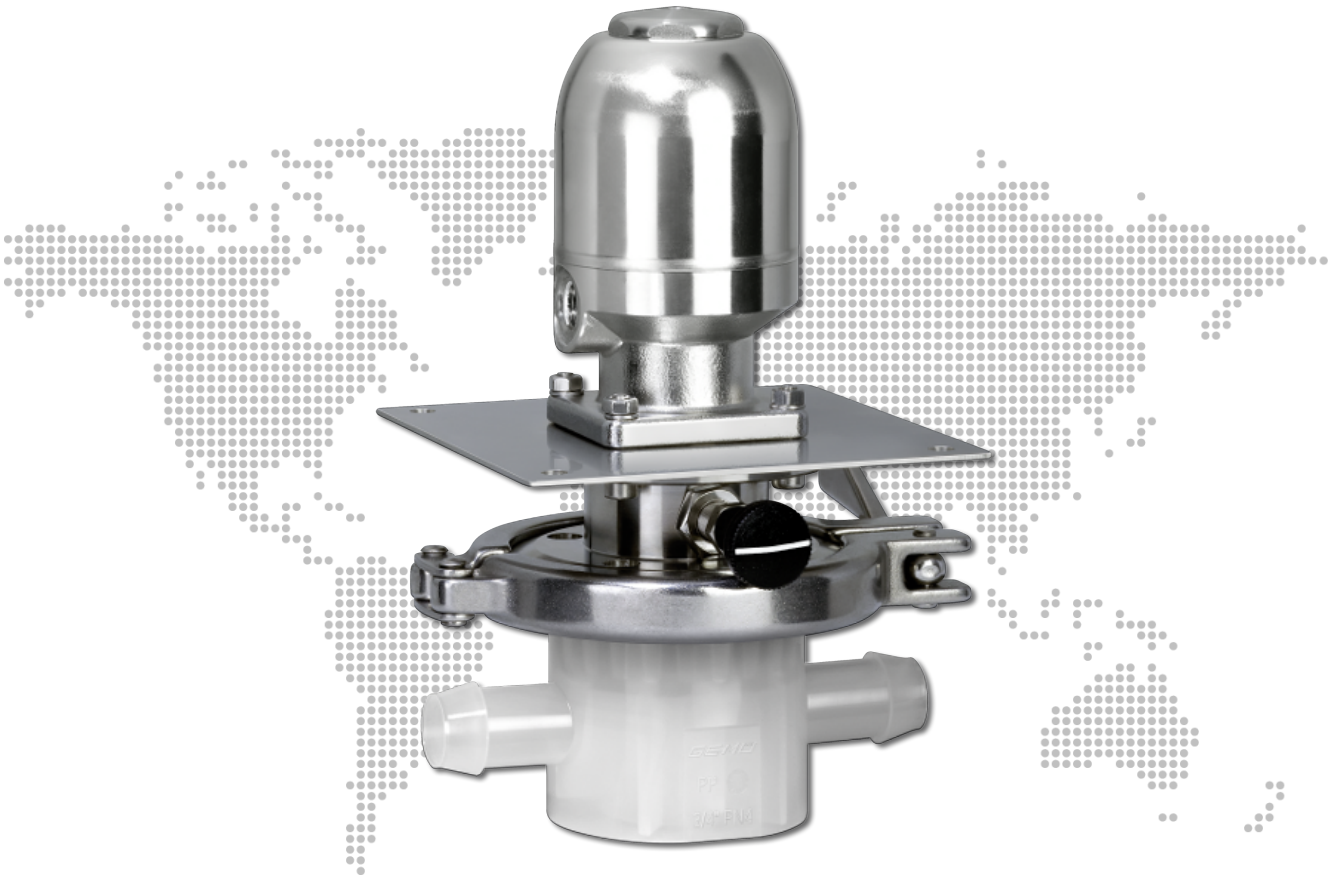
GEMÜ SUPM SUMONDO

Pneumatically operated single-use diaphragm valve

EN **Operating instructions**



further information
webcode: GW-SUPM

Contents

1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
▶	Response(s) to tasks
–	Lists

1.3 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

Control medium

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

Control function

The possible actuation functions of the GEMÜ product.

1.4 Warning notes

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

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

Warning notes are always marked with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER

Imminent danger!

▶ Non-observance can cause death or severe injury.

⚠ WARNING

Potentially dangerous situation!

▶ Non-observance can cause death or severe injury.

⚠ CAUTION

Potentially dangerous situation!

▶ Non-observance can cause moderate to light injury.

NOTICE

Potentially dangerous situation!

▶ Non-observance can cause damage to property.

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger - corrosive materials
	Risk posed by sharp edges
	Danger from potentially explosive atmosphere

2 Safety information

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

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

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

The safety information does not take into account:

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

Prior to commissioning:

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

During operation:

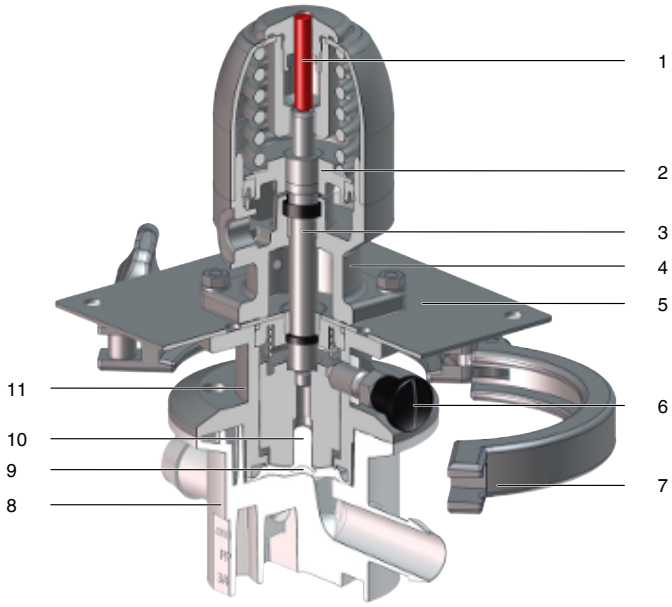
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not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

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction



Item	Name	Materials
1	Optical position indicator	1.4305
2	Piston	1.4571
3	Valve spindle	1.4571
4	Actuator	1.4408
5	Mounting plate	1.4404
6	Indexing plunger	PA6
7	Tri-clamp	1.4401
8	Valve body	PP-R
9	Diaphragm	TPE
10	Diaphragm pin	PP-R
11	Distance piece	1.4435

3.2 Description

The single-use diaphragm valve body of the GEMÜ SUMONDO single-use diaphragm valve has a hermetic sealing through an internally welded diaphragm. For installation, the single-use diaphragm valve body is secured on the pneumatic stainless steel actuator or on the manual actuator and is locked using locking pins. After use, the single-use diaphragm valve body can be removed from the actuator along with the diaphragm and disposed of. The actuators can be used multiple times.

3.3 Function

The GEMÜ single-use diaphragm valve, consisting of the SUB single-use diaphragm valve body and the SUPM pneumatic stainless steel actuator, is designed for installation in single-use systems in plastic pipe and hose lines. It controls a flowing medium by being closed or opened by a control medium.

4 Correct use

⚠ DANGER

Danger of explosion

► Risk of death or severe injury.

● Do **not** use the product in potentially explosive zones.

⚠ 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.

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

● Use the product in accordance with the technical data.

5 Order data

The order data provide an overview of standard configurations.

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

5.1 Pneumatic actuator SUPM

Order codes

1 Type	Code
Pneumatically operated actuator metal version	SUPM

2 Diaphragm size	Code
Diaphragm size B	B
Diaphragm size C	C
Diaphragm size D	D

3 Diaphragm mounting	Code
Pin	G

4 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2

5 Actuator size	Code
Actuator size 1T1	1T1

Order example SUPM

Order option	Code	Description
1 Type	SUPM	Pneumatically operated actuator metal version
2 Diaphragm size	B	Diaphragm size B
3 Diaphragm mounting	G	Pin
4 Control function	1	Normally closed (NC)
5 Actuator size	1T1	Actuator size 1T1

5.2 Diaphragm valve body SUB

Order codes

1 Type	Code
Single-use body	SUB

2 Diaphragm size	Code
Diaphragm size B	B
Diaphragm size C	C
Diaphragm size D	D

3 Connection size 1	Code
1/4" (DN 8)	8
3/8" (DN 10)	10
1/2" (DN 15)	15
3/4" (DN 20)	20
1" (DN 25)	25

4 Body configuration	Code
2/2-way body	D
Angle valve body, right	R
T body	T

5 Connection	Code
Clamp connection similar to ASME-BPE	CA
Hose barb	HB

6 Body material	Code
PP-R, natural	B8

7 Diaphragm material	Code
TPE	K8

8 Connection size 2	Code
1/4" (DN 8)	8
3/8" (DN 10)	10
1/2" (DN 15)	15
3/4" (DN 20)	20
1" (DN 25)	25

9 Connection of spigot 2	Code
Clamp connection similar to ASME-BPE	CA
Hose barb	HB

Order example SUB

Order option	Code	Description
1 Type	SUB	Single-use body
2 Diaphragm size	B	Diaphragm size B
3 Connection size 1	10	3/8" (DN 10)
4 Body configuration	T	T body
5 Connection	HB	Hose barb
6 Body material	B8	PP-R, natural
7 Diaphragm material	K8	TPE
8 Connection size 2	10	3/8" (DN 10)
9 Connection of spigot 2	HB	Hose barb

6 Technical data

6.1 Medium

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

Control medium: Oil concentration Class 4
(max. oil concentration 25 mg/m³)

6.2 Temperature

Media temperature: 5 to 40 °C

Ambient temperature: 0 to 40 °C

Control medium temperature: max. 40 °C

Storage temperature: 0 to 40 °C

6.3 Pressure

Operating pressure: 0 – 4.9 bar (Diaphragm size code B, C),
0 – 4.5 bar (Diaphragm size code D)

Control pressure: Control function 1 = 4.5 - 7.0 bar
Control function 2 = 3.5 - 5.5 bar

Filling volume: Control function 1 = 0.03 dm³
Control function 2 = 0.07 dm³

6.3.1 Kv values

NPS	MG	Connection Code [1]	Body configuration Code [2]	Kv value	Cv value
1/4"	B	HB	D	0.47	0.54
3/8"	B	HB	D	1.08	1.25
			T	1.03	1.19
			R	1.02	1.18
1/2"	B	HB	D	1.59	1.84
			T	1.47	1.70
			R	1.44	1.67
1/2"	C	HB	D	2.17	2.51
3/4"	C	HB	D	3.29	3.81
			T	2.15	2.49
		CA	D	3.29	3.81
			T	2.15	2.49
1"	C	HB	D	4.55	5.27
			T	3.81	4.41
		CA	D	4.55	5.27
			T	3.81	4.41
3/4"	D	CA, HB	D	9.21	10.66

NPS	MG	Connection Code [1]	Body configuration Code [2]	Kv value	Cv value
1"	D	CA, HB	D	12.19	14.11

Kv values in m³/h (Cv values in gpm)
MG = diaphragm size
Kv values determined based on standard DIN EN 60534-2-3:1998, inlet pressure 4 bar, Δp 1 bar
The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

2) **Body configuration**
Code D: 2/2-way body
Code R: Angle valve body, right
Code T: T body

6.4 Product compliance

Certifications:

- USP Bacterial Endotoxins Test, USP <85>
- USP Biological Reactivity Test in vitro, USP <87>
- USP Biological Reactivity Tests in vivo for Class VI, USP <88>
- USP Physicochemical Tests for Plastics, USP <661>
- USP Particulate Matter in Injections, USP <788>, USP <790>
- Validation guide on request

6.5 Mechanical data

Service life:

Diaphragm valve body (SUB): 1000 switching cycles (according to GEMÜ product validation) or max. 4.5 years from production date (1.5 years before irradiation / 3 years after irradiation)

6.5.1 Weight

Type	Connection Code [1]	Body configuration Code [2]	MG B			MG C			MG D	
			1/4" (DN 8)	3/8" (DN 10)	1/2" (DN 15)	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	3/4" (DN 20)	1" (DN 25)
SUB	HB	D	36	40	42	91	94	99	80	80
		T	-	44	47	-	108	113	-	-
		R	-	43	46	-	-	-	-	-
	CA	D	-	-	-	-	97	100	99	100
		T	-	-	-	-	111	112	-	-
SUPM			2167	2167	2167	2605	2605	2605	2847	2847

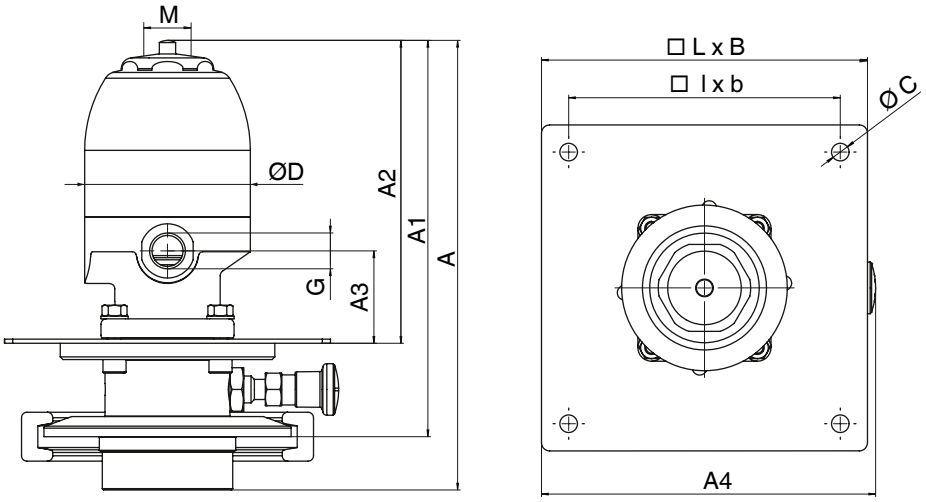
Weight in g, MG = diaphragm size

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

2) **Body configuration**
Code D: 2/2-way body
Code R: Angle valve body, right
Code T: T body

7 Dimensions

7.1 Actuator dimensions

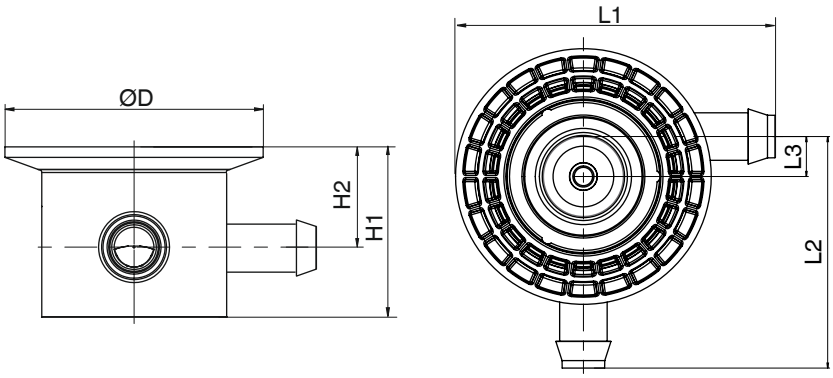


	MG B	MG C	MG D
	1/4" (DN 8), 1/2" (DN 15)	3/4" (DN 20), 1" (DN 25)	3/4" (DN 20), 1" (DN 25)
A	153.2	166	176.7
A1	148.1	146.4	150.8
A2	110.7	112	110.6
A3	34	34	34
A4	123	123	123
G	G1/4	G1/4	G1/4
□LxB	120	120	120
øC	6.5	6.5	6.5
øD	61	61	61
□lxb	100	100	100
M	M16x1	M16x1	M16x1

Dimensions in mm, MG = diaphragm size

7.2 Body dimensions

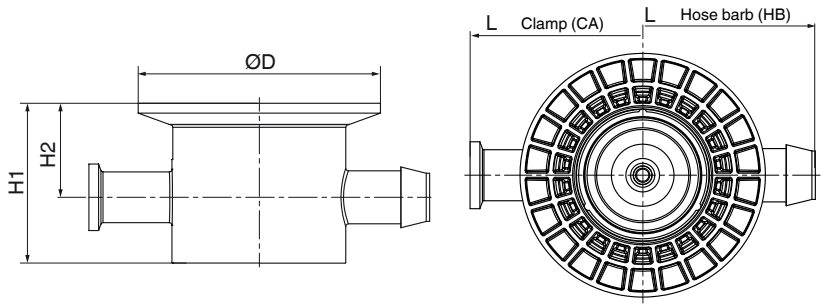
7.2.1 Angle valve body, right (code R)



	MG B	
	3/8" (DN 10)	1/2" (DN 15)
L1	48	55.8
L2	58	66.8
L3	10	10
H1	33.3	33.3
H2	22.3	22.3
øD	64	64

Dimensions in mm, MG = diaphragm size

7.2.2 2/2-way body (code D)

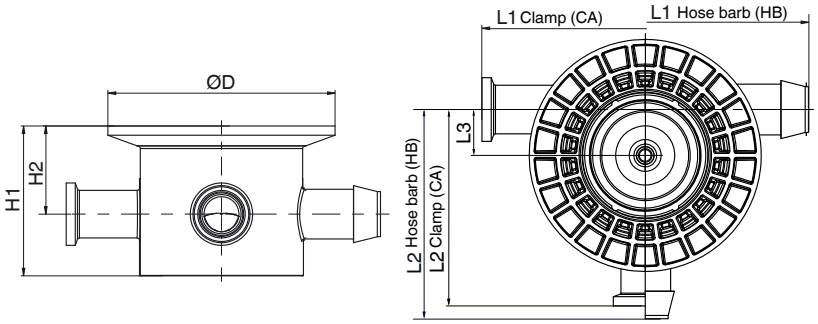


	Con-nection Code [1]	MG B			MG C			MG D	
		1/4" (DN 8)	3/8" (DN 10)	1/2" (DN 15)	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	3/4" (DN 20)	1" (DN 25)
L	**CA**	-	-	-	-	128	137.4	134.6	134.6
H1		-	-	-	-	60	60	58.5	58.5
H2		-	-	-	-	35.3	35.3	38	39.5
øD		-	-	-	-	91	91	91.6	91.6
L	**HB**	80.6	95.9	111.5	126	128	140	139	139
H1		33.3	33.3	33.3	60	60	60	58.5	58.5
H2		22.3	22.3	22.3	35.3	35.3	35.3	38	39.5
øD		64	64	64	91	91	91	91.6	91.6

Dimensions in mm, MG = diaphragm size

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

7.2.3 T valve body (Code T)



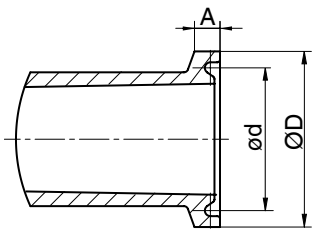
	Connection Code [1]	MG B		MG C	
		3/8" (DN 10)	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)
L1	**CA**	-	-	128	137.4
L2		-	-	82	82
L3		-	-	18	18
H1		-	-	60	60
H2		-	-	35.3	35.3
ØD		-	-	91	91
L1	**HB**	96	111.5	128	140
L2		58	65.8	82	88
L3		10	10	18	18
H1		33.3	33.3	60	60
H2		22.3	22.3	35.3	35.3
ØD		64	64	91	91

Dimensions in mm, MG = diaphragm size

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

7.3 Connection dimensions

7.3.1 Clamp connection

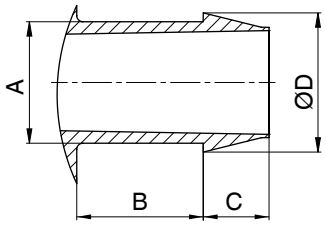


	Connection code [1]	Diaphragm size C		Diaphragm size D	
		3/4" (DN 20)	1" (DN 25)	3/4" (DN 20)	1" (DN 25)
A	**CA**	3.6	3.6	2.85	2.85
ød		21.9	31	43.4	43.4
øD		25	34	50.5	50.5

Dimensions in mm, MG = diaphragm size
Dimension A and øD – tolerances ± 0.2 mm

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

7.3.2 Hose barb



	Connection Code [1]	MG B, MG C					MG D	
		1/4" (DN 8)	3/8" (DN 10)	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	3/4" (DN 20)	1" (DN 25)
A	**HB**	7.9	11.9	15.9	19.9	28	22	28
B		10.6	16	21.4	20.7	24.7	21.4	22.2
C		4.5	6.7	9.1	10.8	11.5	7.5	11.5
øD		9.3	13.8	18.8	22.8	30.8	25	30.8

Dimensions in mm, MG = diaphragm size
Dimension A and øD – tolerances ± 0.2 mm

1) **Connection**
Code CA: Clamp connection similar to ASME-BPE
Code HB: Hose barb

8 Manufacturer's information

8.1 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.

8.2 Packaging

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

8.3 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

8.4 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.

9 Installation in piping

9.1 Preparing for installation

⚠ WARNING

The equipment is subject to pressure!

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

⚠ WARNING

The actuator cover is under spring pressure!

► Risk of severe injury or death!
- Do not open the actuator.

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

Sharp edges on the mounting plate!

► Risk of cuts!
- Wear protective gloves.

⚠ CAUTION

Use as step.

► Damage to the product.
► Risk of slipping-off.
- Choose the installation location so that the product cannot be used as a foothold.
- Do not use the product as a step or a foothold.

⚠ 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

Leakage

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

⚠ CAUTION

Only apply pressure to the single-use diaphragm valve body when it is assembled to the pneumatic stainless steel actuator!

► Otherwise the single-use diaphragm valve body may be damaged.

NOTICE

Suitability of the product!

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

NOTICE

Tools

► The tools required for installation and assembly are not included in the scope of delivery.

● Use appropriate, functional and safe tools.

1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. Keep appropriate tools ready.
4. Wear appropriate protective gear, as specified in the plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Have installation work carried out by trained personnel.
7. Shut off plant or plant component.
8. Secure plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant (or plant component) and let it cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
11. Decontaminate, rinse and ventilate the plant or plant component properly.
12. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
13. Only mount the product between matching aligned pipes (see following chapters).
14. Optional installation position.

9.2 Assembling the pneumatic stainless steel actuator in the housing

⚠ CAUTION

► The pneumatic stainless steel actuators **A** are supplied with a mounting plate **4** as standard.

► **Do not remove the mounting plate 4.**

► Otherwise the manufacturer liability and guarantee will be void.

NOTICE

► **Maximum thickness of the housing 5:** 10 mm

1. Move the pneumatic stainless steel actuator **A** into the closed position (not activated).

Preparing the housing 5

2. Rework the housing before assembling the pneumatic stainless steel actuator **A** according to the borehole pattern below, so that the pneumatic stainless steel actuator **A** can be guided through the recess from below.

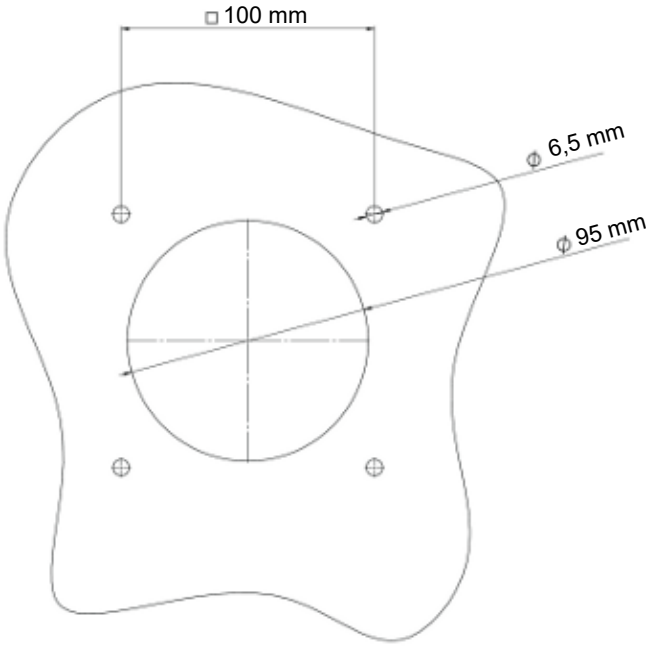


Fig. 1: Borehole pattern for housing (housing not included)

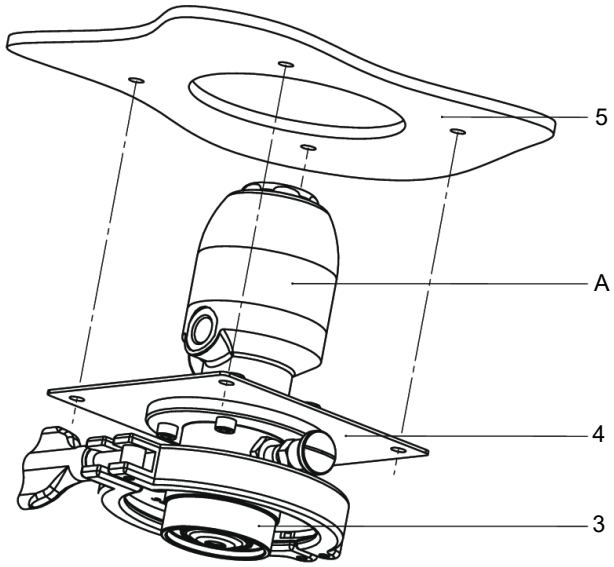


Fig. 2: Assembling the pneumatic stainless steel actuator in the housing

3. Guide the stainless steel actuator **A** through the recess of the housing **5** from below. The mounting plate **4** of the pneumatic stainless steel actuator **A** must lie flush on the housing **5**.
4. Connect the mounting plate **4** and housing **5** using suitable bolts and washers (not included in the scope of delivery).
5. Connect the control medium line and, if necessary, attach accessories to the pneumatic stainless steel actuator **A**.

9.3 Disassembling the pneumatic stainless steel actuator – housing

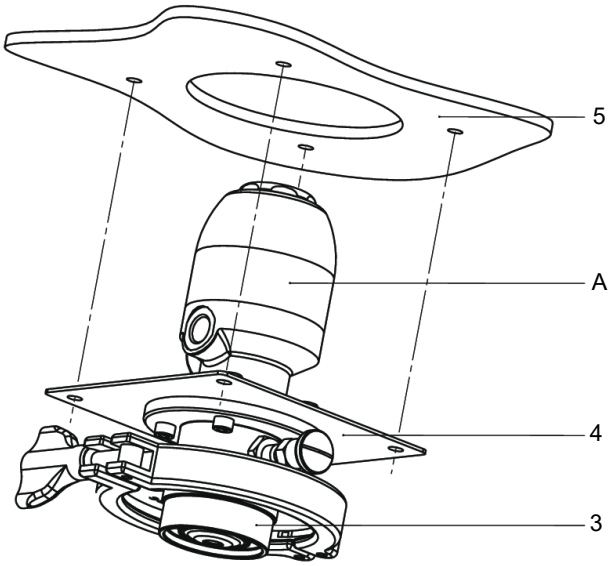


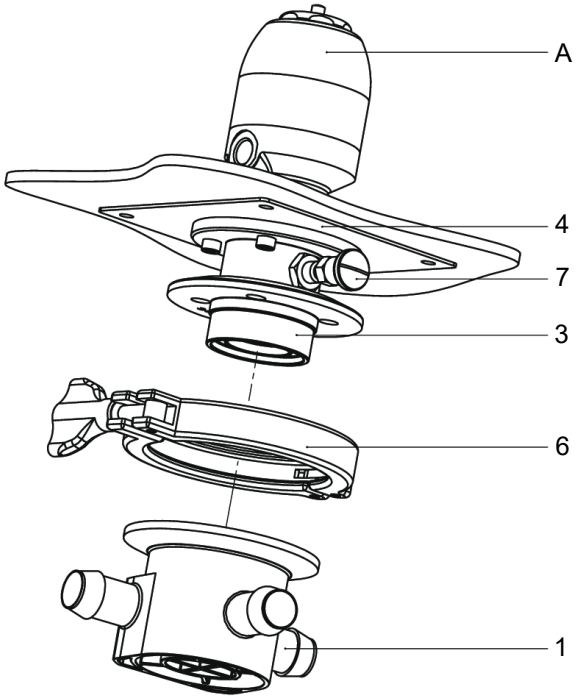
Fig. 3: Disassembling the pneumatic stainless steel actuator – housing

1. Depressurize the pneumatic stainless steel actuator **A**.
2. Remove the single-use diaphragm valve body **1**.
3. Disconnect the control medium line and remove any accessories fitted from the pneumatic stainless steel actuator **A**.
4. Undo the bolts between the mounting plate **4** and the housing **5**.
5. Pull the pneumatic stainless steel actuator **A** downwards through the recess of the housing **5**.

9.4 Installing the single-use diaphragm valve body on the pneumatic stainless steel actuator

NOTICE

► For assembly instructions for the SUB single-use diaphragm valve body, see the annex.



1. Move pneumatic stainless steel actuator **A** to the open position.
2. Lock the indexing plunger **7** of the pneumatic stainless steel actuator **A** (see chapter "Locking system with indexing plunger").
3. Place the single-use diaphragm valve body **1** on the distance piece **3** so that the diaphragm pin **10** is inserted into the compressor of the pneumatic stainless steel actuator **A**.
4. Firmly compress the distance piece **3** and single-use diaphragm valve body **1** with a clamp **6** (tightening torque: 4 Nm).
5. Move pneumatic stainless steel actuator **A** to the closed position.
6. Unlock the indexing plunger **7** of the pneumatic stainless steel actuator **A** (see chapter "Locking system with indexing plunger").
7. Perform initialization (open and close the valve five times so that the diaphragm can adapt to the seat contour under pressure and guarantee the sealing).

⇨ The system is now ready for use.

9.5 Disassembling the single-use diaphragm valve body – pneumatic stainless steel actuator

⚠ CAUTION

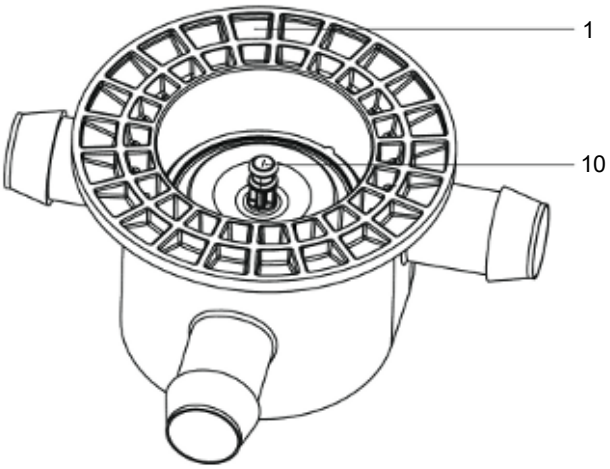
Risk of damaging the single-use diaphragm valve body during disassembly!

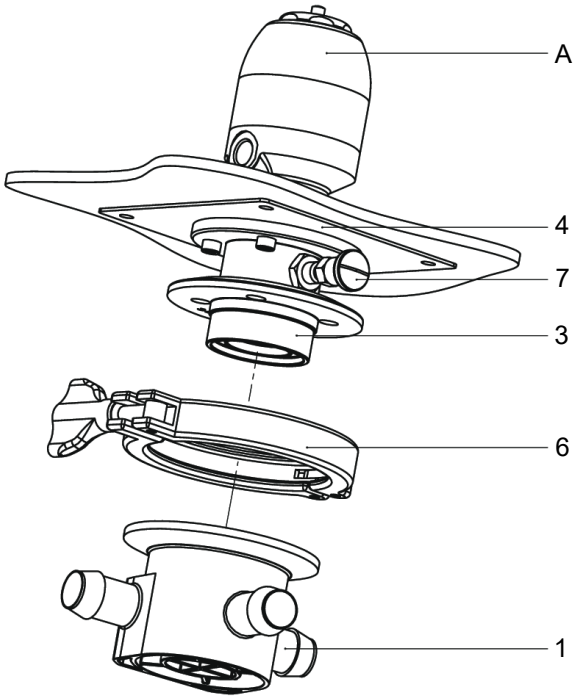
► Depressurize the plant before disassembly.

► The single-use diaphragm valve body 1 cannot be used after disassembly.

NOTICE

► For assembly instructions for the SUB single-use diaphragm valve body, see the annex.





1. Move pneumatic stainless steel actuator **A** to the open position.
2. Lock the indexing plunger **7** of the pneumatic stainless steel actuator **A** (see chapter "Locking system with indexing plunger").
3. Move pneumatic stainless steel actuator **A** to the closed position.
4. Remove the clamp **6**.
5. Pull the single-use diaphragm valve body **1** downwards.

⇨ The single-use diaphragm valve body is now disassembled.

9.6 Installing the single-use diaphragm valve body in the piping

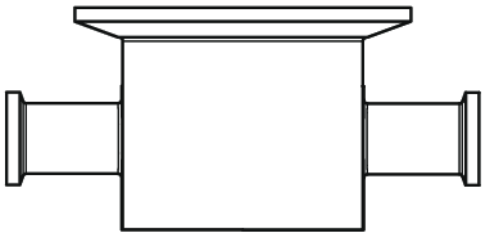
NOTICE

► For assembly instructions for the SUB single-use diaphragm valve body, see the annex.

NOTICE

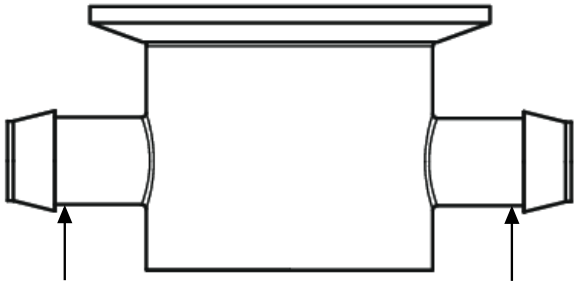
► The single-use diaphragm valve body can only be used once and must be disposed of after use!

Installation - Clamp connections:



1. When installing the clamp connection, insert a gasket between the single-use diaphragm valve body clamp and the adjacent pipe connection and join them using the clamp. The gasket and the clamps are not included in the scope of delivery.

Installation - Hose barbs:



2. When installing the hose barbs, pull hoses (e.g. made of silicone) over the hose barbs.
3. Mount and fasten cable ties or hose clips behind the hose barbs (arrows).

After installation:

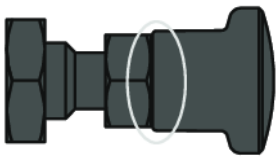
Re-attach or reactivate all safety and protective devices.

9.7 Locking system with indexing plunger

Locking the indexing plunger:

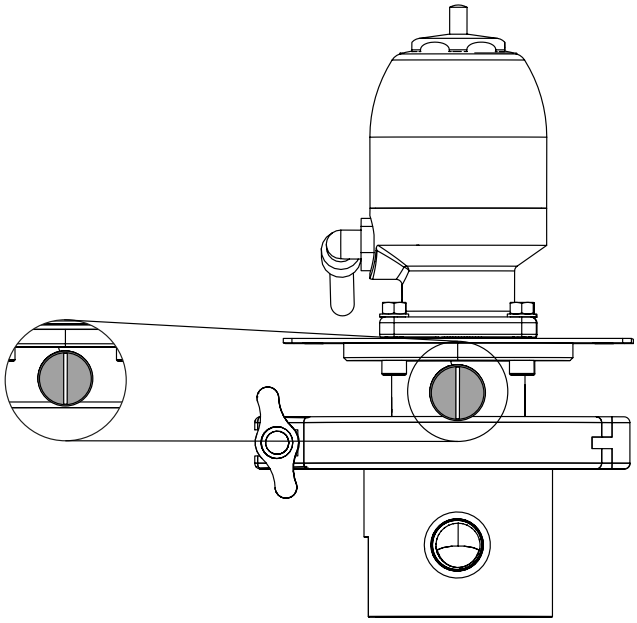
1. Pull out the indexing plunger slightly, turn it 90° and let it engage again.

⇨ Indexing plunger is drawn in.



Side view

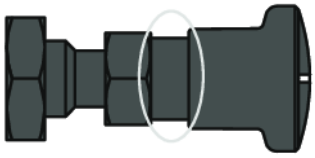
Top view



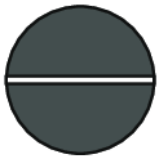
Unlocking the indexing plunger:

2. Pull out the indexing plunger slightly, turn it 90° and let it engage again.

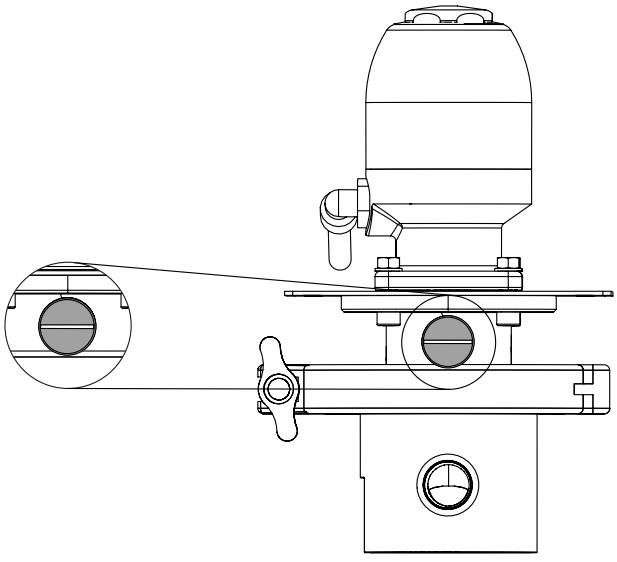
⇨ Indexing plunger is extended.



Side view



Top view



9.8 Control function

The following control functions are available:

Control function 1

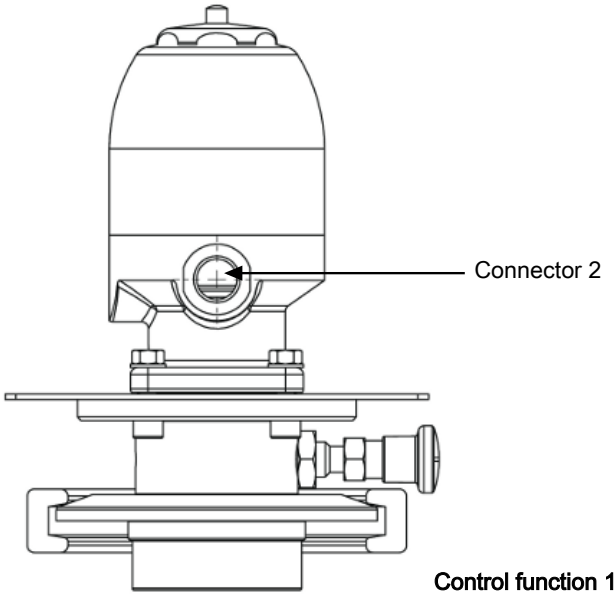
Normally closed (NC):

Single-use diaphragm valve resting position: Closed by spring force. Activation of the pneumatic stainless steel actuator (connector 2) opens the single-use diaphragm valve. When the pneumatic stainless steel actuator is vented, the single-use diaphragm valve is closed by spring force.

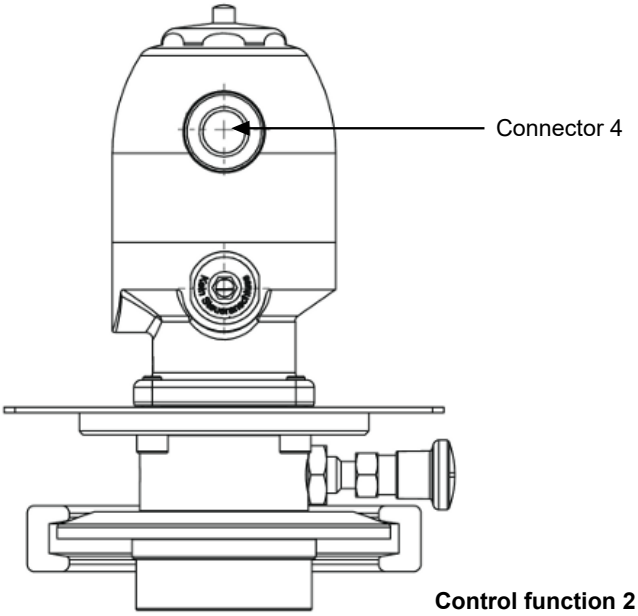
Control function 2

Normally open (NO):

Single-use diaphragm valve resting position: Opened by spring force. Activation of the actuator (connector 4) closes the single-use diaphragm valve. When the actuator is vented, the single-use diaphragm valve is opened by spring force.



Control function 1



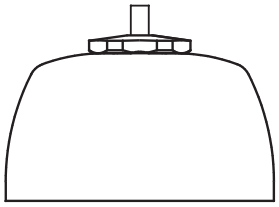
Control function 2

9.9 Connecting the control medium

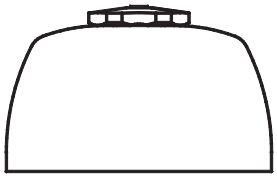
1. Connect the control medium lines tension-free and without any bends or knots.
2. Use appropriate connector according to the application.

Thread size of the control medium connector: G1/4

9.10 Optical position indicator



Valve open



Valve closed

10 Commissioning

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

Leakage

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

NOTICE

Important:

► After any replacement of the product, reinitialize mounted control accessories.

The operator must

1. ensure that the permissible pressure in the plant is adhered to.
2. carry out tests to ensure compatibility of materials and medium prior to commissioning.
3. assemble the product and the pneumatic stainless steel actuators prior to commissioning.

11 Troubleshooting

Error	Error cause	Troubleshooting
Working medium escapes via optical position indicator	Piston faulty	Replace pneumatic stainless steel actuator and check control medium for impurities
Control medium escapes from leak detection hole	Spindle seal leaking	Replace pneumatic stainless steel actuator and check control medium for impurities
The product doesn't open or doesn't open fully	Diaphragm pin broken off in the compressor	Remove the diaphragm pin from the compressor, replace the valve body
	Clamp not fitted	Fit clamp
	Diaphragm pin is damaged	Perform visual inspection of the diaphragm pin for damage, replace the valve body if necessary
	Control pressure too low	Operate the product with the control pressure specified in the datasheet
	Pilot valve faulty	Replace the pilot valve
	Actuator spring faulty (indicator spindle no longer moves to the stop)	Replace pneumatic stainless steel actuator
	Control medium not connected	Connect the control medium
	Valve body not unlocked in the actuator (operating position)	Check that the indexing plunger is unlocked (operating position), unlock the indexing plunger* if required
The product is leaking downstream (doesn't close or doesn't close fully)	Diaphragm pin broken off in the compressor	Remove the diaphragm pin from the compressor, replace the valve body
	Clamp not fitted	Fit clamp
	Diaphragm pin is damaged	Perform visual inspection of the diaphragm pin for damage, replace the valve body if necessary
	Operating pressure too high	Operate the product with the operating pressure specified in the datasheet
	Actuator spring faulty (indicator spindle no longer moves to the stop)	Replace pneumatic stainless steel actuator
	Valve body not locked in the actuator (installation position)	Check that the indexing plunger is locked (installation position), lock the indexing plunger if required
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
Valve body connection to piping is leaking	Clamp/hose clips/cable ties are loose	Tighten clamps/hose clips/cable ties
	Gasket faulty	Replace gasket
	Connection spigot damaged	Replace the valve body
The product is leaking between the distance piece and valve body	Diaphragm torn/torn off	Replace the valve body
	Operating pressure too high	Operate the product with operating pressure
Valve body is leaking	Valve body faulty	Replace the valve body

12 Inspection and servicing

⚠ WARNING

The equipment is subject to pressure!

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

NOTICE

Exceptional maintenance work!

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

The operator must carry out regular visual examination of the GEMÜ products depending on the operating conditions and the potential danger in order to prevent leakage and damage.

The product also must be disassembled and checked for wear in the corresponding intervals.

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

13 Removal from piping

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

14 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.

15 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.

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

Declaration of Incorporation

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

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

declare that the following product

Make: GEMÜ Pneumatically operated single-use diaphragm valve

Serial number: from 18.11.2013
Project number: P6280113 Single_Use

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

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

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

Electronically

Authorised documentation officer **GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG**
Fritz-Müller-Straße 6-8
74653 Ingelfingen, Germany

This does not affect the industrial property rights!

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

Commercial name: Type SUPM, SUB

2018-07-26

Joachim Brien
Head of Technical Department

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

EU Declaration of Conformity

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

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

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

Description of the pressure equipment:	GEMÜ SUMONDO single-use diaphragm valve
Notified body:	TÜV Rheinland Berlin Brandenburg
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H
Technical standard used:	AD 2000

Note for products with a nominal size ≤ DN 25:
The products are developed and produced according to GEMÜ process instructions and quality standards which comply with the requirements of ISO 9001 and ISO 14001.
According to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU these products must not be identified by a CE-label.

2018-07-26

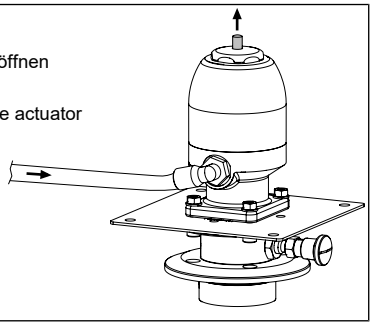
Joachim Brien
Head of Technical Department

18 Assembly

1

Antrieb öffnen

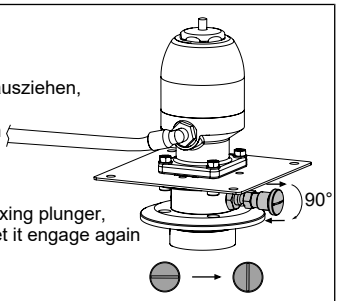
Open the actuator



2

Rastbolzen herausziehen, 90° drehen, einrasten lassen

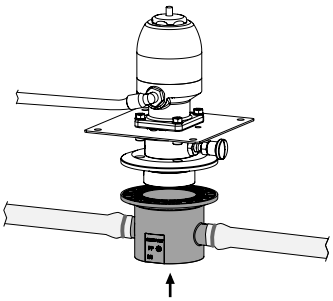
Pull out the indexing plunger, rotate 90° and let it engage again



3

Ventilkörper anbringen

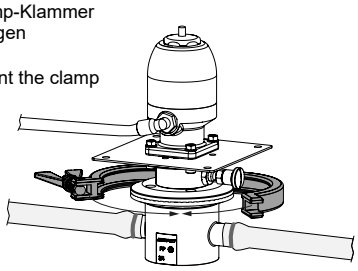
Attaching the valve body



4

Clamp-Klammer anlegen

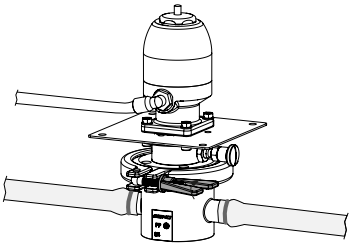
Mount the clamp



5

Flügelmutter schließen: Anzugsdrehmoment 4 Nm

Close the wing nut; tightening torque 4 Nm



6

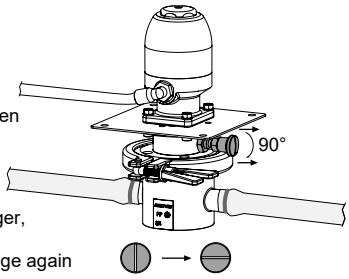
Antrieb schließen

Close the actuator

7

Rastbolzen herausziehen, 90° drehen, einrasten lassen

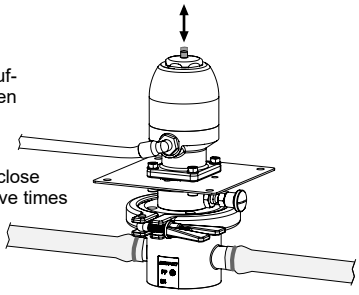
Pull out the indexing plunger, rotate 90° and let it engage again



8

Ventil 5x auf- und zufahren

Open and close the valve five times

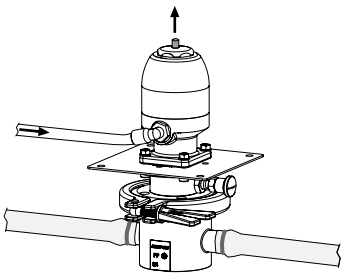


19 Disassembly

1

Antrieb öffnen

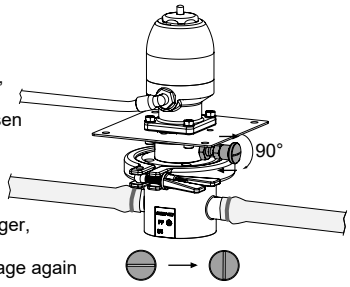
Open actuator



2

Rastbolzen herausziehen, 90° drehen, einrasten lassen

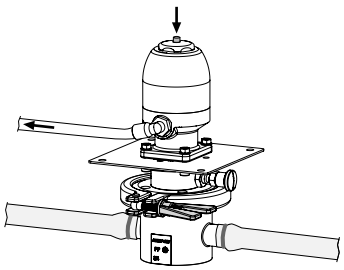
Pull out the indexing plunger, rotate 90° and let it engage again



3

Antrieb schließen

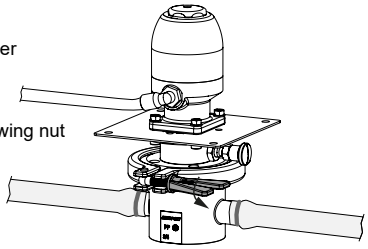
Close the actuator



4

Flügelmutter öffnen

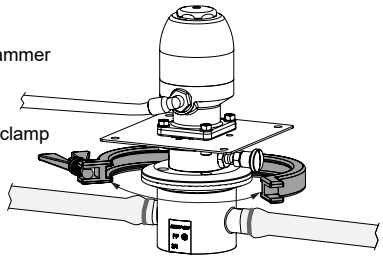
Open the wing nut



5

Clamp-Klammer öffnen

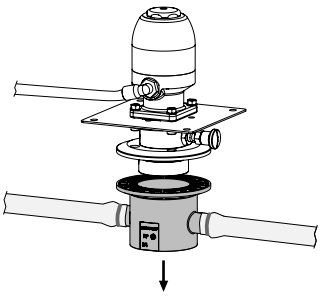
Open the clamp



6

Ventilkörper lösen

Loosen valve body



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www.gemu-group.com

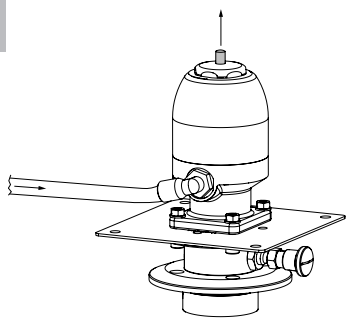
09.2020 | 88591741

Annex

Assembling the GEMÜ SUPM SUMONDO

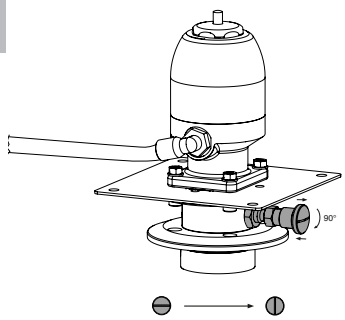
Control function 1

1



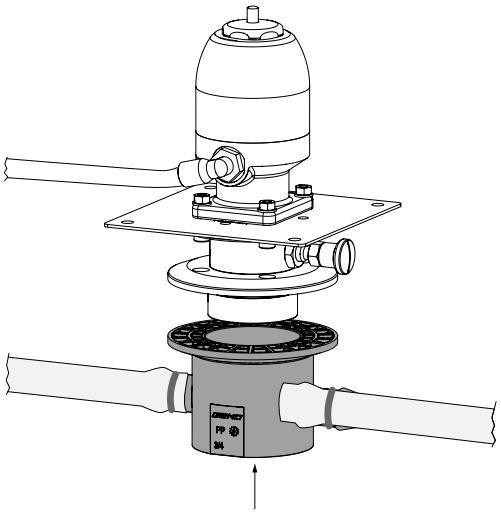
Open the actuator

2

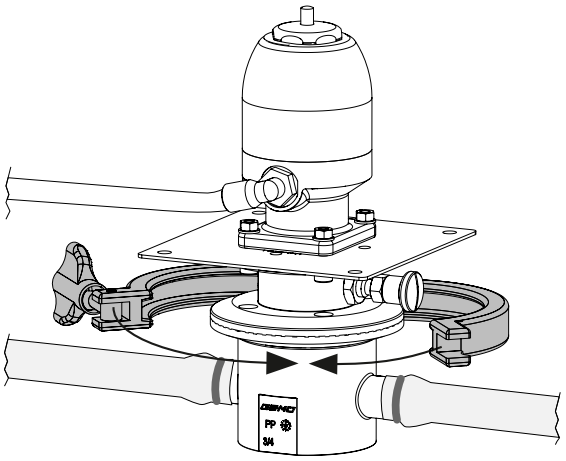


Pull out the indexing plunger slightly, turn it and let it engage again.

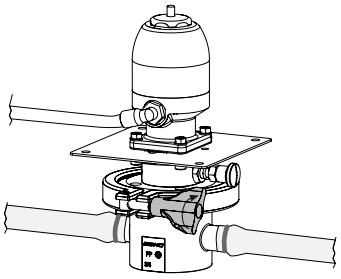
3



4

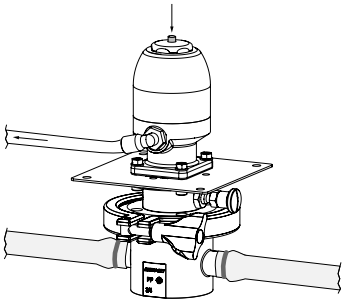


5



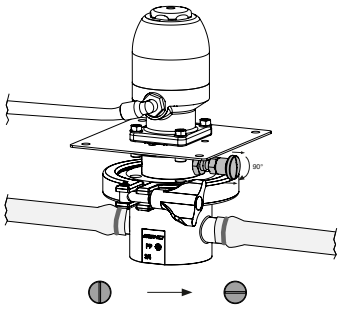
Tightening torque: 4 Nm

6



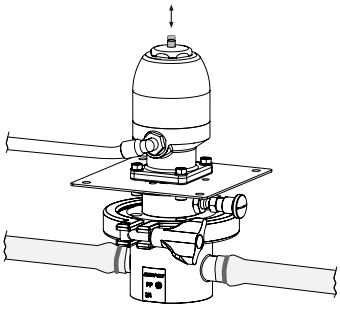
Close the actuator

7



Unlock the indexing plunger

8



Open and close the valve five times

Open the actuator

Pull out the indexing plunger slightly, turn it and let it engage again.

Tightening torque: 4 Nm

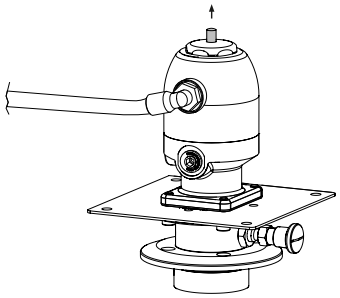
Close the actuator

Unlock the indexing plunger

Open and close the valve five times

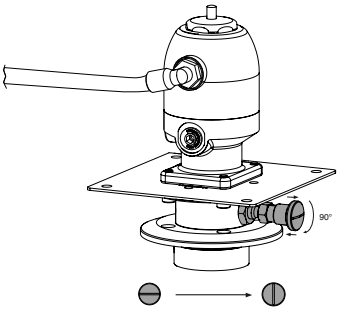
Control function 2

1



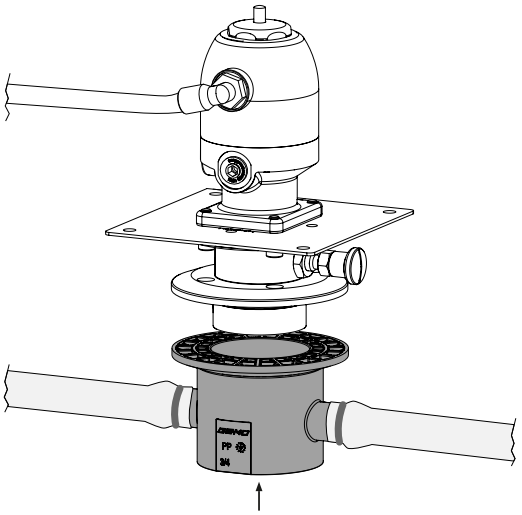
Open the actuator

2

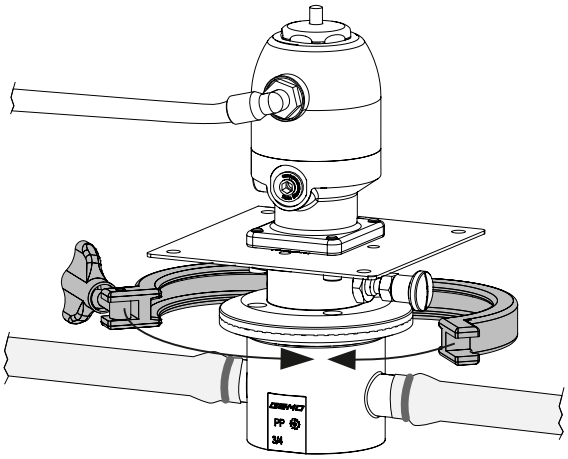


Pull out the indexing plunger slightly, turn it and let it engage again.

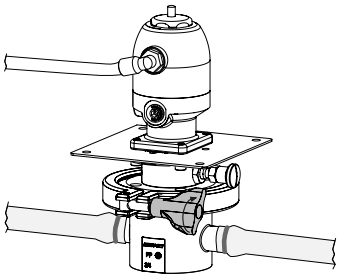
3



4

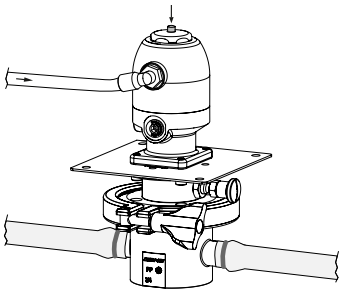


5



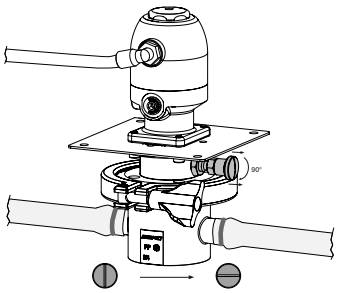
Tightening torque: 4 Nm

6



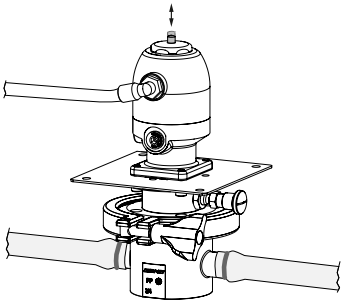
Close the actuator

7



Unlock the indexing plunger

8



Open and close the valve five times

Open the actuator

Pull out the indexing plunger slightly, turn it and let it engage again.

Tightening torque: 4 Nm

Close the actuator

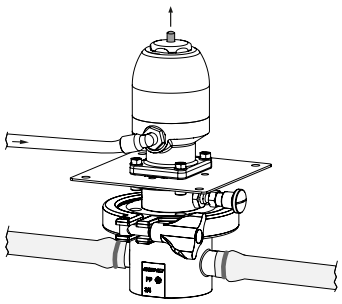
Unlock the indexing plunger

Open and close the valve five times

Disassembling the GEMÜ SUPM SUMONDO

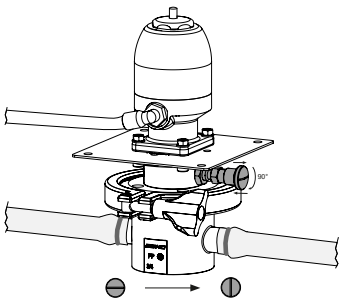
Control function 1

1



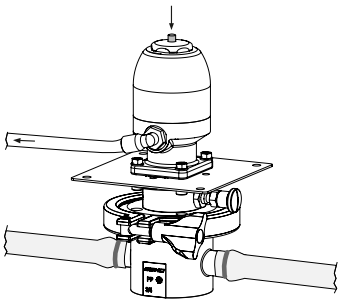
Open the actuator

2



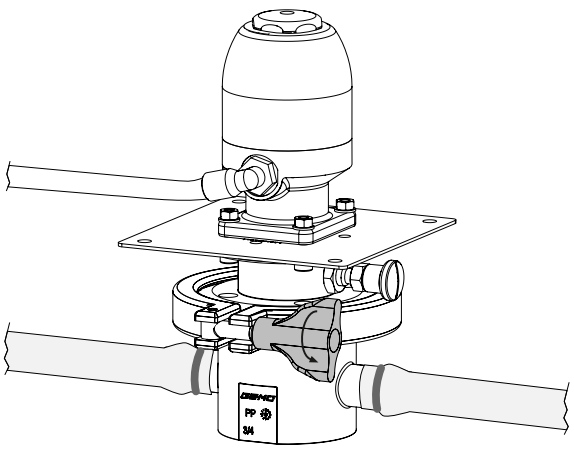
Pull out the indexing plunger slightly, turn it and let it engage again.

3

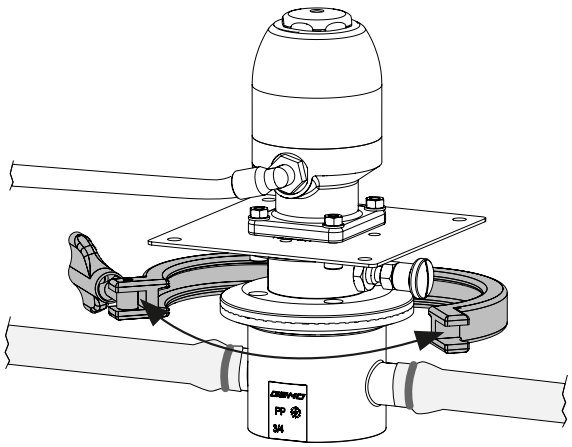


Close the actuator

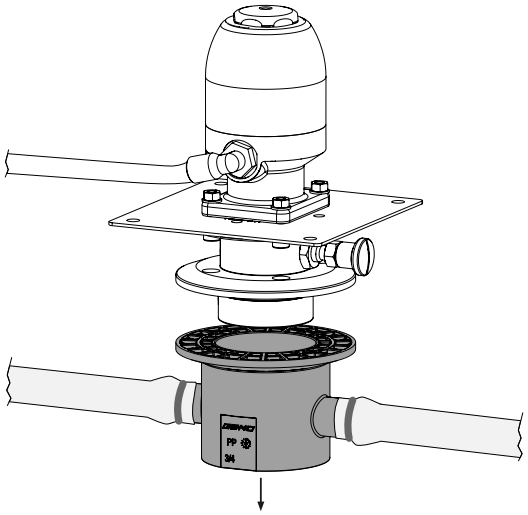
4



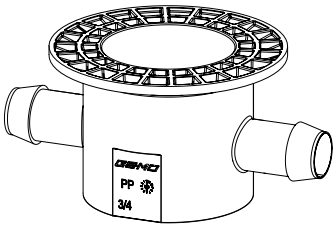
5



6



7



Dispose of the valve body according to relevant local or national disposal regulations/environmental protection laws.

Open the actuator

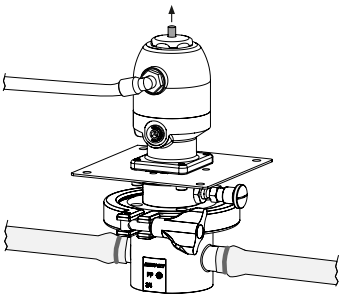
Pull out the indexing plunger slightly, turn it and let it engage again.

Close the actuator

Dispose of the valve body according to relevant local or national disposal regulations/environmental protection laws.

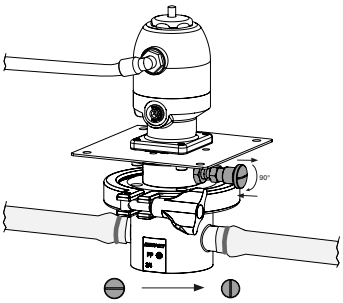
Control function 2

1



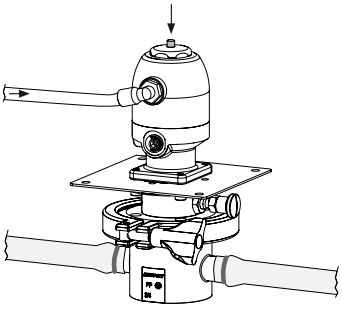
Open the actuator

2



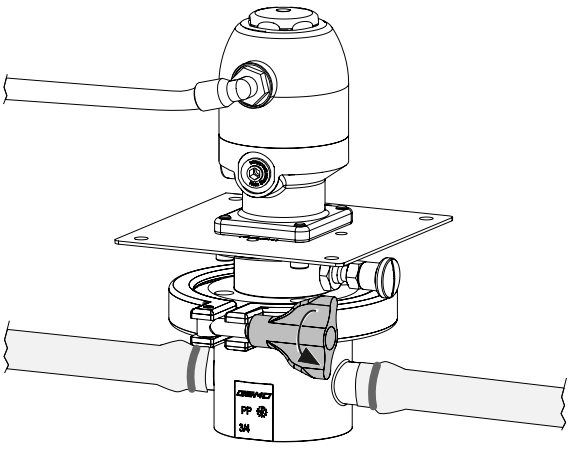
Pull out the indexing plunger slightly, turn it and let it engage again.

3

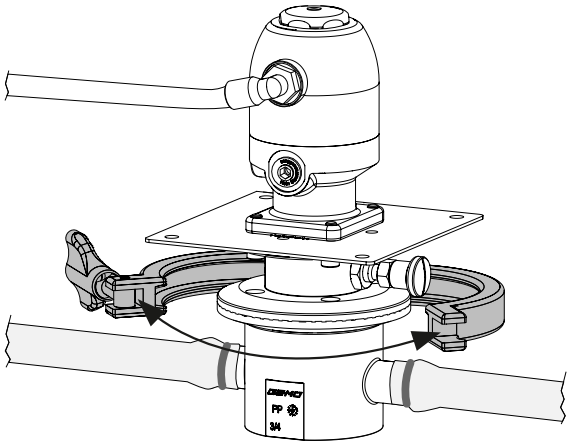


Close the actuator

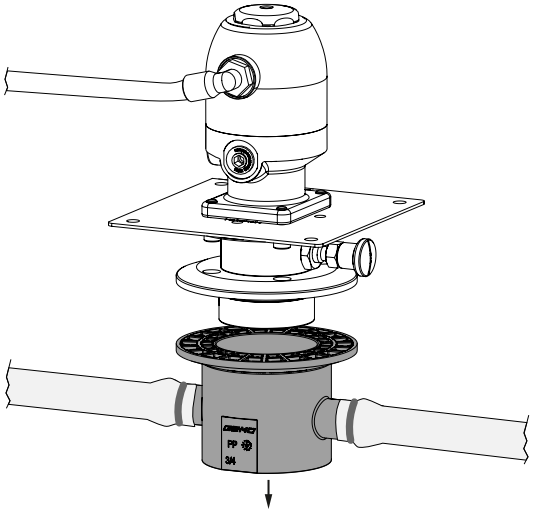
4



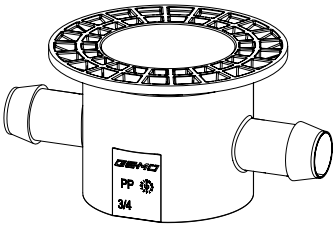
5



6



7



Dispose of the valve body according to relevant local or national disposal regulations/environmental protection laws.

Open the actuator

Pull out the indexing plunger slightly, turn it and let it engage again.

Close the actuator

Dispose of the valve body according to relevant local or national disposal regulations/environmental protection laws.