Pressure Control Valves

Vacuum Breakers and Vacuum Control Valves VV 34, 35, 36

Vacuum Breaker with Setting Scale

Technical Data

Connection DN	20 - 250
Connection G	1/2A - 2 1/2A
Nominal Pressure PN	6 - 40
Setting Range	0.05 - 0.95 bar
K_{vs}-Value	1.2 - 388 m^3/h
Temperature	250 °C
Medium	liquids, gases

Description

Vacuum breakers – also called vacuum venting valves or vacuum limiters - are valves which allow air to be aspirated once a set vacuum or pressure difference to atmosphere is reached. These valves are installed on pipelines, vessels, machines and equipment and are used, for instance, for venting tanks, limiting the vacuum in vacuum systems and protecting steam installations.

The standard version of the vacuum breakers is no equipment part with safety function in accordance with the Pressure Equipment Directive. Otherwise this fact would be taken into account in the Declaration of Conformity.

For control duties vacuum breakers may be used only to a limited degree. For such duties we recommend using the diaphragm-controlled vacuum control valve VV 5.1.

Under normal operating conditions the valve is kept closed by a pre-loaded spring and the internal vacuum acting on the valve cone. If the vacuum drops below the value set by means of the spring, the valve is opened by the atmospheric pressure and air enters the system. With increasing air flow the cone stroke and spring force increase. The pressure difference increases accordingly.

The VV 34 and VV 35 vacuum breakers have a tension spring and a spring cap complete with scale for setting the breaking pressure.

These valves are no shut-off elements ensuring a tight closing of the valve. In accordance with DIN EN 60534-4 and/or ANSI FCI 70-2 they may feature a leakage rate in closed position in compliance with the leakage classes IV (0.01 % K_{vs} value).

Standard

» VV 34 and 35 with spring cap and setting scale
» All stainless steel construction (CrNiMo steel)

Options

» Soft seal
» VV 34 made of CrNiMo steel / steel
» Special connections:
ANSI or JIS flanges, NPT, other connections on request
» Special versions on request

Operating instructions, know how and safety instructions must be observed. All the pressure has always been indicated as overpressure. We reserve the right to alter technical specifications without notice.

K_{vs}-Values [m^3/h]								
nom. diam.	DN		20	25	32	40	50	65
	G..A	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
K_{vs}-value m^3/h		1.2	1.5	3.2	6	9	16	25

K_{vs}-Values [m^3/h]						
nom. diam. DN	80	100	125	150	200	250
K_{vs}-value m^3/h	41	70	107	169	266	388

Adjustable Differential Pressure Δp [bar]*			
VV 34		VV 35	VV 36
≤ DN 100	≥ DN 125		
0.05 - 0.95	0.05 - 0.5	0.05 - 0.95	0.05 - 0.1
	0.05 - 0.95		

*Vacuum breakers should be selected according to the pressure difference between the atmospheric pressure and the pressure inside the vessel or pipeline, not according to the vacuum or absolute pressure in the vessel or pipeline. All specifications given in data sheets or tables or on the scales of valves etc., relate to this differential pressure.

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Materials	
Type	VV 34
Body	CrNiMo-steel
Flange	CrNiMo-steel optional Steel
Spring Cap	CrNiMo-steel
Cone	CrNiMo-steel
Valve Seal	CrNiMo-steel

Materials	
Type	VV 35
Body	CrNiMo-steel
Spring Cap	CrNiMo-steel
Cone	CrNiMo-steel
Valve Seal	CrNiMo-steel

Materials	
Type	VV 36
Body	CrNiMo-steel
Cone	CrNiMo-steel
Valve Seal	CrNiMo-steel

Dimensions [mm] VV 34

set pressure bar	size	nominal diameter DN					
		20	25	32	40	50	65
0.05 - 0.95	A	255	280	350	350	380	535

Dimensions [mm] VV 34

set pressure bar	size	nominal diameter DN					
		80	100	125	150	200	250
0.05 - 0.50	A	-	-	700	860	1155	1390
0.05 - 0.95		600	650	850	1050	1420	1720

Weights [kg] VV 34

set pressure bar	nominal diameter DN					
	20	25	32	40	50	65
0.05 - 0.95	2.2	2.7	3.8	4.8	5.6	9

Weights [kg] VV 34

set pressure bar	nominal diameter DN					
	80	100	125	150	200	250
0.05 - 0.50	-	-	20	25	34	44
0.05 - 0.95	9.5	11.5	22	29.5	49,5	68

Dimensions [mm] VV 35

size	nominal diameter G...A					
	3/4	1	1 1/4	1 1/2	2	2 1/2
A	250	280	350	350	380	530

Weights [kg] VV 35

nominal diameter G...A					
3/4	1	1 1/4	1 1/2	2	2 1/2
1.2	1.4	1.9	2.6	3.2	5.9

Dimensions [mm] VV 36

size	nominal diameter G...A						
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
A	110	120	130	140	146	146	180

Weights [kg] VV 36

nominal diameter G...A						
1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
0.3	0.6	0.8	1	1.2	1.7	2

Customs Tariff Number
84811019

Special designs on request.
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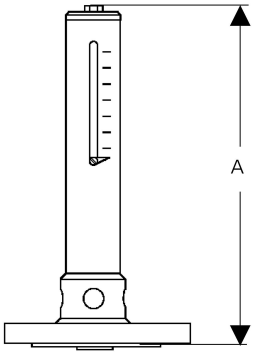
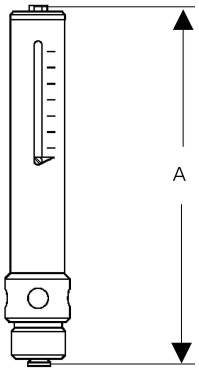
Dimensional Drawing

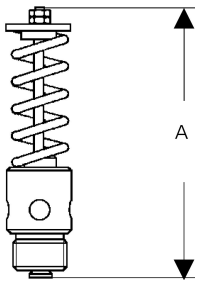
VV 34



VV 35



VV 36



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Vacuum Breaker with Setting Scale

Flow Rate [Nm³/h]						
nominal diameter	differential pressure (set pressure) [bar]					
	≥ 0.47	0.4	0.3	0.2	0.1	0.05
G 1/2					12	7
G 3/4	41	37	32	26	18	10
G 1	71	66	57	46	33	18
G 1 1/4	127	117	102	82	58	32
G 1 1/2	199	183	158	129	91	50
G 2	348	320	278	227	160	87
G 2 1/2	551	507	439	359	254	139
DN 20	41	37	32	26	18	10
DN 25	71	66	57	46	33	18
DN 32	127	117	102	82	58	32
DN 40	199	183	158	129	91	50
DN 50	348	320	278	227	160	87
DN 65	551	507	439	359	254	139
DN 80	891	819	710	580	410	225
DN 100	1.514	1.393	1.207	986	697	382
DN 125	2.316	2.129	1.846	1.507	1.065	584
DN 150	3.664	3.369	2.921	2.385	1.686	923
DN 200	5.68	5.303	4.597	3.753	2.654	1.453
DN 250	8.387	7.711	6.685	5.458	3.859	2.114

The specified flow rate refer to a full open valve. To get these flow rates the scale setting for type 34 and 35 must be 0.05 bar lower then the Δp tabular values. Type 36 is fully adjusted.

Selection Example:
Vacuum breaker for 12 Nm³/h with response pressure 0.1 bar (Δp to atmosphere)
Required nominal width: G 1/2
Setting through the scale: 0.1 bar – 0.05 bar = 0.05 bar Δp to atmosphere

Special designs on request.
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