

Check Valve type 369



Product description

GF Piping Systems flap traps of type 369 are designed especially for large installations, require little servicing and effort and are extremely compact. The design is optimized for installations between ISO/DIN as well as ANSI/BS connections. The flap traps can be installed either horizontally or vertically. If a medium flows in the flow direction, it opens up the plate of the flap trap, allowing the medium to flow through. If the medium pressure falls below a certain threshold, the flap closes again.

Function

After installation in piping systems, the flap traps of type 369 are intended exclusively for preventing media from flowing back within the allowable pressure and temperature range.

The flap traps are available with or without a return spring made of V4A or Hastelloy. They are suitable for horizontal or vertical installation.

Applications

- Water treatment
- Chemical process industry

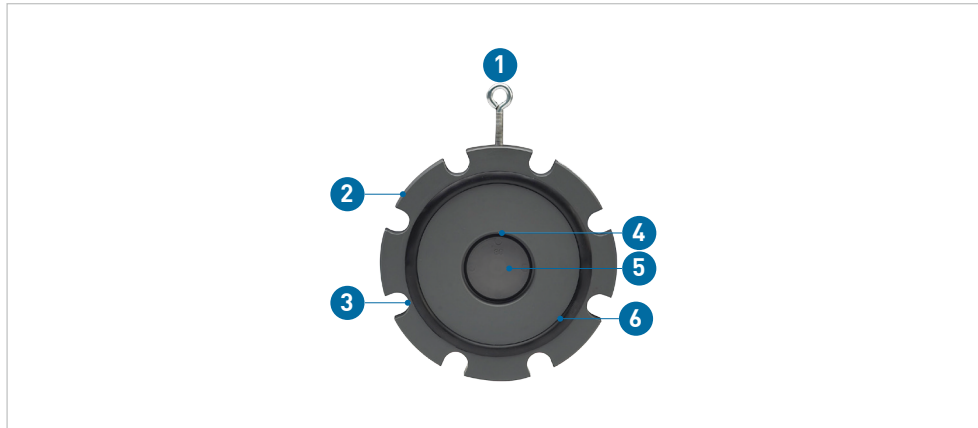
Benefits/features

- Self-closing check valve for horizontal or vertical installation (water column / gravity / optional spring)
- Suitable for installation between both ISO/DIN and ANSI/BS connecting elements
- Simple installation between standard flanges
- Only highly resistant materials
- Robust and maintenance-free design
- All parts that come into contact with media are made in highly resistant plastics and elastomers
- Optimized special flange gasket made of EPDM or FKM already installed in the valve housing are suited for fluted connecting elements
- Disc seals are available in EPDM or FKM and are installed in plates
- For pulsating flow, flap traps with reset spring (made of stainless steel V4A or Hastelloy C) are available. This reduces noise development

Flow media

Media that are free of foreign particles, media containing solids, as well as crystallizing, viscous, thick and gaseous media.

Technical data



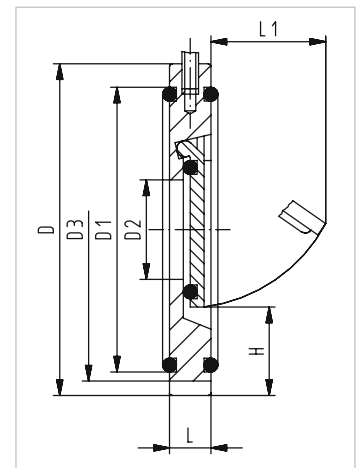
- 1 Supporting eyelets
- 2 Housing
- 3 Cut-out for centering
- 4 Fastening for disc
- 5 Disc
- 6 Sealing

Specification

Dimensions	d40/DN32 – d315/DN300 / 1½" – 12" to DN600 / 24" available upon request
Gasket materials	PVC-U, PP-H, PVDF
Pressure level	PN6/PN10
Connections	Flange joints
Product standard	EN ISO 16137
Test standard	ISO 9393-2, EN 12266-1
Approvals	KTW UBA, DVGW W 270, WRAS, NSF, FDA

Dimensions

d (mm)	DN (mm)	inch (inch)	D (mm)	D1 (mm)	D2 (mm)	D3 (mm)	L (mm)	L1 (mm)	H (mm)
40	32	1¼	85	59	18		15	22	25
50	40	1½	105	77	22	95	16	27	27
63	50	2	124	92	32	109	18	40	29
75	65	2½	137	111	40	129	20	55	31
90	80	3	175	131	54	144	20	67	32
110	100	4	175	153	70	164	23	77	31
140	125	5	195	185	92		23	94	35
160	150	6	222	198	105	220	26	100	41
225	200	8	279	259	154	275	34	152	38
280	250	10	340	311	192	330	40	180	41
315	300	12	410	347	227	380	45	215	41



Kv 100 values

DN (mm)	Inch (inch)	d (mm)	Kv 100 (l/min) ($\Delta p = 1 \text{ bar}$)	Cv 100 (US gal./min) ($\Delta p = 1 \text{ psi}$)	Kv 100 (m ³ /h) ($\Delta p = 1 \text{ bar}$)
32	1¼	40	270	18.9	16.2
40	1½	50	370	25.9	22.2
50	2	63	900	63	54
65	2½	75	1'140	79.8	68
80	3	90	1'870	130.9	112
100	4	110	2'870	200.9	172
125	5	140	5'700	399.0	342
150	6	160	6'900	483.0	414
200	8	225	18'800	1'316.0	1'128
250	10	280	25'000	1'750.0	1'500
300	12	315	27'600	1'932.0	1'656

PP with outlet flange adapter PP/PE, SDR11, PN10

DN (mm)	Inch (inch)	d (mm)	Kv 100 (l/min) ($\Delta p = 1 \text{ bar}$)	Cv 100 (US gal./min) ($\Delta p = 1 \text{ psi}$)	Kv 100 (m ³ /h) ($\Delta p = 1 \text{ bar}$)
32	1¼	40	280	19.6	16.8
40	1½	50	340	23.8	20.4
50	2	63	610	42.7	36.6
65	2½	75	1'230	86.1	74
80	3	90	2'610	182.7	157
100	4	110	3'930	275.1	236
125	5	140	7'120	498.4	427
150	6	160	9'180	642.6	551
200	8	225	17'600	1'232.0	1'056
250	10	280	24'400	1'708.0	1'464
300	12	315	31'900	2'233.0	1'914

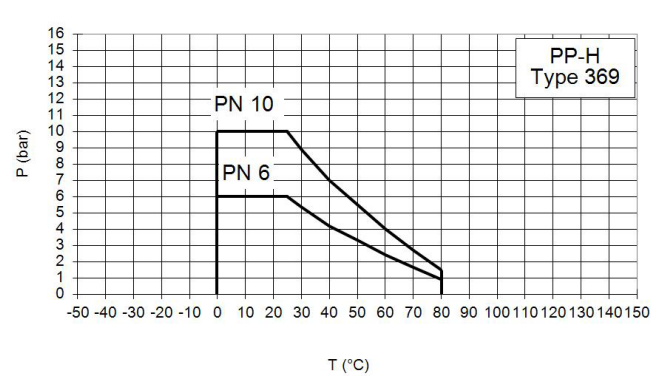
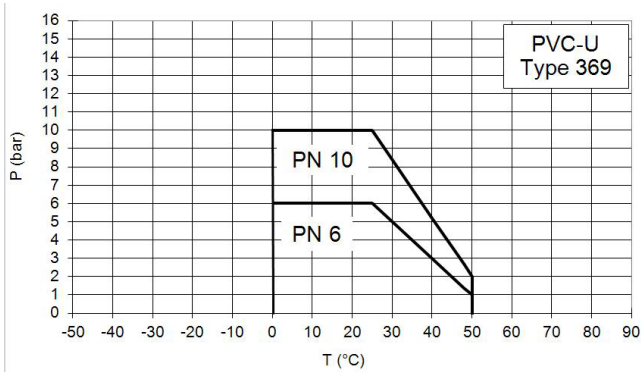
PVDF, pipe PN16 SDR26, PN10 SDR33 from d90

DN (mm)	inch (inch)	d (mm)	Kv 100 (l/min) ($\Delta p = 1 \text{ bar}$)	Cv 100 (US gal./min) ($\Delta p = 1 \text{ psi}$)	Kv 100 (m ³ /h) ($\Delta p = 1 \text{ bar}$)
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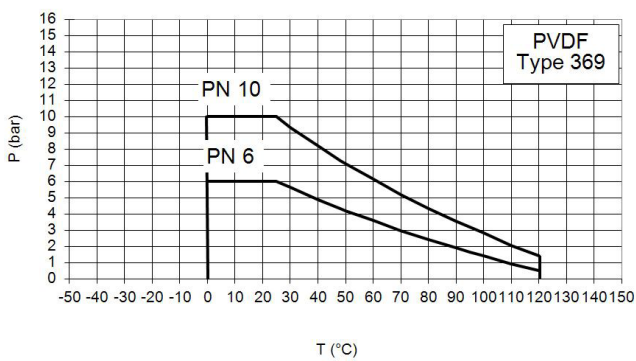
Pressure-temperature diagrams

PVC-U

PP-H



PVDF



T Temperature (°C, °F)

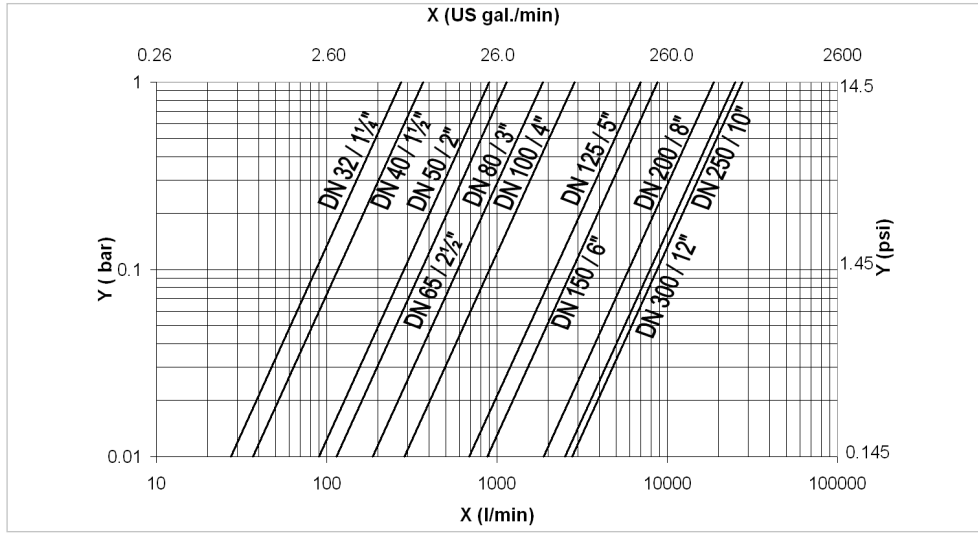
P Permissible pressure (bar, psi)

Opening pressure / leak-tightness

DN (mm)	Opening pressure (mbar)				Tightness of water column (m)	
	Vertical without spring	Vertical with spring	Horizontal without spring	Horizontal with spring	PVC-U, PVDF	PP
32	10	30	1	20	2	3
40	10	30	1	20	2	3
50	10	30	1	20	2	3
65	10	30	1	20	2	3
80	10	30	1	20	2	3
100	10	30	1	20	2	3
125	10	30	1	20	2	3
150	10	30	1	20	2	3
200	18	38	1	20	2	3
250	18	38	1	20	2	3
300	18	38	1	20	2	3

Pressure losses

PVC-U, pipe PN10

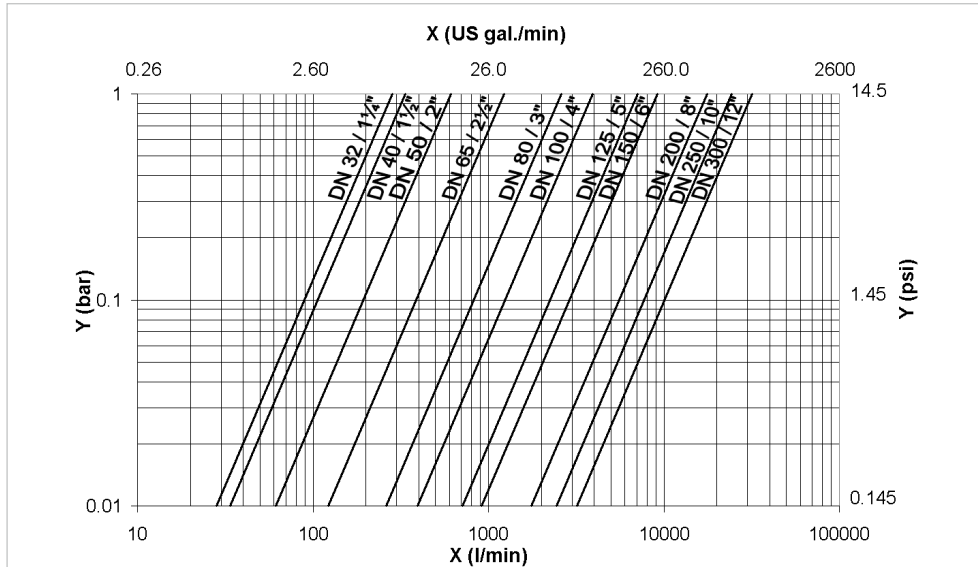


Medium: water 20 °C

X Flow rate
(l/min, US gal/min)

Y Pressure loss Δp (bar, psi)

PP with outlet flange adapter PP/PE, SDR11 (PN10)

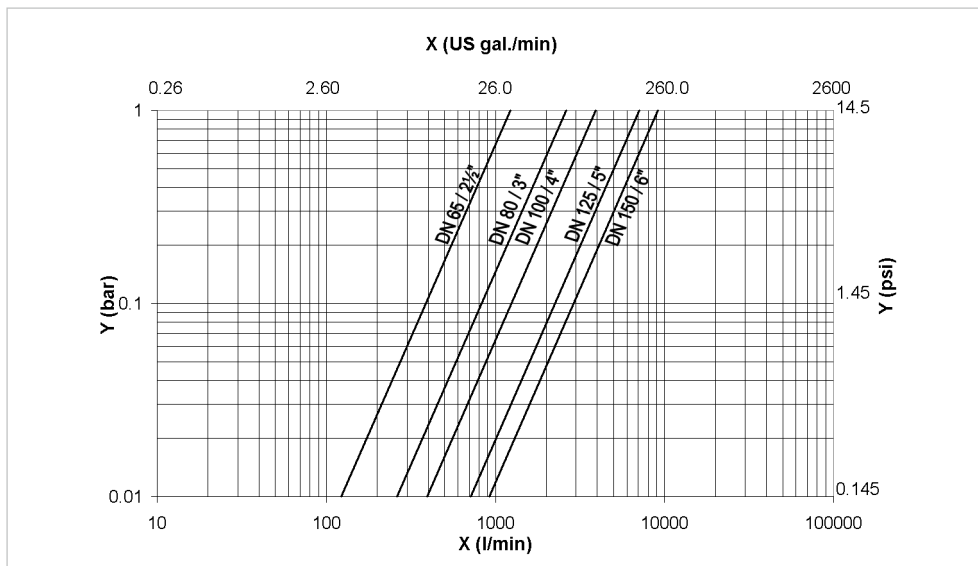


Medium: water 20 °C

X Flow rate
(l/min, US gal/min)

Y Pressure loss Δp (bar, psi)

PVDF, pipe PN10



Medium: water 20 °C

X Flow rate
(l/min, US gal/min)

Y Pressure loss Δp (bar, psi)

Reference values for tightening torque of screws

Metric flange adapter

d (mm)	DN (mm)	Inch (inch)	Total number of screws	Max. screw tightening torque	
				(Nm)	(lb-ft)
40	32	1½	4 x M16 x 85	15	133
50	40	1½	4 x M16 x 85	15	133
63	50	2	4 x M16 x 95	20	177
75	65	2½	4 x M16 x 100	25	221
90	80	3	8 x M16 x 110	25	221
110	100	4	8 x M16 x 130	30	266
140	125	5	8 x M16 x 130	35	310
160	150	6	8 x M20 x 180	40	354
225	200	8	8 x M20 x 180	50	442
280	250	10	12 x M20 x 180	55	487
315	300	12	12 x M20 x 180	60	531

ANSI/BS flange adapters

d (mm)	DN (mm)	Inch (inch)	Total number of screws	Max. closing torque	
				(Nm)	(lb-ft)
50	40	2	4 x UNC5/8" x 3½"	20	177
63	50	2½	4 x UNC5/8" x 4"	25	221
75	65	3	4 x UNC5/8" x 4"	25	221
90	80	4	8 x UNC5/8" x 4½"	30	266
110	100	4	8 x UNC5/8" x 4½"	30	266
160	150	6	8 x UNC3/4" x 5"	40	354
225	200	8	8 x UNC3/4" x 6"	50	442
280	250	10	12 x UNC7/8" x 6½"	55	487
315	300	12	12 x UNC7/8" x 7"	60	531

Technical basics

Installation notes



- 1 Screw and washer
- 2 Flange
- 3 Valve end / flange adapter
- 4 Flange seal
- 5 Flap trap
- 6 Nut and washer

- Install between ISO/DIN (all dimensions) and ANSI/BS valve ends (all except DN32 and DN125).
- Installation with ANSI/BS valve ends: for flap traps in the dimensions DN40 to DN80, ANSI/BS valve ends of the next larger dimension must be used (example DN40 flap trap between DN50 ANSI/BS valve ends).
- Centering through housing diameter (ISO/DIN through D3, ANSI/BS through D).
- Sealing with special flange gasket (except DN32, o-ring).


- Before and after the flap trap, a damping zone of at least 5 times the nominal diameter (DN) should be planned for (we recommend 10 times the nominal diameter).
- Do not install directly on pump flange or subsequent bend.
- PVC-U: The using of PVC-U pipe PN16 is only possible up to d63.
- Wafer Check Valves without spring are not recommended for pulsating flow conditions (noise generation).
- Pay attention on installation between ANSI/BS flange adaptors. The WCV DN32 does not fit together with ANSI/BS flange adaptors. For wafer check valve in the dimensions DN40 to DN80 the next larger size of ANSI/BS flange adapter has to be used (example: a DN40 valve has to be mounted between DN 50 ANSI/BS flange adaptors).
- PP and PE: To ensure the proper function of the valve in PP and PE piping systems, a suitable outlet adaptor is required on the outlet side. Please contact your local GF sales representative for further information.
- PVDF: GF recommends for PVDF piping systems the use of a fusion neck one size larger than the pipeline or the use of a wafer check valve one size smaller than the pipe. (example: two d110 fusion necks should be used for the wafer check valve d90).

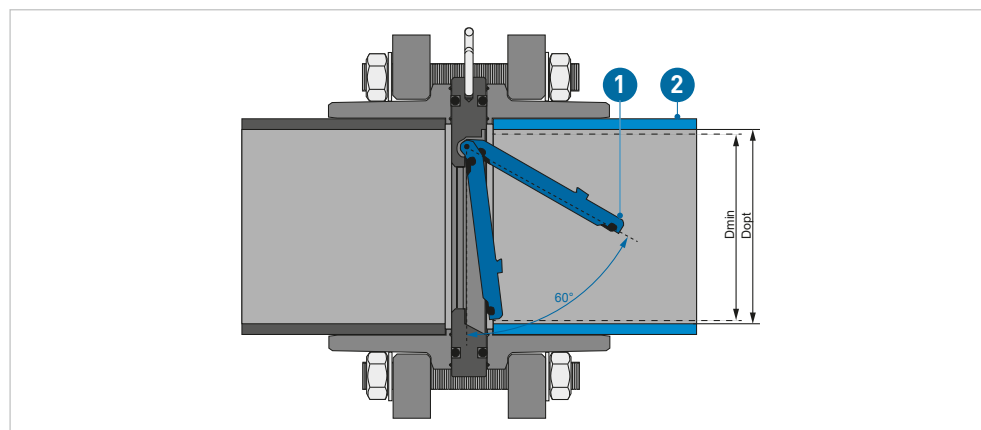
Flange dimensions

Dopt: Optimum inner diameter of connecting element.

- Opening angle of the disc approx. 60° (maximum flow).
- Minimized mechanical stress
- Ideal Kv value

Dmin: Minimum inner diameter at which the disc opens properly.

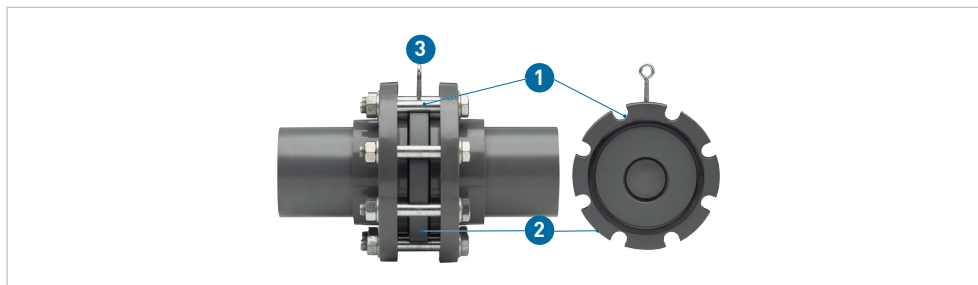
 Since the disc is in contact with the inside of the pipe of the connecting element when it is open, the inside diameter of the connecting element can influence the Kv value.



- 1 Disc
- 2 Connecting element

D (mm)	Flange dimension		ISO/DIN		ANSI/BS	
	d (mm)	D (inch)	Dmin (mm)	Dopt (mm)	Dmin (mm)	Dopt (mm)
DN32	40	1¼	34	37		
DN40	50	1½	39	43	39	43
DN50	63	2	53.5	54	53.5	54
DN65	75	2½	69	70	69	70
DN80	90	3	81	82	81	82
DN100	110	4	104	106	104	106
DN125	140	5	125.5	131		
DN150	160	6	142	144	142	144
DN200	225	8	201	207	201	207
DN250	280	10	250	260	250	260
DN300	315	12	300	309	300	309

Centering and Opening Angle of The Valve



- 1 Cut-out
- 2 External diameter
- 3 Supporting eyelet

Make sure that the disk attach on the inner pipe wall. It is not allowed that the disk attach on the limit stop of the valve.

Selection of lubricant

Using incorrect lubricants can corrode the material of the check valve or the gaskets.

- Mineral oil-based lubricants and Vaseline (petrolatum) are not appropriate.
- All gaskets should be lubricated with silicon- or polyol-based grease.

Maintenance notes

In normal operation, flap traps do not need maintenance. It is sufficient to check periodically that there is no leakage. If media exits at the flange connections, the flange connections must be tightened or replaced in accordance with the tables in "Guidelines for fastening screws".

Accessories

- Spring made of stainless steel V4A (1.4408) or Hastelloy C
- Appropriate outlet flange adapter from GF Piping Systems

i For further information on accessories, refer to the online product catalogue at www.gfps.com

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