

GEMÜ RSK

Plastic check 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.





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
	Reactions of the working medium with test medium residues!
	Valve pressure exceeded!
	Danger of explosion!
	Sharp edges!
	Risk of injury and death from working on plant in operation!
	Risk of crushing!
	The equipment is subject to pressure!
	Corrosive chemicals!
	Hot plant components!
	Maximum permissible pressure exceeded!
	Leakage!

Symbol	Meaning
	Hot plant components as a potential ignition source!
	Leakages!
	Damage due to pressure surges!
	Danger of burning from very hot or very cold plant components!
	Harmful substances on the valve due to use in contaminated areas!
	Danger from residual liquids leaking out!

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, compliance with which the operator is responsible for (including compliance by any additional installation personnel).

Prior to commissioning:

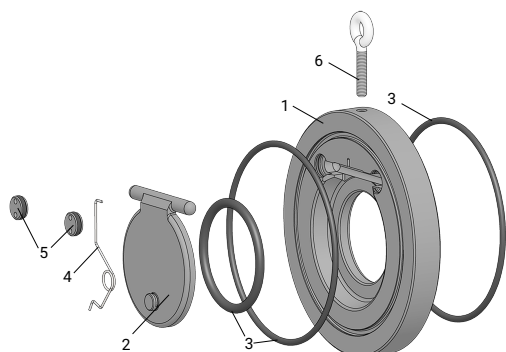
1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Ensure that the piping system is installed properly.
4. Have installation and commissioning carried out by trained personnel.
5. Provide adequate training for installation and operating personnel.
6. Ensure that the contents of the document have been fully understood by the responsible personnel.
7. Define the areas of responsibility.
8. Observe the safety data sheets.
9. Observe the safety regulations for the media used.
10. Plant operator: For applications with a danger of explosion, hot surfaces or plant and valve components may present a potential ignition source.

During operation:

11. Keep this document available at the place of use.
12. Observe the safety information.
13. Operate the product in accordance with this document.
14. Operate the product in accordance with the specifications.
15. Prevent pressure surges.
16. Check the correct function of the piping system regularly.
17. Maintain the product correctly.
18. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

19. Consult the nearest GEMÜ sales office.

3 Product description**3.1 Construction**

Item	Name	Materials
1	Body	PVC-U grey, PP, PVDF
2	Disc	PVC-U grey, PP, PVDF
3	Seal (O-ring)	NBR, EPDM, FKM, PTFE (encapsulated)
4	Spring	1.4571, Hastelloy
5	Screws	PVC-U grey, PP, PVDF
6	Eye bolt	1.4571

3.2 Description

GEMÜ RSK is a plastic check valve with integrated flange seal. The valve body, disc and seal are available in various materials.

The GEMÜ RSK is clamped between two flanges during installation. The centring is based on the outside diameter of the housing

3.3 Function

This product is used to transport liquid and gaseous fluids. The product is not suitable for solids.

The flow of fluid causes the disc **2** in the check valve to open. Check valves therefore need a low opening pressure. The resulting opening force moves the check valve against the spring **4** and the weight force of the disc **2** so that the medium is released. In the event of failure (e.g. pump failure) or backflow of the medium, the valve closes automatically.

To potentially achieve higher flows, special flange adaptors are provided which enable the valve to have a larger opening angle. If the outlet pressure exceeds the inlet pressure, the check valve closes and creates a seal against the medium using the O-ring. The valve is sealed off from the outside via the O-ring. It is therefore recommended that flange sleeves with smooth sealing surfaces be used.

3.4 Pressure test

The check valve is tested for leak-tightness using air or water at the factory in a pressure test.

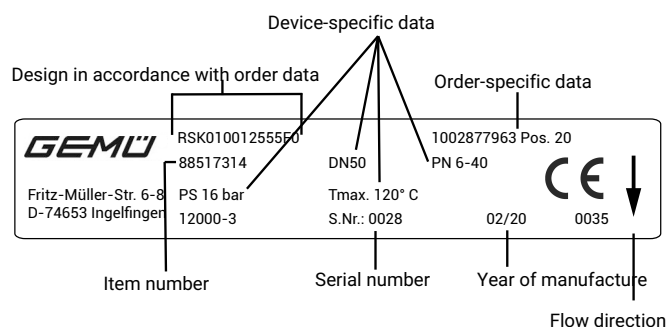
⚠ CAUTION**Reactions of the working medium with test medium residues!**

- Damage to the check valve
- Make sure that the contact surfaces of the valve are clean.

The following must be observed when performing a system pressure test on the plant:

⚠ WARNING**Valve pressure exceeded!**

- Risk of injury!
- Ensure that during the system pressure test, the pressure does not exceed 1.5 times the maximum permissible pressure of the check valve.

3.5 Product label**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.

5 Order data

Order codes

1 Type	Code
Check valve	RSK

2 DN	Code
DN 32	0032
DN 40	0040
DN 50	0050
DN 65	0065
DN 80	0080
DN 100	0100
DN 125	0125
DN 150	0150
DN 200	0200
DN 250	0250
DN 300	0300
DN 350	0350
DN 400	0400
DN 450	0450
DN 500	0500
DN 600	0600

3 Operating pressure	Code
5 bar	7
6 bar	1
8 bar	8
10 bar	2

4 Connection type	Code
PN 6/flange EN 1092	1
PN 10/flange EN 1092	2

4 Connection type	Code
ANSI B16.5, Class 150	D

5 Housing material	Code
PVC-U	1
PP	5
PVDF	20

6 Disc material	Code
PVC-U	1
PP	5
PVDF	20

7 Sealing material	Code
NBR	2
FKM	4
PTFE	5
EPDM	14

8 Spring return	Code
Without return spring	F0
Spring 1.4571	F1
Hastelloy spring	F2

9 Type of design	Code
Without	
Media-wetted area cleaned to ensure suitability for paint applications, parts sealed in plastic bag	0101
Valve free of oil and grease, media-wetted area cleaned and packed in PE bag	0107
Check valve with bonded O-ring	2577

Order example

Ordering option	Code	Description
1 Type	RSK	Check valve
2 DN	0100	DN 100
3 Operating pressure	1	6 bar
4 Connection type	2	PN 10/flange EN 1092
5 Housing material	5	PP
6 Disc material	5	PP
7 Sealing material	5	PTFE
8 Spring return	F0	Without return spring
9 Type of design		Without

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, disc and seal material.

The product can be used under the following conditions (classification in accordance with the Pressure Equipment Directive 2014/68/EU Annex I):

- **Connection sizes DN 32–100**

Fluids of group 1* (dangerous fluids) gaseous or liquid

- **Connection sizes DN 125–600**

Fluids of group 2* (non-dangerous fluids) liquid

* Definition in accordance with Article 2, Numbers 7 and 8 of Regulation (EC) No. 1272/2008 (CLP Regulation).

Operation with unstable gases is impermissible for all nominal sizes.

6.2 Temperature

Media temperature:

Seal	Material code ¹⁾		
	1	5	20
NBR	0 °C ... +60 °C	0 °C ... +90 °C	-20 °C ... +100 °C
EPDM			-20 °C ... +120 °C
FKM			-20 °C ... +120 °C
PTFE			-20 °C ... +120 °C

1) **Housing material**

Code 1: PVC-U

Code 5: PP

Code 20: PVDF

6.3 Pressure

Operating pressure:

DN	Max. permissible pressure in-line with flow direction*		
	Material code ¹⁾		
	1	5	20
32	10	8	10
40	10	8	10
50	10	8	10
65	10	8	10
80	10	6	10
100	10	6	10
125	10	6	10
150	6	6	8
200	6	6	8
250	5	5	5
300	5	5	5
350	5	5	5
400	5	5	5
450	5	5	5
500	5	5	5
600	5	5	5

Pressures in bar

1) **Housing material**

Code 1: PVC-U

Code 5: PP

Code 20: PVDF

* The max. permissible pressure is dependent on the nominal size and temperature (see pressure/temperature diagram). The pressures referred to above only apply in-line with flow direction. If pressure is applied against the closed valve (back pressure), see the table on back pressure.

Back pressure:

DN	Material code ¹⁾								
	1			5			20		
	0 °C ... 25 °C	40 °C	60 °C	0 °C ... 25 °C	60 °C	90 °C	-20 °C ... 25 °C	60 °C	120 °C
32	10.00*	6.00*	1.50*	10.00*	4.00*	0.80*	10.00*	6.30*	1.20*
40	9.20	5.50	1.30	3.60	1.40	0.29	9.20	5.80	1.10
50	10.00*	6.00*	1.50*	6.10	2.40	0.49	10.00*	6.30*	1.20*
65	10.00*	6.00*	1.50*	5.60	2.20	0.45	10.00*	6.30*	1.20*
80	10.00*	6.00*	1.50*	4.30	1.70	0.34	10.00*	6.30*	1.20*
100	8.40	5.00	1.20	3.30	1.30	0.27	8.40	5.30	1.00
125	4.70	2.80	0.72	1.90	0.76	0.15	4.70	3.00	0.57
150	2.90	1.70	0.45	1.20	0.48	0.10	2.90	1.80	0.36
200	5.50	3.30	0.84	2.20	0.89	0.18	5.50	3.50	0.67
250	5.30	3.20	0.80	2.10	0.86	0.17	5.30	3.30	0.64
300	4.10	2.40	0.62	1.60	0.66	0.13	4.10	2.60	0.50
350	5.70	3.40	0.86	2.30	0.92	0.18	5.70	3.60	0.69
400	6.00*	3.60*	0.90*	3.30	1.30	0.26	6.00*	3.70*	0.72*
450	6.00*	3.60*	0.90*	3.20	1.30	0.26	6.00*	3.70*	0.72*
500	6.00*	3.60*	0.90*	3.10	1.20	0.25	6.00*	3.70*	0.72*
600	5.00*	3.00*	0.75*	3.40	1.30	0.28	5.00*	3.15*	0.60*

Pressures in bar

1) **Housing material**

Code 1: PVC-U

Code 5: PP

Code 20: PVDF

* Back pressure corresponds to the max. permissible pressure in-line with flow direction.

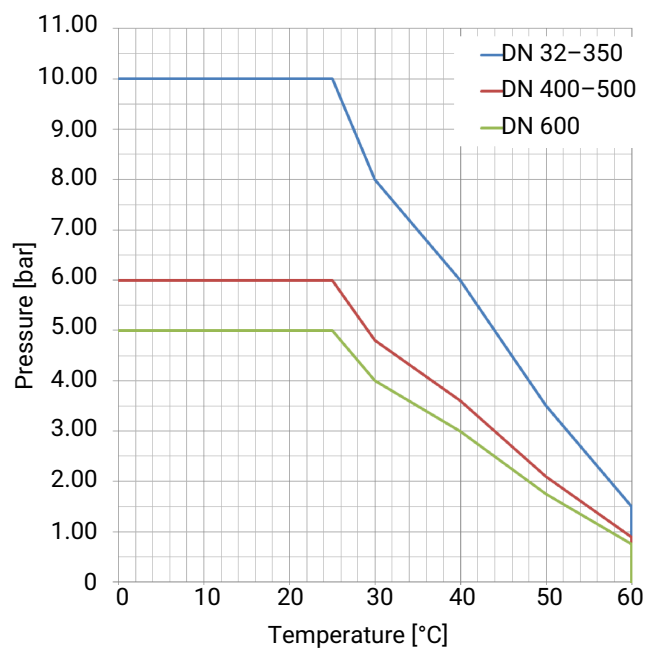
Vacuum:

Can be used up to a vacuum of 100 mbar (abs), or with bonded O-ring (K-no. 2577) up to a vacuum of 20 mbar (abs)

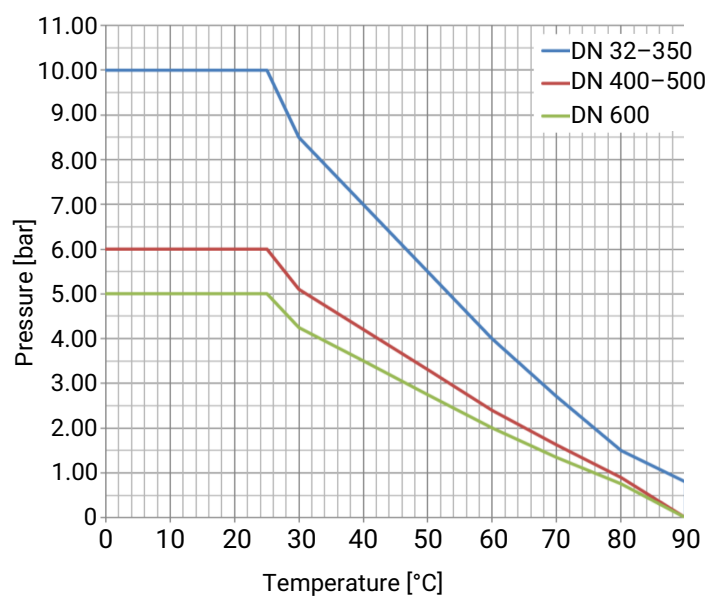
These values apply to room temperature and air. The values may deviate for other media and other temperatures.

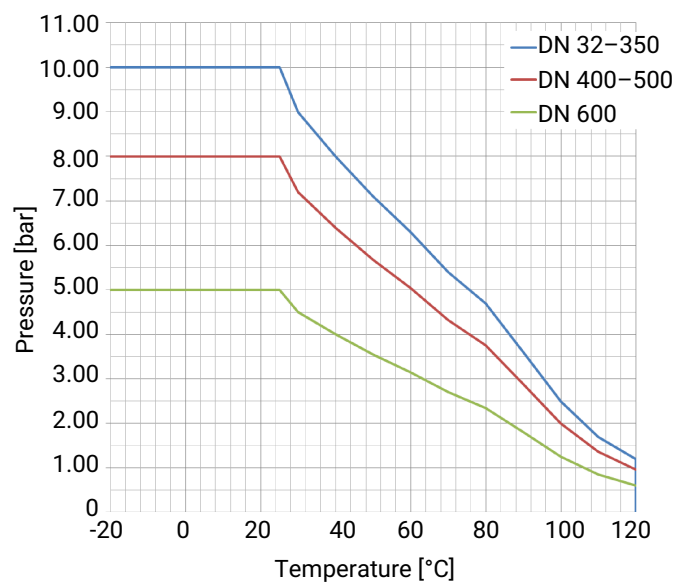
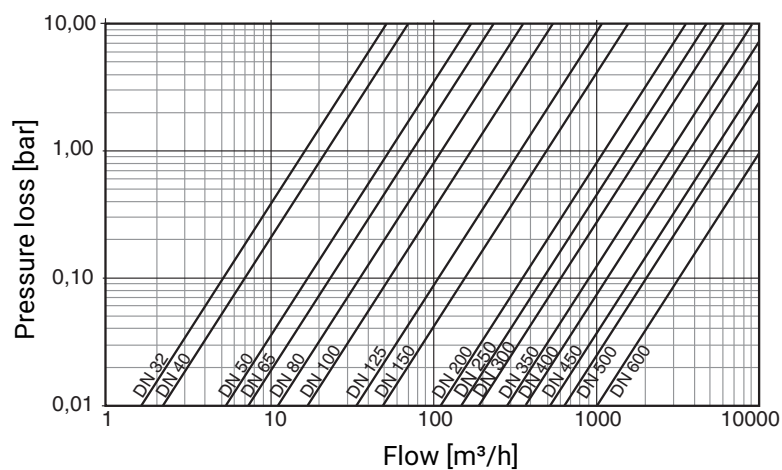
**Pressure/temperature
diagram:**

Body material PVC-U, grey (Code 1)



Body material PP (Code 5)



Pressure/temperature diagram:**Body material PVDF (Code 20)****Pressure loss:**

The diagram values apply to water at 20 °C.

For the calculation of other fluids, please contact us.

Pressure for disc opening:

DN	Piping			
	Vertical (design without spring)	Horizontal (design without spring)	Vertical (design with spring)	Horizontal (design with spring)
32	2.0	0.2	4.0	2.2
40	2.0	0.2	4.0	2.2
50	3.0	0.2	5.0	2.2
65	3.0	0.2	5.0	2.2
80	3.0	0.2	5.0	2.2
100	3.0	0.2	5.0	2.2
125	3.0	0.2	5.0	2.2
150	3.0	0.2	5.0	2.2
200	4.0	0.2	6.0	2.2
250	4.0	0.2	6.0	2.2
300	4.0	0.2	6.0	2.2
350	5.0	0.3	7.0	2.3
400	7.0	0.3	9.0	2.3
450	8.0	0.3	10.0	2.3
500	8.0	0.3	10.0	2.3
600	11.0	0.4	13.0	2.4

Pressures in mbar

Acc. to EN 12266-1

To achieve the stated leakage rate, a back pressure of at least 0.3 bar is required for tight sealing.

Leakage rate:

Leakage rate A according to P12 EN 12266-1

Kv values:

DN	Kv value
32	16.20
40	22.20
50	54.00
65	75.00
80	112.00
100	172.00
125	342.00
150	490.00
200	1128.00
250	1500.00
300	1914.00
350	2800.00
400	3700.00
450	4500.00
500	5450.00
600	6800.00

Kv values in m³/h

6.4 Mechanical data

Weight:

DN	Material code ¹⁾		
	1	5	20
32	0.12	0.09	0.16
40	0.16	0.11	0.19
50	0.22	0.15	0.27
65	0.33	0.22	0.42
80	0.39	0.26	0.50
100	0.57	0.37	0.72
125	0.78	0.50	0.99
150	1.10	0.72	1.40
200	2.10	1.40	2.70
250	3.50	2.20	4.40
300	5.10	3.20	6.50
350	7.70	5.00	9.80
400	12.60	8.10	16.10
450	17.70	11.20	22.50
500	23.50	15.00	30.20
600	39.90	25.40	50.80

Weights in kg

1) **Housing material**

Code 1: PVC-U

Code 5: PP

Code 20: PVDF

6.5 Product compliance

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Food: FDA*
BfR XXI cat. 4*
3A*
USP* Class VI
Regulation (EC) No. 10/2011*
ADI-free*

Drinking water: KTW*
DVGW*
NSF*
WRAS*

Environment: RoHS

TA Luft (German Clean Air Act): The product meets the following requirements under the max. permissible operating conditions:

- Tightness or compliance with the specific leak rate within the sense of TA-Luft as well as VDI 2440
- Compliance with the requirements in accordance with DIN EN ISO 15848-1, Table C.2, Class BH

Oxygen: BAM*

Gas: DIN EN 549*

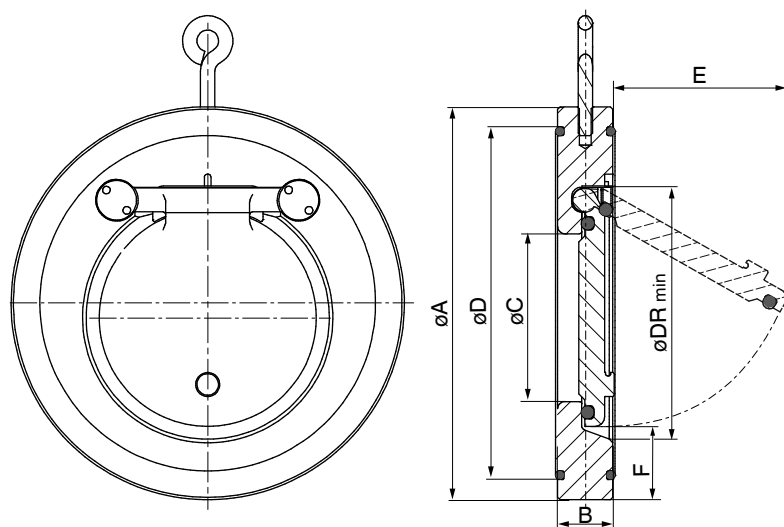
Chemicals: REACH

Explosion protection: ATEX (2014/34/EU)

* This feature is not possible for all versions.

7 Dimensions

7.1 Design version A

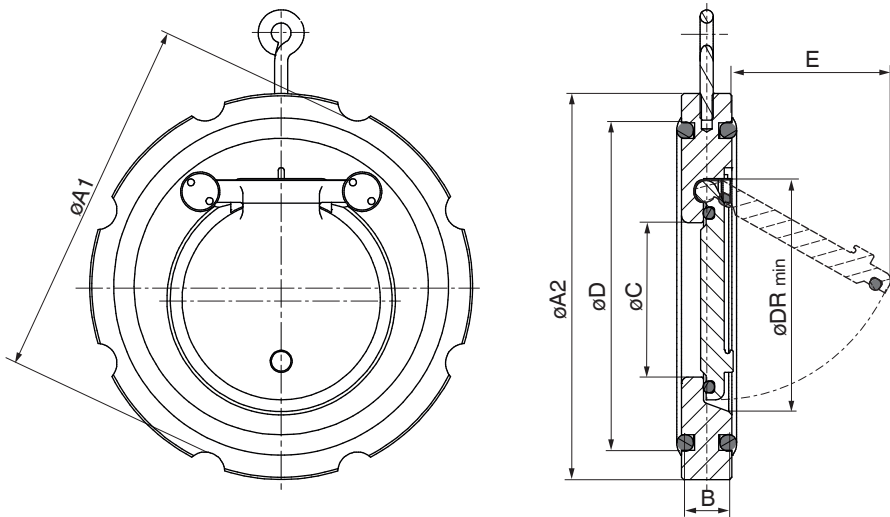


DN	ϕDR_{min}	PN 6	PN 10	ANSI 150	JIS 10K	With spring	Without spring	ϕC	ϕD	E	F
ϕA						B					
32	37.0	79.0	85.0	74.0	85.0	15.0	15.0	18.0	59.0	22.0	25.0
40	43.0	89.0	95.0	83.0	91.0	16.0	16.0	22.0	72.0	25.0	28.0
50	54.0	98.0	109.0	105.0	105.0	18.0	18.0	32.0	86.0	37.0	29.0
65	70.0	118.0	129.0	124.0	124.0	20.0	20.0	40.0	105.0	50.0	31.0
80	82.0	134.0	144.0	137.0	135.0	20.0	20.0	54.0	119.0	61.0	32.0
100	106.0	154.0	164.0*	175.0*	160.0	23.0	23.0	70.0	146.0*	77.0*	31.0
125	131.0	184.0	195.0	197.0	191.0	23.0	23.0	92.0	173.0	94.0*	35.0
150	159.0	209.0	220.0*	222.0*	220.0	26.0	26.0	105.0	197.0*	100.0*	40.0
200	207.0	264.0	275.0*	279.0*	271.0	34.0	34.0	154.0	255.0*	152.0*	38.0
250	260.0	319.0	330.0*	340.0*	334.0	40.0	40.0	192.0	312.0*	180.0*	41.0
300	309.0	375.0	380.0*	410.0*	380.0	45.0	45.0	227.0	363.0*	215.0*	41.0
350	341.0	425.0	440.0	451.0	424.0	49.0	49.0	266.0	416.0	245.0	54.0
400	392.0	475.0	491.0	514.0	487.0	65.0	65.0	310.0	467.0	285.0	55.0
450	443.0	530.0	541.0	549.0	541.0	68.0	78.0	350.0	520.0	330.0	61.0
500	493.0	580.0	596.0	606.0	596.0	78.0	87.0	400.0	550.0	385.0	58.0
600	595.0	681.0	698.0	718.0	698.0	97.0	97.0	486.0	659.0	470.0	60.0

Dimensions in mm

* Design version B is used as standard for these connection types and nominal sizes.

7.2 Design version B



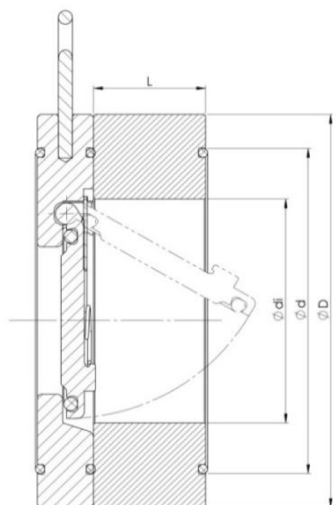
DN	$\phi DR \text{ min.}$	PN 10	ANSI 150	B	ϕC	ϕD	E
		$\phi A1$	$\phi A2$				
100	106.0	164.0	175.0	23.0	70.0	153.0	77.0
150	159.0	220.0	222.0	26.0	105.0	198.5	100.0
200	207.0	275.0	279.0	34.0	154.0	259.5	152.0
250	260.0	330.0	340.0	40.0	192.0	311.0	180.0
300	309.0	380.0	410.0	45.0	227.0	247.0	215.0

Dimensions in mm

7.3 Special flange adaptor

The special flange adaptor must be ordered separately.

7.3.1 Dimensions of spacer ring as special flange adaptor



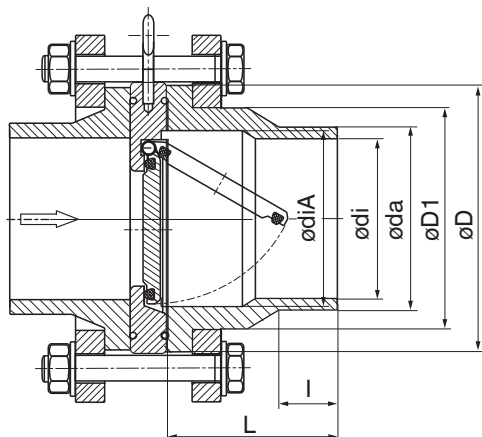
DN	$\varnothing d_i$	$\varnothing d$	$\varnothing D$	L
32	37.0	59.0	85.0	20.0
40	46.0	72.0	95.0	20.0
50	58.0	86.0	109.0	25.0
65	70.0	105.0	129.0	40.0*
80	82.0	119.0	144.0	40.0*
100	106.0	146.0	164.0	50.0
125	130.0	173.0	194.5	50.0**
150	158.0	197.0	220.0	50.0
200	206.0	255.0	275.0	70.0
250	259.0	312.0	330.0	100.0
300	308.0	363.0	380.0	165.0

Dimensions in mm

* PVDF = 30

** PVDF = 40

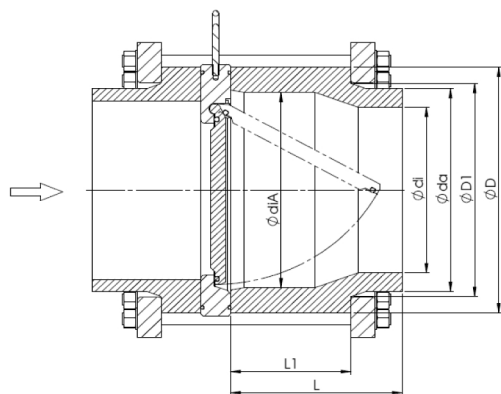
7.3.2 Dimensions of special flange adaptor



DN	ØD	L	Øda	Ødi		ØdiA	I	ØD1	Item no.	
				PN 6	PN 10				PP	PE
32	80.0	65.0	40.0	35.0	32.0	37.0	30.0	50.0	88413915	-
40	90.0	68.0	50.0	43.0	41.0	43.0	30.0	61.0	88322123	88321090
50	105.0	74.0	63.0	54.0	51.0	54.0	30.0	77.0	88299955	88320179
65	125.0	78.0	75.0	66.0	61.0	70.0	30.0	91.0	88242365	88207359
80	140.0	87.0	90.0	79.0	73.0	82.0	35.0	109.0	88264813	88241582
100	160.0	102.0	110.0	97.0	90.0	106.0	35.0	132.0	88312179	88207361
125	190.0	125.0	140.0	124.0	114.0	130.0	47.0	166.0	88263989	88390510
150	215.0	150.0	160.0	141.0	130.0	158.0	52.0	189.0	88276859	88413927
200	270.0	200.0	200.0	177.0	163.0	206.0	55.0	249.0	88249170	88413934
250	325.0	225.0	250.0	221.0	204.0	259.0	63.0	293.0	88265064	88413928
300	375.0	255.0	315.0	280.0	257.0	308.0	66.0	337.0	88413916	88413929

Dimensions in mm

Suitable for loose backing flange for socket system



DN	ØD	L	Øda	Ødi		ØdiA	I	ØD1
				PN 6	PN 10			
350	430.0	285.0	355.0	314.0	290.0	342.0	200.0	373.0
400	491.0	350.0	400.0	354.0	327.0	390.0	270.0	427.0
450	541.0	370.0	450.0	399.0	368.0	440.0	290.0	459.0
500	596.0	380.0	500.0	443.0	409.0	490.0	300.0	530.0
600	698.0	450.0	630.0	558.0	515.0	580.0	370.0	642.0

Dimensions in mm

Suitable for loose backing flange for butt welding system

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

 CAUTION	
	Sharp edges! <ul style="list-style-type: none"> ▶ Risk of cutting injuries! ● Wear protective gloves. ● Adequately secure the valve.

NOTICE

Damage to property due to improper handling during unpacking and transport!

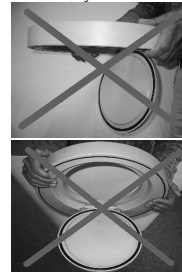
- ▶ If lifted incorrectly, the valve (primarily on products > DN 100) may open due to its own weight and the product may become damaged.
- Hold the product horizontally so that the valve can only open upwards.

1. Observe the specifications on storage, including during transport.
2. Only transport the product by suitable means. Do not drop. Handle carefully.
3. When transporting over long distances, use the original packaging or equivalent packaging.
4. Dispose of transport packing materials according to relevant local or national disposal regulations/environmental protection laws after installation.
5. For products with a large nominal size that cannot be moved by hand, use suitable lifting tackle.
6. Only use lifting tackle on the housing or eye bolt of the product, and not on the internal components.
7. Hold products > DN 100 horizontally so that the product can only open upwards.

Correct handling:



Incorrect handling:



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. Protect the product, particularly the connection and sealing surfaces, from mechanical damage.
5. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.
6. Protect the product, particularly the connection and sealing surfaces, from mechanical damage.
7. Close the compressed air connections with protection caps or sealing plugs.
8. Avoid storing for too long to prevent seals from ageing and functional impairment.

9 Installation in piping

9.1 Preparing for installation

DANGER



Risk of injury and death from working on plant in operation!

- Shut off the plant before carrying out maintenance work.
- Secure the plant against recommissioning.

DANGER



Risk of crushing!

- Risk of severe injury.
- Depressurize the plant before performing any work on the product.
- Observe correct handling procedures.

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.
- Completely decontaminate the plant.

CAUTION



Sharp edges!

- Risk of cutting injuries!
- Wear protective gloves.
- Adequately secure the valve.

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

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

Damage to property!

- Damage to valve and plant.
- Install the valve correctly.
- Do not expose the valve to pressure surges.

NOTICE

Tools!

- The tools required for installation and assembly are not included in the scope of delivery.
- Use appropriate, functional and safe tools.

NOTICE

Functional impairment or damage due to incorrect installation position (horizontal flow direction)!

- Check that the installation position is correct using the position of the eye bolt and the flow direction arrow on the product label.
- Install the valve in the correct installation position and centre it between the two pipes.
- Ensure that the eye bolt of the valve is pointing upwards.

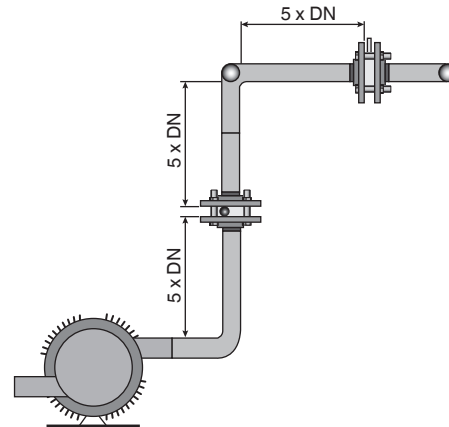
NOTICE

Functional impairment or damage due to incorrect installation position (vertical flow direction)!

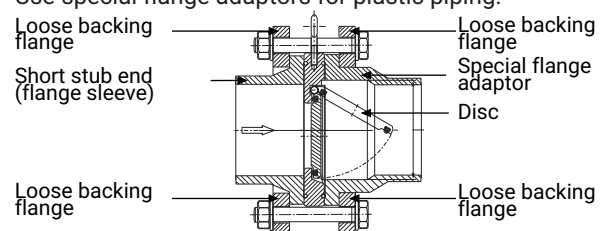
- Check that the installation position is correct using the flow direction arrow on the product label.
 - Install the valve in the correct installation position and centre it between the two pipes.
 - Ensure that the flow direction arrow on the valve is pointing upwards.
1. Ensure the product is suitable 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. Pay attention to the installation position: horizontal or vertical.
 15. Pay attention to the direction of the working medium: positioned in-line with flow direction

9.2 Installation

1. Carry out preparations for installation (see chapter "Preparing for installation").
2. Inspect check valve and O-rings for possible damage before installation. Check the freedom of movement of the check valve. Damaged parts must not be installed.
3. Make sure that you only install check valves whose pressure class, chemical resistance, connection and dimensions are appropriate for the conditions of use.
4. Provide a straight pipe section of at least 5 times the nominal diameter upstream and downstream of the check valve.



5. Use flanges to EN1092-1 or EN1092-2 for metal piping.
6. Do not mount directly on a pump flange.
7. Ensure that when installing between flanges with connection dimensions in accordance with DIN EN 1092-1 B1 PN 10, the inside diameter d_i is maintained over the length L on the output side in order to guarantee that the valve opens correctly.
8. Avoid pulsating flow conditions and water hammer.
9. Use special flange adaptors for plastic piping.



- ⇒ Higher flow rates.
- ⇒ Larger and optimal disc opening angle.

10. Installation with vertical flow is only permissible if the check valve can open upwards. The flow direction arrow on the valve must point upwards.
11. If the medium flows horizontally through the check valve, the eye bolt must point upwards.
12. Put one washer onto each of the flange bolts.
13. Insert two flange bolts through the lower flange holes. These can act as a holder for the valve when in the installation position with a horizontal flow direction.
14. From the other side, put one washer onto each of the flange bolts and place one nut on each.
15. With metal seated valves (without O-rings in the body), the operator is responsible for providing a suitable flange connection seal. This should be centred with the valve between the flanges.
16. Insert the valve between the flanges using the eye bolt. Here, the installation notes on the following pages must be observed in accordance with the flow direction.
17. When being installed in horizontal piping, the valve can be placed on the two flange bolts.
18. Insert the remaining flange bolts into the flange holes.
19. Insert the remaining washers onto the flange bolts from the other side.
20. Position the remaining nuts on the flange bolts.
21. Centre the valve between the flanges using the eye bolt.
22. Tighten the flange bolts to the appropriate torque in a diagonal pattern.

Flange bolt tightening torques	
Thread	Torque [Nm]*
M12	20
M16	35
M20	60
M24	100
M27	165

* The specified tightening torques are to be seen as guide values since they depend on various factors, e.g. material and property class of the bolts or the flange seal used.

10 Manual override

A manual override is available for nominal sizes DN 50–300. The manual override is actuated by an Allen key. The Allen key is not included in the scope of delivery.

- Insert the Allen key in the manual override and turn by the required angle (max. 90°).



11 Commissioning

⚠ WARNING



Corrosive chemicals!

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

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

DANGER



Hot plant components as a potential ignition source!

- ▶ For applications with a danger of explosion, hot surfaces of plant and valve components may present a potential ignition source.
- This danger must be taken into consideration by the operator of the plant before installation.

WARNING



Leakages!

- ▶ Danger from leaking of the medium at areas that are not leak-tight.
- Only use media that do not damage the valves and seals.

WARNING



Damage due to pressure surges!

- ▶ Pressure surges can cause damage to the plant that can lead to injuries.
- ▶ Avoid pressure surges.

CAUTION



Danger of burning from very hot or very cold plant components!

- ▶ Burns
- Only work on a plant that has been shut off and has cooled down.
- Wear appropriate protective gear.

13 Troubleshooting

Malfunctions and defects may occur during operation. The following table shows the possible causes and the appropriate solution to these. In the case of malfunctions/defects that are not listed or that are unclear, contact GEMÜ.

Error	Possible cause	Troubleshooting
Excessive noise	Settling section too small/not complied with	Install valve in a suitable position
	Flow rate too low	Select smaller nominal size
No flow present	Valve and flange not optimally adapted to each other	Adapt the valve and flange to each other or replace
	Valve installed wrong way round	Align flow direction arrow with flow direction
	Pressure too low	Increase pressure and/or flow rate
	Valve too heavy	Use different valve material
		Use the appropriate valve for the piping
		Change the installation position from vertical to horizontal
	Closing spring too strong	Use a weaker closing spring
Leakage rate too high	O-ring damaged	Replace O-ring
	Valve deformed	Replace valve
	Sealing surface damaged	Rework sealing surface, replace housing if applicable
	Sealing surface contaminated	Clean sealing surface
	Wear	Replace affected components
	Closing spring worn/defective	Replace closing spring
Leakage at flange	Flange not sufficiently tightened	Check connector elements and retighten if necessary
	Sealing surface/seal damaged	Rework sealing surface, replace housing if necessary
	Sealing surface/seal contaminated	Clean sealing surface/seal

14 Inspection and maintenance

DANGER



Harmful substances on the valve due to use in contaminated areas!

- ▶ Danger of coming into contact with substances harmful to health.
- Always have work on contaminated valves performed by trained personnel.
- Always wear the specified protective clothing in the contaminated area.
- Follow all safety measures when dealing with the respective hazardous substances.
- Completely decontaminate the valve before working on it. Plastic parts can become so badly contaminated that cleaning is no longer sufficient.

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

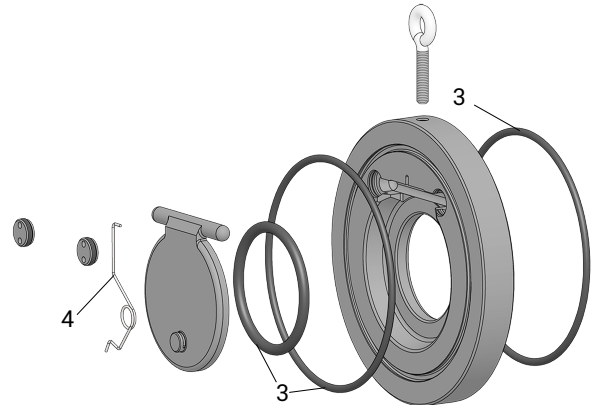
- Servicing and maintenance work must only be performed by trained personnel.
- GEMÜ shall assume no liability whatsoever for damage caused by improper handling or third-party actions.
- In case of doubt, contact GEMÜ prior to commissioning.

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.

14.1 Spare parts







Item	Name	Order designation
3	O-rings	SP*ZR*
4	Spring	



- Replace the O-rings **3** and spring **4**.



15 Removal from piping

15.1 Preparing for removal

 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	
	Danger from residual liquids leaking out!
	● Collect any residual liquids that leak out.
	● Dispose of residual liquids.

 CAUTION	
	Hot plant components!
	► Burns
	● Only work on plant that has cooled down.
	● Wear protective gear.

 CAUTION	
	Sharp edges!
	► Risk of cutting injuries!
	● Wear protective gloves.
	● Adequately secure the valve.

NOTICE	
► If defective, the entire check valve must be replaced.	

1. Wear appropriate protective gear in accordance with the plant operator's guidelines.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.
5. Drain piping and clean it if necessary.
6. Provide a collecting tank in case there are any residues of the medium left in the piping.
7. Take into account warning notes.

15.2 Removal

1. Undo the nuts on all flange bolts.
2. Remove all nuts and washers completely from the flange bolts.
3. Pull the flange bolts out of the flange holes. For a horizontal flow, the bottom flange bolts can remain inserted in order to facilitate disassembly.
4. Secure the check valve against falling down.
5. Remove the check valve from the flange using the eye bolt **6**.
6. Unhook the spring (optional) **4** and unscrew the two bolts **5**.
7. Remove the disc **2**.
8. Place the check valve down on a suitable underlay.

15.3 Prerequisites for storage and reuse

After disassembly, the valve can be stored or used in a different plant. Observe the following guidelines:

- There must be no residues of the medium present in the valve.
- The valve must be in a faultless condition before reuse.
- In order to be reused, the valve must be designed for the specified conditions of use.
- When storing, observe the specifications on storage and transport.

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 Incorporation

Version 1

GEMÜ

Original EU-Einbauerklärung EU Declaration of Incorporation

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen
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 RSK

Product: GEMÜ RSK

Produktname: Rückschlagklappe aus Kunststoff

Product name: Plastic check valve

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

The partly completed machinery may be commissioned only if it has been determined, if necessary, that the machinery into which the partly completed machinery is to be installed meets the provisions of the Machinery Directive 2006/42/EC.

Richtlinien/Verordnungen:

Directives/Regulations:

MD 2006/42/EG¹⁾

Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:

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

EN ISO 12100:2010

Folgende grundlegenden Sicherheits- und Gesundheitsschutzanforderungen der EG-Maschinenrichtlinie 2006/42/EG, Anhang I wurden angewandt und eingehalten:

The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:

1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.4.; 1.3.7.; 1.5.4.; 1.5.5.; 1.6.1.; 1.6.5.; 1.7.1.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.; 2.1.1.; 2.1.2.

¹⁾ MD 2006/42/EG

Bemerkungen:

Ferner wird erklärt, dass die speziellen technischen Unterlagen gemäß Anhang VII Teil B erstellt wurden.

Der Hersteller verpflichtet sich, einzelstaatlichen Stellen auf begründetes Verlangen die speziellen technischen Unterlagen zu der unvollständigen Maschine zu übermitteln. Diese Übermittlung erfolgt elektronisch.

Die gewerblichen Schutzrechte bleiben hiervon unberührt!

¹⁾ MD 2006/42/EG

Remarks:

We also declare that the specific technical documents have been created in accordance with part B of Annex VII.

The manufacturer undertakes to transmit relevant technical documents on the partly completed machinery to the national authorities in response to a reasoned request. This communication takes place electronically.

This does not affect the industrial property rights.



i.V. M. Barghoorn
Leiter Globale Technik
Ingelfingen, 25.09.2025

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

www.gemu-group.com
info@gemue.de

19 EU Declaration of Conformity



Version 1

GEMÜ

EU-Konformitätserklärung

EU Declaration of Conformity

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen
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 RSK**Product:** GEMÜ RSK**Produktname:** Rückschlagklappe aus Kunststoff**Product name:** Plastic check 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 ISO 16137:2006/A1:2019

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

Kategorisierung / Einteilung gemäß Druckgeräterichtlinie 2014/68/EU, Artikel 4 und Anhang II:

Anschlussgröße DN >25 < 125:
- Fluidklasse 1 (gasförmig oder flüssig)
- Diagramm 6, Kategorie I

Anschlussgröße DN ≥ 125:
- Fluidklasse 2 (flüssig)
- Diagramm 7, Kategorie I

Instabile Gase sind ausgeschlossen.

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

Categorisation / classification in accordance with 2014/68/EU Art. 4 and Annex II:

Connection size DN >25 < 125:
- Fluids Group 1 (gaseous or liquid)
- Diagram 6, Category I

Connection size DN ≥ 125:
- Fluids Group 2 (liquid)
- Diagram 7, Category I

Unstable gases are excluded.

i.V. M. Barghoorn
Leiter Globale Technik
Ingelfingen, 30.09.2025

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

www.gemu-group.com
info@gemu.de



GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8, 74653 Ingelfingen-Criesbach, Germany
Phone +49 (0) 7940 1230 · info@gemue.de
www.gemu-group.com

Subject to alteration

10.2025 | 88675926