Outlet: Screwed female
Inlet: Union nut

SBO 11

Outlet: Screwed male
Inlet: Union nut

SBO 21

Outlet: Screwed male
Inlet: Screwed female

SBO 31

Application

Downstream of circulating pumps in heating and hot water installations to prevent gravity circulation.

Pressure/Temperature Ratings / Material

Max. service pressure [bar]	Max. service temperature [°C]	Materials	
		Body	Valve cone
6	130[1]	Brass (CW614N)	PPO

[1]) Max. service temperature at atmospheric pressure

Dimensions

Type		SBO 11		SBO 21		SBO 31		
Size	DN	1"	1¼"	1"	1¼"	¾"	1"	1¼"
	L [mm]	66	82	57	70	39	40	45
Connections (BSP thread)	Inlet [2]	G 1½	G 2	G 1½	G 2	G 1¼	G 1½	G 2
	Outlet	G 1	G 1¼	G 1	G 1¼			

[2]) SBO 11 and SBO 21: Thread of union nut

Opening Pressures

Differential pressures at zero volume flow.

Type	DN	Opening pressure [mbar]			
		Direction of flow			
		without spring	with spring		
		↑	↑	→	↓
SBO 11	1" 1¼"	1	7	6	6
SBO 21	1" 1¼"	1	7	6	5
SBO 31	¾" 1" 1¼"	2	9	7	5

Pressure Drop Charts

SBO 11, SBO 21

Partial opening / instable range — Full opening / stable range
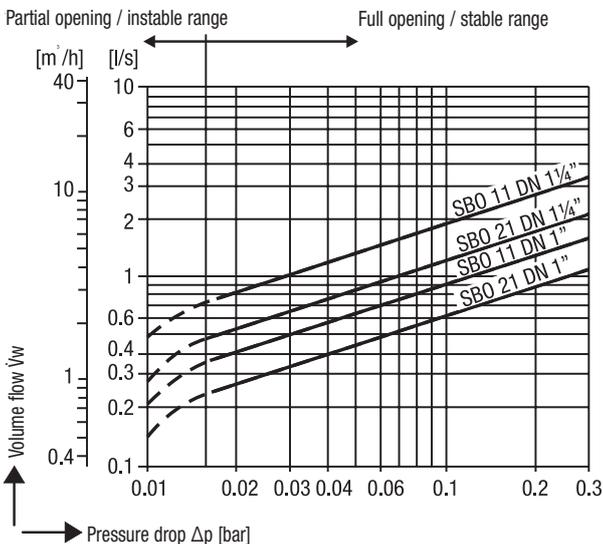
Curve 1: SBO 21 DN 1"
Curve 2: SBO 11 DN 1"
Curve 3: SBO 21 DN 1¼"
Curve 4: SBO 11 DN 1¼"

SBO 31

Partial opening / instable range — Full opening / stable range
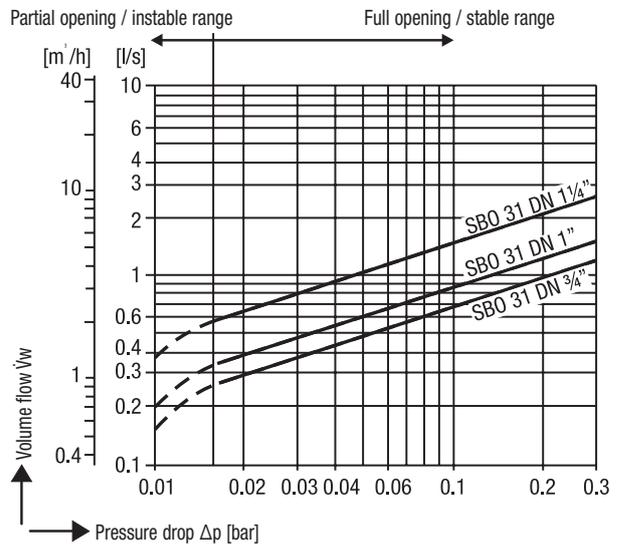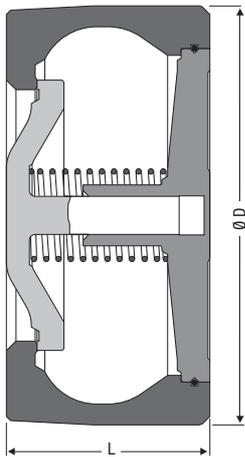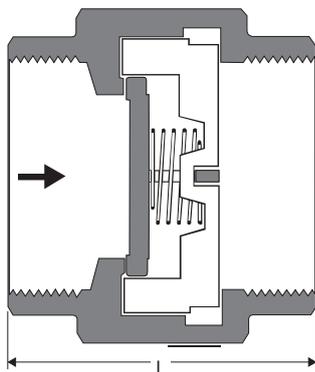
Curve 1: SBO 31 DN ¾"
Curve 2: SBO 31 DN 1"
Curve 3: SBO 31 DN 1¼"
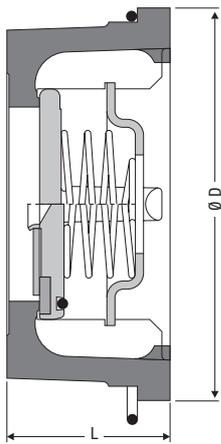
RK 70 (lower part) / RK 71 (upper part)
DN 15 – 100 mm

RK 70
DN 125 – 200 mm

MB 14

Application

Type	PN	
RK 70	6	For liquids, especially suited for heating and hot-water installations. Application as gravity circulation check and check valve.
RK 71 MB 14	16 16	For liquids, gases, vapours. Application as gravity circulation check, vacuum breaker, breather, foot valve, pressure-relief valve or pressure-maintaining valve

Body Material

Type		Nominal sizes DN	EN reference	ASTM equivalent[1]
RK 70	Body	15 – 100 mm	Brass (CW617N)	Brass
	Valve disk		Plastic PPE	–
	Body	125 – 200 mm	Grey cast iron (EN-JL 1040)	A126 Class A
	Plug		Plastic Polyamid 6	–
RK 71	Body	15 – 100 mm	Brass (CW617N)	Brass
	Valve disk		1.4571	AISI 316 Ti
MB 14	Body	15 – 50 mm	Brass (CW614N)	Brass
	Valve disk		1.4571	AISI 316 Ti

[1] ASTM material similar to EN material.
Observe different physical and chemical properties!

Dimensions

	DN	[mm]	15	20	25	32	40	50	65	80	100	125	150	200
		[in]	½	¾	1	1¼	1½	2	2½	3	4	5	6	8
	L	[mm]	16	19	22	28	31.5	40	46	50	60	90	106	140
RK 70	D	[mm]	40	47	56	72	82	95	115	132	152	184	209	264
RK 71	D	[mm]	40	47	56	72	82	95	115	132	152	–	–	–
MB 14	L	[mm]	49	49	61	61	72	72	–	–	–	–	–	–
	D	[mm]	42	42	62	62	83	83	–	–	–	–	–	–
	A.F.	[mm]	30	30	46	46	65	65	–	–	–	–	–	–

Pressure/Temperature Ratings

Type	PN	Nominal sizes DN	PMA / TMA / [bar] / [°C]		
RK 70	6	15 – 100	6 / -30	1.5 / 100	0.5 / 130
	6	125 – 200	6 / -10	1.5 / 100	0.5 / 130
RK 71	16	15 – 100	16 / -60	14 / 200	13 / 250
MB 14	16	G ½ – G 2	16 / -60	14 / 200	13 / 250

RK Designs

Type	Seat				Spring			Earthing connection
	metal-to metal	EPDM	FPM	PTFE	without spring	special spring	Nimonic spring	
RK 70	(Plastic)	–	–	–	–	–	–	Use RK 86
RK 71	X	Use RK 41		Use RK 86	Use RK 41	–		
MB 14	X	–	–	–	–	–	–	–

X : standard

– : not available

Opening Pressures

Differential pressures at zero volume flow.

RK 71*)

DN	Opening pressures [mbar]			
	Direction of flow			
	without spring	with spring		
	↑	↑	→	↓
15	2.5	10	7.5	5
20	2.5	10	7.5	5
25	2.5	10	7.5	5
32	3.5	12	8.5	5
40	4.0	13	9	5
50	4.5	14	9.5	5
65	5.0	15	10	5
80	5.5	16	10.5	5
100	6.5	18	11.5	5

RK 70*)

DN	Opening pressures [mbar]			
	Direction of flow			
	without spring	with spring		
	↑	↑	→	↓
15	0.4	7.8	7.4	7
20	0.4	7.8	7.4	7
25	0.4	7.8	7.4	7
32	0.5	9	8.5	8
40	0.5	9.5	9	8.5
50	0.6	9.7	9.1	8.5
65	0.7	10.4	9.7	9
80	0.8	11.6	10.8	10
100	0.9	12.3	11.4	10.5
125	2.0	9.0	7.0	5.0
150	2.5	10.0	7.5	5.0
200	2.5	10.0	7.5	5.0

*) RK 70, 71 are not available with
   special spring or without spring

Pressure Drop Charts

The curves given in the chart are valid for water at 20 °C. To read the pressure drop for other fluids the equivalent water volume flowrate must be calculated and used in the graph.

The values indicated in the chart are applicable to spring-loaded valves with horizontal flow. With vertical flow insignificant deviations occur only within the range of partial opening.
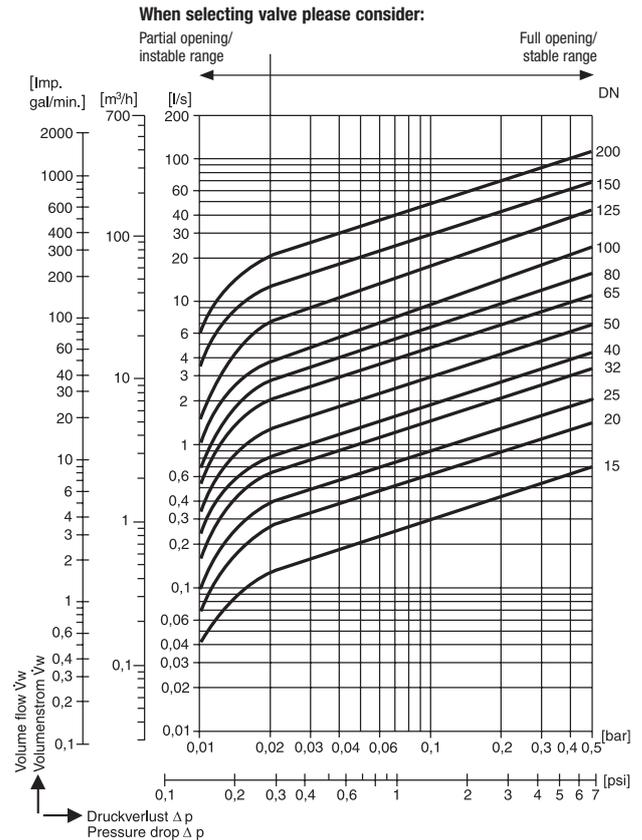
$$\dot{V}_W = \dot{V} \cdot \sqrt{\frac{\rho}{1000}}$$

$\dot{V}_W$ = 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]

RK 70, RK 71

MB 14