SPO
SPECIJALNA OPREMA LUČKO

Safety relief valve type **SVON**

APPLICATION

Safety relief valve SVON is used for relieving pressure of system in which is beeing installed. It's simplisity 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"

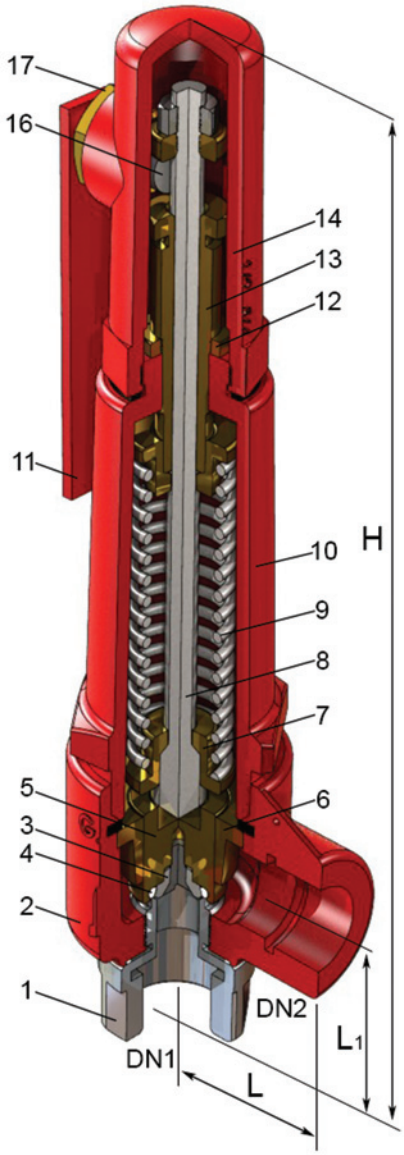
EN 12516-3 "Valves-Shell design strenght. Experimental method"

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

EN 13463-1 "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"

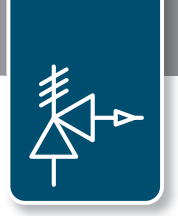
97/23 EC (PED) ""Pressure equipment directive"



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" - 6/4"
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", 5/4"	63	67	307	50	3.2
030204	5/4"	5/4", 6/4"	63	67	307	50	3.2
030209	6/4"	6/4"	63	67	307	60	3.3



SVON

Nominal Diameter, Valve size	DN	-	1/2"	3/4"	1"	5/4"
Nominal Diameter, Outlet	DN	-	3/4"	1"	5/4"	6/4"
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

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 non-flashing fluid "CALIBROL" (ρ=0,84 g/cm3 at 15°C), produced according to: ISO 4113 - "Calibration fluid for diesel injection equipment"

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

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:

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

Mass flow rate for liquids at critical flow:

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

Discharge capacities in (kg/h mm^2) calculated in accordance with EN ISO 4126-1 at 10% overpressure

p_o(bar)	q_{m1}	q_{m2}	q_{m3}	$q_{m1'}$	$q_{m2'}$	$q_{m3'}$	$q_{m1'}$	$q_{m2'}$	$q_{m3'}$	$q_{m1'}$	$q_{m2'}$	$q_{m3'}$	$q_{m1'}$	$q_{m2'}$	$q_{m3'}$
1	1.089	1.714	1.475	0.339	0.527	0.112	0.339	0.527	0.112	0.654	1.501	1.386	0.7381	1.163	0.908
2	1.613	2.571	2.087	0.511	0.800	0.326	0.511	0.800	0.326	1.000	2.171	1.445	1.093	1.743	1.326
3	2.206	3.427	2.556	0.703	1.063	0.404	0.703	1.063	0.404	1.437	2.985	1.501	1.495	2.323	1.666
4	2.649	4.284	2.951	0.825	1.279	0.501	0.825	1.279	0.501	1.556	2.815	1.603	1.795	2.904	1.893
5	3.164	5.141	3.299	0.990	1.479	0.599	0.990	1.479	0.599	1.704	3.021	1.777	2.144	3.484	2.209
6	3.675	5.998	3.614	1.216	1.800	0.723	1.216	1.800	0.723	2.123	3.375	1.887	2.490	4.065	2.386
7	4.184	6.855	3.904	1.305	2.132	0.794	1.305	2.132	0.794	2.305	3.961	2.041	2.835	4.646	2.447
8	4.691	7.712	4.173	1.442	2.402	0.844	1.442	2.402	0.844	2.552	4.311	2.175	3.179	5.227	2.613
9	5.197	8.569	4.426	1.612	2.677	0.906	1.612	2.677	0.906	2.986	4.885	2.309	3.522	5.808	2.705
10		9.426	4.666		3.000	0.956		3.000	0.956		5.289	2.435		6.389	2.869
11		10.282	4.894		3.200	1.012		3.200	1.012		5.756	2.632		6.969	2.800
12		11.139	5.111		3.506	1.112		3.506	1.112		5.921	2.684		7.550	3.006
13		11.997	5.320		3.731	1.134		3.731	1.134		6.111	2.623		8.131	3.101
14		12.853	5.521		4.015	1.150		4.015	1.150		6.412	2.650		8.711	3.222
15		13.710	5.715		4.321	1.620		4.321	1.620		6.925	2.731		9.292	3.493
16		14.567	5.902		4.550	1.217		4.550	1.217		7.013	2.946		9.873	3.514
17		15.424	6.084		4.867	1.252		4.867	1.252		7.300	3.021		10.454	3.643
18		16.281	6.260		5.102	1.286		5.102	1.286		7.562	3.111		11.035	3.719
19		17.138	6.432		5.460	1.320		5.460	1.320		8.112	3.169		11.616	3.865
20		17.995	6.599		5.617	1.352		5.617	1.352		9.215	3.254		12.197	3.944
21		18.852	6.762		0.000	1.384		5.863	1.384		9.953	3.332		12.777	4.009
22		19.709	6.921		6.223	1.662		6.223	1.662		10.786	3.441		13.358	4.100
Kd				0.314	0.311	0.198	0.314	0.311	0.198	0.583	0.579	0.541	0.684	0.677	0.611
Kdr				0.283	0.279	0.178	0.283	0.279	0.178	0.524	0.521	0.486	0.615	0.61	0.55

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

p_o(bar)	Q_{m1}	Q_{m2}	Q_{m3}	Q_{m1}	Q_{m2}	Q_{m3}	Q_{m1}	Q_{m2}	Q_{m3}	Q_{m1}	Q_{m2}	Q_{m3}
1	54.5	84.5	46.4	54.5	84.5	46.4	179.3	280.5	225.2	328.8	513.2	398.2
2	80.7	126.8	65.6	80.7	126.8	65.6	265.5	420.8	318.6	486.9	769.8	563.4
3	110.3	169.0	80.4	110.3	169.0	80.4	363.2	560.9	390.3	666.0	1026.2	690.1
4	132.5	211.2	92.8	132.5	211.2	92.8	436.1	701.2	450.6	799.7	1282.8	796.7
5	158.2	253.5	103.8	158.2	253.5	103.8	520.9	841.5	503.7	955.2	1539.4	890.7
6	183.8	295.7	113.7	183.8	295.7	113.7	605.0	981.7	551.8	1109.4	1796.0	975.7
7	209.2	338.0	122.8	209.2	338.0	122.8	688.8	1122.0	596.1	1263.1	2052.6	1054.0
8	234.6	380.2	131.3	234.6	380.2	131.3	772.2	1262.3	637.1	1416.2	2309.2	1126.6
9	259.9	422.5	139.2	259.9	422.5	139.2	855.5	1402.5	675.8	1568.9	2565.8	1194.9
10		464.7	146.8		464.7	146.8		1542.8	712.4		2822.5	1259.7
11		506.9	153.9		506.9	153.9		1682.9	747.2		3078.8	1321.3
12		549.2	160.8		549.2	160.8		1823.2	780.4		3335.4	1379.9
13		591.5	167.3		591.5	167.3		1963.6	812.3		3592.3	1436.3
14		633.7	173.7		633.7	173.7		2103.7	843.0		3848.6	1490.6
15		675.9	179.8		675.9	179.8		2244.0	872.6		4105.2	1542.9
16		718.2	185.6		718.2	185.6		2384.3	901.1		4361.8	1593.4
17		760.5	191.4		760.5	191.4		2524.6	928.9		4618.5	1642.6
18		802.7	196.9		802.7	196.9		2664.8	955.8		4875.1	1690.1
19		845.0	202.3		845.0	202.3		2805.1	982.0		5131.7	1736.5
20		887.2	207.6		887.2	207.6		2945.4	1007.5		5388.3	1781.6
21		929.5	212.7		929.5	212.7		3085.6	1032.4		5644.9	1825.6
22		971.7	217.7		971.7	217.7		3225.9	1056.7		5901.5	1868.5