

Models 910, 911, 912, 913, 916, 917, 918, 919, 920, 921 and 927

Features

- **Available** with soft seat.
- **Threaded cap** is standard (back pressure tight).
- **Hex on valve nozzle** provides for easy installation.
- **Single control ring** offers easy adjustability of blowdown.
- **Pivoting disc design** corrects misalignment and offers exceptional performance.
- **Guide to nozzle ratio** reduces friction.
- **Full nozzle design** for optimum flow performance.
- **Threaded side outlet** for piped off discharge to eliminate fugitive emissions.

Model Descriptions

Model 912: Full nozzle design. SS warn ring and disc with brass/bronze base. Bronze/brass body and bonnet.

Model 913: Full nozzle design. Bronze/brass body and bonnet. 316 SS trim (base, disc and disc holder).

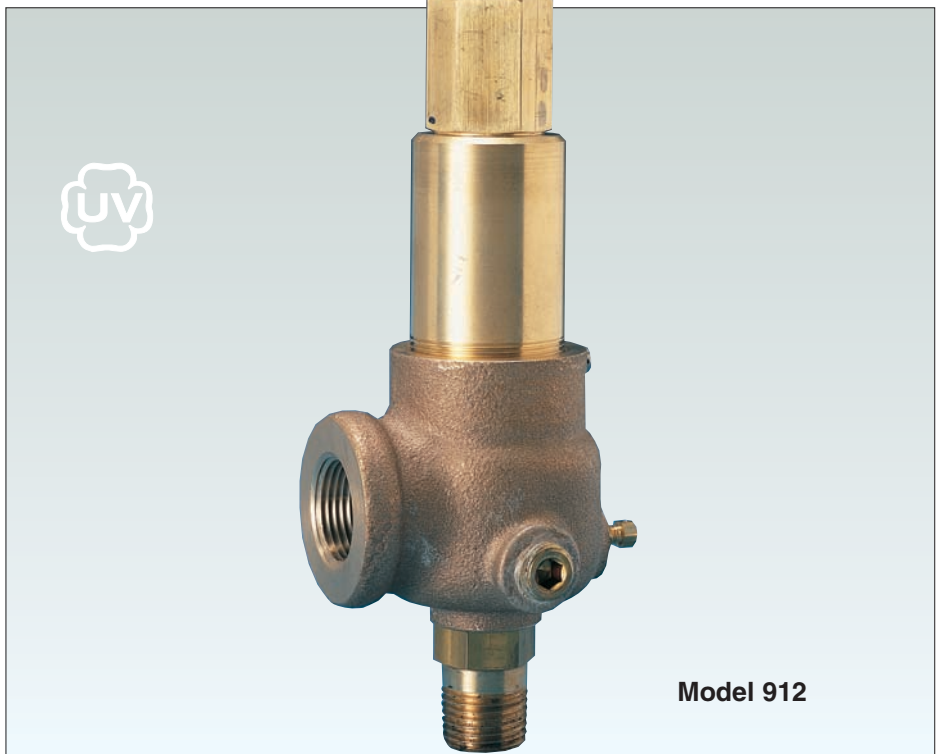
Model 918: Same as Model 912 except resilient seat/seal. Superior 'leak-free' performance.

Model 919: Same as Model 913 except resilient seat/seal. Superior 'leak-free' performance. Bronze body and bonnet. 316 SS trim (base, disc and disc holder).

Applications

- Air/gas compressors - intercoolers - aftercoolers.
- Liquid filled pressure vessels/systems - ASME Section VIII (UV).
- Pressure vessels - containing gas, air, liquid or steam. Including tanks and receivers.
- Vacuum systems including pumps, tanks and equipment.
- Optional materials for low temperature - cryogenic applications.
- Oil/gas separators.
- Overpressure relief and protection of pumps, tanks, lines and hydraulic systems.
- By-pass relief or pressure regulation.

Models 912, 913, 918 and 919 ASME Section VIII, Air/Steam/Gas/Liquid, 'UV' National Board Certified. Also available for Vacuum Service



Model 912

Options

- Threaded cap. (Variation 01)
- Threaded cap with gag. (Variation 02)
- Plain lever. (Variation 03)
- Plain lever with gag. (Variation 04)
- Plain lever with vibration dampener. (Variation 05)
- Packed lever. (Variation 06)
- Packed lever with gag. (Variation 07)

Pressure and Temperature Limits

Models 912, 918: – Steam
3 to 250 psig [-0.2 to 17 barg]¹
-320° to 406°F [-195° to 208°C]

Models 913, 919: – Steam
3 to 300 psig [-0.2 to 17 barg]¹
-320° to 425°F [-195° to 219°C]

Models 912, 918: – Air/Gas/Liquid
3 to 300 psig [-0.2 to 21 barg]
-320° to 406°F [-195° to 208°C]

Models 913, 919: – Air/Gas/Liquid
3 to 900 psig [-0.2 to 62 barg]
-320° to 425°F [-195° to 219°C]

Vacuum – 6- through 29-inch HG
[200 through 1000 mbar] – 300°F [149°C]

Maximum back pressure 50 psig [3 barg] - threaded cap and packed lever

Note

1. ASME standard valves for air or steam service must have lift lever. For steam boilers and generators.

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Service Recommendations for Resilient Seat/Seal Materials

Seat/Seal Materials ¹	Service Recommendation
BUNA-N (-40° to 275°F) [-40° to 135°C]	Air, Anhydrous Ammonia, Butane, Carbon Dioxide, Diesel Oil, Ethyl Chloride, Ethyl Ether, Freons #11 and 12, Fuel Oil, Gasoline, Helium, Hydrogen Sulphide, Kerosene, Lube Oil, Natural Gas, Nitrogen, Oxygen (Gas), Propane, Propylene, Sulphur Dioxide, Vinyl Chloride
Viton® A (-10° to 406°F) [-23° to 208°C]	Acetone, Air, Amyl Alcohol, Aniline, Benzene, Butane, Carbon Disulphide, Carbon Tetrachloride, Dowtherm 'A' and 'E', Ethyl Chloride, Ethylene, Ethylene Glycol, Ethyl Alcohol, Gasoline, Hexane, Hydrogen Sulphide, Isobutyl Alcohol, JP - 4 Fuel, JP - 5 Fuel, Kerosene, Lube Oil, Natural Gas, Naphtha, Nitrogen, Propane, Propylene, Propyl Alcohol, Sulphur Dioxide, Toluene, Trichloroethylene, Turpentine, Water, Xylene
Silicone (-100° to 406°F) [-73° to 208°C]	Air, Helium, Nitrogen, Oxygen (Gas)
Ethylene Propylene (-70° to 400°F) [-57° to 205°C]	Steam, Hot Water
Neoprene (-45° to 300°F) [-43° to 149°C]	Air, Anhydrous Ammonia, Butane, Butyl Alcohol, Castor Oil Denatured Alcohol, Ethanol, Ethyl Alcohol, Freons (12, 13, 14 and 22), Glycols, Natural Gas and Silicate Esters

Note

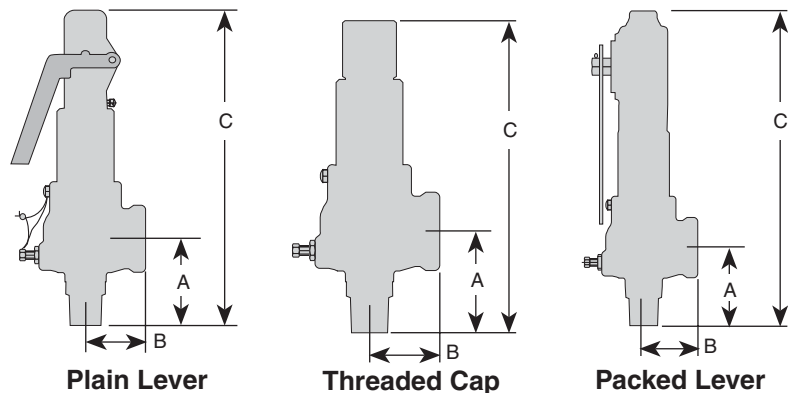
- These recommendations are a guide only. For the final selection of the proper material, your experience with available elastomers of various lading fluids should be considered.

Specifications

Model ² Number	Orifice	Connections		Maximum Set Pressure		Dimensions, in [mm]									Approx. Weight lb [kg]
		ANSI Standard Inlet	ANSI Standard Outlet	912-918 ⁴	913-919 ⁵	A	B	C Plain Lever	C Threaded Cap	C Packed Lever					
9*BDC	D	1/2" [12.7]	3/4" [19.0]	300 [20.7]	900 [62.1]	2 3/8 [60]	1 5/8 [41]	8 3/8 [213]	7 1/4 [184]	9 [229]	3 [1.4]				
9*BDC ⁷	D	1/2" [12.7]	1" [25.4]	300 [20.7]	900 [62.1]	2 3/8 [60]	1 5/8 [41]	8 3/8 [213]	7 1/4 [184]	9 [229]	3 [1.4]				
9*BDD ³	D	3/4" [19.0]	3/4" [19.0]	—	900 [62.1]	2 3/8 [60]	1 5/8 [41]	8 3/8 [213]	7 1/4 [184]	9 [229]	3 [1.4]				
9*BDE ³	D	1" [25.4]	1" [25.4]	—	900 [62.1]	2 5/8 [67]	1 5/8 [41]	8 5/8 [219]	7 1/2 [191]	9 1/8 [232]	3 [1.4]				
9*BED	E	3/4" [19.0]	1 1/4" [31.8]	300 [20.7]	900 [62.1]	2 5/8 [67]	2 [51]	8 3/4 [222]	7 5/8 [194]	9 3/8 [238]	4 [1.8]				
9*BEF ³	E	1 1/4" [31.8]	1 1/4" [31.8]	—	900 [62.1]	3 [76]	2 [51]	9 1/8 [232]	8 [203]	9 3/4 [248]	4 [1.8]				
9*BFE	F	1" [25.4]	1 1/2" [38.1]	300 [20.7]	600 [41.4]	2 7/8 [73]	2 3/8 [60]	9 7/8 [251]	8 3/4 [222]	10 1/2 [267]	6 [2.7]				
9*BFG ³	F	1 1/2" [38.1]	1 1/2" [38.1]	—	600 [41.4]	3 [76]	2 3/8 [60]	10 [254]	8 7/8 [225]	10 5/8 [270]	6 [2.7]				
9*BGF	G	1 1/4" [31.8]	2" [50.8]	300 [20.7]	600 [41.4]	3 1/4 [89]	2 5/8 [67]	11 1/4 [286]	10 1/8 [257]	11 3/4 [298]	8 [3.6]				
9*BGH ³	G	2" [50.8]	2" [50.8]	—	600 [41.4]	3 1/4 [89]	2 5/8 [67]	11 1/4 [286]	10 1/8 [257]	11 3/4 [298]	8 [3.6]				
9*BHG	H	1 1/2" [38.1]	2 1/2" [63.5]	300 [20.7]	500 [34.5]	3 1/2 [89]	2 3/4 [70]	13 [330]	11 1/8 [283]	12 1/2 [318]	11 [5.0]				
9*BJH	J ⁶	2" [50.8]	3" [76.2]	300 [20.7]	500 [34.5]	4 [102]	3 1/4 [89]	14 1/2 [368]	12 1/2 [318]	15 1/8 [384]	15 [6.8]				

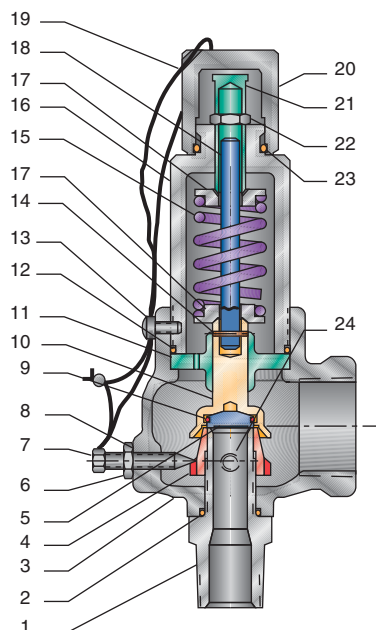
Notes

- Maximum temperature controlled by resilient seat/seal material.
- Replace asterisk with desired Model Number. Data applicable to all models.
- Available with SS trim only.
- Maximum pressure on steam is 250 psig.
- Maximum pressure on steam is 300 psig.
- For C dimensions: pressures above 200 psig [14 barg] add 1.25-inch [31.8 mm] to the overall height.
- Special variation required. Consult factory.



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Parts and Materials - Models 912, 913, 918, 919 Threaded Cap

No.	Part Name	Materials
1	Nozzle ¹	Brass, B21 Alloy 485, (SS, SA351-CF8M ¹ Models 913, 919 only)
2	O-ring Body	Teflon®
3	Body	Bronze, B584 Alloy 84400
4	Warn Ring	SS, A743-CF8M
5	Disc ²	SS, A479-316
6	Set Screw Nut	Brass, B16
7	Set Screw	Brass, B16
8	Seal	Teflon®
9	Retainer Ring	SS, A313-316
10	Disc Holder	Brass, B16, (SS A351-CF8M Models 913, 919 only)
11	Guide ³	Brass, B16
12	Bonnet O-ring	Teflon®
13	Screw	SS, Commercial 18-8
14	Coiled Spring Pin	SS, A313-302
15	Spring	SS: A313-316 or A313-T631 Alloy steel: A681-H12 or B637-X750
16	Bonnet ⁴	Brass, B16-H02
17	Spring Step	Brass, B16
18	Stem	Brass, B16
19	Wire and Seal	SS wire and Lead seal, Commercial
20	Cap	Brass, B16
21	Compression Screw	Brass, B16
22	Jam Nut	Brass, B16
23	Cap O-ring	BUNA-N
24	Body Plug	Brass, B16 [1/4" - 18 NPT]

Notes

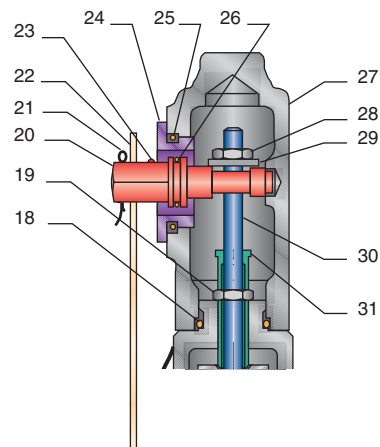
- F through J orifice nozzle material is Bronze, B62.
 - G through J orifice guide material is Bronze, B584, Alloy 84400.
 - F through J orifice bonnet material is Bronze, B584, Alloy 84400.
- | | |
|-------------|--------------------|
| 2. Material | Letter Designation |
| Viton®-A | V |
| BUNA-N | B |
| Silicone | S |
| EPR | E |
| Neoprene | N |

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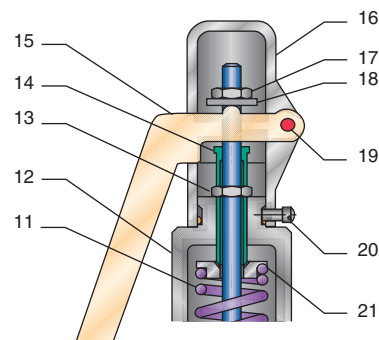
Parts and Materials - Model 912 Packed Lever

No.	Part Name	Materials
18	Cap O-ring	BUNA-N 70 Duro, Commercial
19	Jam Nut	Brass, B16
20	Lift Cam	SS, A743 CF8M
21	Cotter Pin	Steel, Commercial
22	Lever	Zinc Plated Steel, A108
23	Drive Screw	SS, Commercial
24	Retainer Nut	Brass, B16
25	Retainer O-ring	BUNA-N 70 Duro, Commercial
26	Lift Cam O-ring	BUNA-N 70 Duro, Commercial
27	Cap	Bronze, B584 Alloy 84400
28	Lift Nut	SS, A479 316
29	Lift Washer	SS, A479 316
30	Stem	Brass, B16
31	Compression Screw	Brass, B16
32	Coiled Spring Pin	SS, A313 302
33	Body Plug ¹	Brass, B16
	Guide	Brass, B16
34	Guide Locknut	Brass, B16
	Shield	SS, A167 316



Parts and Materials - Model 912 Plain Lever

No.	Part Name	Materials
11	Spring	Steel: A231/A231M w/coating ¹ SS: A313-302 SS: A313-316 Alloy steel: A681-H12
12	Bonnet ³	Brass, B16
13	Jam Nut	Brass, B16
14	Compression Screw	Brass, B16
15	Lever	Steel, A109 w/coating ¹
16	Cap	Brass, B179
17	Lift Nut	SS, A479-316
18	Lift Washer	SS, A479-316
19	Rivet	Steel, Commercial
20	Screw	SS, Commercial Gr. 18-8
21	Spring Step	Brass, B16
22	Disc Holder	Brass, B16
	Spindle	Brass, B16



Note

1. Corrosion preventative coating.

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Model Number/Order Guide

Model Number Position

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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Example

9	1	2	B	J	H	M	0	1	—	K	E	0	3	0	0
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Model

912
913
918
919

Connection Model

B - Male x Female Threaded or NPT

Orifice

D G
E H
F J

Inlet Size

C - 1/2-inch [15 mm] F - 1 1/4-inch [32 mm]
D - 3/4-inch [18 mm] G - 1 1/2-inch [40 mm]
E - 1-inch [25 mm] H - 2-inch [50 mm]

Seat/Seal Material

M - Metal-to-metal
B - BUNA-N 200°F [93°C]
E - EPR 400°F [177°C]
S - Silicone 406°F [208°C]
V - Viton® 406°F [208°C]
N - Neoprene 300°F [149°C]

Variation (01 through 99)

Number provided only by manufacturer to cover specific feature or option.

01 - Threaded cap
02 - Threaded cap with gag
03 - Plain lever
04 - Plain lever with gag
05 - Plain lever with vibration dampener
06 - Packed lever
07 - Packed lever with gag

Design Revision

Indicates non-interchangeable revision. Dash (-) if original design.

Valve Service

J - Liquid ASME Section VIII (Standard Cap/Packed Lever only)
K - Air/Gas ASME Section VIII (Plain Lever/Packed Lever required for air)
L - Steam ASME Section VIII (Plain Lever/Packed Lever required)
M - Liquid (Standard Cap/Packed Lever only)
N - Non-Code Air Gas
P - Non-Code Steam
Q - Vacuum (Standard Cap/Packed Lever only)

Spring Material

E - SS
F - Alloy Steel (high temperature)

Set Pressure

3 psig [0.2 barg] (0003) through 900 psig [62 barg] (0900)
Vacuum 6-inch HG [200 mbar] (0006) through 29-inch HG [1000 mbar] (0029)

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ASME VIII Liquid (English, GPM) - Flow Coefficient = 0.710

Set Pressure (psig)	Orifice Area, in ²					
	D (0.1213)	E (0.2157)	F (0.3369)	G (0.553)	H (0.864)	J (1.415)
15	14	25	39	63	99	162
25	17	31	48	79	123	202
35	20	36	56	93	145	237
45	23	41	64	105	164	269
55	26	45	71	116	181	297
65	28	49	77	126	197	323
75	30	53	83	136	212	347
85	32	56	88	144	225	369
95	34	60	93	153	238	390
100	34	61	95	156	244	400
125	38	68	107	175	273	448
150	42	75	117	192	299	490
175	45	81	126	207	323	530
200	49	86	135	221	346	566
225	52	92	143	235	367	601
250	54	97	151	247	387	633
275	57	101	158	259	405	664
300	60	106	165	271	423	694
325	62	110	172	282	441	722
350	64	114	178	293	457	749
375	67	118	185	303	473	775
400	69	122	191	313	489	801
425	71	126	197	323	504	825
450	73	129	202	332	519	849
475	75	133	208	341	533	873
500	77	136	213	350	547	895
550	81	143	224	367	—	—
600	84	150	234	383	—	—
650	88	156	—	—	—	—
700	91	161	—	—	—	—
750	94	167	—	—	—	—
800	97	173	—	—	—	—
850	100	178	—	—	—	—
900	103	183	—	—	—	—

Notes

- No code stamp or 'NB' on nameplate below 15 psig set.
- Pressure Limitations
Model 910, 916: 3 to 900 psig
Model 911, 917: 3 to 900 psig
Model 912, 918: 3 to 300 psig
Model 913, 919: 3 to 900 psig
- Liquid conversion factors to determine liquid capacity at other than 10% accumulation, multiply by the following:
 1.022 = 15% accumulation
 1.045 = 20% accumulation
 1.066 = 25% accumulation (see page 20)

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Models 910, 911, 912, 913, 916, 917, 918, 919

Notes

1. No code stamp or 'NB' on nameplate below 1.1 barg set.
2. Pressure Limitations
Model 910, 916: 0.2 to 62 barg
Model 911, 917: 0.2 to 62 barg
Model 912, 918: 0.2 to 20.7 barg
Model 913, 919: 0.2 to 62 barg

Non-code¹ and ASME Section VIII Liquid, [Metric m³/h] -
 Flow Coefficient = 0.710

Set Pressure [barg]	Orifice Area, cm ²					
	D [0.783]	E [1.392]	F [2.174]	G [3.568]	H [5.574]	J [9.129]
1.0	3	6	9	14	22	36
2.0	4	7	12	19	30	49
3.0	5	9	14	23	37	60
4.0	6	11	16	27	42	69
5.0	7	12	18	30	47	77
6.0	7	13	20	33	52	85
7.0	8	14	22	36	56	92
8.0	8	15	23	38	60	98
9.0	9	16	25	41	63	104
10.0	9	17	26	43	67	110
12.0	10	18	29	47	73	120
14.0	11	20	31	51	79	130
16.0	12	21	33	54	85	139
18.0	13	22	35	57	90	147
20.0	13	24	37	61	95	155
22.0	14	25	39	63	99	162
24.0	15	26	40	66	104	170
26.0	15	27	42	69	108	177
28.0	16	28	44	72	112	183
30.0	16	29	45	74	116	190
32.0	17	30	47	77	120	196
34.0	17	31	48	79	123	202
36.0	18	32	49	81	—	—
38.0	18	33	51	83	—	—
40.0	19	33	52	86	—	—
42.0	19	34	—	—	—	—
44.0	20	35	—	—	—	—
46.0	20	36	—	—	—	—
48.0	21	37	—	—	—	—
50.0	21	37	—	—	—	—
52.0	21	38	—	—	—	—
54.0	22	39	—	—	—	—
56.0	22	40	—	—	—	—
58.0	23	40	—	—	—	—
60.0	23	41	—	—	—	—
62.0	23	42	—	—	—	—