GEMÜ R478 Tugela

Motorized butterfly valve

EN **Operating instructions**

further information
webcode: GW-R478

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.
- A supplement to Directive 2014/34/EU (ATEX Directive) is included with the product, provided that it was ordered in accordance with ATEX.

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.

Control function

The possible actuation functions of the GEMÜ product.

Control medium

The medium whose increasing or decreasing pressure causes the GEMÜ product to be actuated and operated.

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!
	Moving components!
	The equipment is subject to pressure!
	Corrosive chemicals!
	GEMÜ products without an actuating element!
	Hot plant components!
	Leakage
	Maximum permissible pressure exceeded!
	Use as an end-of-line valve!

Symbol	Meaning
	Risk of crushing!
	Risk of electric shock!
	Leakage!
	Electric shock by dangerous voltage!

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:

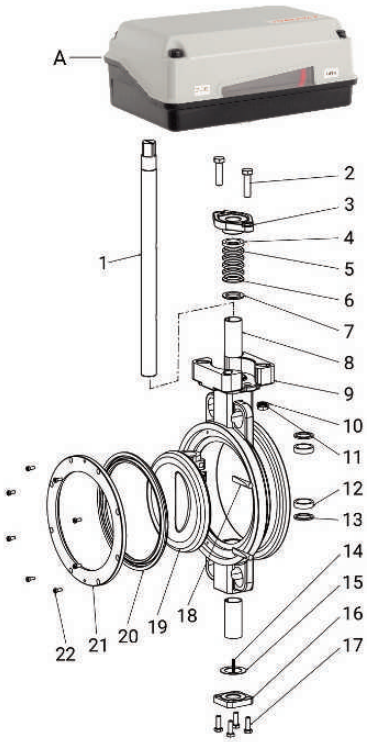
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not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

In cases of uncertainty:

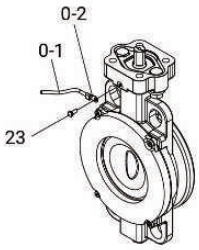
15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



ATEX version

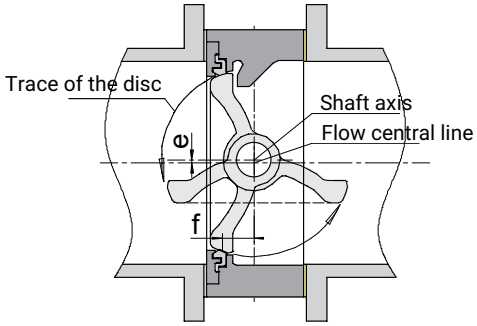


Item	Designation	Material
1	Shaft	See order code (order data)
2	Hexagon screw	Stainless steel
3	Packing washer	1.4408
4	Upper gland packing	PTFE
5	Middle gland packing	PTFE
6	Lower gland packing	PTFE
7	Packing washer	PTFE
8	Bush	316/PTFE
9	Housing	See order code (order data)
10	Spring washer	Stainless steel
11	Hexagon nut	Stainless steel
12	Shaft bearing	PTFE coated steel
13	Shaft bearing	PTFE coated steel
14	Static spring	Stainless steel
15	Sealing washer	Stainless steel
16	Lower cap	As body
17	Hexagon screw	Stainless steel
18	Disc pin	Steel
19	Disc	See order code (order data)
20*	Seat	See order code (order data)
21	Seat retainer	
22	Hexagon screw	Stainless steel
A	Motorized actuator	
0	Earthing kit for ATEX version	
0-1	Stranded wire (ATEX version)	
0-2	Cable lug (ATEX version)	
23	Hexagon screw	Stainless steel

* available as spare part

3.2 Additional design features

Double-eccentric design



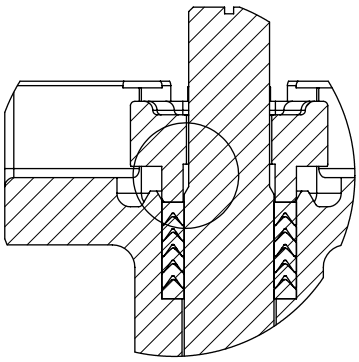
During operation, the disc directly disconnects from the seat, thereby reducing friction between the seat and disc, as well as the torque.

This design is particularly low-wear and this, together with the temperature-resistant carbon bushing, increases the service life.

Spherical surface

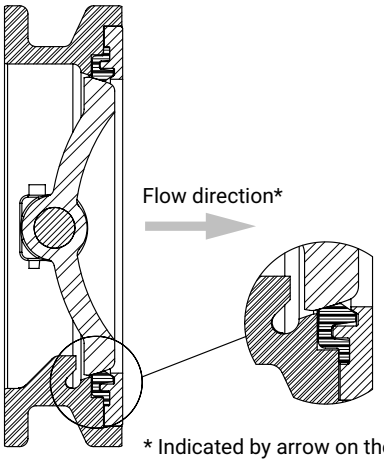
The disc is designed with a spherical surface for improved mechanical behaviour under pressure and temperature fluctuations.

Shaft blow-out protection

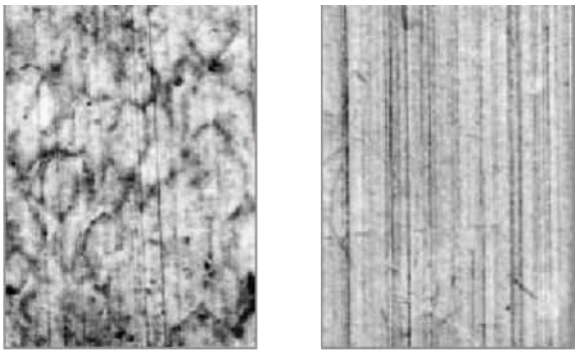


There is a chamfer at the upper end of the shaft which acts as an additional safety measure in case the shaft breaks.

Flow direction



Seat material



TFM™ is made from conventional PTFE and a 1% proportion of perfluoropropyl vinyl ether (PPVE). While the properties of conventional PTFE (excellent chemical resistance, application in a wide temperature range and resistance to embrittlement or ageing, etc.) are maintained, the PPVE additive leads to a better distribution of the PTFE particles and thus to a higher density of the polymer structure.

This leads to the following additional advantages:

- Significantly better cold flow properties (measured as deformation under load):
  Same cold flow properties as PTFE with 25% glass fibres.
- Reduced gas permeability and increased blocking properties
- The smooth surface results in less abrasion of the shut-off seal and fewer abraded particles in the medium.

3.3 Description

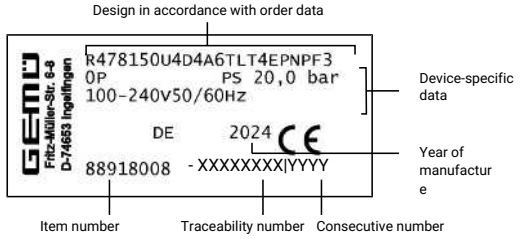
The GEMÜ R478 Tugela double-eccentric metal butterfly valve is operated by a motorized actuator. The butterfly valve is available in nominal sizes DN 50 to 600 and in standardized installation lengths API 609 category A (DIN 3202 K1).

3.4 Function

The product controls or regulates (depending on version) a flowing medium by being closed or opened by a motorized actuator.

3.5 Product label

The product label is located on the valve body. Product label data (example):



The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

The operating pressure stated on the product label applies to a media temperature of 20 °C. The product can be used up to the maximum stated media temperature. You can find the pressure/temperature correlation in the technical data.

4 Correct use

⚠ DANGER

Danger of explosion!

► Risk of severe injury or death

- Do not use the product in potentially explosive zones.
- 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 is designed for installation in piping systems and for controlling a working medium.

- Use the product in accordance with the technical data.

4.1 Product without special function X

The product is not intended for use in potentially explosive areas.

4.2 Product with special function X

With the special version X order option, the product is intended for use in potentially explosive areas in zone 1 with gases, mists or vapours and zone 21 with combustible dusts in accordance with EU Directive 2014/34/EU (ATEX).

The product has the following explosion protection marking:

Gas: Ⓔx II -/2 G Ex h -/IIB T6 ...T3 -/Gb X

Dust: Ⓔx II -/2 D Ex h -/IIIC T150°C -/Db X

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

- EN 1127-1:2011
- ISO 80079-36:2016
- ISO 80079-37:2016

Use of the product is permissible in the following ambient temperature ranges: -40 °C to +70 °C

For use in potentially explosive areas, the following special conditions or operation limits must be observed:

Index X is applied to the ATEX marking.

The following special conditions must be complied with:

- Temperature class depending on the temperature of the conveyed medium and the clock frequency
- Not permissible as an end-of-line valve

5 Order data

5.1 Butterfly valve with AUMA actuator

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

Order codes

1 Type	Code
Butterfly valve, double-eccentric, motorized, long service life, low friction thanks to direct separation of seat/disc, continuous and blow-out proof shaft, with anti-static unit and low-maintenance spindle seal, readjustable	R478

2 DN	Code
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300
DN 350	350
DN 400	400
DN 450	450
DN 500	500
DN 600	600

3 Body configuration	Code
Flange-mounted design (lug), face-to-face dimension FTF EN 558 series 20	L
Double flange design (U section), face-to-face dimension FTF EN 558, series 20	U
Intermediate flange design (wafer), face-to-face dimension FTF API609 table B, EN 558 series 108, EN 558 series 109	W

4 Operating pressure	Code
10 bar	2
16 bar	3
20 bar	4
25 bar	5
40 bar	6

5 Connection type	Code
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 108	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 108	3
PN 25 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	5
PN 40 / flange EN 1092, face-to-face dimension FTF EN 558 series 109	6
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 108	D

5 Connection type	Code
ANSI B16.5, Class 300, face-to-face dimension FTF EN 558 series 109	M

6 Body material	Code
1.4408 / ASTM A351 / CF8M	4
1.0619 / ASTM A216 WCB, CDP coated 20 µm, for non-European countries, 1.0619 is not a material for pressure equipment according to 2014/68/EU	5

7 Disc material	Code
1.4408 / ASTM A351 CF8M	A

8 Shaft material	Code
1.4542 / ASTM 564 630 UNS S17400	6
1.4410 / ASTM A276 S32750	D
Note: -40 °C only possible with shaft material 1.4410 (Code D)	

9 Shut-off seal material	Code
TFM 1600 (FDA certification)	T

10 Liner fixing	Code
Loose liner	L

11 Voltage/Frequency	Code
24V AC/DC	C5
120V 50Hz	G2
120V 60Hz	G3
380V 50Hz	J2
230V 50Hz	L2
230V 60Hz	L3
400V 50Hz	N2
480V 60Hz	P3
85-240V AC/DC	S5
24V-240V AC / DC for model 20, 35, 55, 85, 140, 300	U5
440V 60 Hz	V3
460V 60Hz	W3

12 Control module	Code
ON/OFF actuator	A0
ON/OFF actuator, 2 additional potential-free limit switches, additional potential-free torque switches, Class A (EN15714-2)	AB
ON/OFF actuator, positioner AUMATIC (AC 01.2), fieldbus interface Profibus DP-V0, Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC AA000-1A1-A000, TPA xxR100-0I1-000	ADP

12 Control module	Code
ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)	AE
ON/OFF actuator, 2 additional potential-free limit switches, BSR battery pack (NC)	AE1
ON/OFF actuator, 2 additional potential-free limit switches, BSR battery pack (NO)	AE2
ON/OFF actuator, positioner AUMATIC (AC 01.2), Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC A-1B1-1C1-A000, TPA xxR100-0I1-000	ASC
ON/OFF actuator, remote and on-site control, AUMA MATIC (AM 01.1), Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), MSP 1110KC3-F18E1, TPA xxR1AA-101-000	ASM
Control actuator, external set value 0-10 VDC	E1
Control actuator, external set value 0/4-20 mA	E2

13 Actuator version	Code
Actuator, motorized, operating time 16s, torque 150Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ05H
Actuator, motorized, operating time 16s, torque 300Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ07H
Actuator, motorized, operating time 32s, torque 600Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable,	AQ10L

13 Actuator version	Code
flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	
Actuator, motorized, operating time 25s, torque 140Nm, J+J, type J4 heating, IP67	J4C14
Actuator, motorized, operating time 9s, torque 20Nm, J+J, type J4 heating, IP67	J4C20
Actuator, motorized, operating time 48s, torque 300Nm, J+J, type J4 heating, IP67	J4C30
Actuator, motorized, operating time 9s, torque 35Nm, J+J, type J4 heating, IP67	J4C35
Actuator, motorized, operating time 13s, torque 55Nm, J+J, type J4 heating, IP67	J4C55
Actuator, motorized, operating time 29s, torque 85Nm, J+J, type J4 heating, IP67	J4C85
Actuator, motorized, operating time 10s, torque 35Nm, J+J, type J4 heating, IP67	JRC35

14 Type of design	Code
Without	
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Thermal separation between actuator and valve body via dew point barrier	5226

15 Special version	Code
Without	
ATEX certification	X

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

Order example

Ordering option	Code	Description
1 Type	R478	Butterfly valve, double-eccentric, motorized, long service life, low friction thanks to direct separation of seat/disc, continuous and blow-out proof shaft, with anti-static unit and low-maintenance spindle seal, readjustable
2 DN	300	DN 300
3 Body configuration	W	Intermediate flange design (wafer), face-to-face dimension FTF API609 table B, EN 558 series 108, EN 558 series 109
4 Operating pressure	4	20 bar
5 Connection type	6	PN 40 / flange EN 1092, face-to-face dimension FTF EN 558 series 109
6 Body material	4	1.4408 / ASTM A351 / CF8M

Ordering option	Code	Description
7 Disc material	A	1.4408 / ASTM A351 CF8M
8 Shaft material	6	1.4542 / ASTM 564 630 UNS S17400
9 Shut-off seal material	T	TFM 1600 (FDA certification)
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	G2	120V 50Hz
12 Control module	A0	ON/OFF actuator
13 Actuator version	AQ10L	Actuator, motorized, operating time 32s, torque 600Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68
14 Type of design		Without
15 Special version		Without
16 CONEXO		Without

6 Technical data

6.1 Medium

Working medium: Gaseous and liquid media which have no negative impact on the physical and chemical properties of the disc and seat material.

6.2 Temperature

Media temperature: -40 — 230 °C

Ambient temperature: -40 — 70 °C

Storage temperature: 5 — 40 °C

6.3 Pressure

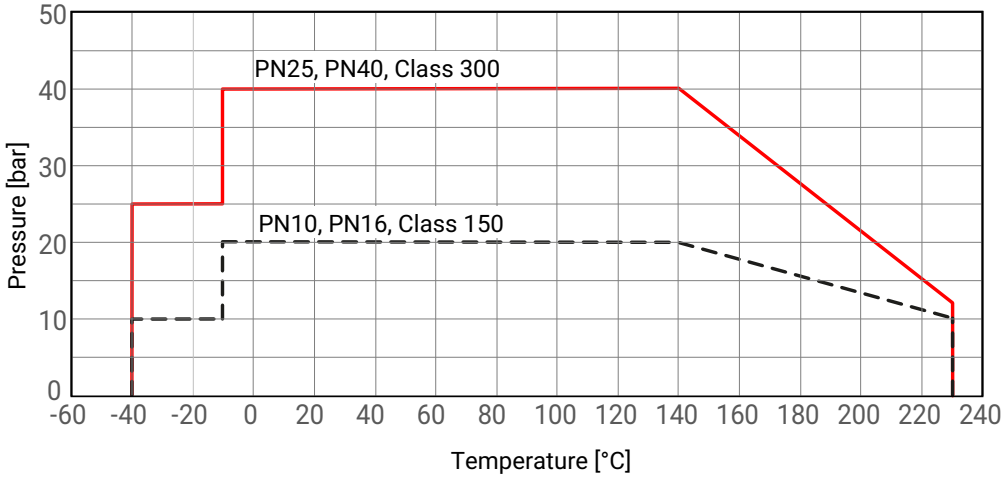
Operating pressure: 0 — 40 bar

Note: Cannot be used as an end-of-line valve

Vacuum: Can be used up to a vacuum of 10 mbar (abs) due to a leak rate at 10^{-3} [mbar l / sec]

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

Pressure/temperature diagram:



Cv values:

DN	NPS	Body	Kv in m³/h at opening angle in °						
		CLASS	90	80	65	50	35	20	0
50	**2"**	**CL300**	24.7	25.3	27.2	21.3	9.6	0.1	0.0
65	**2½"**	**CL300**	59.6	69.3	74.2	50.6	24.2	2.99	0.0
80	**3"**	**CL300**	123.0	129.0	118.0	95.5	60.2	17.2	0.0
100	**4"**	**CL300**	281.0	295.0	250.0	170.0	100.0	35.9	0.0
125	**5"**	**CL300**	423.0	449.0	393.0	276.0	168.0	52.3	0.0
150	**6"**	**CL150**	770.0	776.0	586.0	384.0	211.0	85.2	0.0
		CL300	696.0	705.0	543.0	363.0	200.0	78.0	0.0
200	**8"**	**CL150**	1480.0	1530.0	1160.0	734.0	414.0	192.0	0.0
		CL300	1470.0	1520.0	1150.0	734.0	419.0	195.0	0.0
250	**10"**	**CL150**	2400.0	2410.0	1780.0	1120.0	597.0	271.0	0.0
		CL300	2410.0	2340.0	1690.0	1030.0	522.0	218.0	0.0
300	**12"**	**CL150**	3650.0	3600.0	2610.0	1650.0	910.0	410.0	0.0
		CL300	3350.0	3250.0	2350.0	1490.0	781.0	345.0	0.0
350	**14"**	**CL150**	3890.0	3810.0	2960.0	2000.0	1200.0	647.0	0.0
		CL300	3860.0	3720.0	2780.0	1790.0	1030.0	510.0	0.0
400	**16"**	**CL150**	6350.0	5960.0	4270.0	2570.0	1420.0	720.0	0.0
		CL300	5300.0	5140.0	3670.0	2350.0	1330.0	643.0	0.0
450	**18"**	**CL150**	8080.0	7710.0	5360.0	3290.0	1800.0	888.0	0.0
		CL300	6740.0	6390.0	4650.0	2900.0	1590.0	767.0	0.0
500	**20"**	**CL150**	9590.0	9050.0	6320.0	3850.0	2070.0	948.0	0.0
		CL300	7800.0	7290.0	5460.0	3600.0	2040.0	1000.0	0.0
600	**24"**	**CL150**	14300.0	13400.0	9620.0	6100.0	3560.0	1950.0	0.0
		CL300	12400.0	11800.0	8550.0	5650.0	3240.0	1770.0	0.0

Cv values in m³/h

6.4 Product conformity

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food: FDA

EAC: The product is certified according to EAC.

Explosion protection: 2014/34/EU (ATEX)

ATEX marking:

Assessment of the body

Special function code X
Gas: Ⓔx II -/2 G Ex h -/IIC T6...T3 -/Gb X
Dust: Ⓔx II -/2D Ex h -/IIIC T150°C -/Db X

TA Luft (German Clean Air Act): The product meets the following requirements under the max. permissible operating conditions:

- Tightness or compliance with the specific leak rate within the sense of TA-Luft as well as VDI 2440
- Compliance with the requirements in accordance with DIN EN ISO 15848-1, Table C.2, Class BH

6.5 Mechanical data

Torques:

DN	NPS	Connection type code [1]									
		D, 2, 3					M, 5, 6				
		Maximum pressure differential [bar]									
		0.0	6.0	10.0	16.0	20.0	0.0	20.0	25.0	40.0	50.0
50	**2"**	33.0	33.0	34.0	35.0	37.0	33.0	37.0	38.0	40.0	42.0
65	**2½"**	43.0	44.0	45.0	46.0	50.0	43.0	50.0	52.0	57.0	60.0
80	**3"**	54.0	56.0	57.0	58.0	64.0	54.0	64.0	67.0	74.0	79.0
100	**4"**	68.0	71.0	72.0	74.0	84.0	68.0	84.0	88.0	99.0	107.0
125	**5"**	90.0	94.0	96.0	100.0	115.0	90.0	115.0	121.0	139.0	151.0
150	**6"**	114.0	120.0	123.0	128.0	149.0	123.0	158.0	167.0	193.0	211.0
200	**8"**	181.0	192.0	200.0	211.0	258.0	202.0	280.0	299.0	358.0	397.0
250	**10"**	250.0	268.0	280.0	297.0	372.0	287.0	409.0	439.0	530.0	591.0
300	**12"**	357.0	387.0	408.0	438.0	567.0	393.0	603.0	655.0	813.0	918.0
350	**14"**	559.0	607.0	640.0	688.0	721.0	699.0	861.0	901.0	1023.0	1104.0
400	**16"**	950.0	1027.0	1079.0	1156.0	1207.0	1188.0	1445.0	1509.0	1701.0	1830.0
450	**18"**	1420.0	1534.0	1611.0	1725.0	1802.0	1629.0	2011.0	2107.0	2394.0	2585.0
500	**20"**	1967.0	2144.0	2262.0	2439.0	2557.0	2499.0	3089.0	3237.0	3679.0	3974.0
600	**24"**	3324.0	3579.0	3748.0	4003.0	4173.0	3579.0	4429.0	4641.0	5278.0	5703.0

Torques in Nm

1) **Connection type**
Code 2: PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 108
Code 3: PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 108
Code 5: PN 25 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code 6: PN 40 / flange EN 1092, face-to-face dimension FTF EN 558 series 109
Code D: ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 108
Code M: ANSI B16.5, Class 300, face-to-face dimension FTF EN 558 series 109

Weight:

Butterfly valve

DN	NPS	Connection type code [1]	
		D, 2, 3	M, 5, 6
50	**2"**	3.2	3.2
65	**2½"**	3.6	3.6
80	**3"**	4.9	4.9
100	**4"**	7.5	7.5
125	**5"**	8.0	8.0
150	**6"**	12.0	14.0
200	**8"**	18.0	23.0
250	**10"**	31.0	40.0
300	**12"**	47.0	66.0
350	**14"**	77.0	114.0
400	**16"**	96.0	146.0
450	**18"**	133.0	212.0
500	**20"**	156.0	261.0
600	**24"**	268.0	385.0

Weights in kg

1) **Connection type**
Code 2: PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 108
Code 3: PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 108
Code 5: PN 25 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code 6: PN 40 / flange EN 1092, face-to-face dimension FTF EN 558 series 109
Code D: ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 108
Code M: ANSI B16.5, Class 300, face-to-face dimension FTF EN 558 series 109

Flow direction: Indicated by an arrow on the product

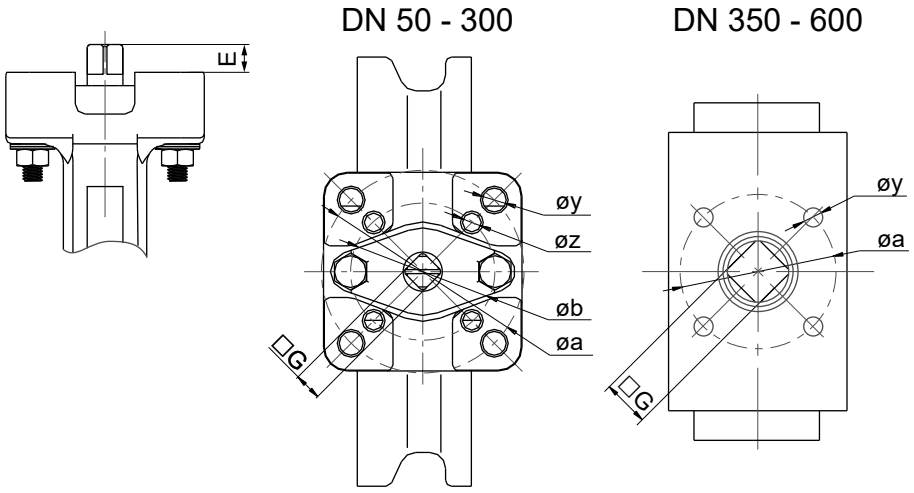
7 Technical data of actuator

Note: For technical data see manufacturer's original datasheets

8 Dimensions

8.1 Actuator flange

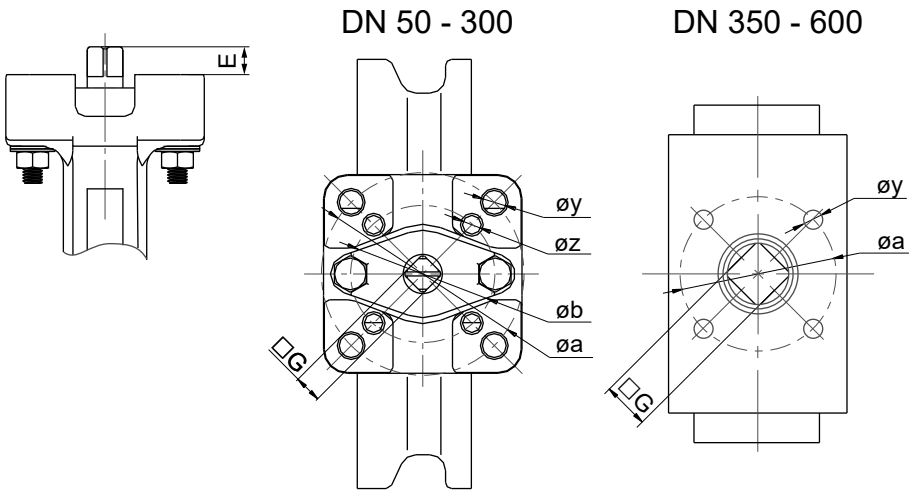
8.1.1 Flange PN10 (code 2), PN16 (code 3), CLASS 150 (code D)



DN	NPS	ISO 5211	øa	øb	E	□G	øy	øz
50	**2"**	F05	50.0	-	15.0	11.0	4 x 7.0	-
65	**2½"**	F05/F07	70.0	50.0	15.0	11.0	4 x 9.5	4 x 7.0
80	**3"**	F05/F07	70.0	50.0	15.0	11.0	4 x 9.5	4 x 7.0
100	**4"**	F07	70.0	-	19.0	14.0	4 x 9.5	-
125	**5"**	F07	70.0	-	19.0	14.0	4 x 9.5	-
150	**6"**	F07/F10	102.0	70.0	19.0	14.0	4 x 12.0	4 x 9.5
200	**8"**	F10	102.0	-	22.0	17.0	4 x 12.0	-
250	**10"**	F10/F12	125.0	102.0	27.0	22.0	4 x 14.0	4 x 12.0
300	**12"**	F12/F14	140.0	125.0	32.0	27.0	4 x 18.0	4 x 14.0
350	**14"**	F14/F16	165.0	140.0	29.0	27.0	4 x 22.0	4 x 18.0
400	**16"**	F14/F16	165.0	140.0	38.0	36.0	4 x 22.0	4 x 18.0
450	**18"**	F14/F16	165.0	140.0	38.0	36.0	4 x 22.0	4 x 18.0
500	**20"**	F14/F16	165.0	140.0	48.0	46.0	4 x 22.0	4 x 18.0
600	**24"**	F16/F25	254.0	165.0	48.0	46.0	8 x 19.0	4 x 22.0

Dimensions in mm

8.1.2 Flange PN25 (code 5), PN40 (code 6), CLASS 300 (code M)



DN	NPS	ISO 5211	øa	øb	E	□G	øy	øz
50	**2"**	F05	50.0	-	15.0	11.0	4 x 7.0	-
65	**2½"**	F05/F07	70.0	50.0	15.0	11.0	4 x 9.5	4 x 7.0
80	**3"**	F05/F07	70.0	50.0	15.0	11.0	4 x 9.5	4 x 7.0
100	**4"**	F07	70.0	-	19.0	14.0	4 x 9.5	-
125	**5"**	F07	70.0	-	19.0	14.0	4 x 9.5	-
150	**6"**	F10	102.0	-	22.0	17.0	4 x 12.0	-
200	**8"**	F10/F12	125.0	102.0	27.0	22.0	4 x 14.0	4 x 12.0
250	**10"**	F12/F14	140.0	125.0	32.0	27.0	4 x 18.0	4 x 13.5
300	**12"**	F14	140.0	-	32.0	27.0	4 x 18.0	-
350	**14"**	F14/F16	165.0	140.0	38.0	36.0	4 x 22.0	4 x 18.0
400	**16"**	F14/F16	165.0	140.0	48.0	46.0	4 x 22.0	4 x 18.0
450	**18"**	F16/F25	254.0	165.0	48.0	46.0	8 x 19.0	4 x 22.0
500	**20"**	F16/F25	254.0	165.0	57.0	55.0	8 x 19.0	4 x 22.0
600	**24"**	F16/F25	254.0	165.0	57.0	55.0	8 x 19.0	4 x 22.0

Dimensions in mm

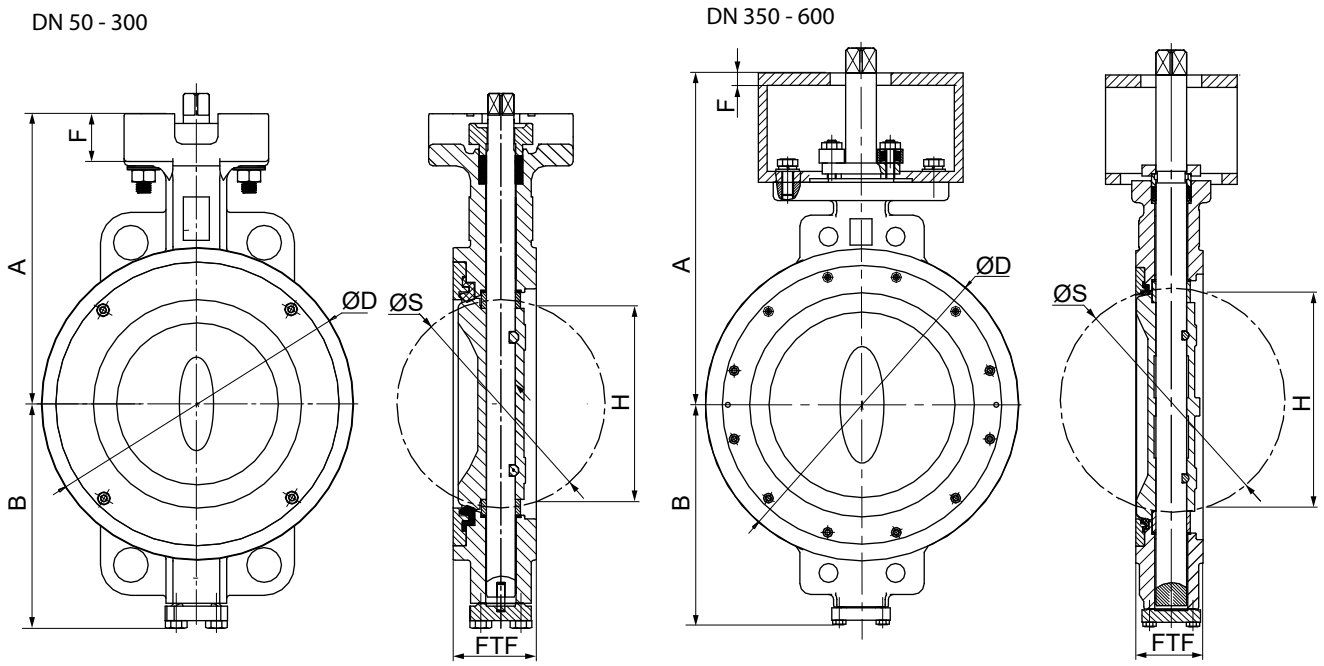
8.2 Actuator dimensions

For more detailed information on third-party actuators, refer to the manufacturers' documentation

8.3 Body

8.3.1 Wafer body configuration

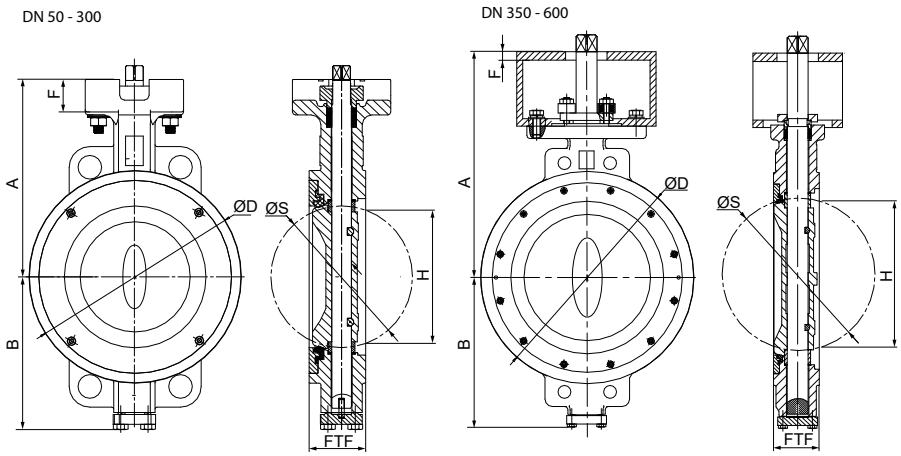
8.3.1.1 Flange PN10 (code 2), PN16 (code 3), CLASS 150 (code D)



DN	NPS	A	B	ØD	F	FTF	H	ØS
50	**2"**	124.0	96.4	100.0	-	50.0	15.0	38.6
65	**2½"**	122.0	101.0	105.0	-	51.5	49.0	57.0
80	**3"**	143.5	115.0	132.0	-	49.5	69.0	74.0
100	**4"**	160.0	128.0	158.0	-	56.5	91.0	96.0
125	**5"**	176.5	148.0	186.0	-	57.0	103.0	111.0
150	**6"**	198.0	157.0	216.0	33.0	57.5	140.0	144.0
200	**8"**	230.0	195.0	266.0	35.0	63.0	179.0	188.0
250	**10"**	273.0	236.0	324.0	34.0	71.0	231.0	237.0
300	**12"**	319.0	262.0	381.0	30.0	81.5	276.0	283.0
350	**14"**	455.0	303.0	429.0	17.0	92.0	300.0	307.0
400	**16"**	490.0	337.5	480.0	17.0	101.5	347.0	363.5
450	**18"**	502.0	353.5	533.0	17.0	114.0	394.0	414.0
500	**20"**	524.0	376.5	584.0	17.0	127.0	434.0	458.0
600	**24"**	625.0	453.5	692.0	22.0	154.0	524.0	550.0

Dimensions in mm

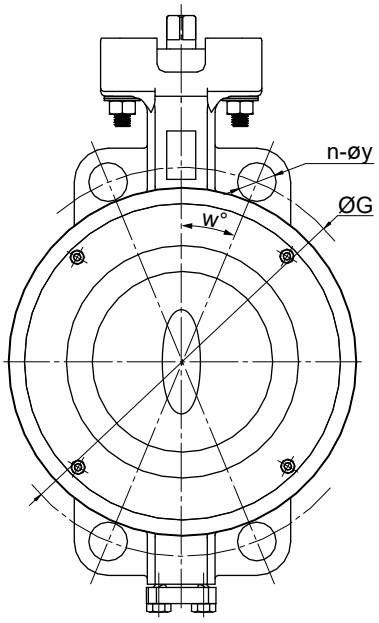
8.3.1.2 Flange PN25 (code 5), PN40 (code 6), CLASS 300 (code M)



DN	NPS	A	B	ØD	F	FTF	H	ØS
50	**2"**	124.0	96.4	100.0	22.0	50.0	15.0	38.6
65	**2½"**	122.0	101.0	105.0	15.0	51.5	49.0	57.0
80	**3"**	143.5	115.0	132.0	18.0	49.5	69.0	74.0
100	**4"**	160.0	128.0	158.0	23.0	56.5	91.0	96.0
125	**5"**	176.5	148.0	186.0	23.0	57.0	103.0	111.0
150	**6"**	217.5	170.5	216.0	26.0	59.0	140.0	144.0
200	**8"**	250.0	206.5	270.0	35.0	73.0	179.0	188.0
250	**10"**	303.0	248.0	324.0	31.0	83.0	231.0	237.0
300	**12"**	335.5	291.0	409.0	39.0	92.0	276.0	283.0
350	**14"**	470.0	320.5	445.0	17.0	117.0	300.0	315.0
400	**16"**	500.5	365.5	470.0	17.0	133.5	347.0	363.5
450	**18"**	531.0	382.5	560.0	17.0	149.0	394.0	414.0
500	**20"**	593.0	426.5	585.0	22.0	162.0	434.0	456.5
600	**24"**	645.0	498.0	692.0	22.0	181.0	524.0	550.0

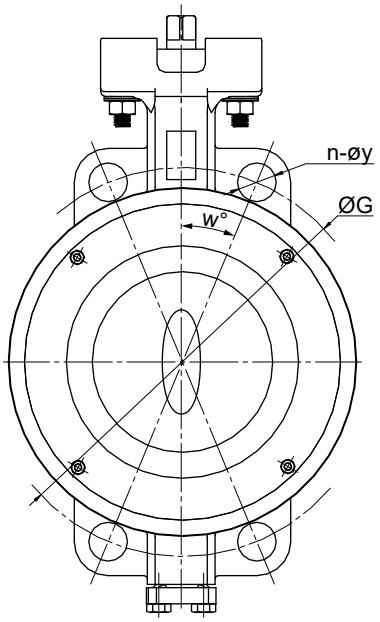
Dimensions in mm

8.3.1.3 Connections



DN	NPS	PN10				PN16				PN25				PN40			
		n	ØG	w°	øy	n	ØG	w°	øy	n	ØG	w°	øy	n	ØG	w°	øy
50	**2"**	4	125.0	45.0	18.0	4	125.0	45.0	18.0	4	125.0	45.0	18.0	4	125.0	45.0	18.0
65	**2½"**	8	145.0	22.5	18.0	8	145.0	22.5	18.0	8	145.0	22.5	18.0	8	145.0	45.0	18.0
80	**3"**	8	160.0	22.5	19.0	8	160.0	22.5	19.0	8	160.0	22.5	19.0	8	160.0	22.5	19.0
100	**4"**	8	180.0	22.5	18.0	8	180.0	22.5	18.0	8	190.0	22.5	22.0	8	190.0	22.5	22.0
125	**5"**	8	210.0	22.5	18.0	8	210.0	22.5	18.0	8	220.0	22.5	26.0	8	220.0	22.5	26.0
150	**6"**	8	240.0	22.5	22.0	8	240.0	22.5	22.0	8	250.0	22.5	28.0	8	250.0	22.5	28.0
200	**8"**	8	295.0	22.5	24.0	12	295.0	15.0	24.0	12	310.0	15.0	28.0	12	320.0	15.0	30.0
250	**10"**	12	350.0	15.0	22.0	12	355.0	15.0	26.0	12	370.0	15.0	30.0	12	385.0	15.0	33.0
300	**12"**	12	400.0	15.0	22.0	12	410.0	15.0	26.0	16	430.0	11.25	M27	16	450.0	11.25	M30
350	**14"**	16	460.0	11.25	22.0	16	470.0	11.25	26.0	16	490.0	11.25	M30	16	510.0	11.25	M33
400	**16"**	16	515.0	11.25	28.0	16	525.0	11.25	30.0	16	550.0	11.25	M33	16	585.0	11.25	M36
450	**18"**	20	565.0	9.0	M24	20	585.0	9.0	M27	20	600.0	9.0	M33	20	610.0	9.0	M36
500	**20"**	20	620.0	9.0	M24	20	650.0	9.0	M30	20	660.0	9.0	M33	20	670.0	9.0	M39
600	**24"**	20	725.0	9.0	M27	20	770.0	9.0	M33	20	770.0	9.0	M36	20	795.0	9.0	M45

Dimensions in mm
n = number of bolt holes / bolts

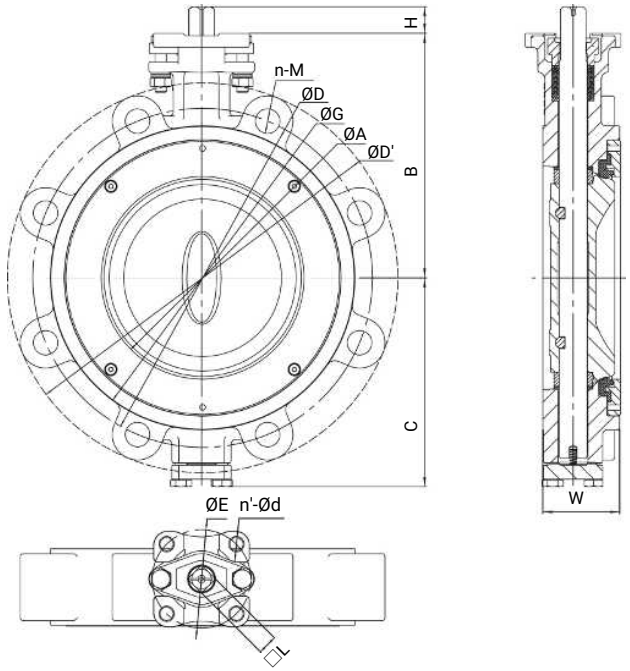


DN	NPS	CLASS 150				CLASS 300			
		n	ØG	w°	øy	n	ØG	w°	øy
50	**2"**	4	120.5	45.0	19.0	8	127.0	22.5	18.0
65	**2½"**	4	139.5	45.0	18.0	8	149.0	22.5	22.0
80	**3"**	4	152.5	45.0	19.0	8	168.5	22.5	22.0
100	**4"**	8	190.5	22.5	19.0	8	200.0	22.5	22.0
125	**5"**	8	216.0	22.5	24.0	8	235.0	22.5	22.0
150	**6"**	8	241.0	22.5	24.0	12	270.0	15.0	24.0
200	**8"**	8	298.5	22.5	24.0	12	330.0	15.0	28.0
250	**10"**	12	362.0	15.0	26.0	16	387.5	11.25	1" x 8UN
300	**12"**	12	432.0	15.0	26.0	16	451.0	11.25	1⅛" x 8UN
350	**14"**	12	476.0	15.0	30.0	20	514.5	9.0	1⅛" x 8UN
400	**16"**	16	540.0	11.25	28.6	20	571.5	9.0	1¼" x 8UN
450	**18"**	16	578.0	11.25	1⅛" x 8UN	24	628.5	7.5	1¼" x 8UN
500	**20"**	20	635.0	9.0	1⅛" x 8UN	24	685.5	7.5	1¼" x 8UN
600	**24"**	20	749.5	9.0	1¼" x 8UN	24	812.8	7.5	1½" x 8UN

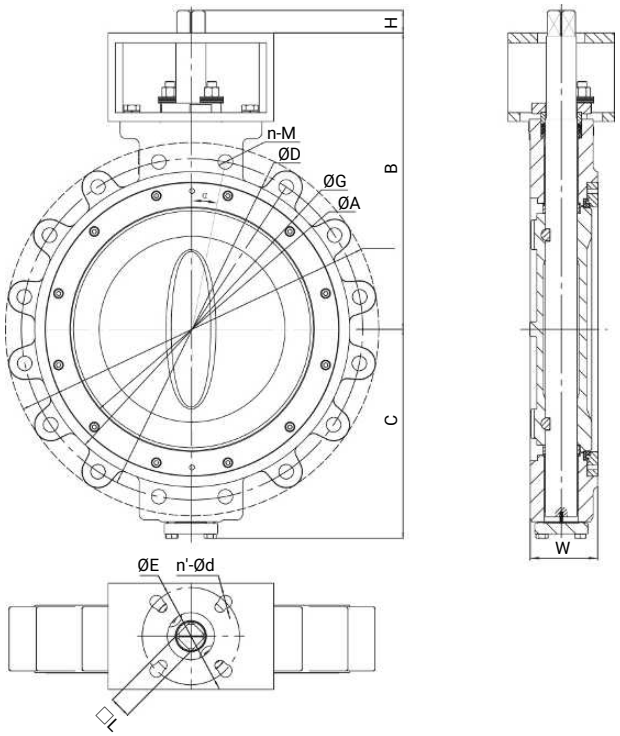
Dimensions in mm
n = number of bolt holes / bolts

8.3.2 Lug body configuration

DN 50 - DN 300



DN 350 - DN 600

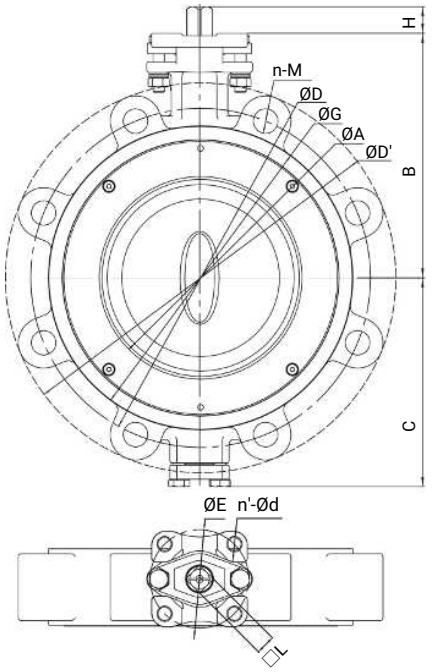


DN	NPS	ISO 5211	ØA	B	C	ØD'	ØG	H	□L	W	ØE	n'-ØF
50	2"	F05	38.5	116.0	86.0	155.0	100.0	15.0	11.0	42.0	50.0	4.0-7.0
65	2,5"	F05	57.0	126.2	93.0	174.0	105.0	15.0	11.0	45.5	50.0	4.0-7.0
80	3"	F05	74.0	133.8	102.0	182.5	132.0	15.0	11.0	47.0	50.0	4.0-7.0
100	4"	F07	96.0	148.5	118.0	220.5	158.0	19.0	14.0	52.0	70.0	4.0-9.5
125	5"	F07	111.0	161.5	133.0	250.0	186.0	19.0	14.0	54.0	70.0	4.0-9.5
150	6"	F07	144.0	173.8	148.5	277.0	216.0	19.0	14.0	57.5	70.0	4.0-9.5
200	8"	F10	188.0	230.0	195.0	335.0 /331.0	266.0	22.0	17.0	60.0	102.0	4.0-12.0
250	10"	F10/F12	237.0	273.0	235.0	402.0	320.0	27.0	22.0	60.5	102.0/125.0	4.0-12.0/4.0-14.0
300	12"	F12/F14	283.0	319.0	261.0	472.0	378.0	32.0	27.0	78.5	150.0/140.0	4.0-14.0/4.0-18.0
350	14"	F14/F16	302.5	455.0	303.0	520.0	429.0	29.0	27.0	92.0	140.0/165.0	4.0-18.0/4.0-22.0
400	16"	F14/F16	363.5	490.0	342.0	588.0	480.0	38.0	36.0	101.6	140.0/165.0	4.0-18.0/4.0-22.0
450	18"	F14/F16	413.4	502.0	353.0	632.0	533.0	38.0	36.0	114.0	140.0/165.0	4.0-18.0/4.0-22.0
500	20"	F14/F16	458.0	524.0	376.0	704.0	584.0	48.0	46.0	127.0	140.0/165.0	4.0-18.0/4.0-22.0
600	24"	F16/F25	550.0	625.0	453.0	830.0	692.0	48.0	46.0	154.0	165.0/254.0	4.0-23.0/8.0-19.0

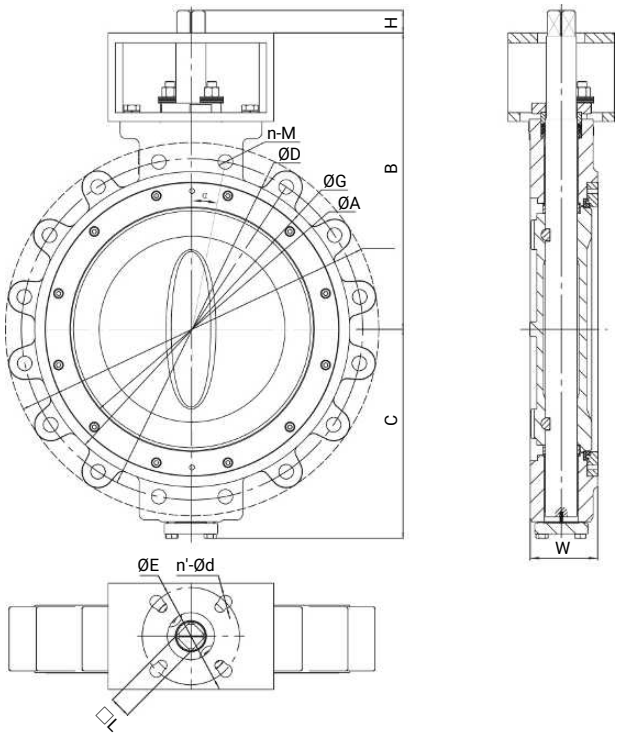
Dimensions in mm
n = number of bolt holes / bolts

8.3.2.1 Connections

DN 50 - DN 300



DN 350 - DN 600



PN10/PN16

DN	NPS	PN10				PN16			
		ØD	n-Ød	n-M	α	ØD	n-Ød	n-M	α
50	2"	125.0	4-M16	-	45.00°	125.0	4-M16	-	45.00°
65	2,5"	145.0	4-M16	-	45.00°	145.0	4-M16	-	45.00°
80	3"	-	-	-	-	-	-	-	-
100	4"	180.0	8-M16	-	22.50°	180.0	8-M16	-	22.50°
125	5"	210.0	8-M16	-	22.50°	210.0	8-M16	-	22.50°
150	6"	240.0	8-M20	-	22.50°	240.0	8-M20	-	22.50°
200	8"	295.0	8-M20	-	22.50°	295.0	12-M20	-	22.50°
250	10"	350.0	12-M20	-	15.00°	355.0	12-M24	-	15.00°
300	12"	400.0	12-M20	-	15.00°	410.0	12-M24	-	15.00°
350	14"	460.0	-	16-M20	11.25°	470.0	-	16-M24	11.25°
400	16"	515.0	-	16-M24	11.25°	525.0	-	16-M27	11.25°
450	18"	565.0	-	20-M24	9.00°	585.0	-	20-M27	9.00°
500	20"	620.0	-	20-M24	9.00°	650.0	-	20-M30	9.00°
600	24"	725.0	-	20-M27	9.00°	770.0	-	20-M33	9.00°

Dimensions in mm
n = number of bolt holes / bolts

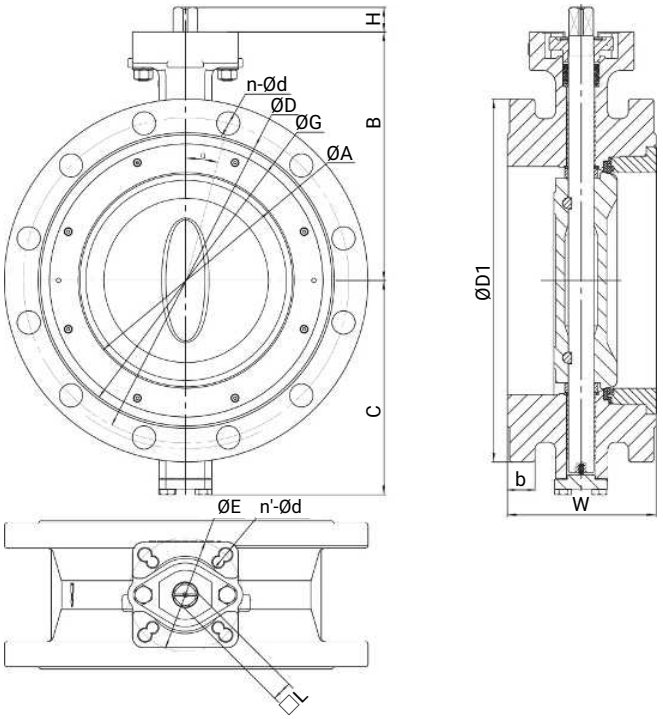
CLASS150

DN	NPS	ØD	n-Ød	n-M	α
50	2"	120.5	4-5/8"-11UN	-	45.00°
65	2,5"	139.5	4-5/8"-11UN	-	45.00°
80	3"	152.5	4-5/8"-11UN	-	45.00°
100	4"	190.5	8-5/8"-11UN	-	22.50°
125	5"	216.0	8-3/4"-10UN	-	22.50°
150	6"	241.0	8-3/4"-10UN	-	22.50°
200	8"	298.5	8-3/4"-10UN	-	22.50°
250	10"	362.0	12-7/8"-9UN	-	15.00°
300	12"	432.0	12-7/8"-9UN	-	15.00°
350	14"	-	-	-	-
400	16"	539.8	-	16-1-UNC	11.25°
450	18"	-	-	-	-
500	20"	635.0	-	20-1⅛-8UN	9.00°
600	24"	749.3	-	20-1¼-8UN	9.00°

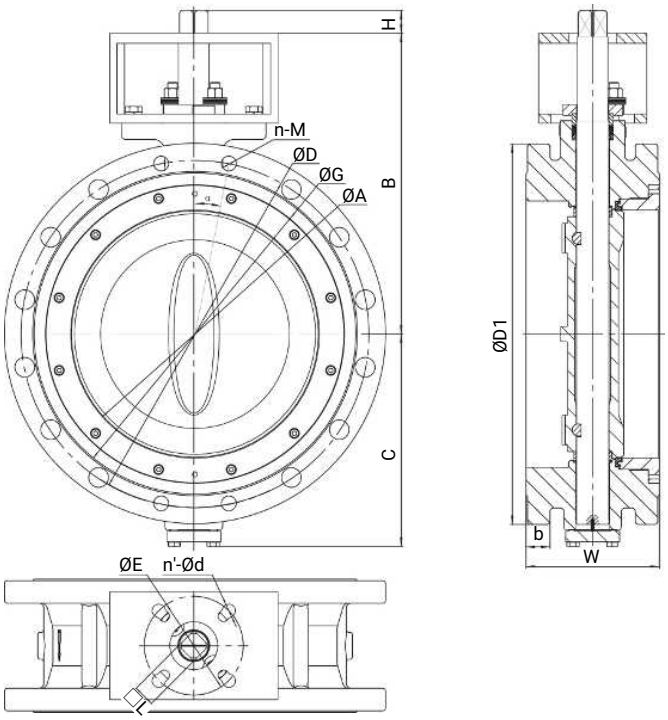
Dimensions in mm
n = number of bolt holes / bolts

8.3.3 U section body configuration

DN 150 - DN 300



DN 350 - DN 600



DN	NPS	ØA	B	C	ØG	H	□L	W	ØE	n'-ØF	ISO 5211
150	6"	144.0	198.0	157.0	216.0	19.0	14.0	140.0	70.0/102.0	4.0-9.5/4.0-12.0	F07/F10
200	8"	188.0	230.0	195.0	266.0	22.0	17.0	152.0	102.0	4.0-12.0	F10
250	10"	237.0	273.0	236.0	324.0	27.0	22.0	165.0	102.0/125.0	4.0-12.0/4.0-14.0	F10/F12
300	12"	283.0	318.5	262.0	381.0	32.0	27.0	178.0	125.0/140.0	4.0-14.0/4.0-18.0	F12/F14
350	14"	302.5	455.0	303.0	429.0	29.0	27.0	190.0	140.0/165.0	4.0-18.0/4.0-22.0	F14/F16
400	16"	363.5	490.0	342.0	480.0	38.0	36.0	216.0	140.0/165.0	4.0-18.0/4.0-22.0	F14/F16
450	18"	413.4	502.0	353.0	533.0	38.0	36.0	222.0	140.0/165.0	4.0-18.0/4.0-22.0	F14/F16
500	20"	458.0	524.0	376.0	584.0	48.0	46.0	229.0	140.0/165.0	4.0-18.0/4.0-22.0	F14/F16
600	24"	550.0	625.0	453.0	692.0	48.0	46.0	267.0	165.0/254.0	4.0-23.0/8.0-19.0	F16/F25

Dimensions in mm
n = number of bolt holes / bolts

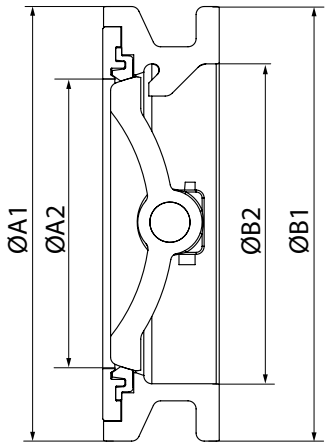
8.3.3.1 Connections

CLASS150

DN	NPS	ØD	n-Ød	n-M	α
150	6"	241.0	8.0-24.0	-	22.5°
200	8"	298.5	8.0-24.0	-	22.5°
250	10"	362.0	12.0-24.0	-	15.0°
300	12"	432.0	12.0-26.0	-	15.0°
350	14"	476.3	-	12-Ø30	15.0°
400	16"	539.8	-	4-1-8UNC, 12-Ø30	11.25°
450	18"	578.0	-	4-1⅛-8UNC, 12-Ø33	11.25°
500	20"	635.0	-	4-1⅛-8UNC, 16-Ø33	9.0°
600	24"	749.3	-	4-1¼-8UNC, 16-Ø36	9.0°

Dimensions in mm
n = number of bolt holes / bolts

8.4 Gasket



DN	NPS	Connection											
		PN10, PN16, CL150, PN25, PN40, CL300				CL150				CL300			
		ØA1	ØA2	ØB1	ØB2	ØA1	ØA2	ØB1	ØB2	ØA1	ØA2	ØB1	ØB2
50	**2"**	99.6	38.6	99.0	56.0	-	-	-	-	-	-	-	-
65	**2½"**	105.0	57.0	104.8	74.0	-	-	-	-	-	-	-	-
80	**3"**	132.0	74.0	132.0	95.0	-	-	-	-	-	-	-	-
100	**4"**	157.5	96.0	156.7	115.8	-	-	-	-	-	-	-	-
125	**5"**	185.2	111.0	185.7	140.3	-	-	-	-	-	-	-	-
150	**6"**	-	-	-	-	215.2	144.0	215.2	159.9	215.5	144.0	215.5	159.5
200	**8"**	-	-	-	-	265.9	188.0	265.6	209.4	269.4	188.0	269.4	209.6
250	**10"**	-	-	-	-	324.0	118.5	324.0	254.0	324.0	237.0	324.0	254.0
300	**12"**	-	-	-	-	381.0	283.0	380.75	305.1	409.0	283.0	409.0	304.8
350	**14"**	-	-	-	-	427.6	307.2	428.0	365.0	445.0	314.7	445.0	364.0
400	**16"**	-	-	-	-	480.0	363.5	480.0	400.0	470.0	363.5	470.0	394.0
450	**18"**	-	-	-	-	533.0	414.0	533.0	444.5	560.0	414.2	560.0	444.5
500	**20"**	-	-	-	-	584.0	458.3	584.0	493.6	583.3	456.4	583.3	493.6
600	**24"**	-	-	-	-	692.0	549.8	692.0	610.0	690.3	549.8	690.3	599.7

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 Transport

⚠ WARNING

Moving components!
- ► Risk of injury!
- ► Moving components can cause serious injury. Only actuate the valve once it has been fully installed in the relevant system. Actuating the valve when it has not been installed may lead to dangerous situations.

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.

9.3 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. Close the compressed air connections with protection caps or sealing plugs.

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 or plant component.
- Completely drain the plant or plant component.

⚠ WARNING

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

⚠ WARNING

GEMÜ products without an actuating element!
- ► Risk of severe injury or death
- Do not apply pressure to GEMÜ products installed in piping without an actuating element.

⚠ CAUTION

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

⚠ CAUTION

Leakage
- ► Emission of dangerous materials
- Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

⚠ CAUTION

Maximum permissible pressure exceeded!
- ► Damage to the product!
- Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

⚠ CAUTION

Use as an end-of-line valve!
- ► Damage to the GEMÜ product
- When using the GEMÜ product as an end-of-line valve, a mating flange must be fitted.

⚠ CAUTION

Risk of crushing!
- ► Risk of severe injury
- Before performing any work on the GEMÜ product, depressurize the plant.

NOTICE

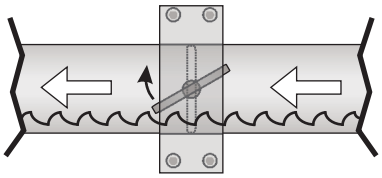
Suitability of the product!

► The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions.

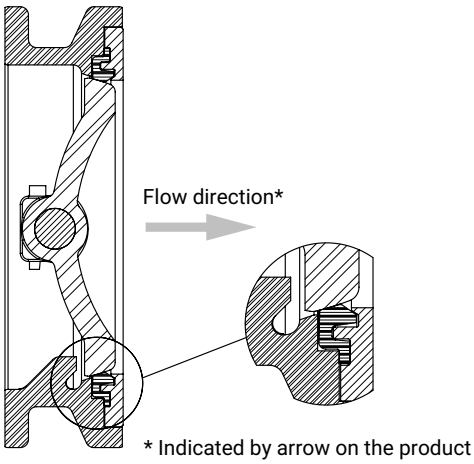
1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. The external pressure must not exceed 1 bar PSa.
4. Pressure surges are not permissible. The plant operator must plan appropriate precautionary measures.
5. The pressure differential must not exceed the maximum operating pressure.
6. The butterfly valve may only be used with a bonded liner up to 0.2 bar abs.
7. The plant operator must ensure fire protection is in place. Regularly service electrical equipment designed for preventive fire protection in compliance with DIN VDE 0100-610 (IEC/EN 61557).
8. Keep appropriate tools ready.
9. Use appropriate protective gear as specified in plant operator's guidelines.
10. Observe appropriate regulations for connections.
11. Installation work must be performed by trained personnel.
12. Shut off plant or plant component.
13. Secure the plant or plant component against recommissioning.
14. Depressurize the plant or plant component.
15. 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.
16. Decontaminate, rinse and ventilate the plant or plant component properly.
17. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
18. Only install the product between matching aligned pipes (see following chapters).
19. Please note the flow direction (see chapter "Installation location").
20. Please note the installation position (see chapter "Installation location").
21. The valve is not designed for loads caused by earthquakes.
22. The plant operator must take into account loads and torques for the bearing elements.
    For valves with a nominal size > DN xx, suitable bearing elements may need to be used. Design weights and dimensions can be found in the datasheets.

10.2 Installation location

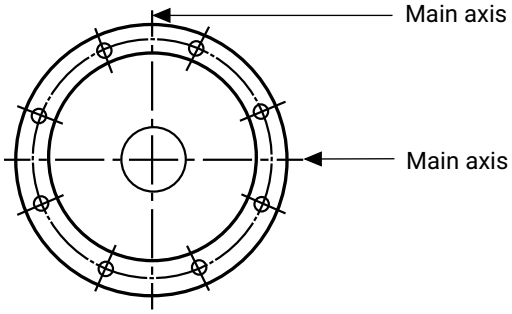
1. Pay attention to the installation position. The installation position is marked on the product with arrows. In case of contaminated media and DN ≥ 300, install GEMÜ R478 horizontally, so that the lower edge of the disc opens in-line with flow direction.



2. Please note the flow direction. The flow direction is marked on the product with arrows.



3. Arrange the bolt holes of piping and valves so that they are not on the two main axes (but rather symmetrical to them).



4. The inside diameter of the piping must match the nominal diameter of the GEMÜ product.
5. The diameter of the pipe flanges should be, in compliance with the respective nominal size, between "D max" and "D min" (see table).

DN	D max	D min
25	32	13
40	47	29
50	60	33
65	74	53
80	96	72

DN	D max	D min
100	113	92
125	140	118
150	169	146
200	223	197
250	273	247
300	323	297
350	363	335
400	417	384
450	465	432
500	518	485
600	618	580

10.3 Installation of the standard version

⚠ CAUTION

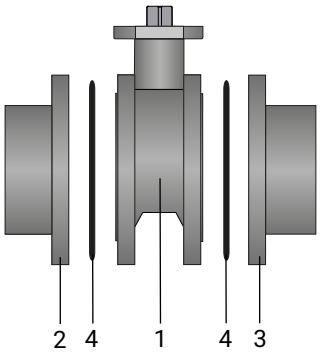
Damage!

► Before carrying out any welding on the piping, remove the butterfly valve to prevent damage to the liner.

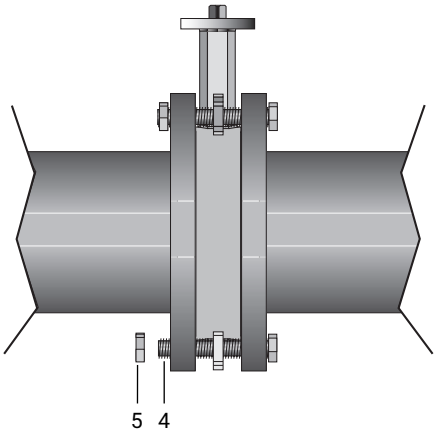
1. Shut off plant or plant component.
2. Secure against recommissioning.
3. Depressurize the plant or plant component.
4. Completely drain the plant or plant component and allow it to cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
5. Correctly decontaminate, rinse and ventilate the plant or plant component.
6. Check flange faces for potential damage!
7. Remove any rough areas (rust, dirt, etc.) from the pipe flanges.
8. Sufficiently spread the pipe flanges.
9. Clamp the butterfly valve **1** centrally between the pipes with flanges **2** and **3**.
10. Centre the seals **4** accurately. Select seals according to medium (TFM/PTFE/graphite).

NOTICE

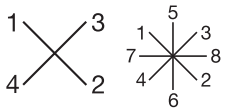
► Seals are not included in the scope of delivery.



11. Slightly open the butterfly valve **1**. The disc must not project from the body.
12. Insert bolts **4** in all holes in the flange.

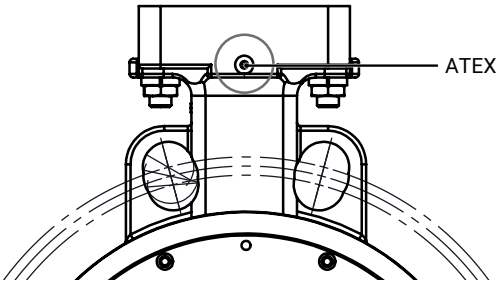


13. Slightly tighten the bolts **4** and nuts **5** diagonally.



14. Fully open the disc and check the alignment of the piping.
15. Tighten the nuts **5** diagonally until the flanges fit tightly on the body.
    Observe the permissible tightening torque of the bolts (see "Mechanical data").

10.4 Installation of the ATEX version



1. Install the butterfly valve, see chapter "Installation of the standard version".
2. Connect the earthing cable of the butterfly valve to the earth terminal of the plant.
3. Test the resistance between the earthing cable and actuator shaft (value <106 Ω, typical value <5 Ω).

11 GEMÜ 9428 electrical connection

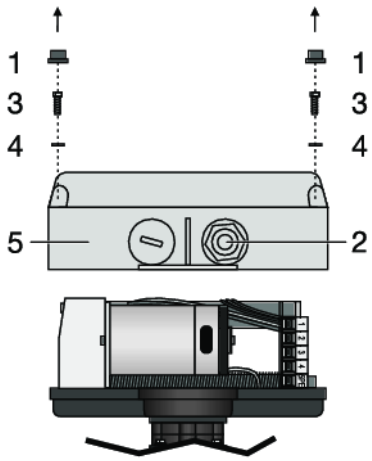
⚠ DANGER

Risk of electric shock!

- ► Risk of injury or death (if operating voltage is higher than safe extra low voltage).
- ► Adjustments are made with the actuator cover removed.
- ► Electric shock can cause severe burns and fatal injury.
- ● **Always** disconnect the product from power supply!
- ● Therefore, have all work performed only by qualified electricians.

NOTICE

- ● Power supply varies dependent on the design (see product label).
- ● Do not bridge terminals!
- ● For parallel connection of several actuators, use the version with K-no. 6410.
- ● With version AE (additional potential-free limit switches), the plug connections must not be interchanged with the power supply.

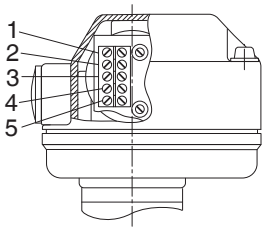


11.1 Connection/wiring diagram

11.1.1 ON/OFF actuator (code A0)

12 V AC (code B4) / 24 V AC (code C4)

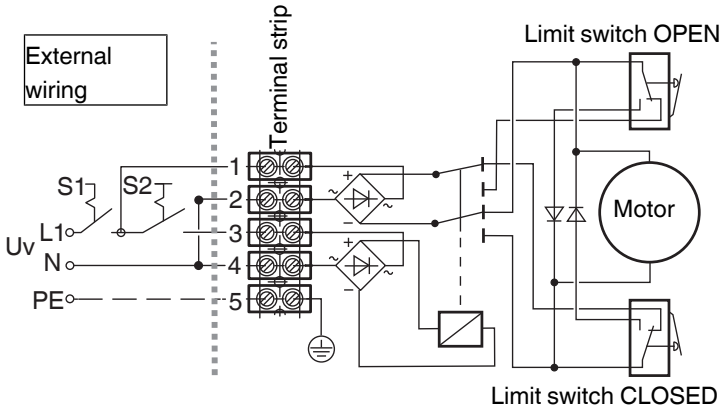
Assignment of the terminal strips



Item	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram



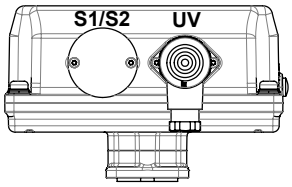
S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

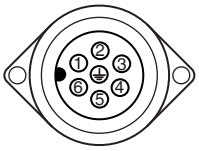
12 V DC (code B1) / 24 V DC (code C1)

Position of the connectors

Actuator version
3006, 3015



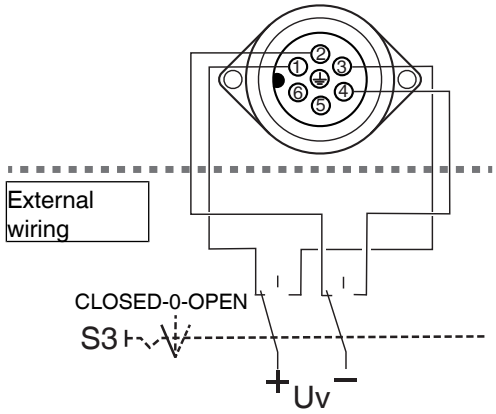
Electrical connection



Plug assignment UV

Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

Connection diagram

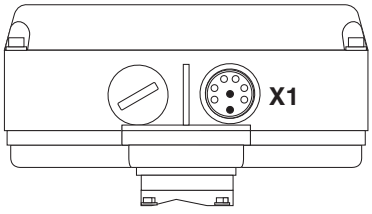


Connection assignment X1, UV

S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

12 V DC (code B1) / 24 V DC (code C1) / K-no. 6598

Position of the connectors

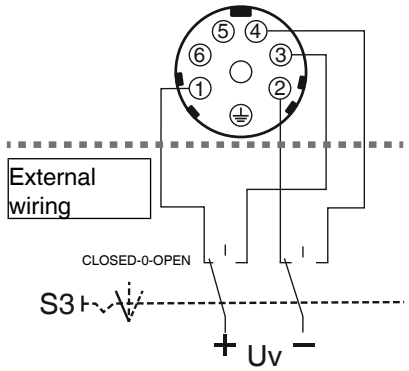


Electrical connection

Plug assignment X1

Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

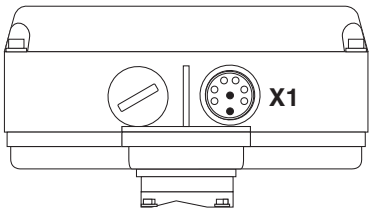
Connection diagram



S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

12 V AC (code B4) / 24 V AC (code C4) / K-no. 6598

Position of the connectors



Electrical connection

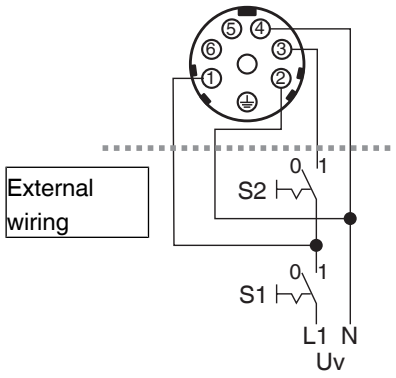
Plug assignment X1

Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	n.c.

Pin	Description
6	n.c.
⏚	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram

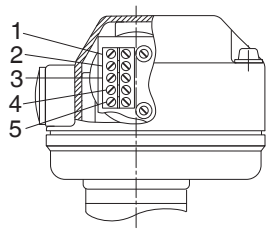


S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

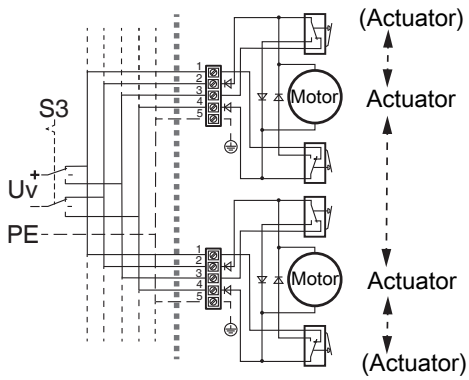
12 V DC (code B1) / 24 V DC (code C1) / K-no. 6410

Assignment of the terminal strips



Item	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	PE, protective earth conductor

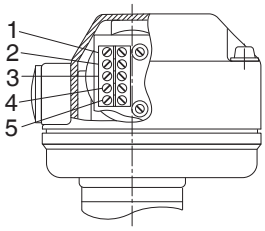
Connection diagram



S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

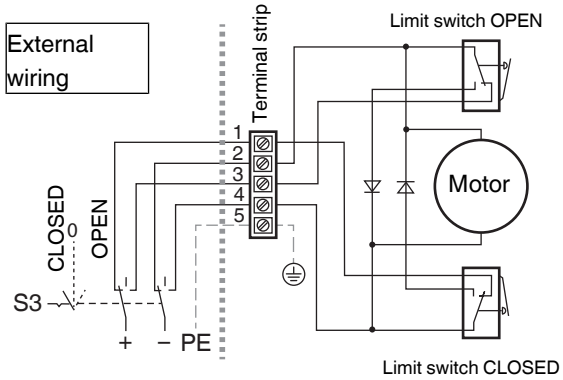
12 V DC (code B1) / 24 V DC (code C1)

Assignment of the terminal strips



Item	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	PE, protective earth conductor

Connection diagram



S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

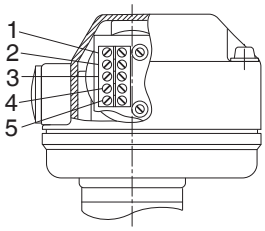
12 V DC (code B1) / 24 V DC (code C1) / K-no. 6410

NOTICE

Parallel operation

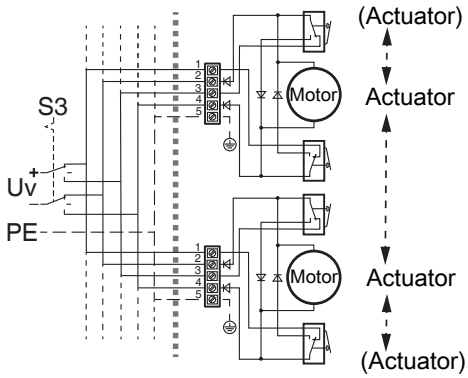
► Parallel operation only possible with K-no. 6410.

Assignment of the terminal strips



Item	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	PE, protective earth conductor

Connection diagram

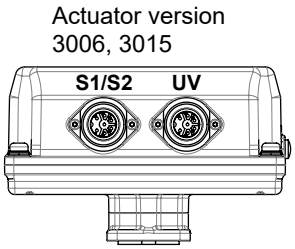


S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

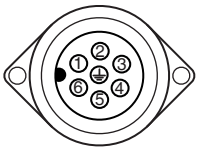
11.1.2 ON/OFF actuator with 2 potential-free limit switches (code AE)

12 V DC (code B1) / 24 V DC (code C1)

Position of the connectors

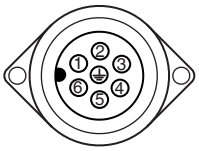


Electrical connection



Plug assignment UV

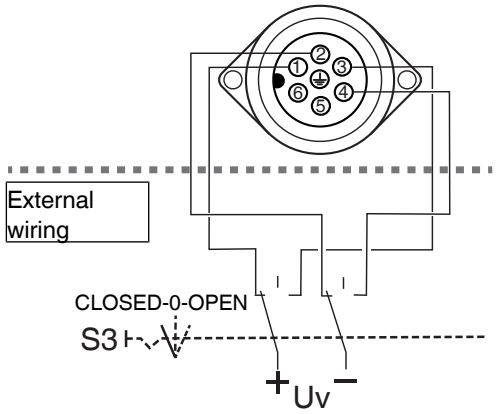
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

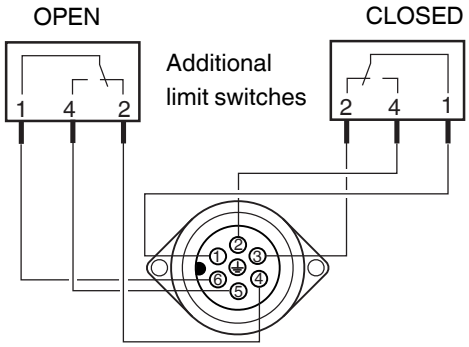


Plug assignment S1/S2

Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

Connection diagram



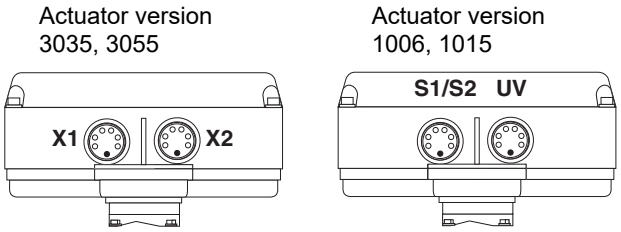


Connection assignment UV

S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

12 V DC (code B1) / 24 V DC (code C1)

Position of the connectors



Electrical connection

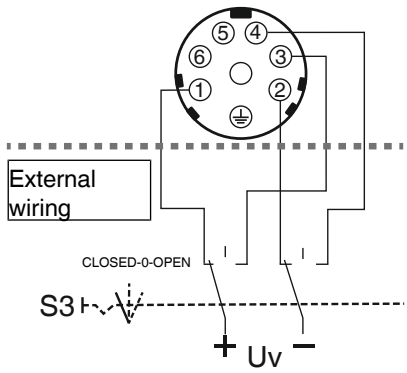
Plug assignment X1, UV

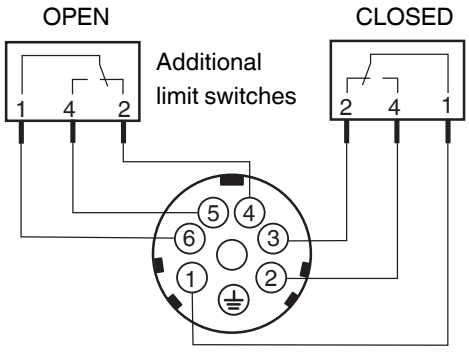
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

Plug assignment X2, S1/S2

Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

Connection diagram





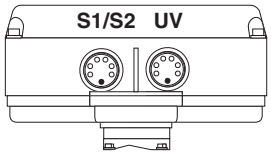
Connection assignment X1, UV

S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

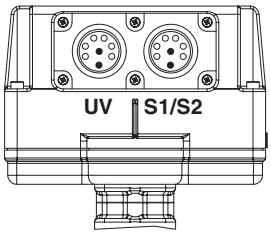
12 V AC (code B4) / 24 V AC (code C4)

Position of the connectors

Actuator version 1006



Actuator version 2015



Electrical connection

Plug assignment UV

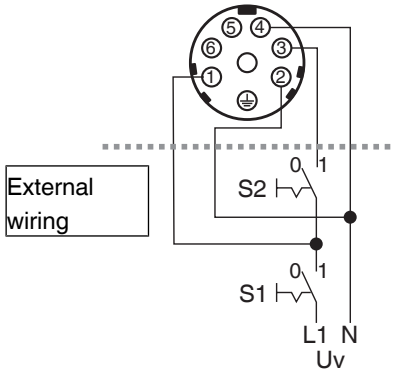
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

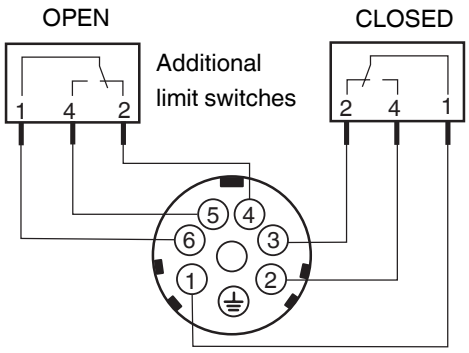
Plug assignment S1/S2

Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram



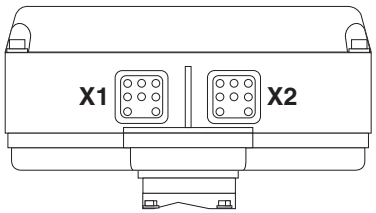


Connection diagram X1, UV

S1	Actuator
0	OFF
1	ON
S2	Direction of travel
0	CLOSED
1	OPEN

12 V DC (code B1) / 24 V DC (code C1) / K-no. 6722

Position of the connectors



Electrical connection

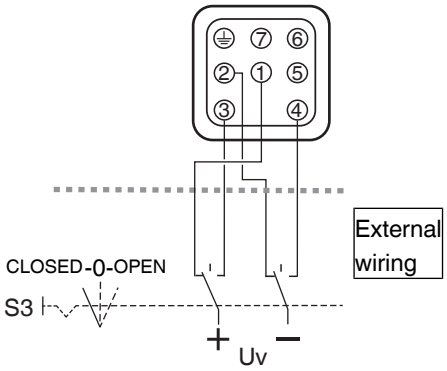
Plug assignment X1

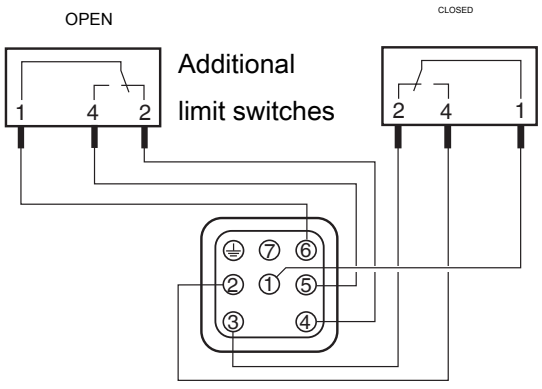
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
7	n.c.
⏚	PE, protective earth conductor

Plug assignment X2

Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
7	n.c.
⏚	PE, protective earth conductor

Connection diagram



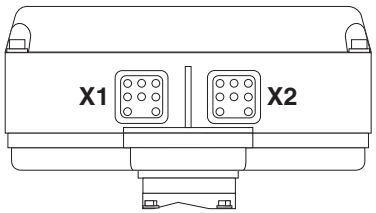


Connection diagram X1

S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

12 V AC (code B4) / 24 V AC (code C4) / K-no. 6722

Position of the connectors



Electrical connection

Plug assignment X1

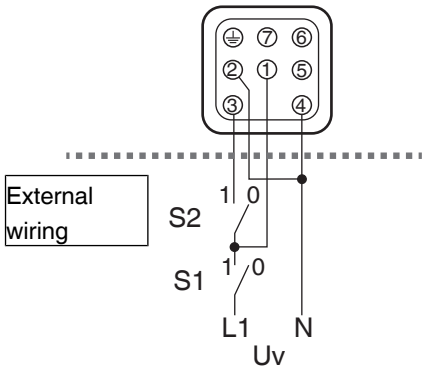
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	n.c.
6	n.c.
7	n.c.
⏚	PE, protective earth conductor

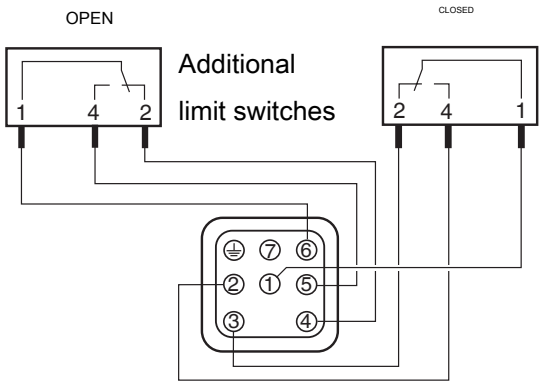
Plug assignment X2

Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
7	n.c.
⏚	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram





Connection diagram X1

S1	Actuator
0	OFF
1	ON
S2	Direction of travel
0	CLOSED
1	OPEN

12 GEMÜ 9468 electrical connection

⚠ DANGER

Risk of electric shock!

- ► Risk of injury or death (if operating voltage is higher than safe extra low voltage).
- ► Adjustments are made with the actuator cover removed.
- ► Electric shock can cause severe burns and fatal injury.
- ● **Always** disconnect the product from power supply!
- ● Therefore, have all work performed only by qualified electricians.

- ● The enclosed connectors for the power supply and signal line are connected according to the connection diagram.

Depending on the version, one or two connectors are fitted to the housing:

- For power supply (labelled with adhesive label showing the type of voltage)
- For signal line (not available with design A0)

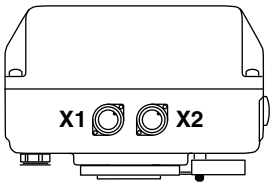
NOTICE

- ● For design AE (additional potential-free limit switches) and design AP (potentiometer output as position feedback), the plug connections must not be confused with the power supply.

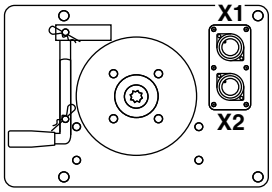
12.1 Connection/wiring diagram

12.1.1 ON/OFF actuator with relay (code 00), 24 V DC (code C1)

12.1.1.1 Position of the connectors

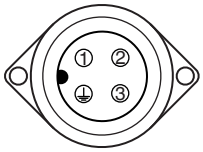


Actuator version 2070



Actuator version 4100, 4200

12.1.1.2 Electrical connection

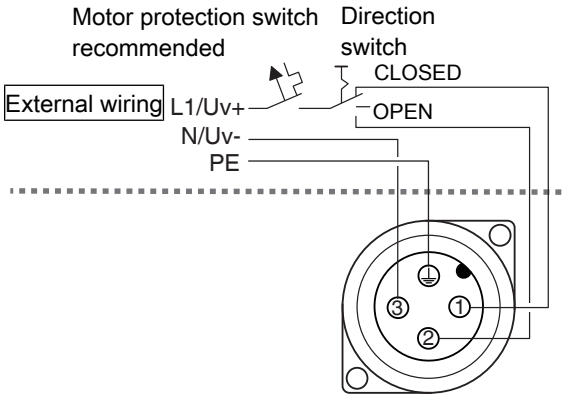


Plug assignment X1

Pin	Description
1	L1 / Uv+, direction of travel CLOSED
2	L1 / Uv+, direction of travel OPEN
3	N / Uv-, neutral conductor
⏚	PE, protective earth conductor

N / L- signals in the unit are separated.
The potential must be assigned by the user.
When the OPEN and CLOSED switches are operated simultaneously the actuator "CLOSES".

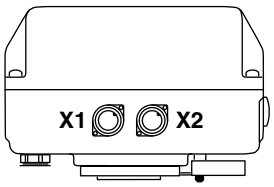
12.1.1.3 Connection diagram



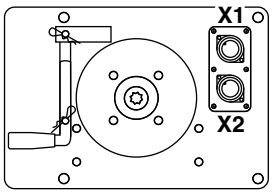
Connection assignment X1

12.1.2 ON/OFF actuator with 2 additional potential-free limit switches, with relay (code 0E), 24 V DC (code C1)

12.1.2.1 Position of the connectors

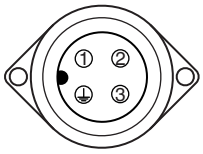


Actuator version 2070



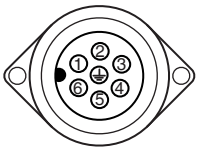
Actuator version 4100, 4200

12.1.2.2 Electrical connection



Plug assignment X1

Pin	Description
1	L1 / Uv+, direction of travel CLOSED
2	L1 / Uv+, direction of travel OPEN
3	N / Uv-, neutral conductor
⏚	PE, protective earth conductor

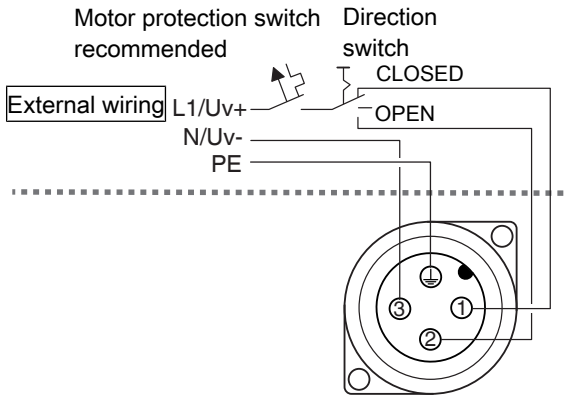


Plug assignment X2

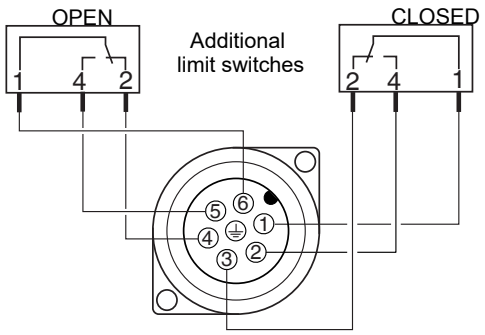
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

N / L- signals in the unit are separated.
The potential must be assigned by the user.
When the OPEN and CLOSED switches are operated simultaneously the actuator "CLOSES".

12.1.2.3 Connection diagram



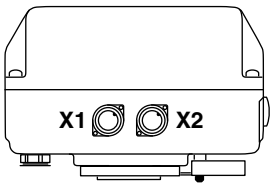
Connection assignment X1



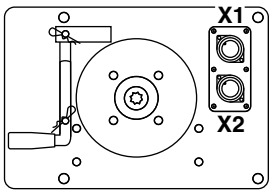
Connection assignment X2

12.1.3 ON/OFF actuator with potentiometer output, with relay (code 0P), 24 V DC (code C1)

12.1.3.1 Position of the connectors

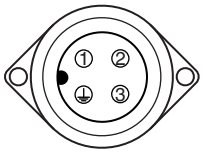


Actuator version 2070



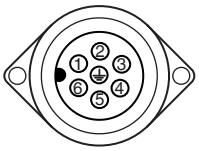
Actuator version 4100, 4200

12.1.3.2 Electrical connection



Plug assignment X1

Pin	Description
1	L1 / Uv+, direction of travel CLOSED
2	L1 / Uv+, direction of travel OPEN
3	N / Uv-, neutral conductor
⏚	PE, protective earth conductor

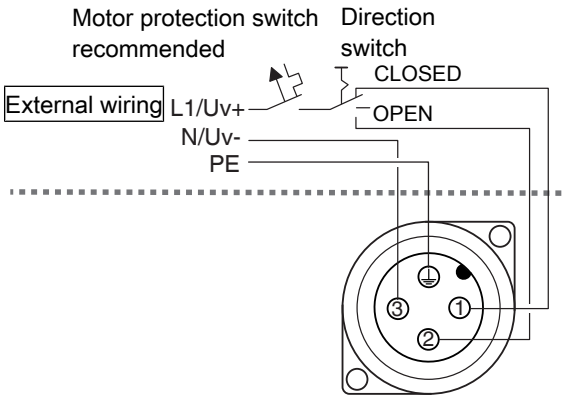


Plug assignment X2

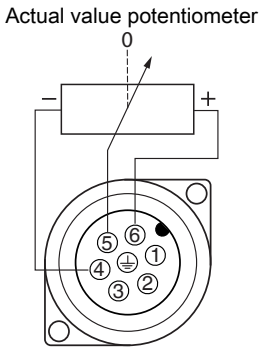
Pin	Description
1	n. c.
2	n. c.
3	n. c.
4	Us-, actual value potentiometer signal voltage minus
5	Us ⌐, actual value potentiometer signal output
6	Us+, actual value potentiometer signal voltage plus
⏚	PE, protective earth conductor

N / L- signals in the unit are separated.
The potential must be assigned by the user.
When the OPEN and CLOSED switches are operated simultaneously the actuator "CLOSES".

12.1.3.3 Connection diagram



Connection assignment X1



Connection assignment X2

13 Electrical connection - Bernard, AUMA, J+J

For more detailed information on third-party actuators, refer to the manufacturers' documentation

14 Commissioning

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

Leakage!

► Emission of dangerous materials
- Provide for precautionary measures against exceeding the maximum permissible pressure that may be caused by pressure surges (water hammer).

⚠ CAUTION

Use as an end-of-line valve!

► Damage to the GEMÜ product
- When using the GEMÜ product as an end-of-line valve, a mating flange must be fitted.

⚠ CAUTION

Cleaning agent!

► Damage to the GEMÜ product
- The plant operator is responsible for selecting the cleaning material and performing the procedure.

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.
4. Commissioning of actuators in accordance with the enclosed instructions.

15 Operation

15.1 Operation - GEMÜ 9428

⚠ CAUTION

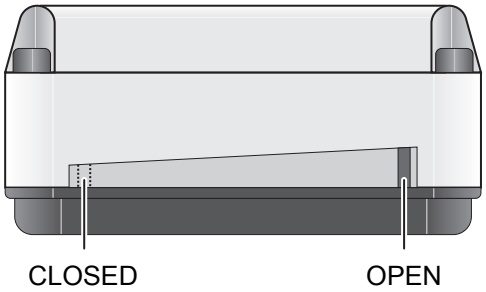
OPEN/CLOSE control

- OPEN/CLOSE control does not allow direct switching (reversing).
- First move the system to the stop position.
- Move from OPEN to CLOSED position only via OFF position (time > 1 sec in OFF position).

15.1.1 Optical position indicator

The actuator has an optical position indicator which indicates the position of the actuator.

Actuator versions 1006, 1015, 2006, 2015, 3035



15.1.2 Manual override

⚠ DANGER

Electric shock by dangerous voltage!

- ► Risk of injury or death (if operating voltage is higher than safe extra low voltage).
- ● Switch off power to the actuator before using the manual override.

⚠ CAUTION

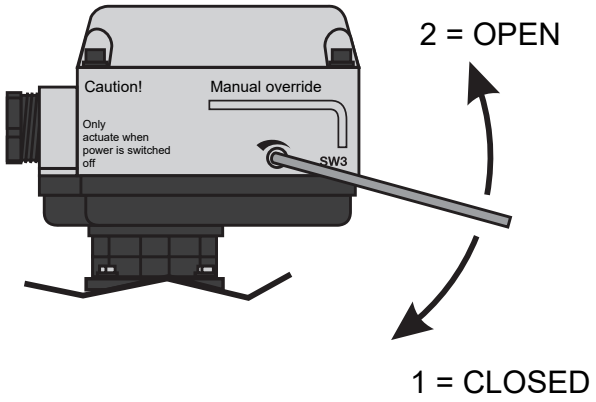
Only actuate the manual override when the power is switched off!

- ► Damage to the actuator!

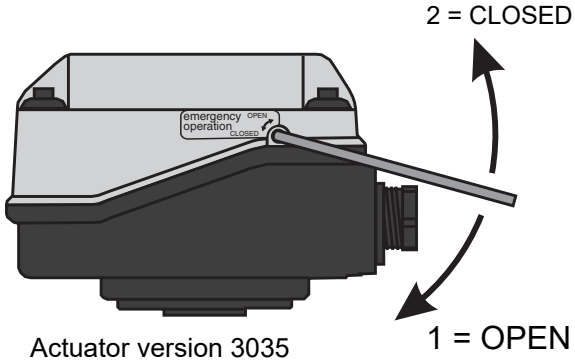
⚠ CAUTION

Set the actuator position to "centred" after using the manual override!

- ► Trip cams may be outside the limit switches as the limit switch position was manually exceeded by the manual override.
- ► Damage to the actuator.
- ● Set the actuator position to "centred" before electrical operation.



Actuator versions
1006, 1015, 2006, 2015



Actuator version 3035

15.1.3 Setting the limit switches

⚠ DANGER

Risk of electric shock!

- ► Risk of injury or death (if operating voltage is higher than safe extra low voltage).
- ► Adjustments are made with the actuator cover removed.
- ► Electric shock can cause severe burns and fatal injury.
- ● **Always** disconnect the product from power supply!
- ● Therefore, have all work performed only by qualified electricians.

⚠ CAUTION

Destruction of the actuator!

- ► Do not move the right limit switch too far to the right and the left limit switch too far to the left, otherwise the actuator will continue running in the end position (i.e. the limit switch cannot be actuated by the lever and the actuator continues to run).

NOTICE

Tools required for setting the limit switches:

- ● Allen key SW3
- ● Small Philips head screw driver

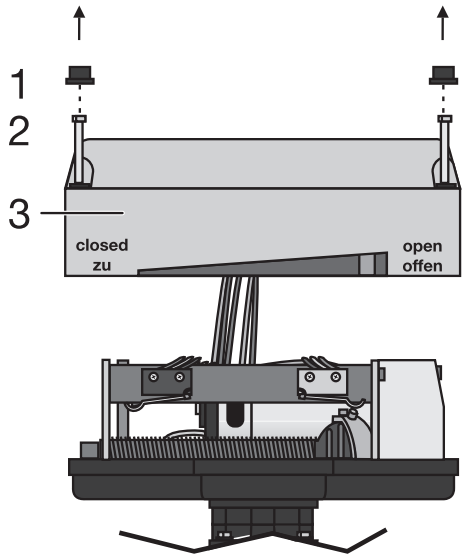
NOTICE

- ● Always switch the limit switch for signal so that the motor switch is actuated first.
- ⇨ Limit switches for signal and motor are already preset.

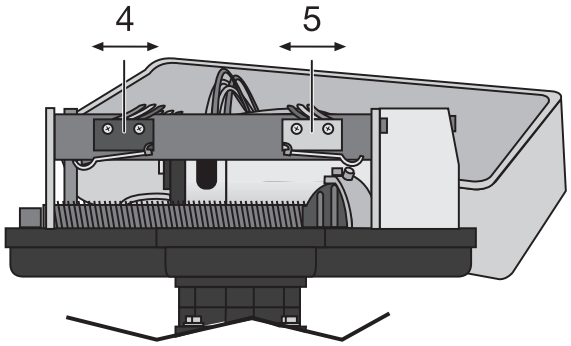
The GEMÜ 9428 motorized actuator is delivered in open position.

The following drawings differ depending on the actuator version!

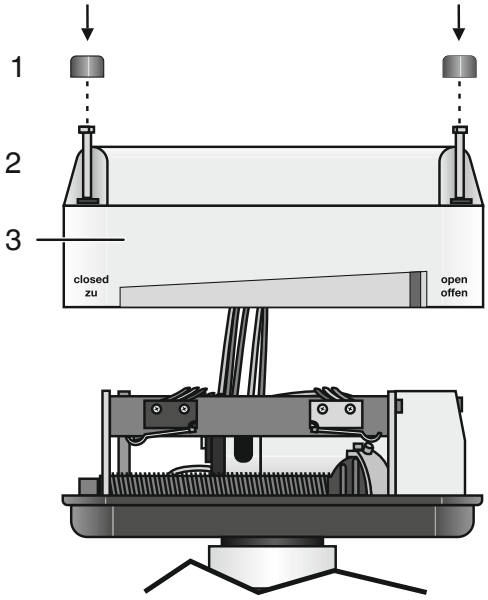
1. Disconnect the plant from power supply and secure against recommissioning.



2. Remove the protective caps **1**.
3. Undo screws **2**.
4. Disassemble the cover of the actuator **3**.



5. Undo screws at the respective limit switch (**4** = "CLOSED", **5** = "OPEN").
6. Move limit switches to the desired position.
7. Tighten limit switch screws.



8. Put on cover of actuator **3**.
9. Tighten cover **3**.
10. Put on protective caps **1**.

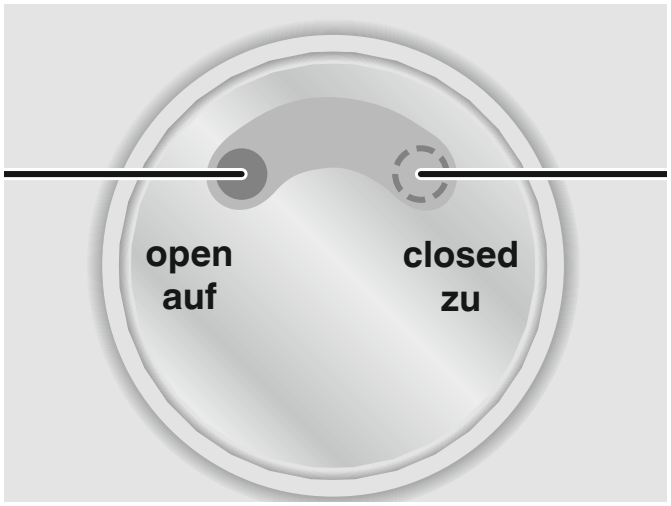
⇨ Limit switches are set.

15.2 Operation - GEMÜ 9468

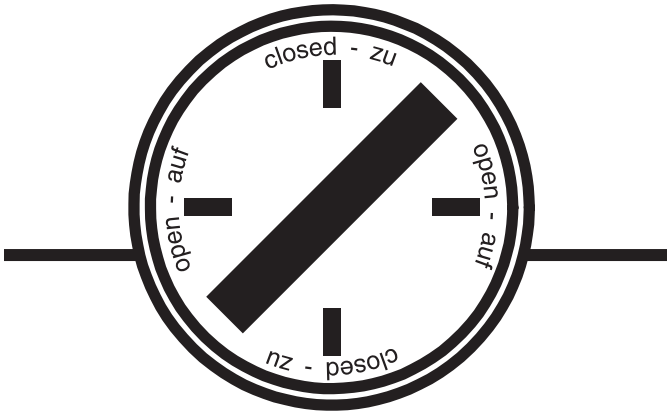
15.2.1 Optical position indicator

Actuator version 2070

Actuator version 4100, 4200



Actuator version 6400



15.2.2 Manual override

⚠ DANGER

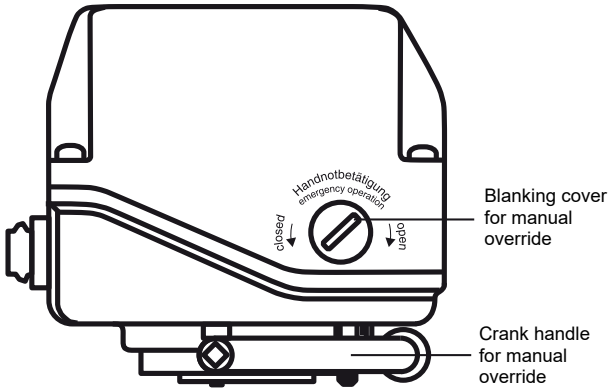
Electric shock by dangerous voltage!

► Risk of injury or death (if operating voltage is higher than safe extra low voltage).

● Switch off power to the actuator before using the manual override.

On the side of the actuator there is a blanking cover for the manual override. The crank handle for manual override is located on the base of the actuator. Actuation of the manual override additionally actuates a switch that shuts off power to the actuator.

Example: Actuator version 2070



If manual override is required, take the following steps:

1. Unscrew the blanking cover using a screw driver.
2. Insert crank handle and actuate the actuator by hand.

Crank into the desired valve position (in the direction indicated on label):

Actuator version 2070	
Clockwise:	Open
Anticlockwise:	Closed

Actuator versions 4100, 4200, 6400	
Clockwise:	Closed
Anticlockwise:	Open

15.2.3 Setting the end positions

The GEMÜ 9468 motorized actuator is delivered in its open position.

The "OPEN" and "CLOSED" end positions are set using the limit switch **4**. These are actuated using the lever **9** and can be adjusted by undoing the two screws (see chapter "Product description").

⚠ CAUTION

Destruction of the actuator!

► Do not move the right limit switch too far to the right and the left limit switch too far to the left, otherwise the actuator will continue running in the end position (i.e. the limit switch cannot be actuated by the lever and the actuator continues to run).

Designs 00, 0E, 0P:

- The actuator is not reversible, i.e. it must be stopped briefly when switching over from "OPEN" to "CLOSED" or "CLOSED" to "OPEN".
- For the above actuator types, overall height 1 applies (see chapter "Dimensions").

Designs A0, AE, AP, E1, E2:

- The actuator is reversible, i.e. it can be switched directly from "OPEN" to "CLOSED". To this end, a dead zone of 200 ms is integrated into the electronic system, i.e. when switching over, the actuator does not run for this time.
- Independent of the supply voltage, the OPEN/CLOSE control is freely selectable via a mains supply of 24 V DC, 24 V AC up to 250 V AC or operated directly via a PLC.
- An electronic current limitation limits the torque.
- For the above actuator types (except for code 2070), overall height 2 applies (see chapter "Dimensions").

⚠ DANGER

Risk of electric shock!

► Risk of injury or death (if operating voltage is higher than safe extra low voltage).

► Adjustments are made with the actuator cover removed.

► Electric shock can cause severe burns and fatal injury.

● **Always** disconnect the product from power supply!

● Therefore, have all work performed only by qualified electricians.

15.3 Operation - Third-party actuators

For more detailed information on third-party actuators, refer to the manufacturers' documentation

16 Troubleshooting

Error	Possible cause	Troubleshooting
The product does not open or does not open fully	Actuator defective	Replace the actuator
	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Foreign matter in the product	Remove and clean the product
	The actuator design is not suitable for the operating conditions	Use an actuator that is designed for the operating conditions
	Flange dimensions do not comply with specifications	Use correct flange dimensions
	Inside diameter of piping too small for nominal size of product	Install product with suitable nominal size
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
The product does not close or does not close fully	The actuator design is not suitable for the operating conditions	Use an actuator that is designed for the operating conditions
	Foreign matter in the product	Remove and clean the product
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
	Sealing material faulty	Replace sealing material
Valve body leaking	Valve body leaking or corroded	Check valve body for damage, replace valve body if necessary
	Incorrect installation	Check installation of valve body in piping
Increased switching noises when opening the product	When the disc is in the closed position, this may cause a higher breakaway torque	Use the product regularly
Actuator does not open/close or does not open/close fully	Power supply not connected	Connect power supply
	Limit switches (optional) incorrectly set	Correctly set the limit switches (optional)
	No voltage between the poles	Restore voltage
Actuator doesn't open/close or doesn't open/close fully	End positions incorrectly set	Correctly set the end positions (see "Setting the end positions")
Actuator leaking at the mounting flange	Actuator damaged	Check the actuator for potential damage, replace the actuator if necessary
	Valve body damaged	Check valve body for potential damage, replace valve body if necessary
	Unions loose	Tighten unions
	Incorrect assembly	Check actuator mounting on the valve body

17 Inspection and 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

Use of incorrect spare parts!

- ► Damage to the GEMÜ product
- ► Manufacturer liability and guarantee will be void.
- ● Use only genuine parts from GEMÜ.

⚠ CAUTION

Hot plant components!

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

NOTICE

Exceptional maintenance work!

- ► Damage to the GEMÜ product
- ● Any maintenance work and repairs not described in these operating instructions must not be performed without consulting the manufacturer first.

The operator must carry out regular visual examinations of the products, depending on the operating conditions and the potentially hazardous situations, in order to prevent leakage and damage.

1. Have servicing and maintenance work performed by trained personnel.
2. Wear appropriate protective gear as specified in the plant operator's guidelines.
3. Shut off plant or plant component.
4. Secure the plant or plant component against recommissioning.
5. Depressurize the plant or plant component.
6. Actuate products which are always in the same position four times a year.

17.1 Cleaning the product

- Clean the product with a damp cloth.
- Do **not** clean the product with a high pressure cleaning device.

17.2 ATEX version

1. Perform inspection and maintenance , see chapter "Installation of standard version".
2. Test the resistance between the earthing cable and actuator shaft at least once a year. (Value <106 Ω, typical value <5 Ω)

17.3 Removing the butterfly valve from the piping

⚠ 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.

⚠ 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.

1. Maintenance work must only be performed by trained personnel.
2. Use appropriate protective gear as specified in plant operator's guidelines.
3. Move the butterfly valve to a slightly open position. The disc must not project from the body.
4. Loosen and remove flange bolts and nuts.
5. Spread the piping flanges.
6. Remove the butterfly valve.

18 Spare parts

18.1 Ordering spare parts

⚠ CAUTION

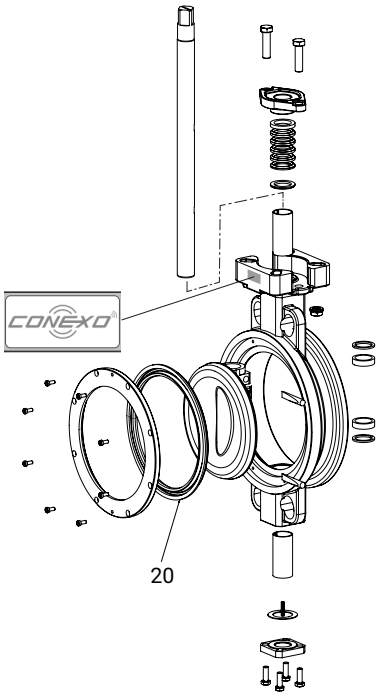
Use of incorrect spare parts!

- ► Damage to the GEMÜ product
- ► Manufacturer liability and guarantee will be void.
- ● Use only genuine parts from GEMÜ.

When ordering spare parts, please provide the following information:

1. Complete order code
2. Item number
3. Traceability number
4. Name of spare part
5. Area of use (medium, temperatures and pressures)

18.2 Overview of spare parts



Item	Name	Order designation
20	Seat	R470...SLN...5T

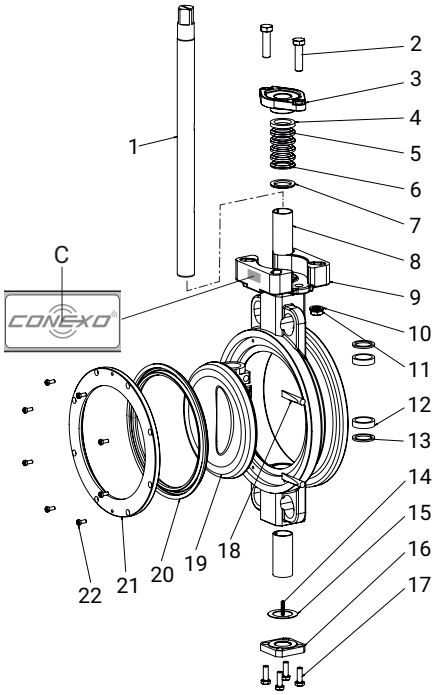
Item	Designation 1	Designation 2	Designation 3	Designation 4
88728128	R470 50SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728131	R470 65SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728132	R470 80SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728134	R470100SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728135	R470125SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728137	R470150SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600

Item	Designation 1	Designation 2	Designation 3	Designation 4
88728139	R470200SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728140	R470250SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728143	R470300SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728144	R470350SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728155	R470400SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728157	R470450SLN 6 5T	Wearing part liner R470	PN10, 16, 25, 40, CL150, CL300	Item 20, TFM 1600
88728158	R470500SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728160	R470600SLN 3 5T	Wearing part liner R470	PN10, PN16, CL150	Item 20, TFM 1600
88728141	R470250SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600
88728142	R470300SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600
88728152	R470350SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600
88728156	R470400SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600
88728159	R470500SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600
88728161	R470600SLN 6 5T	Wearing part liner R470	PN25, PN40, CL300	Item 20, TFM 1600

18.3 Replacement of spare parts

NOTICE

► Assembly instructions for replacing the wearing parts are included with every wearing parts kit.



1. Undo and remove the hexagon screws **22**.
2. Remove the seat retainer **21**.
3. Remove and replace the seat **20**.
4. Assembly in reverse order.

19 Removal from piping

1. Disassemble the product. Observe warning notes and safety information.
2. Remove in reverse order to installation.

20 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.

21 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.

22 Declaration of Incorporation according to 2006/42/EC (Machinery Directive)

Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II, 1.B for partly completed machinery

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

declare that the following product

Make:	Butterfly valve, metal, motorized
Serial number:	from 20.03.2019
Project number:	KL-Metall-Motorisch-2019
Commercial name:	GEMÜ R478

meets the following essential requirements of the Machinery Directive 2006/42/EC:

1.1.3, 1.1.5, 1.1.7, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.3., 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.3.8, 1.3.9, 1.5.3, 1.5.5, 1.5.6, 1.5.7, 1.5.8, 1.5.9, 1.5.13, 1.5.14, 1.5.16, 1.6.1, 1.6.3, 1.6.5, 1.7.1.2

We also declare that the specific technical documentation has been compiled in accordance with part B of Annex VII.

Citation of the harmonized standards used in compliance with Article 7 Section 2:

EN ISO 12100:2010-11	Safety of machinery – General principles for design – Risk assessment and risk reduction (ISO 12100:2010)
EN 593:2017	Industrial valves – Metallic butterfly valves for general purposes

Citation of other technical standards and specifications used:

EN 558:2017-05	Industrial valves – Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems

The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

Electronically

Authorised documentation officer

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG

Fritz-Müller-Straße 6-8

74653 Ingelfingen, Germany

This does not affect the industrial property rights!

Important note! The partly completed machinery may be put into service only if it was determined, where appropriate, that the machinery into which the partly completed machinery is to be installed meets the provisions of this Directive.

2024-09-24

Joachim Brien
Head of BU Industry

23 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 R478
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

Classification of the valves: Max. permissible operating pressure when used as:

Wafer type butterfly valve						**End-of-line valve**
	Fluids of group 1		**Fluids of group 2**			**Fluids of group 1 and 2**
PS	**Gases**	**Liquids**	**Gases**	**Liquids**		**Liquids**
16	DN25–DN200	DN25–DN200	DN25–DN200	DN25–DN200		
10	DN250–DN350	DN250–DN600	DN250–DN500	DN250–DN600		DN25–DN200
6			DN600			DN250–DN600

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.

2024-09-24

Joachim Brien
Head of BU Industry

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