12.0
0450U	14.0	17.0

Weights in kg

90° travel:

GEMÜ GDR/GSR: ±5° adjustable (85° - 95°)
GEMÜ ADA /ASR: ±5° adjustable (85° - 95°)
GEMÜ DR /SC: 20° adjustable (75° - 95°)

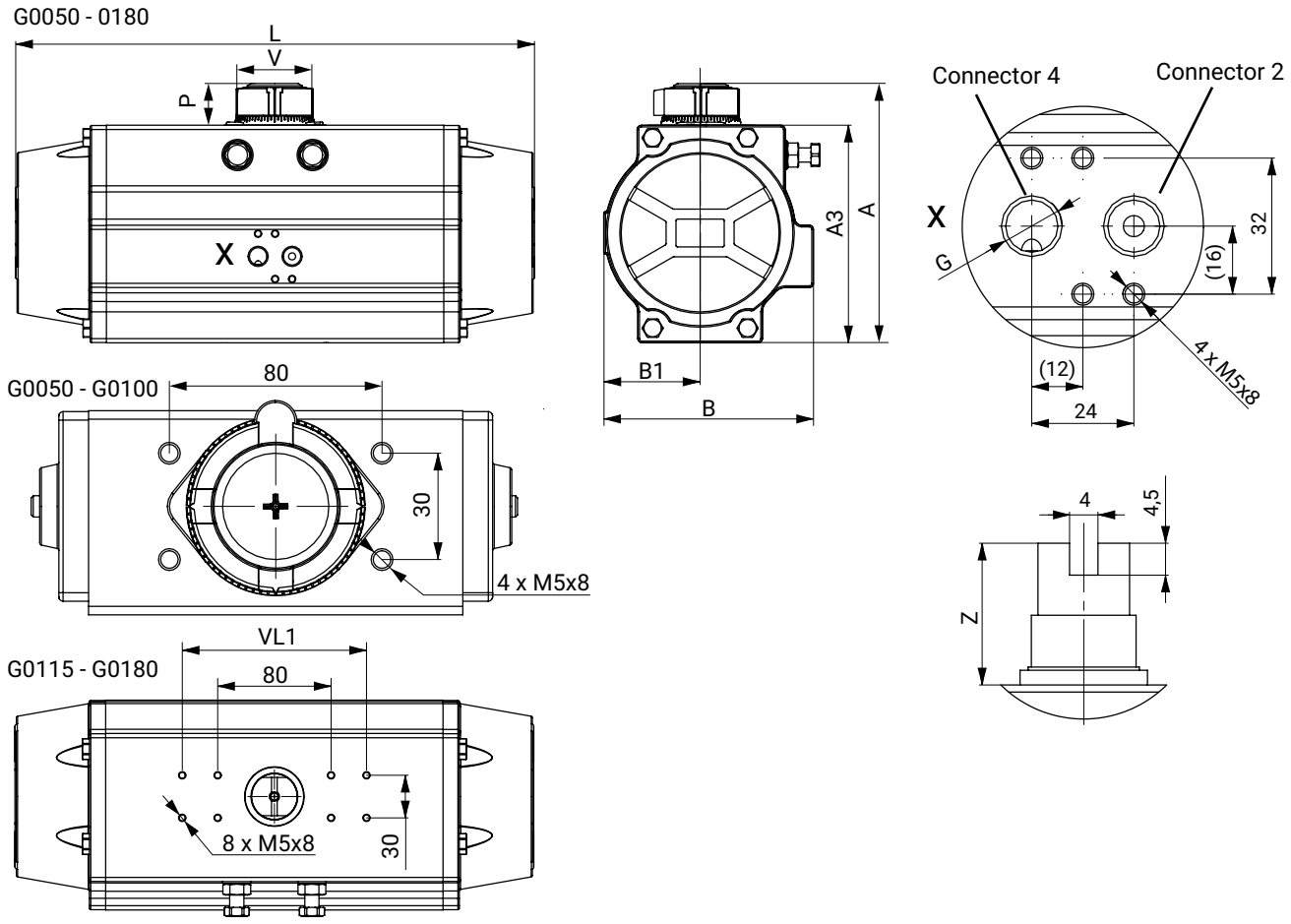
8 Dimensions

8.1 Actuator dimensions

Note on actuator mounting:
Standard mounting orientation – actuator positioned in-line with piping
Only with flanged connections the actuator is mounted across the piping

8.1.1 Actuator type GDR/GSR

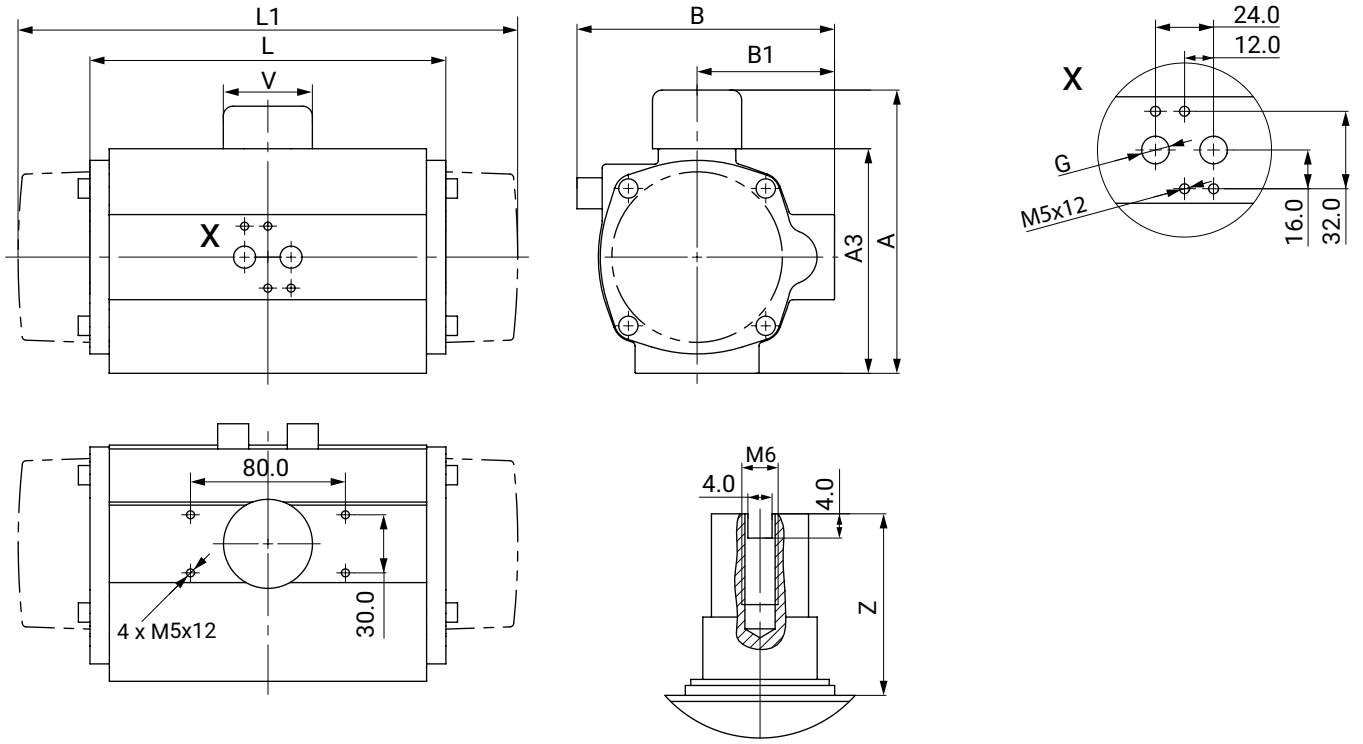
8.1.1.1 Type G0050 – G0180



Type	A	A3	B	B1	V	G	P	VL	Z	L	VL1
G0050	92.0	70.0	71.0	30.0	40.0	G1/8"	22.0	80.0	20.0	141.0	-
G0065	102.5	80.5	80.5	35.5	40.0	G1/8"	22.0	80.0	20.0	162.0	-
G0075	119.0	97.0	94.5	42.0	40.0	G1/8"	22.0	80.0	20.0	208.0	-
G0085	130.5	108.5	106.0	47.5	40.0	G1/8"	22.0	80.0	20.0	237.0	-
G0100	143.5	121.5	123.0	55.0	40.0	G1/4"	22.0	80.0	20.0	271.5	-
G0115	174.0	142.0	137.0	64.0	65.0	G1/4"	32.0	80.0	30.0	337.0	130.0
G0125	185.5	153.5	148.0	68.0	65.0	G1/4"	32.0	80.0	30.0	366.0	130.0
G0140	207.9	175.9	164.0	76.5	65.0	G1/4"	32.0	80.0	30.0	428.5	130.0
G0160	225.0	193.0	188.0	88.0	65.0	G1/4"	32.0	80.0	30.0	512.0	130.0
G0180	251.0	219.0	212.5	96.5	65.0	G1/4"	32.0	80.0	30.0	573.0	130.0

Dimensions in mm

8.1.2 Actuator type ADA/ASR

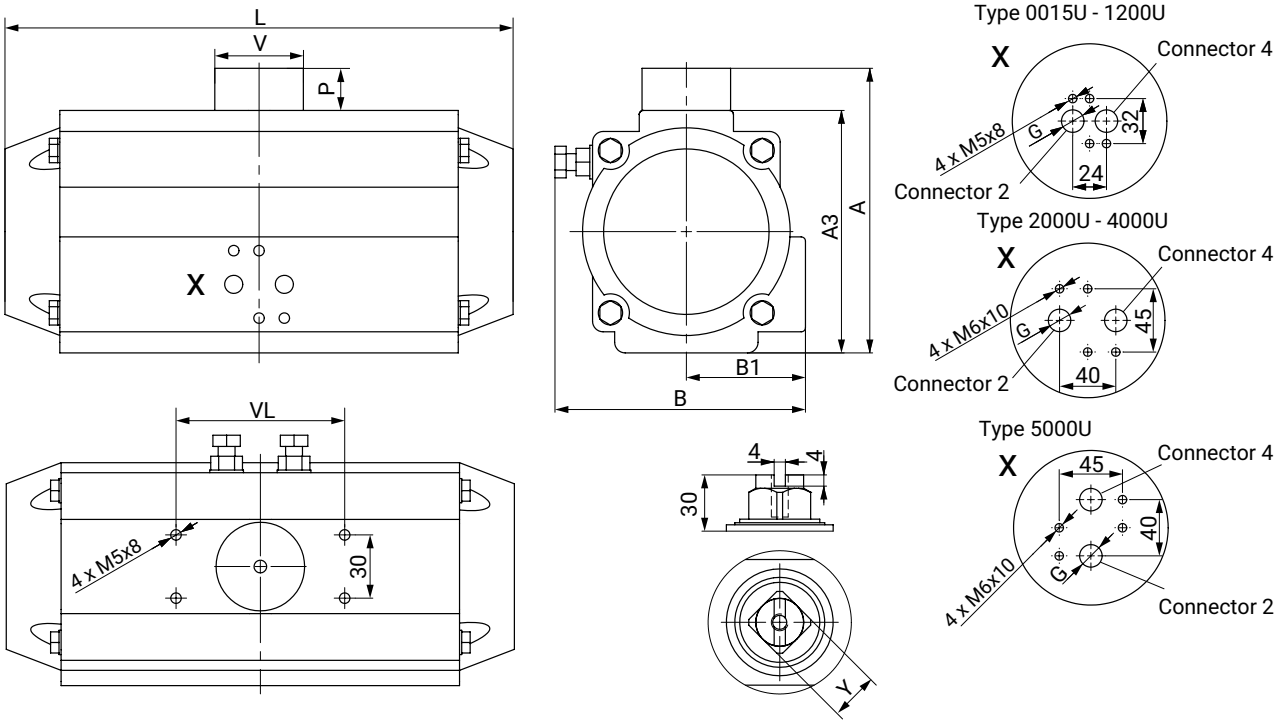


Type	A	A3	B	B1	G	L	L1	V	Z
0020U	96.0	66.0	76.0	48.0	G1/4"	145.0	163.0	40.0	30.0
0040U	115.0	85.0	91.0	56.0	G1/4"	158.0	195.0	40.0	30.0
0080U	137.0	107.0	111.0	66.0	G1/4"	177.0	217.0	40.0	30.0
0130U	147.0	117.0	122.0	71.0	G1/4"	196.0	258.0	40.0	30.0
0200U	165.0	135.0	135.5	78.0	G1/4"	225.0	299.0	40.0	30.0
0300U	182.0	152.0	152.5	86.0	G1/4"	273.0	348.5	40.0	30.0
0500U	199.0	169.0	173.0	96.0	G1/4"	304.0	397.0	40.0	30.0

Dimensions in mm

8.1.3 Actuator type DR/SC

Actuator dimensions

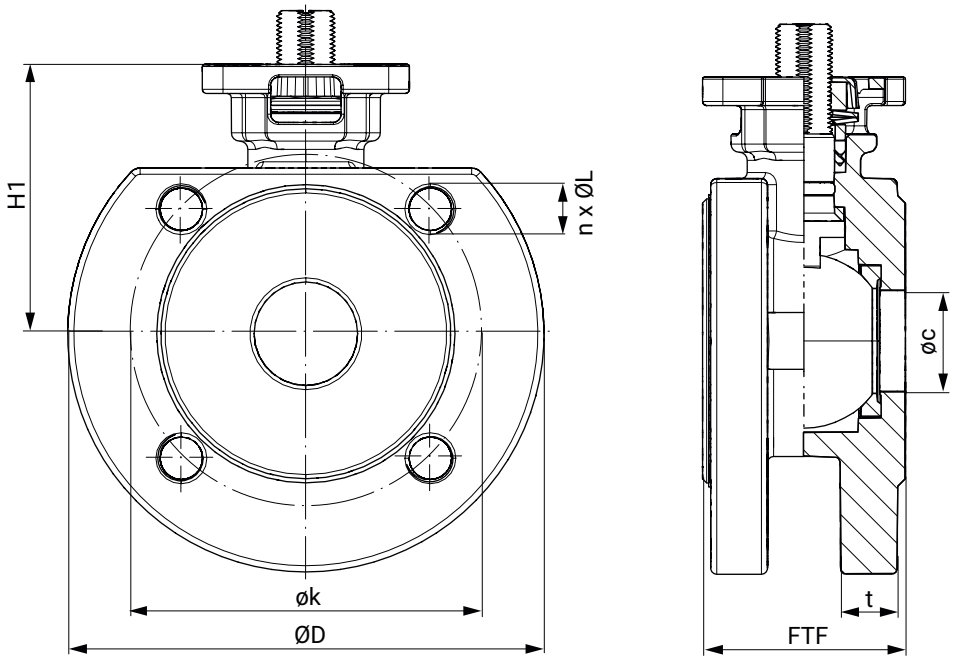


Type	A	A3	B	B1	V	VL	G	P	L	Y
0015U	89.0	69.0	72.0	43.0	42.0	80.0	G1/8"	20.0	136.0	11.0
0030U	105.0	85.0	84.5	48.5	42.0	80.0	G1/8"	20.0	153.5	11.0
0060U	122.0	102.0	93.0	50.5	42.0	80.0	G1/8"	20.0	203.5	17.0
0100U	135.0	115.0	106.0	56.5	42.0	80.0	G1/8"	20.0	241.0	17.0
0150U	147.0	127.0	118.5	63.0	42.0	80.0	G1/4"	20.0	259.0	17.0
0220U	175.0	145.0	136.0	72.0	58.0	80.0	G1/4"	30.0	304.0	27.0
0300U	187.0	157.0	146.5	77.0	58.0	80.0	G1/4"	30.0	333.0	27.0
0450U	207.0	177.0	166.0	86.0	67.5	80.0	G1/4"	30.0	394.5	27.0

Dimensions in mm

8.2 Body dimensions

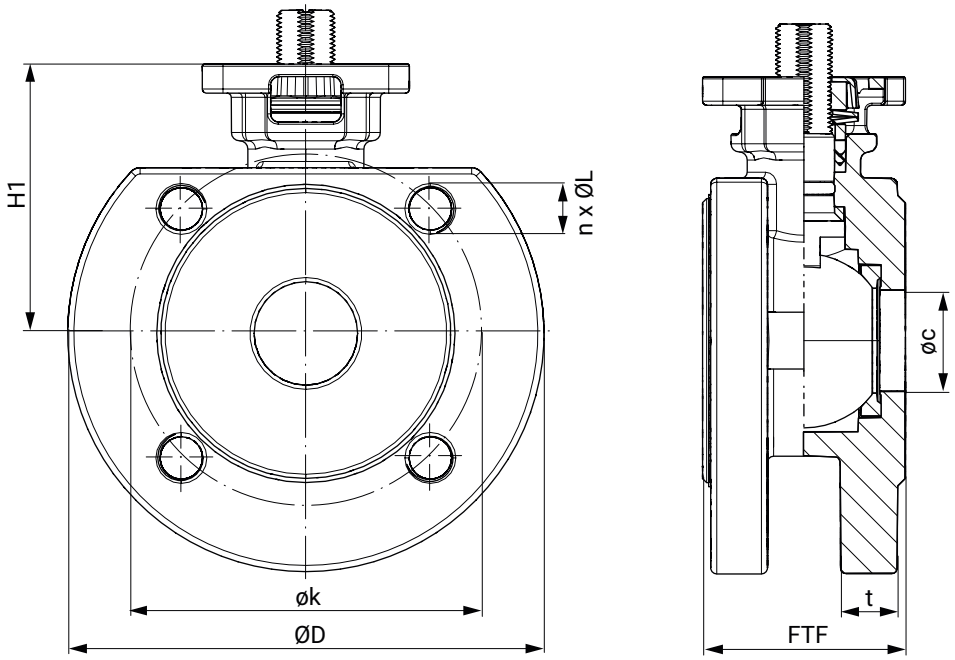
8.2.1 Flange (connection code 39)



DN	øc	ØD	øk	t	FTF	H1	n x ØL
15	15.0	89.0	60.5	9.2	38.0	48.5	4x1/2-13UNC
20	20.0	99.0	69.8	11.0	40.0	54.0	4x1/2-13UNC
25	25.0	108.0	79.2	13.5	46.0	65.0	4x1/2-13UNC
32	32.0	117.0	88.9	14.0	56.0	78.0	4x1/2-13UNC
40	38.0	127.0	98.6	15.5	65.0	85.0	4x1/2-13UNC
50	50.0	152.0	120.6	17.0	78.0	93.0	4x5/8-11UNC
65	65.0	178.0	139.7	20.5	99.0	107.0	4x5/8-11UNC
80	76.0	190.0	152.4	22.0	116.0	119.0	4x5/8-11UNC
100	100.0	229.0	190.5	22.0	149.0	132.0	8x5/8-11UNC

Dimensions in mm

8.2.2 Flange (connection code 68)



DN	øc	ØD	øk	t	FTF	H1	n x ØL
15	15.0	82.0	65.0	14.0	42.0	48.5	4 x M12
20	20.0	98.0	75.0	14.0	44.0	54.0	4 x M12
25	25.0	115.0	85.0	14.0	50.0	65.0	4 x M12
32	32.0	140.0	100.0	16.0	60.0	78.0	4 x M16
40	38.0	150.0	110.0	15.0	69.0	85.0	4 x M16
50	50.0	165.0	125.0	15.5	82.0	93.0	4 x M16
65	65.0	185.0	145.0	15.5	103.0	107.0	4 x M16
80	76.0	200.0	160.0	17.0	119.0	119.0	8 x M16
100	100.0	220.0	180.0	17.0	150.0	132.0	8 x M16

Dimensions in mm

9 Manufacturer's information

9.1 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.

9.2 Packaging

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

9.3 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.

9.4 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 the maximum 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.
5. Store the ball valves in the "open" position.

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.
- Completely drain the plant.

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

Hot plant components!

► Risk of burns
- Only work on plant that has cooled down.

⚠ CAUTION

Exceeding the maximum permissible pressure.

► Damage to the product
- Provide precautionary measures against exceeding the maximum permitted pressures 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

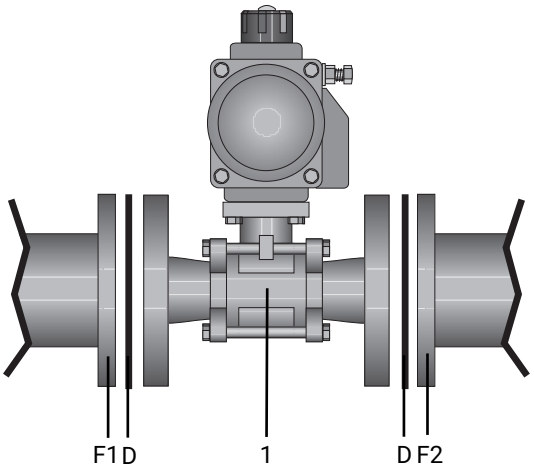
► The tools required for installation and assembly are not included in the scope of delivery.
- Use appropriate, functional and safe tools.

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. Use appropriate protective gear as specified in plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Installation work must be performed by trained personnel.
7. Shut off plant or plant component.
8. Secure the plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant or plant component and allow it to 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).
14. Installation position: preferably actuator upwards.
15. Direction of the working medium: optional.

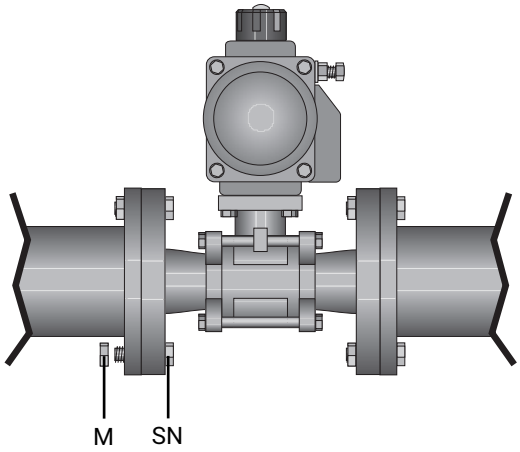
10.2 Installation with flanged connections

NOTICE

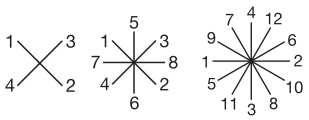
► Observe valid standards for mounting flanges!



1. Ensure sealing surfaces on the mating flanges are clean and undamaged.
2. Only use connector elements made of approved materials!
3. Install the ball valve in the state it is delivered.
4. Carefully align the ball valve body **1** centrally between the pipes with flanges (**F1** and **F2**).
5. Centre the seals **D** accurately. Seals are not included in the scope of delivery.
6. Connect the ball valve flange and the piping flange using appropriate sealing material and matching bolting. Sealing material and bolts are not included in the scope of delivery.



7. Insert bolts **SN** in all holes in the flange.
8. Slightly tighten the bolts **SN** and nuts **M** diagonally.



9. Check the alignment of the piping.
10. Tighten the nuts **M** diagonally.

Observe appropriate regulations for connections!

10.3 After the installation

- Re-attach or reactivate all safety and protective devices.

11 Pneumatic connection

11.1 Control functions

The following control functions are available:

Control function 1, actuator aligned parallel to the piping, control function Q, actuator aligned across the piping normally closed (NC)

Ball valve resting position: closed by spring force. Activation of the actuator (connector 2) opens the ball valve. When the actuator is vented, the ball valve is closed by spring force.

Control function 2, actuator aligned parallel to the piping, control function U, actuator aligned across the piping normally open (NO)

Ball valve resting position: opened by spring force. Activation of the actuator (connector 4) closes the ball valve. When the actuator is vented, the ball valve is opened by spring force.

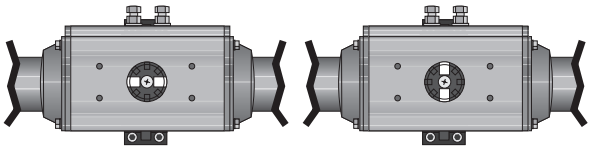
Control function 3, actuator aligned parallel to the piping, control function T, actuator aligned across the piping double acting (DA)

Ball valve resting position: undefined. The ball valve is opened and closed by activating the respective control medium connectors (connector 2: open / connector 4: close).

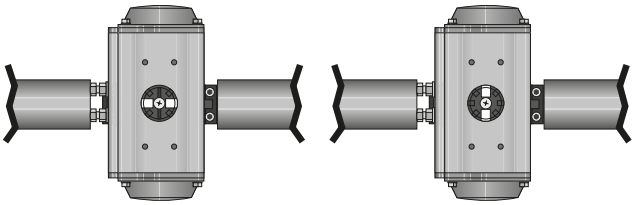
Control functions	Connectors	
	2	4
1 (NC), Q (NC)	+	-
2 (NO), U (NO)	-	+
3 (DA), T (DA)	+	+
+ = available / - = not available (for connectors 2 / 4 see picture in chapter "Connecting the control medium")		

11.2 Optical position indicator

Control function 1, 2, 3



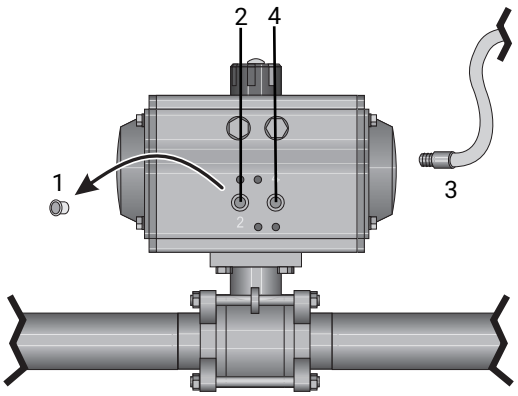
Control function Q, U, T



11.3 Connecting the control medium

1. Use suitable connectors.
2. Connect the control medium lines tension-free and without any bends or knots.

Thread size of the control medium connectors: G1/4

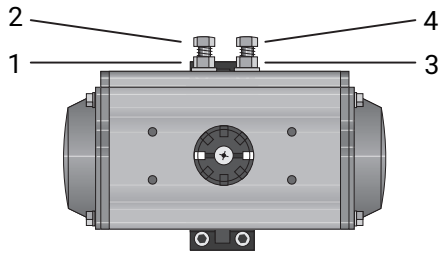


3. Remove the protection cap **1**.
4. Connect the control medium line **3** to connectors **2** and **4** according to the control function.

Control function		Connectors
1	Normally closed (NC)	2: Control medium (open)
2	Normally open (NO)	4: Control medium (close)
3	Double acting (DA)	2: Control medium (open) 4: Control medium (close)
For connectors 2 / 4 see picture above		

12 Setting the end positions

The end positions can be set by ± 4°.



Setting the 0° end position:

1. Move the ball valve to the closed position.
2. Loosen the lock nut **1**.
3. Set the end position via screw **2**.
4. Tighten the lock nut **1**.

Setting the 90° end position:

5. Move the ball valve to the open position.
6. Loosen the lock nut **3**.
7. Set the end position via screw **4**.
8. Tighten the lock nut **3**.

13 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns

● Wear appropriate protective gear.

● Completely drain the plant.

⚠ CAUTION

Leakage

► Emission of dangerous materials.

● Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

1. Check the tightness and the function of the product (close and reopen the product).
2. Flush the piping system of new plant and following repair work (the product must be fully open).
   ⇨ Harmful foreign matter has been removed.
   ⇨ The product is ready for use.
3. Commission the product.

14 Operation

Operate the product according to the control function (see also chapter "Pneumatic connection").

15 Troubleshooting

Error	Possible cause	Troubleshooting
The product does not open or does not open fully	Foreign matter in the product	Remove and clean the product
	Control medium not connected	Connect control medium
	Actuator defective	Replace the actuator
	Control medium not connected or connected incorrectly	Connect the control medium or check the control medium supply
The product does not close or does not close fully	Foreign matter in the product	Remove and clean the product
	Actuator defective	Replace the actuator (see chapter "Actuator mounting on the ball valve body")
The product is leaking between actuator and valve body, medium is escaping at the valve spindle	Spindle nut or spacer bolt loosened	Tighten spindle nut or spacer bolt
	Wearing parts of spindle seal faulty	Replace wearing parts
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
Valve body leaking	Incorrect installation	Check installation of valve body in piping
	Bolts of the ball valve body are loose	Retighten bolts

16 Inspection/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.

⚠ CAUTION

Hot plant components!

► Risk of burns
- Only work on plant that has cooled down.

⚠ CAUTION

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

1. Use appropriate protective gear as specified in plant operator's guidelines.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

Ball valves are maintenance-free. No lubrication or routine maintenance of the ball valve shaft is required. The shaft is guided through a PTFE gland packing in the ball valve body. The shaft seal is pretensioned and self-adjusting. However, the operator must carry out regular visual examinations of the ball valves, dependent on the operating conditions and the potential danger in order to prevent leakage and damage.

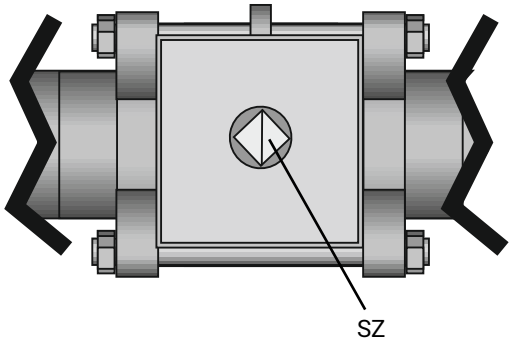
If there is a leakage at the spindle nut, this can generally be rectified by retightening the spindle nut. However, overtightening the spindle nut must be avoided.

Usually, retightening by between 30° and 60° will be sufficient to rectify the leakage.

16.1 General information regarding actuator replacement

NOTICE

The following tools are required for actuator replacement:
- Allen key



1. Check the position of the ball indicated by the groove **SZ** and compare with position indicator, rotate ball valve to correct position if necessary.

⇨ Groove transverse to piping direction:
Ball valve closed.

⇨ Groove in piping direction:
Ball valve open.

16.1.1 Replacing the actuator

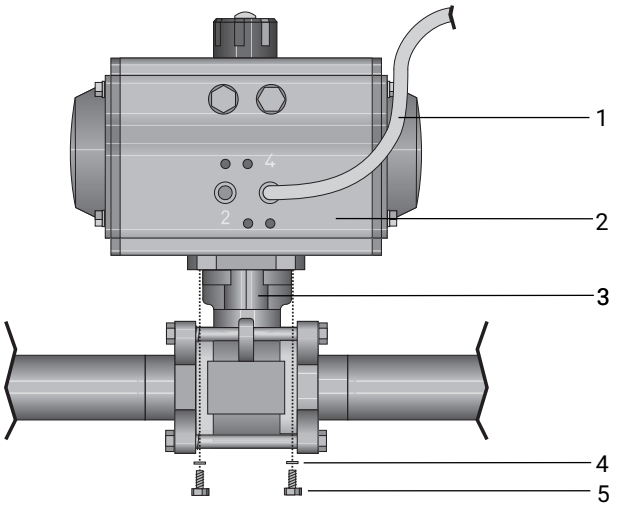
1. Depressurize the control medium.
2. Unscrew the control medium line(s) on the actuator.

16.2 Removing the actuator from the ball valve body

⚠ DANGER

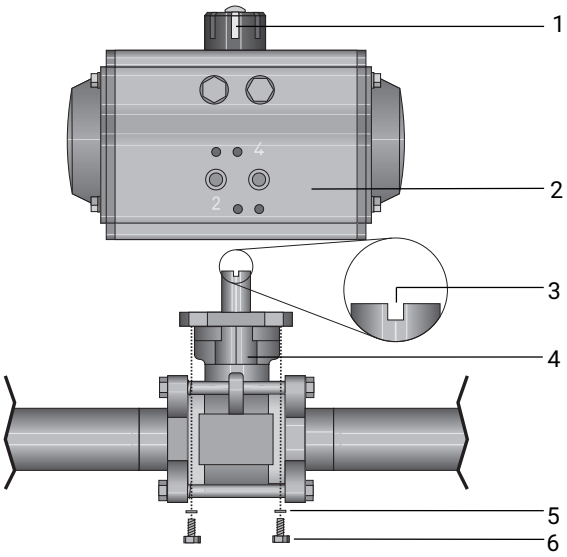
Do not open the actuator!

- ► Risk of severe injury or death!
- ► Manufacturer's warranty will be voided.



1. Depressurize the control medium.
2. Unscrew the control medium line(s) **1** on the actuator.
3. Unscrew the hexagon screws **5**.
4. Do not lose the washers **4**.
5. Remove the actuator **2** from the ball valve body **3**.

16.3 Actuator mounting on the ball valve body



1. Ensure that the groove at the square **3** of the ball valve is in correct alignment with the marking **1** of the position indicator, if necessary rotate the square to the correct position.
2. Place the actuator **2** on the square and align, if necessary.
3. Hand-tighten the screws **6** with their washers **5**.
4. Diagonally hand-tighten the screws **6** evenly.
5. Connect the control medium (see chapter "Connecting the control medium").

Tightening torques for upper spindle nut item 10

Nominal size	Torque [Nm]
DN8	9
DN10	9
DN15	9
DN20	9
DN25	15
DN32	15
DN40	25
DN50	25
DN65	30
DN80	30
DN100	40

17 Removal from piping

1. Remove the clamp or screw connections in reverse order to installation.
2. Remove welded or solvent cemented connections using a suitable cutting tool.
3. Observe the safety information and accident prevention regulations.

18 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.

19 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.

20 EU Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B

EU Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II B

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6–8
74653 Ingelfingen-Criesbach, Germany

hereby declare under our sole responsibility that the below-mentioned product complies with the relevant essential health and safety requirements in accordance with Annex I of the above-mentioned Directive.

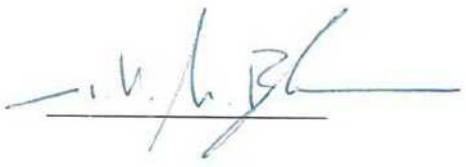
Product:	GEMÜ B46
Product name:	Pneumatically operated compact flanged ball valve
The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:	1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.3.; 1.3.4.; 1.3.7.; 1.3.8.; 1.5.13.; 1.5.3.; 1.5.5.; 1.5.6.; 1.5.7.; 1.5.8.; 1.6.1.; 1.6.3.; 1.6.5.; 1.7.1.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.
The following harmonized standards (or parts thereof) have been applied:	EN ISO 12100:2010

We also declare that the specific technical documents have been created in accordance with part B of Annex VII.

The manufacturer undertakes to transmit relevant technical documents on the partly completed machinery to the national authorities in response to a reasoned request. This communication takes place electronically.

This does not affect the industrial property rights.

The partly completed machinery may be commissioned only if it has been determined, if necessary, that the machinery into which the partly completed machinery is to be installed meets the provisions of the Machinery Directive 2006/42/EC.



M. Barghoorn
Head of Global Technics

Ingelfingen, 01/02/2023

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8 D-74653 Ingelfingen-Criesbach
www.gemu-group.com
info@gemue.de

21 Declaration of conformity according to 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

in accordance with 2014/68/EU (Pressure Equipment Directive)

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6–8
74653 Ingelfingen-Criesbach, Germany

declare that the product listed below complies with the safety requirements of the Pressure Equipment Directive 2014/68/EU.

Description of the pressure equipment:	GEMÜ B46
Notified body:	TÜV Rheinland Industrie Service GmbH
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H
Technical standard applied in parts:	EN 1983, AD 2000

Note for products with a nominal size ≤ DN 25:
The products are developed and produced according to GEMÜ process instructions and quality standards 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-label.

Other applied standards/ remarks:

- DIN EN ISO 5211
- DIN EN 558
- AD 2000

Joachim Brien
Head of Technical Department

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