SPO
SPECIJALNA OPREMA LUČKO

Safety relief valve type **SVON**

APPLICATION

Safety relief valve SVON is used for relieving pressure of system in which is being installed. It's simplicity and reliability makes it perfect safety valve for almost every system or fluid.

Accuracy and valve performance stays permanent even on heavy duty demands. Due to simple design makes it easy to perform service and calibration.

DESIGN FEATURES

"Safety relief valve SVON is angled type of valve, with thread end connection for exhaust pipeline. It automatically opens and relief limited volume of gas, and automatically closes when pressure normalizes in the system it secures."

"Safety valve acts directly according to the developed force, as a result of gas pressure on the plate the set force of the spring is resised. With the adequate increase of pressure, the seat is lifted up to max. 1/4 seat diameter and with this the exiting conduit is opened."

ON REQUEST:

- special "PP" design for back pressure applications
- connections specified by customer
- every part can be produce to meet customer specification requirements
- special modification for aggressive media

TESTING & CALIBRATION

EN ISO/IEC 17025 certified laboratory

APPLIED STANDARDS, CODES & DIRECTIVES

EN ISO 4126-1 "Safety devices for protection against excessive pressure. Safety valves"

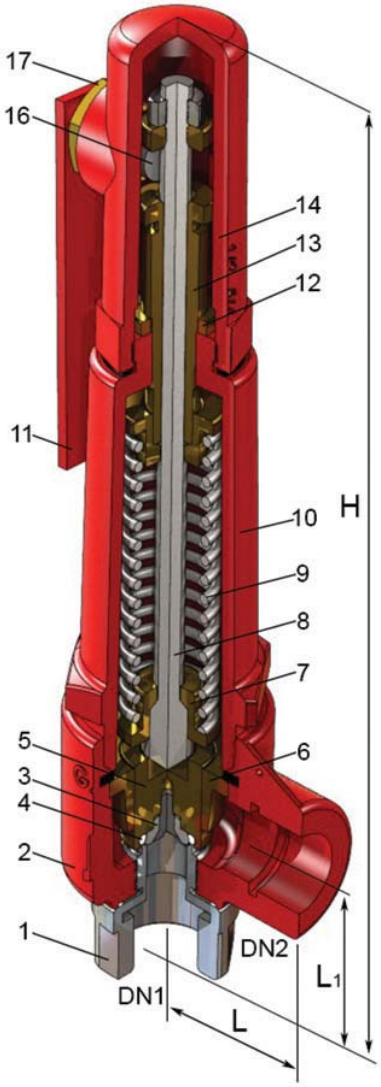
EN 12516-3 "Valves-Shell design strenght. Experimental method"

EN 13463-1 "Non-electrical equipment for use in potentially explosive atmospheres. Basic method and requirements"

EN 13463-5 "Non-electrical equipment for use in potentially explosive atmospheres. Protection by constructional safety 'c'"

94/9 EC (ATEX) "Equipment and protective systems intended for use in potentially explosive atmospheres"

97/23 EC (PED) ""Pressure equipment directive"



Pos.	Part name	Material	Standard
1	Seat	1.4301	EN10088-3
2	Lower housing	GJS-400-15	EN1563
3	Plate	1.4301	EN10088-3
4	"O" ring	FKM	
5	Plate holder	CW614N	EN12164
6	Guide	CW614N	EN12164
7	Spring plate	CW614N	EN12164
8	Spindle	1.4301	EN10088-3
9	Spring	SH	EN10270-1
10	Upper housing	GJS-400-15	EN1563
11	Lever	ST02Z275	DIN59232
12	Nut	CW614N	EN12164
13	Adjusting screw	CW614N	EN12164
14	Bonnet	GJS-400-15	EN1563
15	"O" ring	NBR	
16	Eccentric shaft	1.4301	EN10088-3
17	Guide nut	CW614N	EN12164

DN	1/2" - 1 1/2""
PN	25
p	1 - 25 bar
t	-20°C / +180°C
acceptable media	oil, petrol, natural gas, water, steam, LPG
connections	ISO 7-1, ANSI B1 20.1

CODE	DN1	DN2	L (mm)	L1 (mm)	H (mm)	⬡	WEGHT(kg)
030201	1/2"	1/2", 3/4"	48	49	274	36	2.4
030202	3/4"	3/4", 1"	48	49	274	36	2.4
030203	1"	1", 1 1/4"	63	67	307	50	3.2
030204	1 1/4"	1 1/4", 1 1/2"	63	67	307	50	3.2
030209	1 1/2"	1 1/2"	63	67	307	60	3.3

SVON

Nominal Diameter, Valve size	DN	-	1/2"	3/4"	1"	1 1/4"
Nominal Diameter, Outlet	DN	-	3/4"	1"	1 1/4"	1 1/2"
Pressure rating	PN	-	25			
Max. Set pressure	p_o	bar	22			
Max. allowable pressure	PS	bar	25			
Flow diameter	d_o	mm	15	15	20	25
Flow area	A_o	mm^2	177	177	315	491
Certified derated coefficient of discharge	K_{dr}	S/G/L	0.28 / 0.28 / 0.18	0.28 / 0.28 / 0.18	0.52 / 0.52 / 0.48	0.61 / 0.61 / 0.55

Symbols and their descriptions:

Coefficient of discharge:

$$K_d = \frac{\sum_1^n \left(\frac{q'_m}{q_m}\right)}{n}$$

Certified derated coefficient of discharge:

$$K_{dr} = 0,9 \cdot K_d$$

Theoretical specific discharge capacity for steam:

$$q_{m1} = 0,2883 \cdot C\sqrt{\frac{p_o}{v}} \left[\frac{kg}{h \cdot mm^2}\right]$$

Specific discharge capacity determined by test with saturated steam:

$$q'_{m1} \left[\frac{kg}{h \cdot mm^2}\right]$$

Theoretical specific discharge capacity for any gas under critical flow:

$$q_{m2} = p_o \cdot C\sqrt{\frac{M}{Z \cdot T_o}} \left[\frac{kg}{h \cdot mm^2}\right]$$

Specific discharge capacity determined by test with air at 15°C and 1,013bar(ρ=1,293kg/m3):

$$q'_{m2} \left[\frac{kg}{h \cdot mm^2}\right]$$

Theoretical specific discharge capacity for non-flashing fluid:

$$q_{m3} = 1,61\sqrt{\left(\frac{p_o - p_b}{v}\right)} \left[\frac{kg}{h \cdot mm^2}\right]$$

Specific discharge capacity determined by test with water at 15°C:

$$q'_{m3} \left[\frac{kg}{h \cdot mm^2}\right]$$

Mass flow rate in (kg/h) calculated in accordance with EN ISO 4126-1 at 10% overpressure

p_o (bar)	Q_{m1} (kg/h)	Q_{m2} (m_n^3/h)	Q_{m3} (10^3kg/h)	Q_{m1} (kg/h)	Q_{m2} (m_n^3/h)	Q_{m3} (10^3kg/h)	Q_{m1} (kg/h)	Q_{m2} (m_n^3/h)	Q_{m3} (10^3kg/h)	Q_{m1} (kg/h)	Q_{m2} (m_n^3/h)	Q_{m3} (10^3kg/h)
1	103	130	3,5	103	130	3,5	258	318	9,1	348	437	12,6
2	172	220	5,5	172	220	5,5	404	503	12,8	524	667	17,8
3	238	300	6,8	238	300	6,8,	560	704	15,7	728	935	21,9
4	300	390	7,9	300	390	7,9	702	890	18,1	920	1180	25,1
5	360	460	8,8	360	460	8,8	840	1070	20,3	1100	1430	28,2
6	420	550	9,7	420	550	9,7	980	1250	22,2	1280	1670	30,9
7	480	630	10,4	480	630	10,4	1110	1436	24,0	1460	1920	33,4
8	540	710	11,2	540	710	11,2	1250	1620	25,7	1640	2160	35,7
9	600	790	11,8	600	790	11,8	1390	1800	27,2	1825	2400	37,8
10	650	860	12,5	650	860	12,5	1527	1980	28,7	2000	2640	39,9
11	710	940	13,1	710	940	13,1	1665	2160	30,0	2180	2885	41,8
12	770	1020	13,7	770	1020	13,7	1800	2340	31,4	2360	3130	43,6
13	830	1100	14,2	830	1100	14,2	1930	2520	32,7	2540	3370	45,5
14	890	1180	14,8	890	1180	14,8	2070	2700	33,9	2720	3610	47,1
15	950	1260	15,3	950	1260	15,3	2210	2880	35,1	2900	3850	48,8
16	1010	1340	15,8	1010	1340	15,8	2340	3065	36,3	3080	4100	50,5
17	1070	1420	16,3	1070	1420	16,3	2480	3250	37,4	3260	4340	52,0
18	1130	1500	16,8	1130	1500	16,8	2620	3430	38,5	3440	4585	53,5
19	1190	1580	17,2	1190	1580	17,2	2760	3610	39,4	3620	4830	55,0
20	1240	1660	17,7	1240	1660	17,7	2900	3790	40,5	3800	5070	56,4
21	1290	1710	18,1	1290	1710	18,1	3030	3970	41,5	3980	5310	57,8
22	1360	1820	18,5	1360	1820	18,5	3170	4155	42,5	4170	5550	59,1
23	1410	1890	18,9	1410	1890	18,9	3310	4335	43,5	4350	5800	60,6
24	1480	1980	19,4	1480	1980	19,4	3445	4518	44,4	4530	6040	61,8
25	1520	2040	19,7	1520	2040	19,7	3580	4710	45,3	4700	6280	63,1

Mass flow rate for saturated steam at critical flow:

$$Q_{m1} = 0,2883 \cdot C \cdot A \cdot K_{dr}\sqrt{\frac{p_o}{v}} \quad [kg/h]$$

Mass flow rate for gaseous media at critical flow:

$$Q_{m2} = p_o \cdot C \cdot A \cdot K_{dr}\sqrt{\frac{M}{ZT_o}} \quad [m_n^3/h]$$

Mass flow rate for liquids at critical flow:

$$Q_{m3} = 1,61 \cdot K_{dr} \cdot A\sqrt{\frac{p_o - p_b}{v}} \quad [10^3 kg/h]$$