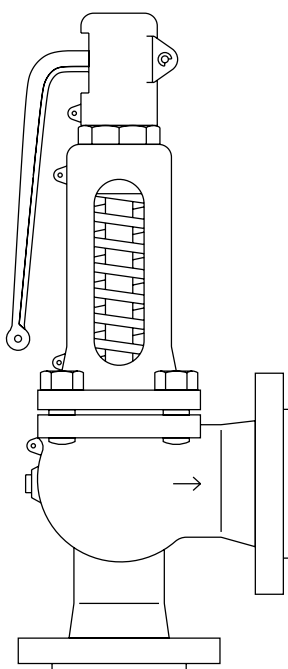




TI-S13-27
CH Issue 13

SV60 Safety Valve



Description

The SV60 is a range of full lift flanged safety valves suitable for use on steam, inert industrial gas and water services. Please contact Spirax Sarco for suitability of any other media.

Available types

Model and material		Bonnet and cap configuration	
SV604	Carbon steel	Closed bonnet	Open type easing lever
			Sealed cap
SV607	SG iron	Open bonnet	Packed easing lever - DN20 to DN100 only
			Open type easing lever

Applications

The SV60 is suitable for the protection of steam boilers, pipelines, pressure vessels, compressors and receivers and most general process industry applications.

Certification

A manufacturers' Typical Test Report is provided as standard for each valve which will include valve set and hydraulic test pressure. Also available on request is material certification in accordance with EN 10204 3.1.

Standards and approvals

The **SV60** carries the **CE** mark and complies with the requirements of the European Pressure Equipment Directive 97/23/EC falling within Category 4 for Group 2 gases.

Seat tightness to ASME / API Standard 527-1992.

Lloyds Register (LR) type approval - Certificate number 01/00125 (E2).

The **SV604** (PN flanged) is approved by the TÜV to AD-Merkblatt A2, AD-Merkblatt A4, TRD 421, Vd TÜV 100, 100/4.

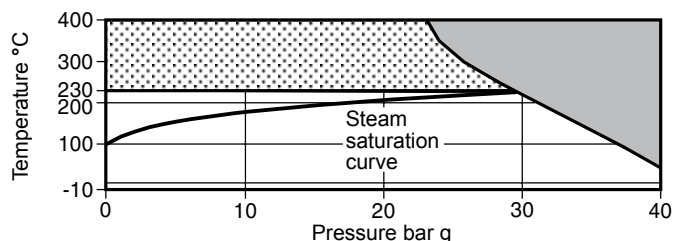
Sizes and end connections

Valve type	Inlet connection	Outlet connection
SV607	PN16 (DN65 to DN150 only)	PN16
	PN25	PN16
SV604	PN40	PN16
	ASME 300	ASME 150

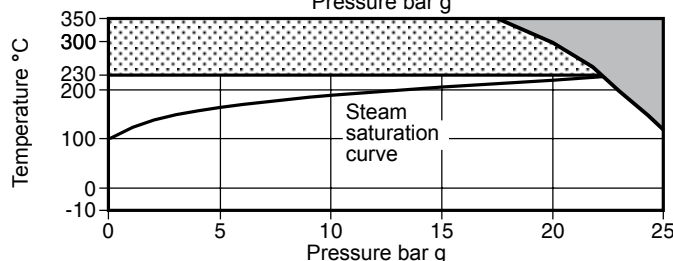
Standard PN flanges are to EN 1092 and ASME 300 flanges to EN 1759-1.

Pressure/temperature limits

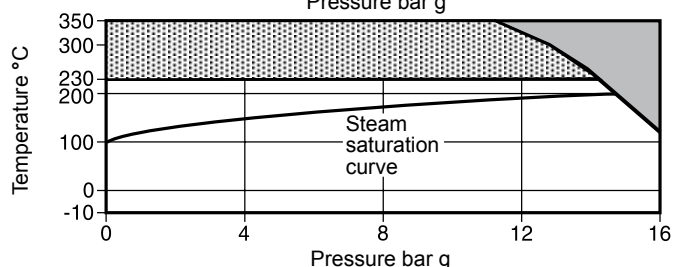
SV604 PN40 inlet





SV607 PN25 inlet



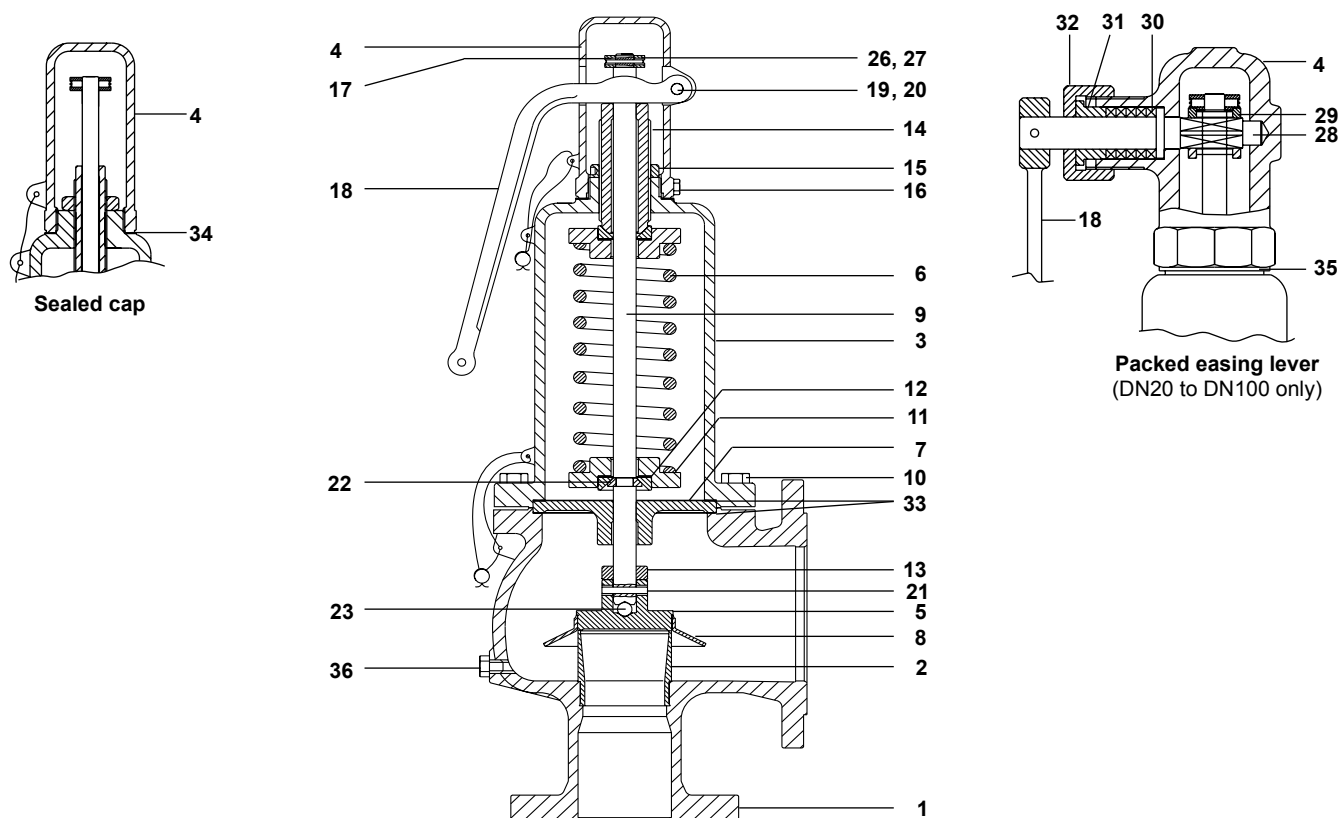
SV607 PN16 inlet



 This product **must not be** used in this region.

 A tungsten alloy spring **must be used** in this region. Consult Spirax Sarco for further information.

Body design conditions		SV604		PN40				
		SV607		PN16 or PN25				
Set pressure range maximum	SV604	PN40	Size	Saturated steam	Air	Water		
			DN20 x DN32	29 bar g	40 bar g	40 bar g		
			DN25 x DN40	29 bar g	40 bar g	40 bar g		
			DN32 x DN50	29 bar g	40 bar g	40 bar g		
			DN40 x DN65	29 bar g	40 bar g	40 bar g		
			DN50 x DN80	29 bar g	40 bar g	40 bar g		
			DN65 x DN100	29 bar g	32 bar g	32 bar g		
			DN80 x DN125	29 bar g	32 bar g	32 bar g		
			DN100 x DN150	25 bar g	25 bar g	25 bar g		
			DN125 x DN200	20 bar g	20 bar g	20 bar g		
			DN150 x DN250	16 bar g	16 bar g	16 bar g		
			SV607	PN25	DN20 x DN32	22.5 bar g	25 bar g	25 bar g
					DN25 x DN40	22.5 bar g	25 bar g	25 bar g
					DN32 x DN50	22.5 bar g	25 bar g	25 bar g
					DN40 x DN65	22.5 bar g	25 bar g	25 bar g
					DN50 x DN80	22.5 bar g	25 bar g	25 bar g
	DN65 x DN100	22.5 bar g			25 bar g	25 bar g		
	DN80 x DN125	22.5 bar g			25 bar g	25 bar g		
	DN100 x DN150	22.5 bar g			25 bar g	25 bar g		
	DN125 x DN200	20 bar g			20 bar g	20 bar g		
	DN150 x DN250	16 bar g			16 bar g	16 bar g		
	PN16	DN65 x DN100			14.6 bar g	16 bar g	16 bar g	
		DN80 x DN125			14.6 bar g	16 bar g	16 bar g	
		DN100 x DN150	14.6 bar g	16 bar g	16 bar g			
		DN125 x DN200	14.6 bar g	16 bar g	16 bar g			
		DN150 x DN250	14.6 bar g	16 bar g	16 bar g			
	Set pressure range minimum		SV604 and SV607			0.2 bar g		
	Temperature	Maximum	SV604			400°C		
		SV607			350°C			
	Minimum	SV604 and SV607			-10°C			
Performance data	Overpressure	Steam			5%			
		Liquids and gas			10%			
	Blowdown limit	Steam and gas			10%			
		Liquids			20%			
	Backpressure limit		10% of set pressure					
	Designed for a maximum inlet cold hydraulic test pressure of:	SV604			60 bar g			
SV607		PN25	38 bar g					
		PN16	24 bar g					



Materials

No.	Part	Material	SV607 / SV604
1	Body	SG iron / carbon steel	GJS-400-18LT / 1.0619 + N
2	Seat	Stainless steel	DN20 - DN100 1.4057 or for DN125 - DN150 ANC2
3	Bonnet	SG iron / carbon steel	GJS-400-18LT / 1.0619 + N
4	Cap	SG iron	GJS-400-15
5	Disc	Stainless steel, hardened 47-52 HRC (Hardened Rockwell 'C' Scale)	DN20 - DN100 1.4021 or for DN125 - DN150 CA15
6	Spring	Standard For temperatures above 230°C	Chrome-vanadium alloy steel Tungsten alloy steel
7	Guide plate	SG iron	GJS-400-15
8	Skirt	Stainless steel	DN20 - DN100 1.4301 or for DN125 - DN150 1.4308
9	Stem	Stainless steel	1.4021
10	Body bolts	Steel	CK35
* 11	Spring plate	Carbon steel	C45E
* 12	Bearing ring (DN80 to DN150 only)	Stainless steel	1.4021
13	Spacer	Stainless steel	1.4021
14	Adjustment screw	Stainless steel	1.4021
15	Lock-nut	Zinc plated carbon steel	
16	Screw	Zinc plated steel	
17	Collar	Zinc plated carbon steel	
18	Lever	SG iron	GJS-400-15
19	Cross pin	Zinc plated carbon steel	
20	Circlip	Spring steel	
21	Disc pin	Spring steel	DIN 7343, A304
22	Collets	Stainless steel	1.4021
23	Stem ball	Stainless steel	
26	Collar pin	Zinc plated carbon steel	
27	Collar circlip	Spring stainless steel	
28	Packed lever spindle	Stainless steel	ASTM A276 431
29	Lifting fork	Carbon steel	
30	Gland packing	Graphite	
31	Gland	Stainless steel	ASTM A276 304
32	Gland nut	Carbon steel	
33	Guide plate gaskets (2 off)	Reinforced exfoliated graphite	
34	Sealed cap gasket	Universal SA	
35	Packed lever cap gasket	Universal SA	
36	Body drain plug ½ BSP	Steel	

* **Note:** The spring plate (11) and bearing ring design (12) varies according to the valve size and set pressure.

Table 1 - SV60 flow capacity for dry saturated steam in kilogrammes per hour (kg/h)
(calculated at 10% overpressure. In accordance with EN ISO 4126)

Valve size DN in/out	20/32	25/40	32/50	40/65	50/80	65/100	80/125	100/150	125/200	150/250
Flow area (mm ²)	230	445	740	1140	1979	2734	4185	6504	8659	12272

Set pressure (bar g)	Dry saturated steam, kg/h									
0.5	129	269	401	525	875	1357	1889	3053	4299	6203
1.0	192	403	608	812	1315	2014	2831	4635	6380	9190
1.5	254	538	816	1102	1764	2726	3793	6190	8502	12235
2.0	312	661	1005	1363	2187	3367	4775	7775	10665	15337
2.5	369	789	1187	1636	2631	3981	5652	9162	12791	18388
3.0	427	911	1354	1867	3002	4609	6551	10651	14805	21278
3.5	485	1023	1521	2097	3372	5251	7471	12139	16864	24233
4.0	538	1148	1688	2326	3801	5825	8289	13662	18709	26883
4.5	591	1261	1854	2555	4175	6398	9104	15006	20549	29527
5.0	644	1374	2019	2783	4548	6970	9917	16347	22385	32165
5.5	697	1487	2185	3011	4920	7540	10729	17685	24217	34798
6.0	750	1599	2350	3239	5291	8110	11539	19021	26046	37427
6.5	802	1711	2514	3466	5662	8678	12349	20354	27873	40052
7.0	855	1823	2679	3693	6033	9246	13157	21687	29697	42673
7.5	907	1935	2843	3919	6403	9814	13964	23017	31519	45291
8.0	959	2047	3007	4145	6773	10380	14771	24346	33339	47907
8.5	1012	2158	3172	4372	7143	10947	15577	25675	35159	50521
9.0	1064	2270	3336	4598	7512	11513	16382	27003	36976	53133
9.5	1116	2381	3499	4824	7881	12078	17187	28329	38793	55743
10.0	1169	2493	3663	5049	8250	12644	17991	29655	40608	58352
11.0	1273	2715	3991	5501	8987	13774	19599	32305	44237	63566
12.0	1377	2938	4318	5952	9724	14903	21206	34955	47866	68780
13.0	1482	3161	4645	6402	10460	16032	22812	37601	51490	73989
14.0	1586	3383	4972	6853	11197	17161	24419	40250	55117	79199
15.0	1690	3606	5299	7304	11934	18290	26025	42898	58743	84410
16.0	1795	3829	5626	7755	12671	19420	27633	45547	62371	89623
17.0	1899	4051	5954	8206	13408	20549	29240	48196	65999	-
18.0	2004	4274	6281	8658	14146	21680	30849	50847	69630	-
19.0	2108	4497	6609	9110	14884	22812	32460	53504	73267	-
20.0	2213	4721	6937	9562	15623	23944	34070	56158	76902	-
21.0	2318	4944	7266	10015	16363	25078	35684	58818	-	-
22.0	2423	5168	7594	10468	17103	26212	37298	61479	-	-
23.0	2528	5392	7924	10922	17844	27348	38915	64144	-	-
24.0	2633	5616	8253	11376	18587	28487	40535	66814	-	-
25.0	2738	5841	8584	11831	19331	29626	42156	69487	-	-
26.0	2844	6065	8914	12286	20074	30766	43777	-	-	-
27.0	2949	6291	9245	12743	20820	31909	45404	-	-	-
28.0	3058	6524	9587	13214	21590	33089	47083	-	-	-
29.0	3163	6748	9917	13669	22333	34228	48704	-	-	-

Table 2 - SV60 flow capacity for air - normal m³/h at 0°C and 1013 mbar
(calculated in accordance with AD-MERKBLATT A2 and TRD 421)

Valve size DN in/out	20/32	25/40	32/50	40/65	50/80	65/100	80/125	100/150	125/200	150/250
Orifice (mm)	17.0	23.8	30.6	38.0	50.1	59.0	73.0	91.0	105	125
Flow area (mm ²)	230	445	740	1140	1979	2734	4185	6504	8659	12272
α_w (P > 4 bar)	0.78	0.86	0.76	0.68	0.64	0.71	0.66	0.70	0.72	0.73

Set pressure (bar g)	Flow capacity for air m ³ /h									
0.5	145	304	456	472	996	1521	2115	3466	4809	6955
1.0	227	480	728	973	1578	2419	3383	5514	7621	10975
1.5	303	643	975	1323	2125	3251	4572	7434	10267	14753
2.0	377	802	1211	1657	2657	4062	5742	9328	12885	18509
2.5	450	956	1438	1978	3171	4853	6892	11195	15467	22232
3.0	522	1107	1656	2289	3672	5627	8026	13015	18018	25924
3.5	593	1255	1868	2591	4161	6388	9146	14837	20542	29590
4.0	660	1411	2074	2858	4670	7157	10184	16785	22986	33029
4.5	728	1554	2285	3149	5145	7884	11219	18491	25321	36385
5.0	795	1697	2496	3439	5619	8611	12254	20196	27657	39741
5.5	862	1841	2706	3730	6094	9338	13289	21902	29992	43097
6.0	929	1984	2917	4020	6568	10065	14324	23607	32328	46452
6.5	996	2127	3128	4310	7043	10793	15359	25313	34663	49808
7.0	1063	2271	3339	4601	7517	11520	16393	27018	36999	53164
7.5	1130	2414	3549	4891	7992	12247	17428	28724	39334	56520
8.0	1197	2557	3760	5182	8466	12974	18463	30429	41670	59876
8.5	1264	2701	3971	5472	8941	13701	19498	32135	44005	63232
9.0	1332	2844	4182	5763	9415	14428	20533	33840	46341	66588
9.5	1399	2987	4392	6053	9890	15156	21567	35546	48677	69944
10.0	1466	3131	4603	6343	10365	15883	22602	37251	51012	73300
11.0	1600	3417	5025	6924	11314	17337	24672	40662	55683	80012
12.0	1734	3704	5446	7505	12263	18791	26741	44073	60354	86724
13.0	1868	3990	5868	8086	13212	20246	28811	47484	65025	93436
14.0	2003	4277	6289	8667	14161	21700	30881	50895	69696	100148
15.0	2137	4564	6711	9248	15110	23154	32950	54306	74367	106860
16.0	2271	4850	7132	9828	16059	24609	35020	57717	79038	113572
17.0	2405	5137	7554	10409	17008	26063	37090	61129	83709	-
18.0	2539	5424	7975	10990	17957	27517	39159	64540	88380	-
19.0	2674	5710	8397	11571	18906	28972	41229	67951	93051	-
20.0	2808	5997	8818	12152	19855	30426	43299	71362	97723	-
21.0	2942	6284	9240	12733	20804	31880	45368	74773	-	-
22.0	3076	6570	9661	13314	21753	33335	47438	78184	-	-
23.0	3210	6857	10083	13894	22702	34789	49507	81595	-	-
24.0	3345	7144	10504	14475	23651	36243	51577	85006	-	-
25.0	3479	7430	10926	15056	24600	37698	53647	88417	-	-
26.0	3613	7717	11347	15637	25549	39152	55716	-	-	-
27.0	3747	8004	11769	16218	26498	40606	57786	-	-	-
28.0	3882	8290	12190	16799	27447	42061	59856	-	-	-
29.0	4016	8577	12612	17379	28397	43515	61925	-	-	-
30.0	4150	8864	13033	17960	29346	44969	63995	-	-	-
31.0	4284	9150	13455	18541	30295	46424	66064	-	-	-
32.0	4418	9437	13876	19122	31244	47878	68134	-	-	-
33.0	4553	9724	14298	19703	31907	-	-	-	-	-
34.0	4687	10010	14719	20284	32865	-	-	-	-	-
35.0	4821	10297	15141	20865	33809	-	-	-	-	-
36.0	4955	10583	15562	21445	34749	-	-	-	-	-
37.0	5089	10870	15984	22026	35690	-	-	-	-	-
38.0	5224	11157	16405	22607	36631	-	-	-	-	-
39.0	5358	11443	16826	23188	37572	-	-	-	-	-
40.0	5492	11730	17248	23769	38514	-	-	-	-	-

Table 3 - SV60 flow capacity for water in tonnes/h at 25% overpressure
(calculated in accordance with AD-MERKBLATT A2 and TRD 421)

Valve size DN in/out	20/32	25/40	32/50	40/65	50/80	65/100	80/125	100/150	125/200	150/250
Orifice (mm)	17.0	23.8	30.6	38.0	50.1	59.0	73.0	91.0	105	125
Flow area (mm ²)	230	445	740	1140	1979	2734	4185	6504	8659	12272
α_w	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Set pressure (bar g)	Flow capacity for water tonnes/h									
0.5	4.6	8.9	14.9	22.9	39.8	55.0	84.1	130.8	174.1	246.7
1.0	6.5	12.6	21.0	32.4	56.3	77.7	119.0	184.9	246.2	348.9
2.0	9.2	17.9	29.8	45.8	79.6	109.9	168.3	261.5	348.2	493.5
3.0	11.3	21.9	36.5	56.1	97.5	134.6	206.1	320.3	426.4	604.4
4.0	13.1	25.3	42.1	64.8	112.6	155.5	238.0	369.9	492.4	697.9
5.0	14.6	28.3	47.1	72.5	125.8	173.8	266.1	413.5	550.5	780.2
6.0	16.0	31.0	51.6	79.4	137.8	190.4	291.5	453.0	603.1	854.7
7.0	17.3	33.5	55.7	85.8	148.9	205.7	314.9	489.3	651.4	923.2
8.0	18.5	35.8	59.5	91.7	159.2	219.9	336.6	523.1	696.4	986.9
9.0	19.6	37.9	63.1	97.2	168.8	233.2	357.0	554.8	738.6	1046.8
10.0	20.6	40.0	66.6	102.5	178.0	245.8	376.3	584.8	778.6	1103.4
11.0	21.7	42.0	69.8	107.5	186.6	257.8	394.7	613.3	816.6	1157.3
12.0	22.6	43.8	72.9	112.3	194.9	269.3	412.2	640.6	852.9	1208.7
13.0	23.5	45.6	75.9	116.9	202.9	280.3	429.1	666.8	887.7	1258.1
14.0	24.4	47.3	78.8	121.3	210.6	290.9	445.3	691.9	921.2	1305.6
15.0	25.3	49.0	81.5	125.5	218.0	301.1	460.9	716.2	953.5	1351.4
16.0	26.1	50.6	84.2	129.7	225.1	310.9	476.0	739.7	984.8	1395.7
17.0	26.9	52.2	86.8	133.7	232.0	320.5	490.7	762.5	1015.1	-
18.0	27.7	53.7	89.3	137.5	238.8	329.8	504.9	784.6	1044.6	-
19.0	28.5	55.1	91.7	141.3	245.3	338.8	518.7	806.1	1073.2	-
20.0	29.2	56.6	94.1	145.0	251.7	347.6	532.2	827.0	1101.1	-
21.0	29.9	58.0	96.5	148.6	257.9	356.2	545.3	847.4	-	-
22.0	30.6	59.3	98.7	152.0	264.0	364.6	558.2	867.4	-	-
23.0	31.3	60.7	100.9	155.5	269.9	372.8	570.7	886.9	-	-
24.0	32.0	62.0	103.1	158.8	275.7	380.8	583.0	906.0	-	-
25.0	32.6	63.2	105.2	162.1	281.4	388.7	595.0	940.0	-	-
26.0	33.3	64.5	107.3	165.3	287.0	396.4	606.8	-	-	-
27.0	33.9	65.7	109.4	168.4	292.4	403.9	618.4	-	-	-
28.0	34.6	66.9	111.4	171.5	297.8	411.3	629.7	-	-	-
29.0	35.2	68.1	113.3	174.6	303.1	418.6	640.9	-	-	-
30.0	35.8	69.3	115.3	177.6	308.2	425.8	651.8	-	-	-
31.0	36.4	70.4	117.2	180.5	313.3	432.8	662.6	-	-	-
32.0	36.9	71.6	119.1	183.4	318.3	439.7	673.2	-	-	-
33.0	37.5	72.7	120.9	186.2	323.3	-	-	-	-	-
34.0	38.1	73.8	122.7	189.0	328.1	-	-	-	-	-
35.0	38.6	74.8	124.5	191.8	332.9	-	-	-	-	-
36.0	39.2	75.9	126.3	194.5	337.7	-	-	-	-	-
37.0	39.7	76.9	128.0	197.2	342.3	-	-	-	-	-
38.0	40.3	78.0	129.7	199.8	346.9	-	-	-	-	-
39.0	40.8	79.0	131.4	202.4	351.4	-	-	-	-	-
40.0	41.3	80.0	133.1	205.0	355.9	-	-	-	-	-

Table 4 α_w /Kdr values for SV60 safety valves

Size	Set pressure (bar g)								
	0.2 - 0.49	0.5 - 0.99	1.0 - 1.49	1.5 - 1.99	2.0 - 2.49	2.5 - 2.99	3.0 - 3.49	3.5 - 3.99	Above 4.0
DN20 x DN32	0.56	0.62	0.69	0.73	0.75	0.76	0.77	0.78	0.78
DN25 x DN40	0.62	0.67	0.75	0.80	0.82	0.84	0.85	0.85	0.86
DN32 x DN50	0.56	0.60	0.68	0.73	0.75	0.76	0.76	0.76	0.76
DN40 x DN65	0.45	0.51	0.59	0.64	0.66	0.68	0.68	0.68	0.68
DN50 x DN80	0.47	0.49	0.55	0.59	0.61	0.63	0.63	0.63	0.64
DN65 x DN100	0.50	0.55	0.61	0.66	0.68	0.69	0.70	0.71	0.71
DN80 x DN125	0.45	0.50	0.56	0.60	0.63	0.64	0.65	0.66	0.66
DN100 x DN150	0.48	0.52	0.59	0.63	0.66	0.67	0.68	0.69	0.70
DN125 x DN200	0.50	0.55	0.61	0.65	0.68	0.70	0.71	0.72	0.72
DN150 x DN250	0.51	0.56	0.62	0.66	0.69	0.71	0.72	0.73	0.73

Sizing and selection

Refer to: - <http://www.spiraxsarco.com/prs/product-sizing.asp>

Dimensions/weights (approximate) in mm and kg

Size Inlet / Outlet	Dimensions				Weight	
	A	B	C	Flow Ø D	SV604	SV607
DN20 - DN32	85	95	385	17.0	10.5	10.5
DN25 - DN40	100	105	435	23.8	12.5	11.5
DN32 - DN50	110	115	450	30.6	16.0	15.0
DN40 - DN65	115	140	520	38.0	18.0	18.0
DN50 - DN80	120	150	535	50.1	20.0	22.0
DN65 - DN100	140	170	710	59.0	40.0	38.0
DN80 - DN125	160	195	790	73.0	56.0	53.0
DN100 - DN150	180	220	835	91.0	77.0	75.0
DN125 - DN200	200	250	1 042	105.0	120.0	115.0
DN150 - DN250	225	285	1 165	125.0	190.0	180.0

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P137-01) supplied with the product.

Installation note:

The safety valve should always be fitted with the centre line of the spring housing vertically above the valve.

Open bonnet valves are recommended for all steam boiler applications and for valves fitted with Tungsten alloy springs.

SV60 safety valve selection guide:

Model type	SV60	SV60
Body material	4 = Carbon steel 7 = SG iron	4
Configuration	A = Closed bonnet / easing lever B = Closed bonnet / sealed cap C = Closed bonnet / packed lever (DN20 to DN100 only) D = Open bonnet / easing lever	A
Seal material	S = Stainless steel with chrome-vanadium alloy steel spring T = Stainless steel with tungsten alloy steel spring	S
Size	DN20 to DN150	DN20
Inlet connection	PN16 (DN65 to DN150 only), PN25, PN40 or ASME (ANSI) 300	PN40

Selection example **SV60** **4** **A** **S** **DN20** **PN40**

How to order example

1 off Spirax Sarco SV604AS, DN20 flanged PN40 safety valve with a set pressure of 6 bar g.

