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 actuating element!
	Hot plant components!
	Use as an end-of-line valve!
	Risk of crushing!
	Risk of electric shock!
	Power supply!
	Electric shock by dangerous voltage!

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects.
- Hazard to nearby equipment.
- Failure of important functions.
- Hazard to the environment due to the leakage of dangerous substances.

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance.
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel.

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

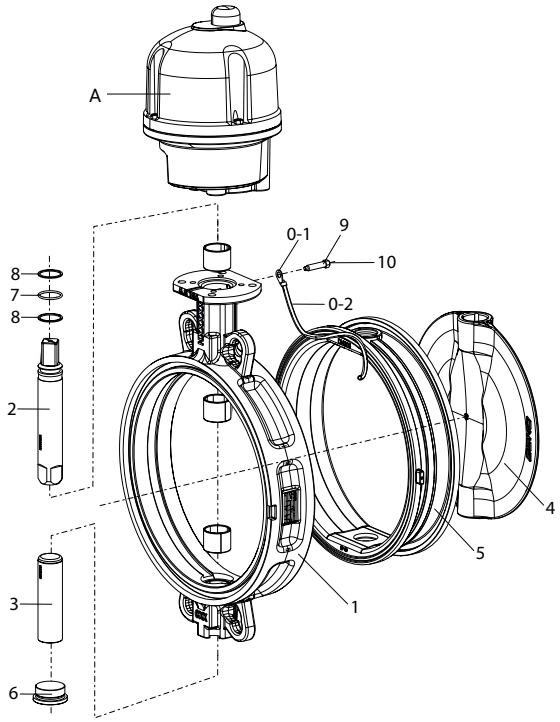
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not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

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



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	CONEXO RFID chip	
A	Motorized actuator	

3.2 Description

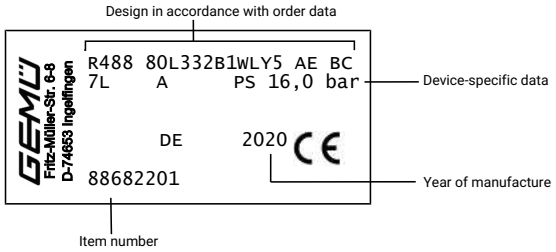
The GEMÜ R488 Victoria soft seated metal butterfly valve is motorized. Various metal or plastic on/off or control actuators are available. The butterfly valve is available in nominal sizes DN 50 to 300 and in standard installation lengths ISO 5752/20 | EN 558-1/20 | API 609 category A (DIN 3202 K1) in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



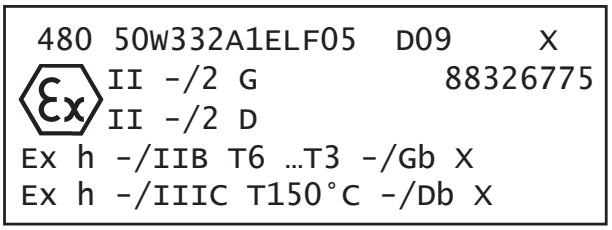
The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

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

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

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

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

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, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed	R488

2 DN	Code
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300
DN 350	350
DN 400	400
DN 450	450
DN 500	500
DN 600	600

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

5 Connection type	Code
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 Tab E, face-to-face dimension FTF EN 558 series 20	S
Flange AS 2129 Tab D, face-to-face dimension FTF EN 558 series 20	T
Flange AS 2129 Tab E, face-to-face dimension FTF EN 558 series 20	U
Flange BS 10 Tab D, face-to-face dimension FTF EN 558 series 20	H
JIS 10 K, face-to-face dimension FTF EN 558 series 20	G
JIS 16 K, face-to-face dimension FTF EN 558 series 20	J

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 / ASTM A351 CF8M	**A**
1.4408, polished, roughness Ra 0.6–3.2, except disc marking	B
1.4408, HALAR coated	**C**
1.4469 / ASTM GR5A	**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 / AISI 420	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
CSM	H
NR (FDA/1935-2004 certification), white AB/W	I
NBR (DVGW Gas certification)	J
EPDM (FDA/1935-2004 certification), white	M
NBR	**N**
FKM +	O
EPDM-SHT (steam)	T
NBR (FDA/1935-2004 certification), white	U

9 Shut-off seal material	Code
FKM	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA/1935-2004 certification)	**Z**

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

11 Voltage/Frequency	Code
12 VDC	B1
12 V 50/60 Hz	B4
24 VDC	C1
24 V 50/60 Hz	C4

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
Actuator, motorized, operating time 11 s, torque 15 Nm, GEMUE, size 1 supply voltage B1, C1	1015
Actuator, motorized, operating time 11s, torque 15Nm, GEMUE, size 2 supply voltage B4, C4	2015
Actuator, motorized, operating time 15 s, torque 70 Nm, GEMUE, size 2 supply voltage C1	2070
Actuator, motorized, operating time 15s, torque 35Nm, GEMUE, size 3 supply voltage C1	3035
Actuator, motorized, operating time 15s, torque 55Nm, GEMUE, size 3 supply voltage C1	3055
Actuator, motorized, operating time 20s, torque 100Nm, GEMUE, size 4 supply voltage C1	4100
Actuator, motorized, operating time 16s, torque 200Nm, GEMUE, size 4 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
Stainless steel valve disc, without characters, mechanically polished to 1.6 µm and electropolished,	1782
Butterfly valve body powder coated, RAL 5015, sky blue	1892

14 Type of design	Code
Butterfly valve body powder coated, RAL 1023, traffic yellow	1925
Mounting parts in A4 quality. Caution! Danger of galling! Customer must provide for this!	5143
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via dew point barrier	5226
Alu product label, black anodized, lasered marking, riveted to the body	6061

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
DVGW Water certification	D
Country of origin Germany	E
DVGW Gas certification	G
NSF 61 water certification	N
Special version for oxygen maximum medium temperature: 60 °C, Media wetted materials cleaned, and grease and seal with BAM testing	O
ASME B31.3	P
DNV GL certification	S
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

Ordering option	Code	Description
1 Type	R488	Butterfly valve, motorized, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed
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 / ASTM A351 CF8M
8 Shaft material	1	1.4021 / AISI 420
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	Actuator, motorized, operating time 15 s, torque 70 Nm, GEMUE, size 2 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, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed	R488

2 DN	Code
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300
DN 350	350
DN 400	400
DN 450	450
DN 500	500
DN 600	600

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

5 Connection type	Code
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Tab E, face-to-face dimension FTF EN 558 series 20	S
Flange AS 2129 Tab D, face-to-face dimension FTF EN 558 series 20	T
Flange AS 2129 Tab E, face-to-face dimension FTF EN 558 series 20	U
Flange BS 10 Tab D, face-to-face dimension FTF EN 558 series 20	H
JIS 10 K, face-to-face dimension FTF EN 558 series 20	G
JIS 16 K, face-to-face dimension FTF EN 558 series 20	J

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 / ASTM A351 CF8M	**A**
1.4408, polished, roughness Ra 0.6–3.2, except disc marking	B
1.4408, HALAR coated	**C**
1.4469 / ASTM GR5A	**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 / AISI 420	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
CSM	H
NR (FDA/1935-2004 certification), white AB/W	I
NBR (DVGW Gas certification)	J
EPDM (FDA/1935-2004 certification), white	M
NBR	**N**
FKM +	O
EPDM-SHT (steam)	T
NBR (FDA/1935-2004 certification), white	U
FKM	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA/1935-2004 certification)	**Z**

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

11 Voltage/Frequency	Code
12 VDC	B1
24V-240V AC / DC for model 20, 35, 55, 85, 140, 300	U5

12 Control module	Code
ON/OFF actuator, 3-position actuator, additional potential-free limit switches	A3
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, external set value 4-20mA, battery pack (NC)	E21
Positioner, external set value 4-20mA, battery pack (NO)	E22

13 Actuator version	Code
Actuator, motorized, operating time 9s, torque 20Nm, J+J, type J4 heating, IP67	J4C20
Actuator, motorized, operating time 9s, torque 35Nm, J+J, type J4 heating, IP67	J4C35
Actuator, motorized, operating time 13s, torque 55Nm, J+J, type J4 heating, IP67	J4C55
Actuator, motorized, operating time 29s, torque 85Nm, J+J, type J4 heating, IP67	J4C85
Actuator, motorized, operating time 34s, torque 140Nm, J+J, type J4 heating, IP67	J4C14
Actuator, motorized, operating time 58s, torque 300Nm, J+J, type J4 heating, IP67	J4C30

14 Type of design	Code
Without	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101

14 Type of design	Code
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Stainless steel valve disc, without characters, mechanically polished to 1.6 µm and electropolished,	1782
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Butterfly valve body powder coated, RAL 1023, traffic yellow	1925
Mounting parts in A4 quality. Caution! Danger of galling! Customer must provide for this!	5143
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via dew point barrier	5226
Alu product label, black anodized, lasered marking, riveted to the body	6061

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
DVGW Water certification	D
Country of origin Germany	E
DVGW Gas certification	G
NSF 61 water certification	N
Special version for oxygen maximum medium temperature: 60 °C, Media wetted materials cleaned, and grease and seal with BAM testing	O
ASME B31.3	P
DNV GL certification	S
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

Ordering option	Code	Description
1 Type	R488	Butterfly valve, motorized, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed
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 / ASTM A351 CF8M
8 Shaft material	1	1.4021 / AISI 420
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	U5	24V-240V AC / DC for model 20, 35, 55, 85, 140, 300
12 Control module	AE	ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)
13 Actuator version	J4C85	Actuator, motorized, operating time 29s, torque 85Nm, J+J, type J4 heating, IP67
14 Type of design		Without
15 Special version		Without
16 CONEXO		Without

6.3 Butterfly valve with AUMA AQ 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, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed	R488

2 DN	Code
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300
DN 350	350
DN 400	400
DN 450	450
DN 500	500
DN 600	600

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

5 Connection type	Code
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Tab E, face-to-face dimension FTF EN 558 series 20	S
Flange AS 2129 Tab D, face-to-face dimension FTF EN 558 series 20	T
Flange AS 2129 Tab E, face-to-face dimension FTF EN 558 series 20	U
Flange BS 10 Tab D, face-to-face dimension FTF EN 558 series 20	H
JIS 10 K, face-to-face dimension FTF EN 558 series 20	G
JIS 16 K, face-to-face dimension FTF EN 558 series 20	J

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 / ASTM A351 CF8M	**A**
1.4408, polished, roughness Ra 0.6–3.2, except disc marking	B
1.4408, HALAR coated	**C**
1.4469 / ASTM GR5A	**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 / AISI 420	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
CSM	H
NR (FDA/1935-2004 certification), white AB/W	I
NBR (DVGW Gas certification)	J
EPDM (FDA/1935-2004 certification), white	M
NBR	**N**
FKM +	O
EPDM-SHT (steam)	T
NBR (FDA/1935-2004 certification), white	U
FKM	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA/1935-2004 certification)	**Z**

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

11 Voltage/Frequency	Code
120V 50Hz	G2
120V 60Hz	G3
380V 50Hz	J2
230V 50Hz	L2
230V 60Hz	L3
400V 50Hz	N2
480V 60Hz	P3
440V 60 Hz	V3
460V 60Hz	W3

12 Control module	Code
ON/OFF actuator	A0
ON/OFF actuator, 2 additional potential-free limit switches, additional potential-free torque switches, Class A (EN15714-2)	AB
ON/OFF actuator, positioner AUMATIC (AC 01.2), fieldbus interface Profibus DP-V0, Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC AA000-1A1-A000, TPA xxR100-0I1-000	ADP
ON/OFF actuator, 2 additional potential-free limit switches, Class A (EN15714-2)	AE
ON/OFF actuator, positioner AUMATIC (AC 01.2), fieldbus interface Modbus RTU, Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC AC000-1A1-A000, TPA xxR100-0I1-000	AMB
ON/OFF actuator, positioner AUMATIC (AC 01.2), fieldbus interface Modbus TCP/IP, Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC AC000-1A1-A5E0, TPA xxR100-0I1-000	AMI
ON/OFF actuator, positioner AUMATIC (AC 01.2), fieldbus interface ProfiNet, Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC AN000N1A2-A000, TPA xxR100-0I1-000	APN
ON/OFF actuator, positioner AUMATIC (AC 01.2), Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), TPC A-1B1-1C1-A000, TPA xxR100-0I1-000	ASC
ON/OFF actuator, remote and on-site control, AUMA MATIC (AM 01.1), Basic AUMA standard SQ (S2 15 minutes, actuator class A/B), MSP 1110KC3-F18E1, TPA xxR1AA-101-000	ASM
Control actuator, positioner AUMATIC (AC 01.2), fieldbus interface Profibus DP, Basic AUMA standard SQR (S4 25% duty, actuator class C), only for 400V 50Hz and 230V 50/60Hz, TPC AA000-1A1-A000, TPA xxR100-0I1-000	EDP

12 Control module	Code
Control actuator, remote and on-site control, AUMATIC (AC 01.2), fieldbus interface Modbus RTU, Basic AUMA standard SQR (S4 25% duty actuator class C), only for 400V 50Hz und 230V 50HZ/60HZ, TPC AC000-1A1-A000, TPA xxR100-0I1-000	EMB
Control actuator, remote and on-site control, AUMATIC (AC 01.2), fieldbus interface Modbus TCP/IP, Basic AUMA standard SQR (S4 25% duty actuator class C), only for 400V 50Hz und 230V 50HZ/60HZ, TPC AC000-1A1-A5E0, TPA xxR100-0I1-000	EMI
Control actuator, remote and on-site control, AUMATIC (AC 01.2), fieldbus interface ProfiNet, Basic AUMA standard SQR (S4 25% duty actuator class C), only for 400V 50Hz und 230V 50HZ/60HZ	EPN
Control actuator, positioner AUMATIC (AC 01.2), Basic AUMA standard SQR (S4 25% duty, actuator class C), only for 400V 50Hz und 230V 50HZ/60HZ, TPC A-1B1-1C1-A000, TPA xxR100-0I1-000	ESC

13 Actuator version	Code
Actuator, motorized, operating time 16s, torque 150Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ05H
Actuator, motorized, operating time 32s, torque 150Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ05L
Actuator, motorized, operating time 16s, torque 300Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ07H
Actuator, motorized, operating time 32s, torque 300Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	AQ07L
Actuator, motorized, operating time 32s, torque 600Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical	AQ10L

13 Actuator version	Code
position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68	

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
Stainless steel valve disc, without characters, mechanically polished to 1.6 µm and electropolished,	1782
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Butterfly valve body powder coated, RAL 1023, traffic yellow	1925
Mounting parts in A4 quality. Caution! Danger of galling! Customer must provide for this!	5143
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via dew point barrier	5226
Alu product label, black anodized, lasered marking, riveted to the body	6061

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
DVGW Water certification	D
Country of origin Germany	E
DVGW Gas certification	G
NSF 61 water certification	N
Special version for oxygen maximum medium temperature: 60 °C, Media wetted materials cleaned, and grease and seal with BAM testing	O
ASME B31.3	P
DNV GL certification	S
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

Ordering option	Code	Description
1 Type	R488	Butterfly valve, motorized, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed
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 / ASTM A351 CF8M
8 Shaft material	1	1.4021 / AISI 420
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	Actuator, motorized, operating time 16s, torque 150Nm, AUMA, type SQ Class A (EN15714-2), Open/Close control, 75° to 105°, continuously adjustable, flasher unit for travel indication, heating, mechanical position indicator, KS, layer thickness 0, 140mm, RAL7037, manual override, IP68
14 Type of design		Without
15 Special version		Without
16 CONEXO		Without

6.4 Butterfly valve with AUMA PROFOX 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, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed	R488

2 DN	Code
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300
DN 350	350
DN 400	400
DN 450	450
DN 500	500
DN 600	600

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

5 Connection type	Code
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558 series 20	D
Flange BS 10 Tab E, face-to-face dimension FTF EN 558 series 20	S
Flange AS 2129 Tab D, face-to-face dimension FTF EN 558 series 20	T
Flange AS 2129 Tab E, face-to-face dimension FTF EN 558 series 20	U
Flange BS 10 Tab D, face-to-face dimension FTF EN 558 series 20	H
JIS 10 K, face-to-face dimension FTF EN 558 series 20	G
JIS 16 K, face-to-face dimension FTF EN 558 series 20	J

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 / ASTM A351 CF8M	**A**
1.4408, polished, roughness Ra 0.6–3.2, except disc marking	B
1.4408, HALAR coated	**C**
1.4469 / ASTM GR5A	**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 / AISI 420	1

9 Shut-off seal material	Code
EPDM	**E**
SBR-AB/P (abrasion resistant)	F
CSM	H
NR (FDA/1935-2004 certification), white AB/W	I
NBR (DVGW Gas certification)	J
EPDM (FDA/1935-2004 certification), white	M
NBR	**N**
FKM +	O
EPDM-SHT (steam)	T
NBR (FDA/1935-2004 certification), white	U
FKM	**V**
EPDM (drinking water compliant)	**W**
EPDM-HT (FDA/1935-2004 certification)	**Z**

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

11 Voltage/Frequency	Code
24 V DC	C1
100 - 240 V/50 - 60 Hz	T4

12 Control module	Code
ON/OFF actuator, 2 additional potential-free limit switches, 2 additional potential-free torque switches	AB
Control actuator with positioner, 4 -20 mA input and output, 2 additional potential-free limit switches, 2 additional potential-free torque switches	E2
Control actuator with positioner, fieldbus interface Profibus DP	EDP
Control actuator with positioner, fieldbus interface Modbus RTU	EMB
Control actuator with positioner, fieldbus interface ProfiNet	EPN

13 Actuator version	Code
AUMA PROFOX PF-Q40	40
AUMA PROFOX PF-Q80	80
AUMA PROFOX PF-Q150	150
AUMA PROFOX PF-Q300	300
AUMA PROFOX PF-Q600	600

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
Stainless steel valve disc, without characters, mechanically polished to 1.6 µm and electropolished,	1782
Butterfly valve body powder coated, RAL 5015, sky blue	1892
Butterfly valve body powder coated, RAL 1023, traffic yellow	1925
Mounting parts in A4 quality. Caution! Danger of galling! Customer must provide for this!	5143
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via dew point barrier	5226
Alu product label, black anodized, lasered marking, riveted to the body	6061

15 Special version	Code
Without	
ACS certification	A
BELGAQUA certification	B
DVGW Water certification	D
Country of origin Germany	E
DVGW Gas certification	G

15 Special version	Code
NSF 61 water certification	N
Special version for oxygen maximum medium temperature: 60 °C, Media wetted materials cleaned, and grease and seal with BAM testing	O
ASME B31.3	P
DNV GL certification	S
WRAS certification	W

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

Order example - standard version

Ordering option	Code	Description
1 Type	R488	Butterfly valve, motorized, body with C5-M coating (min. 250 µm) and integrated leakage groove, blow-out proof shaft with dust protection, multiple bearings through PTFE bushing, multiple sealing system with insertion slope, material easy to read when installed
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 / ASTM A351 CF8M
8 Shaft material	1	1.4021 / AISI 420
9 Shut-off seal material	E	EPDM
10 Liner fixing	L	Loose liner
11 Voltage/Frequency	C1	24 V DC
12 Control module	AB	ON/OFF actuator, 2 additional potential-free limit switches, 2 additional potential-free torque switches
13 Actuator version	40	AUMA PROFOX PF-Q40
14 Type of design		Without
15 Special version		Without
16 CONEXO		Without

7 Butterfly valve technical data

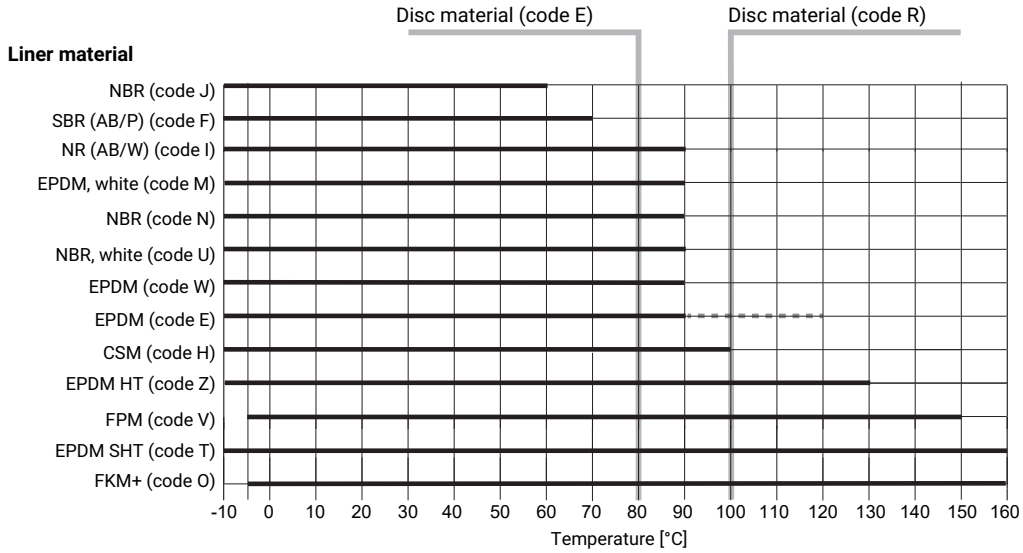
7.1 Medium

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

Media temperature: -10 — 160 °C

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



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

Ambient temperature: -10 — 70 °C

Storage temperature: -20 — 40 °C

7.3 Pressure

Operating pressure: DN 25–200: 0–16 bar
DN 250–600: 0–10 bar

Observe pressure/temperature diagram

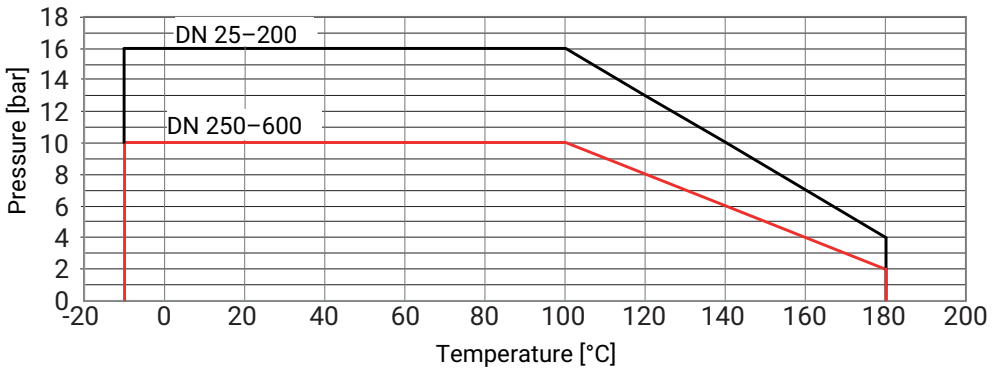
Use as an end-of-line valve:

DN 25–200: 10 bar
DN 250–600: 6 bar

Vacuum: Can be used up to a vacuum of 800 mbar (abs) with replaceable liner or with bonded liner up to a vacuum of 2 mbar (abs) through a leakage rate at 10^{-3} [mbar l/sec]

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

Pressure/temperature diagram:



Pressure rating:

PN 3
PN 6
PN 10
PN 16

Kv values:

DN	PS	Kv values at opening angle							
	[bar]	20°	30°	40°	50°	60°	70°	80°	90°
25	16	0.7	2.0	4.1	7.2	11.0	14.5	16.6	17.2
40	16	2.5	7.0	14.4	25.1	38.3	50.6	57.8	60.0
50	16	3.0	9.0	20.0	33.0	65.0	110.0	124.0	125.0
65	16	9.0	15.0	30.0	64.0	118.0	195.0	214.0	222.0
80	16	19.0	40.0	66.0	117.0	196.0	321.0	353.0	363.0
100	16	29.0	75.0	137.0	213.0	316.0	487.0	584.0	618.0
125	16	48.0	100.0	185.0	315.0	550.0	895.0	1060.0	1120.0
150	16	60.0	150.0	281.0	450.0	789.0	1280.0	1630.0	1730.0
200	3/16	110.0	281.0	472.0	759.0	1480.0	2880.0	3710.0	3900.0
250	3/10	200.0	444.0	738.0	1190.0	2110.0	3880.0	5180.0	5410.0
300	3/10	250.0	682.0	1060.0	1670.0	3120.0	6360.0	8620.0	8930.0
350	3/10	466.0	1036.0	1721.0	2767.0	4397.0	6803.0	9097.0	9494.0
400	3/10	644.0	1431.0	2376.0	3820.0	6072.0	9394.0	12561.0	13110.0
450	3/10	1039.0	2308.0	3834.0	6163.0	9796.0	15154.0	20264.0	21149.0
500	3/10	1083.0	2406.0	3997.0	6425.0	10213.0	15800.0	21127.0	22050.0
600	3/10	1563.0	3473.0	5770.0	9276.0	14744.0	22809.0	30500.0	31832.0

Kv values in m³/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

RoHS Directive: 2011/65/EU (GEMÜ 9428)

Pressure equipment standards:

ASME GEMÜ B31.3

2014/68/EU

The butterfly valve fulfils the technical requirements of pressure equipment categories I and II and can be used under the following conditions.

Areas of use for R488 butterfly valve as in-line valve (classification as per Pressure Equipment Directive 2014/68/EC Article 4 and Annex II)				
	Media of fluid group 1 (dangerous)		Media of fluid group 2 (other)	
PS	**Gases** (Section 4 (1) c) i), diagram 6)	**Liquids** (Section 4 (1) c) ii), diagram 8)	**Gases** (Section 4 (1) c) i), diagram 7)	**Liquids** (Section 4 (1) c) ii), diagram 9)
16	DN25 – DN200	DN25 – DN200*	DN25 – DN200*	DN25 – DN200*
10	DN25 – DN350	DN25 – DN600	DN25 – DN500	DN25 – DN600
6	DN25 – DN350	DN25 – DN600	DN25 – DN600	DN25 – DN600
3	DN25 – DN350	DN25 – DN600	DN25 – DN600	DN25 – DN600

* Limit of the technical specification

When used as an end-of-line valve, a mating flange must be fitted.

Special conditions of use as an end-of-line valve: See section 7.3.

Food:

FDA

Regulation (EC) No. 1935/2004

Drinking water:

DVGW

ACS

WRAS

Belgaqua

NSF

Oxygen:

BAM compliant, the product is suitable for application with oxygen

Gas:

DVGW

Ship approval:

DNV GL

Explosion protection:

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

NEC 500 (ISA 12.12.01), order code 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/IIB T6 ... T3 Gb X
Dust: Ⓔx II 2 D Ex h IIIC T150 °C Db X

TA Luft (German Clean Air Act):

The product meets the following requirements under the max. permissible operating conditions:

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

7.5 Mechanical data

Torques:

DN	PS			
	3 bar	6 bar	10 bar	16 bar *
25	-	-	-	4.0
40	-	-	-	7.0
50	3.0	5.0	7.0	9.0
65	8.0	10.0	13.0	15.0
80	10.0	15.0	20.0	25.0
100	15.0	20.0	30.0	40.0
125	25.0	35.0	45.0	60.0
150	40.0	50.0	80.0	100.0
200	100.0	-	-	160.0
250	140.0	-	200.0	-
300	200.0	-	330.0	-
350	255.0	-	430.0	-
400	580.0	-	1035.0	-
450	600.0	-	1150.0	-
500	860.0	-	1250.0	-
600	1441.0	-	2140.0	-

Torques in Nm

* Standard
Working medium water (20 °C) and optimal operating conditions

Tightening torques:

Bolt size	Tightening torque [Nm]
M5	5–6
M6	10–11
M8	23–25
M10	48–52
M12	82–86
M14	132–138
M16	200–210
M20	390–410
M24	675–705

Weight:

DN	Wafer	Lug	U section
25	1.2	-	-
40	1.5	-	-
50	1.7	2.2	-
65	2.5	2.9	-
80	3.2	4.4	-
100	4.4	6.2	-
125	5.9	8.1	-
150	7.7	10.1	-
200	13.9	18.4	-
250	19.6	28.7	-
300	27.3	36.8	-
350	48.0	66.0	-
400	72.0	110.0	107.0
450	95.0	-	125.0
500	120.0	-	164.0
600	192.0	-	261.0

Weights in kg

8 Technical data of actuator

8.1 GEMÜ 9428, 9468 actuators

8.1.1 Electrical data

Rated voltage:

24 V AC or DC (+10/-15 %)
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 DC (code B1)	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)
1015, 3015	**A0, AE**	30.0	-	30.0	-
2015	**A0, AE**	-	30.0	-	30.0
3035	**A0, AE**	-	-	30.0	-
3055	**A0, AE**	-	-	40.0	-
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 DC (code B1)	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)
1015, 3015	**A0, AE**	2.2	-	1.20	-
2015	**A0, AE**	-	2.0	-	1.2
3035	**A0, AE**	-	-	1.30	-
3055	**A0, AE**	-	-	1.65	-
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 DC (code B1)	12 V AC (code B4)	24 V DC (code C1)	24 V AC (code C4)
1015, 3015	**A0, AE**	9.2	-	1.20	-
2015	**A0, AE**	-	2.3	-	1.8
3035	**A0, AE**	-	-	3.3	-
3055	**A0, AE**	-	-	7.0	-
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:

Continuous duty

Electrical protection:

GEMÜ 9428

Motor protective system by customer

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
Motor protection switch type	Siemens 3RV 1011-1CA10	Siemens 3RV 1011-1BA10
Set current	2.20	1.70

Current data in A

GEMÜ 9468

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

8.1.2 Product compliance

Machinery Directive: 2006/42/EC

EMC Directive: 2014/30/EU

Low Voltage Directive: 2014/35/EU

RoHS Directive: 2011/65/EU (GEMÜ 9428)

8.1.3 Mechanical data

Weight:

GEMÜ 9428

Supply voltage 12 V / 24 V:	1.0 kg
Actuator version 3055:	2.8 kg

Actuator type 9468

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

8.2 AUMA, J+J actuators

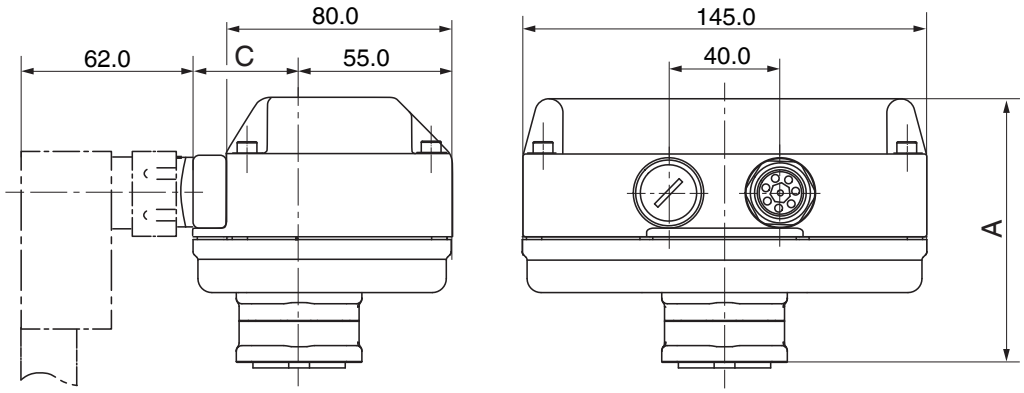
Note: For technical data see manufacturer's original datasheets

9 Dimensions

9.1 Actuator dimensions

9.1.1 GEMÜ 9428, 9468 actuators

9.1.1.1 Actuator version 1015, 2015

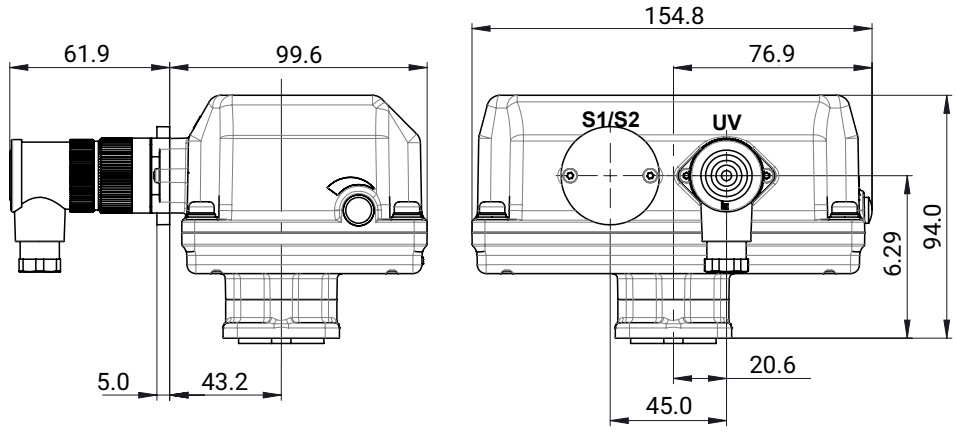


Actuator version	A	C
1006, 1015	94.0	49.0
2015	122.0	53.0

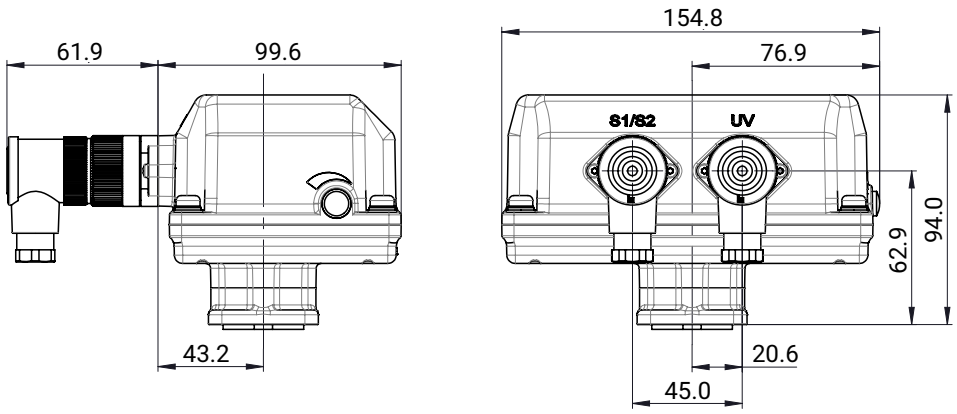
Dimensions in mm

9.1.1.2 Actuator version 3015

ON/OFF actuator (control module code A0)

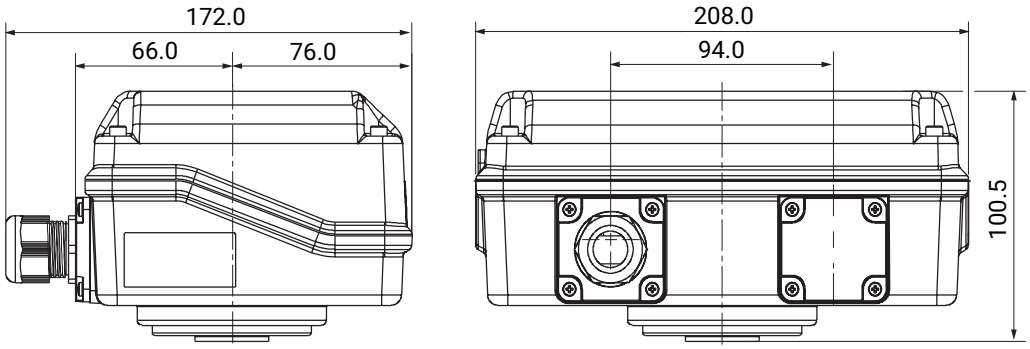


OPEN/CLOSE control, 2 additional potential-free limit switches (control module code AE)



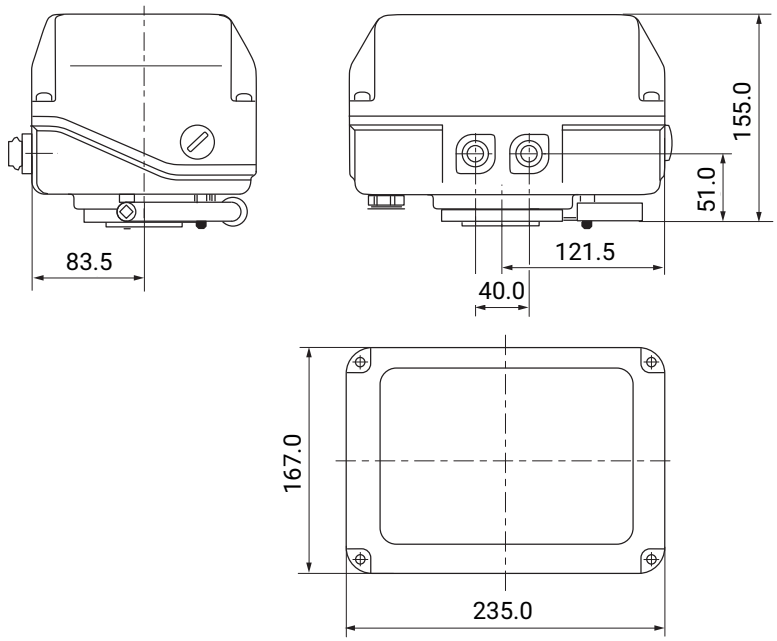
Dimensions in mm

9.1.1.3 Actuator version 3035, 3055



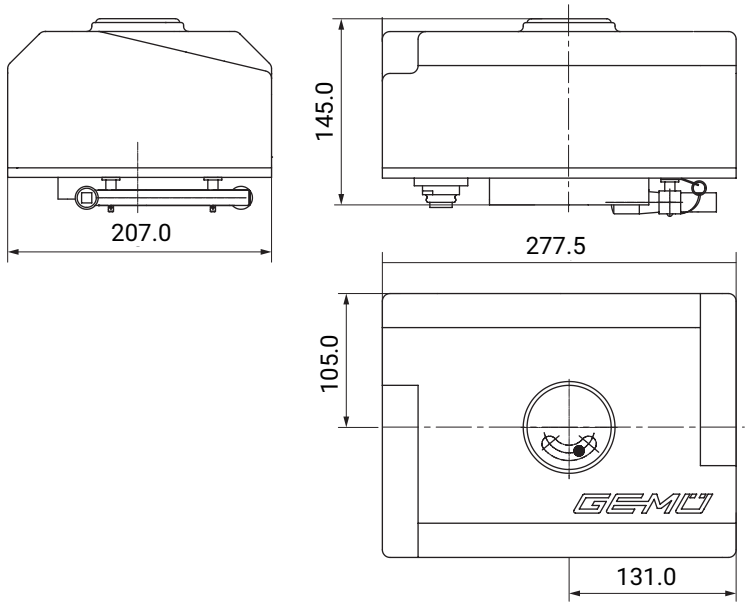
Dimensions in mm

9.1.1.4 Actuator version 2070



Dimensions in mm

9.1.1.5 Actuator version 4100, 4200



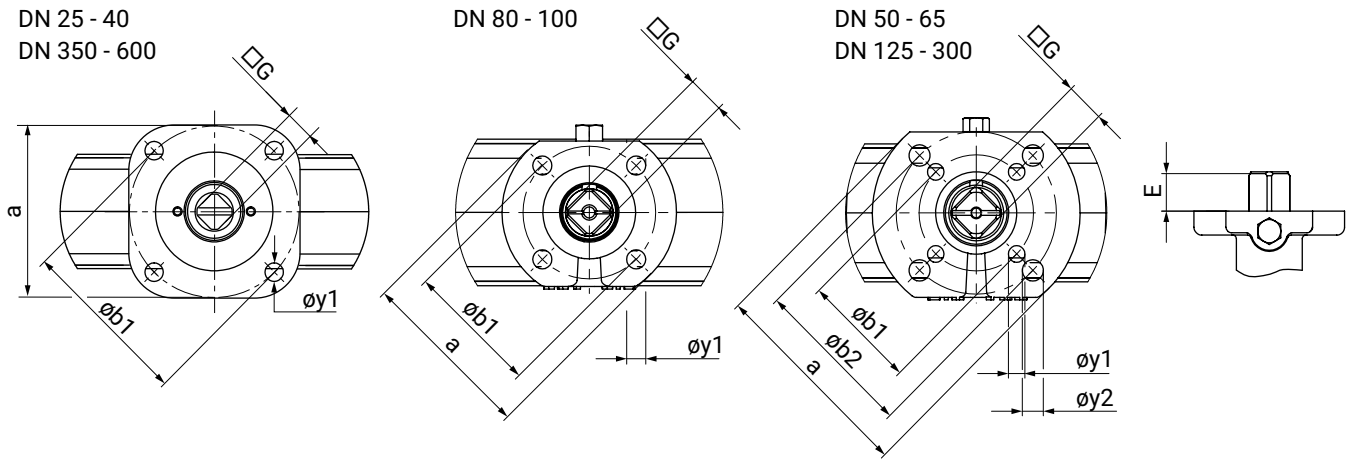
Dimensions in mm

9.1.2 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



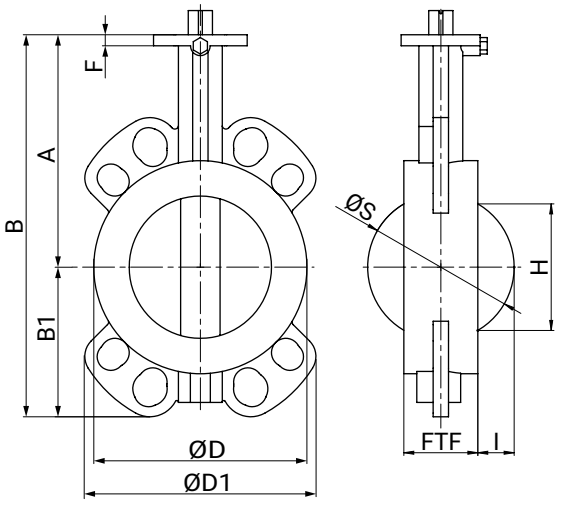
DN	ISO 5211	a	øb1	øy1	øb2	øy2	E		□G		Code
							PS3	PS10/ PS16	PS3	PS10/ PS16	
25	F05	50.0	50.0	7.0	-	-	-	19.0	-	9.0	05 D09
32	F05	□50,0	50,0	7,0	-	-	-	19.0	-	9.0	05 D09
40	F05	50.0	50.0	7.0	-	-	-	19.0	-	9.0	05 D09
50	F03 | F05	65.0	36.0	6.0	50.0	7.0	-	19.0	-	9.0	05 D09
65	F03 | F05	65.0	36.0	6.0	50.0	7.0	-	19.0	-	11.0	05 D11
80	F05	65.0	50.0	7.0	-	-	-	19.0	-	11.0	05 D11
100	F05	65.0	50.0	7.0	-	-	-	19.0	-	14.0	05 D14
125	F05 | F07	90.0	50.0	7.0	70.0	9.0	-	25.0	-	17.0	07 D17
150	F05 | F07	90.0	50.0	7.0	70.0	9.0	-	25.0	-	17.0	07 D17
200	F07 | F10	125.0	70.0	9.0	102.0	11.0	25.0	32.0	17.0	22.0	10 D22
250	F07 | F10	125.0	70.0	9.0	102.0	11.0	25.0	32.0	17.0	22.0	10 D22
300	F07 | F10	125.0	70.0	9.0	102.0	11.0	25.0	32.0	17.0	22.0	10 D22
350	F12	130.0	125.0	13.0	-	-	28.0	28.0	22.0	27.0	12 D27
400	F14	160.0	140.0	17.0	-	-	28.0	37.0	27.0	36.0	14 D36
450	F14	160.0	140.0	17.0	-	-	28.0	37.0	27.0	36.0	14 D36
500	F14	160.0	140.0	17.0	-	-	28.0	37.0	27.0	36.0	14 D36
600	F16	200.0	165.0	21.0	-	-	37.0	47.0	36.0	46.0	16 D46

Dimensions in mm

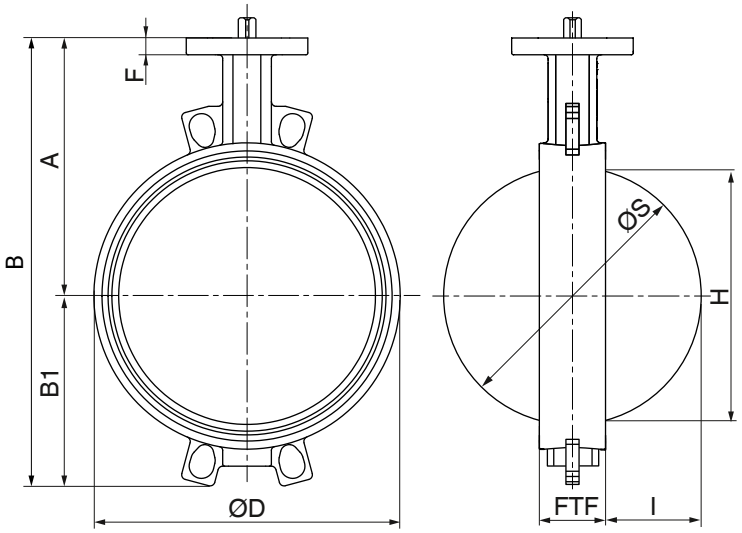
9.2.2 Body

9.2.2.1 Wafer body configuration

DN 25 - 100



DN 125 - 600



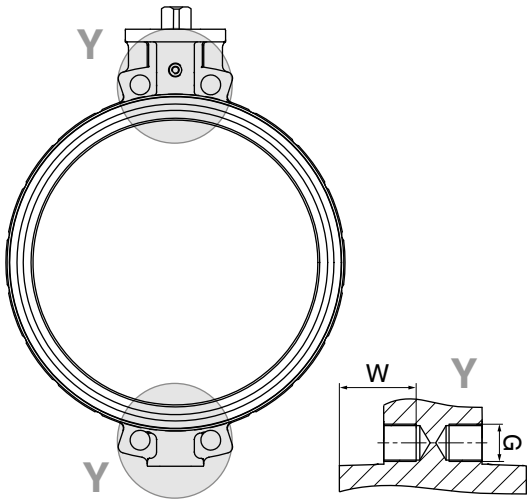
DN	A	B	B1	ØD	ØD1	F	FTF	H*	ØS	I
25	100.0	141.3	41.3	59.5	88.6	12.0	25.0	16.0	26.5	0.5
32	120.0	173.8	53.8	75.8	109.8	12.0	43.0	24.5	41.5	4.0
40	120.0	173.8	53.8	75.8	109.8	12.0	43.0	24.5	41.5	4.0
50	120.0	182.0	62.0	90.0	118.0	12.0	43.0	29.0	52.0	5.0
65	137.0	218.0	81.0	108.0	133.0	12.0	46.0	48.0	67.0	10.0
80	145.0	231.0	87.0	130.0	141.0	12.0	46.0	68.0	82.0	18.0
100	166.0	271.0	105.0	150.0	163.0	14.0	52.0	88.0	102.0	25.0
125	187.0	304.0	117.0	175.0	120.0	16.0	56.0	114.0	127.0	35.0
150	200.0	332.0	132.0	207.0	129.0	16.0	56.0	141.0	152.0	48.0
200	240.0	413.0	173.0	263.0	157.0	17.0	60.0	193.0	202.0	71.0
250	265.0	466.0	201.0	317.0	185.0	17.0	68.0	242.0	252.0	92.0
300	290.0	531.0	241.0	366.0	164.0	17.0	78.0	291.0	302.0	112.0
350	321.0	587.0	266.0	440.0	440.0	15.0	78.0	329.0	337.4	130.0
400	347.0	655.0	308.0	485.0	485.0	20.0	102.0	379.0	391.4	145.0
450	372.0	705.0	333.0	541.0	541.0	20.0	114.0	428.0	441.4	164.0
500	398.0	756.0	358.0	600.0	600.0	20.0	127.0	478.0	493.4	183.5
600	470.0	912.0	442.0	700.0	700.0	24.0	154.0	574.0	593.4	220.0

Dimensions in mm

* Please note dimension H to prevent disc binding on internal pipe

Please note: chamfer flanges for plastic pipelines if necessary

9.2.2.1.1 Threaded hole



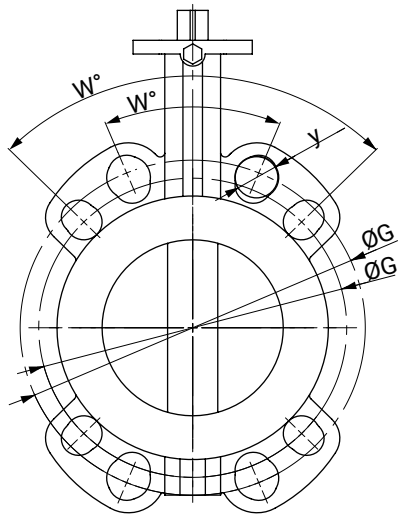
Threaded hole (detail Y)

DN	Connection type code [1]					
	2		3		D	
	G	W	G	W	G	W
450	M24	46	M27	46	Ø 31,7	-

Dimensions in mm

1) **Connection type**
Code 2: PN 10/flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code 3: PN 16/flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code D: ANSI B16.5, class 150, face-to-face dimension FTF EN 558, series 20, For lug bodies/threaded holes with UNC thread

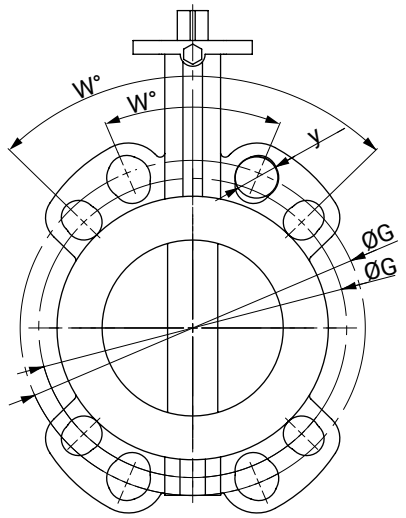
9.2.2.1.2 Connections



Connection EN1092, ANSI B16.5

DN	INCH	Connection (code)															
		EN1092-1 PN6 (code 1)				EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				ANSI B16.5/CL150 (code D)			
DIN	ANSI	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
25	**1"**	90	4	75.0	M10	90	4	85.0	M12	90	4	85.0	M12	90	4	79.0	1/2"
32	**1¼"**	90	4	90.0	M12	90	4	100.0	M16	90	4	100.0	M16	90	4	89.0	1/2"
40	**1½"**	90	4	100.0	M12	90	4	110.0	M16	90	4	110.0	M16	90	4	98.0	1/2"
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	45	8	145.0	18.0	45	8	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
350	**14"**	-	-	-	-	22.5	16	460.0	M20	22.5	16	470.0	M24	30	12	476.0	1"
400	**16"**	-	-	-	-	22.5	16	515.0	M24	22.5	16	525.0	M27	22.5	16	540.0	1"
450	**18"**	-	-	-	-	18	20	565.0	M24	18	20	585.0	M27	22.5	16	578.0	1⅛"
500	**20"**	-	-	-	-	18	20	620.0	M24	18	20	650.0	M30	18	20	635.0	1⅛"
600	**24"**	-	-	-	-	18	20	725.0	M27	18	20	770.0	M33	18	20	749.0	1¼"

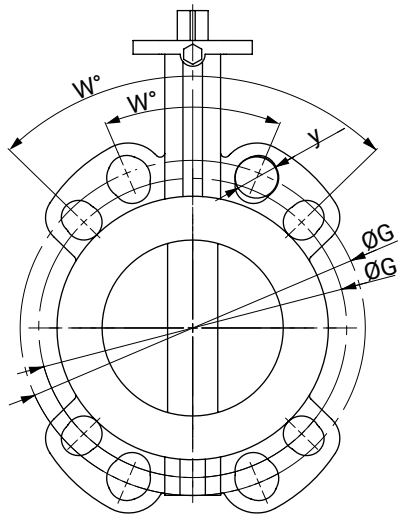
Dimensions in mm
n = number of bolts



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	ANSI	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
25	1"	90	4	83.0	M12	90	4	83.0	M12	90	4	83.0	M12	90	4	83.0	M12
32	1¼"	90	4	87.0	M12	90	4	87.0	M12	90	4	87.0	M12	90	4	87.0	M12
40	1½"	90	4	98.0	M12	90	4	98.0	M12	90	4	98.0	M12	90	4	98.0	M12
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
350	14"	30	12	470.0	M22	30	12	470.0	M27	30	12	470.0	M22	30	12	470.0	M27
400	16"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450	18"	-	-	-	-	22.5	16	584.0	M24	-	-	-	-	22.5	16	584.0	M24
500	20"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
600	24"	22.5	16	756.0	M27	22.5	16	756.0	M30	22.5	16	756.0	M27	22.5	16	756.0	M30

Dimensions in mm
n = number of bolts



Connection JIS K10, K16

DN	INCH	Connection (code)							
		JIS-K10 (code G)				JIS-K16 (code J)			
DIN	ANSI	w°	n	ØG	y	w°	n	ØG	y
25	**1"**	90	4	90.0	M16	90	4	90.0	M16
32	**1¼"**	90	4	100.0	M16	90	4	100.0	M16
40	**1½"**	90	4	105.0	M16	90	4	105.0	M16
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	-	-	-	-
150	**6"**	45	8	240.0	23.0	-	-	-	-
200	**8"**	30	12	290.0	23.0	30	12	305.0	25.0
250	**10"**	30	12	355.0	25.0	-	-	-	-
300	**12"**	22,5	16	400.0	25.0	-	-	-	-
350	**14"**	-	-	-	-	-	-	-	-
400	**16"**	22.5	16	510.0	M24	-	-	-	-
450	**18"**	18	20	565.0	M24	-	-	-	-
500	**20"**	18	20	620.0	M24	-	-	-	-
600	**24"**	15	24	730.0	M30	-	-	-	-

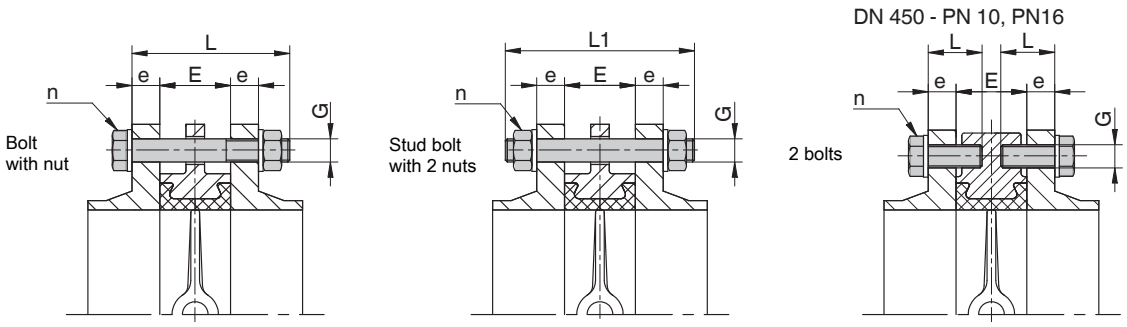
Dimensions in mm
n = number of bolts

Availabilities

Wafer																	
Flange	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
EN1092-1 PN6	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
EN1092-1 PN10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
EN1092-1 PN16	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ANSI B16.5/CL150	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
AS 2129 D	T	T	T	T	T	T	T	T	T	T	T	T	T	-	-	-	T
AS 2129 E	U	U	U	U	U	U	U	U	U	U	U	U	U	-	U	-	U
JIS 5 K	K	K	K	-	K	K	-	K	K	K	K	-	-	-	-	-	-
JIS-K10	G	G	G	G	G	G	G	G	G	G	G	G	-	G	G	G	G
JIS-K16	J	J	J	J	J	J	J	-	-	J	-	-	-	-	-	-	-
BS10 D	H	H	H	H	H	H	H	H	H*	H*	H	H*	H	-	-	-	H
BS10 E	S	S	S	S	S	S	S	S	S	S*	S*	S	S	-	S	-	S

* Note: It is important to centrically align the butterfly valve during installation

9.2.2.1.3 Connection – screws, bolts

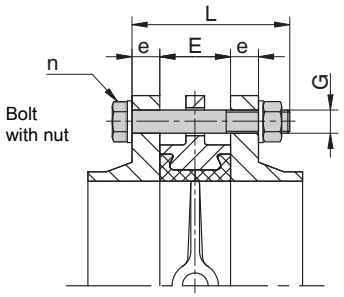


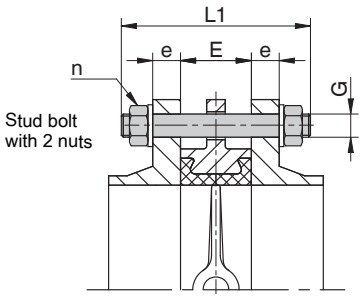
n = number of bolts

n/2 = number of eyes (flange eyes)

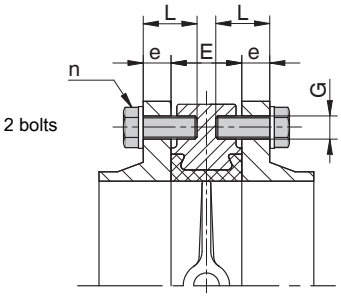
DN	E	Connection (code)									
		EN1092-1 PN10 (code 2)					EN1092-1 PN16 (code 3)				
		e	L	L1	n	G	e	L	L1	n	G
25	25	18	85	100	4	M12	18	85	100	4	M12
32	33	18	90	110	4	M12	18	90	110	4	M16
40	33	18	90	110	4	M12	18	90	110	4	M16
50	43	18	100	120	4	M16	18	100	120	4	M16
65	46	18	100	120	4	M16	18	100	120	4	M16
80	46	20	110	130	8	M16	20	110	130	8	M16
100	52	20	110	130	8	M16	20	110	130	8	M16
125	56	22	120	140	8	M16	22	120	140	8	M16
150	56	22	130	150	8	M20	22	130	150	8	M20
200	60	24	130	160	8	M20	24	130	160	12	M20
250	68	26	150	170	12	M20	26	150	170	12	M24
300	78	26	160	180	12	M20	28	160	180	12	M24
350	78	26	170	180	16	M20	30	170	190	16	M24
400	102	26	180	210	16	M24	32	200	220	16	M27
450	114	26	190	220	16	M24	32	210	240	16	M27
	114	26	60	-	8	M24	32	60	-	8	M27
500	127	28	210	230	20	M24	34	230	260	20	M30
600	154	28	240	270	20	M27	36	260	290	20	M33

Dimensions in mm





DN 450 - PN 10, PN16



n = number of bolts

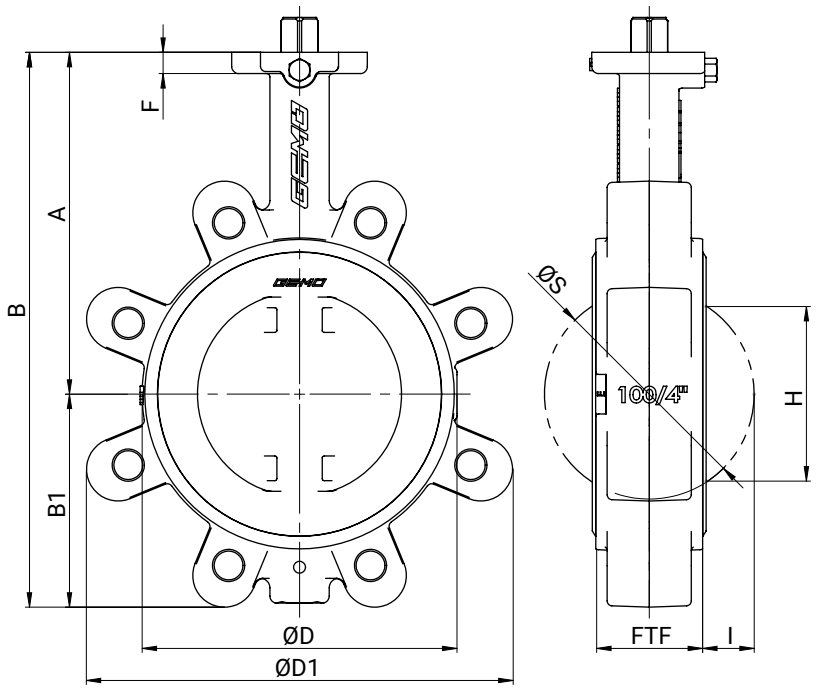
n/2 = number of eyes (flange eyes)

DN	E	ANSI B16.5/CL150 (code D)				
		e	L	L1	n	G [1)]
25	25	14.3	85	100	4	1/2"-13
32	33	17.5	90	110	4	1/2"-13
40	33	17.5	90	110	4	1/2"-13
50	43	19.0	100	120	4	5/8"-11
65	46	22.2	110	130	4	5/8"-11
80	46	23.8	110	130	4	5/8"-11
100	52	23.8	120	140	8	5/8"-11
125	56	23.8	130	150	8	3/4"-10
150	56	25.4	130	150	8	3/4"-10
200	60	28.6	140	160	8	3/4"-10
250	68	30.2	160	180	12	7/8"- 9
300	78	31.7	170	190	12	7/8"- 9
350	78	34.9	180	200	12	1"- 8
400	102	36.5	210	230	16	1"- 8
450	114	39.7	230	250	16	1 1/8"-7
450	114	39.7	230	250	16	1 1/8"-7
500	127	46.0	250	280	20	1 1/8"-7
600	154	47.6	280	310	20	1 1/4"-7

Dimensions in mm

1) Thread acc. to UNC

9.2.2.2 Lug body configuration



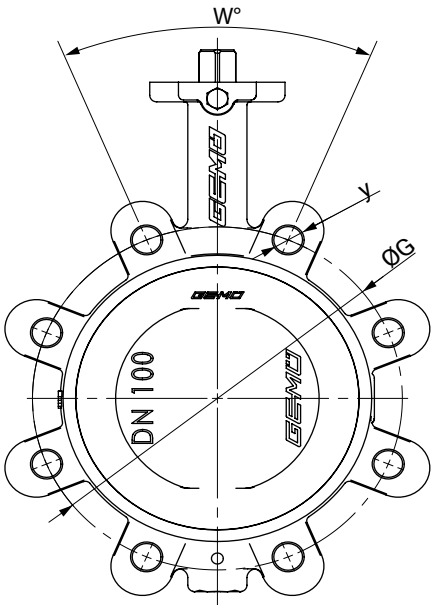
DN	A	B	B1	ØD	ØD1	F	FTF	H*	ØS	I
50	120.0	182.0	62.0	91.0	116.0	12.0	44.0	29.0	52.0	4.0
65	137.0	219.0	82.0	109.0	126.0	12.0	46.0	48.0	67.0	10.0
80	145.0	234.0	89.0	131.0	177.0	12.0	46.0	68.0	82.0	18.0
100	166.0	270.0	104.0	153.0	207.0	14.0	52.0	88.0	102.0	25.0
125	187.0	305.0	118.0	175.0	231.0	16.0	56.0	114.0	127.0	36.0
150	200.0	333.0	133.0	208.0	255.0	16.0	56.0	141.0	152.0	48.0
200	240.0	415.0	175.0	264.0	325.0	17.0	60.0	193.0	202.0	71.0
250	265.0	467.0	202.0	317.0	386.0	17.0	68.0	242.0	252.0	92.0
300	290.0	531.0	241.0	366.0	459.0	17.0	78.0	291.0	302.0	112.0
350	321.0	581.0	260.0	520.0	520.0	15.0	78.0	329.0	337.4	130.0
400	347.0	647.0	300.0	596.0	596.0	20.0	102.0	379.0	391.4	145.0

Dimensions in mm

* Please note dimension H to prevent disc binding on internal pipe

Please note: chamfer flanges for plastic pipelines if necessary

9.2.2.2.1 Connections

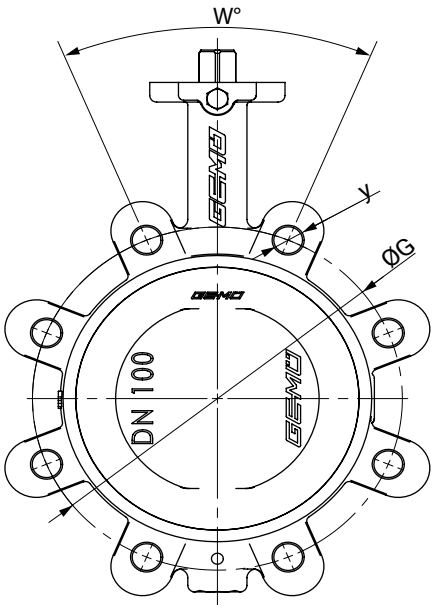


Connection EN1092, ANSI B16.5

DN	INCH	Connection (code)															
		EN1092-1 PN6 (code 1)				EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				ANSI B16.5/CL150 (code D)			
DIN	ANSI	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	45	8*	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"
350	**14"**	30	12	445.0	M20	22.5	16	460.0	M20	22.5	16	470.0	M24	30	12	476.0	1"
400	**16"**	22.5	16	495.0	M20	22.5	16	515.0	M24	22.5	16	525.0	M27	22.5	16	540.0	1"

Dimensions in mm
n = number of bolts

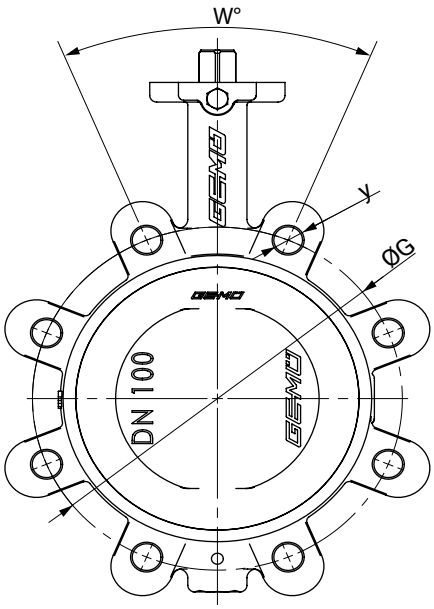
* Standard: 8 holes code 3 (PN16); if 4 holes are required, select code 2 (PN10);



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	ANSI	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	M16	90	4	114.3	M16
65	**2½"**	90	4	127.0	M16	90	4	127.0	M16	90	4	127.0	M16	90	4	127.0	M16
80	**3"**	90	4	146.0	M16	90	4	146.0	M16	90	4	146.1	M16	90	4	146.1	M16
100	**4"**	90	4	178.0	M16	45	8	178.0	M16	90	4	177.8	M16	45	8	177.8	M16
125	**5"**	45	8	210.0	M16	45	8	210.0	M16	45	8	209.6	M16	45	8	209.6	M16
150	**6"**	45	8	235.0	M16	45	8	235.0	M20	45	8	235.0	M16	45	8	235.0	M20
200	**8"**	45	8	292.0	M16	45	8	292.0	M20	45	8	292.1	M16	45	8	292.1	M20
250	**10"**	45	8	356.0	M20	30	12	356.0	M20	45	8	355.6	M20	30	12	355.6	M20
300	**12"**	30	12	406.0	M20	30	12	406.0	M22	30	12	406.4	M20	30	12	406.4	M22
350	**14"**	30	12	470.0	M22	30	12	470.0	M27	30	12	470.0	M22	30	12	470.0	M27

Dimensions in mm
n = number of bolts



Connection JIS-K10

DN	INCH	Connection (code)			
		JIS-K10 (code G)			
DIN	ANSI	w°	n	ØG	y
50	**2"**	90.0	4	120.0	M16
65	**2½"**	90.0	4	140.0	M16
80	**3"**	45.0	8	150.0	M16
100	**4"**	45.0	8	175.0	M16
125	**5"**	45.0	8	210.0	M20
150	**6"**	45.0	8	240.0	M20
200	**8"**	30.0	12	290.0	M20
250	**10"**	30.0	12	355.0	M24
300	**12"**	22.5	16	400.0	M24
350	**14"**	22.5	16	445.0	M22
400	**16"**	22.5	16	510.0	M24

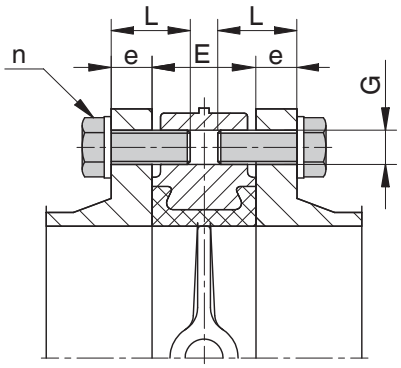
Dimensions in mm
n = number of bolts

Availabilities

	Lug										
Flange	50	65	80	100	125	150	200	250	300	350	400
EN1092-1 PN6	1	1	1	1	1	1	1	1	1	-	-
EN1092-1 PN10	3	3*	3	3	3	3	2	2	2	2	2
EN1092-1 PN16	3	3*	3	3	3	3	3	3	3	3	3
ANSI B16.5/CL150	D	D	D	D	D	D	D	D	D	D	D
AS 2129 D	T	-	T	T	T	T	T	-	T	-	-
AS 2129 E	U	-	U	U	U	U	U	U	U	-	-
JIS-K10	G	G	G	G	G	G	G	G	-	G	G
BS10 D	H	-	H	H	H	H	H	-	H	-	-
BS10 E	S	-	S	S	S	S	S	S	S	-	-

* drilled, with four threaded holes

9.2.2.2.2 Connection – screws, bolts



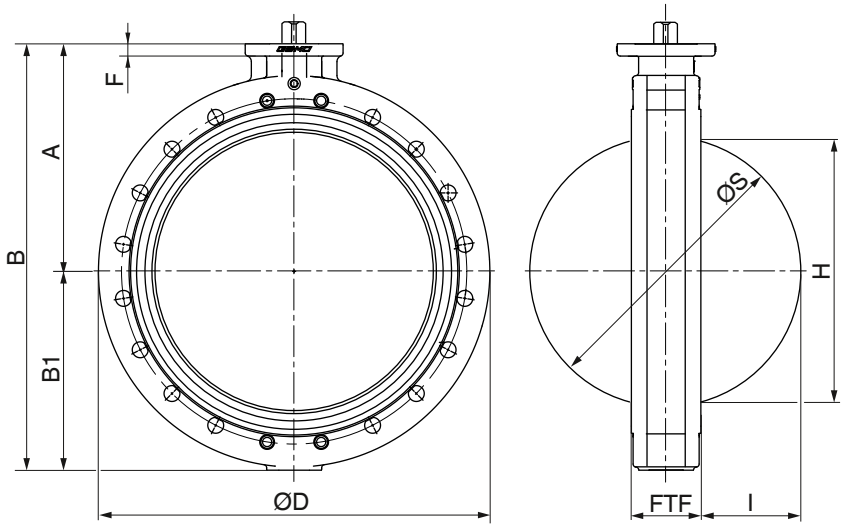
n = number of bolts (thread)

DN	E	Connection (code)											
		EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				ANSI B16.5/CL150 (code D)			
		e	L	n	G	e	L	n	G	e	L	n	G [1)]
50	43	18	35	8	M16	18	40	8	M16	19	40	8	5/8"-11
65	46	18	40	8	M16	18	40	8	M16	22.2	45	8	5/8"-11
80	46	20	40	16	M16	20	40	16	M16	23.8	45	8	5/8"-11
100	52	20	45	16	M16	20	45	16	M16	23.8	50	16	5/8"-11
125	56	22	45	16	M16	22	45	16	M16	23.8	55	16	3/4"-10
150	56	22	45	16	M20	22	45	16	M20	25.4	55	16	3/4"-10
200	60	24	50	16	M20	24	50	24	M20	28.6	65	16	3/4"-10
250	68	26	55	24	M20	26	55	24	M24	30.2	70	24	7/8"- 9
300	78	26	60	24	M20	28	65	24	M24	31.7	80	24	7/8"- 9
350	78	26	60	32	M20	30	60	32	M24	34.9	75	24	1"- 8
400	102	26	65	32	M24	32	65	32	M27	36.5	85	32	1"- 8

Dimensions in mm

1) Thread acc. to UNC

9.2.2.3 U section body configuration



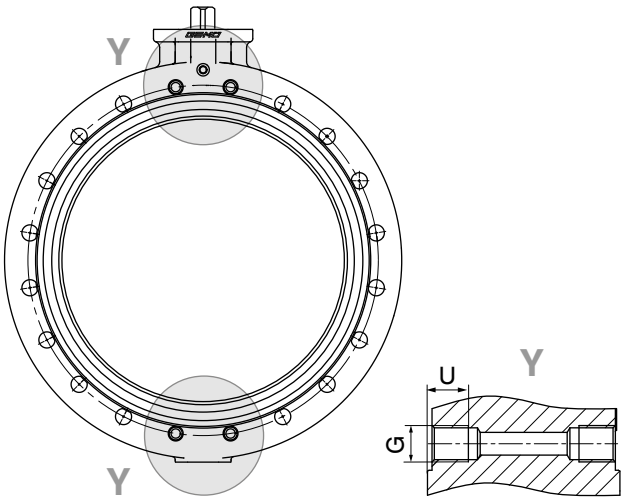
DN	A	B	B1	ØD	F	FTF	H*	I	ØS
400	347.0	662.0	315.0	596.0	20.0	102.0	379.0	145.0	391.4
450	372.0	712.0	340.0	640.0	20.0	114.0	428.0	164.0	441.4
500	398.0	763.0	365.0	715.0	20.0	127.0	478.0	183.5	493.4
600	470.0	917.0	447.0	840.0	24.0	154.0	574.0	220.0	593.4

Dimensions in mm

* Please note dimension H to prevent disc binding on internal pipe

Please note: chamfer flanges for plastic pipelines if necessary

9.2.2.3.1 Threaded hole



Threaded hole (detail Y)

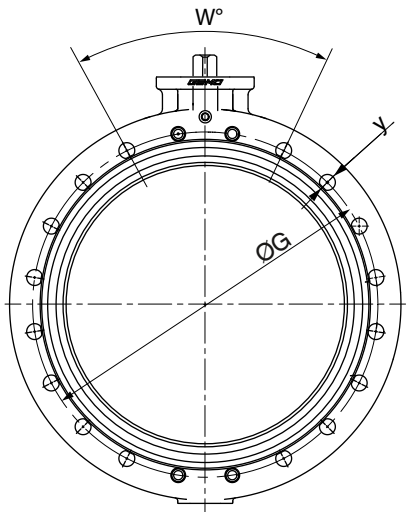
DN	Connection type code [1]					
	2		3		D	
	G	U	G	U	G [2]	U
400	M24	24	M27	27	1"-8	-
450	M24	24	M27	27	1 1/8"-7	30
500	M24	24	M30	30	1 1/8"-7	30
600	M27	27	M33	33	1 1/4"-7	33

Dimensions in mm

1) **Connection type**
Code 2: PN 10/flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code 3: PN 16/flange EN 1092, face-to-face dimension FTF EN 558 series 20
Code D: ANSI B16.5, class 150, face-to-face dimension FTF EN 558, series 20, For lug bodies/threaded holes with UNC thread

2) Thread acc. to UNC

9.2.2.3.2 Connections



DN	INCH	Connection (code)											
		EN1092-1 PN10 (code 2)				EN1092-1 PN16 (code 3)				ANSI B16.5/CL150 (code D)			
DIN	ANSI	w°	n	ØG	y	w°	n	ØG	y	w°	n	ØG	y
400	**16"**	22.5	16	515.0	M24	22.5	16	525.0	M27	22.5	16	540.0	1"
450	**18"**	18	20	565.0	M24	18	20	585.0	M27	22.5	16	578.0	1⅛"
500	**20"**	18	20	620.0	M24	18	20	650.0	M30	18	20	635.0	1⅛"
600	**24"**	18	20	725.0	M27	18	20	770.0	M33	18	20	749.0	1¼"

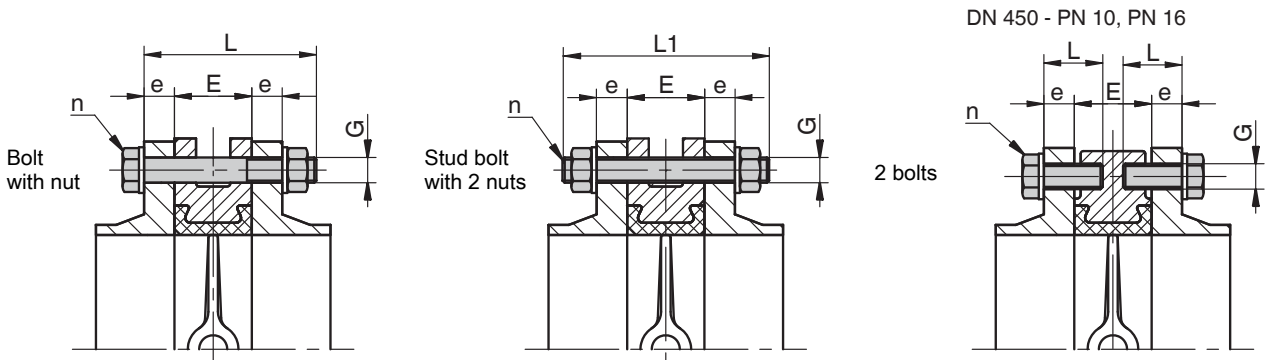
Dimensions in mm

Availabilities

U section				
Flange	400	450	500	600
EN1092-1 PN6	1*	1*	1*	1*
EN1092-1 PN10	2	2	2	2
EN1092-1 PN16	3	3	3	3
ANSI B16.5/CL150	D	D	D	D
AS 2129 E	-	U	-	-
BS10 D	-	-	-	H
BS10 E	-	S	-	-

* only available with threaded holes

9.2.2.3.3 Connection – screws, bolts



n = number of bolts

DN	E	Connection (code)									
		EN1092-1 PN10 (code 2)					EN1092-1 PN16 (code 3)				
		e	L	L1	n	G	e	L	L1	n	G
400	102	26	180	210	12	M24	32	200	220	12	M27
	102	26	50	210	8	M24	32	55	220	8	M27
450	114	26	190	220	16	M24	32	210	240	16	M27
	114	26	50	220	8	M24	32	55	240	8	M27
500	127	28	210	230	16	M24	34	230	260	16	M30
	127	28	50	230	8	M24	34	60	260	8	M30
600	154	28	240	270	16	M27	36	260	290	16	M33
	154	28	50	270	8	M27	36	60	290	8	M33

Dimensions in mm

DN	E	ANSI B16.5/CL150 (code D)				
		e	L	L1	n	G [1)]
400	102	36.5	210	230	12	1"- 8
	102	36.5	210	230	8	1"- 8
450	114	39.7	230	250	16	1 1/8"-7
	114	39.7	65	250	8	1 1/8"-7
500	127	46.0	250	280	16	1 1/8"-7
	127	46.0	70	280	8	1 1/8"-7
600	154	47.6	280	310	16	1 1/4"-7
	154	47.6	70	310	8	1 1/4"-7

Dimensions in mm

1) Thread acc. to UNC

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

⚠ WARNING

Corrosive chemicals!

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

⚠ WARNING

GEMÜ products without an actuating element!

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

⚠ CAUTION

Hot plant components!

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

⚠ CAUTION

Leakage!

► Emission of dangerous materials
- Provide 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 an end-of-line valve!

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

⚠ CAUTION

Risk of crushing!

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

⚠ CAUTION

Risk of crushing!

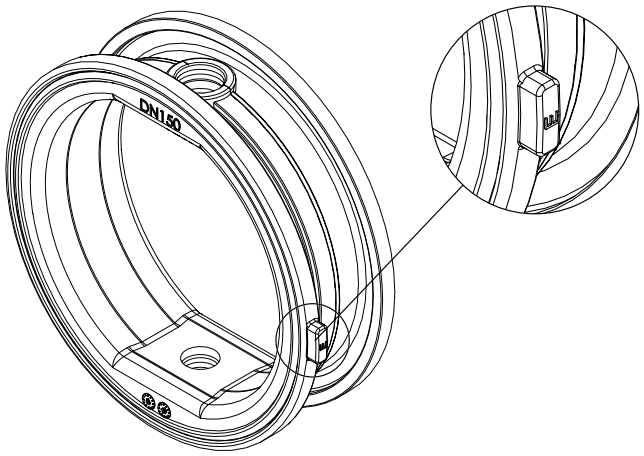
► Severe injury due to crushing of the fingers between the valve body and butterfly disc.
- Depressurize the plant before performing any work on the butterfly valve, and unscrew the control medium line(s) of the butterfly valve.
- Ensure that the butterfly disc is in the respective end position (closed for NC or open for NO).
- Do not reach into the crushing area between the valve body and butterfly disc.

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.

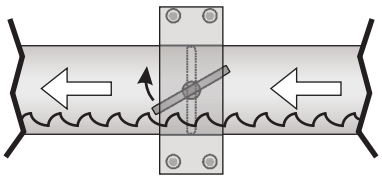
1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. The external pressure must not exceed 1 bar PSa.
4. Pressure surges are not permissible. The plant operator must plan appropriate precautionary measures.
5. The pressure differential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



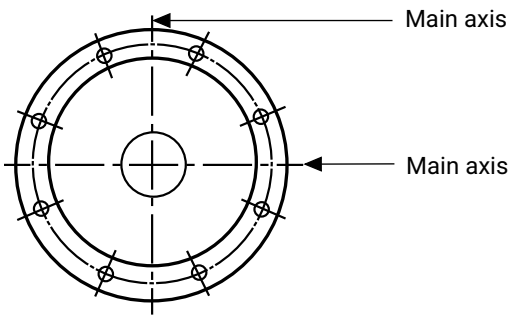
Material	Code	Colour
EPDM	EL	-
EPDM (drinking water)	WL	Orange
EPDM white	ML	-
EPDM-HT	TL	Grey
NBR	NL	Blue
FPM	VL	Yellow
Flucast AB/P	FL	Red

11.2 Installation location

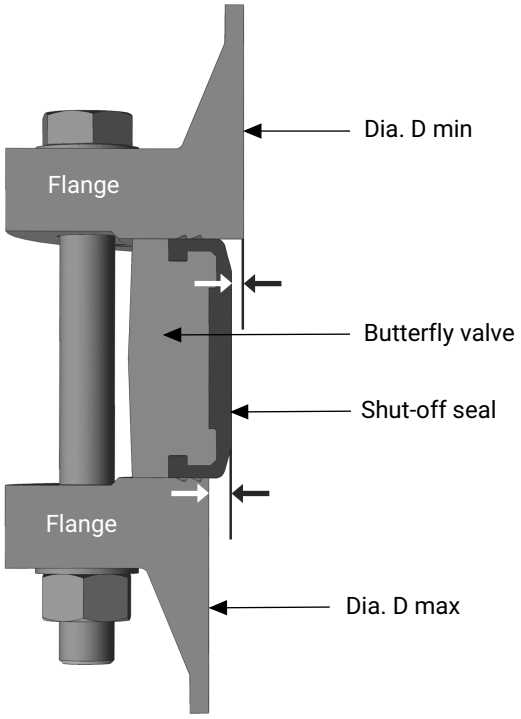
1. You can choose the installation position of the GEMÜ product. If media is contaminated and DN ≥ 300, install GEMÜ R488 horizontally, so that the lower edge of the disc opens in-line with flow direction.



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	32.0	13.0
40	47.0	29.0
50	60.0	33.0
65	74.0	53.0
80	96.0	72.0
100	113.0	92.0
125	140.0	118.0
150	169.0	146.0
200	223.0	197.0
250	273.0	247.0
300	323.0	297.0
350	363.0	335.0
400	417.0	384.0
450	465.0	432.0
500	518.0	485.0
600	618.0	580.0

Dimensions in mm

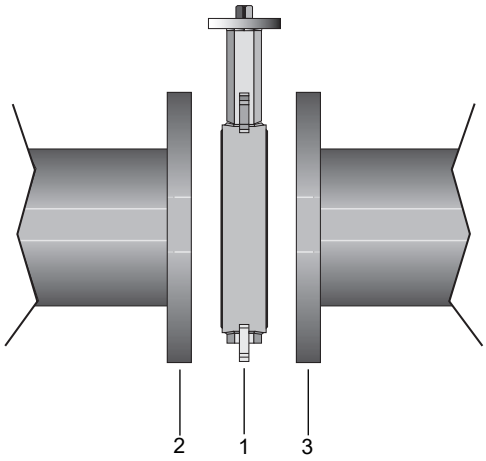
11.3 Installation of the standard version

⚠ CAUTION

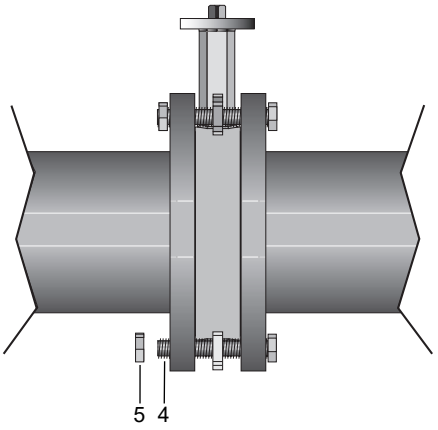
Damage!

► 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**.

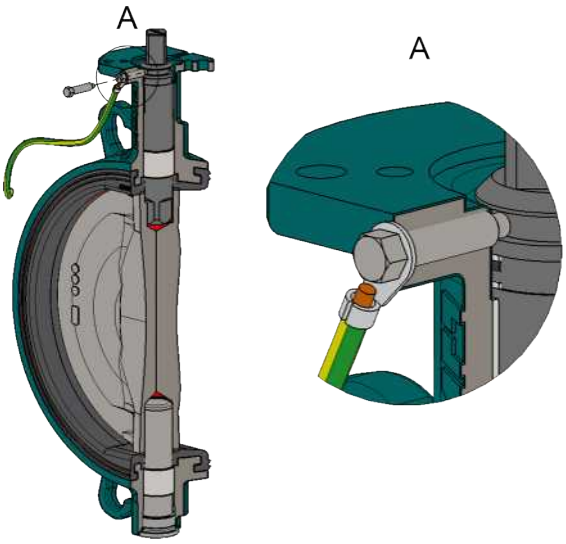


11. Slightly open the butterfly valve **1**. The disc must not project from the body.
12. Insert bolts **4** in all holes in the flange.



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.

⚠ CAUTION

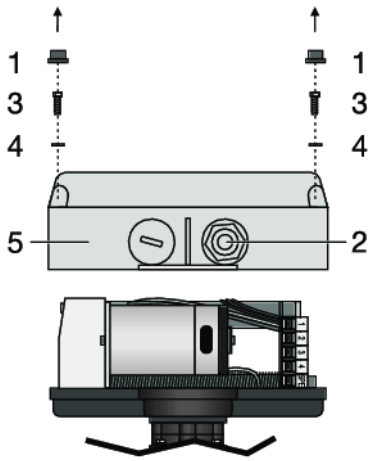
Power supply!

- ● 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.

NOTICE

Required for electrical connection:

- ● Allen key size SW3
- ● Small flat screw driver



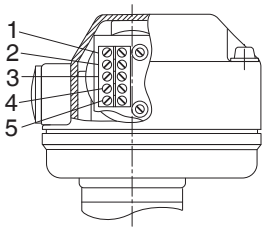
1. Disconnect the plant from power supply.
2. Remove the protective caps **1**.
3. Unscrew cable entry **2**.
4. Undo screws **3**.
5. Do not lose the washers **4**.
6. Remove the cover of the actuator **5**.
7. Insert cable through cable entry **2**.
   Remove internal sealing ring if necessary.
8. Connect cable (see chapter "Connection diagram 12 / 24 V" and chapter "Connection diagram 100 - 250 V").
9. Put on cover of actuator **5**.
10. Tighten cover **5**.
11. Put on protective caps **1**.
12. Screw down cable entry **2**.

12.1 Connection/wiring diagram

12.1.1 ON/OFF actuator (code A0)

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

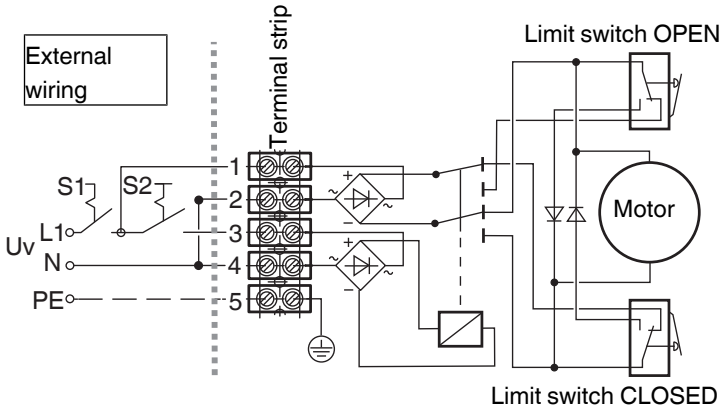
Assignment of the terminal strips



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

Preferred direction -OPEN- when all signals are present

Connection diagram



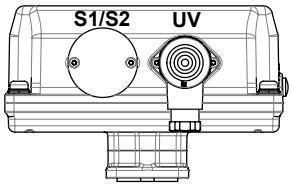
S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

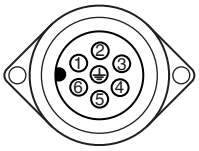
12 V DC (code B1) / 24 V DC (code C1)

Position of the connectors

Actuator version
3006, 3015



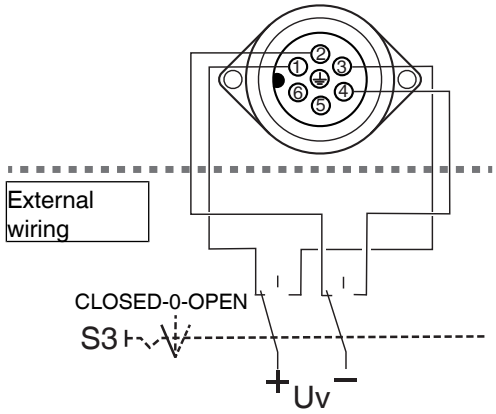
Electrical connection



Plug assignment UV

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

Connection diagram

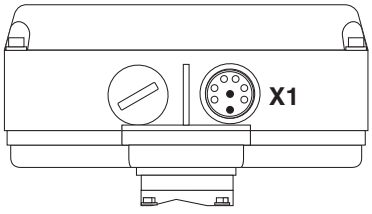


Connection assignment X1, UV

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

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

Position of the connectors

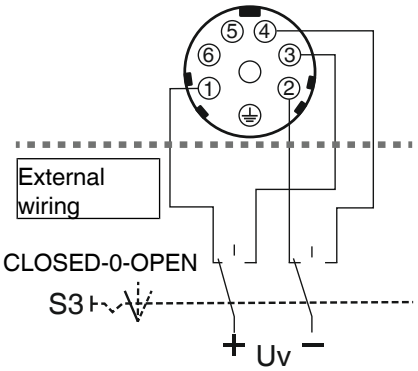


Electrical connection

Plug assignment X1

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

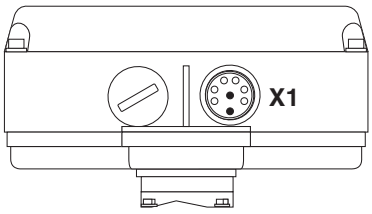
Connection diagram



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

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

Position of the connectors



Electrical connection

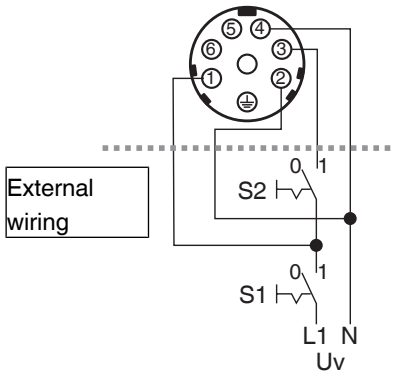
Plug assignment X1

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

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

Preferred direction -OPEN- when all signals are present

Connection diagram

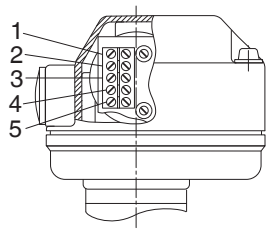


S1	Actuator
0	OFF
1	ON

S2	Direction of travel
0	CLOSED
1	OPEN

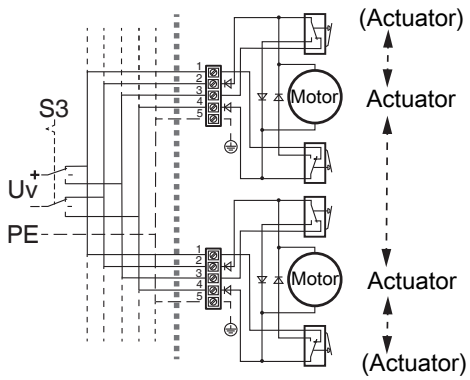
12 V DC (code B1) / 24 V DC (code C1) / K-no. 6410

Assignment of the terminal strips



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

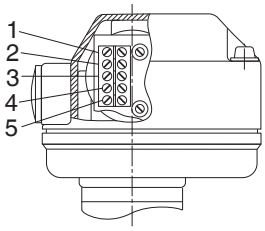
Connection diagram



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

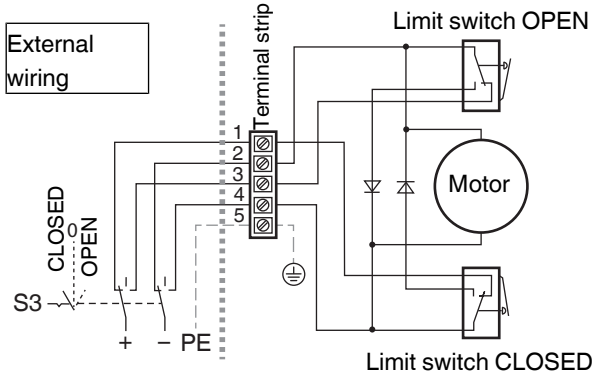
12 V DC (code B1) / 24 V DC (code C1)

Assignment of the terminal strips



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

Connection diagram



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

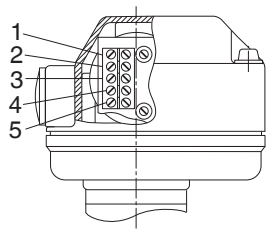
12 V DC (code B1) / 24 V DC (code C1) / K-no. 6410

NOTICE

Parallel operation

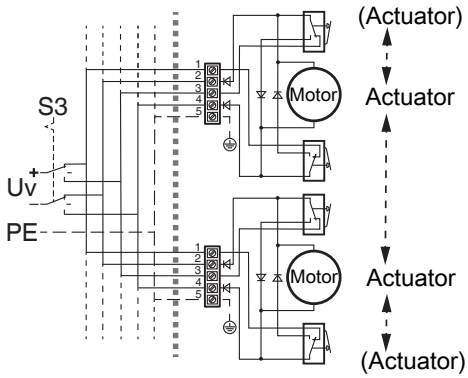
► Parallel operation only possible with K-no. 6410.

Assignment of the terminal strips



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

Connection diagram

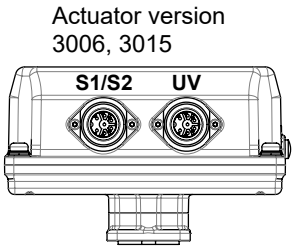


S3	Actuator
CLOSED	Direction of travel CLOSED
0	OFF
OPEN	Direction of travel OPEN

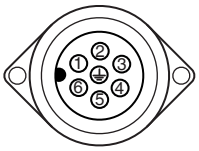
12.1.2 ON/OFF actuator with 2 potential-free limit switches (code AE)

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

Position of the connectors

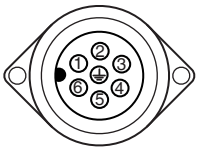


Electrical connection



Plug assignment UV

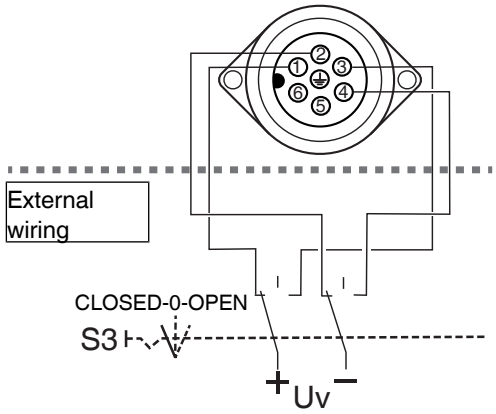
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

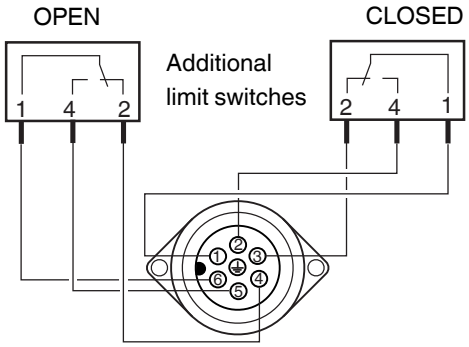


Plug assignment S1/S2

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

Connection diagram



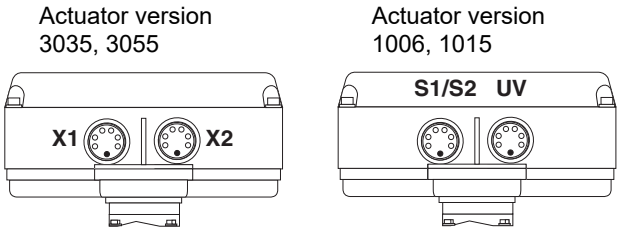


Connection assignment UV

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

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

Position of the connectors



Electrical connection

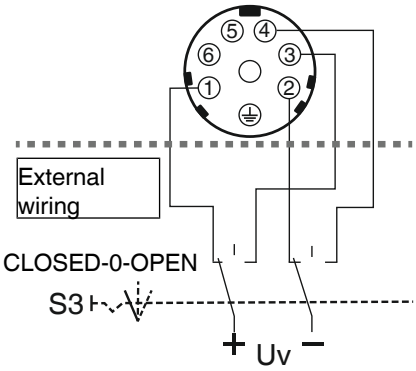
Plug assignment X1, UV

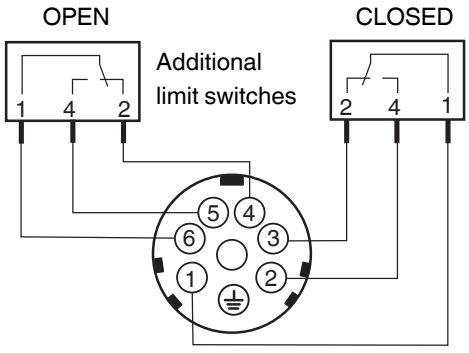
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

Plug assignment X2, S1/S2

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

Connection diagram





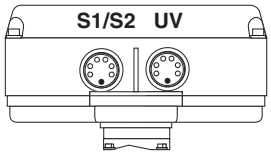
Connection assignment X1, UV

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

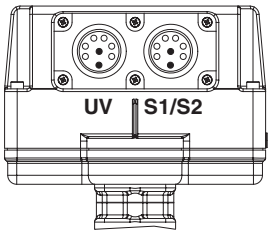
12 V AC (code B4) / 24 V AC (code C4)

Position of the connectors

Actuator version 1006



Actuator version 2015



Electrical connection

Plug assignment UV

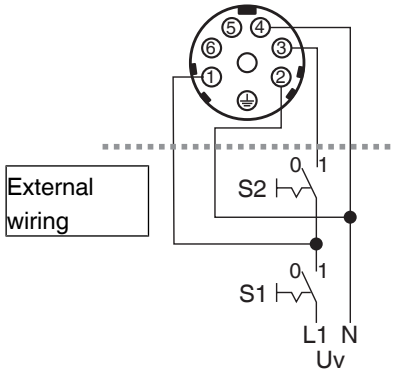
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	n.c.
6	n.c.
⏚	PE, protective earth conductor

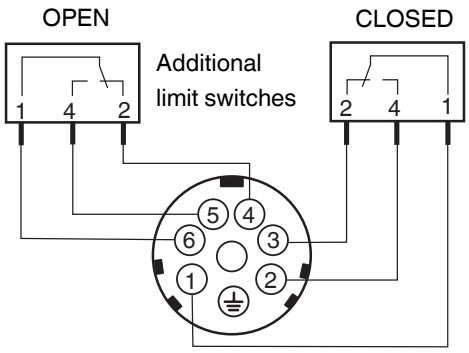
Plug assignment S1/S2

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

Preferred direction -OPEN- when all signals are present

Connection diagram



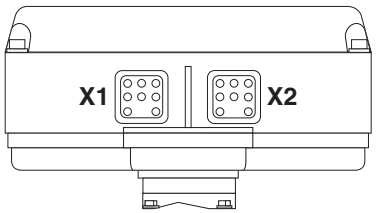


Connection diagram X1, UV

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

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

Position of the connectors



Electrical connection

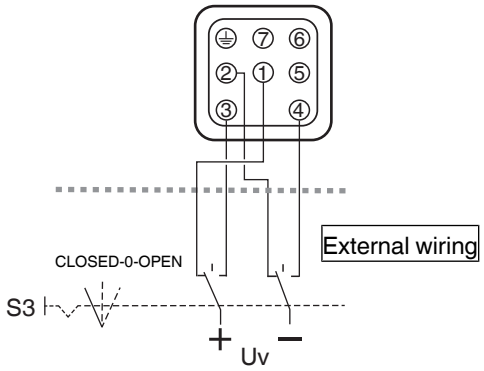
Plug assignment X1

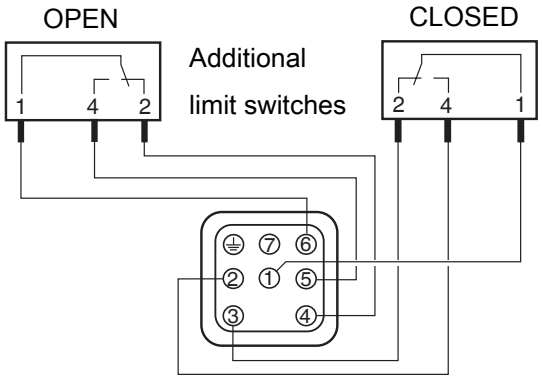
Pin	Description
1	Uv+, direction of travel CLOSED
2	Uv-, direction of travel CLOSED
3	Uv+, direction of travel OPEN
4	Uv-, direction of travel OPEN
5	n.c.
6	n.c.
7	n.c.
⏚	PE, protective earth conductor

Plug assignment X2

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

Connection diagram



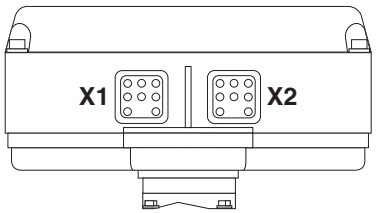


Connection diagram X1

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

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

Position of the connectors



Electrical connection

Plug assignment X1

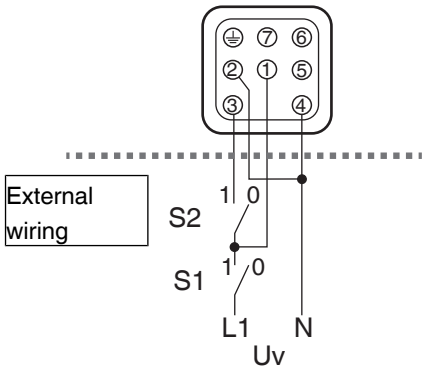
Pin	Description
1	L1, supply voltage
2	N, supply voltage
3	L1, change-over (OPEN/CLOSED)
4	N, change-over (OPEN/CLOSED)
5	n.c.
6	n.c.
7	n.c.
⏚	PE, protective earth conductor

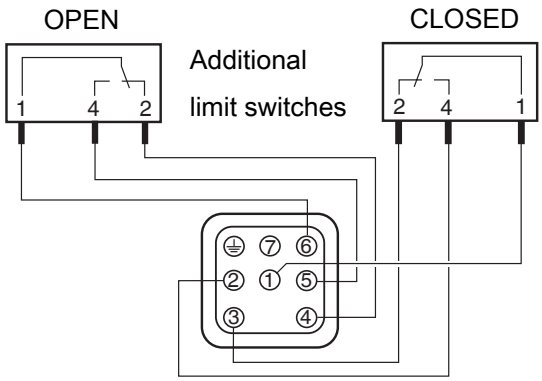
Plug assignment X2

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

Preferred direction -OPEN- when all signals are present

Connection diagram





Connection diagram X1

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

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)

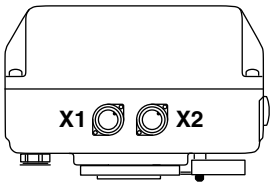
NOTICE

- ● 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.

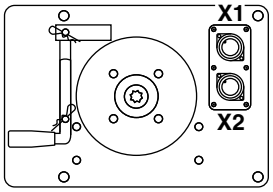
13.1 Connection/wiring diagram

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

13.1.1.1 Position of the connectors

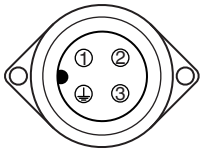


Actuator version 2070



Actuator version 4100, 4200

13.1.1.2 Electrical connection

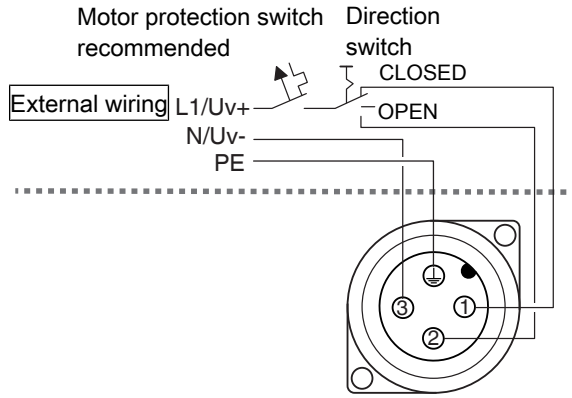


Plug assignment X1

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".

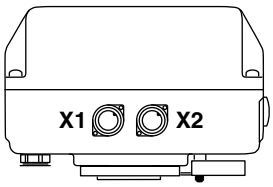
13.1.1.3 Connection diagram



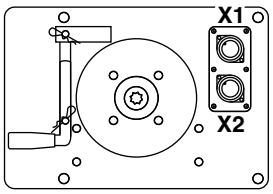
Connection assignment X1

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

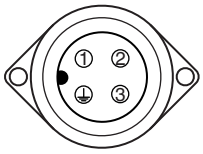


Actuator version 2070



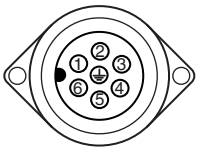
Actuator version 4100, 4200

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

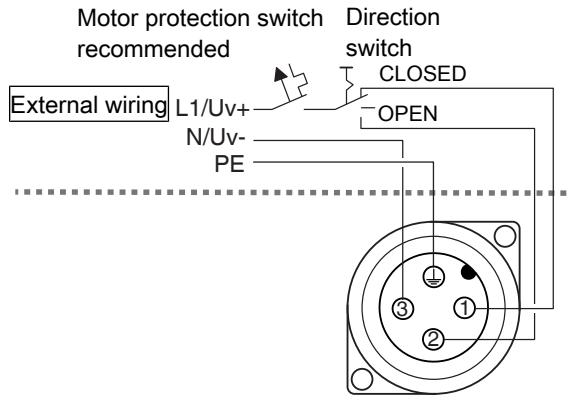


Plug assignment X2

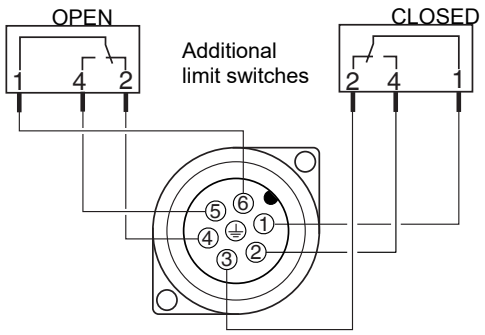
Pin	Description
1	Change-over contact limit switch CLOSED
2	Make contact limit switch CLOSED
3	Break contact limit switch CLOSED
4	Break contact limit switch OPEN
5	Make contact limit switch OPEN
6	Change-over contact limit switch OPEN
⏚	PE, protective earth conductor

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



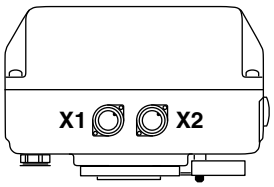
Connection assignment X1



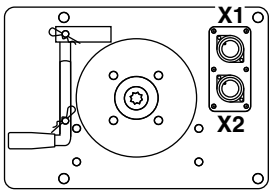
Connection assignment X2

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

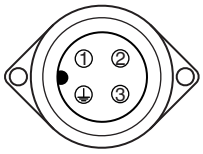


Actuator version 2070



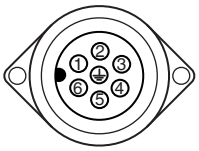
Actuator version 4100, 4200

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

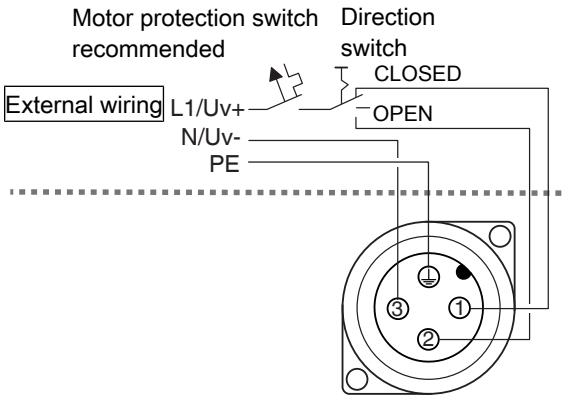


Plug assignment X2

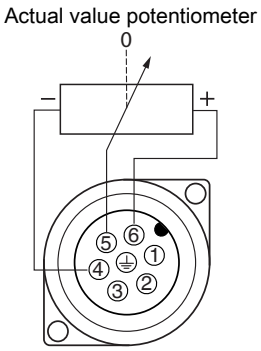
Pin	Description
1	n. c.
2	n. c.
3	n. c.
4	Us-, actual value potentiometer signal voltage minus
5	Us ⌐, actual value potentiometer signal output
6	Us+, actual value potentiometer signal voltage plus
⏚	PE, protective earth conductor

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 appropriate protective gear.
- ● Completely drain the plant.

⚠ CAUTION

Leakage!

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

⚠ CAUTION

Use as an end-of-line valve!

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

⚠ CAUTION

Cleaning agent!

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

1. Check the tightness and the function of the product (close and reopen the product).
2. Flush the piping system of new plant and following repair work (the product must be fully open).

⇨ Harmful foreign matter has been removed.

⇨ The product is ready for use.

3. Commission the product.
4. Commissioning of actuators in accordance with the enclosed instructions.

16 Operation

16.1 Operation - GEMÜ 9428

⚠ CAUTION

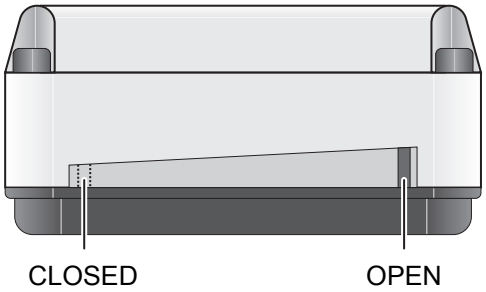
OPEN/CLOSE control

- ● 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

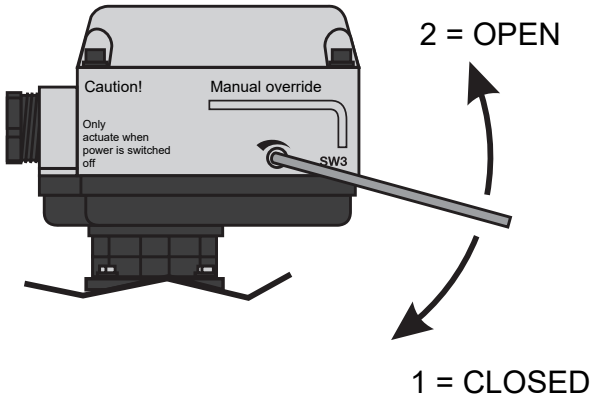
Only actuate the manual override when the power is switched off.

- ► Damage to the actuator!

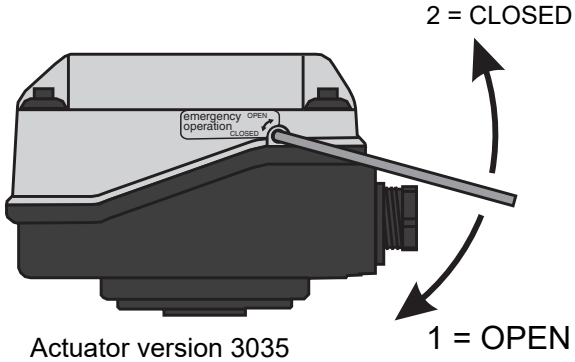
⚠ CAUTION

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

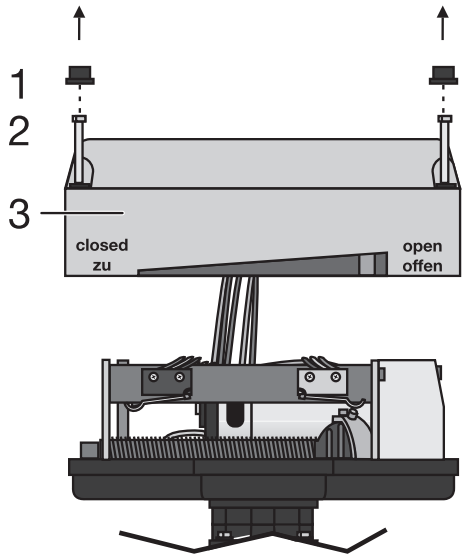
NOTICE

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

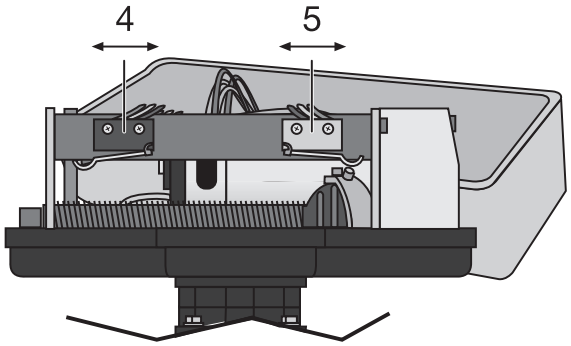
The GEMÜ 9428 motorized actuator is delivered in open position.

The following drawings differ depending on the actuator version!

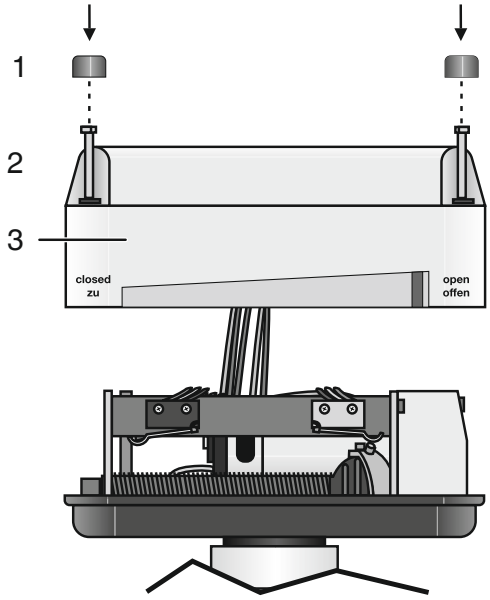
1. Disconnect the plant from power supply and secure against recommissioning.



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**.

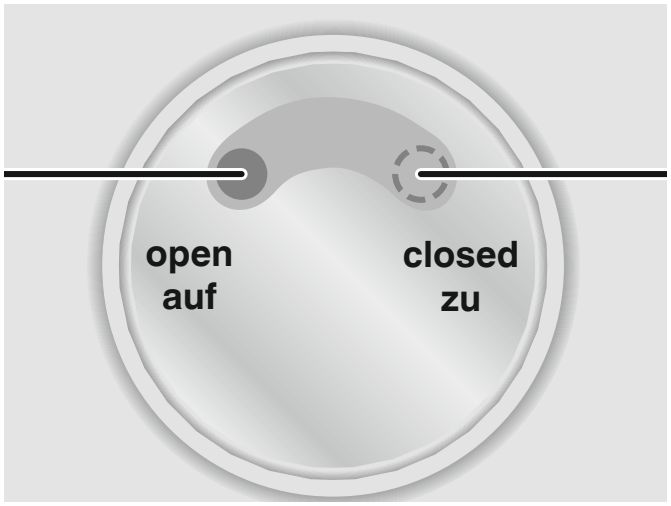
⇨ Limit switches are set.

16.2 Operation - GEMÜ 9468

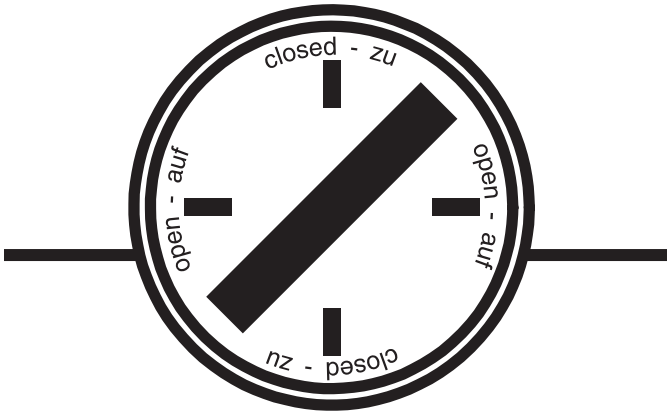
16.2.1 Optical position indicator

Actuator version 2070

Actuator version 4100, 4200



Actuator version 6400



16.2.2 Manual override

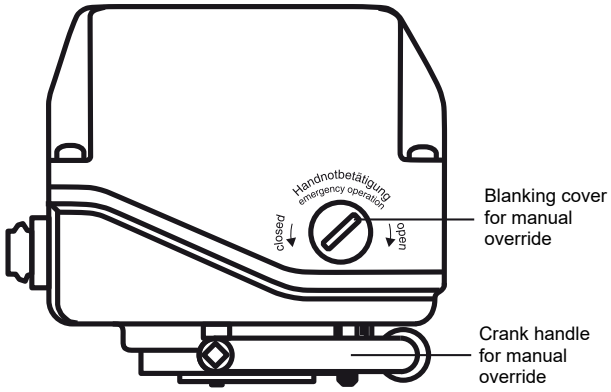
⚠ DANGER

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:

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

Designs A0, AE, AP, E1, E2:

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

⚠ DANGER

Risk of electric shock!

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

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

18 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

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

⚠ CAUTION

Use of incorrect spare parts!

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

⚠ CAUTION

Hot plant components!

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

NOTICE

Exceptional maintenance work!

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

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

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

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 or plant component.
● Completely drain the plant or plant component.

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

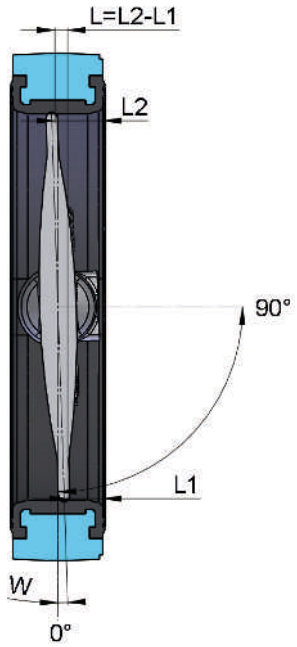
Hot plant components!

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

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

18.4 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

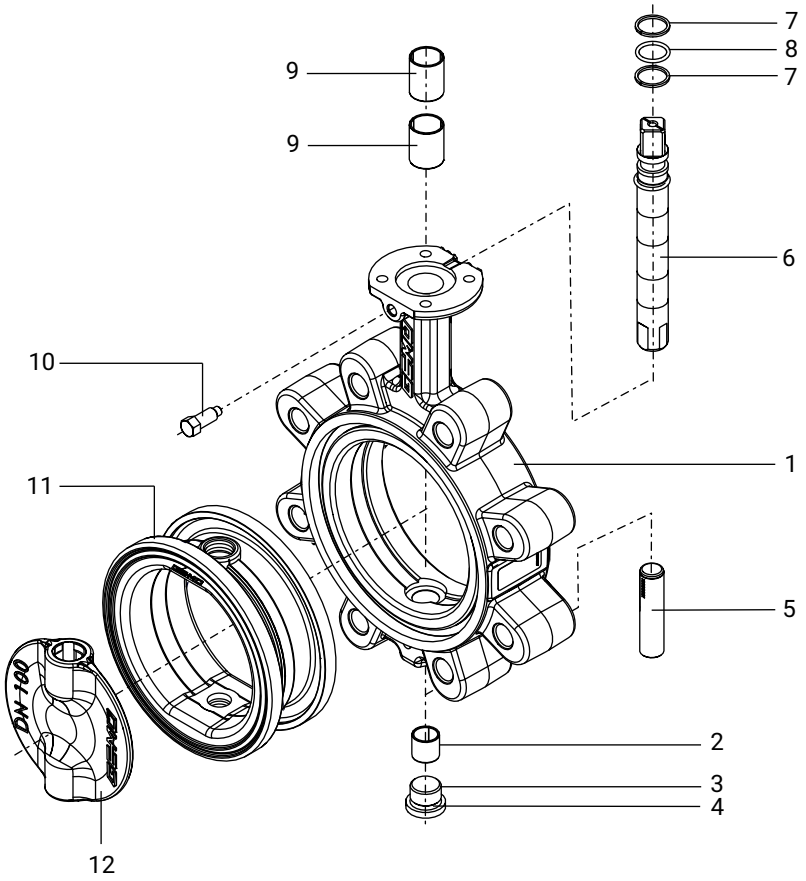
Use of incorrect spare parts!

- ► 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:

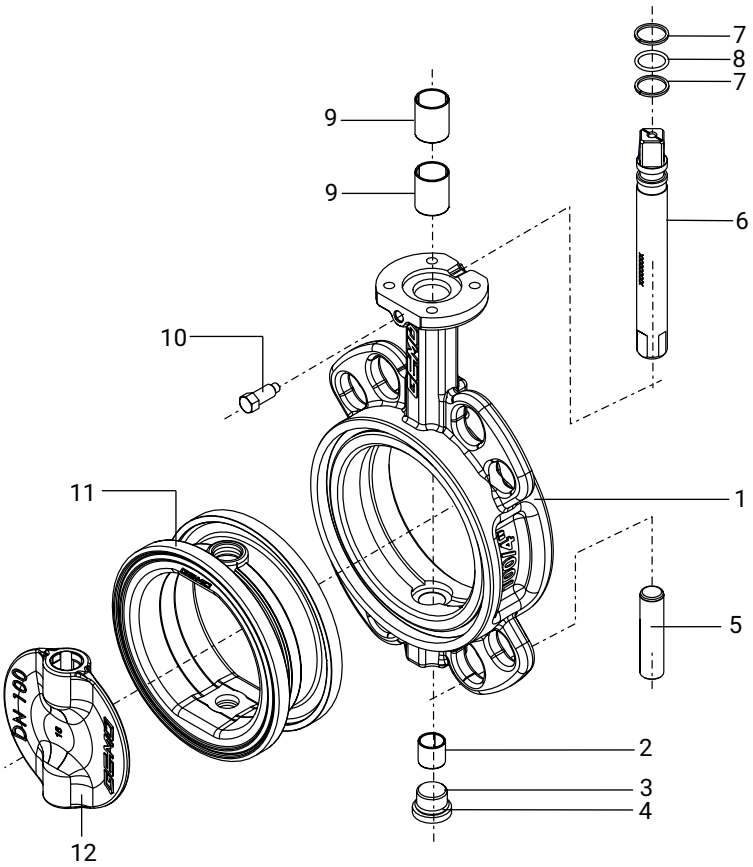
1. Complete order code
2. Item number
3. Traceability number
4. Name of spare part
5. Area of use (medium, temperatures and pressures)

19.2 Lug



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

19.3 Wafer



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

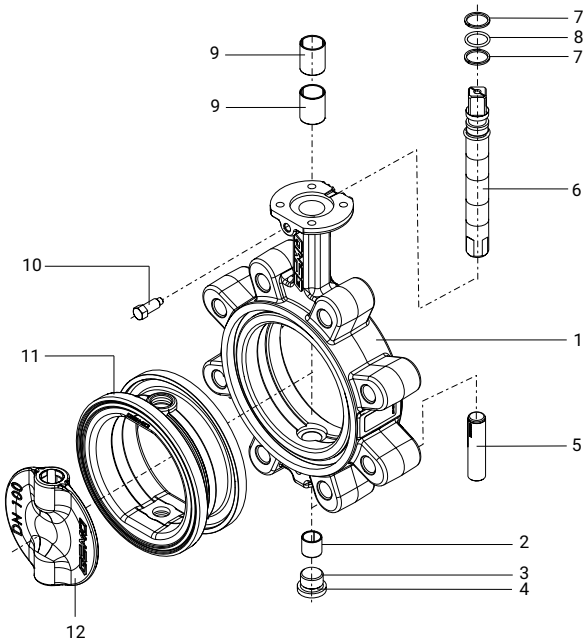
19.4 Replacement of spare parts

NOTICE

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

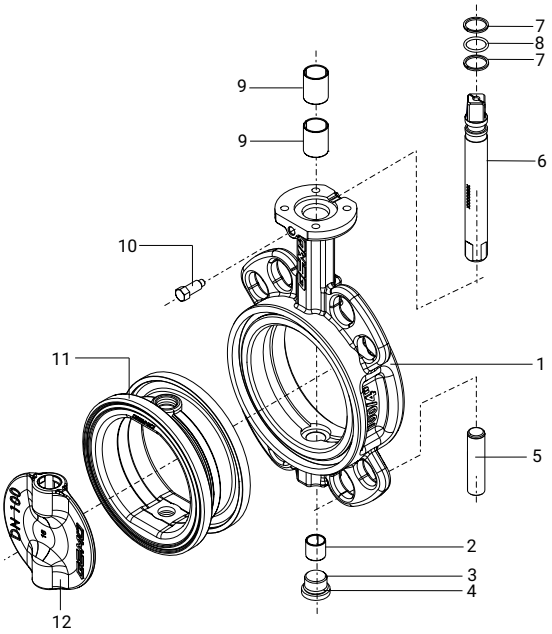
19.4.1 Replacing the SVK wearing parts kit

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

EU Declaration of Incorporation

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

We, the company

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

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

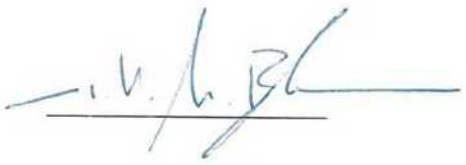
Product:	GEMÜ R488
Product name:	Motorized butterfly valve
The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:	1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.3.; 1.3.4.; 1.3.7.; 1.5.3.; 1.5.4.; 1.5.5.; 1.5.6.; 1.6.1.; 1.6.5.; 1.7.1.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.
The following harmonized standards (or parts thereof) have been applied:	EN ISO 12100:2010

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

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

This does not affect the industrial property rights.

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



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/02/2023

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24 EU Declaration of Conformity in accordance with 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

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

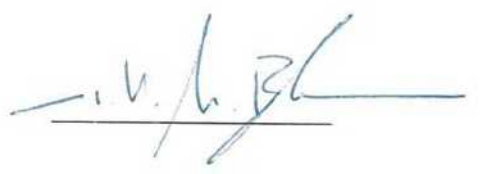
We, the company	GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG Fritz-Müller-Strasse 6–8 74653 Ingelfingen-Criesbach, Germany

hereby declare under our sole responsibility that the below-mentioned product complies with the regulations of the above-mentioned Directive.

Product:	GEMÜ R488
Product name:	Motorized butterfly valve
Notified body:	TÜV Rheinland Industrie Service GmbH Am Grauen Stein 1 51105 Cologne, Germany
ID number of the notified body:	0035
No. of the QA certificate:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H1
The following harmonized standards (or parts thereof) have been applied:	EN 593:2017

Other applied technical standards / Remarks:

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



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/02/2023

25 EU Declaration of Conformity in accordance with 2014/35/EU (Low Voltage Directive)

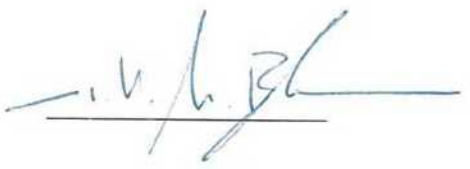
EU Declaration of Conformity

in accordance with 2014/35/EU (Low Voltage Directive)

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

hereby declare under our sole responsibility that the below-mentioned product complies with the regulations of the above-mentioned Directive.

Product:	GEMÜ R488
Product name:	Motorized butterfly valve
Product version:	Control module code AE (230 V)
The following harmonized standards (or parts thereof) have been applied:	EN IEC 61010-2-201:2018; EN 61010-1:2010/A1:2019/AC:2019-04



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/02/2023

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26 EU Declaration of Conformity in accordance with 2014/30/EU (EMC Directive)

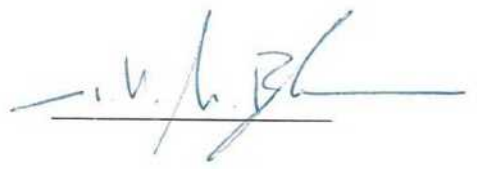
EU Declaration of Conformity

in accordance with 2014/30/EU (EMC Directive)

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

hereby declare under our sole responsibility that the below-mentioned product complies with the regulations of the above-mentioned Directive.

Product:	GEMÜ R488
Product name:	Motorized butterfly valve
The following harmonized standards (or parts thereof) have been applied:	EN 61000-6-4:2007/A1:2011



M. Barghoorn
Head of Global Technics

Ingelfingen, 23/02/2023

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