

GEMÜ BB07

3/2-way ball valve with bare shaft

EN **Operating instructions**



further information
webcode: GW-BB07



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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.

Control medium

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


1.4 Warning notes


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


SIGNAL WORD	
Possible symbol for the specific danger	<p>Type and source of the danger</p> <ul style="list-style-type: none"> ▶ 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	
	<p>Imminent danger!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ WARNING	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ CAUTION	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ Non-observance can cause moderate to light injury.

NOTICE	
	<p>Potentially dangerous situation!</p> <ul style="list-style-type: none"> ▶ 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 screws 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:

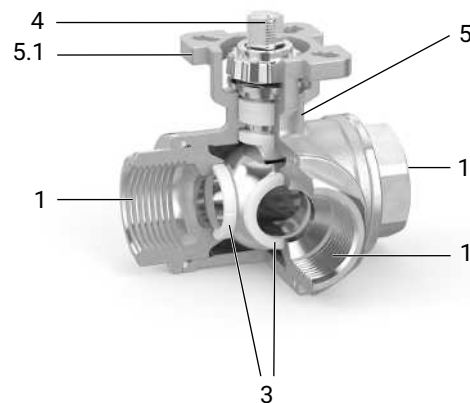
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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
5	Ball valve body	1.4408 / CF8M
1	Pipe connections	1.4408 / CF8M
5.1	Mounting flange ISO 5211	1.4408 / CF8M
4	Ball valve shaft	1.4401 / SS316
3	Seal	PTFE

3.2 Pressure-relief hole



3.3 Description

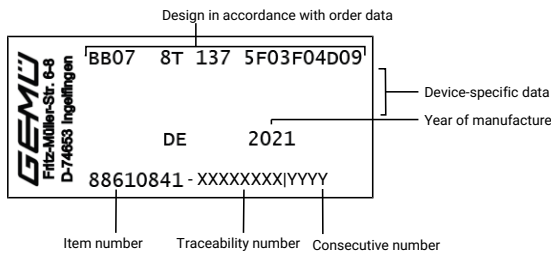
The GEMÜ BB07 stainless steel 3/2-way ball valve has a bare shaft. Thanks to the top flange according to ISO 5211, easy actuator mounting is possible.

3.4 Function

The product is designed for use in piping. It controls a flowing medium after a manual actuator (see GEMÜ B27), pneumatic actuator (see GEMÜ B47) or motorized actuator (see GEMÜ B57) has been mounted.

3.5 Product label

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



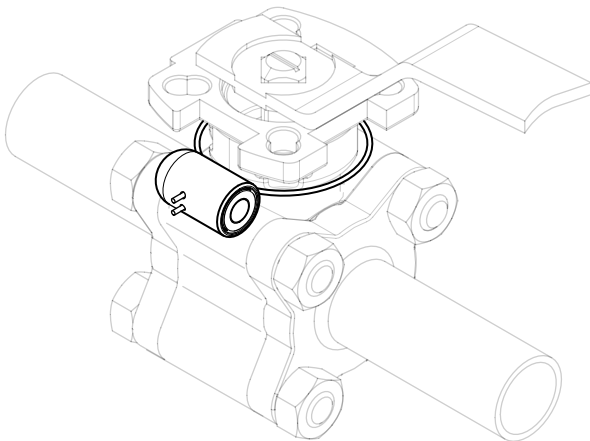
The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

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 GEMÜ CONEXO

Installing the RFID chip

In the corresponding design with CONEXO, this product has an RFID chip (1) for electronic recognition. The position of the RFID chip can be seen below.




5 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	
Improper use of the product!	
<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	
Build-up of lint!	
<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. 	

6 Order data

The order data provide an overview of standard configurations.

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

Products ordered with **bold marked ordering options** are so-called preferred series. Depending on the nominal size, these are available more quickly.

Order codes

1 Type	Code
Ball valve body, metal, multi-port, threaded connection, ISO 5211, top flange, low-maintenance spindle seal and blow-out proof shaft, with anti-static unit	BB07

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

3 Body/ball configuration	Code
Multi-port design, T-port, end position "Open", connection 1 and 3 open, T-port, end position "Closed", connection 1 and 2 open (For ball position see datasheet)	2
Multi-port design, T-port, end position "Open", connection 1 and 2 open, T-port, end position "Closed", connection 2 and 3 open (For ball position see datasheet)	3
Multi-port design, T-port, end position "Open", connection 2 and 3 open, T-port, end position "Closed", connection 1, 2 and 3 open (For ball position see datasheet)	4
Multi-port design, T-port, end position "Open", connection 1 and 3 open, T-port, end position "Closed", connection 1 open (For ball position see datasheet)	6
Multi-port design, T-port, end position "Open", connection 2 and 3 open, T-port, end position "Closed", connection 1 and 3 open (For ball position see datasheet)	L
Multi-port design, T-port, end position "Open", connection 1, 2 and 3 open, T-port, end position "Closed", connection 1 and 3 open (For ball position see datasheet)	T

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 Special version	Code
Without	
ATEX version	X

8 Type of design	Code
Standard	
Media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Media wetted parts cleaned for high purity media and packed in plastic bag	0104
Valve free of oil and grease, media wetted area cleaned and packed in PE bag	0107
Thermal separation between actuator and valve body via mounting kit	5222
Thermal separation between actuator and valve body via mounting kit, mounting kit and mounting parts made from stainless steel	5227
Hand lever cropped to set up feedback units. Shaft face drilled for mounting kit: DN8-DN20 M5 X 12,5 / depth of thread 9.0mm, DN25-DN50 M6 x 15 / depth of thread 10.0mm, DN65-DN100 M8 x 20 / depth of thread 14.0mm	7056
K-no. 7056, K-no. 0101, 7056 - shaft face drilled for mounting kit M6 x15, hand lever shortened for mounting feedback units, 0101 - media wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	7097

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

Order example

Ordering option	Code	Description
1 Type	BB07	Ball valve body, metal, multi-port, threaded connection, ISO 5211, top flange, low-maintenance spindle seal and blow-out proof shaft, with anti-static unit
2 DN	15	DN 15
3 Body/ball configuration	T	Multi-port design, T-port, end position "Open", connection 1, 2 and 3 open, T-port, end position "Closed", connection 1 and 3 open (For ball position see datasheet)
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 Special version		Without
8 Type of design		Standard
9 CONEXO	C	Integrated RFID chip for electronic identification and traceability

7 Technical data

7.1 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.

7.2 Temperature

Media temperature: Connection code 17, 19, 59, -10 – 180 °C
60:
Connection code 1, 31, 8, 11: -20 – 180 °C
For media temperatures > 100 °C, we recommend using a mounting kit with adapter between the ball valve and the actuator.

Ambient temperature: -20 – 60 °C

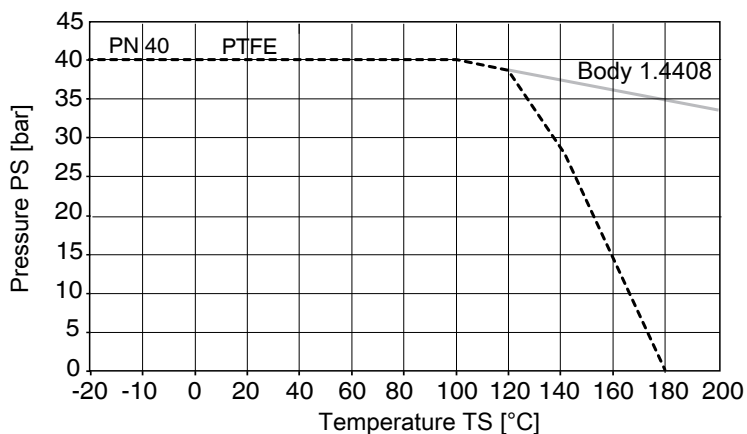
Storage temperature: 0 – 40 °C

7.3 Pressure

Operating pressure: 0 – 40 bar

Vacuum: Can be used up to a vacuum of 50 mbar (absolute)
These values apply to room temperature and air. The values may deviate for other media and other temperatures.

Pressure/temperature diagram:



Note media temperature

Leakage rate: Leakage rate according to ANSI FCI70 – B16.104
Leakage rate according to EN12266, 6 bar air, leakage rate A

Kv values:



DN	NPS	Kv values
8	1/4"	8.0
10	3/8"	8.0
15	1/2"	17.0
20	3/4"	34.0
25	1"	60.0
32	1¼"	94.0
40	1½"	213.0
50	2"	366.0

Kv values in m³/h

7.4 Product conformity

Pressure Equipment Directive: 2014/68/EU

Explosion protection: ATEX (2014/34/EU), order code Special version X

ATEX marking: Gas:  II 2G Ex h IIC T6 ... T2 Gb X
Dust:  II -/2D Ex h -/IIIC T180 °C -/Db X

7.5 Mechanical data**Torques:**

DN	NPS	Torques
8	1/4"	8.0
10	3/8"	8.0
15	1/2"	10.0
20	3/4"	13.0
25	1"	19.0
32	1¼"	29.0
40	1½"	51.0
50	2"	62.0

Torques in Nm

A safety factor of 1.2 is included

With dry, non-lubricating media the breakaway torque may be increased.

Valid for clean, non-particulate and oil-free media (water, alcohol, etc.), gas or saturated steam (clean and wet).

PTFE seal.

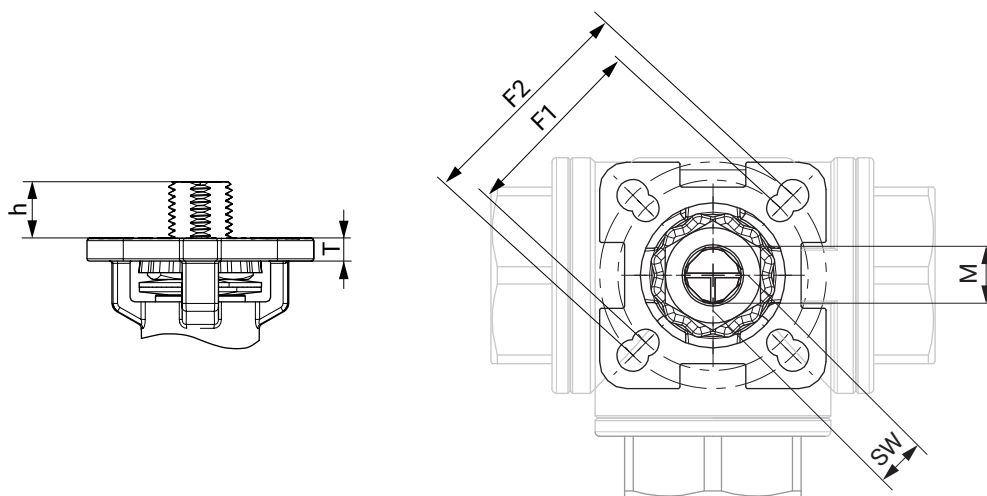
Weight:**Body**

DN	NPS	Weight
8	1/4"	0.55
10	3/8"	0.55
15	1/2"	0.55
20	3/4"	0.85
25	1"	1.20
32	1¼"	2.20
40	1½"	3.40
50	2"	4.63

Weights in kg

8 Dimensions

8.1 Actuator flange

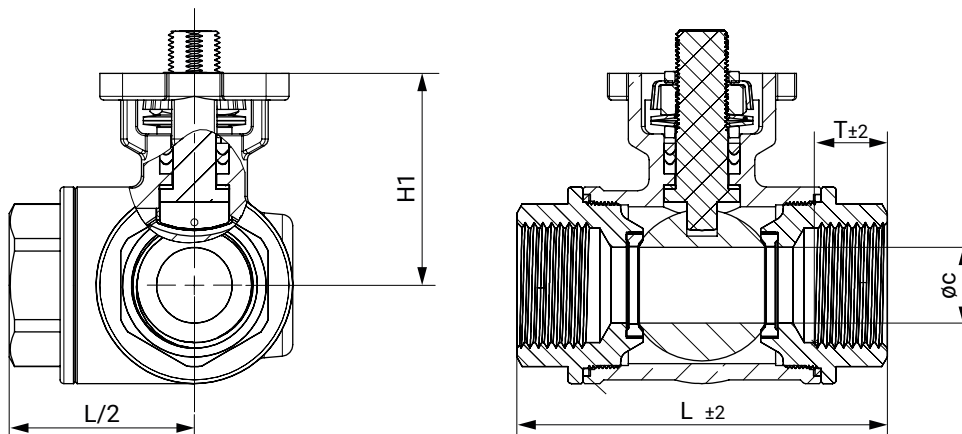


DN	G	F1	ISO 5211	F2	ISO 5211	SW	h	T	M
8	1/4"	36.0	F03	42.0	F04	9.0	9.0	6.5	M12
10	3/8"	36.0	F03	42.0	F04	9.0	9.0	6.5	M12
15	1/2"	36.0	F03	42.0	F04	9.0	9.0	6.5	M12
20	3/4"	36.0	F03	42.0	F04	9.0	8.5	6.0	M12
25	1"	42.0	F04	50.0	F05	11.0	11.5	7.0	M14
32	1 1/4"	42.0	F04	50.0	F05	11.0	11.5	7.0	M14
40	1 1/2"	50.0	F05	70.0	F07	14.0	14.0	8.5	M18
50	2"	50.0	F05	70.0	F07	14.0	14.0	8.5	M18

Dimensions in mm

8.2 Body dimensions

8.2.1 Threaded socket (connection code 1, 31)



DN	G	øc	H1	L	T
8	1/4"	12.0	40.9	74.0	14.6
10	3/8"	12.0	43.0	74.0	14.6
15	1/2"	12.0	43.0	74.0	14.7
20	3/4"	15.0	45.0	86.0	16.7
25	1"	20.0	56.0	98.0	19.9
32	1¼"	25.0	62.0	118.0	21.9
40	1½"	32.0	74.0	130.0	22.4
50	2"	38.0	78.0	149.0	26.9

Dimensions in mm

9 Manufacturer's information

9.1 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.

9.2 Packaging

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

9.3 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.

9.4 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.
5. Store the ball valves in the "open" position.

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.
- Completely drain the plant.

WARNING



Corrosive chemicals!

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

CAUTION



Hot plant components!

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

CAUTION

Exceeding the maximum permissible pressure.

- ▶ Damage to the product
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

CAUTION

Use as 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

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.

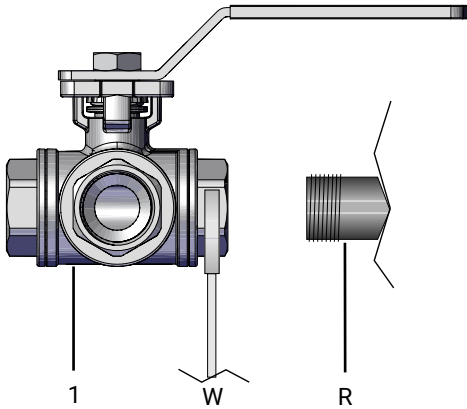
NOTICE

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. Flow direction and installation position are optional.

10.2 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.

10.3 After the installation

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

11 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.

12 Operation

The product is operated via manual, pneumatic or motorized actuators.


- Observe the enclosed actuator instructions.

13 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

14 Inspection/maintenance

CAUTION



Hot plant components!

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

WARNING

The equipment is subject to pressure!

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

CAUTION

- Servicing and maintenance work must only be performed by trained personnel.
- 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.

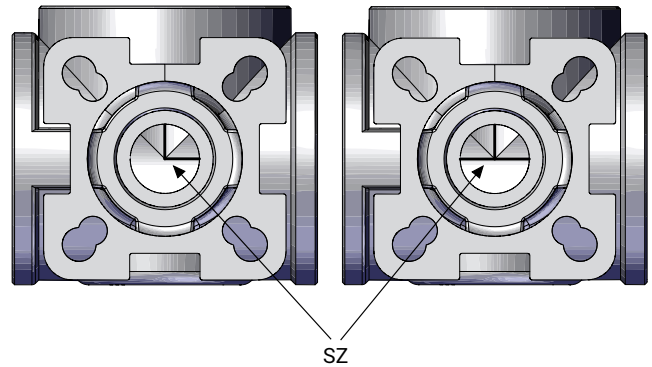
Usually, retightening by between 30° and 60° will be sufficient to rectify the leakage.

14.1 General information regarding replacing the hand lever

NOTICE

The following is required for hand lever replacement:

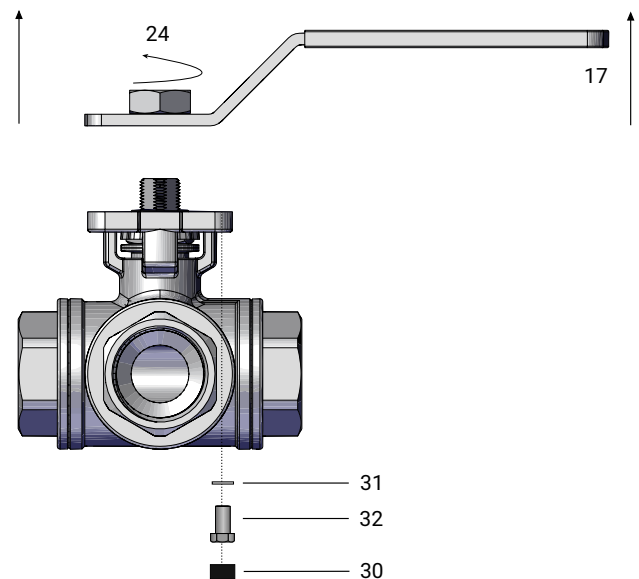
- Allen key



1. Check the position of the ball indicated by the groove **SZ** and compare with position indicator, rotate ball valve to correct position if necessary.
- ⇒ Groove transverse to piping direction:
Ball valve closed.
 - ⇒ Groove in piping direction:
Ball valve open.

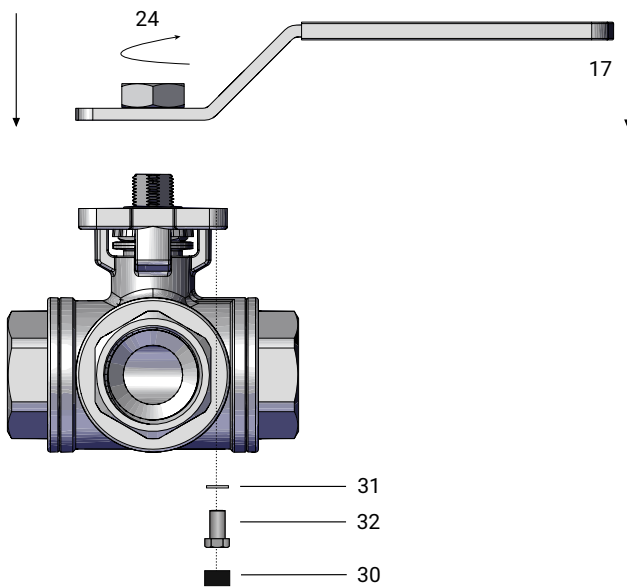
14.1.1 Replacing the hand lever

14.1.1.1 Removing the hand lever

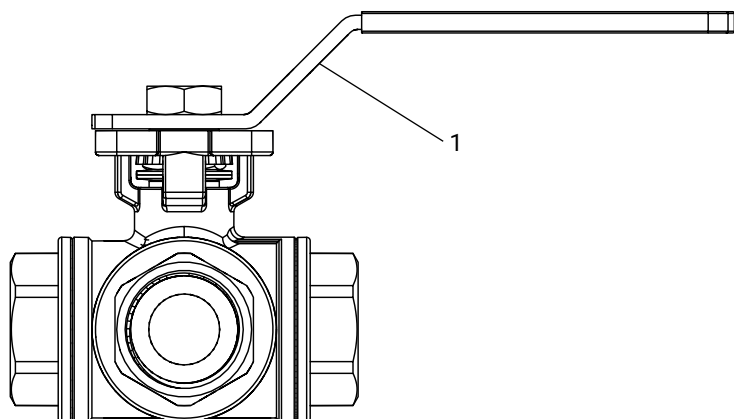


1. Remove the protective caps **30**.
2. Unscrew the hexagon screws **32**.
3. Do not lose the washers **31**.
4. Unscrew the nut **24**.
5. The hand lever **17** can be removed from the ball valve body.

14.1.1.2 Assembling the hand lever



1. Push the new hand lever **17** onto the ball valve body.
2. Turn the hand lever until the screws **32** and nuts **24** can be inserted.
3. Tighten the hand lever with the nut **24**.
4. Tighten the hexagon screws **32** with their washers **31** until hand tight.
5. Diagonally tighten the hexagon screws **32** evenly until they are hand tight.
6. Put the protective caps **30** back on.

14.2 Spare parts

Item	Name	Order designation
1	Quarter turn actuator, manual, DN 15-20	AB22 20D 0SET
	Quarter turn actuator, manual, DN 25-32	AB22 32D 0SET
	Quarter turn actuator, manual, DN 40-50	AB22 50D 0SET

15 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.

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



EU Declaration of Conformity

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

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

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

Product: GEMÜ BB07
Product name: 3/2-way ball valve with bare shaft
Notified body: TÜV Rheinland Industrie Service GmbH
Am Grauen Stein 1
51105 Cologne, Germany

ID number of the notified body: 0035
No. of the QA certificate: 01 202 926/Q-02 0036
Conformity assessment procedure: Module H1

The following harmonized standards (or parts thereof) have been applied: EN ISO 1983:2013

Information for products with a nominal size \leq 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.

Other applied technical standards / Remarks:

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

M. Barghoorn
Head of Global Technics
Ingelfingen, 01/12/2022

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Subject to alteration

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