GEMÜ R488 Victoria

Motorized butterfly valve

EN **Operating instructions**

further information
webcode: GW-R488

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!
	Corrosive chemicals!
	GEMÜ products without an operator!
	Hot plant components!
	Use as end-of-line valve!
	Danger – bodily injury!
	Risk of electric shock
	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 materials.

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	Body	SG iron 5.3106, epoxy coated (RAL 5021)
2	Shaft	1.4021
3	Axis	1.4021
4	Disc	Various materials (see order data)
5	Liner	Various materials (see order data)
6	Threaded plug	1.4408
7	O-ring	NBR
8	Support rings	PTFE
9	Hexagon head bolts	Stainless steel A2-70
0	Earthing kit for ATEX version	
0-1	Cable lug (ATEX version)	
0-2	Stranded wire (ATEX version)	
10	Motorized actuator	
11	CONEXO RFID chip	

3.2 Description

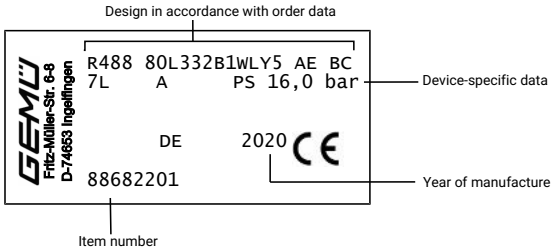
The GEMÜ R488 Victoria soft seated metal butterfly valve is motorized. Various metal or plastic on/off or control actuators are available. The butterfly valve is available in nominal sizes DN 50 to 300 and in standard installation lengths ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) in wafer and lug body versions.

3.3 Function

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

3.4 Product label

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



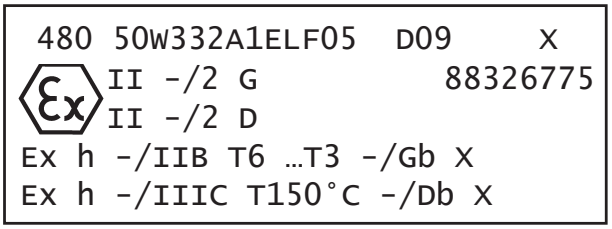
The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

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.

3.5 ATEX label

The product with special function X is intended for use in potentially explosive areas and is equipped with an ATEX label.

On the butterfly valve there is an additional adhesive label with the ATEX marking for the butterfly valve with bare shaft:



The ATEX marking applies only to the butterfly valve with bare shaft. The overall evaluation must be carried out by the plant operator.

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

5 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.

5.1 Product without special function X

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

5.2 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: ⟨Ex⟩ II -/2 G Ex h -/IIB T6 ...T3 -/Gb X

Dust: ⟨Ex⟩ 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

The product can be used in the following ambient temperature ranges: -10 °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

6 Order data

6.1 Butterfly valve with GEMÜ 9428, 9468 actuator

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
Butterfly valve, motorized	R488

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

3 Body configuration	Code
Flange-mounted design (lug), face-to-face dimension FTF EN 558 series 20	L
Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20	W

4 Operating pressure	Code
3 bar	0
6 bar	1
10 bar	2
16 bar	3

5 Connection type	Code
PN 6 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	1
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	3
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Table "D", face-to-face dimension FTF EN 558, series 20	H
Flange BS 10 Table "E", face-to-face dimension FTF EN 558, series 20	S
Flange AS 2129 Table "D", face-to-face dimension FTF EN 558, series 20	T
Flange AS 2129 Table "E", face-to-face dimension FTF EN 558, series 20	U

6 Body material	Code
EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm	2
EN-GJS-400-18-LT (GGG-40.3), epoxy coated 250 µm	3

7 Disc material	Code
1.4408	**A**
1.4408, polished, roughness Ra 0.6-3.2, except disc marking	B
1.4408, Halar coated	**C**
1.4469, super duplex	**D**
EN-GJS-400-15 (GGG-40), epoxy coated	**E**
EN-GJS-400-15 (GGG-40), HALAR coated	P
EN-GJS-400-15 (GGG-40), RILSAN PA11 coated	R
2.0975 / CC333G	G
1.4435 / ASTM A351 / CF3M / AISI 316L	I

8 Shaft material	Code
1.4021	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
NBR (DVGW gas certification)	J
EPDM (FDA certification), white	M
NBR	**N**
FPM (FKM)	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA certification)	**Z**
ECO	C
CSM	H
Silicone (MVQ-S, steam)	R
Silicone (MVQ)	S
NBR (FDA certification), white	U

10 Liner fixing	Code
Liner bonded into body	B
Loose liner	L

11 Voltage/Frequency	Code
12 V 50/60 Hz	B4
24 VDC	C1
24 V 50/60 Hz	C4

11 Continuation of Voltage/Frequency	Code
100-250V 50/60Hz	O4

12 Control module	Code
ON/OFF actuator, relay, not reversible	00
ON/OFF actuator, 2 additional potential-free limit switches, relay, not reversible	0E
ON/OFF actuator, potentiometer output, relay, not reversible	0P
ON/OFF actuator	A0
ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)	AE

13 Actuator version	Code
GEMÜ actuator, motorized, size 2, operating time 4 s, torque 6 Nm, supply voltage O4	2006
GEMÜ actuator, motorized, size 2, operating time 11 s, torque 15 Nm, supply voltage B4, C4, O4	2015
GEMÜ actuator, motorized, size 2, operating time 15 s, torque 70 Nm, supply voltage C1	2070
GEMÜ actuator, motorized, size 3, operating time 15 s, torque 35 Nm, supply voltage C1, O4	3035
GEMÜ actuator, motorized, size 4, operating time 20 s, torque 100 Nm, supply voltage C1	4100

13 Continuation of Actuator version	Code
GEMÜ actuator, motorized, size 4, operating time 16 s, torque 200 Nm, supply voltage C1	4200

14 Type of design	Code
Without	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Thermal separation between actuator and valve body via dew point barrier	5226

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
WRAS certification	W
ATEX certification	X
ATEX certification (in the piping system)	Y

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

Order example - standard version

Order option	Code	Description
1 Type	R488	Butterfly valve, motorized
2 DN	100	DN 100
3 Body configuration	W	Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20
4 Operating pressure	3	16 bar
5 Connection type	3	PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
6 Body material	2	EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm
7 Disc material	A	1.4408
8 Shaft material	1	1.4021
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	C1	24 VDC
12 Control module	00	ON/OFF actuator, relay, not reversible
13 Actuator version	2070	GEMÜ actuator, motorized, size 2, operating time 15 s, torque 70 Nm, supply voltage C1
14 Type of design		Without
15 Special version		Without
16 CONEXO		without

6.2 Butterfly valve with J+J actuator

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
Butterfly valve, motorized	R488

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

3 Body configuration	Code
Flange-mounted design (lug), face-to-face dimension FTF EN 558 series 20	L
Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20	W

4 Operating pressure	Code
3 bar	0
6 bar	1
10 bar	2
16 bar	3

5 Connection type	Code
PN 6 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	1
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	3
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Table "D", face-to-face dimension FTF EN 558, series 20	H
Flange BS 10 Table "E", face-to-face dimension FTF EN 558, series 20	S
Flange AS 2129 Table "D", face-to-face dimension FTF EN 558, series 20	T
Flange AS 2129 Table "E", face-to-face dimension FTF EN 558, series 20	U

6 Body material	Code
EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm	2

6 Continuation of Body material	Code
EN-GJS-400-18-LT (GGG-40.3), epoxy coated 250 µm	3

7 Disc material	Code
1.4408	**A**
1.4408, polished, roughness Ra 0.6-3.2, except disc marking	B
1.4408, Halar coated	**C**
1.4469, super duplex	**D**
EN-GJS-400-15 (GGG-40), epoxy coated	**E**
EN-GJS-400-15 (GGG-40), HALAR coated	P
EN-GJS-400-15 (GGG-40), RILSAN PA11 coated	R
2.0975 / CC333G	G
1.4435 / ASTM A351 / CF3M / AISI 316L	I

8 Shaft material	Code
1.4021	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
NBR (DVGW gas certification)	J
EPDM (FDA certification), white	M
NBR	**N**
FPM (FKM)	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA certification)	**Z**
ECO	C
CSM	H
Silicone (MVQ-S, steam)	R
Silicone (MVQ)	S
NBR (FDA certification), white	U

10 Liner fixing	Code
Liner bonded into body	B
Loose liner	L

11 Voltage/Frequency	Code
12 VDC	B1
24-240V AC/DC	U5

12 Control module	Code
ON/OFF 3-position actuator, additional potential-free limit switches	A3

12 Continuation of 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, potentiometer output, Class A (EN15714-2)	AP
ON/OFF actuator, 2 additional potential-free limit switches, potentiometer output 5 kOhm, Failsafe battery pack (NC), preferred direction adjustable	AP1
Control actuator, external set value 0-10 VDC	E1
Positioner DPS, external set value 0-10V, BSR battery pack (NC)	E11
Control actuator, external set value 0/4-20 mA	E2
Positioner DPS, external set value 4-20mA, BSR battery pack (NO)	E22

13 Actuator version	Code
J+J actuator, motorized, type J4C, operating time 10 s, torque 20 Nm, heating, IP 67	J4C20
J+J actuator, motorized, type J4C, operating time 10 s, torque 35 Nm, heating, IP 67	J4C35
J+J actuator, motorized, type J4C, operating time 14 s, torque 55 Nm, heating, IP 67	J4C55
J+J actuator, motorized, type J4C, operating time 30 s, torque 85 Nm, heating, IP 67	J4C85
J+J actuator, motorized, type J4C, operating time 34 s, torque 140 Nm, heating, IP 67	J4C14
J+J actuator, motorized, type J4C, operating time 58 s, torque 300 Nm, heating, IP 67	J4C30

14 Type of design	Code
Without	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Thermal separation between actuator and valve body via dew point barrier	5226

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
WRAS certification	W
ATEX certification	X
ATEX certification (in the piping system)	Y

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

Order example - standard version

Order option	Code	Description
1 Type	R488	Butterfly valve, motorized
2 DN	100	DN 100
3 Body configuration	W	Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20
4 Operating pressure	3	16 bar
5 Connection type	3	PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
6 Body material	2	EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm
7 Disc material	A	1.4408
8 Shaft material	1	1.4021
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	U5	24-240V AC/DC
12 Control module	AE	ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)
13 Actuator version	J4C55	J+J actuator, motorized, type J4C, operating time 14 s, torque 55 Nm, heating, IP 67
14 Type of design		Without
15 Special version		Without
16 CONEXO		without

6.3 Butterfly valve with AUMA actuator

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
Butterfly valve, motorized	R488

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

3 Body configuration	Code
Flange-mounted design (lug), face-to-face dimension FTF EN 558 series 20	L
Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20	W

4 Operating pressure	Code
3 bar	0
6 bar	1
10 bar	2
16 bar	3

5 Connection type	Code
PN 6 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	1
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	3
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Table "D", face-to-face dimension FTF EN 558, series 20	H
Flange BS 10 Table "E", face-to-face dimension FTF EN 558, series 20	S
Flange AS 2129 Table "D", face-to-face dimension FTF EN 558, series 20	T
Flange AS 2129 Table "E", face-to-face dimension FTF EN 558, series 20	U

6 Body material	Code
EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm	2

6 Continuation of Body material	Code
EN-GJS-400-18-LT (GGG-40.3), epoxy coated 250 µm	3

7 Disc material	Code
1.4408	**A**
1.4408, polished, roughness Ra 0.6-3.2, except disc marking	B
1.4408, Halar coated	**C**
1.4469, super duplex	**D**
EN-GJS-400-15 (GGG-40), epoxy coated	**E**
EN-GJS-400-15 (GGG-40), HALAR coated	P
EN-GJS-400-15 (GGG-40), RILSAN PA11 coated	R
2.0975 / CC333G	G
1.4435 / ASTM A351 / CF3M / AISI 316L	I

8 Shaft material	Code
1.4021	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
NBR (DVGW gas certification)	J
EPDM (FDA certification), white	M
NBR	**N**
FPM (FKM)	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA certification)	**Z**
ECO	C
CSM	H
Silicone (MVQ-S, steam)	R
Silicone (MVQ)	S
NBR (FDA certification), white	U

10 Liner fixing	Code
Liner bonded into body	B
Loose liner	L

11 Voltage/Frequency	Code
120V 50Hz	G2
120V 60Hz	G3
230V 50Hz	L2
230V 60Hz	L3
400V 50Hz	N2

12 Control module	Code
ON/OFF actuator	A0

13 Actuator version	Code
AUMA actuator, motorized, type SQ05.2, operating time 16s, torque 150Nm, Class A (EN15714-2), Open/Close, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0.140mm, RAL7037, manual override, IP 68	AQ05H
AUMA actuator, motorized, type SQ07.2, operating time 16s, torque 300Nm, Class A (EN15714-2), Open/Close, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0.140mm, RAL7037, manual override, IP 68	AQ07H
AUMA actuator, motorized, type SQ10.2, operating time 16s, torque 600Nm, Class A (EN15714-2), Open/Close, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0.140mm, RAL7037, manual override, IP 68	AQ10H

14 Type of design	Code
Without	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Thermal separation between actuator and valve body via dew point barrier	5226

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
WRAS certification	W
ATEX certification	X
ATEX certification (in the piping system)	Y

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

Order example - standard version

Order option	Code	Description
1 Type	R488	Butterfly valve, motorized
2 DN	100	DN 100
3 Body configuration	W	Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20
4 Operating pressure	3	16 bar
5 Connection type	3	PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
6 Body material	2	EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm
7 Disc material	A	1.4408
8 Shaft material	1	1.4021
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	N2	400V 50Hz
12 Control module	A0	ON/OFF actuator
13 Actuator version	AQ05H	AUMA actuator, motorized, type SQ05.2, operating time 16s, torque 150Nm, Class A (EN15714-2), Open/Close, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0.140mm, RAL7037, manual override, IP 68
14 Type of design		Without
15 Special version		Without
16 CONEXO		without

6.4 Butterfly valve with Bernard actuator

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
Butterfly valve, motorized	R488

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

3 Body configuration	Code
Flange-mounted design (lug), face-to-face dimension FTF EN 558 series 20	L
Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20	W

4 Operating pressure	Code
3 bar	0
6 bar	1
10 bar	2
16 bar	3

5 Connection type	Code
PN 6 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	1
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20	3
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Table "D", face-to-face dimension FTF EN 558, series 20	H
Flange BS 10 Table "E", face-to-face dimension FTF EN 558, series 20	S
Flange AS 2129 Table "D", face-to-face dimension FTF EN 558, series 20	T
Flange AS 2129 Table "E", face-to-face dimension FTF EN 558, series 20	U

6 Body material	Code
EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm	2

6 Continuation of Body material	Code
EN-GJS-400-18-LT (GGG-40.3), epoxy coated 250 µm	3

7 Disc material	Code
1.4408	**A**
1.4408, polished, roughness Ra 0.6-3.2, except disc marking	B
1.4408, Halar coated	**C**
1.4469, super duplex	**D**
EN-GJS-400-15 (GGG-40), epoxy coated	**E**
EN-GJS-400-15 (GGG-40), HALAR coated	P
EN-GJS-400-15 (GGG-40), RILSAN PA11 coated	R
2.0975 / CC333G	G
1.4435 / ASTM A351 / CF3M / AISI 316L	I

8 Shaft material	Code
1.4021	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
NBR (DVGW gas certification)	J
EPDM (FDA certification), white	M
NBR	**N**
FPM (FKM)	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA certification)	**Z**
ECO	C
CSM	H
Silicone (MVQ-S, steam)	R
Silicone (MVQ)	S
NBR (FDA certification), white	U

10 Liner fixing	Code
Liner bonded into body	B
Loose liner	L

11 Voltage/Frequency	Code
24 VDC	C1
230V 50Hz	L2
230V 60Hz	L3
400V 50Hz	N2
24VDC 85-260VAC	Y5

12 Control module	Code
ON/OFF actuator, 2 additional potential-free limit switches, additional potential-free torque switches, Class A (EN15714-2)	AB
ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)	AE
ON/OFF actuator, potentiometer output, Class A (EN15714-2)	AP
ON/OFF actuator, analogue position feedback, external set value 0/4-20mA, 2 additional potential-free limit switches	AT
Control actuator, external set value 0/4-20 mA	E2
ON/OFF actuator, on-site control, 2 additional potential-free limit switches, Basic (Logic ON/OFF), (S4 30% duty, 120 starts/hour, actuator class A/B)	ALS
Position control, external set value 4-20mA, input and output, on-site control, 2 additional potential-free limit switches, Basic (Logic Positioner), (S4 50% duty, 360 starts/hour, actuator class C)	ELS

13 Actuator version	Code
BERNARD actuator, motorized, type AQ05, operating time 16s, torque 50Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC05
BERNARD actuator, motorized, type AQ10, operating time 25s, torque 100Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC10
BERNARD actuator, motorized, type AQ15, operating time 30s, torque 150Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC15
BERNARD actuator, motorized, type AQ25, operating time 30s, torque 250Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC25
BERNARD actuator, motorized, type AQ30, operating time 35s, torque 300Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC30
BERNARD actuator, motorized, type AQ50, operating time 35s, torque 500Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68	BC50

13 Continuation of Actuator version	Code
BERNARD actuator, motorized, type AQ1L, operating time 13s, torque 15Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL5002, IP 67	BC1L
BERNARD actuator, motorized, type AQ, operating time 15s, torque 30Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL5002, IP 67	BC3L
BERNARD actuator, motorized, type AQ07, operating time 15s, torque 70Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL5002, IP 67	BC7L

14 Type of design	Code
Without	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Thermal separation between actuator and valve body via dew point barrier	5226

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
WRAS certification	W
ATEX certification	X
ATEX certification (in the piping system)	Y

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

Order example - standard version

Order option	Code	Description
1 Type	R488	Butterfly valve, motorized
2 DN	100	DN 100
3 Body configuration	W	Intermediate flange design (wafer), face-to-face dimension FTF EN 558 series 20
4 Operating pressure	3	16 bar
5 Connection type	3	PN 16 / flange EN 1092, face-to-face dimension FTF EN 558 series 20
6 Body material	2	EN-GJS-400-15 (GGG-40), epoxy-coated 250 µm
7 Disc material	A	1.4408
8 Shaft material	1	1.4021
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	L2	230V 50Hz
12 Control module	AE	ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)
13 Actuator version	BC25	BERNARD actuator, motorized, type AQ25, operating time 30s, torque 250Nm, 2 additional limit switches, heating, manual override, aluminium housing, RAL1014, IP 68
14 Type of design		Without
15 Special version		Without
16 CONEXO		without

7 Butterfly valve technical data

7.1 Medium

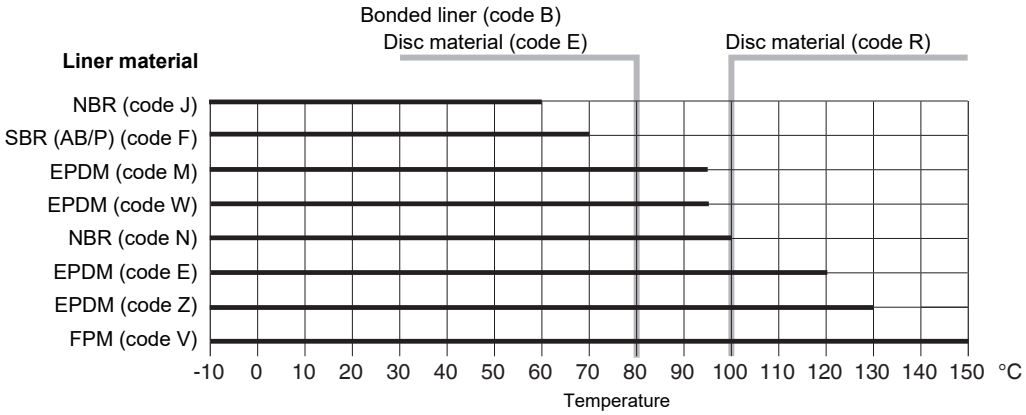
Working medium: Gaseous and liquid media which have no negative impact on the physical and chemical properties of the disc and seat material.

7.2 Temperature

Ambient temperature: -10 — 70 °C

Media temperature: -10 — 150 °C

Depending on the liner and disc material or the type of liner fixing



FPM material not suitable for water/steam applications above 100 °C,
Observe Pressure/Temperature diagram.

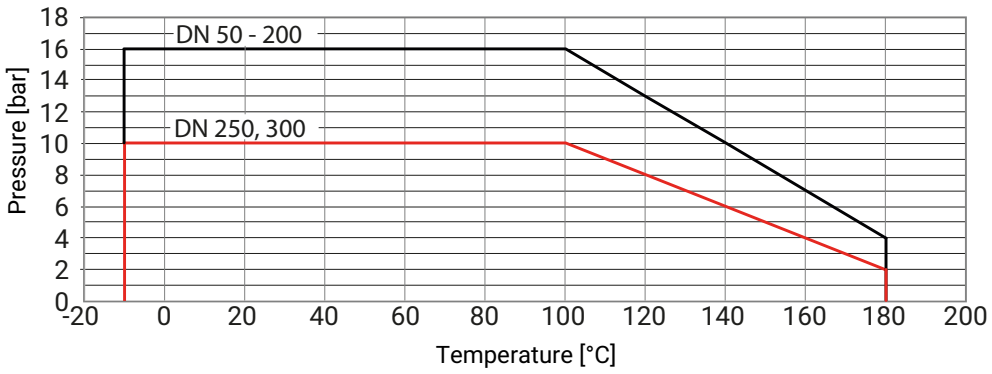
Storage temperature: 5 — 40 °C

7.3 Pressure

Operating pressure: 0 to 16 bar

Use (installation) as end-of-line valve
DN 50 – 200: 10 bar
DN 250, 300: 6 bar

Pressure/temperature diagram:



Pressure rating: PN 6

PN 10

PN 16

Kv values:

DN	Kv values at opening angle							
	20°	30°	40°	50°	60°	70°	80°	90°
50	3.0	9.0	20.0	33.0	65.0	110.0	124.0	125.0
65	9.0	15.0	30.0	64.0	118.0	195.0	214.0	222.0
80	19.0	40.0	66.0	117.0	196.0	321.0	353.0	363.0
100	29.0	75.0	137.0	213.0	316.0	487.0	584.0	618.0
125	48.0	100.0	185.0	315.0	550.0	895.0	1060.0	1120.0
150	60.0	150.0	281.0	450.0	789.0	1280.0	1630.0	1730.0
200	110.0	281.0	472.0	759.0	1480.0	2880.0	3710.0	3900.0
250	200.0	444.0	738.0	1190.0	2110.0	3880.0	5180.0	5410.0
300	250.0	682.0	1060.0	1670.0	3120.0	6360.0	8620.0	8930.0

Kv values in m^3/h
When the opening angle is below 30° no regulation should be made!

7.4 Product conformity

Machinery Directive: 2006/42/EC

EMC Directive: 2014/30/EU

Low Voltage Directive: 2014/35/EU

Pressure Equipment Directive: 2014/68/EU

Food: FDA

Drinking water: ACS
WRAS
Belgaqua

Explosion protection: ATEX (2014/34/EU) and IECEx, order code Special version X
NEC 500 (ISA 12.12.01), order code for special version Y

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

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

7.5 Mechanical data

Weight:

DN	Wafer	Lug
50	1.70	2.22
65	2.47	2.91
80	3.18	4.40
100	4.36	6.20
125	5.87	8.10
150	7.73	10.13
200	13.9	18.35
250	19.64	28.74
300	27.26	36.75

Weights in kg

8 Technical data of actuator

8.1 GEMÜ 9428, 9468 actuators

8.1.1 Mechanical data

Weight:

GEMÜ 9428

Supply voltage 24 V / 100-250 V	2.4 kg
Actuator version 3035:	2.4 kg
Actuator version 3055:	2.8 kg

Actuator type 9468

Actuator version 2070:	4.6 kg
Actuator version 4100:	11.6 kg
Actuator version 4200:	11.6 kg

8.1.2 Product compliance

Machinery Directive: 2006/42/EU

EMC Directive: 2014/30/EU

Low Voltage Directive: 2014/35/EU

8.1.3 Electrical data

Rated voltage:
120 V, 230 V AC (+10/-15 %)
24 V AC or DC (+10/-15 %)
100 – 250 V AC (± 10 %)
12 V / 24 V AC or DC (± 10 %)

Rated frequency: 50/60 Hz (at AC rated voltage)

Electrical protection class: I (DIN EN 61140)

Power consumption:

Actuator version code	Control module code	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)	100-250 V AC (code O4)
2006	**A0, AE**	-	-	-	60.0
2015	**A0, AE**	30.0	-	30.0	50.0
3035	**A0, AE**	-	30.0	-	50.0
2070	**00, 0E, 0P**	-	63.0	-	-
4100	**00, 0E, 0P**	-	105.0	-	-
4200	**00, 0E, 0P**	-	90.0	-	-

Power consumption in W

Current consumption:

Actuator version code	Control module code	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)	100-250 V AC (code O4)
2006	**A0, AE**	-	-	-	0.25
2015	**A0, AE**	2.0	-	1.2	0.20
3035	**A0, AE**	-	1.30	-	0.20
2070	**00, 0E, 0P**	-	2.60	-	-
4100	**00, 0E, 0P**	-	4.40	-	-
4200	**00, 0E, 0P**	-	3.60	-	-

Current data in A

Max. switching current:

Actuator version code	Control module code	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)	100-250 V AC (code O4)
2006	**A0, AE**	-	-	-	0.3
2015	**A0, AE**	2.3	-	1.8	0.4
3035	**A0, AE**	-	3.3	-	0.2
2070	**00, 0E, 0P**	-	14.0		-
4100	**00, 0E, 0P**	-	35.0	-	-
4200	**00, 0E, 0P**	-	35.0		-

Current data in A

Input signal:

24 V DC, 24 V AC, 120 V AC, 230 V AC
dependent on rated voltage

Duty cycle:

Supply voltage 12 V / 24 V: Continuous duty
Supply voltage 100 - 250 V: 40 % duty
Actuator version 2070: Continuous duty

Electrical protection:

GEMÜ 9428

Supply voltage 12 V / 24 V:
Motor protective system by customer

Supply voltage 100 - 250 V:
Integrated stall and overload protection

plus excess current release T 1A 5x20 mm

GEMÜ 9468

Internal for functional module 0x

Actuator version 2070: MT 6.3 A
Actuator version 4100, 4200: MT 10.0 A

Motor protective system by customer, see "Recommended motor protection"

Recommended motor protection:

GEMÜ 9428

Voltage	12 V DC	24 V DC	120 V AC	230 V AC
Motor protection switch type	Siemens 3RV 1011-1CA10	Siemens 3RV 1011-1BA10	Siemens 3RV 1011-OGA10	Siemens 3RV 1011-OGA10
Set current	2.20	1.70	0.60	0.45

Current data in A

GEMÜ 9468

Motor protection switch type:	Siemens 3RV 1011-1FA10
Set current:	4.0 A

8.2 Bernard, AUMA, J+J actuators

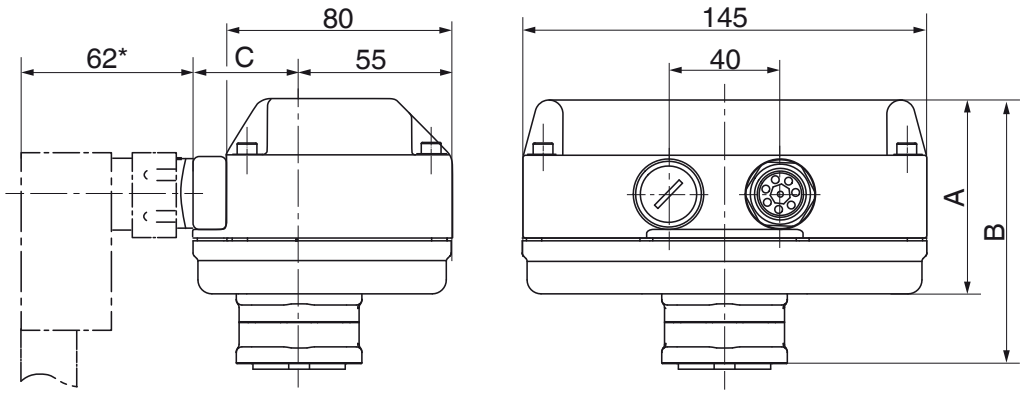
Note: For technical data see manufacturer's original datasheets

9 Dimensions

9.1 Actuator dimensions

9.1.1 GEMÜ 9428, 9468 actuators

9.1.1.1 Actuator version 1006, 1015, 2006, 2015

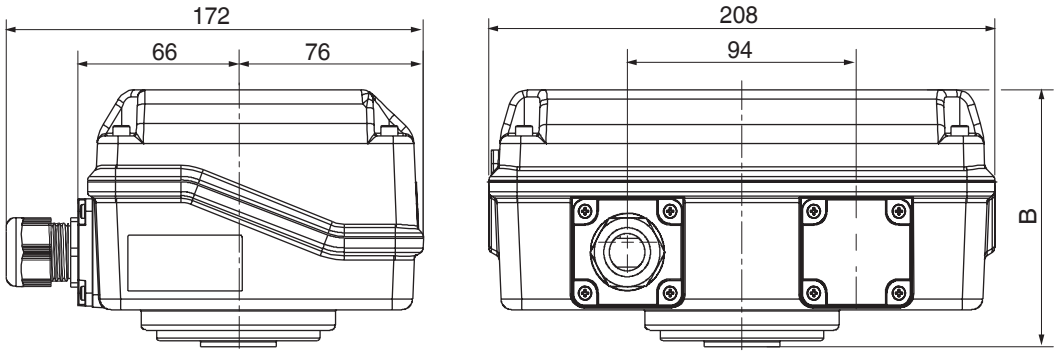


* Standard with supply voltage code O4

Actuator version	A	B	C
1006, 1015	69	94	49
2006, 2015	96	122	53

Dimensions in mm

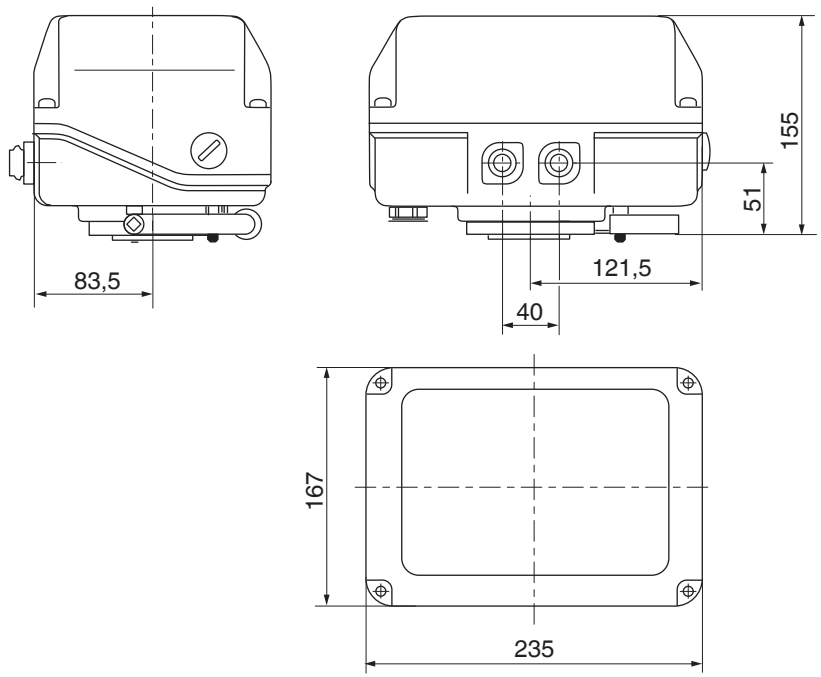
9.1.1.2 Actuator version 3035, 3055



Voltages	B
24 V	100.5
100 V - 250 V	124.5

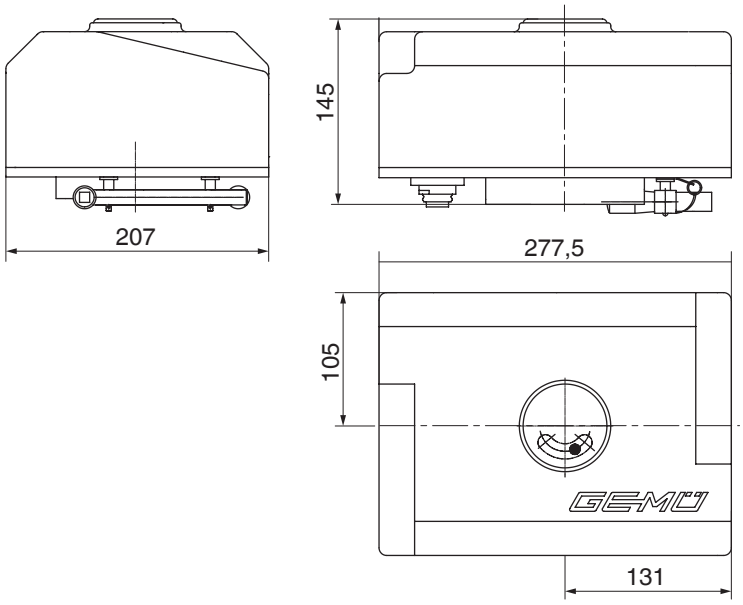
Dimensions in mm

9.1.1.3 Actuator version 2070



Dimensions in mm

9.1.1.4 Actuator version 4100, 4200



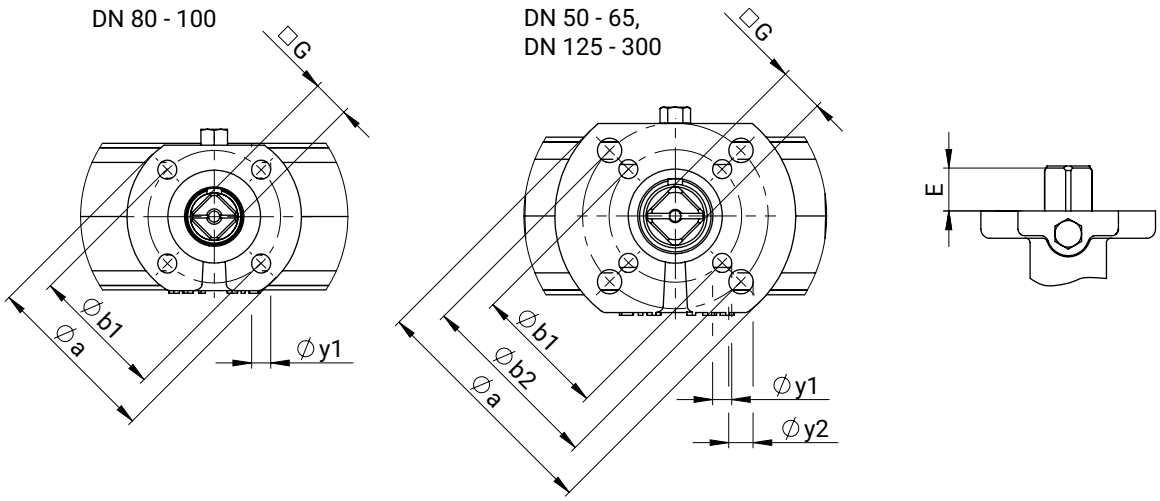
Dimensions in mm

9.1.2 Bernard, AUMA, J+J actuators

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

9.2 Body dimensions

9.2.1 Actuator flange

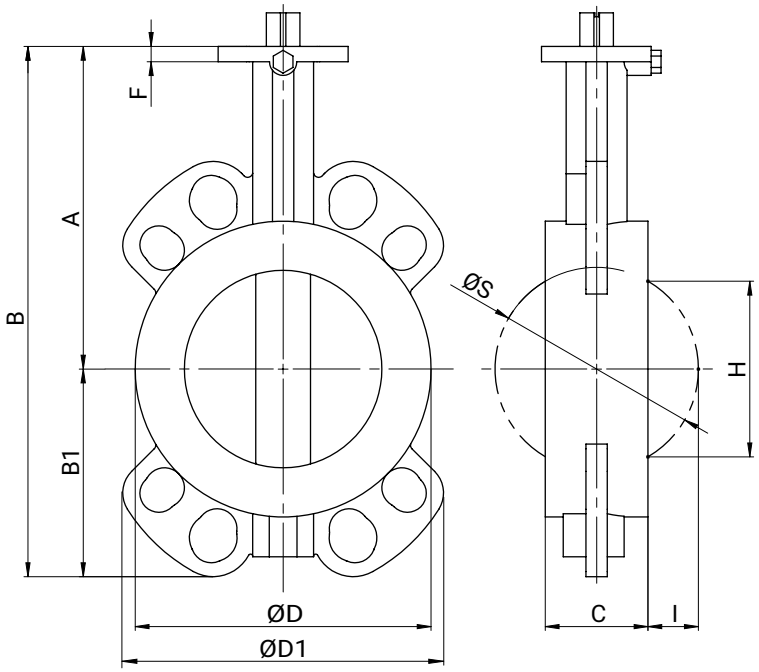


DN	□G	øa	ISO 5211	øb1	øy1	øb2	øy2	E
50	9.0	65.0	F03 | F05	36.0	6.0	50.0	7.0	17.0
65	11.0	65.0	F03 | F05	36.0	6.0	50.0	7.0	17.0
80	11.0	65.0	F05	36.0	7.0	-	-	17.0
100	14.0	65.0	F05	50.0	7.0	-	-	17.0
125	17.0	90.0	F05 | F07	50.0	7.0	70.0	9.0	23.0
150	17.0	90.0	F05 | F07	50.0	7.0	70.0	9.0	23.0
200	22.0	125.0	F07 | F10	70.0	9.0	102.0	11.0	34.0
250	22.0	125.0	F07 | F10	70.0	9.0	102.0	11.0	34.0
300	22.0	125.0	F07 | F10	70.0	9.0	102.0	11.0	34.0

Dimensions in mm

9.2.2 Body

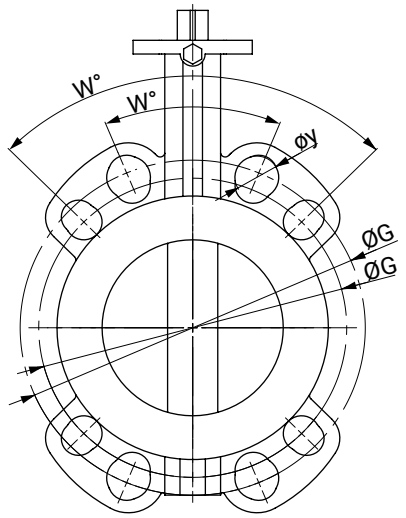
9.2.2.1 Wafer body configuration



DN	PS	A	B	B1	C	ØD	ØD1	F	H	ØS	I
50	16	120.0	182.0	62.0	43.0	90.0	118.0	7.0	29.0	52.0	5.0
65	16	137.0	218.0	81.0	46.0	108.0	133.0	7.0	48.0	67.0	10.0
80	16	145.0	231.0	87.0	46.0	130.0	141.0	7.0	68.0	82.0	18.0
100	16	166.0	271.0	105.0	52.0	150.0	163.0	7.0	88.0	102.0	25.0
125	16	187.0	304.0	117.0	56.0	175.0	120.0	9.0	114.0	127.0	35.0
150	16	200.0	332.0	132.0	56.0	207.0	129.0	9.0	141.0	152.0	48.0
200	16	240.0	413.0	173.0	60.0	263.0	157.0	11.0	193.0	202.0	71.0
250	10	265.0	466.0	201.0	68.0	317.0	185.0	11.0	242.0	252.0	92.0
300	10	290.0	531.0	241.0	78.0	366.0	164.0	11.0	291.0	302.0	112.0

Dimensions in mm

9.2.2.1.1 Connections



Connection EN1092, EN1759

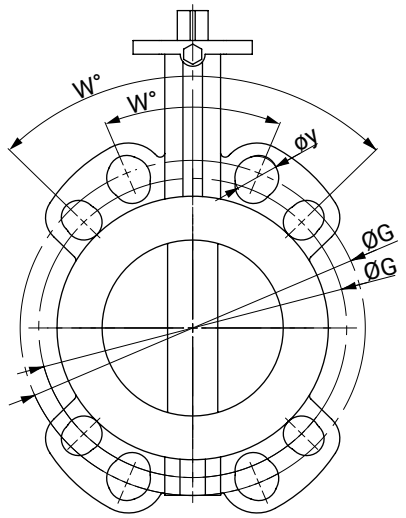
DN	INCH	Connection (code)															
		EN1092-1 PN6 (code 1)				EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				EN1759/CL150 (code D)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
50	**2"**	90	4	110.0	14.0	90	4	125.0	18.0	90	4	125.0	18.0	90	4	120.6	19.0
65	**2½"**	90	4	130.0	14.0	90	4	145.0	18.0	90	4	145.0	18.0	90	4	139.7	19.0
80	**3"**	90	4	150.0	18.0	45	8	160.0	18.0	45	8	160.0	18.0	90	4	152.4	19.0
100	**4"**	90	4	170.0	18.0	45	8	180.0	18.0	45	8	180.0	18.0	45	8	190.5	19.0
125	**5"**	45	8	200.0	18.0	45	8	210.0	18.0	45	8	210.0	18.0	45	8	215.9	22.2
150	**6"**	45	8	225.0	18.0	45	8	240.0	22.0	45	8	240.0	22.0	45	8	241.3	22.2
200	**8"**	45	8	280.0	18.0	45	8	295.0	22.0	30	12	295.0	22.0	45	8	298.5	22.2
250	**10"**	30	12	335.0	18.0	30	12	350.0	22.0	30	12	355.0	26.0	30	12	362.0	25.4
300	**12"**	30	12	395.0	22.0	30	12	400.0	22.0	30	12	410.0	26.0	30	12	431.8	25.4

Dimensions in mm

Connection AS2129, BS10

DN	INCH	Connection (code)															
		AS 2129 D (code T)				AS 2129 E (code U)				BS10 D (code H)				BS10 E (code S)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
50	**2"**	90	4	114.0	18.0	90	4	114.0	18.0	90	4	114.3	17.5	90	4	114.3	17.5
65	**2½"**	90	4	127.0	18.0	90	4	127.0	18.0	90	4	127.0	17.5	90	4	127.0	17.5
80	**3"**	90	4	146.0	18.0	90	4	146.0	18.0	90	4	146.1	17.5	90	4	146.1	17.5
100	**4"**	90	4	178.0	18.0	45	8	178.0	18.0	90	4	177.8	17.5	45	8	177.8	17.5
125	**5"**	45	8	210.0	18.0	45	8	210.0	18.0	45	8	209.6	17.5	45	8	209.6	17.5
150	**6"**	45	8	235.0	18.0	45	8	235.0	22.0	45	8	235.0	17.5	45	8	235.0	20.6
200	**8"**	45	8	292.0	18.0	45	8	292.0	22.0	45	8	292.1	17.5	45	8	292.1	20.6
250	**10"**	45	8	356.0	22.0	30	12	356.0	22.0	45	8	355.6	22.2	30	12	355.6	22.2
300	**12"**	30	12	406.0	22.0	30	12	406.0	26.0	30	12	406.4	22.2	30	12	406.4	25.4

Dimensions in mm

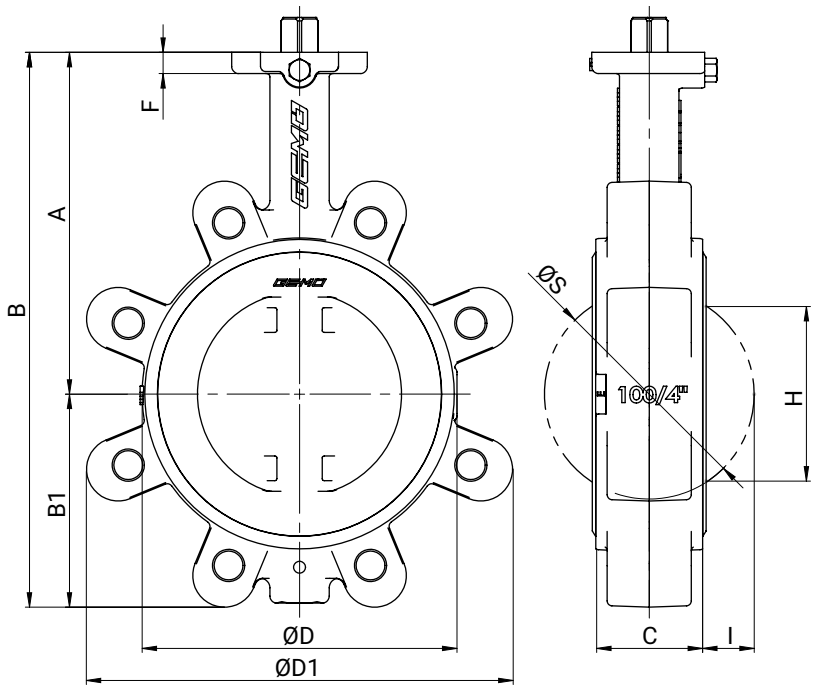


Connection JIS K10, K16

DN	INCH	Connection (code)							
		JIS-K10 (code G)				JIS-K16 (code J)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y
50	**2"**	90	4	120.0	19.0	45	8	120.0	19.0
65	**2½"**	90	4	140.0	19.0	45	8	140.0	19.0
80	**3"**	45	8	150.0	19.0	45	8	160.0	23.0
100	**4"**	45	8	175.0	19.0	45	8	185.0	23.0
125	**5"**	45	8	210.0	23.0	45	8	225.0	25.0
150	**6"**	45	8	240.0	23.0	30	12	260.0	25.0
200	**8"**	30	12	290.0	23.0	30	12	305.0	25.0
250	**10"**	30	12	355.0	25.0	30	12	380.0	27.0
300	**12"**	22,5	16	400.0	25.0	22,5	16	430.0	27.0

Dimensions in mm

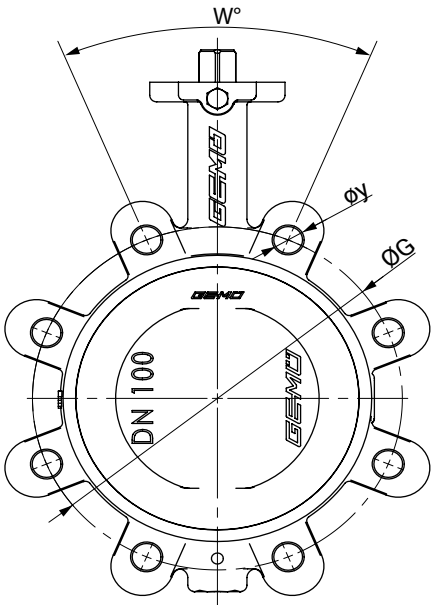
9.2.2.2 Lug body configuration



DN	PS	A	B	B1	C	ØD	ØD1	F	H	ØS	I
50	16	120.0	182.0	62.0	44.0	91.0	116.0	9.0	29.0	52.0	4.0
65	16	137.0	219.0	82.0	46.0	109.0	126.0	9.0	48.0	67.0	10.0
80	16	145.0	234.0	89.0	46.0	131.0	177.0	9.0	68.0	82.0	18.0
100	16	166.0	270.0	104.0	52.0	153.0	207.0	10.0	88.0	102.0	25.0
125	16	187.0	305.0	118.0	56.0	175.0	231.0	10.0	114.0	127.0	36.0
150	16	200.0	333.0	133.0	56.0	208.0	255.0	10.0	141.0	152.0	48.0
200	16	240.0	415.0	175.0	60.0	264.0	325.0	12.0	193.0	202.0	71.0
250	10	265.0	467.0	202.0	68.0	317.0	386.0	11.0	242.0	252.0	92.0
300	10	290.0	531.0	241.0	78.0	366.0	459.0	12.0	291.0	302.0	112.0

Dimensions in mm

9.2.2.2.1 Connections



Connection EN1092, EN1759

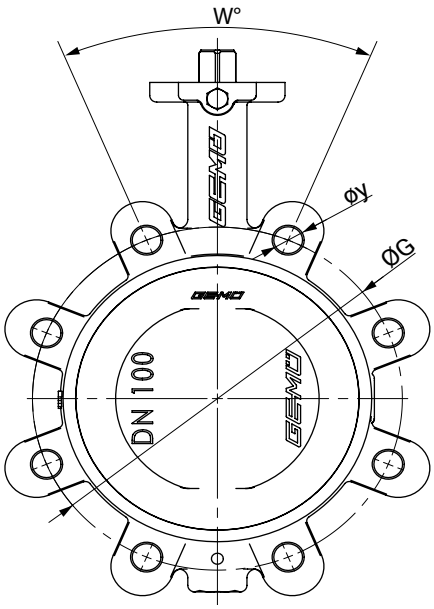
DN	INCH	Connection (code)															
		EN1092-1 PN6 (code 1)				EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				EN1759/CL150 (code D)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
50	2"	90	4	110.0	M12	90	4	125.0	M16	90	4	125.0	M16	90	4	120.6	5/8"
65	2½"	90	4	130.0	M12	90	4	145.0	M16	90	4	145.0	M16	90	4	139.7	5/8"
80	3"	90	4	150.0	M16	45	8	160.0	M16	45	8	160.0	M16	90	4	152.4	5/8"
100	4"	90	4	170.0	M16	45	8	180.0	M16	45	8	180.0	M16	45	8	190.5	5/8"
125	5"	45	8	200.0	M16	45	8	210.0	M16	45	8	210.0	M16	45	8	215.9	3/4"
150	6"	45	8	225.0	M16	45	8	240.0	M20	45	8	240.0	M20	45	8	241.3	3/4"
200	8"	45	8	280.0	M16	45	8	295.0	M20	30	12	295.0	M20	45	8	298.5	3/4"
250	10"	30	12	335.0	M16	30	12	350.0	M20	30	12	355.0	M24	30	12	362.0	7/8"
300	12"	30	12	395.0	M20	30	12	400.0	M20	30	12	410.0	M24	30	12	431.8	7/8"

Dimensions in mm

Connection AS 2129, BS10

DN	INCH	Connection (code)															
		AS 2129 D (code T)				AS 2129 E (code U)				BS10 D (code H)				BS10 E (code S)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
50	2"	90	4	114.0	M16	90	4	114.0	M16	90	4	114.3	5/8"	90	4	114.3	5/8"
65	2½"	90	4	127.0	M16	90	4	127.0	M16	90	4	127.0	5/8"	90	4	127.0	5/8"
80	3"	90	4	146.0	M16	90	4	146.0	M16	90	4	146.1	5/8"	90	4	146.1	5/8"
100	4"	90	4	178.0	M16	45	8	178.0	M16	90	4	177.8	5/8"	45	8	177.8	5/8"
125	5"	45	8	210.0	M16	45	8	210.0	M16	45	8	209.6	5/8"	45	8	209.6	5/8"
150	6"	45	8	235.0	M16	45	8	235.0	M20	45	8	235.0	5/8"	45	8	235.0	3/4"
200	8"	45	8	292.0	M16	45	8	292.0	M20	45	8	292.1	5/8"	45	8	292.1	3/4"
250	10"	45	8	356.0	M20	30	12	356.0	M20	45	8	355.6	3/4"	30	12	355.6	3/4"
300	12"	30	12	406.0	M20	30	12	406.0	M24	30	12	406.4	3/4"	30	12	406.4	7/8"

Dimensions in mm



Connection JIS K10, JIS K16

DN	INCH	Connection (code)							
		JIS-K10 (code G)				JIS-K16 (code J)			
DIN	ASME	w°	n	ØG	y	w°	n	ØG	y
50	2"	90.0	4	120.0	M16	45.0	8	120.0	M16
65	2½"	90.0	4	140.0	M16	45.0	8	140.0	M16
80	3"	45.0	8	150.0	M16	45.0	8	160.0	M20
100	4"	45.0	8	175.0	M16	45.0	8	185.0	M20
125	5"	45.0	8	210.0	M20	45.0	8	225.0	M22
150	6"	45.0	8	240.0	M20	30.0	12	260.0	M22
200	8"	30.0	12	290.0	M20	30.0	12	305.0	M22
250	10"	30.0	12	355.0	M22	30.0	12	380.0	M24
300	12"	22.5	16	400.0	M22	22.5	16	430	M24

Dimensions in mm

10 Manufacturer's information

10.1 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.

10.2 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.

10.3 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.

11 Installation in piping

11.1 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 suitable protective gear.
- Completely drain the plant.

⚠ WARNING

GEMÜ products without an operator!

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

⚠ CAUTION

Hot plant components!

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

⚠ CAUTION

Leakage

► Emission of dangerous materials.
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ 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 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

Danger – bodily injury!

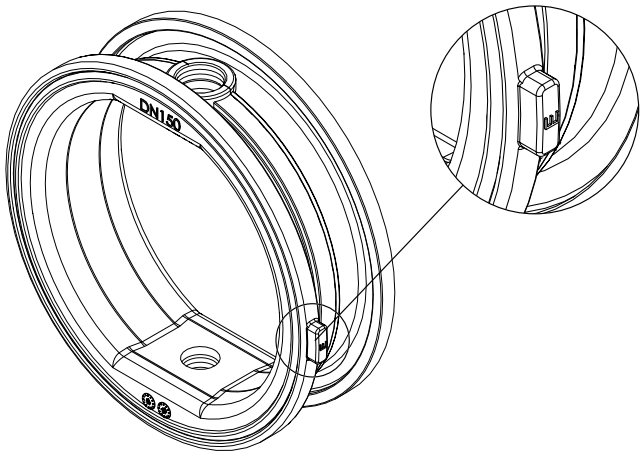
► Risk of severe injury!
- Before performing any work on the GEMÜ product, depressurize the plant.

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.

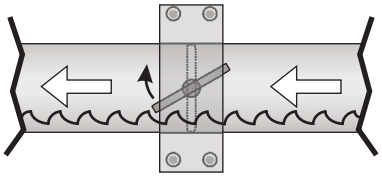
1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. The external pressure must not exceed 1 bar PSa.
4. Pressure surges are not permissible. The plant operator must plan appropriate precautionary measures.
5. The pressure differential 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.
23. Match the coloured marking of the liner to the material (see table):



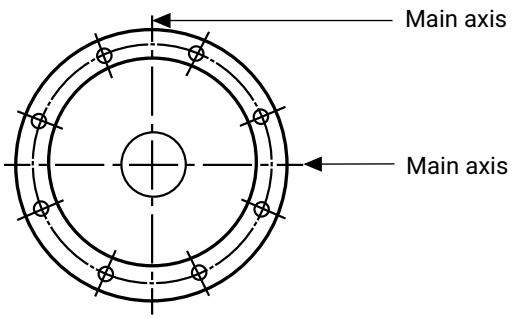
Material	Code	Colour
EPDM	EL	-
EPDM (drinking water)	WL	Orange
EPDM white	ML	-
EPDM-HT	TL	Grey
NBR	NL	Blue
FPM	VL	Yellow
Flucast AB/P	FL	Red

11.2 Installation location

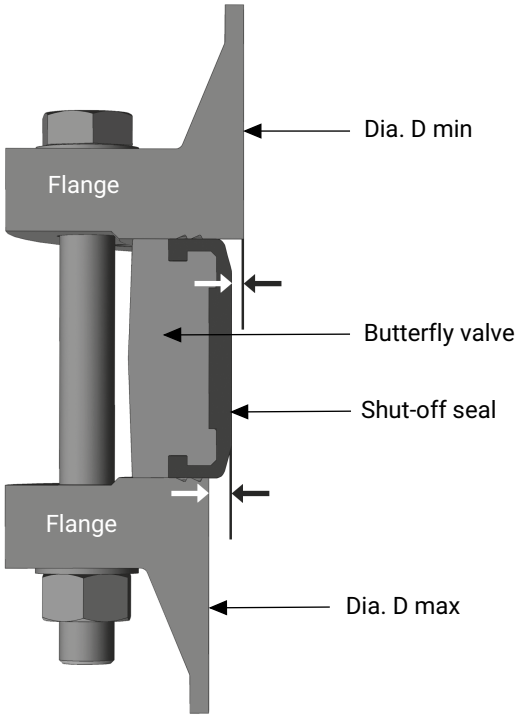
1. You can choose the installation position of the GEMÜ product. If media is contaminated and DN ≥ 300, install GEMÜ R488 horizontally, so that the lower edge of the disc opens in-line with flow direction.



2. You can choose the flow direction of the GEMÜ product.
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
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

Dimensions in mm

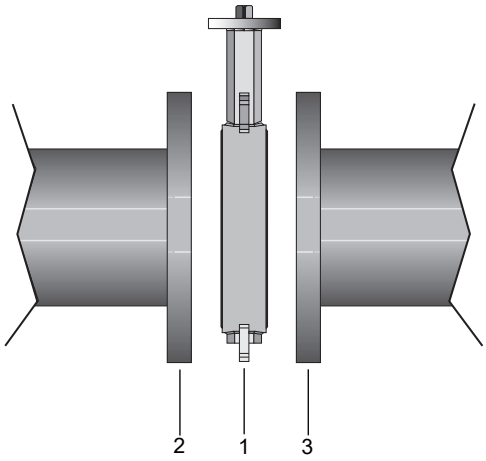
11.3 Installation of the standard version

⚠ CAUTION

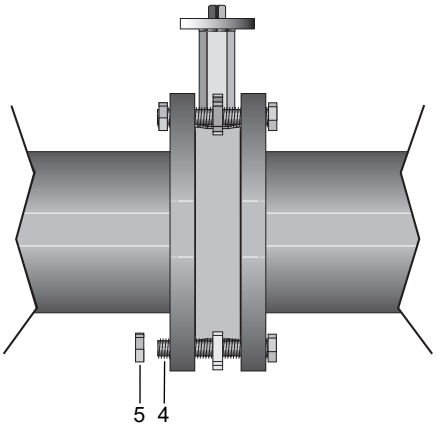
Damage!

► 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. Decontaminate, rinse and ventilate the plant or plant component properly.
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. Do not use any flange seals.
10. Clamp the butterfly valve **1** centrally between the pipes with flanges **2** and **3**.

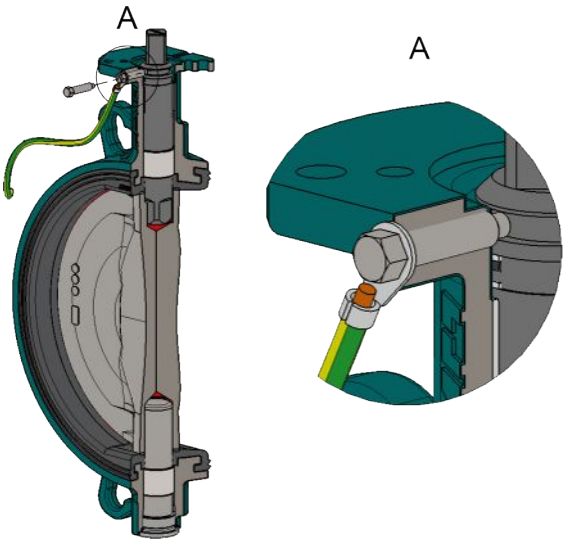


11. Slightly open the butterfly valve **1**. The disc must not project from the body.
12. Insert bolts **4** in all holes in the flange.



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").

11.4 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).

12 GEMÜ 9428 electrical connection

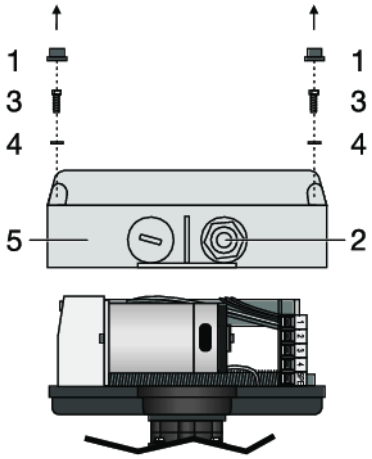
⚠ DANGER

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.



12.1 Connection/wiring diagram

NOTICE

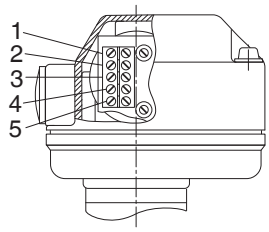
Parallel operation

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

12.1.1 On/Off actuator (code A0)

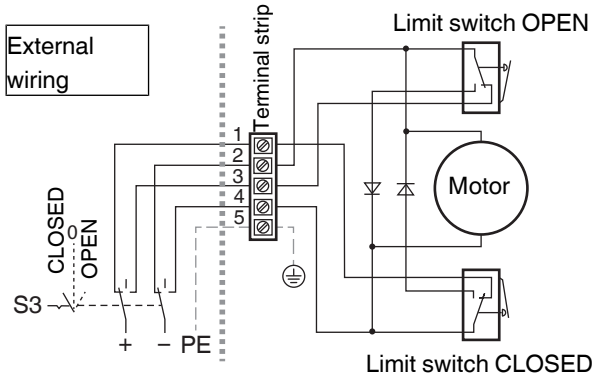
12 V DC (code B1) / 24 V DC (code C1)

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

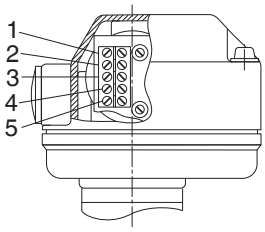
Connection diagram



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

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

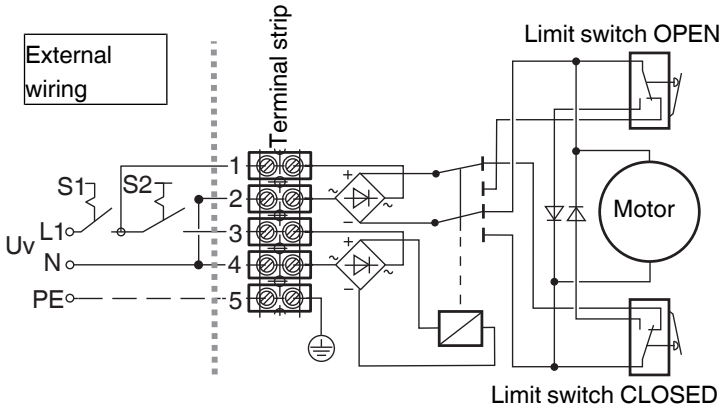
Assignment of the terminal strips



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

Preferred direction -OPEN- when all signals are present

Connection diagram

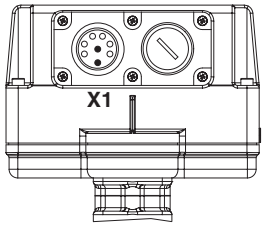


S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

100 - 250 V AC (code 04)

Position of the connectors



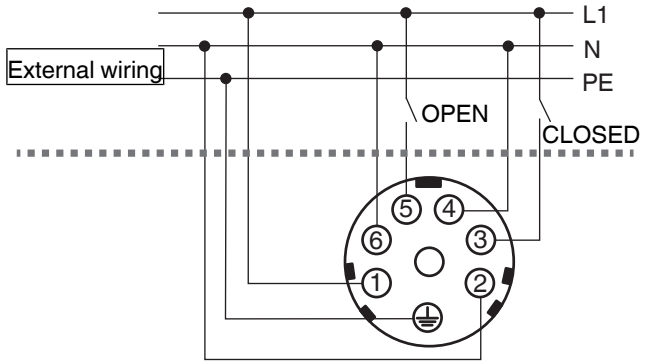
Electrical connection

Plug assignment X1

Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, direction of travel CLOSED
4	N, direction of travel CLOSED
5	L1, direction of travel OPEN
6	N, direction of travel OPEN
⏚	PE, protective earth conductor

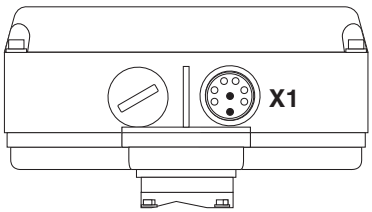
The potential must be assigned by the user.

Connection diagram



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

Position of the connectors

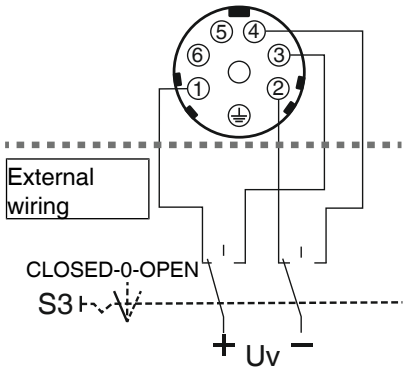


Electrical connection

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

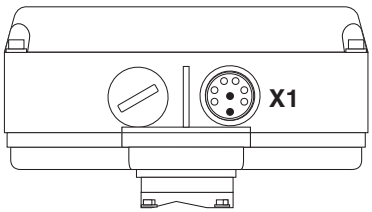
Connection diagram



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



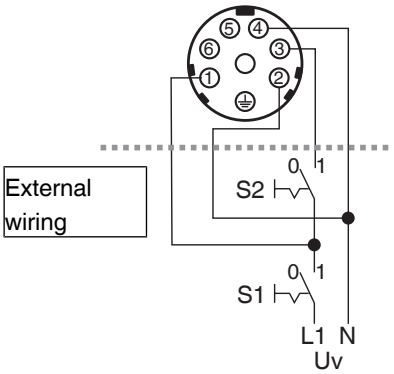
Electrical connection

Plug assignment X2

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

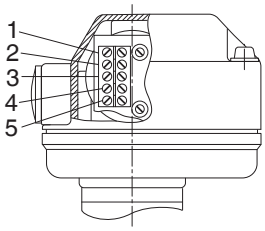
12 V DC (code B1) / 24 V DC (code C1) / K-no. 6410

NOTICE

Parallel operation

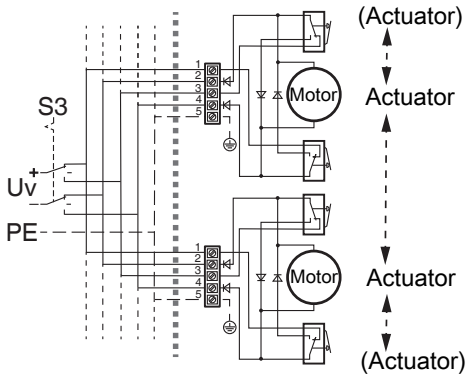
► Parallel operation only possible with K-no. 6410.

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

12.1.2 On/Off actuator with 2 potential-free limit switches (code AE)

⚠ DANGER

Risk of electric shock

► Death or injuries

● The end positions (potential-free limit switches) are set mechanically by means of adjusting screws. To do this, disconnect the plant from the power supply. This may only be done by qualified electricians!

NOTICE

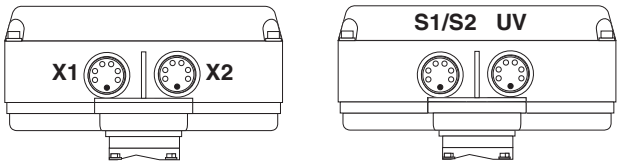
● Always switch the limit switch for signal so that the motor switch is actuated first.

⇨ Limit switches for signal and motor are already preset.

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

Position of the connectors

Actuator version 3035, 3055 Actuator version 1006, 101



Electrical connection

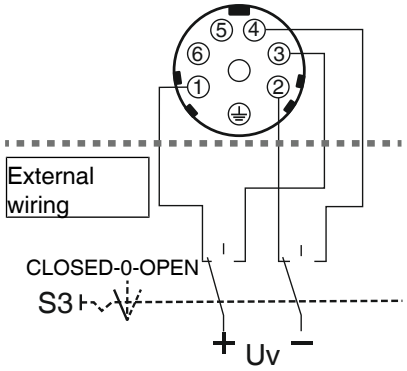
Plug assignment X1, UV

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

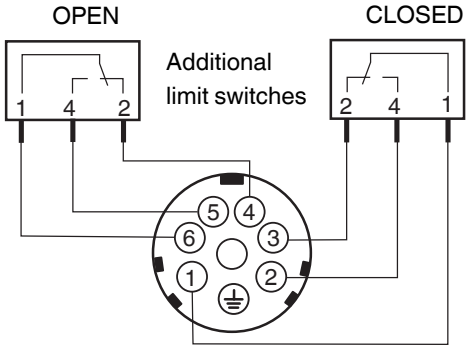
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

Connection diagram



Connection assignment X1, UV

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

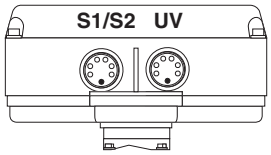


Connection assignment X2, S1/S2

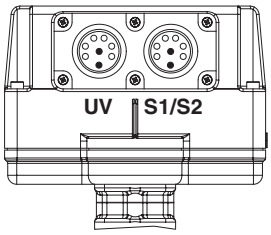
12 V AC (code B4) / 24 V AC (code C4)

Position of the connectors

Actuator version 1006



Actuator version 2015



Electrical connection

Plug assignment X1, UV

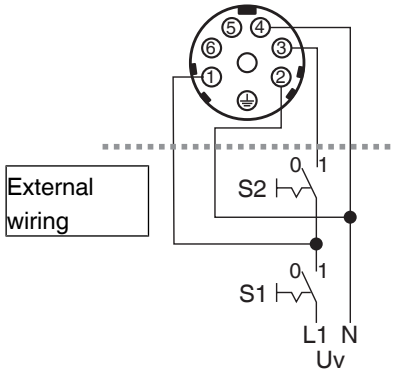
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSE)
4	N, change-over (OPEN/CLOSE)
5	n. c.
6	n. c.
⏚	PE, protective earth conductor

Plug assignment X2, S1/S2

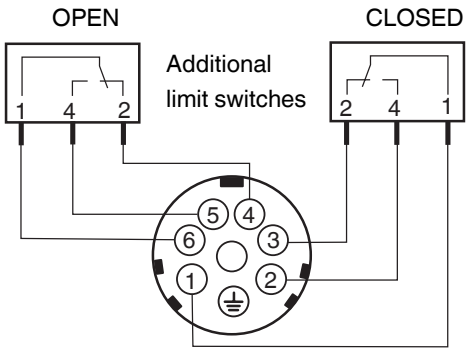
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram



Connection diagram X1, UV



Connection diagram X2, S1/S2

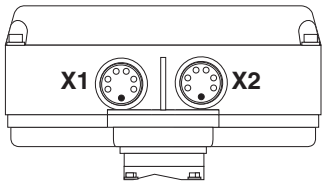
S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

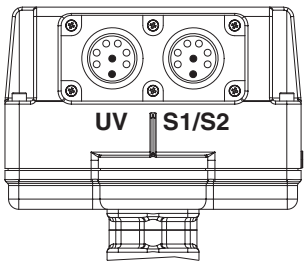
100-250 V AC (code 04)

Position of the connectors

Actuator version 3035, 3055



Actuator version 2006, 2015



Electrical connection

Plug assignment X1, UV

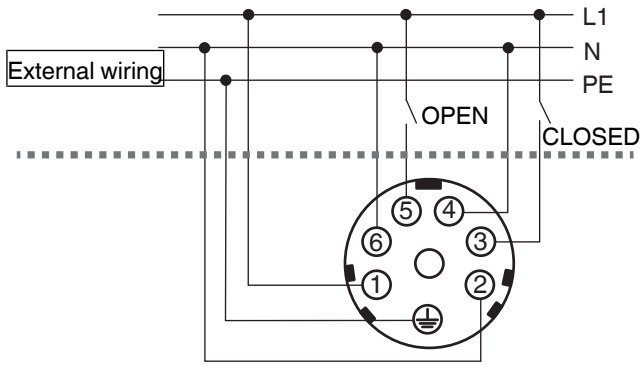
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, direction of travel CLOSED
4	N, direction of travel CLOSED
5	L1, direction of travel OPEN
6	N, direction of travel OPEN
⏚	PE, protective earth conductor

Plug assignment X2, S1/S2

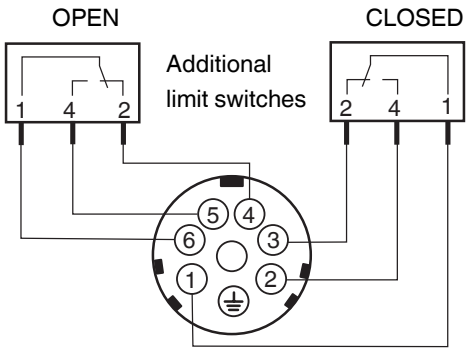
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

The potential must be assigned by the user.

Connection diagram



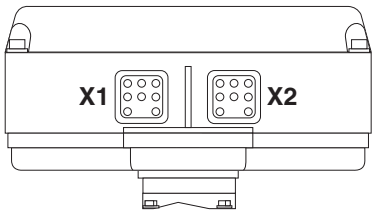
Connection diagram X1, UV



Connection diagram X2, S1/S2

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

Position of the connectors



Electrical connection

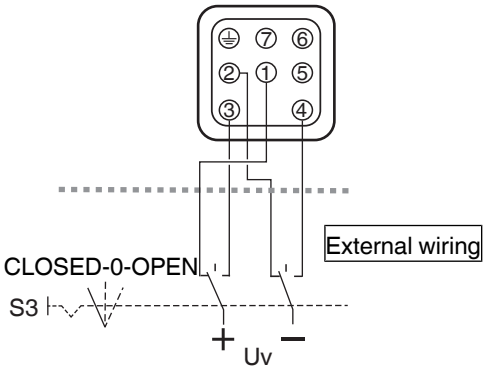
Plug assignment X1

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

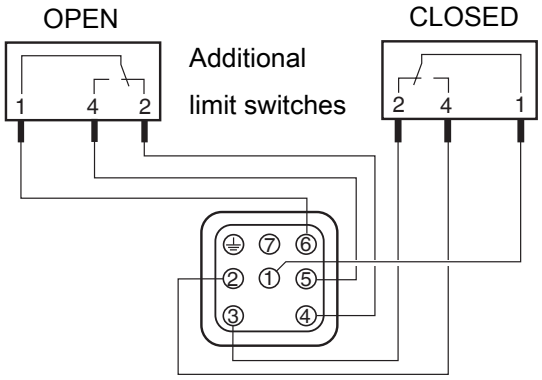
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
7	n. c.
⏚	PE, protective earth conductor

Connection diagram



Connection diagram X1

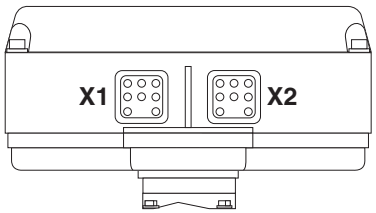
S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN



Connection diagram X2

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

Position of the connectors



Electrical connection

Plug assignment X1

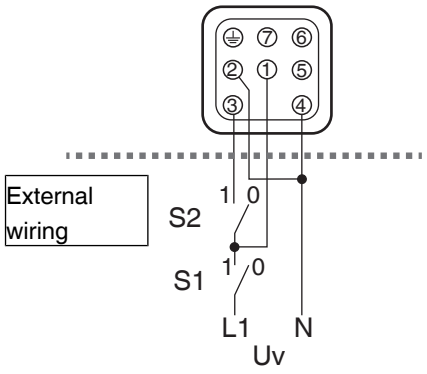
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSE)
4	N, change-over (OPEN/CLOSE)
5	n. c.
6	n. c.
7	n. c.
⏚	PE, protective earth conductor

Plug assignment X2

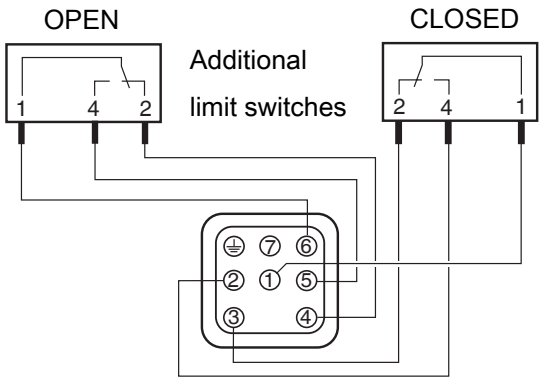
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
7	n. c.
⏚	PE, protective earth conductor

Preferred direction -OPEN- when all signals are present

Connection diagram



Connection diagram X1



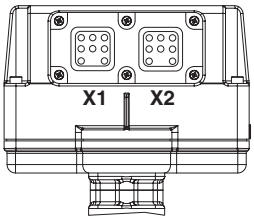
Connection diagram X2

S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

100-250 V AC (Code O4) / K-no. 6722

Position of the connectors



Electrical connection

Plug assignment X1

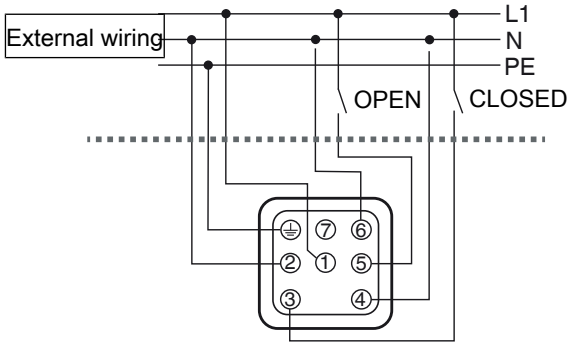
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, direction of travel CLOSED
4	N, direction of travel CLOSED
5	L1, direction of travel OPEN
6	N, direction of travel OPEN
7	n. c.
⏚	PE, protective earth conductor

Plug assignment X2

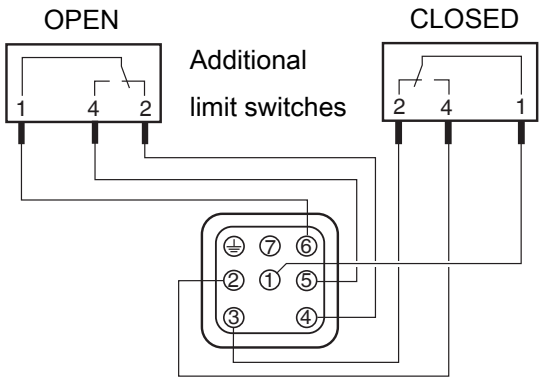
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
7	n. c.
⏚	PE, protective earth conductor

The potential must be assigned by the user.

Connection diagram



Connection diagram X1



Connection diagram X2

13 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)

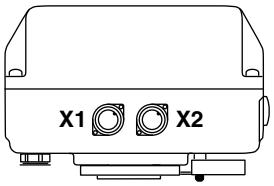
NOTICE

- ● 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.

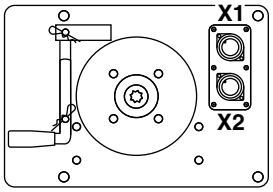
13.1 Connection/wiring diagram

13.1.1 On/Off actuator with relay (code 00), 24 V DC (code C1)

13.1.1.1 Position of the connectors

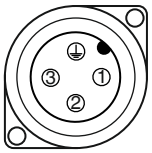


Actuator version 2070



Actuator version 4100, 4200

13.1.1.2 Electrical connection

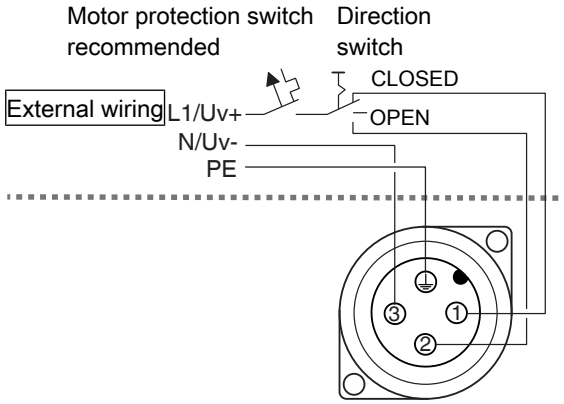


Plug assignment X1

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".

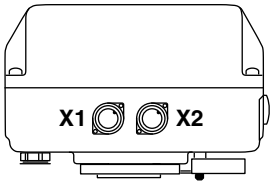
13.1.1.3 Connection diagram



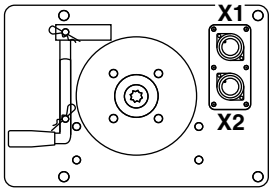
Connection assignment X1

13.1.2 On/Off actuator with 2 additional potential-free limit switches, with relay (code 0E), 24 V DC (code C1)

13.1.2.1 Position of the connectors

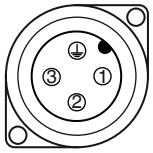


Actuator version 2070



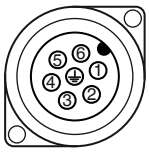
Actuator version 4100, 4200

13.1.2.2 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

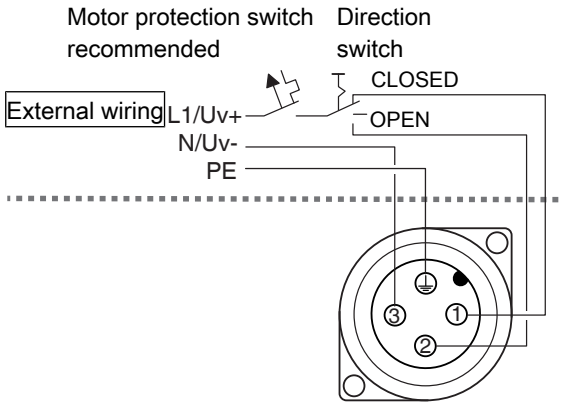


Plug assignment X2

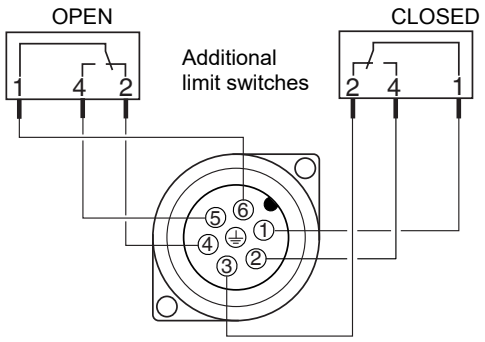
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

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".

13.1.2.3 Connection diagram



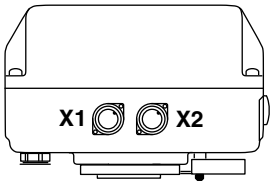
Connection assignment X1



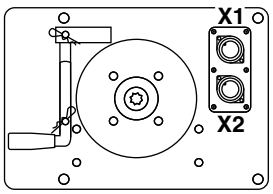
Connection assignment X2

13.1.3 On/Off actuator with potentiometer output, with relay (code 0P), 24 V DC (code C1)

13.1.3.1 Position of the connectors

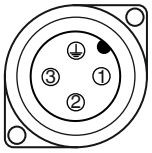


Actuator version 2070



Actuator version 4100, 4200

13.1.3.2 Electrical connection



Plug assignment X1

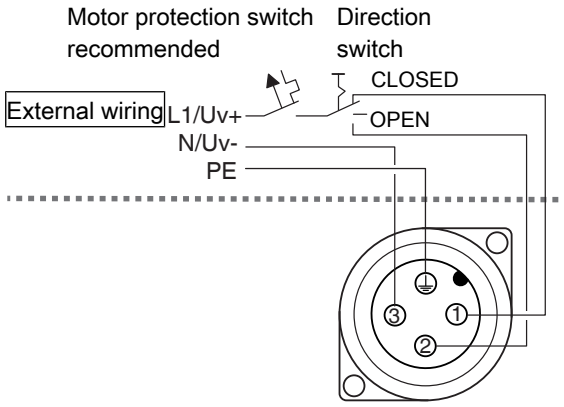
Pin	Description
1	L1 / Uv+, direction of travel CLOSED
2	L1 / Uv+, direction of travel OPEN
3	N / Uv-, neutral conductor
⏚	PE, protective earth conductor

Plug assignment X2

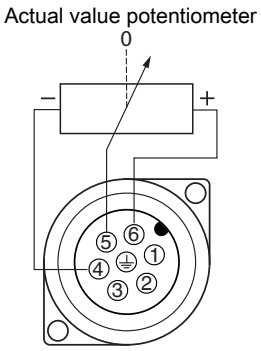
Pin	Description
1	n. c.
2	n. c.
3	n. c.
4	Us-, actual value potentiometer signal voltage minus
5	Us ⌐, actual value potentiometer signal output
6	Us+, actual value potentiometer signal voltage plus
⏚	PE, protective earth conductor

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".

13.1.3.3 Connection diagram



Connection assignment X1



Connection assignment X2

14 Electrical connection - Bernard, AUMA, J+J

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

15 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns.
● Wear suitable 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).

⚠ CAUTION

Use as 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.

16 Operation

16.1 Operation - GEMÜ 9428

⚠ CAUTION

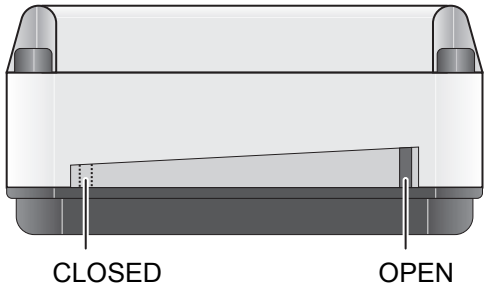
OPEN/CLOSE control

- 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).

16.1.1 Optical position indicator

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

Actuator versions 1006, 1015, 2006, 2015, 3035



16.1.2 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

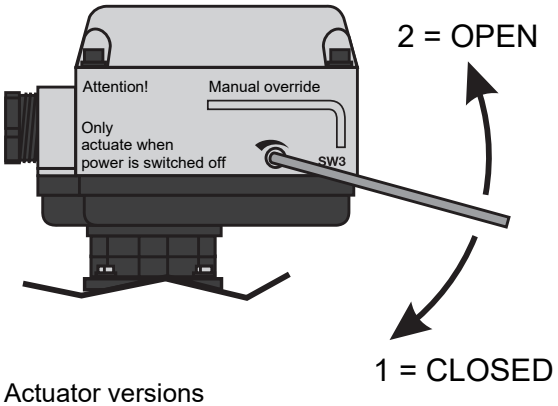
Only actuate the manual override when the power is switched off.

- ► Damage to the actuator!

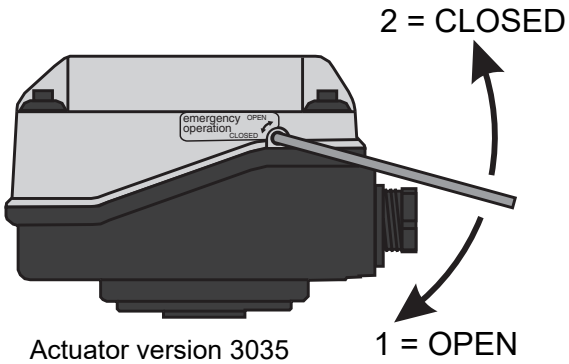
⚠ CAUTION

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

16.1.3 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

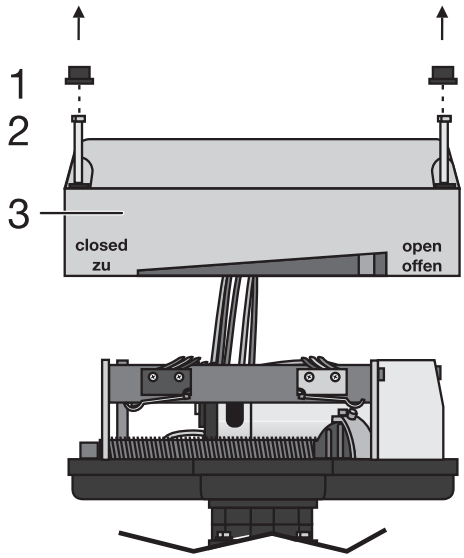
- ● Always switch the limit switch for signal so that the motor switch is actuated first.

⇨ Limit switches for signal and motor are already preset.

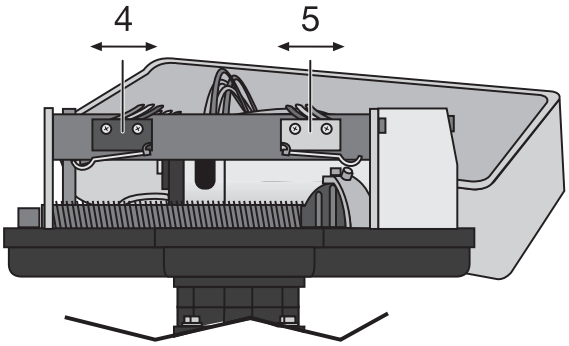
The GEMÜ 9428 motorized actuator is delivered in open position.

The following drawings differ depending on the actuator version!

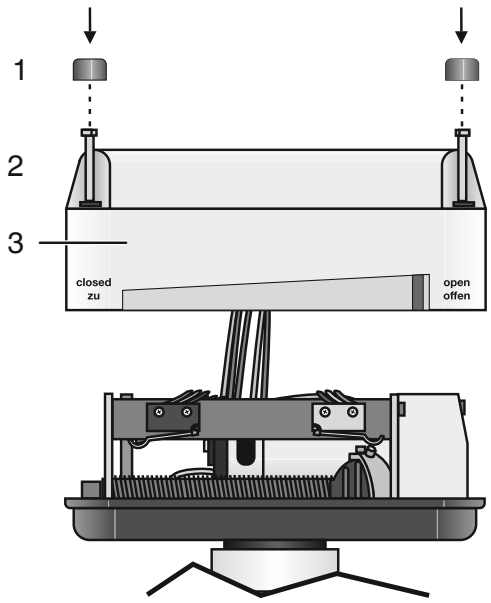
1. Disconnect the plant from power supply and secure against recommissioning.



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**.

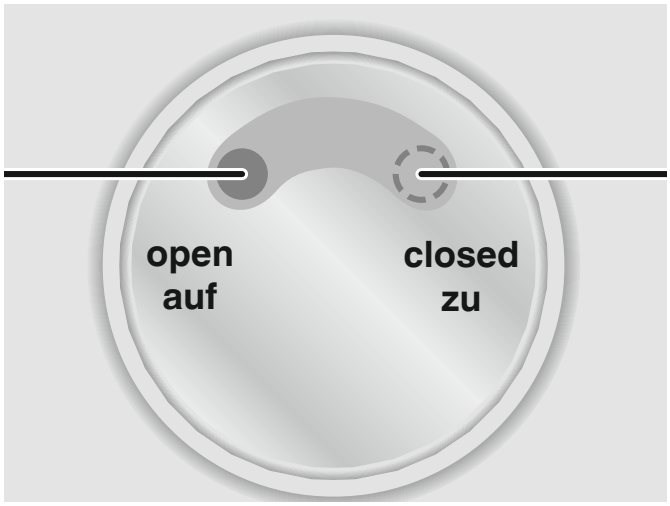
⇨ Limit switches are set.

16.2 Operation - GEMÜ 9468

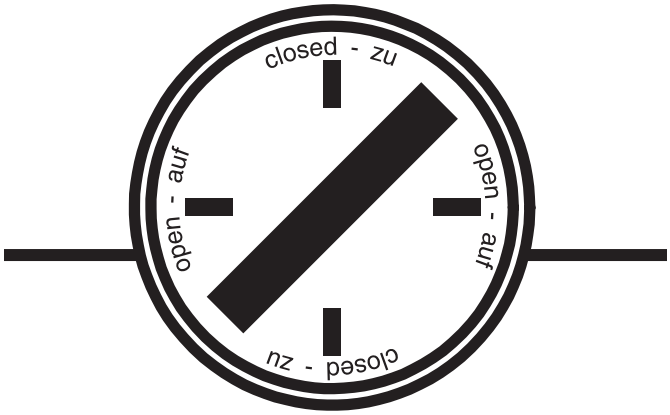
16.2.1 Optical position indicator

Actuator version 2070

Actuator version 4100, 4200



Actuator version 6400



16.2.2 Manual override

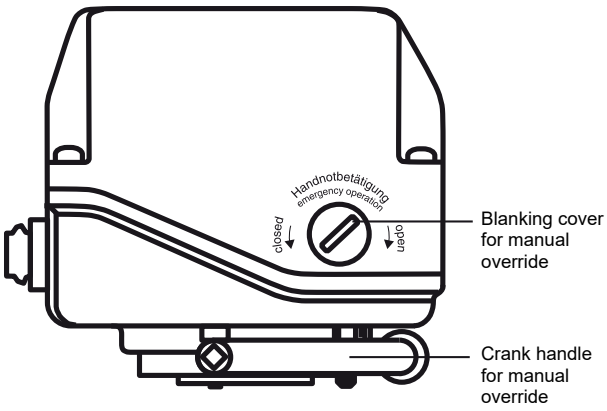
⚠ DANGER

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

16.2.3 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 (see chapter "Functional versions"):

- 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 (see chapter "Functional versions"):

- 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.

16.3 Operation - Third-party actuators

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

17 Troubleshooting

Error	Possible cause	Troubleshooting
The product doesn't open or doesn't 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 leaks downstream (doesn't close or doesn't close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
The product doesn't close or doesn't 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 leaks	Valve body leaks or is 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 or does not open correctly	Control medium not connected	Connect the control medium
	End positions incorrectly set	Correctly set the end positions (see "Setting the end positions")
	Stroke limiter (optional) incorrectly set	Correctly set the stroke limiter (optional)
	Contaminated control medium	Disassemble and clean the actuator, install a filter upstream
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

18 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death.
● Depressurize the plant.
● Completely drain the plant.

⚠ 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 examination of the products depending on the operating conditions and the potential danger 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 plant operator's guidelines.
3. Shut off plant or plant component.
4. Secure 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.

18.1 Cleaning the product

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

18.2 ATEX version

● Test the resistance between the earthing cable and actuator shaft at least once a year.
(Value <106 Ω, typical value <5 Ω)

18.3 Removing the butterfly valve from the piping

⚠ 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 suitable protective gear.
● Completely drain the plant.

⚠ CAUTION

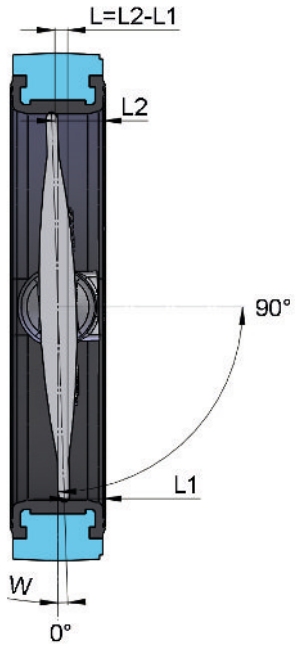
Hot plant components!

► 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.

18.4 Presetting the butterfly valves

1. Move the butterfly disc to the closed position.
2. Determine the L1 and L2 dimensions and use them to calculate the L dimension.
3. The butterfly disc must be turned out of the seal seat in the closed position. (Anticlockwise)
4. Comply with the L dimension when setting.
5. If readjustment is necessary, open the butterfly disc and adapt the presetting.
6. Repeat steps 1 to 4 until the L dimension has been reached.
7. In the open position, the disc must be set to 90°, otherwise the Kv value will be reduced.



DN	L [mm]	W [°]
25	2.0	9.1
40	2.0	5.7
50	2.0	4.6
65	2.0	3.5
80	2.0	2.9
100	2.0	2.3
125	2.0	1.8
150	7.7	3.0
200	8.9	2.6
250	10.0	2.3
300	11.0	2.1
350	11.8	1.9
400	12.6	1.8
450	13.4	1.7
500	14.1	1.6
600	15.5	1.5

19 Spare parts

19.1 Ordering spare parts

⚠ CAUTION

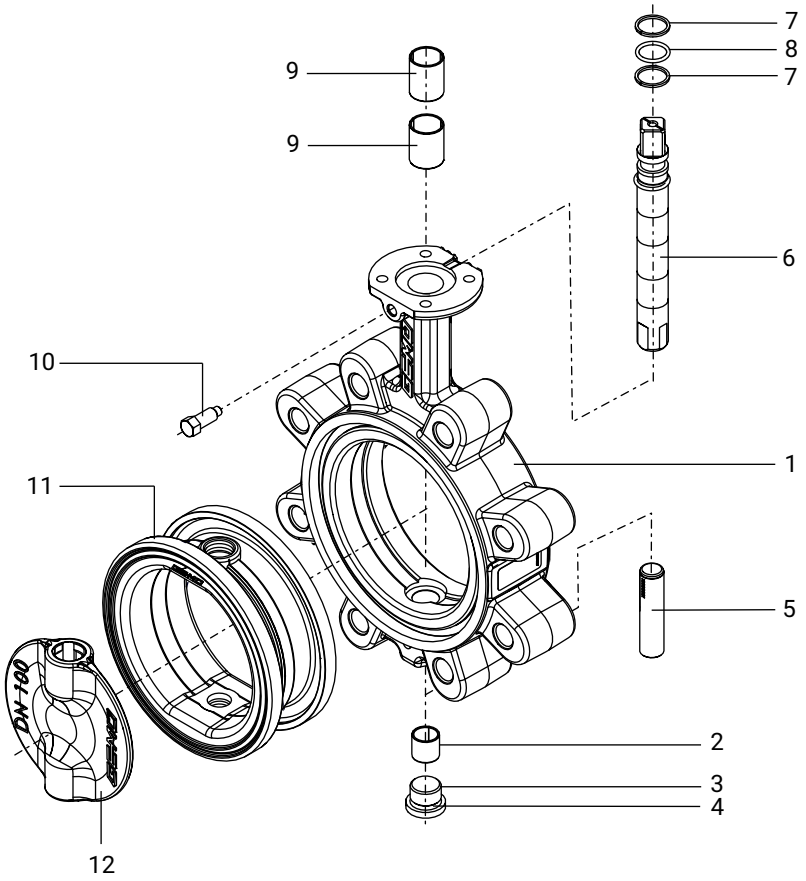
Use of incorrect spare parts!

- ► 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:

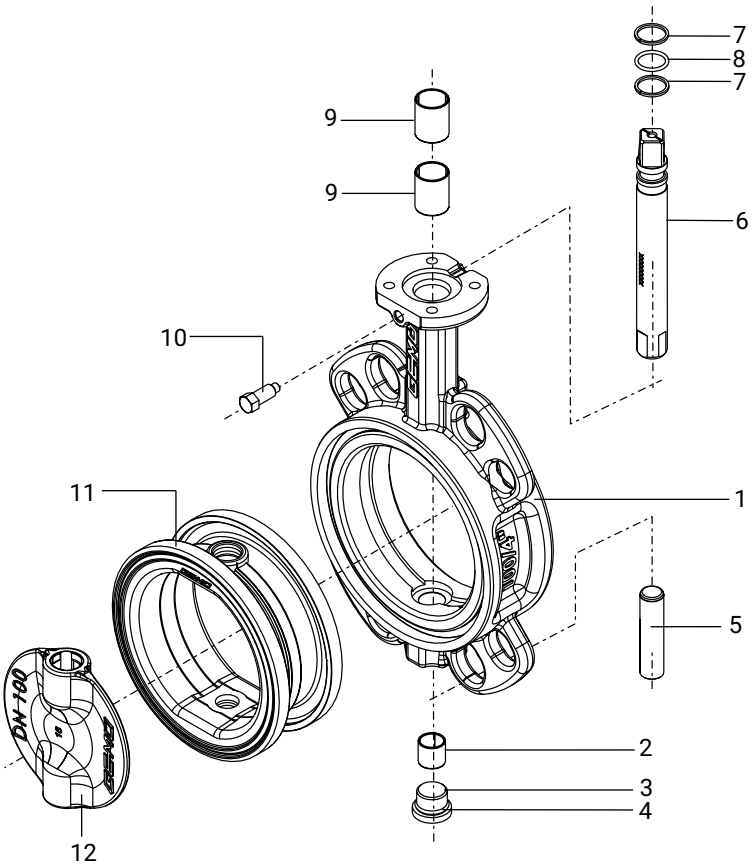
1. Complete order code
2. Item number
3. Traceability number
4. Name of spare part
5. Area of use (medium, temperatures and pressures)

19.2 Lug



Item	Name	Order designation
1	Coated metallic valve body	R480...SVK...
2	Bush	
3	Threaded plug	
4	O-ring	
5	Axis	
6	Shaft	
7	Support ring	
8	O-ring	
9	Bush	
10	Hexagon head bolt with pin	
11	Liner	R480...SLN...
12	Butterfly disc	R480...SDS...

19.3 Wafer



Item	Name	Order designation
1	Coated metallic valve body	R480...SVK...
2	Bush	
3	Threaded plug	
4	O-ring	
5	Axis	
6	Shaft	
7	Support ring	
8	O-ring	
9	Bush	
10	Hexagon head bolt with pin	
11	Liner	R480...SLN...
12	Butterfly disc	R480...SDS...

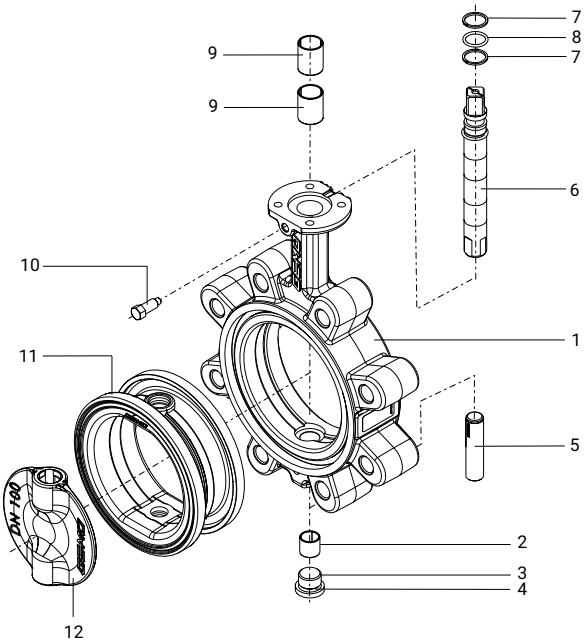
19.4 Replacement of spare parts

NOTICE

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

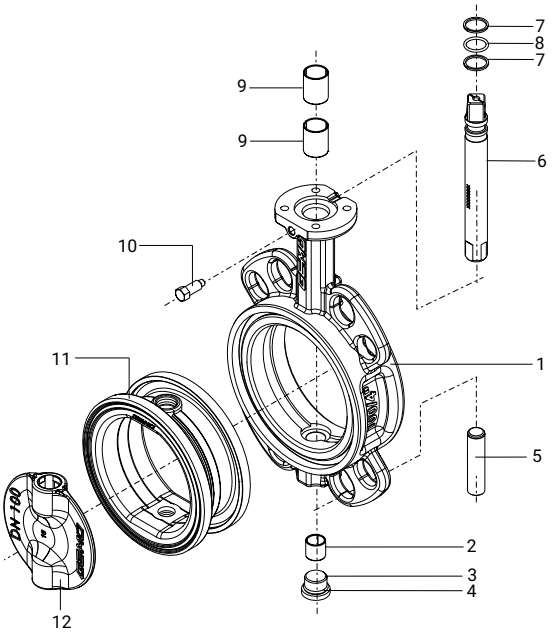
19.4.1 Replacing the SVK wearing parts kit

19.4.1.1 Lug



1. Loosen and remove the hexagon head bolt **10** with pin.
2. Remove the support ring **7**, O-ring **8** and bush **9**.
3. Pull the shaft **6** out upwards.
4. Undo the threaded plug **3**, remove the O-ring **4** and bush **2**.
5. Pull the axis **5** out downwards.
6. Assemble the wearing parts kit in reverse order.

19.4.1.2 Wafer



1. Loosen and remove the hexagon head bolt **10** with pin.
2. Remove the support ring **7**, O-ring **8** and bush **9**.
3. Pull the shaft **6** out upwards.
4. Undo the threaded plug **3**, remove the O-ring **4** and bush **2**.
5. Pull the axis **5** out downwards.
6. Assemble the wearing parts kit in reverse order.

19.4.2 Replacing the SDS wearing parts kit

1. Disassemble the SVK wearing parts kit (see chapter "Replacing the SVK wearing parts kit").
2. Remove the butterfly disc **12**.
3. Assemble the wearing parts kit in reverse order.

19.4.3 Replacing the SLN wearing parts kit

1. Disassemble the SVK wearing parts kit (see chapter "Replacing the SVK wearing parts kit").
2. Disassemble the SDS wearing parts kit (see chapter "Replacing SDS wearing parts kit").
3. Remove the liner **11**.
4. Assemble the wearing parts kit in reverse order.

20 Removal from piping

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

21 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.

22 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.

23 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,	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 R488

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.

2020-11-12

Joachim Brien
Head of Technical Department

24 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, 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: GEMU R488
Notified body: TÜV Rheinland Industrie Service GmbH
Number: 0035
Certificate no.: 01 202 926/Q-02 0036
Conformity assessment procedure: Module H
Technical standard used: 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.

2020-03-30

Joachim Brien
Head of Technical Department

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www.gemu-group.com

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