

SV615 Safety valves

for use with steam, air and water



spirax
/sarco

Spirax Sarco safety valves - protecting people, plant and profit

The Spirax Sarco SV615 range of spring loaded full lift safety valves range has been designed to protect against excess pressure across a broad spectrum of industrial processes. Suitable for use with steam, air and water, the SV615 safety valves provide a comprehensive and competitive solution to most applications, including the protection of steam or hot water boilers, generators, vessels, receivers and air compressors, autoclaves, downstream or pressure reducing valves and for most general industrial applications.

The SV615 is simple in design and available with inlet sizes of DN15 to DN50 with the option of a sanitary clamp inlet connection on sizes DN15 to DN25. All valves have a closed bonnet with either lifting lever or tamper-proof cap, with an optional soft seat available in nitrile, EPDM or viton.

Where frequent washdown occurs or aesthetic appearance is a consideration, this product can also be supplied with an electroless nickel plated (ENP) finish to the body, lever housing (or sealed cap) and lever. This optional extra can be specified by adding 'ENP' to the end of the product number when making an order placement (see the SV615 safety valve selection guide, page 7).

people

A company's most valued asset is secure in the knowledge that their safety has been put first

plant

Safeguard plant against major damage from excess pressure and ensure continued efficient operation

profit

**Major shutdowns interfere with production and lose customers.
A continuous supply of products protects a company's image and profits**

Quality comes as standard

Safety valves protect people, plant and profit so there should be no compromise on quality when selecting a valve.

The SV615 is approved by **SAFed TAS** (Royal and Sun Alliance) and meets the requirements of **EN ISO 4126:2004** and also of the European Pressure Equipment Directive 97/23/EC and is **CE** marked accordingly.

The quality of shut-off tightness is a critical feature of any safety valve and each Spirax Sarco safety valve is tested to ensure that the integrity of shut-off complies with the requirements of **ANSI/API STD 527-1992**.

Spirax Sarco is a company of assessed capability to BS EN ISO 9001

User benefits

- Off-the-shelf availability.
- Compact full lift, high flow design.
- Option of soft seal and gas tight cap.
- Independently approved conformance with the European Pressure Equipment Directive.
- API 527 shut-off tightness.
- Spirax Sarco's guarantee of worldwide technical support, knowledge and service.

Chrome vanadium steel spring gives stability at high temperatures and eliminates spring relaxation.

Hardened stainless steel disc and seat, lapped to optical flatness.

Stainless steel nozzle

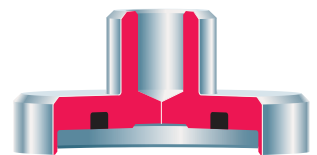
Optional



Tamper-proof gas tight cap.

Optional

Soft seal option for bubble tight shut-off.



Connections
Screwed
BSP or NPT
DN15 to DN50
Optional
Sanitary clamp
connection
available in sizes
DN15 to DN25

Sizing a valve

Establish the maximum flowrate

This value must be the maximum possible for the system, for example at full boiler load or maximum possible valve capacity.

Establish the set pressure

The set pressure must be low enough to ensure that the maximum allowable accumulated pressure of the boiler, vessel or system it is protecting, is not exceeded.

The set pressure must be high enough to ensure that there is sufficient margin above the normal system operating pressure to allow the valve to close. However, it must be no higher than the maximum allowable working pressure of the system. For safety valves used downstream of pressure reducing valves, it is essential to establish the pressure at no-load since this may be significantly higher than the working pressure for a direct acting type valve.

Unless operational considerations dictate otherwise, the safety valve set pressure should always be significantly higher than the system operating pressure with plenty of margin allowed for blowdown. There is sometimes a temptation to set a safety valve just above the normal operating pressure, which can lead to poor shut-off and nuisance operation.

Select a suitable size safety valve

Once the type of safety valve has been selected and the flow and set pressures established, the correct size can be determined. For media such as steam, air and water, published capacity charts are usually quite sufficient to select the correct size safety valve. That is one, whose capacity just exceeds the required capacity at the desired overpressure. Where sizing charts are not available or do not cater for the particular fluid or conditions then the minimum required flow area will need to be calculated and a valve with a larger flow area chosen.

For hot water duty where flashing will occur, the capacity charts for water are unsuitable since a percentage of the discharge will be steam and this must be taken into account in the sizing calculation.

Capacities

SV615 flow capacity for water in kilogrammes per hour (kg/h) at 20°C

(calculated in accordance with EN ISO 4126:2004 at 10% overpressure)

Derated coefficient of discharge (K_{dr}) = 0.52

Valve size DN	15/20	20/32	25/40	32/50	40/65	50/80
Area (mm ²)	113	314	452	661	1075	1662
Set pressure (bar g)	Flow capacity for water kg/h					
0.5	2 216	6 159	8 866	12 965	21 086	32 599
1.0	3 135	8 710	12 538	18 335	29 819	46 102
1.5	3 839	10 668	15 356	22 456	36 521	56 463
2.0	4 433	12 318	17 731	25 930	42 171	65 198
3.0	5 429	15 086	21 717	31 758	51 649	79 851
4.0	6 269	17 420	25 076	36 671	59 639	92 204
5.0	7 009	19 476	28 036	40 999	66 678	103 088
6.0	7 678	21 335	30 712	44 913	73 042	112 927
7.0	8 293	23 045	33 173	48 511	78 895	121 975
8.0	8 866	24 636	35 463	51 861	84 342	130 397
9.0	9 404	26 130	37 614	55 006	89 458	138 307
10.0	9 912	27 544	39 649	57 982	94 297	145 788
11.0	10 396	28 888	41 584	60 812	98 900	152 904
12.0	10 858	30 172	43 433	63 516	103 298	159 703
13.0	11 302	31 405	45 207	66 110	107 515	166 224
14.0	11 728	32 590	46 913	68 605	111 574	172 499
16.0	12 538	34 840	50 152	73 342	-	-
18.0	13 299	36 954	53 194	77 791	-	-

SV615 flow capacity for saturated steam in kilogrammes per hour (kg/h)

(calculated in accordance with EN ISO 4126:2004 at 5% overpressure)

Derated coefficient of discharge (K_{dr}) = 0.71

Valve size DN	15/20	20/32	25/40	32/50	40/65	50/80
Area (mm ²)	113	314	452	661	1 075	1 662
Set pressure (bar g)	Flow capacity for saturated steam kg/h					
0.5	65	180	259	379	616	953
1.0	87	241	348	508	827	1 278
1.5	109	303	436	638	1 037	1 603
2.0	131	364	524	767	1 247	1 929
2.5	153	426	613	896	1 458	2 254
3.0	175	487	701	1 026	1 668	2 579
3.5	197	549	790	1 155	1 879	2 904
4.0	220	610	878	1 284	2 089	3 230
4.5	242	672	967	1 414	2 299	3 555
5.0	264	733	1 055	1 543	2 510	3 880
5.5	286	794	1 144	1 672	2 720	4 205
6.0	308	856	1 232	1 802	2 930	4 530
6.5	330	917	1 321	1 931	3 141	4 856
7.0	352	979	1 409	2 061	3 351	5 181
7.5	374	1 040	1 497	2 190	3 561	5 506
8.0	396	1 102	1 586	2 319	3 772	5 831
8.5	419	1 163	1 674	2 449	3 982	6 157
9.0	441	1 225	1 763	2 578	4 193	6 482
9.5	463	1 286	1 851	2 707	4 403	6 807
10.0	485	1 348	1 940	2 837	4 613	7 132
11.0	529	1 470	2 117	3 095	5 034	7 783
12.0	573	1 593	2 294	3 354	5 455	8 433
13.0	618	1 716	2 470	3 613	5 876	9 084
14.0	662	1 839	2 647	3 871	6 296	9 734
15.0	706	1 962	2 824	4 130	-	-
16.0	750	2 085	3 001	4 389	-	-
17.0	795	2 208	3 178	4 648	-	-
18.0	839	2 331	3 355	4 906	-	-

SV615 flow capacity for air in litres per second (l/s) at 15°C and 1.013 bar a

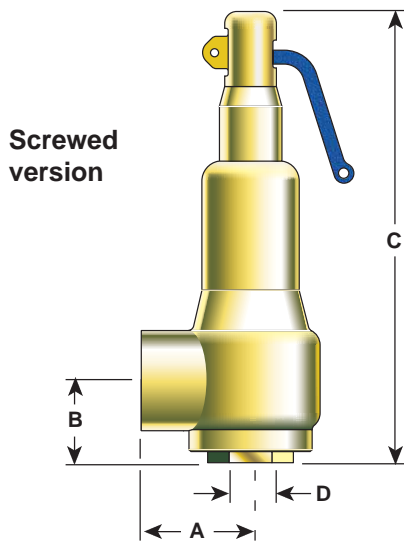
(calculated in accordance with EN ISO 4126:2004 at 10% overpressure)

Derated coefficient of discharge (K_{dr}) = 0.71

Valve size DN	15/20	20/32	25/40	32/50	40/65	50/80
Area (mm ²)	113	314	452	661	1 075	1 662
Set pressure (bar g)	Flow capacity for air l/s					
0.5	24	67	97	142	230	356
1.0	33	91	131	191	311	481
1.5	41	115	165	241	392	606
2.0	50	138	199	291	473	732
3.0	67	186	267	391	635	982
4.0	84	233	335	490	797	1 233
5.0	101	280	403	590	959	1 483
6.0	118	328	472	690	1 121	1 734
7.0	135	375	540	789	1 283	1 984
8.0	152	422	608	889	1 446	2 235
9.0	169	470	676	988	1 608	2 485
10.0	186	517	744	1 088	1 770	2 736
11.0	203	564	812	1 188	1 932	2 986
12.0	220	612	880	1 287	2 094	3 237
13.0	237	659	948	1 387	2 256	3 487
14.0	254	706	1 017	1 487	2 418	3 738
16.0	288	801	1 153	1 686	-	-
18.0	322	896	1 289	1 885	-	-

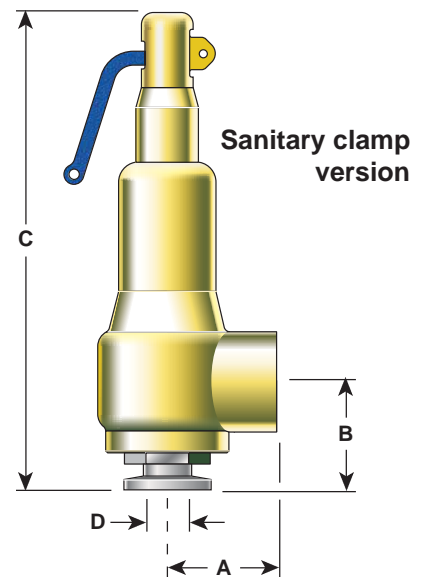
Technical data

Sizes and pipe connections DN15 to DN50	Inlet connections		Screwed BSP (BS 21 parallel) or NPT	
			Sanitary clamp (DN15 to DN25 sizes only) BS 4825 / ISO 2852 / DIN 32676	
	Outlet connections		Screwed BSP (BS 21 parallel) or NPT	
Materials	Body		Bronze (Optional EPN finish)	BS EN 1982 CC491K
	Nozzle	Standard	Stainless steel	BS 3146 Pt2 Gr. ANC2
		Sanitary clamp	Stainless steel	ASTM A276 316L
	Soft seal		Nitrile	
			EPDM	
			Viton	
	Disc	Standard	Stainless steel	BS 970 431 S29
		Sanitary clamp	Stainless steel	ASTM A276 316L
	Spring	Chrome vanadium steel		BS 2803 730 A65
Limiting conditions	Body design			PN25
	Set pressure range		DN15 to DN32	0.3 bar up to 18 bar
			DN40 and DN50	0.3 bar up to 14 bar
	Designed for a maximum cold hydraulic test pressure of			38 bar
	Temperature range		Stainless steel seat	-90°C to +230°C
	Soft seal material and temperature range (The soft seal insert is not recommended for steam applications)		Nitrile seal	-30°C to +120°C
			EPDM seal	-50°C to +150°C
			Viton seal	-20°C to +200°C



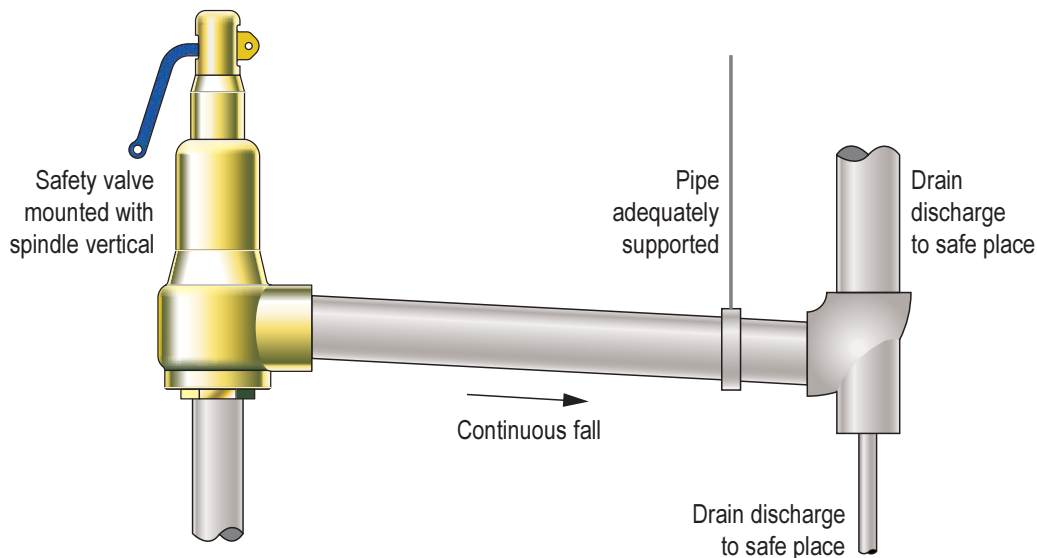
Dimensions and weights

(approximate) in mm and kg



Type of connection	Size	Connection Inlet	Connection Outlet	Lift	A	B	C	Flow Ø D	Weight
Screwed	DN15	1/2"	3/4"	3.00	40	40	194	12	1.3
	DN20	3/4"	1 1/4"	5.00	55	44	229	20	2.4
	DN25	1"	1 1/2"	6.00	60	48	242	24	2.9
	DN32	1 1/4"	2"	7.25	70	58	279	29	4.2
	DN40	1 1/2"	2 1/2"	9.25	81	67	365	37	8.8
	DN50	2"	3"	11.50	96	80	420	46	13.0
Sanitary clamp	DN15	1/2"	3/4"	3.00	40	55	209	12	1.4
	DN20	1"	1 1/4"	5.00	55	60	245	20	2.6
	DN25	1"	1 1/2"	6.00	60	64	258	24	3.1

Installation



**When installing safety valves, the following salient points should be observed.
If in any doubt contact your Spirax Sarco engineer.**

- The safety valve should always be fitted with the centre line of the spring housing vertically above the valve.
- There should not be any shut-off device on the inlet or outlet of the safety valve.
- The discharge pipework must not be smaller in diameter than the valve outlet.
- No undue stresses should be imposed on installation which may cause distortion and leakage.
- If a rise in the discharge pipework cannot be avoided, a small bore drain should be provided at the point where water could collect.
- Discharge pipework should be sized in such a way that built-up back pressure does not exceed 12% of the set pressure.
- Spirax Sarco Installation and Maintenance Instructions should be consulted prior to installation.

SV615 safety valve selection guide

Series number	SV615		SV615
Configuration	A	= Closed bonnet / easing lever	A
	B	= Closed bonnet / gas tight cap	
Seal material	S	= Stainless steel	N
	N	= Nitrile	
	E	= EPDM	
	V	= Viton	
Finish	ENP	= Electroless nickel plated (optional extra)	
Size	DN15, DN20, DN25, DN32, DN40 and DN50		DN15
Connection	BSP, NPT or sanitary clamp		BSP

Selection example	SV615	A	N		DN15	BSP
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How to order

Example: 1 off Spirax Sarco SV615AN DN15 screwed BSP.

Spirax Sarco products, service and support



A partnership with Spirax Sarco provides knowledge, service and products worldwide for the control and efficient use of steam and other industrial fluids.



Technical support

Experienced technical engineers are available to assist with the study of plant layout and application problems, leading to the correct sizing and selection of equipment using dedicated software.



Spare parts

Spare parts and expert advice are provided through a networked organisation at global level, and Spirax Sarco warehouses with local assistance from specialists.



After sales service

Repairs can be carried out either at the plant or at our central workshops, by expert, highly specialist technicians. Calibrating equipment is a service provided in each of the 39 subsidiaries throughout our worldwide organisation.



Training

Correct sizing, application and calibration are among the main factors contributing to success in solving control problems. Spirax Sarco offers a worldwide organisation for training at its 35 fully equipped technical training centres.



Our comprehensive product range includes:

- Boiler controls
- Flowmeters
- Pneumatically and electrically actuated control valves
- Pressure reducing valves
- Self-acting temperature control valves
- Programmable electronic controllers
- Pneumatic transmitter controllers
- Safety valves
- Steam traps
- Steam trap monitoring systems
- Condensate pumps
- Flash vessels
- Separators
- Strainers
- Stop valves
- Check valves
- Humidifiers
- Complete packaged solutions

Some of the products may not be available in certain markets.

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