

GEMÜ 643

Manually operated tank valve

EN

Operating instructions



further information
webcode: GW-643



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1 General information

1.1 Information

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

1.2 Symbols used

The following symbols are used in this document:

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

1.3 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

1.4 Warning notes



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


SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶Possible consequences in case of non-compliance ●Measures for avoiding danger

Warning notes are always labelled 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
	The equipment is subject to pressure!
	Corrosive chemicals!
	Hot plant components!
	Maximum permissible pressure exceeded!
	Handwheel can become hot during operation!
	Leakage!

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:

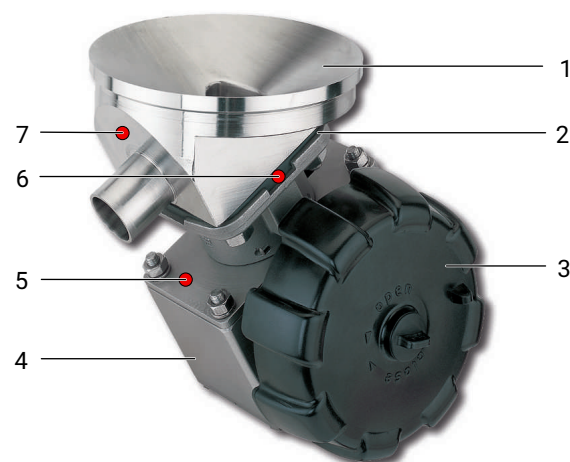
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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	Valve body	1.4435 (F316L), forged body 1.4435 (BN2), forged body, Δ Fe < 0.5%
2	Diaphragm	EPDM, PTFE/EPDM (two-piece)
3	Handwheel	Temperature-resistant plastic
4	Side-mounted gear operator	Stainless steel
5	CONEXO actuator RFID chip (see Conexo information)	
6	CONEXO diaphragm RFID chip (see Conexo information)	
7	CONEXO body RFID chip (see Conexo information)	

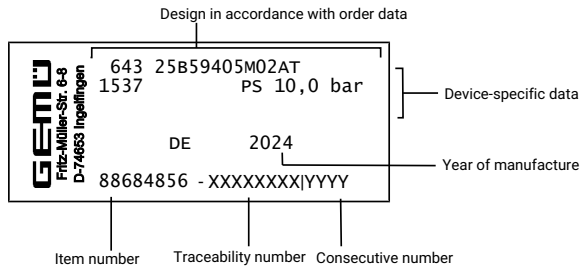
3.2 Description

The GEMÜ 643 2/2-way tank bottom valve has a manual side mounted gear operator with a plastic handwheel. An integral optical position indicator is standard. The stainless steel valve body is machined from a single block (monoblock, no welded components). The metal distance piece and the operator housing are made from stainless steel.

3.3 Function

The product is designed for use in piping. It controls a flowing medium by manual operation.

3.4 Product label



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

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

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.

NOTICE

Explosion protection (ATEX)

- ▶ The product is free from potential ignition sources and does not fall under the ATEX Directive 2014/34/EU. It is suitable for use in potentially explosive areas. See the manufacturer's declaration.

The product is designed for installation in piping and for controlling a working medium. It controls a flowing medium by allowing it to be opened and/or closed by the user.

The valve is suitable for corrosive, neutral or gaseous media, which have no negative impact on the physical properties of the respective body and diaphragm material.

- Use the product in accordance with the technical data.

6 Order data

The order data provide an overview of standard configurations.

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

Order codes

1 Type	Code
Tank bottom diaphragm valve, manually operated, side-mounted gear actuator, plastic handwheel, stainless steel distance piece, stainless steel actuator housing, optical position indicator	643

2 DN	Code
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40

3 Body configuration	Code
Floor drain	B

4 Connection type	Code
Spigot	
DIN spigot	0
Spigots DIN EN 10357 Series B (2014 edition; formerly DIN 11850 Series 1)	16
Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2	17
Spigot DIN 11850 Series 3	18
SMS 3008 spigot	37
Spigot ASME BPE/DIN EN 10357 series C (from 2022 issue)/DIN 11866 series C	59
Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B	60
Spigot ANSI/ASME B36.19M Schedule 10s	63
Spigot ANSI/ASME B36.19M Schedule 5s	64
ANSI/ASME B36.19M Schedule 40s spigot	65

5 Valve body material	Code
1.4435 (F316L), forged body	40
1.4435 (BN2), forged body, $\Delta Fe < 0.5\%$	42

6 Diaphragm material	Code
Elastomer	
EPDM	13
EPDM	17
EPDM	19
PTFE	
PTFE/EPDM two-piece	5M

7 Control function	Code
Manually operated	0

8 Actuator version	Code
Actuator size 2AT, actuator type 643 MG 25 for ATEX	2AT

8 Actuator version	Code
Actuator size 3AT, actuator type 643 MG 40 for ATEX	3AT

9 Surface	Code
Ra $\leq 0.8 \mu\text{m}$ for surfaces in contact with media, in accordance with DIN 11866 H3 mechanically polished on the inside	1502
Ra $\leq 0.8 \mu\text{m}$ for surfaces in contact with media, in accordance with DIN 11866 HE3, electropolished inside/outside	1503
Ra $\leq 0.6 \mu\text{m}$ for surfaces in contact with media, mechanically polished on the inside	1507
Ra $\leq 0.6 \mu\text{m}$ for surfaces in contact with media, electropolished inside/outside	1508
Ra $\leq 0.25 \mu\text{m}$ for surfaces in contact with media *), in accordance with DIN 11866 HE5, electropolished inside/outside, *) for pipe inner diameter $< 6 \text{ mm}$, Ra $\leq 0.38 \mu\text{m}$ in the spigot	1516
Ra $\leq 0.25 \mu\text{m}$ for surfaces in contact with media *), in accordance with DIN 11866 H5, mechanically polished on the inside, *) for pipe inner $\varnothing < 6 \text{ mm}$, Ra $\leq 0.38 \mu\text{m}$ in the spigot	1527
Ra $\leq 0.4 \mu\text{m}$ for surfaces in contact with media, in accordance with DIN 11866 H4, mechanically polished on the inside	1536
Ra $\leq 0.4 \mu\text{m}$ for surfaces in contact with media, in accordance with DIN 11866 HE4, electropolished inside/outside	1537
Ra max. $0.51 \mu\text{m}$ (20 $\mu\text{in.}$) for surfaces in contact with media, in accordance with ASME BPE SF1, internally mechanically polished	SF1
Ra max. $0.64 \mu\text{m}$ (25 $\mu\text{in.}$) for surfaces in contact with media, in accordance with ASME BPE SF2, internally mechanically polished	SF2
Ra max. $0.76 \mu\text{m}$ (30 $\mu\text{in.}$) for surfaces in contact with media, in accordance with ASME BPE SF3, mechanically polished interior	SF3
Ra max. $0.38 \mu\text{m}$ (15 $\mu\text{in.}$) for media wetted surfaces, in accordance with ASME BPE SF4, electropolished internal/external	SF4
Ra max. $0.51 \mu\text{m}$ (20 $\mu\text{in.}$) for surfaces in contact with media, in accordance with ASME BPE SF5, electropolished inside/outside	SF5
Ra max. $0.64 \mu\text{m}$ (25 $\mu\text{in.}$) for surfaces in contact with media, in accordance with ASME BPE SF6, electropolished inside/outside	SF6

10 Special version	Code
Without	

10 Special version	Code
Special design for oxygen, maximum medium temperature: 60°C	S

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

Order example

Ordering option	Code	Description
1 Type	643	Tank bottom diaphragm valve, manually operated, side-mounted gear actuator, plastic handwheel, stainless steel distance piece, stainless steel actuator housing, optical position indicator
2 DN	25	DN 25
3 Body configuration	B	Floor drain
4 Connection type	60	Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B
5 Valve body material	40	1.4435 (F316L), forged body
6 Diaphragm material	13	EPDM
7 Control function	0	Manually operated
8 Actuator version	2AT	Actuator size 2AT, actuator type 643 MG 25 for ATEX
9 Surface	1503	Ra ≤ 0.8 µm for surfaces in contact with media, in accordance with DIN 11866 HE3, electropolished inside/outside
10 Special version		Without
11 CONEXO		Without

7 Technical data

7.1 Medium

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

7.2 Temperature

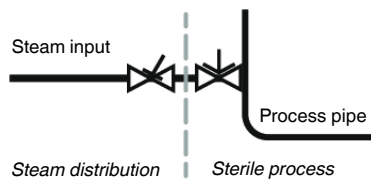
Media temperature:

Diaphragm material	Standard	Special version for oxygen
EPDM (code 13)	-10 – 100 °C	0 – 60 °C
EPDM (code 17)	-10 – 100 °C	-
EPDM (code 19)	-10 – 100 °C	0 – 60 °C
PTFE/EPDM (code 5M)	-10 – 100 °C	0 – 60 °C

Sterilization temperature: EPDM (code 13) max. 150 °C, max. 60 min per cycle
 EPDM (code 17) max. 150 °C, max. 180 min per cycle
 EPDM (code 19) max. 150 °C, max. 180 min per cycle
 PTFE/EPDM (code 5M) max. 150 °C, constant temperature per cycle

The sterilization temperature is only valid for steam (saturated steam) or superheated water. If the sterilization temperatures listed above are applied to the EPDM diaphragms for longer periods of time, the service life of the diaphragms will be reduced. In these cases, maintenance cycles must be adapted accordingly.

PTFE diaphragms can also be used as steam barriers; however, this will reduce their service life. This also applies to PTFE diaphragms exposed to high temperature fluctuations. The maintenance cycles must be adapted accordingly. GEMÜ 555 and 505 globe valves are particularly suitable for use in the area of steam generation and distribution. The following valve arrangement for interfaces between steam pipes and process pipes has proven itself over time: A globe valve for shutting off steam pipes and a diaphragm valve as an interface to the process pipes.



Ambient temperature: 0 – 60 °C

Storage temperature: 0 – 40 °C

7.3 Pressure

Operating pressure: 0 – 10 bar

Pressure rating: PN 16

Leakage rate: Leakage rate A to P11/P12 EN 12266-1

7.4 Product compliance

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food: Regulation (EC) No. 1935/2006
 FDA*
 USP* Class VI
 * depending on version and/or operating parameters

TA Luft (German Clean Air Act): The product meets the following requirements under the maximum permissible operating conditions:
 - Tightness or compliance with the specific leak rate as defined in TA Luft (German Clean Air Act) and VDI 2440 and VDI 2290
 - Compliance with the requirements in accordance with DIN EN ISO 15848-1, Table C.2, Class BH

Explosion protection: The product does not fall within the scope of Directive 2014/34/EU, as there is no potential ignition source. The basis for this is Section 38 of the ATEX Guideline (5th edition, April 2024). For further details, see the manufacturer's declaration in accordance with EU Directive 2014/34/EU (ATEX).

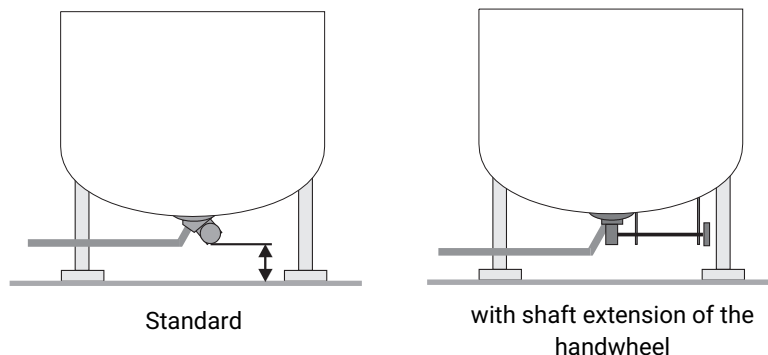
7.5 Mechanical data

Weight:

MG	DN	Actuator	Weight
25	15 – 25	2AT	3.0
40	32 – 40	3AT	6.0

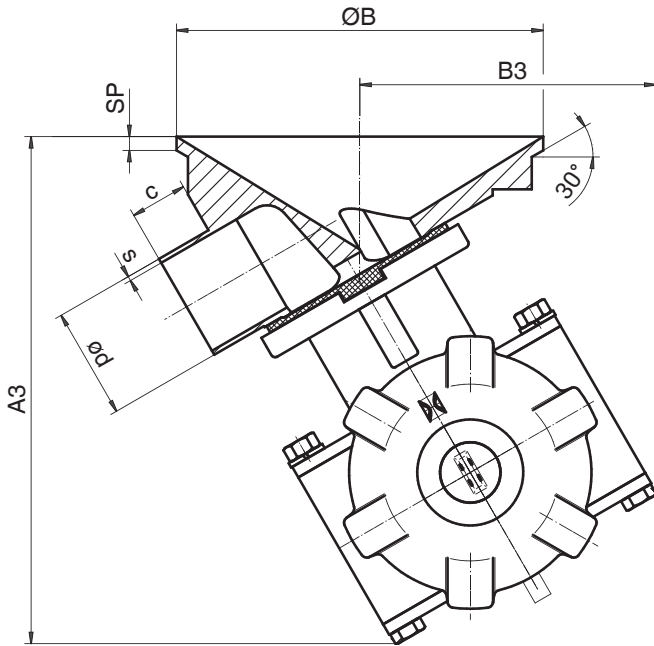
Weights in kg
 MG = diaphragm size

Installation position:



8 Dimensions

8.1 Spigot (code 0, 16, 17, 18, 60)



Connection type spigot DIN/EN/ISO (code 0, 16, 17, 18, 60)¹⁾, forged material (code 40, 42)

MG	DN	A3	B3	ø B	c	ød					s					SP
						Connection type					Connection type					
						0	16	17	18	60	0	16	17	18	60	
25	15	166.0	104.0	120.0	25.0	18.0	18.0	19.0	20.0	21.3	1.5	1.0	1.5	2.0	1.6	6.0
	20	166.0	104.0	120.0	25.0	22.0	22.0	23.0	24.0	26.9	1.5	1.0	1.5	2.0	1.6	6.0
	25	166.0	104.0	120.0	25.0	28.0	28.0	29.0	30.0	33.7	1.5	1.0	1.5	2.0	2.0	6.0
40	32	190.0	110.0	160.0	25.0	34.0	34.0	35.0	36.0	42.4	1.5	1.0	1.5	2.0	2.0	6.0
	40	190.0	110.0	160.0	25.0	40.0	40.0	41.0	42.0	48.3	1.5	1.0	1.5	2.0	2.0	6.0

Dimensions in mm

MG = diaphragm size

1) **Connection type**

Code 0: DIN spigot

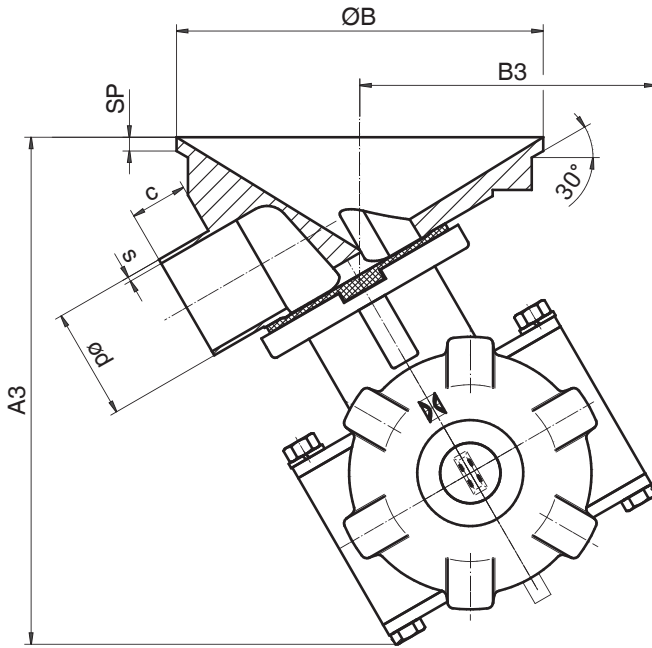
Code 16: Spigots DIN EN 10357 Series B (2014 edition; formerly DIN 11850 Series 1)

Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2

Code 18: Spigot DIN 11850 Series 3

Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B

8.2 Spigot (code 37, 59, 63, 64, 65)



Connection type spigot (code 37, 59, 63, 64, 65)¹⁾, forged material (code 40, 42)

MG	DN	A3	B3	Ø B	c	ød					s					SP
						Connection type					Connection type					
						37	59	63	64	65	37	59	63	64	65	
25	15	166.0	104.0	120.0	25.0	-	-	21.3	21.3	21.3	-	-	2.11	1.65	2.77	6.0
	20	166.0	104.0	120.0	25.0	-	19.05	26.7	26.7	26.7	-	1.65	2.11	1.65	2.87	6.0
	25	166.0	104.0	120.0	25.0	25.0	25.4	33.4	33.4	33.4	1.2	1.65	2.77	1.65	3.38	6.0
40	32	190.0	110.0	160.0	25.0	33.7	-	42.2	42.2	42.2	1.2	-	2.77	1.65	3.56	6.0
	40	190.0	110.0	160.0	25.0	38.0	38.1	48.3	48.3	48.3	1.2	1.65	2.77	1.65	3.68	6.0

Dimensions in mm

MG = diaphragm size

1) Connection type

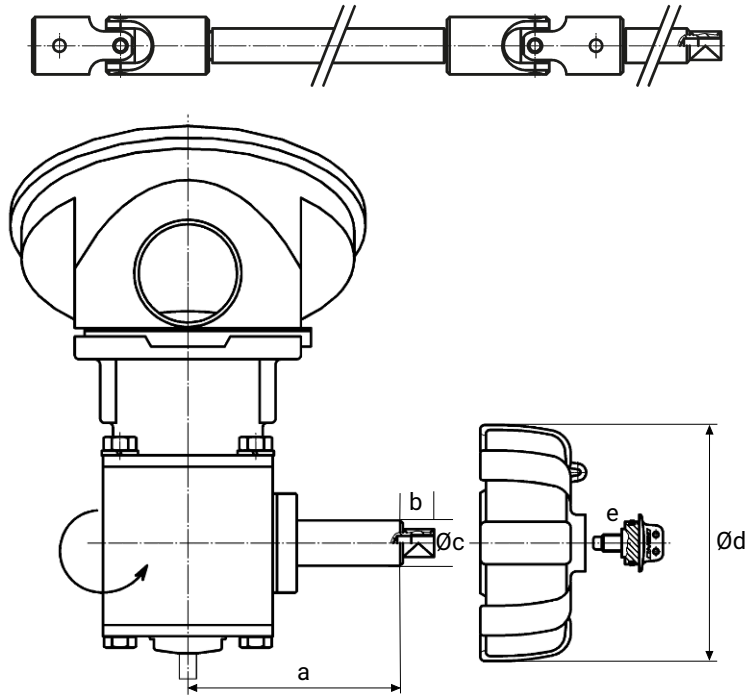
Code 37: SMS 3008 spigot

Code 59: Spigot ASME BPE/DIN EN 10357 series C (from 2022 issue)/DIN 11866 series C

Code 63: Spigot ANSI/ASME B36.19M Schedule 10s

Code 64: Spigot ANSI/ASME B36.19M Schedule 5s

Code 65: ANSI/ASME B36.19M Schedule 40s spigot

8.3 Shaft extension

DN	Actuator size	a	b	øc	ød	e
15-25	2AT	76	10.5	16 WAF: 10	90	M6
32-40	3AT				114	

Dimensions in mm

9 Manufacturer's information

9.1 Packaging

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

9.2 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.

9.3 Storage

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

9.4 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 Installation in piping

10.1 Preparing for installation

WARNING



The equipment is subject to pressure!

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

WARNING



Corrosive chemicals!

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

CAUTION



Hot plant components!

- ▶ Burns
- Only work on plant that has cooled down.
- Wear protective gear.

CAUTION



Maximum permissible pressure exceeded!

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

CAUTION

Use as step!

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

NOTICE

Corrosion!

- ▶ Damage to the product.
- Only operate the product with suitable media.

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.

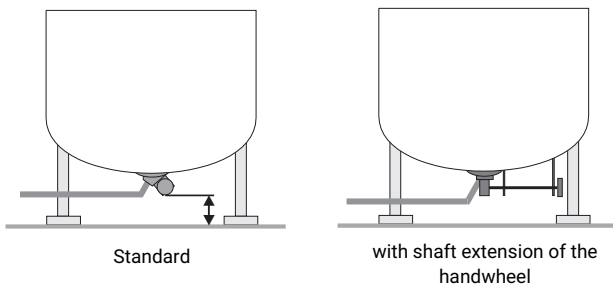
NOTICE

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. Comply with appropriate regulations for the connections.
6. Installation work must be performed by trained personnel.
7. Shut off the plant or plant component.
8. Secure the plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant or plant component and allow it to cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
11. Correctly decontaminate, rinse and ventilate the plant or plant component.
12. Lay piping so that the product is protected against transverse and bending forces, and also vibrations and tension.
13. Only install the product between matching aligned pipes (see chapters below).
14. Pay attention to the installation position (see "Installation position" chapter).

10.2 Installation position



10.3 Installation with butt weld spigots

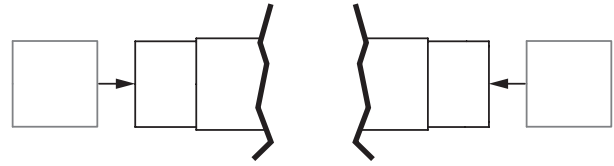


Fig. 1: Butt weld spigots

1. Carry out preparations for installation (see chapter "Preparing for installation").
2. Adhere to good welding practices!
3. Disassemble the actuator with the diaphragm before welding in the valve body (see "Removing the actuator" chapter).
4. Weld the body of the product in the piping.
5. Allow butt weld spigots to cool down.
6. Reassemble the valve body and the actuator with diaphragm (see "Mounting the actuator" chapter).
7. Re-attach or reactivate all safety and protective devices.
8. Flush the system.
9. After welding the valve into the tank/plant, check for pressure tightness.

10.4 After the installation

NOTICE

Diaphragms set in the course of time.

- ▶ Leakage
- After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.
- Retighten the bolts and nuts at the very latest after the first sterilization process.
- Observe the specifications for tightening the bolts and nuts (over-tightening can damage the product).
- Re-attach or reactivate all safety and protective devices.

10.5 Operation

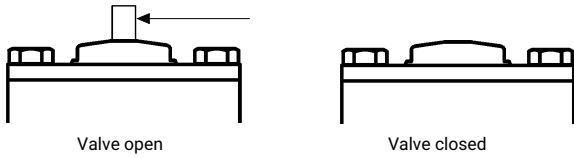
CAUTION



Handwheel can become hot during operation!

- ▶ Risk of burns!
- Ensure protective gloves are worn when operating handwheel.

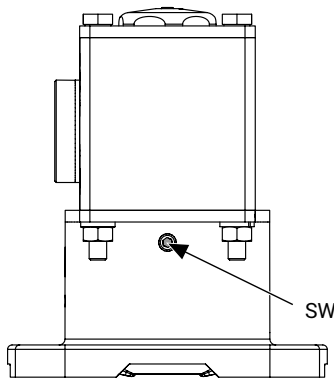
10.5.1 Optical position indicator



10.5.2 Turning the actuator

NOTICE

▶ The bonnet can be rotated through 360°. This rotation is ensured by a bearing in the bonnet and the actuator distance piece. To prevent the balls from falling out, the hexagon socket screw marked **SW** must not be removed.



1. Undo (but **do not remove**) the grub screw (indicated by the arrow) on the distance piece using the hexagon wrench.
2. Turn the actuator to the desired position.
3. Secure it in position by tightening the grub screw.

Hexagon wrench:

Version	DN	Actuator size	WAF
Old	15–25	2AT	2
	32–40	3AT	2.5
New	15–25	2AT	3
	32–40	3AT	3

10.6 Shaft extension

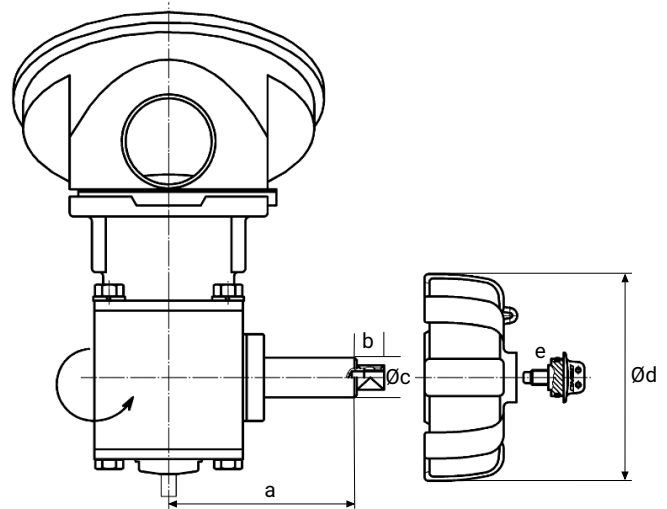
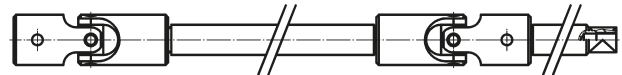
NOTICE

Important!

▶ When using a handwheel extension, ensure that there are sufficient bearing points.

Torques for shaft extension:

DN	Actuator size	Torque [Nm]
15–25	2AT	11
30–40	3AT	14




DN	Actuator size	a	b	øc	ød	e
15–25	2AT	76	10.5	16	90	M6
32–40	3AT			WAF: 10	114	

Dimensions in mm

11 Commissioning


WARNING



Corrosive chemicals!

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

CAUTION



Leakage!

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

 **CAUTION**

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.

12 Operation

NOTICE

Flow direction!

- ▶ You can choose the flow direction of the product.

The product is manually operated.


13 Troubleshooting

Error	Error cause	Troubleshooting
Working medium escaping from leak detection hole*	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
The product does not open or does not open fully	Actuator defective	Replace the actuator
	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
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
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check diaphragm and valve body for potential damage, replace damaged parts if necessary
	Valve body leaking or damaged	Carry out initialisation, check valve body for damage, replace valve body if necessary.
	Shut-off diaphragm is defective	Check shut-off diaphragm for potential damage, replace diaphragm if necessary
The product is leaking between actuator and valve body	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Bolting between valve body and actuator loose	Replace valve
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace the shut-off diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
Valve body is leaking	Valve body is leaking	Check valve body for damage, replace valve body if necessary
Handwheel cannot be turned	Handwheel defective	Replace the handwheel
	Threaded spindle seized	Replace the actuator

* see chapter "Spare parts"

14 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



Hot plant components!

- ▶ Burns
- Only work on plant that has cooled down.
- Wear protective gear.

⚠ CAUTION

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

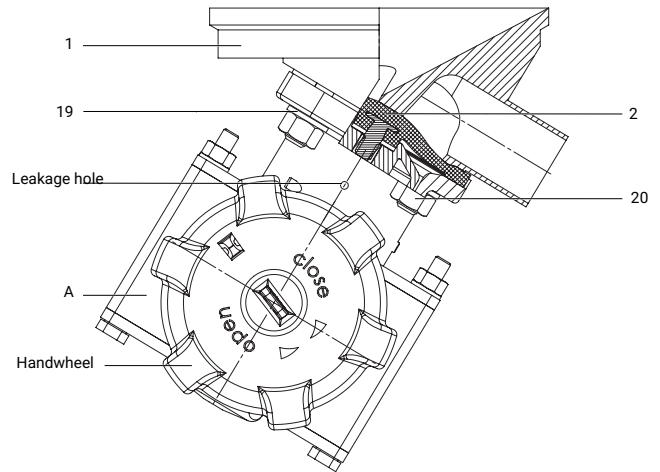
NOTICE

- ▶ Depending on the operating conditions, regrease the threaded spindle. GEMÜ recommends the grease "Boss-Fluorine Y 108/00 (99099484)".

1. Wear appropriate protective gear in accordance with the plant operator's guidelines.
2. Shut off the plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

The operator must carry out regular visual examinations of the valves, depending on the operating conditions and the potentially hazardous situations, in order to prevent leakage and damage. The valve also has to be disassembled in corresponding intervals and checked for wear (see "Fitting/removing spare parts").

14.1 Spare parts



Item	Name	Order designation
A	Actuator	9643
2	Diaphragm	Code 13 Code 17 Code 19 Code 36 Code 5M
1	Body	K600
19, 20	Screw connection kit	643 S30

14.2 Fitting/removing spare parts

14.2.1 Valve disassembly (removing the actuator from the body)

1. Move the actuator **A** to the open position.
2. Remove the actuator **A** from the valve body **1**.
3. Move the actuator **A** to the closed position.

NOTICE

- ▶ Clean all parts of contamination (do not damage the parts during cleaning) following removal. Check parts for potential damage, replace if necessary (only use genuine parts from GEMÜ).

14.2.2 Removing the diaphragm

NOTICE

- ▶ Before removing the diaphragm, remove the actuator; see "Valve disassembly (removing the actuator from the body)".

1. Unscrew the diaphragm.
2. Clean all parts so that they are free of remains of product and contaminants. Take care not to scratch or damage the parts in the process.
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

14.2.3 Mounting the diaphragm

NOTICE

- Fit the diaphragms suitable for the product (suitable for medium, medium concentration, temperature and pressure). The diaphragm is a wearing part. Check the technical condition and function of the product before commissioning and during the whole term of use. Carry out checks regularly and determine the check intervals in accordance with the conditions of use and/or the regulatory codes and provisions applicable for this application.

NOTICE

- If the diaphragm is not screwed into the adapter far enough, the closing force is transmitted directly onto the diaphragm pin and not via the compressor. This will cause damage and early failure of the diaphragm and leakage of the product. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the product is no longer ensured.

NOTICE

- Incorrectly mounted diaphragms cause the product leakage and emission of medium. In this case, remove the diaphragms, check the complete valve and diaphragms and reassemble again proceeding as described above.

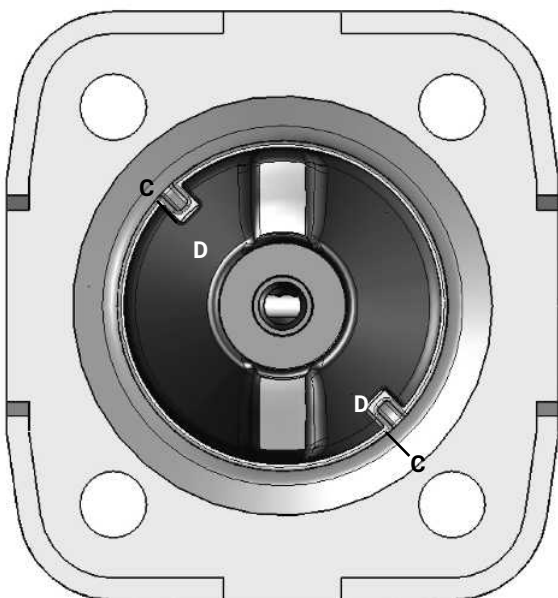
14.2.3.1 Mounting the compressor

NOTICE

Compressor

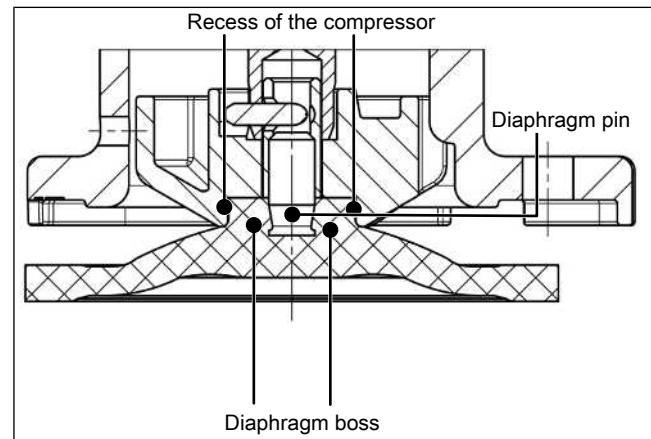
- The compressor is loose.

Compressor and actuator flange seen from below:



Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C**. It must be possible to move the compressor freely between the guides.

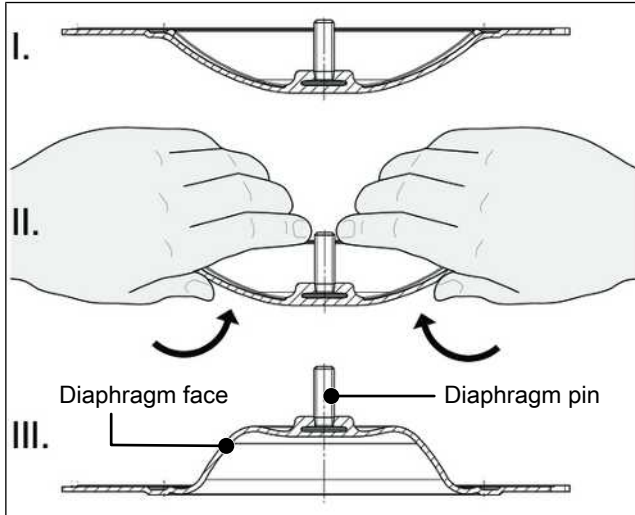
14.2.3.2 Mounting a concave diaphragm



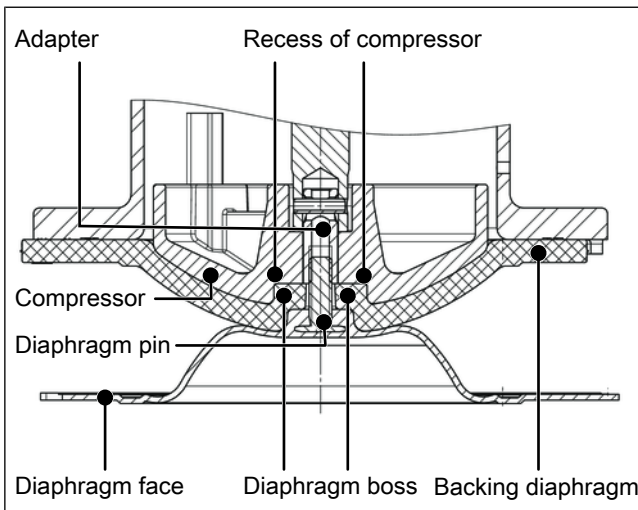
1. Move the actuator **A** to the closed position.
2. Place the compressor loosely on the actuator spindle, fit the recesses **D** into the guides **C** (see "Mounting the compressor", page 21).
3. Check whether the compressor is resting in the guides.
4. Manually screw the new diaphragm into the compressor tightly.
5. Check whether the diaphragm boss is in the recess of the compressor.
6. If it is difficult to screw it in, check the thread and replace damaged parts (only use genuine parts from GEMÜ).
7. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.

14.2.3.3 Mounting a convex diaphragm

1. Move the actuator **A** to the closed position.
2. Place the compressor loosely on the actuator spindle, fit the recesses D into the guides C (see "Mounting the compressor", page 21).
3. Check whether the compressor is resting in the guides.
4. Invert the new diaphragm face manually; for larger diameters, use a clean, padded mat.



5. Position the new backing diaphragm on the compressor.
6. Position the diaphragm face on the backing diaphragm.
7. Manually screw the diaphragm face into the compressor tightly. The diaphragm boss must be in the recess of the compressor.



8. If it is difficult to screw it in, check the thread and replace any damaged parts.
9. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.
10. Press the diaphragm face tightly onto the backing diaphragm manually so that it returns to its original shape and fits closely on the backing diaphragm.

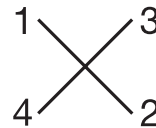
14.2.4 Mounting the actuator on the valve body

NOTICE

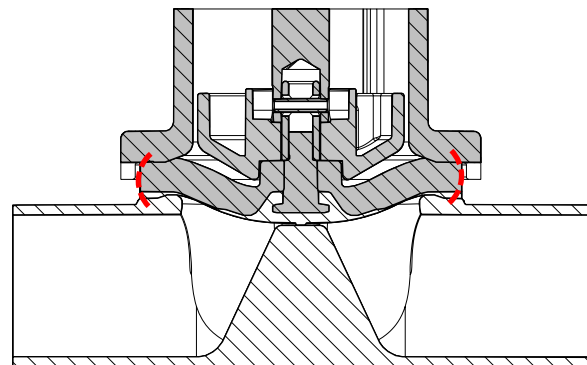
Diaphragms set in the course of time.

- ▶ Leakage
- After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.
- Retighten the bolts and nuts at the very latest after the first sterilization process.
- Observe the specifications for tightening the bolts and nuts (over-tightening can damage the product).

1. Move the actuator **A** to the closed position.
2. Open the actuator **A** approx. 20%.
3. Place actuator **A** with the mounted diaphragm on valve body 1.
 - ⇒ Take care that the diaphragm is in the correct orientation.
4. Screw in washers and nuts by hand.
 - ⇒ Fastening elements may vary depending on the diaphragm size and/or valve body version.
5. Tighten the nuts diagonally.



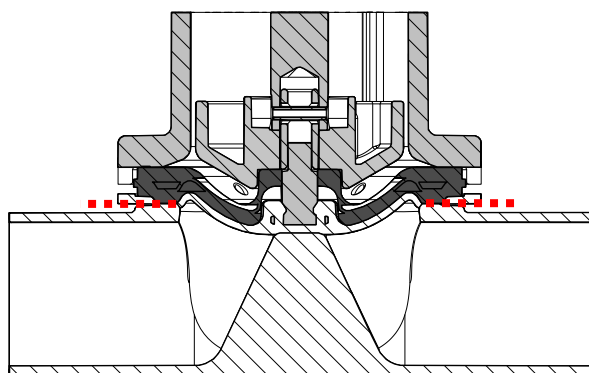
Diaphragm code 13, 17, 19



The diaphragm is tightened until a slight bulge can be seen.

6. Ensure even compression of the diaphragm (approx. 10 to 15%).
 - ⇒ Even compression is detected by an even outer bulge.

Diaphragm code 5M



The diaphragm lies level with and parallel to the valve body.

7. **Please note:** For a code 5M diaphragm (convex diaphragm), the PTFE diaphragm face and the EPDM backing diaphragm must be positioned level with and parallel to the valve body.
8. With the valve fully assembled, check the function and tightness.

15 Removal from piping

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

16 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.

17 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.

18 EU Declaration of Conformity



Version 1



EU-Konformitätserklärung
EU Declaration of Conformity

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1
74635 Kupferzell
Deutschland

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt: GEMÜ 643

Product: GEMÜ 643

Produktname: Manuell betätigtes Bodenablassventil

Product name: Manually operated tank bottom valve

Richtlinien/Verordnungen:

Directives/Regulations:

PED 2014/68/EU¹⁾

Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:

The following harmonized standards (or parts thereof) have been applied:

EN 13397:2001

Weitere angewandte Normen:

Further applied norms:

AD 2000

¹⁾ PED 2014/68/EU

Benannte Stelle: TÜV Rheinland Industrie Service GmbH
Am Grauen Stein 1
51105 Köln

Kennnummer der benannten Stelle: 0035

Nr. des QS-Zertifikats: 01 202 926/Q-02 0036

Angewandte(s) Konformitätsbewertungsverfahren: Modul H

Hinweis für Produkte mit einer Nennweite ≤ DN 25:

Die Produkte werden entwickelt und produziert nach GEMÜ eigenen Verfahrensanweisungen und Qualitätsstandards, welche die Forderungen der ISO 9001 und der ISO 14001 erfüllen. Die Produkte dürfen gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU keine CE-Kennzeichnung tragen.

Bemerkungen:

Der Einsatz des Produkts in Kategorie III gemäß Druckgeräterichtlinie 2014/68/EU sowie die Verwendung mit instabilen Gasen ist nicht zulässig.

¹⁾ PED 2014/68/EU

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(s) applied: Module H

Information for products with a nominal size ≤ DN 25:

The products are developed and produced according to GEMÜ's in-house process instructions and standards of quality 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-marking.

Remarks:

Use of the product in category III in accordance with Pressure Equipment Directive 2014/68/EU and use with unstable gases are not permissible.

[Handwritten signature]

i.V. M. Barghoorn
Leiter Globale Technik
Kupferzell, 16.12.2025

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Subject to alteration

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