

APPROVED AND CALIBRATED SAFETY VALVES

STANDARD SAFETY VALVE



I.S.P.E.S.L. APPROVED AND CALIBRATED SAFETY VALVES

The VST safety valves for heating systems are designed in accordance with the requirements of Body R edition 1982, technical specification, of Italian D.M. 1.12.75. Verification of the parameters and experimental determination of the discharge coefficient have been carried out in the presence of an I.S.P.E.S.L. officer.

The VST safety valves find application in heating systems with expansion vessel.

STANDARD SAFETY VALVES

These are safety valves not submitted to experimental determination. They may be used in plumbing, water and heating systems with capacity lower than 30,000 kcal/h not covered by the regulations in accordance with Italian D.M. 01.12.1975

DESCRIPTION

Diaphragm safety valves for heating systems, manufactured in accordance with Body R 1982 edition (R.2.A.2), carrying the certificate of I.S.P.E.S.L. approval issued after experimental tests to determine the discharge coefficient conducted at Milan Polytechnic University - Italy.

SIZING

The overall flow rate of the safety valve should be such as to discharge an hourly quantity of liquid equal to:

$$W = P / i \quad \text{where } W = \text{Discharge rate in kg/h}$$

$$P = \text{Nominal capacity of the boiler in kcal/h}$$

$$i = \text{heat of vaporization conventionally assumed to be 500}$$

N.B. For boilers higher than 580 kW (500,000 kcal) in capacity, the discharge rate should be subdivided over at least two safety valves (R.3.B.7.3).

OVERPRESSURE

"Increase in pressure over the set pressure to allow the disc to complete the lift" (R.2.A.2.1.8) is, for the **VST valves**, < 10% of the set pressure.

BLOWDOWN

"Lowering of the pressure below the set pressure necessary to close the valve" (R.2.A.2.1.9) is, for the **VST valves**, < 20% of the set pressure.

DISCHARGE PIPING

Diameter of the discharge piping has been increased larger, as specified by the most advanced European standards; this characteristic, together with the use of a discharge tundish (Art. IS) allows the valve to operate under optimum conditions by having the discharge at atmosphere backpressure.

INSTALLATION

The VST safety valves "should be connected to the highest part of the boiler or to the outlet piping in the immediate vicinity of the boiler. The length of the piping between the connection to the boiler and the safety valve must not be greater than one metre" (R.3.B.2.4).

"It should not be possible to shut off the connecting piping between the safety valve and the boiler nor should this piping have a section, at any point, under that of the safety valve inlet port..." (R.3.B.2.5). The discharge piping "should be engineered so as not to prevent the regular valve operation and not to cause injury to persons" (R.3.B.2.6). The diameter of the discharge piping should never be smaller than that of the outlet fitting from the safety valve".

I.S.P.E.S.L. APPROVED AND CALIBRATED SAFETY VALVES



VST

Diaphragm safety valve with fixed setting. FF connections with large size outlet.

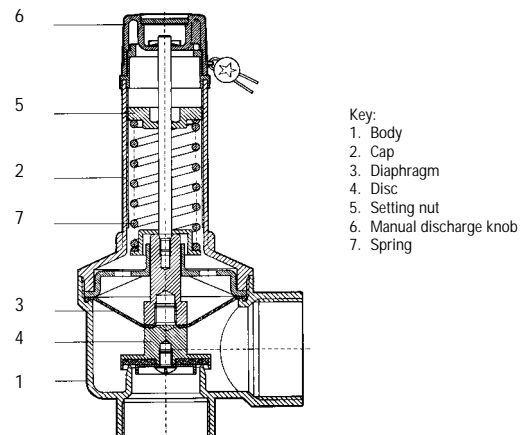
I.S.P.E.S.L. approved.

Part No.	Size	bar
0212122	1/2" x 3/4"	2,25
0212125	1/2" x 3/4"	2,5
0212127	1/2" x 3/4"	2,7
0212130	1/2" x 3/4"	3
0212135	1/2" x 3/4"	3,5
0212140	1/2" x 3/4"	4
0212145	1/2" x 3/4"	4,5
0212150	1/2" x 3/4"	5
0212154	1/2" x 3/4"	5,4
0212160	1/2" x 3/4"	6
0213122	3/4" x 1"	2,25
0213125	3/4" x 1"	2,5
0213127	3/4" x 1"	2,7
0213130	3/4" x 1"	3
0213135	3/4" x 1"	3,5
0213140	3/4" x 1"	4
0213145	3/4" x 1"	4,5
0213150	3/4" x 1"	5
0213154	3/4" x 1"	5,4
0213160	3/4" x 1"	6
0214122	1" x 1.1/4"	2,25
0214125	1" x 1.1/4"	2,5
0214127	1" x 1.1/4"	2,7
0214130	1" x 1.1/4"	3
0214135	1" x 1.1/4"	3,5
0214140	1" x 1.1/4"	4
0214145	1" x 1.1/4"	4,5
0214150	1" x 1.1/4"	5
0214154	1" x 1.1/4"	5,4
0214160	1" x 1.1/4"	6

All safety valves model VST are supplied complete with Factory-calibrated Report, undersigned by an I.S.P.E.S.L. engineer.

DESIGN FEATURES

Body and cap	Brass CuZn40Pb2 DIN17660 stamped and shot-blasted
Diaphragm and seal	EPDM rubber for temperatures up to 140°C
Manual discharge knob	High impact plastic
Spring	Galvanized steel C100
Disc, stem and other parts	Brass CuZn40Pb2 DIN17660 drawn and machined



In order not to impair correct valve operation, it is recommended not to install an elbow in the pipework, rather a pipe bent with a radius equal to at least 3 times the diameter of the actual pipework. Discharge should be through an appropriate siphon or vessel so as to allow checking for opening of the valve.

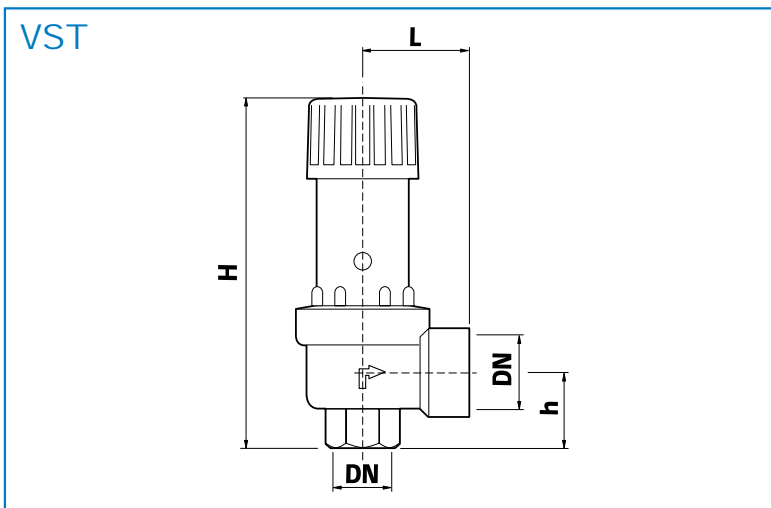
MAINTENANCE

To ensure perfect efficiency, the safety valves require periodic inspection. In a system where the safety valve remains idle, there is risk of foreign matter building up over time close to the disc; therefore the valve seat should be flushed periodically. Such flushing is obtained through a manual discharge of the valve by turning the knob in the direction indicated by the arrows. Almost all leaks (dripping, incomplete closing) are caused by impurities lodged between the seat and disc; hence periodic inspection and flushing prevent such leaks and related difficulties.

APPROVALS

Approval according to Body R (June 1982 edition).
 Factory-calibrated certificate issued by I.S.P.E.S.L.

Overall dimensions (mm)



SIZE	L	H	h
1/2" x 3/4"	37	119	25
3/4" x 1"	48	165	29
1" x 1.1/4"	54	173	34,5

TECHNICAL CHARACTERISTICS AND DISCHARGE RATES WITH OVERPRESSURE 10% AND BLOWDOWN 20%

MODEL	PRESSURE (bar)			Ø mm	Orifice Section cm ²	K	CAPACITY			
	set	discharge	closing				kg/h	kcal/h	kW	KJ/h
VST15/22	2,25	2,475	1,80	15	1,7671	0,71	205,67	102.839	119,29	430.484
VST15/25	2,50	2,75	2,00				221,40	110.703	128,41	463.340
VST15/27	2,70	2,97	2,16				233,78	116.892	135,59	489.309
VST15/30	3,00	3,30	2,40				253,74	126.873	147,17	531.090
VST15/35	3,50	3,85	2,80				284,07	142.035	164,76	594.558
VST15/40	4,00	4,40	3,20				318,07	159.039	184,48	665.737
VST15/45	4,50	4,95	3,60				344,78	172.393	199,97	721.637
VST15/50	5,00	5,50	4,00				376,39	188.196	218,30	787.788
VST15/54	5,40	5,94	4,32				399,70	199.850	139,04	836.572
VST15/60	6,00	6,60	4,80				442,81	221.407	256,83	926.809
VST20/22	2,25	2,475	1,80	20	3,1416	0,80	412,01	206.006	238,96	862.341
VST20/25	2,50	2,75	2,00				443,52	221.760	257,24	928.287
VST20/27	2,70	2,97	2,16				468,31	234.156	271,62	980.177
VST20/30	3,00	3,30	2,40				508,30	254.151	294,81	1.063.876
VST20/35	3,50	3,85	2,80				569,04	284.522	330,04	1.191.009
VST20/40	4,00	4,40	3,20				637,17	318.585	369,55	1.333.596
VST20/45	4,50	4,95	3,60				690,67	345.336	400,58	1.445.576
VST20/50	5,00	5,50	4,00				753,98	376.992	437,31	1.578.028
VST20/54	5,40	5,94	4,32				804,25	402.125	466,50	1.683.295
VST20/60	6,00	6,60	4,80				887,04	443.520	514,48	1.856.574
VST25/22	2,25	2,475	1,80	25	4,9087	0,71	571,37	285.670	331,37	1.195.814
VST25/25	2,50	2,75	2,00				615,03	307.515	356,71	1.287.257
VST25/27	2,70	2,97	2,16				649,41	324.705	376,65	1.359.215
VST25/30	3,00	3,30	2,40				704,86	352.433	408,82	1.475.284
VST25/35	3,50	3,85	2,80				789,09	394.548	457,67	1.651.577
VST25/40	4,00	4,40	3,20				883,56	441.783	512,46	1.849.303
VST25/45	4,50	4,95	3,60				957,75	478.879	555,49	2.004.587
VST25/50	5,00	5,50	4,00				1045,55	522.776	606,42	2.188.340
VST25/54	5,40	5,94	4,32				1120,24	560.117	649,79	2.344.650
VST25/60	6,00	6,60	4,80				1230,06	615.031	713,43	2.574.519

HEATING SYSTEMS

Safety valves to be used in heating systems, for which no experimental determination is carried out are defined as standard valves. In the calculation formula, the value of 0.9K, i.e. equal to 0.05 (R.2.A.2.3.4) should be assumed. In this way the regulations drastically reduce this application limits for standard safety valves in the heating field. Furthermore systems with capacity less than 35 kW (30,000 kcal/h) are not subject to the regulations covered by Italian D.M. 1.12.1975.

$$W = \frac{0,9xKxA}{0,005xM}$$

where : A = net valve orifice section in cm²
 M = factor to be taken from the table in Body R (R.2.A.2.3)
 W = steam venting capacity in kg/h

PLUMBING SYSTEM

Body R, containing technical application requirements of Italian D.M. 1.12.1975, indicates the sizing criterion for safety valves to be used in protecting heaters for domestic hot water. Orifice of such safety valves should have a diameter D no smaller than:

$$D = \sqrt{\frac{V}{5}}$$

where : D = net valve orifice diameter in mm
 V = water heater volume in litres

CALIBRATION

The safety valves are factory calibrated with a set pressure. The setting is given on the tag attached to the top of the manual discharge knob.

MAINTENANCE

To ensure perfect efficiency, the safety valves require periodic inspection. In a system where the safety valve remains idle, there is risk of foreign matter building up over time close to the disc; therefore the valve seat should be flushed periodically. Such flushing is obtained through a manual discharge of the valve by turning the knob in the direction indicated by the arrows. Almost all leaks (dripping, incomplete closing) are caused by impurities lodged between the seat and disc; hence periodic inspection and flushing prevent such leaks and related difficulties.

APPROVALS

UDT (only MSL/E30)
 AFNOR / CSTB (MSML/E-OM30 and MSM/E-OM30).
 TÜV / TSUP (SVH - SVW)

I.S.P.E.S.L. APPROVED AND CALIBRATED SAFETY VALVES



MSL

Standard diaphragm safety valve. Inlet connection 1/2" M and outlet 1/2" F.

MSL, set at 3 bar, conforms with UDT and is AFNOR/CSTB approved.

Part No.	Size	bar
0206525	1/2"	2,5
0206530	1/2"	3
0206160	1/2"	6
0206170	1/2"	7
0206180	1/2"	8
0206190	1/2"	9
0206199	1/2"	10



MSV

Like MSL, but with inlet connection 1/2" F and outlet 1/2" F.

Part No.	Size	bar
0207110	1/2"	1
0207115	1/2"	1,5
0207525	1/2"	2,5
0207530	1/2"	3
0207160	1/2"	6
0207170	1/2"	7
0207180	1/2"	8
0207190	1/2"	9
0207199	1/2"	10



SV

Standard diaphragm safety valve. Female connections with increased outlet.

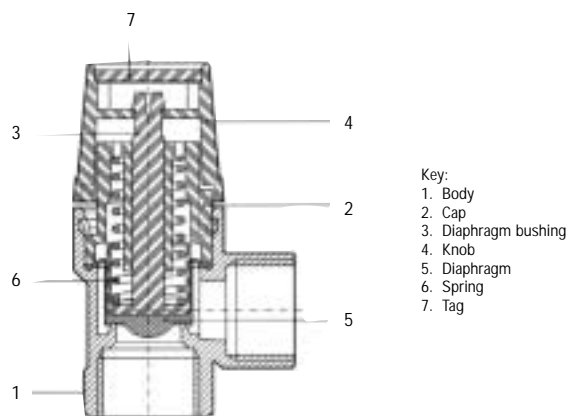
Settings at 4-7-8 bars are also available on request.

TÜV/TSUP approved.

Part No.	Size	bar
0215104	1/2" x 3/4"	4
0216108	1/2" x 3/4"	8
0216110	1/2" x 3/4"	10
0217625	3/4" x 1"	2,5
0217630	3/4" x 1"	3
0217206	3/4" x 1"	6
0217210	3/4" x 1"	10
0218325	1" x 1.1/4"	2,5
0218330	1" x 1.1/4"	3
0218306	1" x 1.1/4"	6
0218310	1" x 1.1/4"	10
0219425	1.1/4" x 1.1/2"	2,5
0219430	1.1/4" x 1.1/2"	3
0219406	1.1/4" x 1.1/2"	6
0219410	1.1/4" x 1.1/2"	10

DESIGN FEATURES

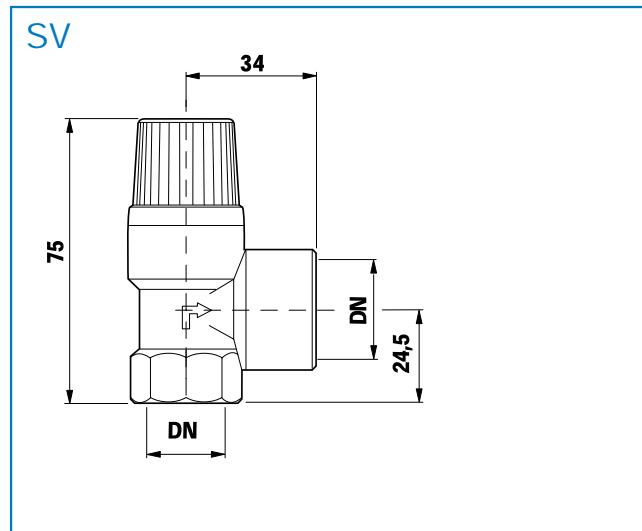
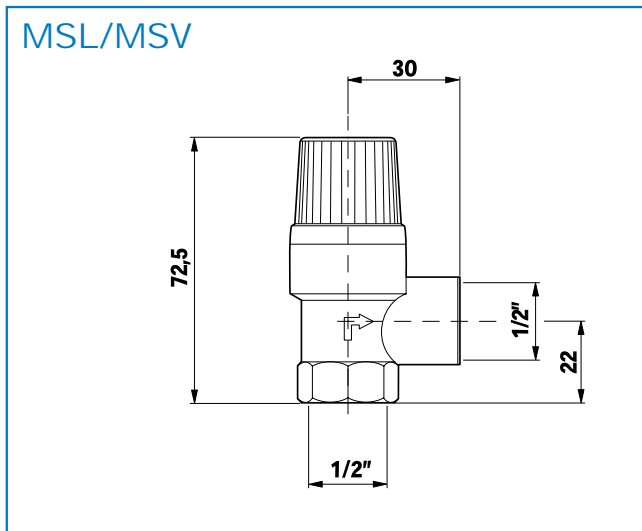
Body and cap	Brass CuZn40Pb2 DIN17660 stamped and shot-blasted
Manual discharge knob	Reinforced nylon
Diaphragm and seal	Ethylene-polypropylene
Spring	Special galvanized steel
Disc, stem and other parts	Brass CuZn40Pb2 DIN17660 turned from barstock



TECHNICAL CHARACTERISTICS

MSL MSV SV	PRESSURE			Orifice Diameter (mm)	Orifice Section (mm ²)	Kv	DISCHARGE CAPACITY			
	set (bar)	discharge (bar)	closing (bar)				kg/h	kcal/h	kW	kJ/h
1/2"	1,0	1,1	0,8	13,5	143,14	0,57	82,0	41.023	47,5	171.639
3/4"				14	153,94	0,66	102,2	51.084	59,2	213.735
1"				20	314,16	0,84	265,4	132.684	153,7	555.151
1 1/4"				30	706,86	0,49	348,3	174.148	201,8	728.636
1/2"	1,5	1,7	1,2	13,5	143,14	0,57	104,9	52.451	60,8	219.453
3/4"				14	153,94	0,66	130,6	65.315	75,7	273.276
1"				20	314,16	0,84	339,3	169.646	196,6	709.801
1 1/4"				30	706,86	0,49	445,3	222.661	258,0	931.613
1/2"	2,0	2,2	1,6	13,5	143,14	0,57	123,4	61.707	71,5	258.180
3/4"				14	153,94	0,66	153,7	76.841	89,0	321.501
1"				20	314,16	0,84	399,2	199.584	231,3	835.059
1 1/4"				30	706,86	0,49	523,9	261.954	303,5	1.096.016
1/2"	2,5	2,8	2,0	13,5	143,14	0,57	145,4	72.704	84,2	304.193
3/4"				14	153,94	0,66	181,1	90.535	104,9	378.798
1"				20	314,16	0,84	470,3	235.153	272,5	983.882
1 1/4"				30	706,86	0,49	617,3	308.639	357,6	1.291.345
1/2"	3,0	3,3	2,4	13,5	143,14	0,57	165,0	82.507	95,6	345.207
3/4"				14	153,94	0,66	205,5	102.742	119,1	429.872
1"				20	314,16	0,84	533,7	266.860	309,2	1.116.540
1 1/4"				30	706,86	0,49	700,5	350.253	405,9	1.465.459
1/2"	3,5	3,9	2,8	13,5	143,14	0,57	185,9	92.950	107,7	388.904
3/4"				14	153,94	0,66	231,5	115.747	134,1	484.287
1"				20	314,16	0,84	601,3	300.639	348,4	1.257.874
1 1/4"				30	706,86	0,49	789,2	394.589	457,2	1.650.960
1/2"	4,0	4,4	3,2	13,5	143,14	0,57	206,8	103.424	119,8	432.725
3/4"				14	153,94	0,66	257,6	128.789	149,2	538.854
1"				20	314,16	0,84	669,0	334.514	387,6	1.399.607
1 1/4"				30	706,86	0,49	878,1	439.050	508,7	1.836.984
1/2"	4,5	5,0	3,6	13,5	143,14	0,57	225,9	112.970	130,9	472.669
3/4"				14	153,94	0,66	281,4	140.677	163,0	588.595
1"				20	314,16	0,84	730,8	365.392	423,4	1.528.801
1 1/4"				30	706,86	0,49	959,2	479.577	555,7	2.006.552
1/2"	6,0	6,6	4,8	13,5	143,14	0,57	288,0	143.982	166,8	602.421
3/4"				14	153,94	0,66	358,6	179.295	207,8	750.170
1"				20	314,16	0,84	931,4	465.696	539,6	1.948.472
1 1/4"				30	706,86	0,49	1222,5	611.226	708,3	2.557.370
1/2"	7,0	7,7	5,6	13,5	143,14	0,57	330,0	165.013	191,2	690.415
3/4"				14	153,94	0,66	411,0	205.484	238,1	859.745
1"				20	314,16	0,84	1067,4	533.719	618,4	2.233.080
1 1/4"				30	706,86	0,49	1401,0	700.506	811,7	2.930.918
1/2"	8,0	8,8	6,4	13,5	143,14	0,57	367,2	183.577	212,7	768.086
3/4"				14	153,94	0,66	457,2	228.601	264,9	956.466
1"				20	314,16	0,84	1187,5	593.762	688,0	2.484.302
1 1/4"				30	706,86	0,49	1558,6	779.313	903,0	3.260.646
1/2"	9,0	9,9	7,2	13,5	143,14	0,57	389,6	194.777	225,7	814.946
3/4"				14	153,94	0,66	485,1	242.547	281,1	1.014.818
1"				20	314,16	0,84	1260,0	629.987	730,0	2.635.864
1 1/4"				30	706,86	0,49	1653,7	826.857	958,1	3.459.572
1/2"	10,0	11,0	8,0	13,5	143,14	0,57	458,9	229.471	265,9	960.108
3/4"				14	153,94	0,66	571,5	285.751	331,1	1.195.583
1"				20	314,16	0,84	1484,4	742.203	860,0	3.105.377
1 1/4"				30	706,86	0,49	1948,3	974.141	1128,8	4.075.808

Overall dimensions (mm)



SIZE	H	h	L
1/2" x 3/4"	75	24,5	34
3/4" x 1"	86,5	34	37
1" x 1.1/4"	189	40	55
1.1/4" x 1.1/2"	204	43	60

IMBOLD COM SRL
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