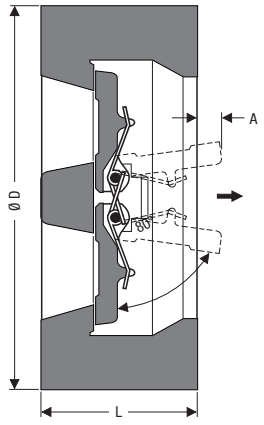
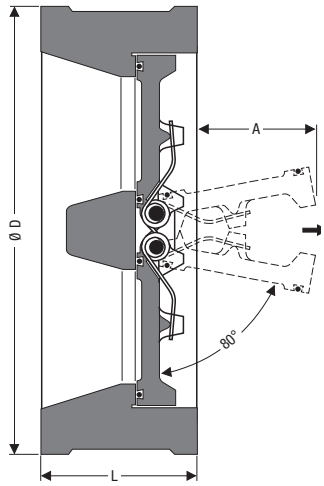
DISCOCHECK® Dual-Plate Check Valves BB

Short overall length according to DIN EN 558-1, table 11, series 16
(≙ **DIN** 3202, part 3, series K3)



DN 50 – 125 mm



DN 150 – 500 mm
DN 600 – 1200 only in grey cast iron

Application

For liquids, gases, vapours. In heating, air-conditioning, water-supply and cooling installations, steam and condensate systems, oil pipelines and natural gas lines.
For use with sea water, in sewage works, downstream of fans and compressors.
For drinking water: with lining, and for sea water with rubber lining.
With adjustable dampers for installations with waterhammer problems.
Metal-to-metal or soft seat (EPDM, FPM).

Materials

Design	Part designation	Nominal size DN	EN reference	ASTM equivalent [1]
Grey cast iron (BB ... G)	Body	150 – 1200	EN-JL 1040	A 126 Class A
	Dual plate	150 – 1200	EN-JS 1030	A 536 60-40-18
Carbon steel (BB ... C)	Body	100 + 125	1.0460	A 105
	Body	150 – 500	1.0619	A 216 WCB
	Dual plate	100 + 125	1.4006	A 182 F6
	Dual plate	150 – 500	1.0619	A 216 WCB
Stainless steel	Body	50 – 125	1.4404	A 182 F 316 L
	Body	150 – 500	1.4408	A 351 CF 8 M
	Dual plate	50 – 125	1.4404	A 182 F 316 L
	Dual plate	150 – 500	1.4408	A 351 CF 8 M

[1]) Physical and chemical properties comply with EN grade.

Pressure/Temperature Ratings with metal-to-metal seat

Design	Type	PN	Max. service pressure [bar] at temperature [°C] [2]										
			20	100	150	200	250	300	350	400	450	500	550
Grey cast iron down to –10 °C at nominal pressure	BB 11 G / 21 G	6	6	6	5.4	4.8	4.2	3.6	–	–	–	–	–
	12 G / 22 G	10	10	10	9.0	8.0	7.0	6.0	–	–	–	–	–
	14 G / 24 G	16	16	16	14.4	12.8	11.2	9.6	–	–	–	–	–
Carbon steel down to –10 °C at nominal pressure	BB 12 C / 22 C	10	10	10	10	9.6	8.9	7.6	7.1	6.7	6.4	–	–
	14 C / 24 C	16	16	16	16	15.3	14.2	12.1	11.4	10.7	10.3	–	–
	15 C / 25 C	25	25	25	25	23.9	22.2	18.9	17.8	16.7	16.1	–	–
	16 C / 26 C	40	40	40	40	38.2	35.6	30.2	28.4	26.7	25.8	–	–
	17 C	63	63	58.5	54.6	47.6	44.8	40.6	37.8	36.4	–	–	–
	18 C	100	100	93.3	86.7	75.6	71.1	64.4	60	57.8	–	–	–
	19 C	160	160	149.3	138.7	121	113.8	103	96	92.5	–	–	–
Stainless steel down to –200 °C at nominal pressure	BB 12 A / 22 A	10	10	9.8	9.1	8.5	8.1	7.8	7.5	7.3	7.2	7	6.9
	14 A / 24 A	16	16	15.6	14.6	13.7	13	12.4	12	11.7	11.4	11.2	11.1
	15 A / 25 A	25	25	24.4	22.8	21.3	20.3	19.4	18.8	18.2	17.9	17.6	17.3
	16 A / 26 A	40	40	39.1	36.4	34.1	32.5	31.1	30	29.2	28.6	28.1	27.7
	17 A	63	63	61.6	57.4	53.8	51.2	49	47.3	45.9	45.1	44.2	43.7
	18 A	100	100	93.3	86.7	82.2	77.8	74.2	71.6	69.3	67.6	66.2	63.1
	19 A	160	160	149.3	138.7	131.5	124.5	118.7	114.6	110.9	108.2	105.9	101.0

[2]) For temperatures above +300 °C special springs of Inconel X 750 are required.

BB 12A-18A DN 50 – 125 applicable up to max. 500 °C.

If PN > 40 ask for corresponding data sheets.
If DN > 500 and made from grey cast iron ask for corresponding data sheets.

BB Designs

Type	Seat					Lining	
	metal-to-metal	EPDM (–40 up to 150 °C) [1])	FPM (–25 up to 200 °C) [1])	NBR (–30 up to 110 °C) [1])	PTFE [2]) (–25 up to 200 °C) [1])	VESTOSINT® [4])	Rubber [5])
BB.....G	0	X	0	0	–	0 [6])	0 [6])
BB.....C	X	0	0	0	0 [3])	0 [6])	0 [6])
BB.....A	X	0	0	0	0 [3])	–	–

[1]) Observe pressure / temp. ratings of equipment — X : standard 0 : optional – : not available
[2]) Cover FPM ring with PTFE
[3]) From DN 150. Not possible for smaller sizes.
[4]) Inside and outside of body lined with VESTOSINT®, seat made of EPDM. Internals either of bronze or of stainless steel. Temp. range –10 °C up to 80 °C.
[5]) Inside of body lined with rubber, seat made of EPDM. Internals either of bronze or of stainless steel. Temp. range –10 °C up to 90 °C.
[6]) From DN 150. For smaller sizes use "BB...A"

Type	Damper [7])	Earthing connection	Drain plug	Springs				
				without spring	Inconel spring [8])	2 WA [10])	7 WA [11])	5 VO [12])
BB.....G	0	–	0	0	–	0	X	0
BB.....C	0	0	0 [9])	0	0	0	X	0
BB.....A	–	0	0 [9])	0	0	0	X	0

[7]) From DN 200 up to DN 500. Max. temperature rating 110 °C, see table "Pressure/Temperature Ratings BB with Dampers" — X : standard 0 : optional – : not available
[8]) Inconel X 750 (Required for temperatures above 300 °C). Opening pressure 7 mbar (spring 7 WAI).
[9]) From DN 150
[10]) Spring for 2 mbar opening pressure with horizontal installation.
[11]) Spring for 7 mbar opening pressure (standard) with horizontal installation.
[12]) Spring for 5 mbar opening pressure with vertical installation and downward flow.

Opening Pressures

Differential pressures at zero volume flow.

DN	Opening pressures [mbar]			
	without spring	with upward flow with spring		
		7 WA 7 WAI	2 WA	5 VO
50	6	13	8	17
65	6	13	8	17
80	7	14	9	19
100	7	14	9	19
125	10	17	12	25
150	11 (15)	18 (22)	13 (17)	27 (35)
200	12 (18)	19 (25)	14 (20)	29 (41)
250	14 (18)	21 (25)	16 (20)	33 (41)
300	15 (25)	22 (32)	17 (27)	35 (55)
350	17 (25)	24 (32)	19 (27)	39 (55)
400	19 (25)	26 (32)	21 (27)	43 (55)
450	22	29	24	49
500	23 (28)	30 (35)	25 (30)	51 (61)

Values indicated in brackets apply for BB 17/18/19.

Pressure Drop Chart

The chart is valid for water at 20 °C; for other fluids, the equivalent water volume flowrate must be calculated and used in the chart.

The values indicated in the chart are applicable to valves with 7 mbar springs with horizontal flow. With vertical flow deviations occur only within the range of partial opening.

The dashed lines in the chart are valid for valves with 2 mbar springs with horizontal flow.

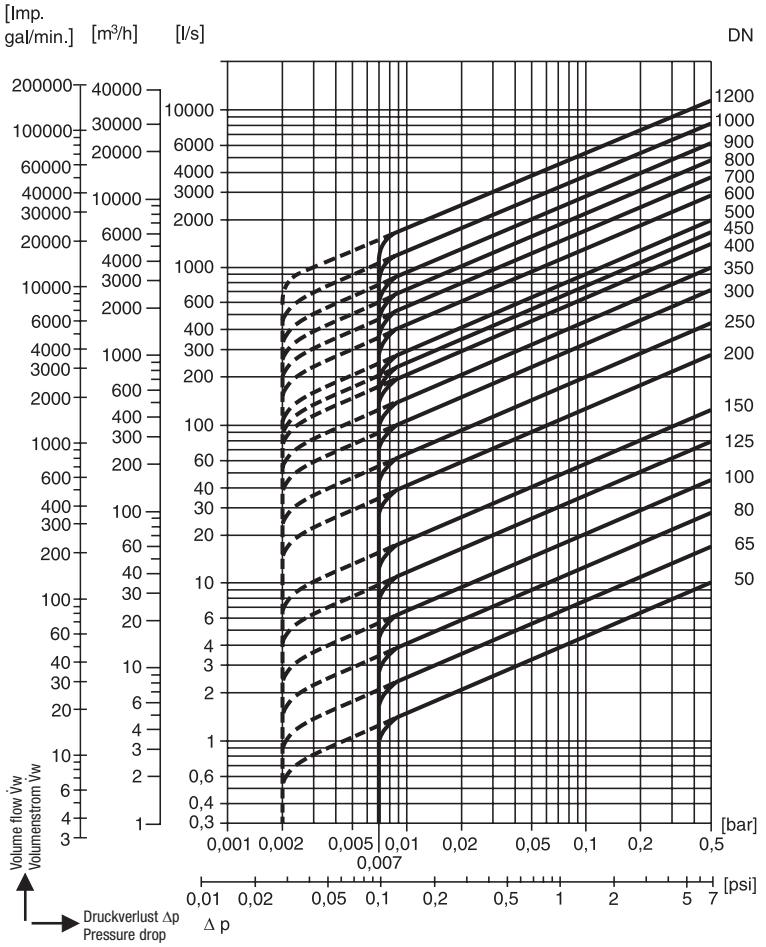
The chart and the flow characteristics apply to values up to PN 40. For valves with higher pressure ratings (PN) the loss coefficients (zeta values) and the pressure drops are increased by approx. 20 %. The k_{vs} values are correspondingly reduced.

$$\dot{V}_W = \dot{V} \cdot \sqrt{\frac{\rho}{1000}}$$

$\dot{V}_W$ = Equivalent water volume flow in [l/s] or [m³/h]

ρ = Density of fluid (operating condition) in [kg/m³]

$\dot{V}$ = Volume of fluid (operating condition) in [l/s] or [m³/h]



[1]) If PN > 40 and DN > 500 mm ask for corresponding data sheets.

Dimensions and Weights

DN	PN	Dimensions [mm] D	L	A	Weight [2]) [kg]
50 [3])	10	109	43	8	2.5
	16	109			2.5
	25	109			2.5
	40	109			2.5
65 [3])	10	129	46	11	4
	16	129			4
	25	129			4
	40	129			4
80 [3])	10	144	64	12	6
	16	144			6
	25	144			6
	40	144			6
100	10	164	64	19	7
	16	164			7
	25	171			7.5
	40	171			7.5
125	10	194	70	28	12
	16	194			12
	25	196			12
	40	196			12
150	6	209	76	40	12
	10	220			13.5
	16	220			13.5
	25	226			14
	40	226			14
200	6	264	89	64	18.5
	10	275			20
	16	275			20
	25	286			22
	40	293			23

DN	PN	Dimensions [mm] D	L	A	Weight [2]) [kg]
250	6	319	114	87	33
	10	330			35
	16	330			35
	25	343			38
	40	355			41
300	6	375	114	110	44
	10	380			45
	16	386			47
	25	403			51
	40	420			55
350	6	425	127	120	62.5
	10	440			67
	16	446			69
	25	460			73
	40	477			79
400	6	475	140	142	80.5
	10	491			86
	16	498			88
	25	517			95
450	40	549	152	163	107
	6	530			125
	10	541			130
	16	558			138
	40	574			143
500	6	580	152	181	144
	10	596			152
	16	620			164
	25	627			168
	40	631			170

[1]) If PN > 40 and DN > 500 mm ask for corresponding data sheets.
[2]) Weights rated for cast steel grade GP 240 GH (GS-C 25).
[3]) DN 50, 65 and 80 only available as BB … "A" (stainless steel).

Type Code

BB – Valve Type

2 – Series
1 – DN 50 – 125 mm and from DN 450 mm as well as from PN 63
2 – DN 150 – 400 mm up to PN 40

4 – Pressure rating
1 – PN 6 (only grey cast iron)
2 – PN 10
4 – PN 16
5 – PN 25
6 – PN 40

C – Body material
G – Grey cast iron
C – Steel
A – Austenitic steel

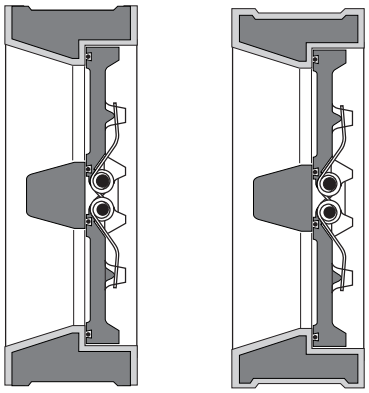
150 – Nominal size
DN 50 – 500

FPM – Seat
HD – metal-to-metal
EPDM
FPM
PTFE

7 WA – Springs/Opening pressures
7 WA – Spring for 7 mbar with horizontal installation
7 WAI – Inconel spring for 7 mbar with horizontal installation
2 WA – Spring for 2 mbar with horizontal installation
5 VO – Spring for 5 mbar with downward flow

Typical example: **BB 24 C 150 FPM 7 WA**
Explanatory note: Dual-plate check valve BB 24, PN 16, made of cast steel type GS-C 25, DN 150 mm with FPM gasket and spring (7 mbar) for horizontal installation.

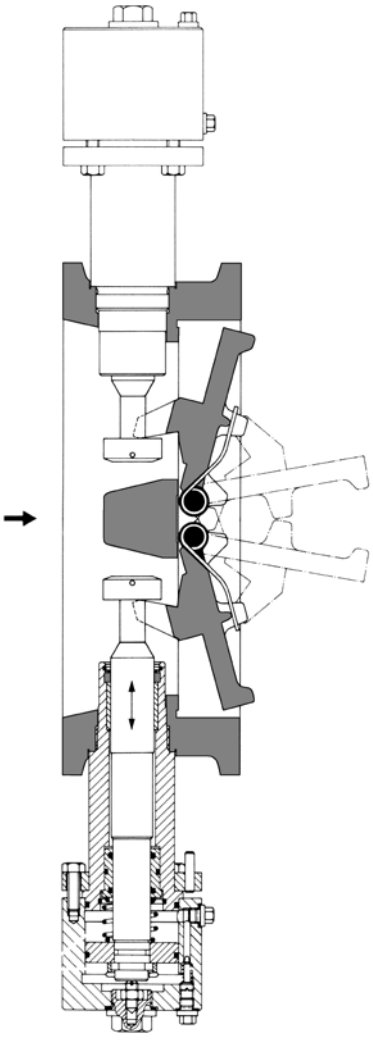
BB with lining from DN 150



Hard-rubber lining

Plastic lining

Dual plates, hinge pins and springs are not lined. Dual plates standard with O-rings of EPDM or on request with metal seating surface.



BB with patented adjustable dampers, DN 200 – 800.

BB with Lining

Application

Design with plastic lining: for drinking water and sea water. Design with rubber lining: for sea water. Design with dampers: to solve waterhammer problems.
Metal-to-metal or elastic seat (EPDM, FPM)

[1]) For pressure ratings > PN 40 and sizes > DN 500 please ask for corresponding data sheets.

Temperature Limits

Plastic lining –10 °C up to 80 °C

Rubber lining –10 °C up to 90 °C

BB with Dampers

Application

To solve waterhammer problems in pipelines carrying liquids.To evaluate possible waterhammer problems please ask for our questionnaire.

Pressure/Temperature Ratings

Size DN	[mm]	200	250	300	350	400	500
	[inch]	8	10	12	14	16	20
Max. service pressure	[bar]	16	16	13	9	13	9
Max. service temperature	[°C]	110					
Max. admissible pressure at line leading to the valve (pump switched off)	[bar]	0.5					