

GEMÜ R90

Metal disco check valve



Features

- Suitable for low and high temperatures
- Standardized length to DIN EN 558, series 49
- Available as option free of oil and grease
- A special disc guide prevents the disc from tilting and the occurrence of strong flutter
- Bubble tight sealing in accordance with EN 12266-1/P12, leakage rate A and G

Description

The GEMÜ R90 is a metal disco check valve with flange connection and standardized length to DIN EN 558. The valve body, disc and seal are available in various materials. In the version with metallic seal, the GEMÜ R90 valve can be used at high temperatures up to 400 °C.

Technical specifications

- **Media temperature :** -196 to 400 °C
- **Operating pressure :** 0 to 50 bar
- **Nominal sizes:** DN 15 to 300
- **Connection types:** Flange
- **Connection standards:** ANSI | ASME | EN
- **Body materials:** 1.0619, galvanized cast steel material | 1.4408, investment casting material
- **Seal materials:** EPDM | FKM | NBR | PTFE
- **Disc/spring cross materials:** 1.4408, investment casting material | 1.4469, duplex cast steel material
- **Spring materials:** 1.4571, spring steel | 2.4610
- **Conformities:** ATEX | DVGW Drinking water | EAC | FDA | KTW

Technical data depends on the respective configuration



further information
webcode: GW-R90



Product description



Item	Name	Materials
1	Body	1.4408, CC333G, 1.0619, 1.4469 (super duplex)
2	Disc	1.4408, CC333G, 1.0619, 1.4469 (super duplex)
3	Spring	1.4571, C4 (Hastelloy)
4	Spring cross	1.4408, CC333G, 1.0619, 1.4469 (super duplex)

Availability

DN	Pressure range	Version	Materials		
			Body	Disc, spring cross	Spring
15 - 100	0 - 25 bar	1	CC333G	CC333G	C4 (Hastelloy)
		2	CC333G	1.4408	1.4571
15 - 300	0 - 40 bar	3	1.4408	1.4408	1.4571
		4	1.0619, galvanised	1.4408	1.4571
		5	1.4469 (super duplex)	1.4469 (super duplex)	C4 (Hastelloy)

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
Disco check valve, metal	R90

2 DN	Code
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100
DN 125	125
DN 150	150
DN 200	200
DN 250	250
DN 300	300

3 Operating pressure	Code
16 bar	3
25 bar	5
40 bar	6

4 Connection type	Code
PN 6 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	1
PN 10 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	2
PN 16 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	3
PN 25 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	5
PN 40 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	6
ANSI B16.5, Class 150, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	D
ANSI B16.5, Class 300, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)	M

5 Body material	Code
1.4408 / ASTM A351 / CF8M	4
1.0619 / ASTM A216 / WCB	5
1.4469, SUPERDUPLEX / ASTM A890 Grade 5A	D
CC333G / 2.0975 / C954	G

6 Shut-off element material	Code
1.4408 / ASTM A351 / CF8M	4
1.4469, SUPERDUPLEX / ASTM A890 Grade 5A	D
CC333G / 2.0975 / C954	G

7 Guide element material	Code
1.4408 / ASTM A351 / CF8M	4
1.4469, SUPERDUPLEX / ASTM A890 Grade 5A	D
CC333G / 2.0975 / C954	G

8 Shut-off seal material	Code
Steel	0
EPDM (FDA, DVGW-Water certification)	2
PTFE	5
EPDM	E
NBR	N
FKM	V

9 Spring material	Code
1.4571	6
HASTELLOY C-4 / 2.4610	7

10 Special version	Code
Without	
ATEX certification	X

11 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	R90	Disco check valve, metal
2 DN	32	DN 32
3 Operating pressure	3	16 bar
4 Connection type	3	PN 16 / flange EN 1092, face-to-face dimension FTF EN 558-1 series 49 (R90), series 16 (R91)
5 Body material	5	1.0619 / ASTM A216 / WCB
6 Shut-off element material	4	1.4408 / ASTM A351 / CF8M
7 Guide element material	4	1.4408 / ASTM A351 / CF8M
8 Shut-off seal material	0	Steel
9 Spring material	6	1.4571
10 Special version		Without
11 Type of design		Without

Technical data

Medium

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

The valves are not suitable for fluids containing solids.

Temperature

Media temperature:

Seal material:

Steel (code 0): -196 to 400 °C (design 3)

NBR (code N): -30 to 100 °C

EPDM (code 2, E): -65 to 150 °C

FKM (code V): -30 to 230 °C

PTFE (code 5): -196 to 250 °C

For temperatures above 300 °C a compression spring made of Hastelloy C4 (code 7) is required.

Ambient temperature: -20 to 95 °C

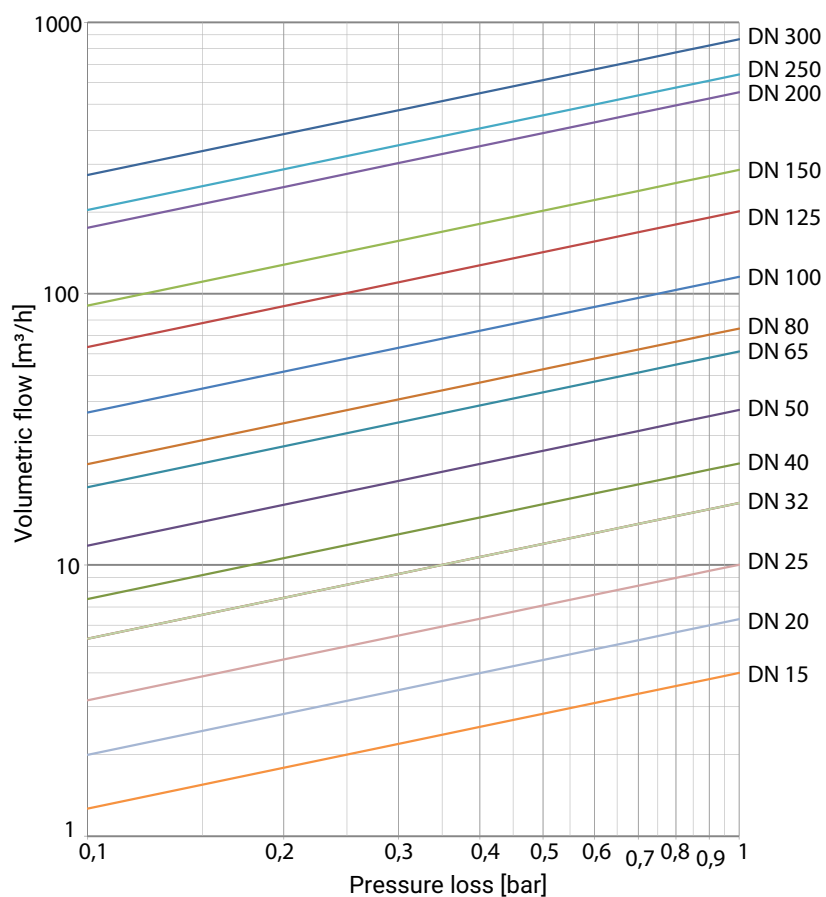
Pressure

Operating pressure: max. 50 bar

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 loss:



Disc opening pressure:

DN	Piping			
				without spring
				
15	~ 20	~ 24	~ 16	~ 4
20	~ 20	~ 25	~ 15	~ 5
25	~ 20	~ 25	~ 15	~ 5
32	~ 20	~ 26	~ 14	~ 6
40	~ 20	~ 27	~ 13	~ 7
50	~ 20	~ 28	~ 12	~ 8
65	~ 20	~ 29	~ 11	~ 9
80	~ 20	~ 30	~ 10	~ 10
100	~ 20	~ 33	~ 7	~ 13
125	~ 30	~ 46	~ 14	~ 16
150	~ 30	~ 47	~ 13	~ 17
200	~ 30	~ 51	~ 9	~ 21
250	~ 40	~ 64	~ 16	~ 24
300	~ 40	~ 68	~ 12	~ 38

Pressures in mbar

Leakage rate:

A acc. to EN 12266-1 (with plastic seal)

G acc. to EN 12266-1 (metallic sealing)

Pressure/temperature correlation:

DN	Design 2/3								
	Temperature [°C]								
	-196*	20.0	100.0	150.0	200.0	250.0	300.0	350.0	400.0*
15	50.0	40.0	40.0	40.0	40.0	40.0	40.0	41.7	40.0
20	50.0	40.0	40.0	40.0	40.0	40.0	40.0	39.6	38.0
25	50.0	40.0	40.0	40.0	40.0	40.0	40.0	41.3	39.6
32	50.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	35.7
40	50.0	40.0	40.0	40.0	40.0	40.0	40.0	37.5	36.0
50	50.0	40.0	40.0	40.0	40.0	40.0	40.0	36.7	35.2
65	50.0	40.0	40.0	40.0	40.0	40.0	40.0	35.9	34.4
80	50.0	40.0	40.0	40.0	40.0	40.0	40.0	36.4	34.9
100	50.0	40.0	40.0	40.0	40.0	40.0	40.0	37.9	36.3
125	50.0	40.0	36.0	32.7	29.7	27.5	25.6	37.6	36.1
150	50.0	40.0	33.1	33.1	27.3	25.3	23.2	39.2	37.6
200	50.0	40.0	29.0	26.5	23.9	22.2	20.7	32.5	31.2
250	50.0	40.0	28.9	26.1	23.8	21.8	20.5	41.7	40.0
300	50.0	40.0	28.1	25.7	23.1	21.5	20.0	35.6	34.1

Pressures in bar

* Design 2 may only be used from -10 to 350 °C.

Pressure/temperature correlation:

DN	Design 4								
	Temperature [°C]								
	-10.0	20.0	100.0	150.0	200.0	250.0	300.0	350.0	400.0
15	40.0	40.0	40.0	40.0	40.0	40.0	40.0	22.4	21.6
20	40.0	40.0	40.0	40.0	40.0	40.0	40.0	22.6	21.8
25	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.9	25.0
32	40.0	40.0	40.0	40.0	40.0	40.0	40.0	24.8	23.9
40	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.5	24.5
50	40.0	40.0	40.0	40.0	40.0	40.0	40.0	26.4	25.4
65	40.0	40.0	40.0	40.0	40.0	40.0	40.0	27.0	26.0
80	40.0	40.0	40.0	40.0	40.0	40.0	40.0	28.2	27.2
100	40.0	40.0	40.0	40.0	40.0	40.0	40.0	29.7	28.6
125	50.0	40.0	36.0	32.7	29.7	27.5	25.6	31.8	30.6
150	50.0	40.0	33.1	30.2	27.3	25.3	23.2	37.3	35.9
200	50.0	40.0	29.0	26.5	23.9	22.2	20.7	32.5	31.2
250	50.0	40.0	28.9	26.1	23.8	21.8	20.5	37.6	36.2
300	50.0	40.0	28.8	26.5	23.8	22.1	20.6	35.6	34.1

Pressures in bar

DN	Design 1/5							
	Temperature [°C]							
	-10.0	20.0	100.0	150.0	200.0	250.0	300.0*	350.0*
15	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
20	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
25	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
32	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
40	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
50	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
65	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
80	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
100	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
125	50.0	50.0	50.0	50.0	50.0	50.0	-	-
150	50.0	50.0	50.0	50.0	50.0	50.0	-	-
200	50.0	50.0	50.0	50.0	50.0	50.0	-	-
250	50.0	50.0	50.0	50.0	50.0	50.0	-	-
300	50.0	50.0	50.0	50.0	50.0	50.0	-	-

Pressures in bar

* Design 5 may only be used from -10 to 250 °C.

Kv values:

DN	Kv values
15	4.0
20	7.0
25	10.0
32	17.0
40	24.0
50	37.0
65	61.0
80	74.0
100	115.0
125	201.0
150	286.0
200	553.0
250	643.0
300	867.0

Kv values in m³/h

If disc springs are used, the Kv value is reduced.

Product compliance

Pressure Equipment Directive: 2014/68/EU

Food: FDA*
BfR XXI cat. 4*

Drinking water: KTW*
DVGW*
* only with seal material EPDM

Explosion protection: ATEX (2014/34/EU)

Mechanical data

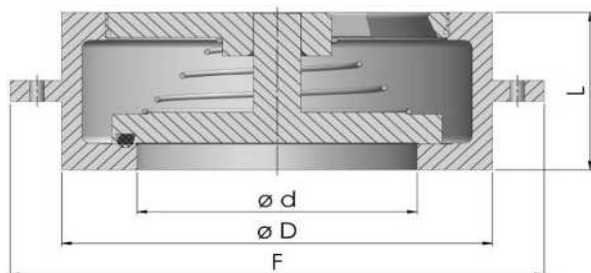
Weight:

DN	Design				
	1	2	3	4	5
15	0.12	0.11	0.11	0.12	0.12
20	0.19	0.19	0.2	0.2	0.19
25	0.31	0.31	0.32	0.32	0.31
32	0.5	0.5	0.52	0.51	0.5
40	0.6	0.61	0.62	0.62	0.61
50	1.02	1.03	1.06	1.05	1.03
65	1.64	1.66	1.71	1.69	1.66
80	2.45	2.48	2.54	2.52	2.48
100	3.83	3.89	3.98	3.95	3.88
125	-	-	8.44	8.37	8.23
150	-	-	12.37	12.26	12.06
200	-	-	23.94	23.74	23.35
250	-	-	39.21	38.88	38.23
300	-	-	58.26	57.81	56.81

Weights in kg

Dimensions

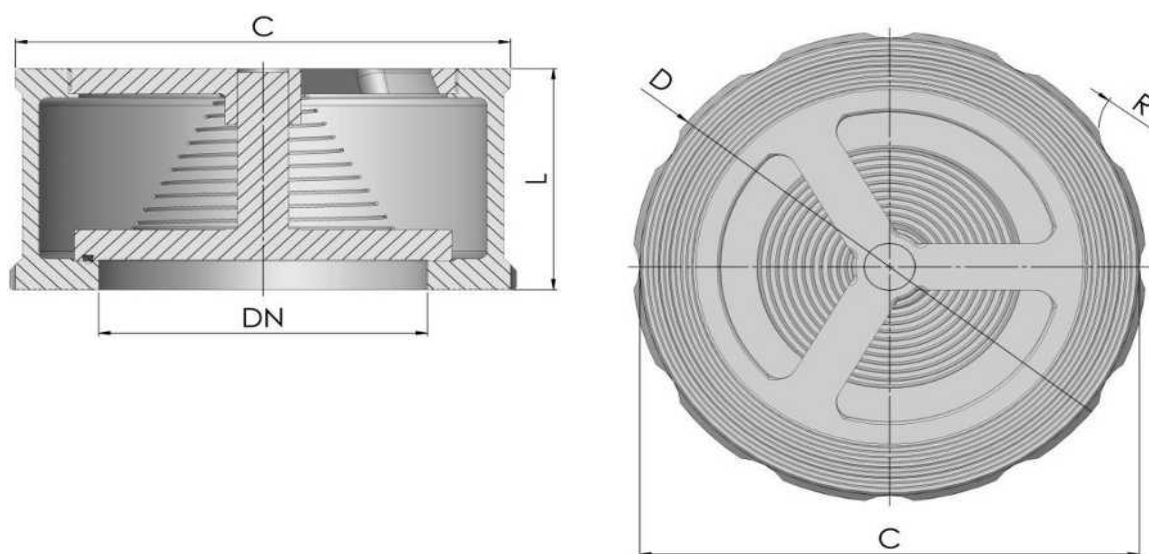
DN 15 to 100



DN	ø d	ø D	F	L
15	15.0	43.0	57.0	16.0
20	19.0	53.0	72.0	19.0
25	25.0	63.0	79.0	22.0
32	32.0	75.0	92.0	28.0
40	38.0	80.0	97.0	31.5
50	47.0	95.0	113.0	40.0
65	63.0	115.0	137.0	46.0
80	77.0	131.0	154.0	50.0
100	97.5	150.0	186.0	60.0

Dimensions in mm

DN 125 to 300



DN	Connection type							L	DN
	PN 10 (code 2), PN 16 (code 3)			PN 25 (code 5)		PN 40 (code 6)	ANSI (code D)		
	C	D	R	C	R	D	D		
125	194.0	194.0	-	194.0	-	194.0	194.0	90.0	118.5
150	220.0	220.0	-	220.0	-	220.0	220.0	106.0	141.0
200	275.0	280.0	11.0	286.0	30.0	294.0	280.0	140.0	190.0
250	331.0	340.0	13.0	344.0	33.0	356.0	340.0	145.0	229.0
300	380.0	386.0	11.0	404.0	33.0	421.0	404.0	160.0	280.0

Dimensions in mm

Certificates

Certificate	Standard	Item number
2.1 Certificate of compliance with the order	EN 10204	88535071
3.1 Material	EN 10204	88490978
3.1 Pressure test	DIN EN 12266-1 P10, P11, P12	88306836



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