GEMÜ CV

Check valve

EN **Operating instructions**

further information
webcode: GW-CV

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Keep the document for future reference.

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15.06.2026

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1 General information

1. Check the check valves for possible damage before installation. Check the check valve for freedom of movement. Damaged parts must not be installed.
2. Make sure that you only install check valves whose pressure class, chemical resistance, connection and dimensions are appropriate for the conditions of use.
3. Please note the flow direction (see arrow on product label)!

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
	Danger of explosion!
	The equipment is subject to pressure!
	Corrosive chemicals!
	Hot plant components!
	Maximum permissible pressure exceeded!
	Risk of crushing fingers when reaching into the media connection (pipe) in the event of sudden back pressure from the closing valve!
	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:

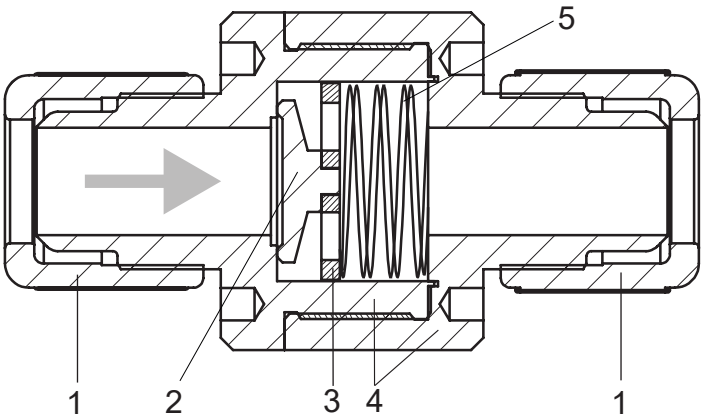
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not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

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

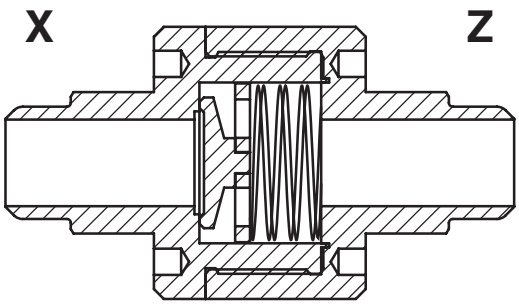
3.1 Flare connection



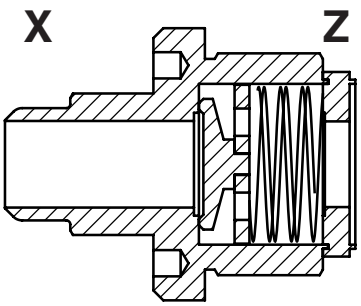
Item	Name	Materials
1	Flare union nut	PFA, CPFA or PVDF
2	Sealing plate	PTFE
3	Perforated disc	PTFE
4	Basic body	PTFE
5	Return spring	PTFE

Designs

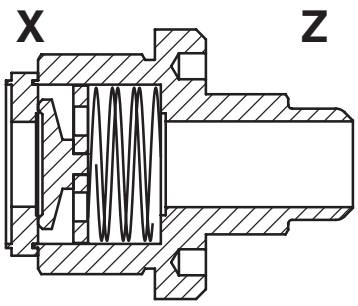
For PC50 block solutions



Check valve,
connection Flare + Flare
type code CVFF

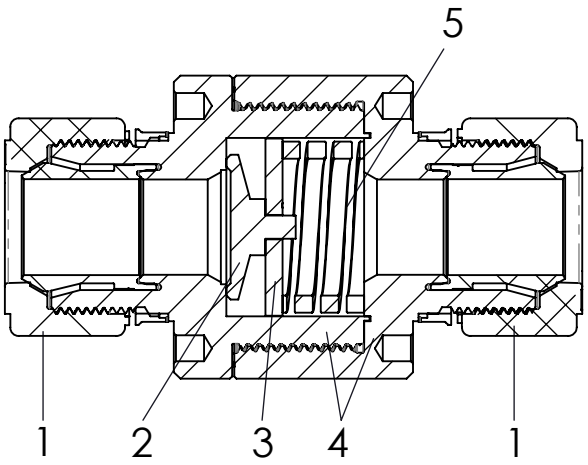


Check valve,
connection Flare + UN thread
flow direction X to Z
type code CVFU



Check valve,
connection UN thread + Flare
flow direction X to Z
type code CVUF

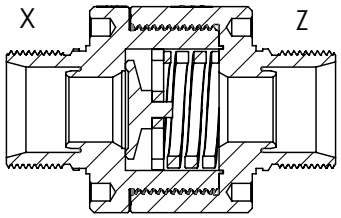
3.2 Nexus Connect® connection



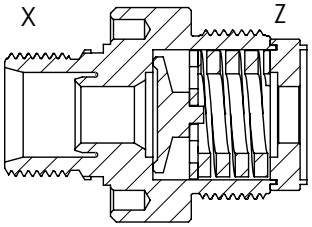
Item	Name	Materials
1	Nexus union nut	PFA
2	Sealing plate	PTFE
3	Perforated disc	PTFE
4	Basic body	PTFE
5	Return spring	PTFE

Designs

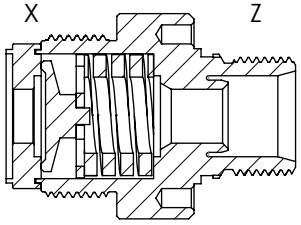
For PC50 block solutions



Check valve,
NX + NX connection
Type code CVNN



Check valve,
NX + UN thread connection flow direction X to Z
Type code CVNU



Check valve,
UN thread + NX flow direction connection X to Z
Type code CVUN

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.

Order codes

1 Type	Code
Check valve	CVFF
Check valve	CVNN

2 Connection size 1	Code
1/4", international code: 4	4
3/8", international code: 6	6
1/2", international code: 8	8
3/4", international code: 12	12
1", international code: 16	16

3 Connection type, spigot 1	Code
Flare connection with CPFA union nut	73
Flare connection with PVDF union nut	75
Flare connection with PFA union nut	77
Nexus with PFA union nut	NX

4 Valve body material	Code
Modified PTFE, polytetrafluoroethylene	26

5 Sealing plate material	Code
Modified PTFE, polytetrafluoroethylene	5

6 Connection size 2	Code
1/4", international code: 4	4
3/8", international code: 6	6
1/2", international code: 8	8
3/4", international code: 12	12
1", international code: 16	16

7 Connection type, spigot 2	Code
Flare connection with CPFA union nut	73
Flare connection with PVDF union nut	75
Flare connection with PFA union nut	77
Nexus with PFA union nut	NX

8 High Purity version	Code
High Purity	HP

Order example

Ordering option	Code	Description
1 Type	CVFF	Check valve
2 Connection size 1	16	1", international code: 16
3 Connection type, spigot 1	75	Flare connection with PVDF union nut
4 Valve body material	26	Modified PTFE, polytetrafluoroethylene
5 Sealing plate material	5	Modified PTFE, polytetrafluoroethylene
6 Connection size 2	16	1", international code: 16
7 Connection type, spigot 2	75	Flare connection with PVDF union nut
8 High Purity version	HP	High Purity

6 Technical data

6.1 Medium

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

6.2 Temperature

Media temperature: 0 — 130 °C

Observe pressure/temperature diagram

Ambient temperature: 0 — 100 °C

Storage temperature: 0 — 40 °C

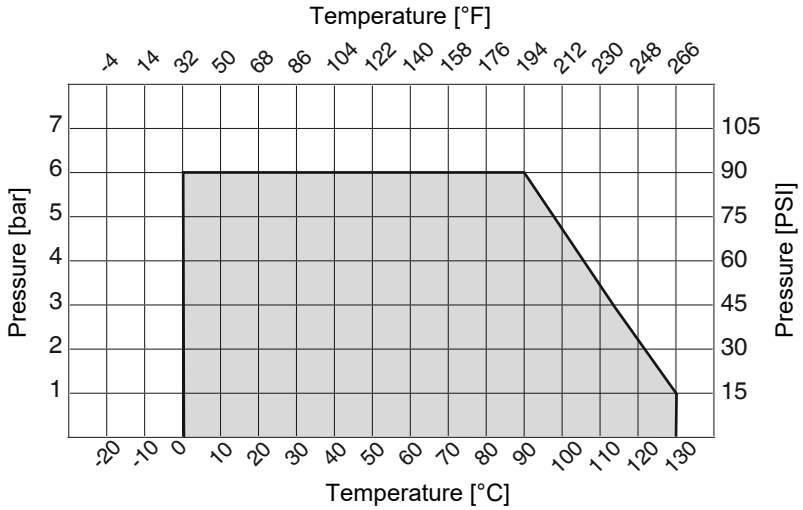
6.3 Pressure

Operating pressure: 0 — 6 bar

Open pressure: 0.017 to 0.052 bar

Back pressure/sealing pressure: 0.35 bar

Pressure/temperature diagram:



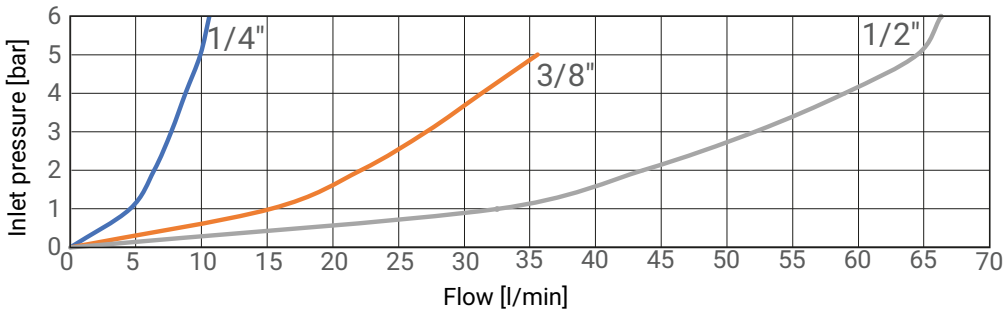
Note: The temperature / pressure diagram is only an aid. The data refers to water as a working medium. A change of operating conditions or other media may result in deviations. In case of doubt it is advisable to test the behaviour of the material under the definitive operating conditions by means of a test installation.

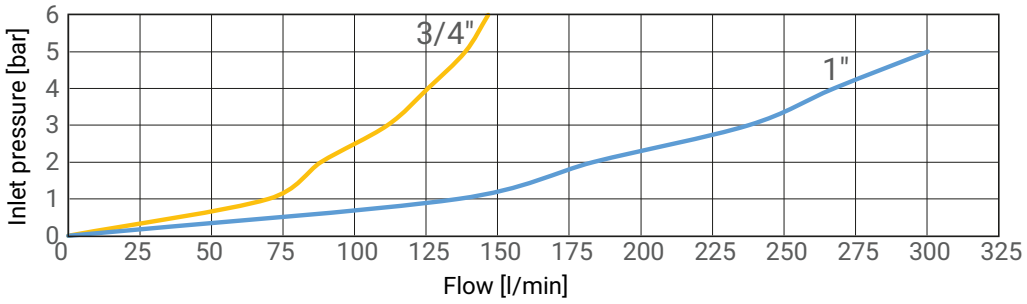
Kv values:

DN	Size	Code	Size	Kv value	Cv value
4	1/4”	4	1	4.56	0.32
4	3/8”	6	1	16.80	1.17
10	1/2”	8	2	33.47	2.33
15	3/4”	12	3	72.50	5.04
20	1”	16	4	144.67	10.42

Kv values in l/min, Cv values in gpm

Kv values:





6.4 Mechanical data

Flow direction: Connection X to connection Z (see arrow on product label)

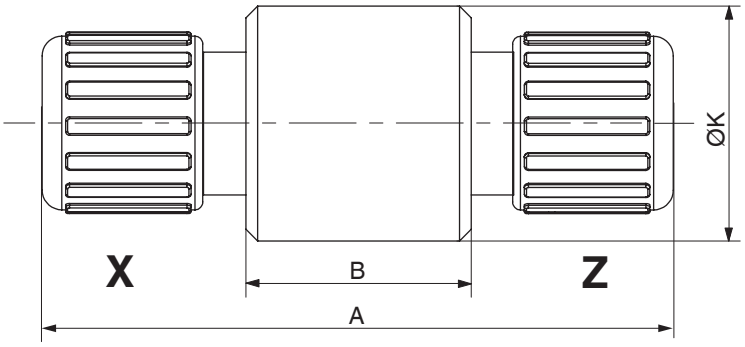
Weight:

DN	Size	Code	Size	Weight
4	1/4”	4	1	83
4	3/8”	6	1	94
10	1/2”	8	2	126
15	3/4”	12	3	201
20	1”	16	4	560

Weight in g

7 Dimensions

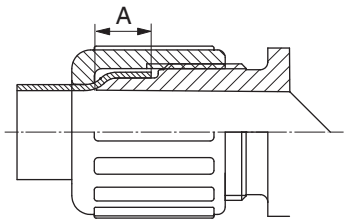
7.1 GEMÜ CV



Size	Connection	Z	A	B	ØK
1	1/4“, 3/8“ Flare	1/4“, 3/8“ Flare	97.0 / 3.82	38.5 / 1.52	31.2 / 1.23
2	1/2“ Flare	1/2“ Flare	104,9 / 4.13	36.7 / 1.44	37.6 / 1.48
3	3/4“ Flare	3/4“ Flare	105.4 / 4.15	36.9 / 1.45	47.2 / 1.86
4	1“ Flare	1“ Flare	146.3 / 5.76	55.0 / 2.17	69.9 / 2.75

Dimensions in mm/inch

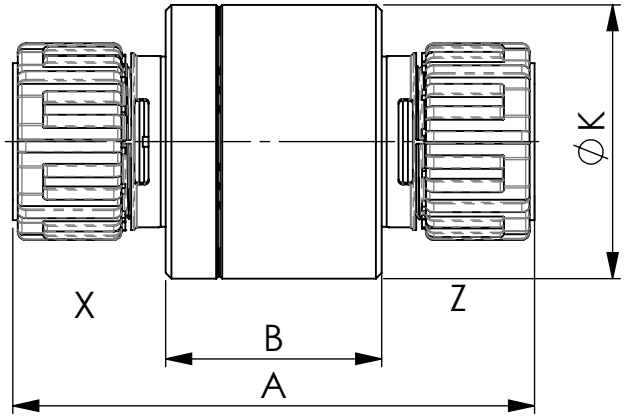
7.2 Overlap dimensions of flare connection



Size	Tube size	Thread designation	Standard	A
1	1/4“	1/2“-20-UNF	ANSI B 1.1	7.0
1	3/8“	5/8“-20-UN	ANSI B 1.1	10.0
2	1/2“	3/4“-20-UNEF	ANSI B 1.1	12.0
3	3/4“	1“-20-UNEF	ANSI B 1.1	14.0
4	1“	1 7/16“-12-UN	ANSI B 1.1	14.0

Dimensions in mm/inch

7.3 Nexus Connect® connection (code NX)



Size	A	B	ØK
1/4"	79.31	38.30	31.5
3/8"	87.72	38.30	31.5
1/2"	91.90	36.50	38.0
3/4"	104.29	36.70	48.0
1"	133.36	55.22	70.0

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.
5. Close the compressed air connections with protection caps or sealing plugs.

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 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

Risk of crushing fingers when reaching into the media connection (pipe) in the event of sudden back pressure from the closing valve!

► Serious injuries to the fingers.
- Never reach into the media connection (pipe).

⚠ 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!

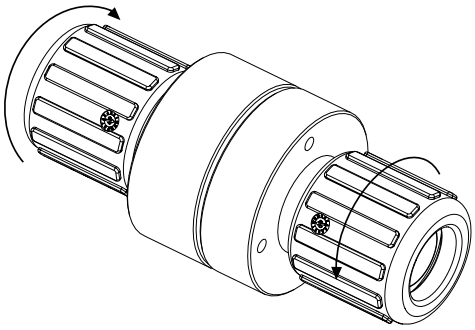
► The tools required for installation and assembly are not included in the scope of delivery.

● Use appropriate, functional and safe tools.

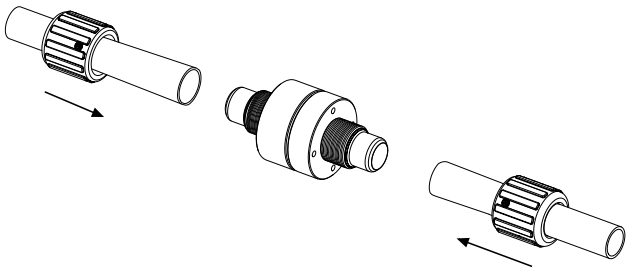
1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. Keep appropriate tools ready.
4. Wear appropriate protective gear, as specified in the plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Have 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. 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 from vibrations and tension.
13. Only install the product between matching aligned pipes (see chapters below).
14. Please note the flow direction.

9.2 Installation with flare connections

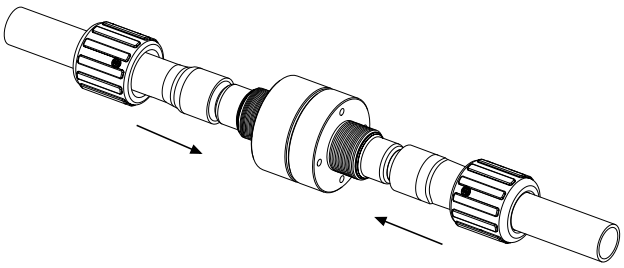
1. Carry out preparations for installation (see chapter "Preparing for installation").



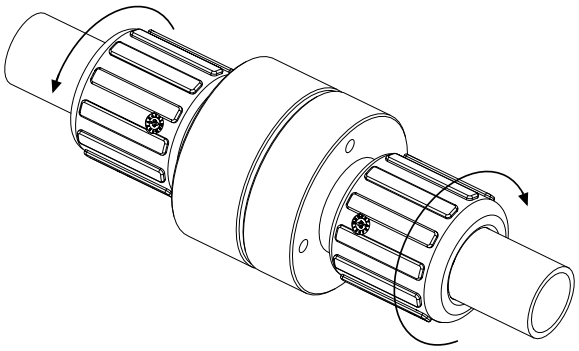
2. Unscrew the union nuts.



3. Guide tube through union nuts.



4. Flare the tube and push it onto the check valve spigot.



5. Tighten the union nuts.
6. Check the connections for leaks in a subsequent pressure test.

9.3 Installation with Nexus Connect® connection

1. Carry out preparation for installation (see chapter "Preparing for installation").
2. Prepare the tube by installing the sleeve (follow the FitLine Global's instructions, a video about this is available on request).
3. Connect the Nexus Connect® connection with the prepared tube.
4. Tighten the Nexus Connect® union nut.

10 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns

● Wear appropriate protective gear.

● Completely drain the plant.

⚠ CAUTION

Risk of crushing fingers when reaching into the media connection (pipe) in the event of sudden back pressure from the closing valve!

► Serious injuries to the fingers.

● Never reach into the media connection (pipe).

⚠ 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 for new plants and after 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. Commission the actuators in accordance with the enclosed instructions.

11 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.

NOTICE

Use of incorrect spare parts!

► Damage to the GEMÜ product

► The manufacturer liability and guarantee will be void.

● Use only genuine parts from GEMÜ.

⚠ CAUTION

Hot plant components!

► Burns

● Only work on plant that has cooled down.

● Wear protective gear.

⚠ CAUTION

Risk of crushing fingers when reaching into the media connection (pipe) in the event of sudden back pressure from the closing valve!

► Serious injuries to the fingers.

● Never reach into the media connection (pipe).

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 dependent 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 the 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.

11.1 Cleaning the product

- Clean the product with a damp cloth.
- Do **not** clean the product with a high pressure cleaning device.

12 Removal from piping

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

13 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.

14 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.

15 Manufacturer's declaration according to the Pressure Equipment Directive 2014/68/EU

Version 1.0

Herstellererklärung im Sinne der Druckgeräterichtlinie 2014/68/EU

Manufacturer's declaration according to the Pressure Equipment Directive 2014/68/EU

Wir, die Firma

We, the company

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

erklären, dass das nachfolgend bezeichnete Produkt gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU in Übereinstimmung mit der guten Ingenieurspraxis ausgelegt und hergestellt ist.

declare that the below-mentioned product is designed and manufactured in compliance with sound engineering practice according to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU.

Produkt: GEMÜ CV

Produktname: Rückschlagventil

Product: GEMÜ CV

Product name: Check valve

Das Produkt wurde entwickelt und produziert nach GEMÜ eigenen Verfahrensanweisungen und Qualitätsstandards, welche die Forderungen der ISO 9001 und der ISO 14001 erfüllen. Das Produkt darf gemäß Artikel 4, Absatz 3 der Druckgeräterichtlinie 2014/68/EU keine CE Kennzeichnung tragen.

The product has been 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, this product must not be identified by a CE-marking.

i.V. M. Barghoorn
Leiter Globale Technik

Ingelfingen, 21.01.2026

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Subject to alteration

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