



VSGR SERIES

THREADED SAFETY VALVE





CONTENTS

☐ USE.....	2
☐ ADVANTAGES.....	2
☐ QUALITY.....	2
☐ DIMENSIONS.....	3
☐ DISCHARGE CAPACITY.....	3
☐ SPRING TABLE.....	4
☐ SPRING RANGES.....	4
☐ MANUFACTURING MATERIALS.....	5
☐ INSTALLATION.....	5
☐ ORDER CODE.....	6
☐ SIZING SOFTWARE.....	6



USE

Our safety valve line can protect different systems, including vessels handling steam, air, or non-hazardous gases.

When an increase in the system's internal pressure exceeds the set pressure of the safety valve, a force imbalance causes the disc to lift, allowing the fluid to be released to relieve pressure.



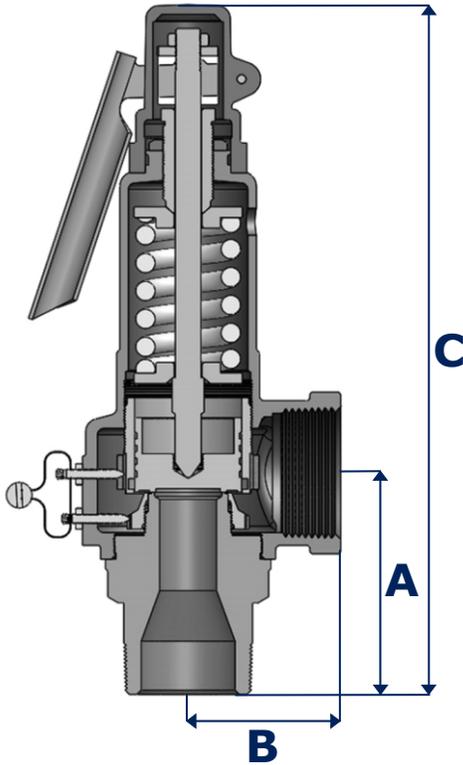
ADVANTAGES

- ☒ Springs designed, manufactured, and tested by TECVAL ensure consistent opening and closing pressures, keeping them within the tolerances specified by the standard
- ☒ Lapped sealing surface processed on an automatic machine and optically verified ensures compliance with leak-tightness requirements according to API 527.
- ☒ Precisely machined calibration rings are positioned optimally relative to the disc and seat to ensure full compliance with ASME Section I requirements related to opening and closing of safety valves used in boilers
- ☒ Robust bodies produced through micro casting provide consistent wall thickness and eliminate porosity.

QUALITY

Individual tests are performed on each valve to ensure proper calibration. Test certificates are issued and registered in the **TECVAL CLOUD** management system to ensure full traceability.

DIMENSIONS



Connection		Dimensions			Boquilla			Weight
Inlet	Outlet	A (mm)	B (mm)	C (mm)	Category	Nozzle Area		
						in2	cm2	Lbs
1/2"	3/4"	58	44	195.5	D	0.12	0.78	2.4
3/4"	3/4"	58	44	195.5	D	0.12	0.78	2.4
3/4"	1"	68.5	47	228.5	E	0.21	1.39	4.0
1"	1"	68.5	47	228.5	E	0.21	1.39	4.0
1"	1 1/4"	70	52.5	246	F	0.03	2.18	5.5
1 1/4"	1 1/4"	70	52.5	246	F	0.03	2.18	6.0
1 1/4"	1 1/2"	77.5	61.5	273.5	G	0.55	3.57	8.2
1 1/2"	1 1/2"	77.5	61.5	273.5	G	0.55	3.57	8.6
1 1/2"	2"	104	71.5	324	H	0.86	5.56	13.0
2"	2"	104	74.5	324	H	0.86	5.56	13.5
2"	2 1/2"	115	88	354	J	1.28	8.30	18.2
2 1/2"	2 1/2"	115	88	354	J	1.28	8.30	18.5

DISCHARGE CAPACITY

Discharge capacity for saturated steam (lb/hr).

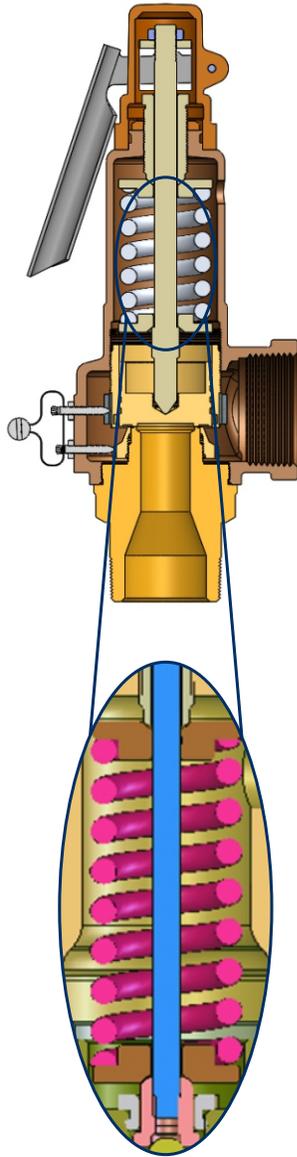
Press. psi	Orif. design. and area (inches ²)					
	D	E	F	G	H	J
	0.121	0.216	0.338	0.554	0.863	1.287
10	151	270	422	692	1078	1607
30	276	492	770	1262	1966	2932
60	462	825	1292	2117	3298	4918
90	649	1159	1813	2972	4630	6905
120	836	1492	2335	3827	5962	8892
150	1023	1826	2857	4683	7294	10878
180	1210	2159	3379	5538	8627	12865
210	1396	2493	3900	6393	9959	14851
240	1583	2826	4422	7248	11291	16838
270	1770	3159	4944	8103	12623	18825
300	1957	3493	5466	8958	13955	20811
330	2143	3826	5987	9814	15287	22798

Press. psi	Orif. design. and area (inches ²)					
	D	E	F	G	H	J
	0.121	0.216	0.338	0.554	0.863	1.287
360	2330	4160	6509	10669	16619	24785
390	2517	4493	7031	11524	17951	26771
420	2704	4826	7553	12379	19284	28758
450	2891	5160	8074	13234	20616	30744
480	3077	5493	8596	14089	21948	32731
510	3264	5827	9118	14945	23280	34718
540	3451	6160	9640	15800	24612	36704
570	3638	6494	10161	16655	25944	38691
600	3824	6827	10683	17510	27276	40678
630	4011	7160	11205	18365	28609	42664
660	4198	7494	11726	19220	29941	44651
690	4385	7827	12248	20075	31273	46637
720	4571	8161	12770	20931	32605	48624

Lb/hr other gases		Gas	FV
Lb/hr of gas = $\frac{\text{Lb/hr sat. steam.}}{F_v \times \sqrt{\frac{T + 460}{460}}}$		Air	.61
		Argon	.49
		Co2	.51
		Nitrogen	.62

VSGR SERIES THREADED SAFETY VALVE

SPRING TABLE



D Nozzle		
Pressure Range		Code
Min.	Max.	
15	16	SPR05417
18	22	SPR05418
23	27	SPR05419
27	33	SPR05420
32	39	SPR05421
36	44	SPR05422
41	49	SPR05423
54	65	SPR05424
64	76	SPR05425
68	82	SPR05426
82	99	SPR05427
90	108	SPR05428
115	138	SPR05429
136	163	SPR05430
183	220	SPR05431
205	246	SPR05432
228	250	SPR05433

E Nozzle		
Pressure Range		Code
Min.	Max.	
15	16	SPR05438
18	22	SPR05439
23	27	SPR05440
27	33	SPR05441
32	38	SPR05442
37	44	SPR05443
41	49	SPR05444
55	66	SPR05445
64	76	SPR05446
68	82	SPR05447
82	98	SPR05448
92	110	SPR05449
114	136	SPR05450
137	164	SPR05451
183	220	SPR05452
204	245	SPR05453
227	250	SPR05454

F Nozzle		
Pressure Range		Code
Min.	Max.	
15	16	SPR05459
18	22	SPR05460
23	27	SPR05461
27	33	SPR05462
32	38	SPR05463
36	44	SPR05464
41	49	SPR05465
55	66	SPR05466
63	76	SPR05467
68	82	SPR05468
82	98	SPR05469
91	109	SPR05470
113	136	SPR05471
136	163	SPR05472
182	219	SPR05473
205	246	SPR05474
227	250	SPR05475

G Nozzle		
Pressure Range		Code
Min.	Max.	
15	16	SPR05480
18	22	SPR05481
23	27	SPR05482
27	33	SPR05483
32	38	SPR05484
37	44	SPR05485
41	49	SPR05486
55	66	SPR05487
64	76	SPR05488
68	82	SPR05489
82	98	SPR05490
91	109	SPR05491
113	136	SPR05492
136	163	SPR05493
181	217	SPR05494
204	245	SPR05495
226	250	SPR05496

H Nozzle		
Pressure Range		Code
Min.	Max.	
15	16	SPR05500
17	21	SPR05501
23	27	SPR05502
27	33	SPR05503
32	38	SPR05504
36	44	SPR05505
41	49	SPR05506
54	65	SPR05507
64	77	SPR05508
68	82	SPR05509
82	98	SPR05510
91	109	SPR05511
113	136	SPR05512
137	164	SPR05513

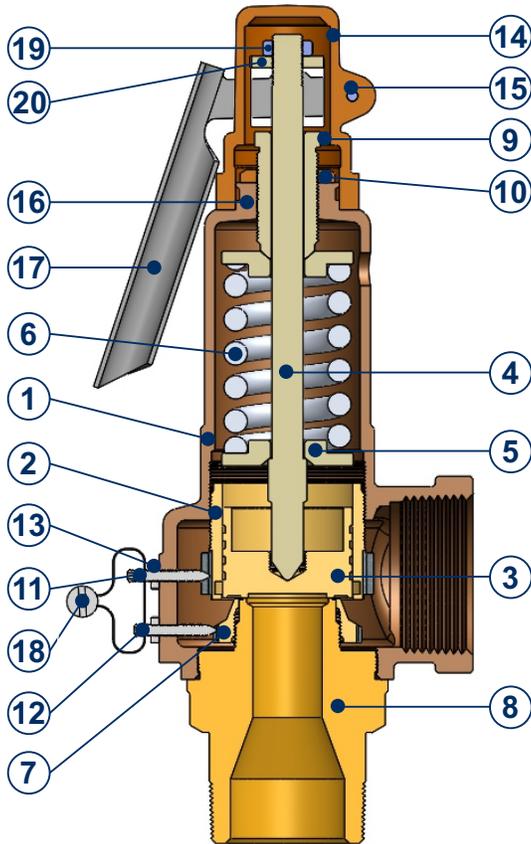
J Nozzle		
Pressure Range		Code
Min.	Max.	
15	17	SPR00520
17	22	SPR00530
22	28	SPR00535
28	35	SPR00540
35	40	SPR00545
40	50	SPR00550
50	60	SPR00560
56	68	SPR00565
68	84	SPR00570
74	95	SPR00575
95	125	SPR00580
125	133	SPR00585
133	140	SPR00590
135	160	SPR00595
150	175	SPR00600
175	200	SPR00605
200	230	SPR00610
205	245	SPR00615
245	250	SPR00620

SPRING RANGES

Maximum Set Pressure PSI					
Connection		Reference			
Inlet	Outlet	VSGR-V	VSGR-HD	VSGR-I	VSGR-IA
1/2"	3/4"	250	250	300	N/A
3/4"	3/4"	250	250	300	N/A
3/4"	1"	250	250	300	See note
1"	1"	250	250	300	See note
1"	1 1/4"	250	250	300	350
1 1/4"	1 1/4"	250	250	300	350
1 1/4"	1 1/2"	250	250	300	400
1 1/2"	1 1/2"	250	250	300	400
1 1/2"	2"	150	250	250	250
2"	2"	150	250	250	250
2"	2 1/2"	N/A	250	300	300
2 1/2"	2 1/2"	N/A	250	300	300

For D and E nozzles, 1/2" x 1", 3/4" x 1" y 1" x 1" sizes are available. Special construction: carbon steel body, AISI 304 stainless steel internal parts, and a maximum pressure of 500 psi.

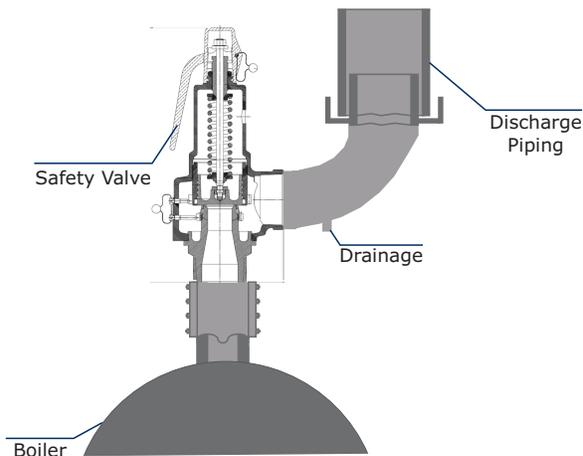
MANUFACTURING MATERIALS



Descripción	VSGR-HD	VSGR-I	VSGR-IA
Body	ASTM A526 Ductile Iron	Ductile Iron	Carbon Steel
Connector	Bronze	Stainless Steel	Stainless Steel
Plug	Bronze	Stainless Steel	Stainless Steel
Plug guide	Bronze	Forged Brass	Stainless Steel
Regulator	Bronze	Forged Brass	Stainless Steel
Stem	Bronze	Brass	Stainless Steel
Pivot	Bronze	Brass	Stainless Steel

VSGR-V			
Item	Qt.	Description	Material
1	1	Body	Cast Bronze
2	1	Plug Guide	Forged Brass
3	1	Plug	Bronze / AISI 304
4	1	Pivot Stem	Bronze
5	2	Washer	Brass
6	1	Spring	Steel
7	1	Regulator	Forged Brass
8	1	Connector	Cast Bronze
9	1	Comp. screw	Brass
10	1	Screw nut Comp.	Brass
11	1	Fix. screw Guide	Stainless Steel
12	1	Fix. screw Reg.	Stainless Steel
13	2	3/16" 24H ZN nut	Stainless Steel
14	1	Hood	Cast Bronze
15	1	Valve cap	Steel
16	2	Cap screw	Steel
17	1	Lever	Steel
18	2	Safety seal	Plomo
19	1	Locknut	Steel
20	1	Pivot stem nut	Bronze

INSTALLATION



Installation and maintenance recommendations

- Make sure the vessel or line is free of particles; always install vertically.
- Do not block the discharge or vent openings.
- Do not use the valve connection to support the discharge piping.
- Do not tamper with the security seals, as doing so will void the factory warranty.
- The distance between the boiler and the safety valve must not exceed the length of a standard T-fitting for that size.
- The process connections must have a diameter equal to or greater than the corresponding connections on the valves.

ORDER CODE

To identify the valve, use the following codes:

VSGR-V

—

200 H

—

50

—

PSI

Series
Reference
VSGR-V
VSGR-I
VSGR-IA

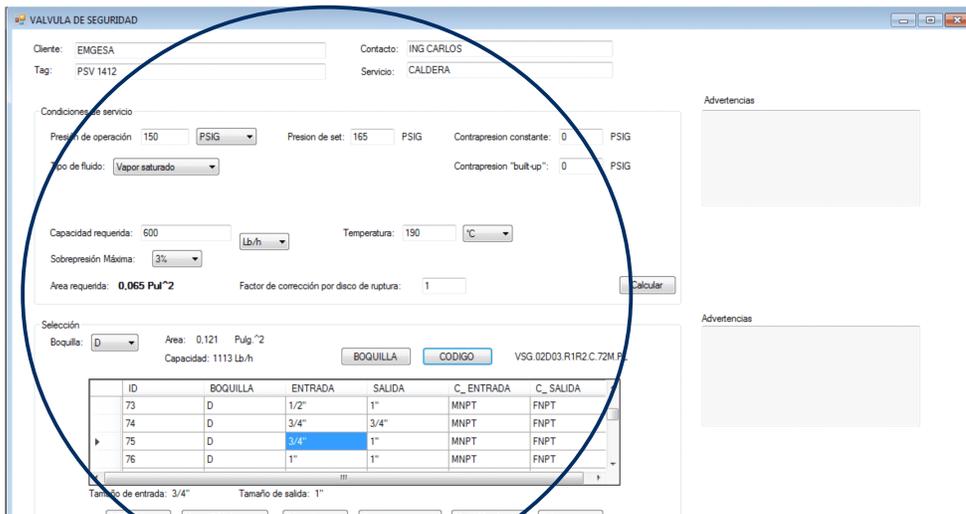
References	Max. Operating Pressure
VSGR-V	250 PSI
VSGR-I	300 PSI
VSGR-IA	500 PSI

Valve Size			
Inlet	Outlet	Nozzle	Code
1/2"	3/4"	D	050D
3/4"	3/4"	D	075D
3/4"	1"	E	075E
1"	1"	E	100E
1"	1 1/4"	F	100F
1 1/4"	1 1/4"	F	125F
1 1/4"	1 1/2"	G	125G
1 1/2"	1 1/2"	G	150G
1 1/2"	2"	H	150H
2"	2"	H	200H
2"	2 1/2"	J	200J
2 1/2"	2 1/2"	J	250J

Pressure Set
Code
PSI
BAR
Kg / Cm2

Guidelines	
- Boilers under 100 BHP must have at least one safety valve.	
- Boilers over 100 BHP must have at least two safety valves.	
- For pressure reducing stations, the capacity of the safety valve must be equal to or greater than the maximum flow capacity of the regulating valve.	
- Always select a set pressure at least 10% above the operating pressure, and no less than 5 psi for operating pressures below 50 psi.	

SIZING SOFTWARE



TECVAL's sizing software ensures proper selection in accordance with specific process conditions.



We are Operational Reliability

www.tecvalonline.com

E-mail: soporte@tecvalsas.com

PBX: 601 678 2714

Phone: 318 3513071

Factory and Main Office: Av. Calle 22 No. 43^a – 31 / Bogotá

Valle Service Center: Calle 15 N° 31 - 99, Bodega 1 - Parcelación Acerosa / autopista Cali - Yumbo

Atlantic Coast Service Center: Centro Logístico Stock Caribe - Km 1, Vía la Cordialidad - Warehouse 3B / Barranquilla