

GEMÜ B20

Manually operated ball valve

EN

Operating instructions



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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.

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 of explosion!
	Corrosive chemicals!
	Hot plant components!

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:

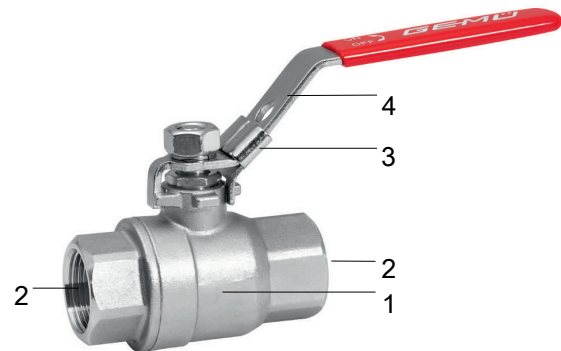
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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	Ball valve body	CF8M 1.4408 investment casting
2	Pipe connections	
3	Lock	CF8M 1.4408 investment casting
4	Hand lever	304

3.2 Description

The GEMÜ B20 2-piece 2/2-way metal ball valve is manually operated. It has a plastic sleeved lockable hand lever. The seat seal is made of PTFE.

3.3 Function

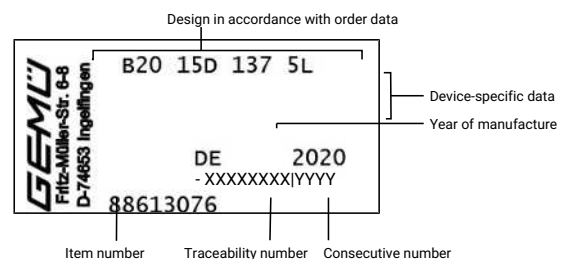
The product is a metal ball valve equipped with a plastic sleeved hand lever.

The ball valve can be continuously opened or closed.

The position of the ball valve can be secured using an appropriate lock (e.g. padlock). It is not included in the scope of delivery.

3.4 Product label

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



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



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


4 Correct use

Ball valves are used to isolate media flows.

Only clean, liquid or gaseous media must be used, and the body and seal materials used must be resistant to and suitable for this. Contaminated media and / or applications outside of the pressure and temperature data may lead to damage to the body and, in particular, to the seals on the ball valve.

The "Technical data" chapter describes the permissible pressure / temperature range for these ball valves.

 DANGER	
	<p>Danger of explosion!</p> <ul style="list-style-type: none"> ▶ 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	
<p>Improper use of the product!</p> <ul style="list-style-type: none"> ▶ 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.

1. Use the product in accordance with the technical data.
2. Note the supplement acc. to ATEX

Due to the design, in the open and closed position, a low volume of medium may be trapped within the ball or between the ball and the body.

Expansion of the medium due to temperature differences, change in state or a chemical response may lead to a high pressure build-up. In order to prevent unacceptable pressure increases, a special version with pressure-relief hole in the ball is available on request for this case.

NOTICE	
<p>Build-up of lint!</p> <ul style="list-style-type: none"> ▶ For soft-seated ball valves, due to the relative rotations of the stainless steel ball valve to the seat seal, slight wear of the PTFE seals must always be anticipated. Despite this, the safety of the ball valve is not affected by any potential build-up of lint and the seal materials are compliant in accordance with FDA directives. 	

5 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
Ball valve, metal, manually operated, 2-piece body, lockable hand lever	B20

2 DN	Code
DN 8	8
DN 10	10
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65

3 Body/ball configuration	Code
2/2-way body	D

4 Connection type	Code
Threaded socket DIN ISO 228	1
Threaded socket NPT	31

5 Ball valve material	Code
1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)	37

6 Seal material	Code
PTFE	5

7 Control function	Code
Manually operated, hand lever, lockable	L

Order example

Ordering option	Code	Description
1 Type	B20	Ball valve, metal, manually operated, 2-piece body, lockable hand lever
2 DN	15	DN 15
3 Body/ball configuration	D	2/2-way body
4 Connection type	1	Threaded socket DIN ISO 228
5 Ball valve material	37	1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)
6 Seal material	5	PTFE
7 Control function	L	Manually operated, hand lever, lockable

6 Technical data

6.1 Medium

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

6.2 Temperature

Media temperature: -20 – 180 °C

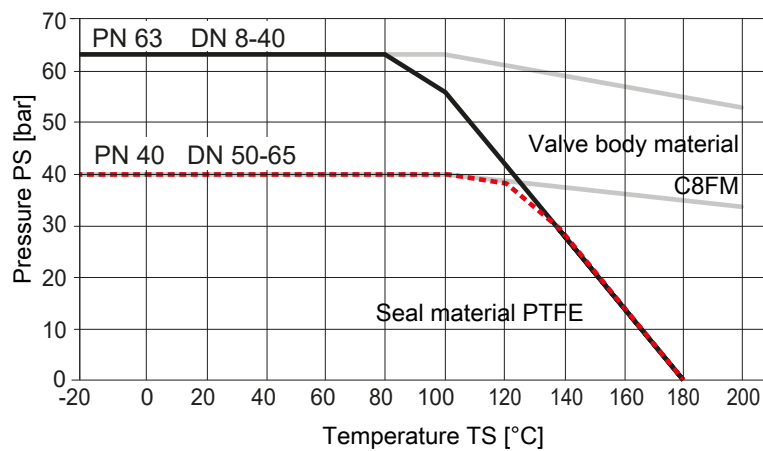
Ambient temperature: -20 – 60 °C

Storage temperature: -60 – 60 °C

6.3 Pressure

Vacuum: Can be used up to a vacuum of 50 mbar (absolute)

Pressure/temperature diagram:



Kv values:

DN	NPS	Kv values
8	1/4"	8.6
10	3/8"	21.0
15	1/2"	35.0
20	3/4"	46.0
25	1"	72.0
32	1 1/4"	105.0
40	1 1/2"	170.0
50	2"	275.0
65	2 1/2"	363.0

Kv values in m³/h

Operating pressure: 0 – 63 bar

6.4 Product conformities

Pressure Equipment Directive: 2014/68/EU

Food: FDA
Regulation (EC) No. 10/2011
Regulation (EC) No. 1935/2006

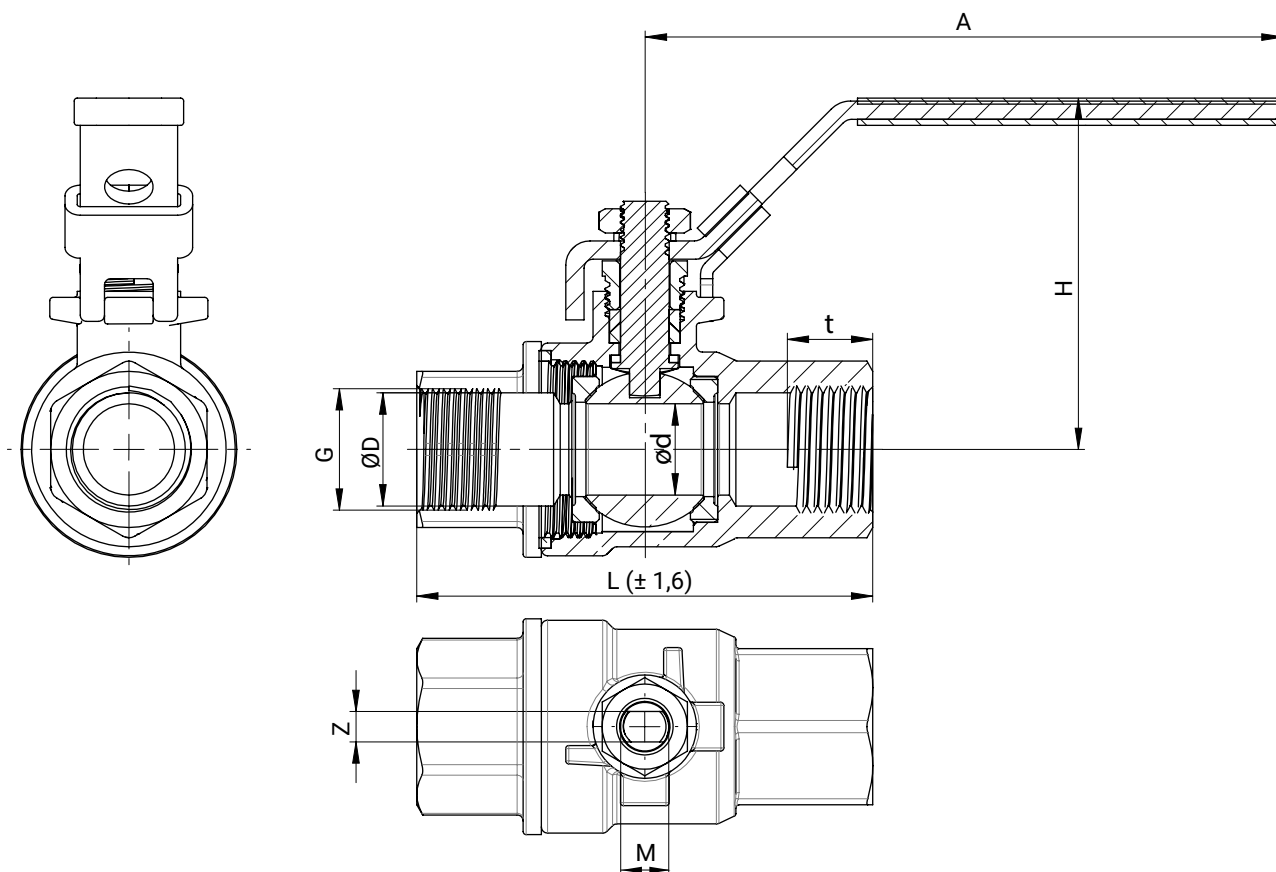
6.5 Mechanical data

Weight:

DN	NPS	Weight
8	1/4"	0.458
10	3/8"	0.458
15	1/2"	0.458
20	3/4"	0.520
25	1"	0.830
32	1¼"	1.292
40	1½"	1.915
50	2"	2.895
65	2½"	2.895

Weights in kg

7 Dimensions



DN	G	ød	ØD	A	L	H	t	M	Z
8	1/4"	12.0	15.0	92.0	55.0	49.0	11.0	M8	5.0
10	3/8"	12.0	15.0	92.0	60.0	49.0	11.0	M8	5.0
15	1/2"	15.0	18.6	105.0	75.0	52.0	14.0	M8	5.0
20	3/4"	20.0	24.2	124.0	80.0	63.0	14.0	M10	6.0
25	1"	25.0	30.3	130.0	90.0	67.0	16.0	M10	6.0
32	1¼"	32.0	39.0	140.0	110.0	80.0	22.0	M12	7.0
40	1½"	38.0	44.9	175.0	120.0	93.0	24.0	M14	9.0
50	2"	49.0	56.7	175.0	140.0	110.0	26.0	M14	9.0
65	2½"	64.0	72.6	220.0	185.0	117.0	31.0	M14	9.0

Dimensions in mm

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!	
<ul style="list-style-type: none"> ▶ Risk of severe injury or death ● Depressurize the plant. ● Completely drain the plant. 	

 WARNING	
	Corrosive chemicals!
	<ul style="list-style-type: none"> ▶ Risk of caustic burns ● Wear appropriate protective gear. ● Completely drain the plant.

 CAUTION	
	Hot plant components!
	<ul style="list-style-type: none"> ▶ Risk of burns ● Only work on plant that has cooled down.

 CAUTION	
Exceeding the maximum permissible pressure.	
<ul style="list-style-type: none"> ▶ Damage to the product ● Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer). 	

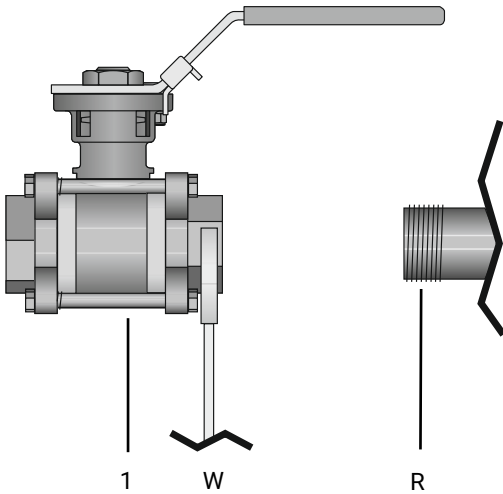
 CAUTION	
Use as step.	
<ul style="list-style-type: none"> ▶ Damage to the product ▶ Risk of slipping-off ● Choose the installation location so that the product cannot be used as a foothold. ● Do not use the product as a step or a foothold. 	

NOTICE	
Suitability of the product!	
<ul style="list-style-type: none"> ▶ The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions. 	

NOTICE	
Tools	
<ul style="list-style-type: none"> ▶ 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. Flow direction and installation position are optional.

9.2 Installation with threaded connections



1. Screw ball valve body **1** onto piping **R** using an appropriate thread sealant. The thread sealant is not included in the scope of delivery.
2. Hold in place with open-end wrench **W**.
3. Connect the ball valve body **1** to piping on the other side in a like manner.

9.3 After the installation

- Re-attach or reactivate all safety and protective devices.

10 Commissioning

⚠ WARNING



Corrosive chemicals!

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

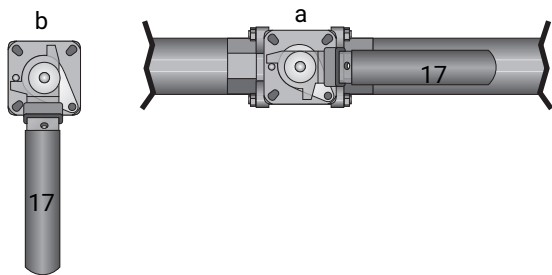
⚠ CAUTION

Leakage

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

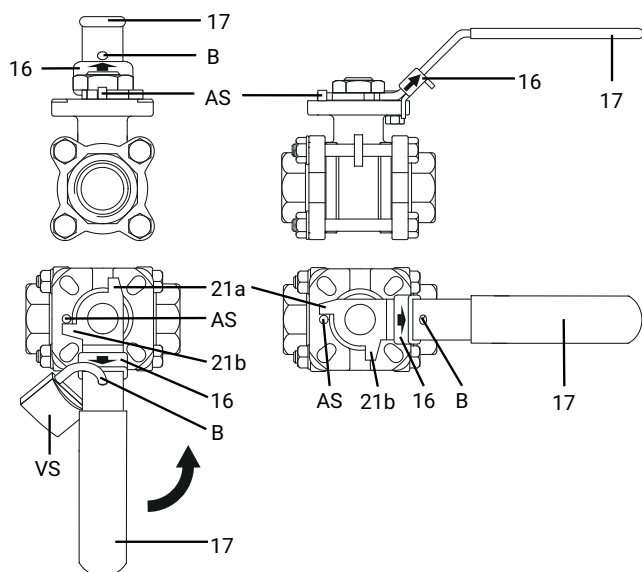
1. Check the tightness and the function of the product (close and reopen the product).
2. Flush the piping system of new plant and following repair work (the product must be fully open).
 - ⇒ Harmful foreign matter has been removed.
 - ⇒ The product is ready for use.
3. Commission the product.

11 Operation



17	Hand lever
a	Ball valve open
b	Ball valve closed

1. Move the hand lever 17 to the desired position.



Fully open ball valve:

Hand lever 17 with travel stop 21a abuts locking stop AS.

Fully closed ball valve:

Hand lever 17 with travel stop 21b abuts locking stop AS.

NOTICE



- The open position is infinitely variable but intermediate positions cannot be engaged and locked.


2. Lift the hand lever locking device 16 to enable turning the hand lever 17.
3. When the desired end position is reached push down the hand lever locking device 16 and make it engage (only possible when the ball valve is fully open or fully closed). The travel stops 21a and 21b abut the locking stop AS in each case.
4. When the ball valve is fully open or fully closed and the hand lever 17 is engaged, the position can be secured with an appropriate lock (e.g. padlock VS) in hole B in the hand lever 17 above the hand lever locking device 16.


12 Troubleshooting

Error	Possible cause	Troubleshooting
The product does not open or does not open fully	Hand lever locking device engaged	Disengage hand lever locking device
	Foreign matter in the product	Remove and clean the product
The product does not close or does not close fully	Hand lever locking device engaged	Disengage hand lever locking device
	Foreign matter in the product	Remove and clean the product
The product is leaking between hand lever and valve body	Faulty product	Check the product for potential damage, replace the product if necessary
	Seals faulty	Replace seals
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Thread leaking	Reseal thread
Valve body leaking	Valve body leaking or corroded	Check valve body for damage, replace valve body if necessary

13 Inspection/maintenance

 CAUTION	
	<p>Hot plant components!</p> <ul style="list-style-type: none"> ▶ Risk of burns ● Only work on plant that has cooled down.

 WARNING	
The equipment is subject to pressure!	
<ul style="list-style-type: none"> ▶ Risk of severe injury or death ● Depressurize the plant. ● Completely drain the plant. 	

 CAUTION	
<ul style="list-style-type: none"> ● Servicing and maintenance work must only be performed by trained personnel. ● Do not extend hand lever. GEMÜ shall assume no liability whatsoever for damages caused by improper handling or third-party actions. ● In case of doubt, contact GEMÜ prior to commissioning. 	

1. Use appropriate protective gear as specified in plant operator's guidelines.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

Ball valves are maintenance-free. No lubrication or routine maintenance of the ball valve shaft is required. The shaft is guided through a PTFE gland packing in the ball valve body. The shaft seal is pretensioned and self-adjusting. However, the operator must carry out regular visual examinations of the ball valves, dependent on the operating conditions and the potential danger in order to prevent leakage and damage.

If there is a leakage at the spindle nut, this can generally be rectified by retightening the spindle nut. However, overtightening the spindle nut must be avoided.

Usually, retightening by between 30° and 60° will be sufficient to rectify the leakage.

14 Removal from piping

1. Remove the clamp or screw connections in reverse order to installation.
2. Remove welded or solvent cemented connections using a suitable cutting tool.
3. Observe the safety information and accident prevention regulations.

15 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.

16 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.

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

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

Description of the pressure equipment: GEMÜ B20
Notified body: TÜV Rheinland Industrie Service GmbH
Number: 0035
Certificate no.: 01 202 926/Q-02 0036
Conformity assessment procedure: Module H1
Technical standard used in parts: EN 1983, AD 2000

Note for products with a nominal size \leq 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.

The sole responsibility for issuing this declaration of conformity lies with the company GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG.

2023-02-01



Joachim Brien
Head of Technical Department



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Subject to alteration

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