

Twin plate check valves



Carbon steel and stainless steel body
Sizes 50 to 300 mm (2" to 12")
Class 150 and Class 300

Applications

- Industrial process, chemicals, petrochemicals, sugar industry, pulp and paper industry, . . .
- Water supply, desalination, . . .
- Marine applications: air, gas, hydrocarbon,...
- General circuits: water, air, gas,...

Working conditions

- Temperature range: -196° C to +538° C
The working temperature depends on the body, plates and seat materials (refer to table page 3).
- Maximum working pressure (PS): 50 bar
- Vacuum service down to 0 bar absolute.
- Maximum fluid velocity:
 - on liquids: refer to diagram page 3
 - on gas: 75 m/s.

Materials

- Body:
 - carbon steel ASTM A 216 gr. WCC / 1.0619
 - stainless steel ASTM A 351 gr. CF 8M 1.4408
- Plates :
 - stainless steel ASTM A 351 gr. CF 8M
- Seating system:
 - metal/elastomer with AMRING® seat in high content nitrile
EPDM
VITON®
 - metal/metal
- Springs:
 - 316 stainless steel: metal / elastomer seating
 - Inconel 600 : metal / metal seating
- Springs: Internal pieces in Monel 400

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- For the other parts, please refer to the part list (page 2)

Standard design

- One-piece wafer type body ensuring maximum life and corrosion resistance
- Twin plate configuration.
- 2 types of seat: metal/elastomer or metal/metal
- Upstream/downstream sealing:
 - check valves with metal/elastomer seating in accordance with NF E 29-311 rate 3, ISO 5208 category A, API 598 and DIN 3230 rate 1,
 - check valves with metal/metal seating in accordance with API 598.
- Face-to-face dimensions in accordance with API 594.
- Connection between flanges:
 - PN 10, 16, 25 and ASME B 16-5 cl.150 for check valves class 150,
 - PN 25, 40, and ASME B 16-5 cl.300 for check valves class 300.
- Marking in accordance with EN 19 standard.
- External coating for steel body: polyurethane paint, 80 µm thickness, colour blue RAL 5002.
- External coating for stainless steel body: pickling and passivation, no coating.
- The valves meet the safety requirements of the pressure equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

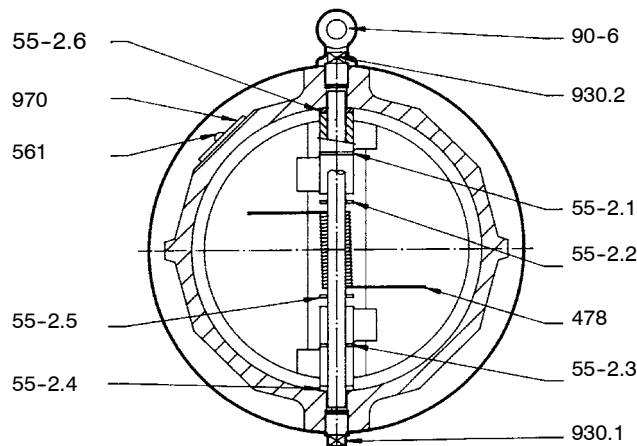
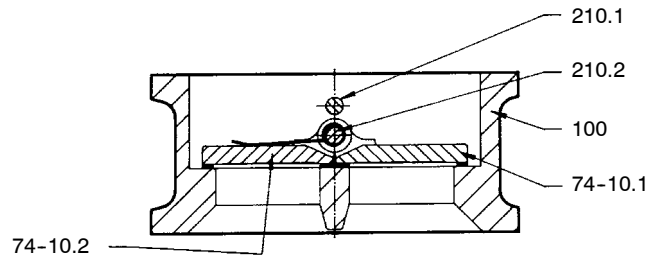
Standard variant

- ATEX version in accordance with 94/9/EC directive.

Data to be supplied when ordering

- Serie 2000 check valve, in accordance with type series booklet 8485.1/5 - 10.
- Size.
- Connection drilling pattern.
- Working conditions:
 - nature of fluid,
 - pressure,
 - temperature.

Construction



Item	Designation	Size (mm)	Materials
100	Body	50 to 300	Carbon steel or stainless steel
210.1	Pin retainer	50 to 300	316 stainless steel
210.2	Pin retainer	50 to 300	316 stainless steel
478	Spring (right hand)	50 to 300	316 stainless steel ou Inconel 600
55-2.1	Friction washer	50 to 300	PTFE filled or 316L stainless steel
55-2.2	Friction washer	50 to 300	PTFE filled or 316L stainless steel
55-2.3	Friction washer	50 to 300	PTFE filled or 316L stainless steel
55-2.4	Friction washer	50 to 300	PTFE filled or 316L stainless steel
55-2.5	Friction washer	50 to 300	PTFE filled or 316L stainless steel
55-2.6	Friction washer	50 to 300	PTFE filled or 316L stainless steel
561	Grooved pin	50 to 300	Stainless steel
74-10.1	Plate	50 to 300	Stainless steel
74-10.2	Plate	50 to 300	Stainless steel
90-6	Eye bolt	200 to 300	Carbon steel
930.1	Stop pin retainer	50 to 300	Carbon steel
930.2	Hinge pin retainer	50 to 300	Carbon steel
970	Identification plate	50 to 300	Stainless steel

Production range

In pressure class PN 20 and Class 300 (European materials), Serie 2000 check valves are in accordance with EN 12516-1. The values in the table below must be used for valves which have to comply with PED 97/23/EC:

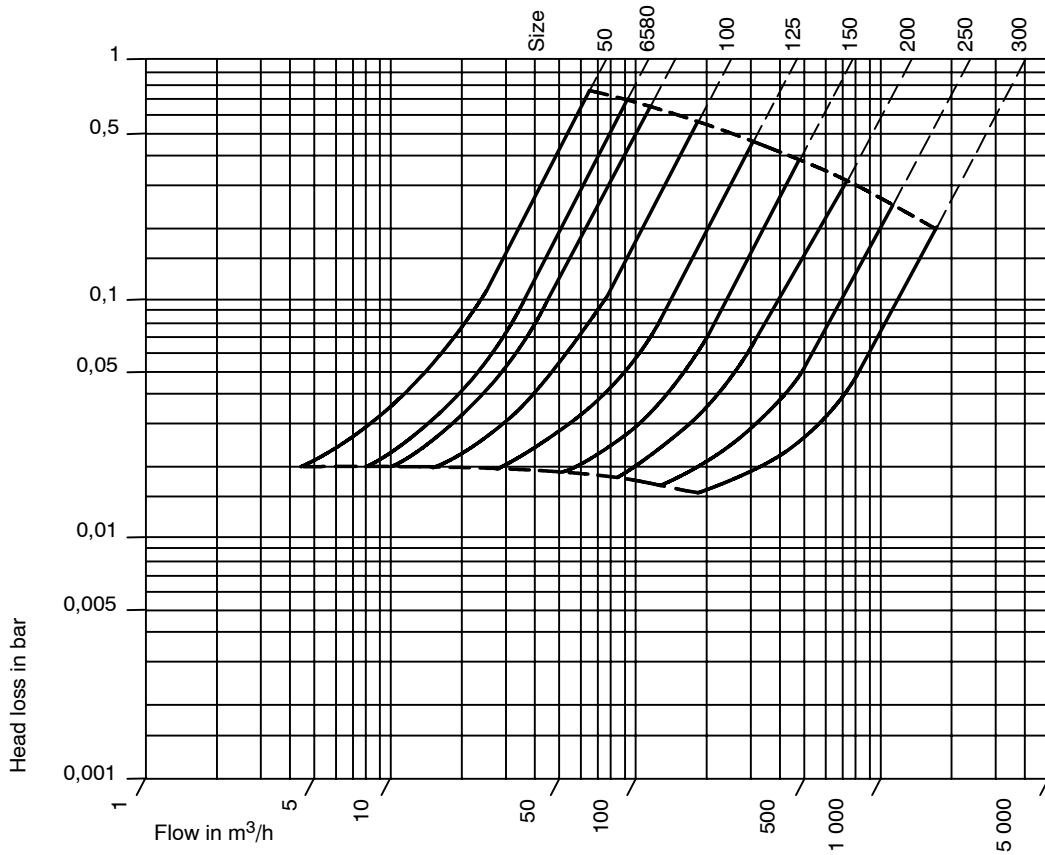
Nominal pressure	Material		Working pressure in bar for temperature °C														
	Body	Seat	-196	-10	20	50	100	150	200	250	300	350	375	400	450	500	525
PN 20	1.0619	Metal/Metal	not allowed	19,5	19,5	18,6	17,1	15,8	14,2	13,0	11,8	11,0	10,8	10,6	not allowed		
		Nitrile	not allowed	19,5	19,5	18,6	17,1	not allowed									
	1.4408	Metal/Metal	19,4	19,4	19,4	18,5	16,6	15,0	13,7	12,8	12,0	11,4	11,2	10,9	10,7	10,4	8,8
		Nitrile	19,4	19,4	19,4	18,5	16,6	not allowed									
Class 300	1.0619	Metal/Metal	not allowed	49,4	49,4	47,1	43,2	40,1	36,0	32,9	29,8	27,8	27,4	26,7	not allowed		
		Nitrile	not allowed	49,4	49,4	47,1	43,2	not allowed									
	1.4408	Metal/Metal	49,2	49,2	49,2	46,8	42,0	37,9	34,8	32,4	30,5	28,8	28,3	27,6	27,1	26,4	22,2
		Nitrile	49,2	49,2	49,2	46,8	42,0	not allowed									

In pressure class 150 and 300, Serie 2000 check valves are in accordance with ASME B 16-34 "Standard class" 150 and 300 according to the following table:

Nominal pressure	Material		Working pressure in bar for temperature °C														
	Body	Seat	-196	-29	38	100	149	204	260	316	343	371	399	427	454	482	538
Class 150	A 216 Gr WCC	Metal/Metal	not allowed	20,0	20,0	17,7	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	not allowed		
		Nitrile	not allowed	20,0	20,0	17,7	not allowed										
	A 351 Gr CF8M	Metal/Metal	19,0	19,0	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	1,4
		Nitrile	19,0	19,0	19,0	16,2	not allowed										
Class 300	A 216 Gr WCC	Metal/Metal	not allowed	51,7	51,7	51,5	50,3	48,6	45,9	41,7	40,7	39,3	34,8	28,3	not allowed		
		Nitrile	not allowed	51,7	51,7	51,5	not allowed										
	A 351 Gr CF8M	Metal/Metal	49,6	49,6	49,6	42,7	38,6	35,5	33,1	31,0	30,7	29,6	29,3	29,0	29,0	28,6	24,1
		Nitrile	49,6	49,6	49,6	42,7	not allowed										

Pressure class	Materials			Type	Working temperature	Connections
	Body	Plates	Seat			
PN 20 / Class 150	Steel	Stainless steel	Metal / metal	1 6 M	from -29° to +427° C	PN 10, 16 and 25 ASME B16.5 cl.150
			Nitrile	1 6 K	from -20° to +100° C	
	Stainless steel		Metal / Metal	6 6 M	from -196° to +538° C	
			Nitrile	6 6 K	from -20° to +538° C	
Class 300	Steel	Stainless steel	Metal / Metal	1 6 M	from -29° to +427° C	PN 25 and 40 ASME B16.5 cl.300
			Nitrile	1 6 K	from -20° to +100° C	
	Stainless steel		Metal / Metal	6 6 M	from -196° to +538° C	
			Nitrile	6 6 K	from -20° to +100° C	

Pressure drops in flow water



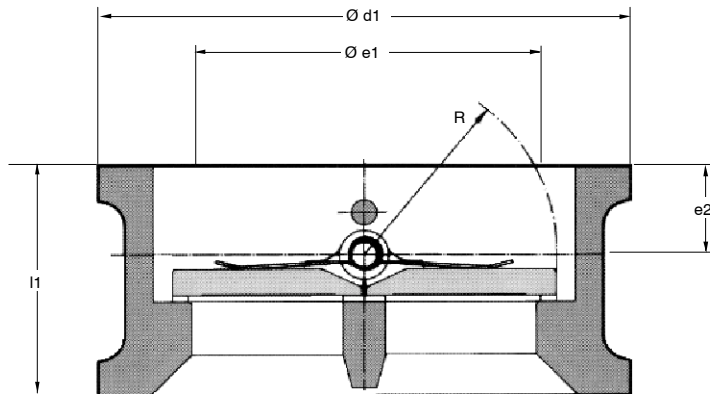
The curves in continuous line define the flow range for the optimum use of the check valve.

Size		Flow coefficient in full open position		Zeta
mm	inch	Kvo	Cvo	
50	2	75	87	1,77
65	2 1/2	112	130	2,27
80	3	141	163	3,29
100	4	240	278	2,77

Size		Flow coefficient in full open position		Zeta
mm	inch	Kvo	Cvo	
125	5	450	522	1,92
150	6	750	870	1,43
200	8	1300	1508	1,51
250	10	2300	2668	1,18
300	12	3850	4466	0,87

Units : Kvo in m³/h/bar^{1/2} - Cvo in gallon US/mn/PSI^{1/2}

Class 150 - Dimensions (mm) and weight (kg)

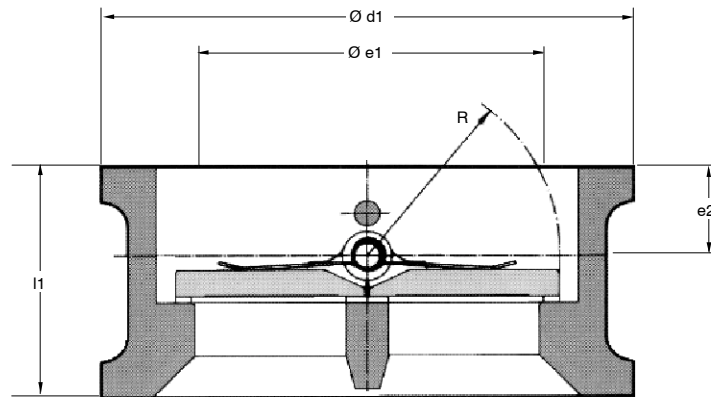


Size		Connection										Weight kg
		PN 10		PN 16		PN 20		PN 25		Class 150		
mm	inch	Ø d1	l1	Ø d1	l1	Ø d1	l1	Ø d1	l1	Ø d1	l1	
50	2	104,6	60	104,6	60	104,6	60	104,6	60	104,6	60	2,5
65	2 1/2	123,7	67	123,7	67	123,7	67	123,7	67	123,7	67	3,0
80	3	136,4	73	136,4	73	136,4	73	136,4	73	136,4	73	3,4
100	4	164,0	73	164,0	73	174,5	73	170,0	73	174,5	73	6,5
125	5	194,0	86	194,0	86	194,0	86	194,0	86	194,0	86	11,0
150	6	220,0	98	220,0	98	220,0	98	226,0	98	220,0	98	14,5
200	8	275,0	127	275,0	127	275,0	127	286,0	127	275,0	127	28,0
250	10	330,0	146	330,0	146	330,0	146	343,0	146	330,0	146	43,0
300	12	380,0	181	380,0	181	407,8	181	403,0	181	409,5	181	74,0

Size		Plate clearance		
mm	inch	e1	e2	R
50	2	-	33,6	30
65	2 1/2	36	32,6	36
80	3	50	36,3	42
100	4	84	38,6	54
125	5	107	42,7	65

Size		Plate clearance		
mm	inch	e1	e2	R
150	6	142	44,6	81
200	8	191	48,3	104
250	10	238	56,0	128
300	12	280	70,4	154

Class 300 - Dimensions (mm) and weights (kg)



Size		Connections								Weight kg
		PN 25		PN 40		PN 50		Class 300		
mm	inch	$\varnothing d1$	l1	$\varnothing d1$	l1	$\varnothing d1$	l1	$\varnothing d1$	l1	
50	2	109	60	109	60	111,0	60	111,1	60	3,1
65	2 1/2	129	67	129	67	129,2	67	130,3	67	4
80	3	144	73	144	73	148,3	73	149,0	73	4,6
100	4	170	73	170	73	180,0	73	181,0	73	8
125	5	196	86	196	86	215,0	86	215,9	86	14
150	6	226	98	226	98	249,9	98	250,6	98	16
200	8	286	127	293	127	306,2	127	307,9	127	32,5
250	10	343	146	355	146	360,4	146	361,9	146	54
300	12	403	181	420	181	420,8	181	422,2	181	86,5

Size		Plate clearance		
mm	inch	e1	e2	R
50	2	-	33,6	30
65	2 1/2	36	32,6	36
80	3	50	36,3	42
100	4	84	38,6	54
125	5	107	42,7	65

DN		Plate clearance		
mm	inch	e1	e2	R
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300	12	280	70,4	154

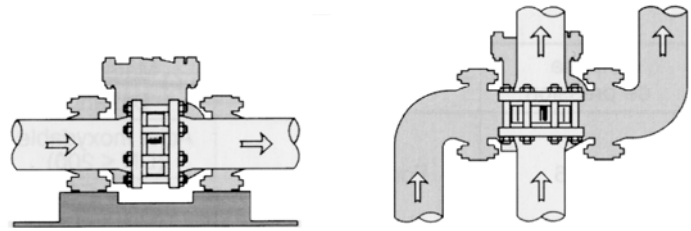
Installation

The Serie 2000 check valve design allows a rapid and easy installation between standardized flanges :

- reduced weight and overall dimensions
- no additional pipe supports are required
- suitable for horizontal and vertical up flow
- no special tools are needed for installation
- low maintenance.

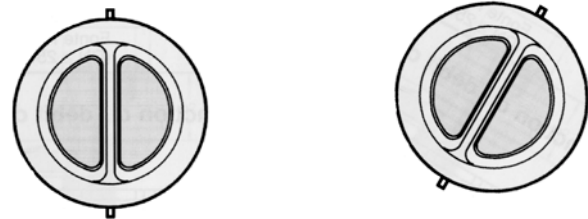
The Serie 2000 check valves, in the standard configuration, is offered with flat faces (FF). On request, raised faces (RF) can be supplied.

The flange faces are machined "Smooth finish" (Ra max. : 3,2µ) or "Stock finish".

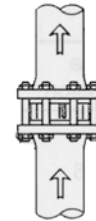


Optimum installation

In a horizontal pipe, the check valve must always be installed with its hinge pin in the vertical position.



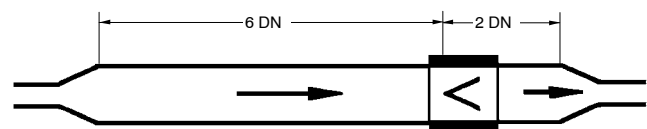
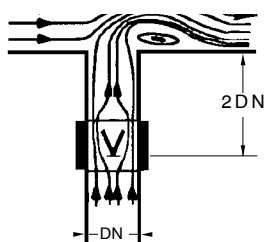
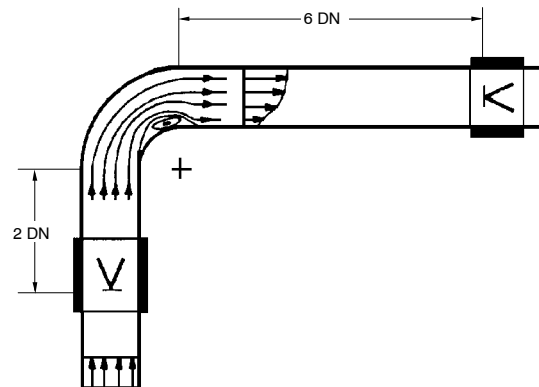
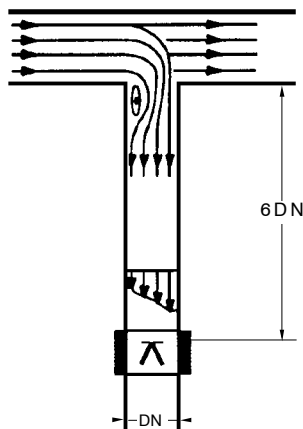
When the check valve is inserted in a vertical pipe, it will function correctly only if the fluid moves upwards (for a fluid moving downwards, please consul us).



In a piping system, some minimum distances must be respected between the check valve position and a bend or a tee. The following drawings show some horizontal pipe configurations (viewed from above) in which the check valve is installed with its hinge pin in the vertical position.

The minimum recommended distance for a check valve installed downstream from a bend, tee, pump or valve causing flow disturbance is 6 diameters.

When such a unit is downstream of the check valve, it is necessary to respect a distance of at least 2 diameters.



This leaflet is not contractual
and may be amended without notice

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