



spirax sarco

TI-D343-02

BR Rev.03



SV81H Safety and Relief Valve

Description

The SV81H have fixed blowdown.No blowdown adjustment required when setting or testing the valve.It is designed for short blowdown on all medias.

Available Types

The body, bonnet, cap, nozzle, disc and spring are available in a variety of materials and selected to suit the chemical and physical characteristics of the specified process fluid available. The SV81H has screwed connections (NPT) according to ASME B1.20.1, can be supplied with open or packed lever, resilient seat (O'Ring) and test lever. The SV81H can also be supplied with flanged and welded connections.

Applications

The safety and relief valves SV81H are designed for the effective protection of overpressure in processes or equipment, including extreme service conditions such as high outflows, high pressures, high temperatures, corrosive media and viscous liquid. Always consult Spirax Sarco for fluid compatibility of the construction materials.

Standards and Approvals

The SV81H are designed in accordance with ASME Boiler and Pressure Vessel Code, Section VIII Division 1. Capacities are certified by the National Board of Boiler and Pressure Vessel Inspectors. For compressible fluids and liquids, the valve can be stamped with 'UV' and 'NB' marks.

The requirements of the European Pressure Equipment Directive, 97 / 23 / EC have been satisfied and the valve belongs to Category 4, having been designed for use with fluids in Group 1 and 2 (gases and liquids).

Standard construction includes 304 or 316 stainless steel body, trim and carbon steel bonnet.

When required, the valve can be supplied with materials in compliance with NACE MR-01-75 standard for sour gas service.

The SV81H complies with the seat tightness requirements of the API STD 527.

Certification

A certificate of conformity is supplied with each valve including valve set pressure and hydrostatic test. Material certification is provided in accordance with BS-EN 10204 3.1, for all primary pressure containing parts.

Optional Extras

Resilient seat seal – O'Ring

Hard seat – Stellite 6

Lift indicator

Installation and Maintenance

See the last issue of the Installation and Maintenance Instructions.

Materials see pages 2 to 6 for details.

Dimensions and Weight see pages 6 to 8 for details.

Capacity Tables see pages 13 to 16 for details.

Pressure Limits see page 11 for details.



Limiting Conditions

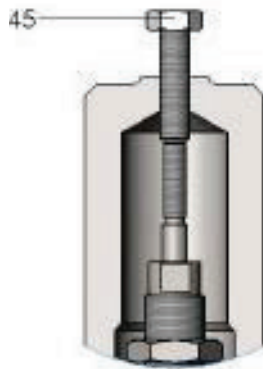
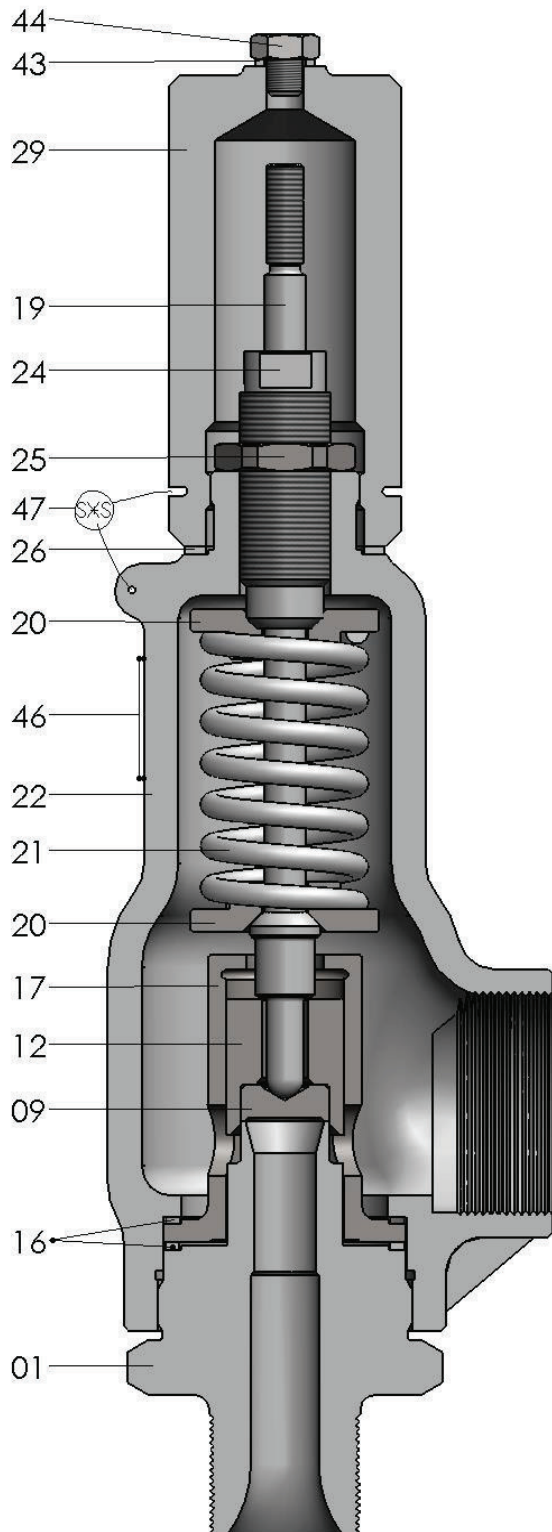
Pressure

* Minimum set pressure	0,5 bar g
* Maximum set pressure	207 bar g @ 20°C
* Maximum allowable backpressure	21,0 bar g @ 20°C
*1 Hydrostatic test pressure	1,5 times designe pressure
*1 Quality Procedure PIQ-07 in according PED 97 / 23 / EC - ANNEX I – 3.2.2 and 7.4	

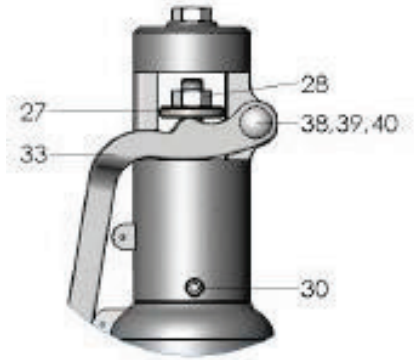
Temperature

Body material	Specification	Min. to Max. °C
Stainless steel	SA - 479 Type 316	-232 to 825
Stainless steel	SA - 351 Gr. CF8M	-232 to 825
Alloy 20	SA - 351 Gr. CN7M	-30 to 325
Monel	SA - 494 Gr. M-35-1	-29 to 400
Hastelloy	SA - 494 Gr. CW-12-MW-1	-30 to 550

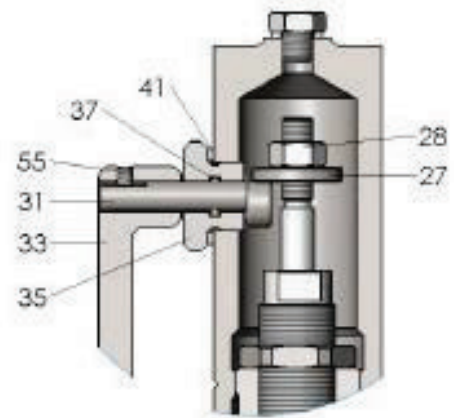
SV81H - Safety and Relief Valve



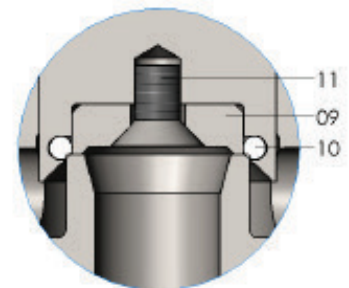
Test GAG



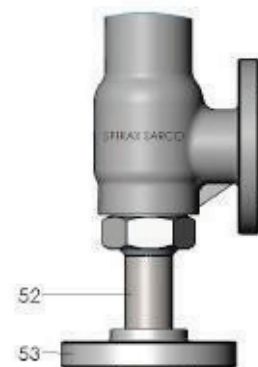
Open Lever



Packed Lever



O' Ring Seal



Flanged

Standard Materials

No.	Part	Material
1	Base	SA - 479 Type 304 / 316 SA - 351 Gr. CF8 / CF8M
9	Disc	304 St.St or 316 St.St.
10	O'Ring	Specify
11	Disc screw	304 St.St or 316 St.St.
12	Disc Holder	304 St.St or 316 St.St.
16	Guide Gasket	NA 1002
17	Guide	304 St.St or 316 St.St.
19	Stem	304 St.St or 316 St.St.
20	Spring retainer	304 St.St or 316 St.St.
21	Spring	-59 to 232 °C Carbon Steel or Stainless Steel 233 to 400 °C Stainless Steel / Inconel
22	Bonnet	SA - 216 Gr. WCB
24	Adjusting Screw	304 St.St or 316 St.St.
25	Adjusting Screw Locknut	304 St.St or 316 St.St.
26	Cap Gasket	NA 1002
29	Cap	Carbon Steel
43	Sealing Plug Gasket	NA 1002
44	Sealing Plug	Carbon Steel
45	Test GAG	Carbon Steel
46	Nameplate	304 St.St or 316 St.St.
47	Seal	Lead
52	Lap Joint Stub End	SA - 479 Type 304 SA - 479 Type 316
53	Flange	ASTMA 105
54	Weld Connector (Inlet)	SA - 479 Type 304 SA - 479 Type 316
62	Weld Connector (Outlet)	Carbon Steel

Standard Materials for Corrosive Service - Inox T 316

No.	Part	I1	I2	I3
		-268 to 232 °C	-59 to 232 °C	233 to 400 °C
1	Body	SA - 479 Type 316 or SA - 351 Gr CF8M	-	-
9	Disc	316 St.St.	-	-
10	O'Ring	Specify	-	-
11	Disc Screw	316 St.St.	-	-
12	Disc Holder	316 St.St.	-	-
16	Guide Gasket	Teflon	NA 1002	NA 1002
17	Guide	316 St.St.	-	-
19	Stem	316 St.St.	-	-
20	Spring Holder	316 St.St.	-	-
21	Spring	Stainless Steel T 316* / Inconel	316 St.St.* / Inconel	Inconel
22	Bonnet	SA - 351 Gr CF8M	-	-
24	Adjusting Screw	316 St.St.	-	-
25	Adjusting Screw Locknut	316 St.St.	-	-
26	Cap Gasket	Teflon	NA 1002	NA 1002
29	Cap	316 St.St.	-	-
43	Sealing Plug Gasket	Teflon	NA 1002	NA 1002
44	Sealing Plug	316 St.St.	-	-
45	Test GAG	316 St.St.	-	-
46	Nameplate	316 St.St.	-	-
47	Seal	Lead	-	-
52	Lap Joint Stub End	SA - 479 Type 316	-	-
53	Flange	ASTMA 182 F 316	-	-
54	Weld Connector (Inlet)	SA - 479 Type 316	-	-
62	Weld Connector (Outlet)	SA - 479 Type 316	-	-

* There may be restrictions on the opening pressure. "-" Indicates the same material for option I1.

Standard Materials for Corrosive Service - Alloy 20

No. Part	A1	A2	A3
	- 28 to 149 °C		
1 Body	Alloy 20	Alloy 20	-
9 Disc	Alloy 20	Alloy 20	-
10 O'Ring	Specify	-	-
11 Disc Screw	Alloy 20	-	-
12 Disc Holder	Alloy 20	Alloy 20	-
16 Guide Gasket	NA 1002	NA 1002	-
17 Guide	Alloy 20	Alloy 20	-
19 Stem	304 St.St	Alloy 20	-
20 Spring Washer	304 St.St	Alloy 20	-
21 Spring	Carbon Steel or 316 St.St.	Carbon Steel or 316 St.St.	Alloy 20*
22 Bonnet	SA - 216 Gr. WCB	SA - 351 Gr. CN7M	-
24 Adjusting Screw	304 St.St	Alloy 20	-
25 Adjusting Screw Locknut	304 St.St	Alloy 20	-
26 Cap Gasket	NA 1002	NA 1002	-
29 Cap	Carbon Steel	Alloy 20	-
43 Sealing Plug Gasket	NA 1002	NA 1002	-
44 Sealing Plug	Carbon Steel	Alloy 20	-
45 Test GAG	Carbon Steel	Alloy 20	-
46 Nameplate	Stainless Steel	Stainless Steel	-
47 Seal	Lead	Lead	-
52 Lap Joint Stub End	Alloy 20	Alloy 20	-
53 Flange	ASTM A 105	Alloy 20	-
54 Weld Connector (Inlet)	Alloy 20	Alloy 20	-
62 Weld Connector (Outlet)	Carbon Steel	Alloy 20	-

* There may be restrictions on the opening pressure. "*" Indicates the same material for option A2.

Standard Materials for Corrosive Service - Monel

No. Part	M1	M2	M3
	- 28 to 315 °C		
1 Body	Monel	Monel	-
9 Disc	Monel	Monel	-
10 O'Ring	Specify	-	-
11 Disc Screw	Monel	-	-
12 Disc Holder	Monel	Monel	-
16 Guide Gasket	NA 1002	NA 1002	-
17 Guide	Monel	Monel	-
19 Stem	304 St.St	Monel	-
20 Spring Washer	304 St.St	Monel	-
21 Spring	Carbon Steel or 316 St.St.	Carbon Steel or 316 St.St.	Inconel
22 Bonnet	SA - 216 Gr. WCB	SA - 494 Gr. M-35-1	-
24 Adjusting Screw	304 St.St	Monel	-
25 Adjusting Screw Locknut	304 St.St	Monel	-
26 Cap Gasket	NA 1002	NA 1002	-
29 Cap	Carbon Steel	Monel	-
43 Sealing Plug Gasket	NA 1002	NA 1002	-
44 Sealing Plug	Carbon Steel	Monel	-
45 Test GAG	Carbon Steel	Monel	-
46 Nameplate	Stainless Steel	Stainless Steel	-
47 Seal	Lead	Lead	-
52 Lap Joint Stub End	Monel	Monel	-
53 Flange	ASTM A 105	Monel	-
54 Weld Connector (Inlet)	Alloy 20	Monel	-
62 Weld Connector (Outlet)	Carbon Steel	Monel	-

"*" Indicates the same material for option M2.

Standard Materials for Corrosive Service - Hastelloy C

No.	Part	H1	H2	H3
		-28 to 260 °C		
		Conventional	Conventional	Conventional
1	Body	Hastelloy C	Hastelloy C	-
9	Disc	Hastelloy C	Hastelloy C	-
10	O'Ring	Specify	-	-
11	Disc Screw	Hastelloy C	-	-
12	Disc Holder	Hastelloy C	Hastelloy C	-
16	Guide Gasket	NA 1002	NA 1002	-
17	Guide	Hastelloy C	Hastelloy C	-
19	Stem	304 St.St	Hastelloy C	-
20	Spring Washer	304 St.St	Hastelloy C	-
21	Spring	Carbon Steel or 316 St.St.	Carbon Steel or 316 St.St.	Hastelloy* / Inconel
22	Bonnet	SA - 216 Gr WCB	SA - 494 Gr CW-12-MW-1	-
24	Adjusting Screw	304 St.St	Hastelloy C	-
25	Adjusting Screw Locknut	304 St.St	Hastelloy C	-
26	Cap Gasket	NA 1002	NA 1002	-
29	Cap	Carbon Steel	Hastelloy C	-
43	Sealing Plug Gasket	NA 1002	NA 1002	-
44	Sealing Plug	Carbon Steel	Hastelloy C	-
45	Test GAG	Carbon Steel	Hastelloy C	-
46	Nameplate	Stainless Steel	Stainless Steel	-
47	Seal	Lead	Lead	-
52	Lap Joint Stub End	Hastelloy C	Hastelloy C	-
53	Flange	ASTM A 105	Hastelloy C	-
54	Weld Connector (Inlet)	Hastelloy C	Hastelloy C	-
62	Weld Connector (Outlet)	Carbon Steel	Hastelloy C	-

* There may be restrictions on the opening pressure. "-" Indicates the same material for option H2.

Cap and Lever Materials

Type	Item	Description	Standard, A1, M1, H1	I1	I2, I3
Open Lever	27	Stem Test Nut	Carbon Steel	316 St.St	316 St.St
	28	Stem Nut	Carbon Steel	316 St.St	316 St.St
	29	Cap	Carbon Steel	SA - 351 Gr CF8M	SA - 351 Gr CF8M
	30	Cap Screw	Carbon Steel	Stainless Steel	Stainless Steel
	33	Lever	Carbon Steel	Stainless Steel	Stainless Steel
	38	Washer	Carbon Steel	Stainless Steel	Stainless Steel
	39	Rivet	Carbon Steel	Stainless Steel	Stainless Steel
	40	Cotter Pin	Carbon Steel	Stainless Steel	Stainless Steel

Packed Lever	27	Lever Disc	Carbon Steel	316 St.St	316 St.St
	28	Stem Test Nut	Carbon Steel	316 St.St	316 St.St
	29	Cap	Carbon Steel	316 St.St	316 St.St
	31	Cam	304 St.St	316 St.St	316 St.St
	33	Lever	Carbon Steel	316 St.St	316 St.St
	35	Bushing	304 St.St	316 St.St	316 St.St
	37	O'Ring	Viton	Teflon	Teflon
	41	Gasket	NA 1002	Teflon	Teflon
55	Lock Screw	Carbon Steel	Stainless Steel	Stainless Steel	

Type	Item	Description	A2, A3	M2, M3	H2, H3
Open Lever	27	Stem Test Nut	Alloy 20	Monel	Hastelloy
	28	Stem Nut	Alloy 20	Monel	Hastelloy
	29	Cap	SA - 351 Gr CN7M	SA - 494 Gr M-35-1	SA - 494 Gr CW-12-MW-1
	30	Cap Screw	Stainless Steel	Stainless Steel	Stainless Steel
	33	Lever	Stainless Steel	Stainless Steel	Stainless Steel
	38	Washer	Stainless Steel	Stainless Steel	Stainless Steel
	39	Rivet	Stainless Steel	Stainless Steel	Stainless Steel
	40	Cotter Pin	Stainless Steel	Stainless Steel	Stainless Steel

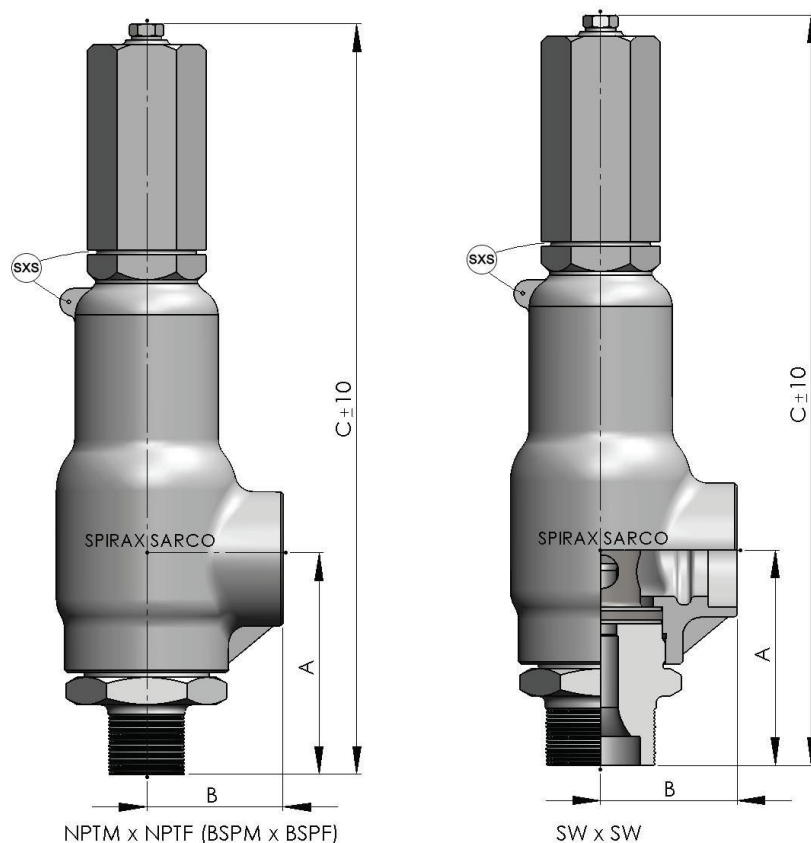
Packed Lever	27	Lever Disc	Alloy 20	Monel	Hastelloy C
	28	Stem Test Nut	Alloy 20	Monel	Hastelloy C
	29	Cap	SA - 351 Gr CN7M	SA - 494 Gr. M-35-1	SA - 494 Gr CW-12-MW-1
	31	Cam	Alloy 20	Monel	Hastelloy C
	33	Lever	Alloy 20	Monel	Hastelloy C
	35	Bushing	Alloy 20	Monel	Hastelloy C
	37	O'Ring	Teflon	Teflon	Teflon
	41	Gasket	Teflon	Teflon	Teflon
55	Lock Screw	Stainless Steel	Stainless Steel	Stainless Steel	

O'Ring Materials

Description	Temperature ° C
Buna N	- 29 to 121
Viton	- 29 to 232
EPDM	- 53 to 149
Silicone	- 101 to 260
Neoprene	- 53 to 121
Kalrez	- 20 to 327

The temperature limits may change depending on the process fluid involved.
Refer to Spirax Sarco for other material options.

Dimensions and Weight (approximated in mm and kg)



Screwed Connections NPTM x NPTF (BSPM x BSPF) Weld Connections SW x SW

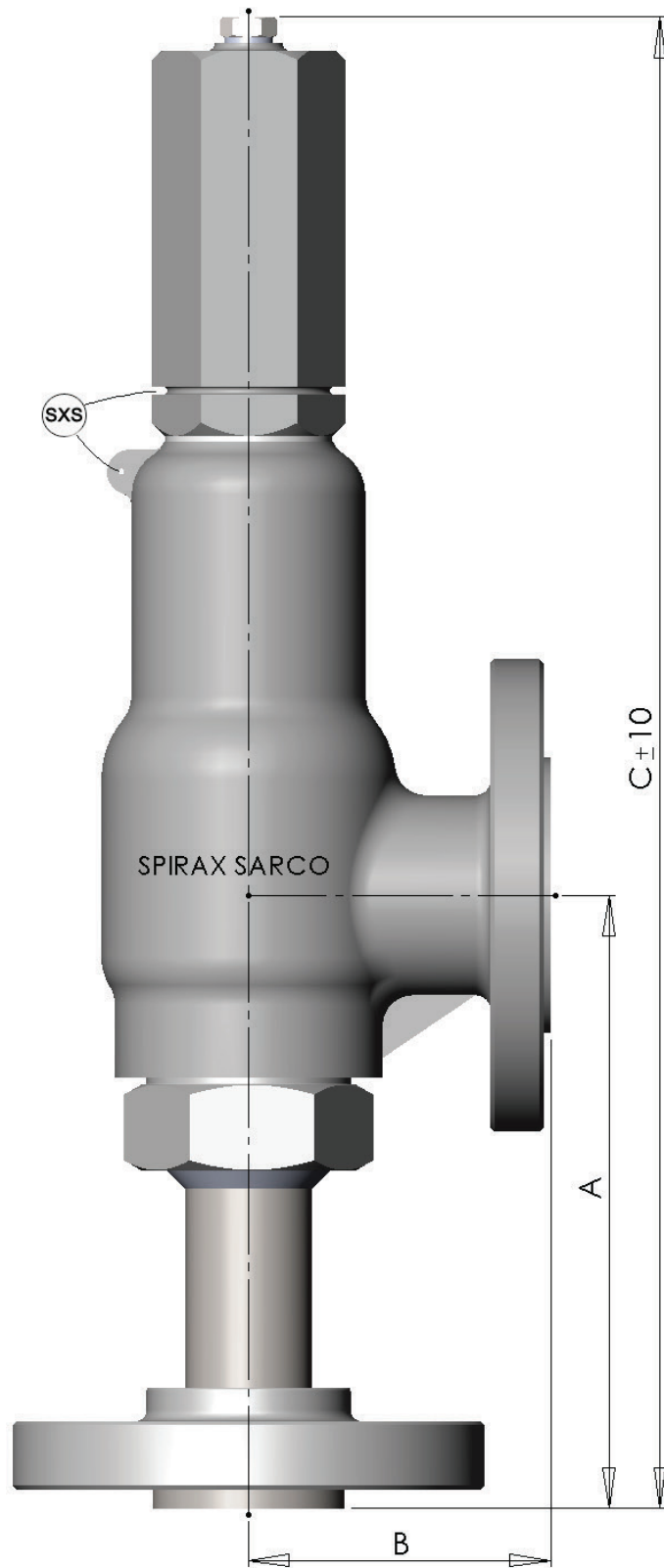
Orifice	Effective Area (cm ²)	Pressure Limit (bar)	Connections	A	B	C	Weight	
1 and 2	0.554 and 0.838	21	1/2 x 1	79,5	48	275	3.0	
			3/4 x 1					
			1 x 1					
		103,5	1/2 x 1	79,5	54,5	306		4.0
			3/4 x 1					
			1 x 1					
207	1/2 x 1	84,5	54,5	335	4.8			
	3/4 x 1							
	1 x 1							
3	1.474	21	1x1.1/2	93,5	57	295	3.7	
			1.1/4 x 1.1/2					
			1.1/2 x 1.1/2					
		103,5	1x1.1/2	93,5	59	326		3.9
			1.1/4 x 1.1/2					
			1.1/2 x 1.1/2					
175	1x1.1/2	93,5	59	350	4.3			
	1.1/4 x 1.1/2							
	1.1/2 x 1.1/2							
4	2.324	105	1.1/2x2 2 x 2	118,5	80	396	9.5	
5	3.664	79	1.1/2 x 2.1/2 2 x 2.1/2	118,5	80	396	9.5	



Screwed Connections NPTF x NPTF (BSPF x BSPF)

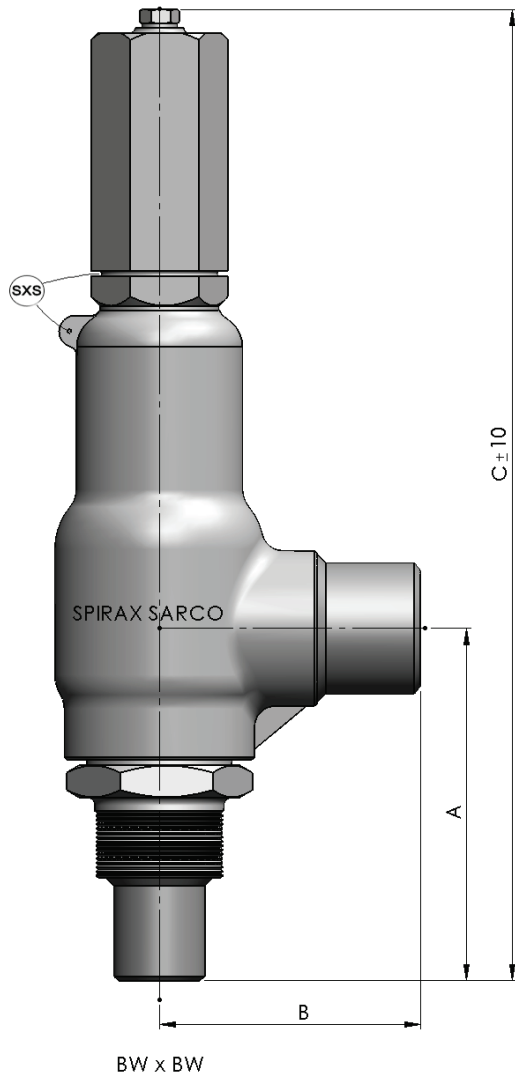
Orifice	Effective Area (cm ²)	Pressure Limit (bar)	Connections	A	B	C	Weight	
1 and 2	0.554 and 0.838	21	1/2 x 1	63,5	48	258	3.0	
			3/4 x 1					
			1 x 1					
		103,5	1/2 x 1	63,5	54,5	290		4.0
			3/4 x 1					
			1 x 1					
207	1/2 x 1	68,5	54,5	320	4.8			
	3/4 x 1							
	1 x 1							
3	1.474	21	1x1.1/2	79,5		57	281	3.7
			1.1/4 x 1.1/2					
			1.1/2 x 1.1/2					
		103,5	1x1.1/2	79,5	59	312	3.9	
			1.1/4 x 1.1/2					
			1.1/2 x 1.1/2					
175	1x1.1/2	79,5	59	335	4.3			
	1.1/4 x 1.1/2							
	1.1/2 x 1.1/2							
4	2.324	105	1.1/2x2	98,5		80	375	9.5
			2 x 2					
5	3.664	79	1.1/2 x 2.1/2	98,5		80	375	9.5
			2 x 2.1/2					

Flanged Connections



Flanged Connections

Orifice	Effective Area (cm ²)	Pressure Limit (bar)	Connections	Class	A	B	C	Weight						
1 and 2	0.554 and 0.838	21	1/2 x 1	150# x 150#	127	70	315	4.3						
				300# x 150#				4.6						
				600# x 150#				4.3						
			3/4 x 1	150# x 150#				153	70	345	4.6			
				300# x 150#							4.8			
				600# x 150#							5.5			
			1 x 1	150# x 150#							127	70	345	4.6
				300# x 150#										5.6
				900# x 300#										4.6
		3/4 x 1	300# x 150#	153	70	375	4.6							
			600# x 150#				6.5							
			900# x 300#				8.4							
		1 x 1	1500# x 300#				127	77	380	5.6				
			300# x 150#							7.0				
			900# x 300#							5.6				
		3/4 x 1	1500# x 300#							153	70	405	7.0	
			300# x 150#										8.4	
			600# x 150#										9.5	
		1 x 1	1500# x 300#	127	80	365							6.0	
			2500# x 300#										6.8	
			1500# x 300#										7.0	
1/2 x 1	150# x 150#	162,5	80				396	7.6						
	300# x 150#							9.6						
	600# x 150#							9.2						
3/4 x 1	150# x 150#							162,5	80	396	12.0			
	300# x 150#										9.2			
	600# x 150#										12.0			
1 x 1	900# x 300#			162,5	90	396					9.2			
	1500# x 300#										12.0			
	300# x 150#										10.5			
1/2 x 1	1500# x 300#	172	100				460				13.8			
	2500# x 300#										14.0			
	1500# x 300#										16.6			
3/4 x 1	150# x 150#							222	100	508	14.6			
	300# x 150#										15.6			
	600# x 150#										16.0			
1 x 1	900# x 300#			179,5	100	460					22.0			
	1500# x 300#										13.7			
	300# x 150#										15.0			
1/2 x 2	600# x 150#	179,5	100				460				15.3			
	900# x 300#										17.9			
	1500# x 300#										15.8			
3/4 x 2	150# x 150#							229	100	508	16.8			
	300# x 150#										17.2			
	600# x 150#										23.2			
1 x 2	900# x 300#			229	100	508					17.2			
	1500# x 300#										23.2			
	300# x 150#										23.2			



Welded Connections BW x BW

Orifice	Effective Area (cm ²)	Pressure Limit (bar)	Connections	A	B	C	Weight
1 and 2	0.554 and 0.838	21	1/2 x 1	118	86,5	315	3.5
			3/4 x 1				
			1 x 1				
3	1.474	207	1/2 x 1	118	93	344	4.5
			3/4 x 1				
			1 x 1				
3	1.474	21	1x1.1/2	132	95,5	335	4.0
			1.1/4 x 1.1/2				
			1.1/2 x 1.1/2				
4	2.324	105	1x1.1/2	132	98	365	5.0
			1.1/4 x 1.1/2				
			1.1/2 x 1.1/2				
4	2.324	105	1.1/2x2	156.5	128	435	9.5
			2 x 2	166	128	442	12.5
5	3.664	79	1.1/2 x 2.1/2	157.5	128	434	12.3
			2 x 2.1/2	167	128	445	14.5

Pressure Limits

Orifice	Effective Area (cm ²)	Size		Type	Maximum Set Pressure (barg) -267°C to 400°C	Maximum Backpressure @ 38°C (barg)
		Inlet	Outlet			
1	0.554	1/2"	1"	81H103L	21	16
		3/4"	1"	81H105L		
		1"	1"	81H106L		
		1/2"	1"	81H103M	103.5	21
		3/4"	1"	81H105M		
		1"	1"	81H106M		
		1/2"	1"	81H103H	207	21
		3/4"	1"	81H105H		
		1"	1"	81H106H		
2	0.838	1/2"	1"	81H203L	21	16
		3/4"	1"	81H205L		
		1"	1"	81H206L		
		1/2"	1"	81H203M	103.5	21
		3/4"	1"	81H205M		
		1"	1"	81H206M		
		1/2"	1"	81H203H	207	21
		3/4"	1"	81H205H		
		1"	1"	81H206H		
3	1.474	1"	1.1/2"	81H317L	21	16
		1.1/4"	1.1/2"	81H318L		
		1.1/2"	1.1/2"	81H319L		
		1"	1.1/2"	81H317M	103.5	21
		1.1/4"	1.1/2"	81H318M		
		1.1/2"	1.1/2"	81H319M		
		1"	1.1/2"	81H317H	175	21
		1.1/4"	1.1/2"	81H318H		
		1.1/2"	1.1/2"	81H319H		
4	2.324	1.1/2"	2"	81H421M	105	21
		2"	2"	81H422M		
5	3.664	1.1/2"	2.1/2"	81H525M	79	21
		2"	2.1/2"	81H526M		

Flanged Connections

Orifice	Effective Area (cm ²)	Size		Class ASME B16.5	Maximum Set Pressure (barg)			Maximum Backpressure @ 38°C (barg)		
		Inlet	Outlet		-29°C to 38°C	200°C	400°C			
1 and 2	0.554 and 0.838	1/2"	1"	150# x 150#	19.6	13.8	6.5	15.6		
				300# x 150#	51.1	43.8	34.7			
				600# x 150#	102.1	87.6	69.4			
				900# x 300#	153.2	131.4	104.2			
				1500# x 300#	207.0	207.0	173.6			
		2500# x 300#	207.0	207.0	207.0	21.0				
		150# x 150#	19.6	13.8	6.5					
		300# x 150#	51.1	43.8	34.7					
		600# x 150#	102.1	87.6	69.4					
		900# x 300#	153.2	131.4	104.2					
		1500# x 300#	207.0	207.0	173.6	15.6				
		2500# x 300#	207.0	207.0	207.0					
		150# x 150#	19.6	13.8	6.5					
		300# x 150#	51.1	43.8	34.7					
		600# x 150#	102.1	87.6	69.4					
3	1.474	1"	1"	150# x 150#	19.6	13.8	6.5	15.6		
				300# x 150#	51.1	43.8	34.7			
				600# x 150#	102.1	87.6	69.4			
				900# x 300#	153.2	131.4	104.2			
				1500# x 300#	207.0	207.0	173.6			
		2500# x 300#	175.0	175.0	175.0	21.0				
		150# x 150#	19.6	13.8	6.5					
		300# x 150#	51.1	43.8	34.7					
		600# x 150#	102.1	87.6	69.4					
		900# x 300#	153.2	131.4	104.2					
		4	2.324	1.1/2"	1.1/2"	150# x 150#	19.6	13.8	6.5	15.6
						300# x 150#	51.1	43.8	34.7	
						600# x 150#	102.1	87.6	69.4	
						900# x 300#	153.2	131.4	104.2	
						1500# x 300#	207.0	207.0	173.6	
2500# x 300#	175.0			175.0	175.0	21.0				
150# x 150#	19.6			13.8	6.5					
300# x 150#	51.1			43.8	34.7					
600# x 150#	102.1			87.6	69.4					
900# x 300#	153.2			131.4	104.2					
5	3.664			1.1/2"	2"	150# x 150#	19.6	13.8	6.5	19.6
						300# x 150#	51.1	43.8	34.7	
						600# x 150#	79.0	79.0	69.4	
						900# x 300#	79.0	79.0	79.0	
						1500# x 300#	79.0	79.0	79.0	
		2500# x 300#	105.0	105.0	105.0	21.0				
		150# x 150#	19.6	13.8	6.5					
		300# x 150#	51.1	43.8	34.7					
		600# x 150#	102.1	87.6	69.4					
		900# x 300#	105.0	105.0	104.2					
		5	3.664	1.1/2"	2.1/2"	150# x 150#	19.6	13.8	6.5	19.6
						300# x 150#	51.1	43.8	34.7	
						600# x 150#	79.0	79.0	69.4	
						900# x 300#	79.0	79.0	79.0	
						1500# x 300#	79.0	79.0	79.0	
2500# x 300#	105.0			105.0	105.0	21.0				
150# x 150#	19.6			13.8	6.5					
300# x 150#	51.1			43.8	34.7					
600# x 150#	79.0			79.0	69.4					
900# x 300#	79.0			79.0	79.0					

Purchase Information

For the correct sizing and selection of the SV81H, the following information is necessary:

- 1) Fluid
- 2) Required capacity (flow)
- 3) Operation pressure and Set pressure
- 4) Operating temperature and Opening temperature
- 5) Backpressure
- 6) Overpressure
- 7) Viscosity and Specific Gravity (Liquid)
- 8) Molecular Weight (Gases)

Spirax Sarco has a computer sizing program (PSV Calc) which performs sizing and selection functions. Additionally, it will select materials, configure the complete valve and provide a data sheet.

**Capacity Table - Compressed Air -
10% Overpressure - Nm³/h (0°C and 1,013 bar)**

Set Pressure (bar g)	Orifice Designation / Effective Area (cm ²)				
	1	2	3	4	5
	0,554	0,833	1,474	2,324	3,664
1,0	73	110	194	307	483
1,5	90	135	238	376	592
2,0	106	159	282	445	701
2,5	124	186	330	520	819
3,0	142	213	378	595	939
3,5	160	241	426	671	1.059
4,0	178	268	474	747	1.178
4,5	196	295	522	823	1.298
5,0	214	322	570	899	1.418
5,5	232	350	618	975	1.537
6,0	251	377	667	1.051	1.657
6,5	269	404	715	1.127	1.777
7,0	287	431	763	1.203	1.897
7,5	305	458	811	1.279	2.016
8,0	323	486	859	1.355	2.136
8,5	341	513	907	1.431	2.256
9,0	359	540	956	1.507	2.375
9,5	377	567	1.004	1.583	2.495
10	395	594	1.052	1.659	2.615
12	468	703	1.245	1.962	3.094
14	540	812	1.437	2.266	3.573
16	613	921	1.630	2.570	4.052
18	685	1.030	1.823	2.874	4.530
20	757	1.139	2.015	3.177	5.009
22	830	1.248	2.208	3.481	5.488
24	902	1.357	2.401	3.785	5.967
26	975	1.465	2.593	4.089	6.446
28	1.047	1.574	2.786	4.392	6.925
30	1.119	1.683	2.978	4.696	7.404
32	1.192	1.792	3.171	5.000	7.883
34	1.264	1.901	3.364	5.304	8.361
36	1.337	2.010	3.556	5.607	8.840
38	1.409	2.119	3.749	5.911	9.319
40	1.481	2.228	3.942	6.215	9.798
42	1.554	2.336	4.134	6.518	10.277
44	1.626	2.445	4.327	6.822	10.756
46	1.699	2.554	4.520	7.126	11.235
48	1.771	2.663	4.712	7.430	11.714
50	1.844	2.772	4.905	7.733	12.193
55	2.025	3.044	5.387	8.493	13.390
60	2.206	3.316	5.868	9.252	14.587
65	2.387	3.588	6.350	10.012	15.784
70	2.568	3.861	6.831	10.771	16.981
75	2.749	4.133	7.313	11.530	18.179
80	2.930	4.405	7.795	12.290	19.376
85	3.111	4.677	8.276	13.049	
90	3.292	4.949	8.758	13.808	
95	3.473	5.222	9.240	14.568	
100	3.654	5.494	9.721	15.327	
110	4.016	6.038	10.684	16.846	
120	4.378	6.582	11.648		
130	4.740	7.127	12.611		
140	5.102	7.671	13.574		
150	5.464	8.216	14.537		
160	5.826	8.760	15.501		
170	6.188	9.304	16.464		
180	6.550	9.849	17.427		
190	6.912	10.393			
200	7.274	10.937			
207	7.527	11.318			

**Capacity Table - Compressed Air -
10% Overpressure - SCFM (60°F and 14,7 psi)**

Set Pressure (psi g)	Orifice Designation / Effective Area (in ²)				
	1	2	3	4	5
	0,086	0,130	0,228	0,360	0,568
15	45	67	119	188	297
20	52	78	137	217	343
25	59	88	156	246	388
30	66	98	174	275	433
35	73	110	194	306	483
40	81	121	214	338	533
45	88	132	234	370	583
50	96	144	254	401	633
55	103	155	274	433	683
60	111	167	294	465	733
65	119	178	314	496	783
70	126	189	334	528	833
75	134	201	354	560	883
80	141	212	375	591	933
85	149	223	395	623	983
90	156	235	415	655	1.033
95	164	246	435	686	1.083
100	172	257	455	718	1.133
110	187	280	495	781	1.233
120	202	303	535	845	1.333
130	217	325	575	908	1.433
140	232	348	615	971	1.533
150	247	371	655	1.035	1.633
160	262	394	695	1.098	1.733
170	277	416	736	1.161	1.833
180	293	439	776	1.225	1.933
190	308	462	816	1.288	2.032
200	323	484	856	1.352	2.132
210	338	507	896	1.415	2.232
220	353	530	936	1.478	2.332
230	368	552	976	1.542	2.432
240	383	575	1.016	1.605	2.532
250	399	598	1.057	1.668	2.632
260	414	620	1.097	1.732	2.732
270	429	643	1.137	1.795	2.832
280	444	666	1.177	1.858	2.932
290	459	689	1.217	1.922	3.032
300	474	711	1.257	1.985	3.132
320	504	757	1.337	2.112	3.332
340	535	802	1.418	2.238	3.532
360	565	847	1.498	2.365	3.732
380	595	893	1.578	2.492	3.931
400	626	938	1.658	2.618	4.131
420	656	984	1.739	2.745	4.331
440	686	1.029	1.819	2.872	4.531
460	716	1.074	1.899	2.998	4.731
480	747	1.120	1.979	3.125	4.931
500	777	1.165	2.060	3.252	5.131
600	928	1.392	2.461	3.885	6.130
700	1.079	1.619	2.862	4.519	7.130
800	1.231	1.846	3.263	5.152	8.129
900	1.382	2.073	3.664	5.786	9.128
1000	1.533	2.300	4.065	6.419	10.128
1100	1.685	2.527	4.467	7.052	11.127
1200	1.836	2.754	4.868	7.686	12.127
1300	1.987	2.981	5.269	8.319	
1400	2.139	3.208	5.670	8.953	
1500	2.290	3.435	6.071	9.586	
2000	3.047	4.570	8.077		
2500	3.803	5.705	10.083		
3000	4.560	6.840			

For sizing purpose, the certified coefficient of discharge Kd for air, gas and steam is 0,854

**Capacity Table - Steam -
10% Overpressure - kg/h**

Set Pressure (bar g)	Orifice Designation / Effective Area (cm ²)				
	1	2	3	4	5
	0,554	0,833	1,474	2,324	3,664
1,0	56	85	150	237	373
1,5	69	104	184	290	457
2,0	82	123	218	343	541
2,5	96	144	254	401	632
3,0	110	165	292	460	725
3,5	124	186	329	518	817
4,0	138	207	366	577	910
4,5	152	228	403	636	1.002
5,0	165	249	440	694	1.095
5,5	179	270	478	753	1.187
6,0	193	291	515	812	1.279
6,5	207	312	552	870	1.372
7,0	221	333	589	929	1.464
7,5	235	354	626	987	1.557
8,0	249	375	663	1.046	1.649
8,5	263	396	701	1.105	1.742
9,0	277	417	738	1.163	1.834
9,5	291	438	775	1.222	1.926
10	305	459	812	1.281	2.019
12	361	543	961	1.515	2.389
14	417	627	1.110	1.750	2.758
16	473	711	1.258	1.984	3.128
18	529	795	1.407	2.219	3.498
20	585	879	1.556	2.453	3.868
22	641	963	1.705	2.688	4.237
24	697	1.047	1.853	2.922	4.607
26	752	1.131	2.002	3.157	4.977
28	808	1.215	2.151	3.391	5.346
30	864	1.300	2.300	3.626	5.716
32	920	1.384	2.448	3.860	6.086
34	976	1.468	2.597	4.095	6.456
36	1.032	1.552	2.746	4.329	6.825
38	1.088	1.636	2.895	4.564	7.195
40	1.144	1.720	3.043	4.798	7.565
42	1.200	1.804	3.192	5.033	7.934
44	1.256	1.888	3.341	5.267	8.304
46	1.312	1.972	3.489	5.502	8.674
48	1.367	2.056	3.638	5.736	9.044
50	1.423	2.140	3.787	5.971	9.413
55	1.563	2.350	4.159	6.557	10.338
60	1.703	2.560	4.531	7.143	11.262
65	1.843	2.771	4.902	7.730	12.186
70	1.982	2.981	5.274	8.316	13.111
75	2.122	3.191	5.646	8.902	14.035
80	2.262	3.401	6.018	9.488	14.959
85	2.402	3.611	6.390	10.075	
90	2.541	3.821	6.762	10.661	
95	2.681	4.031	7.134	11.247	
100	2.821	4.242	7.505	11.833	
110	2.931	4.408	7.800	12.297	
120	3.197	4.807	8.505		
130	3.462	5.206	9.211		
140	3.728	5.605	9.918		
150	3.993	6.004	10.625		
160	4.259	6.404	11.332		
170	4.525	6.804	12.040		
180	4.791	7.204	12.748		
190	5.058	7.605			
200	5.324	8.006			
207	5.511	8.286			

**Capacity Table - Steam -
10% Overpressure - lb/h**

Set Pressure (psi g)	Orifice Designation / Effective Area (in ²)				
	1	2	3	4	5
	0,086	0,130	0,228	0,360	0,568
15	126	191	335	529	834
20	146	220	386	609	962
25	165	249	437	690	1.089
30	184	278	488	771	1.217
35	205	311	545	860	1.357
40	227	343	601	949	1.497
45	248	375	657	1.038	1.638
50	269	407	714	1.127	1.778
55	290	439	770	1.216	1.918
60	312	471	826	1.305	2.058
65	333	503	883	1.394	2.199
70	354	535	939	1.483	2.339
75	375	567	995	1.571	2.479
80	397	600	1.052	1.660	2.620
85	418	632	1.108	1.749	2.760
90	439	664	1.164	1.838	2.900
95	460	696	1.220	1.927	3.041
100	482	728	1.277	2.016	3.181
110	524	792	1.389	2.194	3.461
120	567	856	1.502	2.372	3.742
130	609	921	1.615	2.550	4.023
140	652	985	1.727	2.727	4.303
150	694	1.049	1.840	2.905	4.584
160	737	1.113	1.953	3.083	4.864
170	779	1.178	2.065	3.261	5.145
180	821	1.242	2.178	3.439	5.425
190	864	1.306	2.290	3.617	5.706
200	906	1.370	2.403	3.794	5.987
210	949	1.434	2.516	3.972	6.267
220	991	1.499	2.628	4.150	6.548
230	1.034	1.563	2.741	4.328	6.828
240	1.076	1.627	2.854	4.506	7.109
250	1.119	1.691	2.966	4.684	7.390
260	1.161	1.755	3.079	4.861	7.670
270	1.204	1.820	3.192	5.039	7.951
280	1.246	1.884	3.304	5.217	8.231
290	1.289	1.948	3.417	5.395	8.512
300	1.331	2.012	3.529	5.573	8.793
320	1.416	2.141	3.755	5.928	9.354
340	1.501	2.269	3.980	6.284	9.915
360	1.586	2.398	4.205	6.640	10.476
380	1.671	2.526	4.430	6.995	11.037
400	1.756	2.655	4.656	7.351	11.598
420	1.841	2.783	4.881	7.707	12.160
440	1.926	2.911	5.106	8.062	12.721
460	2.011	3.040	5.331	8.418	13.282
480	2.096	3.168	5.557	8.774	13.843
500	2.181	3.297	5.782	9.129	14.404
600	2.606	3.939	6.908	10.908	17.210
700	3.031	4.581	8.035	12.686	20.016
800	3.455	5.223	9.161	14.465	22.822
900	3.880	5.865	10.287	16.243	25.628
1000	4.305	6.508	11.413	18.021	28.433
1100	4.730	7.150	12.540	19.800	31.239
1200	5.155	7.792	13.666	21.578	34.045
1300	5.580	8.434	14.792	23.356	
1400	6.004	9.076	15.919	25.135	
1500	6.460	9.765	17.127	27.042	
2000	8.932	13.502	23.680		
2500	11.820	17.867	31.336		
3000	15.646	23.652			

For sizing purpose, the certified coefficient of discharge K_d for air, gas and steam is 0,854

**Capacity Table - Water -
10% Overpressure - m³/h**

Set Pressure (bar g)	Orifice Designation / Effective Area (cm²)				
	1 0,554	2 0,922	3 1,474	4 2,324	5 3,664
1,0	2,0	3,0	5,3	8,4	13,2
1,5	2,4	3,6	6,3	10,0	15,7
2,0	2,7	4,1	7,2	11,4	17,9
2,5	3,0	4,5	8,0	12,7	20,0
3,0	3,3	5,0	8,8	13,9	21,9
3,5	3,6	5,4	9,5	15,0	23,6
4,0	3,8	5,7	10,2	16,0	25,3
4,5	4,1	6,1	10,8	17,0	26,8
5,0	4,3	6,4	11,4	17,9	28,3
5,5	4,5	6,7	11,9	18,8	29,6
6,0	4,7	7,0	12,5	19,6	31,0
6,5	4,9	7,3	13,0	20,4	32,2
7,0	5,1	7,6	13,4	21,2	33,4
7,5	5,2	7,9	13,9	21,9	34,6
8,0	5,4	8,1	14,4	22,7	35,7
8,5	5,6	8,4	14,8	23,4	36,8
9,0	5,7	8,6	15,2	24,0	37,9
9,5	5,9	8,9	15,7	24,7	38,9
10	6,0	9,1	16,1	25,3	40,0
12	6,6	10,0	17,6	27,8	43,8
14	7,1	10,7	19,0	30,0	47,3
16	7,6	11,5	20,3	32,1	50,5
18	8,1	12,2	21,6	34,0	53,6
20	8,5	12,8	22,7	35,8	56,5
22	9,0	13,5	23,8	37,6	59,3
24	9,4	14,1	24,9	39,3	61,9
26	9,7	14,6	25,9	40,9	64,4
28	10,1	15,2	26,9	42,4	66,9
30	10,5	15,7	27,8	43,9	69,2
32	10,8	16,3	28,8	45,3	71,5
34	11,1	16,8	29,6	46,7	73,7
36	11,5	17,2	30,5	48,1	75,8
38	11,8	17,7	31,3	49,4	77,9
40	12,1	18,2	32,1	50,7	79,9
42	12,4	18,6	32,9	51,9	81,9
44	12,7	19,1	33,7	53,2	83,8
46	13,0	19,5	34,5	54,4	85,7
48	13,2	19,9	35,2	55,5	87,5
50	13,5	20,3	35,9	56,7	89,3
55	14,2	21,3	37,7	59,4	93,7
60	14,8	22,3	39,4	62,1	97,9
65	15,4	23,2	41,0	64,6	102
70	16,0	24,0	42,5	67,1	106
75	16,5	24,9	44,0	69,4	109
80	17,1	25,7	45,5	71,7	113
85	17,6	26,5	46,9	73,9	
90	18,1	27,3	48,2	76,0	
95	18,6	28,0	49,5	78,1	
100	19,1	28,7	50,8	80,1	
110	20,0	30,1	53,3	84,1	
120	20,9	31,5	55,7		
130	21,8	32,8	58,0		
140	22,6	34,0	60,1		
150	23,4	35,2	62,3		
160	24,2	36,3	64,3		
170	24,9	37,5	66,3		
180	25,6	38,5	68,2		
190	26,3	39,6			
200	27,0	40,6			
207	27,5	41,3			

**Capacity Table - Water -
10% Overpressure - GPM**

Set Pressure (psi g)	Orifice Designation / Effective Area (in²)				
	1 0,086	2 0,130	3 0,228	4 0,360	5 0,568
15	9	13	24	37	59
20	10	15	27	42	67
25	11	17	30	47	74
30	12	18	32	51	80
35	13	20	35	55	87
40	14	21	37	59	92
45	15	22	39	62	98
50	16	23	42	66	103
55	16	25	44	69	108
60	17	26	45	72	113
65	18	27	47	75	118
70	19	28	49	78	122
75	19	29	51	80	127
80	20	30	53	83	131
85	20	31	54	85	135
90	21	32	56	88	139
95	22	32	57	90	143
100	22	33	59	93	146
110	23	35	62	97	153
120	24	36	64	102	160
130	25	38	67	106	167
140	26	39	69	110	173
150	27	41	72	114	179
160	28	42	74	117	185
170	29	43	77	121	191
180	30	45	79	124	196
190	31	46	81	128	202
200	31	47	83	131	207
210	32	48	85	134	212
220	33	49	87	137	217
230	34	50	89	141	222
240	34	51	91	144	227
250	35	53	93	147	231
260	36	54	95	149	236
270	36	55	96	152	240
280	37	56	98	155	245
290	38	57	100	158	249
300	38	58	102	161	253
320	40	59	105	166	262
340	41	61	108	171	270
360	42	63	111	176	277
380	43	65	114	181	285
400	44	66	117	185	292
420	45	68	120	190	300
440	46	70	123	194	307
460	47	71	126	199	314
480	49	73	129	203	320
500	50	74	131	207	327
600	54	81	144	227	358
700	59	88	155	245	387
800	63	94	166	262	414
900	66	100	176	278	439
1000	70	105	186	293	462
1100	73	110	195	307	485
1200	77	115	203	321	507
1300	80	120	212	334	
1400	83	124	220	347	
1500	86	129	227	359	
2000	99	149	263		
2500	111	166	294		
3000	121	182			

For sizing purpose, the certified coefficient of discharge Kd for liquids is 0,655.

**Capacity Table - Water -
25% Overpressure - m³/h**

Set Pressure (bar g)	Orifice Designation / Effective Area				
	(cm²)				
	1 0,554	2 0,833	3 1,474	4 2,324	5 3,664
1,0	2,0	3,1	5,4	8,5	13,5
1,5	2,5	3,8	6,6	10,5	16,5
2,0	2,9	4,3	7,7	12,1	19,0
2,5	3,2	4,8	8,6	13,5	21,3
3,0	3,5	5,3	9,4	14,8	23,3
3,5	3,8	5,7	10,1	16,0	25,2
4,0	4,1	6,1	10,8	17,1	26,9
4,5	4,3	6,5	11,5	18,1	28,6
5,0	4,6	6,8	12,1	19,1	30,1
5,5	4,8	7,2	12,7	20,0	31,6
6,0	5,0	7,5	13,3	20,9	33,0
6,5	5,2	7,8	13,8	21,8	34,3
7,0	5,4	8,1	14,3	22,6	35,6
7,5	5,6	8,4	14,8	23,4	36,9
8,0	5,8	8,7	15,3	24,2	38,1
8,5	5,9	8,9	15,8	24,9	39,3
9,0	6,1	9,2	16,3	25,6	40,4
9,5	6,3	9,4	16,7	26,3	41,5
10	6,4	9,7	17,1	27,0	42,6
12	7,1	10,6	18,8	29,6	46,7
14	7,6	11,5	20,3	32,0	50,4
16	8,1	12,2	21,7	34,2	53,9
18	8,6	13,0	23,0	36,2	57,1
20	9,1	13,7	24,2	38,2	60,2
22	9,6	14,4	25,4	40,1	63,2
24	10,0	15,0	26,5	41,9	66,0
26	10,4	15,6	27,6	43,6	68,7
28	10,8	16,2	28,7	45,2	71,3
30	11,2	16,8	29,7	46,8	73,8
32	11,5	17,3	30,7	48,3	76,2
34	11,9	17,9	31,6	49,8	78,5
36	12,2	18,4	32,5	51,3	80,8
38	12,6	18,9	33,4	52,7	83,0
40	12,9	19,4	34,3	54,0	85,2
42	13,2	19,8	35,1	55,4	87,3
44	13,5	20,3	35,9	56,7	89,3
46	13,8	20,8	36,8	57,9	91,4
48	14,1	21,2	37,5	59,2	93,3
50	14,4	21,7	38,3	60,4	95,2
55	15,1	22,7	40,2	63,4	100
60	15,8	23,7	42,0	66,2	104
65	16,4	24,7	43,7	68,9	109
70	17,0	25,6	45,3	71,5	113
75	17,6	26,5	46,9	74,0	117
80	18,2	27,4	48,5	76,4	120
85	18,8	28,2	50,0	78,8	
90	19,3	29,1	51,4	81,1	
95	19,9	29,8	52,8	83,3	
100	20,4	30,6	54,2	85,4	
110	21,4	32,1	56,8	89,6	
120	22,3	33,5	59,4		
130	23,2	34,9	61,8		
140	24,1	36,2	64,1		
150	24,9	37,5	66,4		
160	25,8	38,7	68,5		
170	26,6	39,9	70,7		
180	27,3	41,1	72,7		
190	28,1	42,2			
200	28,8	43,3			
207	29,3	44,1			

**Capacity Table - Water -
25% Overpressure - GPM**

Set Pressure (psi g)	Orifice Designation / Effective Area				
	(in²)				
	1 0,002	2 0,003	3 0,005	4 0,008	5 0,013
15	9	14	24	38	60
20	11	16	28	44	70
25	12	18	31	49	78
30	13	19	34	54	85
35	14	21	37	58	92
40	15	22	40	62	99
45	16	24	42	66	105
50	17	25	44	70	110
55	18	26	46	73	116
60	18	27	48	77	121
65	19	29	50	80	126
70	20	30	52	83	130
75	20	31	54	86	135
80	21	32	56	88	139
85	22	33	58	91	144
90	22	34	59	94	148
95	23	35	61	96	152
100	24	35	63	99	156
110	25	37	66	104	163
120	26	39	69	108	171
130	27	40	71	113	178
140	28	42	74	117	184
150	29	43	77	121	191
160	30	45	79	125	197
170	31	46	82	129	203
180	32	48	84	133	209
190	33	49	86	136	215
200	33	50	88	140	220
210	34	51	91	143	226
220	35	53	93	147	231
230	36	54	95	150	236
240	37	55	97	153	242
250	37	56	99	156	246
260	38	57	101	159	251
270	39	58	103	162	256
280	39	59	105	165	261
290	40	60	107	168	265
300	41	61	108	171	270
320	42	63	112	177	279
340	44	65	115	182	287
360	45	67	119	187	296
380	46	69	122	193	304
400	47	71	125	198	312
420	48	73	128	202	319
440	50	74	131	207	327
460	51	76	134	212	334
480	52	78	137	216	342
500	53	79	140	221	349
600	58	87	153	242	382
700	62	94	166	261	412
800	67	100	177	279	441
900	71	106	188	296	468
1000	75	112	198	312	493
1100	78	117	208	328	517
1200	82	123	217	342	540
1300	85	128	226	356	
1400	88	132	234	370	
1500	91	137	242	383	
2000	106	158	280		
2500	118	177	313		
3000	129	194			

For sizing purpose, the certified coefficient of discharge Kd for liquids is 0,655.