

W2601 and W2602 Threaded Safety Relief Valves

Application

These valves are for general purpose gas and air services, and are recommended for over-pressure protection on separators, compressors, pressure vessels, heater-treaters, gathering and transmission lines, meter runs and other systems where the rated capacities of the valve are commensurate with the requirements of the system. All of these valves are manufactured in accordance with the ASME Boiler and Pressure Vessel Code and have been capacity tested and certified by the National Board to meet the requirements of Section VIII of the ASME Code, as signified accordingly by the symbols "UV" and "NB" on their nameplates.

Features

- Choice Of Multiple Orifice Sizes
- ASME Coded: "UV" Section VIII Air/Gas
- Enhanced Guided Lift System: Optimum Performance
- Trim Option: Soft Seat, Metal-to-Metal
- High Volume Applications
- Low Pressure Applications
- Stainless Steel Internals
- NACE Option Available

Specifications

Type W2601—1" Size

Type W2602—2" Size

Soft Resilient Seat or

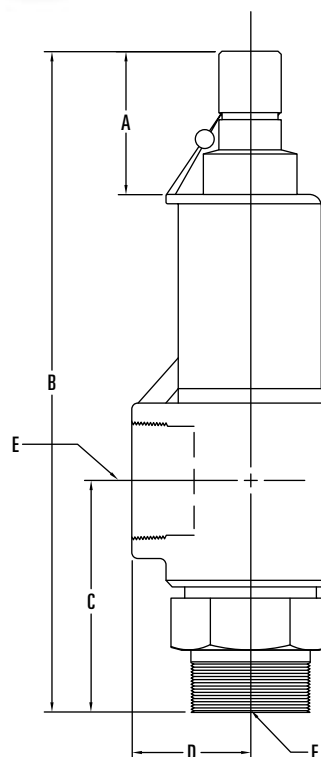
Metal-to-Metal Available

Multiple Orifices Available:

- C—.295" Diameter (1" valve only)
- D—.400" Diameter (1" valve only)
- E—.534" Diameter (1" or 2" valve)
- F—.672" Diameter (2" valve only)
- G—.857" Diameter (2" valve only)

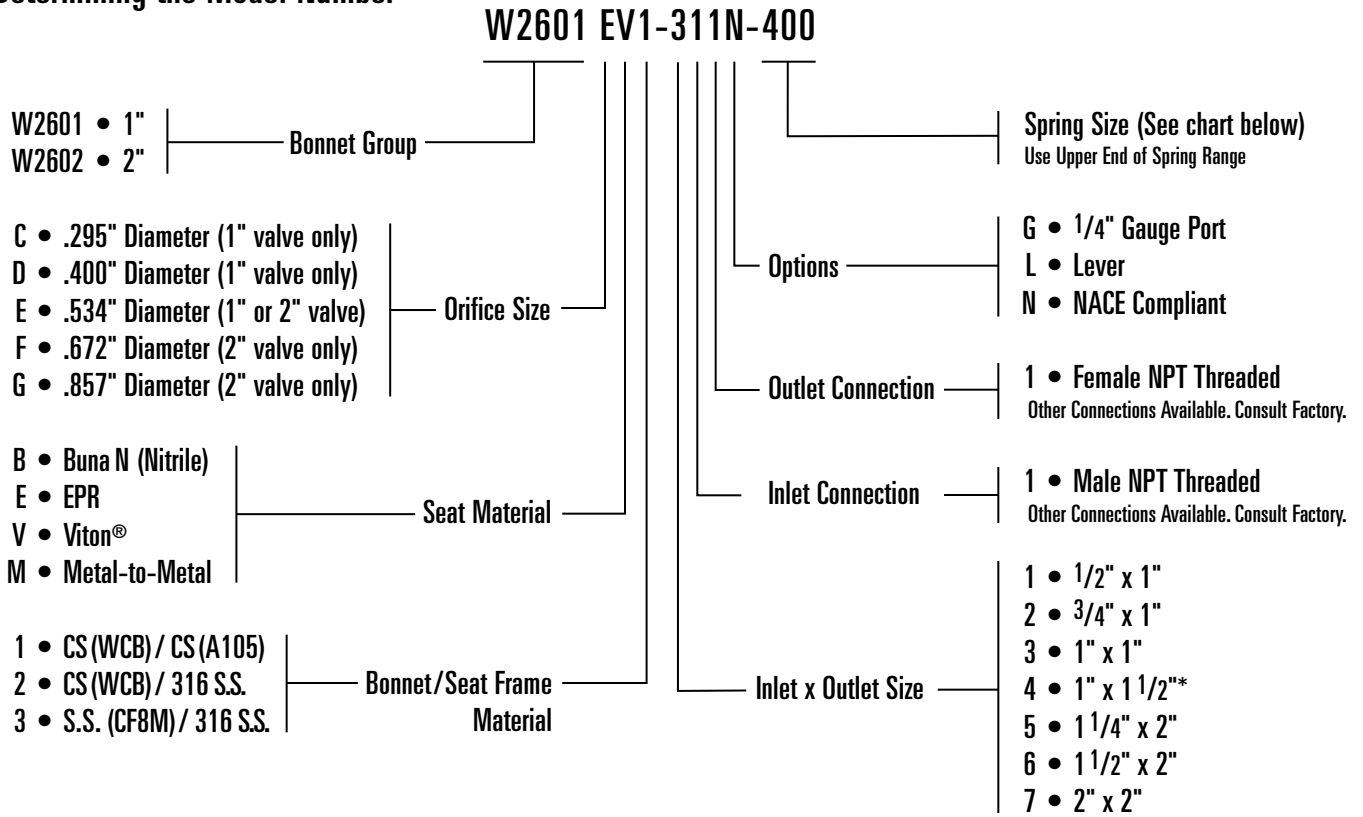
Dimensional Data

Model	A	B	C	D	E	F
W2601	2 3/8"	10 1/2"	3 1/4"	1 7/8"	1" FNPT 1 1/2" OPT.	1" MNPT STANDARD 3/4" MNPT OPTIONAL 1/2" MNPT OPTIONAL
W2602	2 7/8"	13 1/4"	4 5/8"	2 3/8"	2" FNPT	2" MNPT STANDARD 1 1/4" MNPT OPTIONAL 1 1/2" MNPT OPTIONAL



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Determining the Model Number



Specification	Orifice Designation				
	C	D	E	F	G
Orifice Diameter (in.)	0.295	0.400	0.534	0.672	0.857
Orifice Area (A) (sq. in.)	0.068	0.126	0.224	0.355	0.577
Inlet Size Available (in.)	1/2, 3/4, 1	1/2, 3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/2, 2
Outlet Size Available (in.)	1, 1 1/2*	1, 1 1/2*	1, 1 1/2*, 2	2	2
Pressure Ranges (psig)	15-2500	15-2500	15-2500	15-1600	75-1000
Flow Coefficient (K)	0.859	0.859	0.859	0.859	0.859

Orifice	Orifice Diameter	Orifice Area (A)	Spring Ranges (psig)- Use Upper End of Spring Range						
			15-80	80-250	250-400	400-800	800-1600	1600-2500	
1"	C	0.295	0.068	15-80	80-250	250-400	400-800	800-1600	1600-2500
	D	0.400	0.126						
	E	0.534	0.224						
2"	E	0.534	0.224	15-75	75-250	250-500	500-1200	1200-2500	—
	F	0.672	0.355	15-40	40-200	200-400	400-800	800-1600	—
	G	0.857	0.577	—	75-100	100-200	200-600	600-1000	—

*When coupled with 1 1/4" or larger inlet, 1 1/2" outlet available by special order only.

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Relieving Capacity For Air • (10% Overpressure) Capacities in standard cubic feet per minute at 60° F

Set Pressure	Orifice Diameter (in.) / Area (sq. in.)					NOT AVAILABLE
	C 0.295/0.068	D 0.400/0.126	E 0.534/0.224	F 0.672/0.355	G 0.857/0.577	
15	33	61	110	174		
20	39	72	129	205		
25	45	83	148	235		
30	51	94	168	266		
40	62	116	207	328		
50	74	138	245	389		
60	86	160	284	451		
70	98	181	323	512		
75	104	192	342	543	882	
80	109	203	362	573	932	
90	121	225	400	635	1032	
100	133	247	439	696	1132	
125	162	301	536	850	1382	
150	192	356	633	1004	1632	
175	221	411	730	1158	1882	
200	251	465	827	1311	2132	
250	310	574	1021	1619	2631	
275	339	629	1118	1773	2881	
300	369	683	1215	1926	3131	
350	427	792	1409	2233	3630	
400	486	901	1603	2541	4130	
450	545	1011	1797	2848	4630	
500	604	1120	1991	3156	5129	
550	663	1229	2185	3463	5629	
600	722	1338	2379	3770	6129	
650	781	1447	2573	4078	6628	
700	840	1556	2767	4385	7128	
720	863	1600	2845	4509	7329	
750	898	1665	2961	4693	7627	
800	957	1774	3155	5000	8127	
850	1016	1883	3349	5307	8627	
900	1075	1993	3543	5615	9126	
950	1134	2102	3737	5922	9626	
1000	1193	2211	3931	6230	10,126	

Set Pressure	Orifice Diameter (in.) / Area (sq. in.)					NOT AVAILABLE
	C 0.295/0.068	D 0.400/0.126	E 0.534/0.224	F 0.672/0.355	G 0.857/0.577	
1050	1252	2320	4125	6537		
1100	1311	2429	4319	6844		
1150	1370	2538	4513	7152		
1200	1428	2647	4706	7459		
1250	1487	2756	4900	7767		
1300	1546	2865	5094	8074		
1350	1605	2974	5288	8381		
1400	1664	3084	5482	8689		
1440	1711	3171	5638	8936		
1450	1723	3193	5676	8996		
1500	1782	3302	5870	9304		
1550	1841	3411	6064	9611		
1600	1899	3520	6258	9918		
1650	1958	3629	6452			
1700	2017	3738	6646			
1750	2076	3847	6840			
1800	2135	3956	7034			
1850	2194	4066	7228			
1900	2253	4175	7422			
1950	2312	4284	7616			
2000	2371	4393	7810			
2050	2429	4502	8004			
2100	2488	4611	8198			
2150	2547	4720	8392			
2160	2559	4743	8432			
2200	2606	4829	8586			
2250	2665	4938	8780			
2300	2724	5047	8974			
2350	2783	5157	9168			
2400	2842	5266	9362			
2450	2900	5375	9556			
2500	2959	5484	9750			

Sizing of Safety Relief Valves

Given certain information as follows, Safety Relief Valves may be sized by use of various formulas prescribed by Appendix 11, Section VIII, Division I of the ASME Boiler and Pressure Vessel Code for

capacities of orifices. The information as shown below allows sizing using the coefficient method.

Table I – Molecular Weight and Values of C for Gases

Gas	M	C
AIR	28.97	356
ACETYLENE	26.04	345
AMMONIA	17.03	351
BUTANE	58.12	324
CARBON DIOXIDE	44.01	345
CHLORINE	70.91	352
ETHANE	30.07	339
ETHYLENE	28.05	337
FREON 22	86.48	355
HYDROGEN	2.02	356
HYDROGEN SULFIDE	34.08	348
METHANE	16.04	346
METHYL CHLORIDE	50.48	337
NATURAL GAS (0.6)	17.40	344
NITROGEN	28.02	356
OXYGEN	32.00	356
PROPANE	44.09	331
SULFUR DIOXIDE	64.06	342

Relieving Capacity Formula Coefficient Method

$$Q \text{ (SCFM)} = \frac{KACP}{w \times 60} \sqrt{\frac{M}{T}}$$

A = Effective Flow Area (Orifice Area in sq. in.)

C = Gas Constant

K = Flow Coefficient

M = Molecular Weight

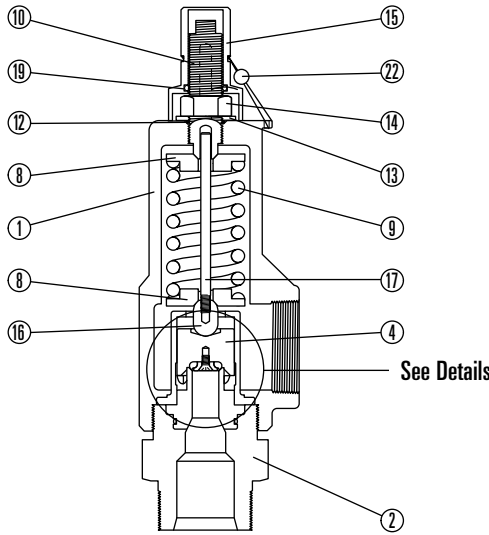
P = Flowing pressure (set pressure x 1.1 + 14.7 psia)

Q = Flow Rate in SCFM for gases

T = Absolute temperature in degrees Rankin (°F + 460)

w = Density of the gas in lb./ft.³ (Air = .0764 @ 14.7 psia)

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See Details

Parts List, W2601

Item	Description	Material	Qty.	Part No.
1	BONNET	SA-216 GR. WCB CS	1	40986
2	SEAT FRAME	1/2" SA-105 CS	1	21293
		3/4" SA-105 CS	1	21294
		1" SA-105 CS	1	21222
3	SEAT	"C" ORIFICE SA-276 S.S.	1	21223
		"D" ORIFICE SA-276 S.S.	1	21242
		"E" ORIFICE SA-276 S.S.	1	21283
4	PLUG	"C", "D" ORIFICE SA-276 S.S.	1	21224
		"E" ORIFICE SA-276 S.S.	1	21282
		"C", "D" ORIFICE VITON®	1	11180
5	O-RING	"E" ORIFICE VITON®	1	11182
		"F" ORIFICE VITON®	1	11183
		"G" ORIFICE VITON®	1	11186
6	O-RING HOLDER	"E" ORIFICE SA-276 S.S.	1	21275
		"F" ORIFICE SA-276 S.S.	1	21261
		"G" ORIFICE SA-276 S.S.	1	21271
7	PLUG GUIDE	"E" ORIFICE SA-351 S.S.	1	21278
		"F" ORIFICE SA-351 S.S.	1	21258
		"G" ORIFICE SA-351 S.S.	1	21376
8	SPRING GUIDE	SA-29 CS	2	21263
		SA-29 CS	2	21227
9	SPRING FOR C OR D	15-80# 302 S.S.	1	11188
		80-250# 302 S.S.	1	11189
		250-400# 302 S.S.	1	11190
		400-800# 302 S.S.	1	11192
		800-1600# 17-7 S.S.	1	11194
		1600-2500# 17-7 S.S.	1	11195
	SPRING FOR E	15-50# 302 S.S.	1	11188
		50-150# 302 S.S.	1	11189
		150-300# 302 S.S.	1	11190
		300-500# 302 S.S.	1	11192
		500-1000# 17-7 S.S.	1	11194
		1000-2500# 17-7 S.S.	1	11195
10	ADJUSTING SCREW	307 CS	1	21229
11	O-RING	VITON®	1	11181
12	O-RING	VITON®	1	10402
13	SEAL WASHER	S.S./BUNA-N	1	10578
14	JAM NUT	STEEL	1	10174
15	CAP	ALUMINUM	1	21211
16	GUIDE	SA-29 CS	1	21279
17	GUIDE STEM	SA-29 CS	1	21292
18	SCREW	"C", "D" ORIFICE 18-8 S.S.	1	10001
		"E" ORIFICE 18-8 S.S.	1	11184
19	O-RING	VITON®	1	05000-0223
20*	NAMEPLATE	ALUMINUM	1	11066
21*	DRIVE SCREW	18-8 S.S.	4	10075
22	SEAL WIRE & LEAD	STEEL & LEAD	1	10178

*Not Shown

Note: Optional Seal Materials Available. Consult Factory.

Parts List, W2602

Item	Description	Material	Qty.	Part No.
1	BONNET	SA-216 GR. WCB CS	1	40996
2	SEAT FRAME	1 1/4" SA-105 CS	1	31061
		1 1/2" SA-105 CS	1	31062
		2" SA-105 CS	1	31056
3	SEAT	"E" ORIFICE SA-276 S.S.	1	21274
		"F" ORIFICE SA-276 S.S.	1	21259
		"G" ORIFICE SA-276 S.S.	1	21265
4	PLUG	"E" ORIFICE SA-276 S.S.	1	21273
		"F" ORIFICE SA-276 S.S.	1	21260
		"G" ORIFICE SA-276 S.S.	1	21267
5	O-RING	"E" ORIFICE VITON®	1	11182
		"F" ORIFICE VITON®	1	11183
		"G" ORIFICE VITON®	1	11186
6	O-RING HOLDER	"E" ORIFICE SA-276 S.S.	1	21275
		"F" ORIFICE SA-276 S.S.	1	21261
		"G" ORIFICE SA-276 S.S.	1	21271
7	PLUG GUIDE	"E" ORIFICE SA-351 S.S.	1	21278
		"F" ORIFICE SA-351 S.S.	1	21258
		"G" ORIFICE SA-351 S.S.	1	21376
8	SPRING GUIDE	SA-29 CS	2	21263
		SA-29 CS	2	21227
9	SPRING FOR E	15-75# 302 S.S.	1	10296
		75-250# 302 S.S.	1	10297
		250-500# 302 S.S.	1	10298
		500-1200# 302 S.S.	1	10301
		1200-2500# 17-7 S.S.	1	10304
		15-40# 302 S.S.	1	10296
	SPRING FOR F	15-40# 302 S.S.	1	10296
		40-200# 302 S.S.	1	10297
		200-400# 302 S.S.	1	10298
		400-800# 302 S.S.	1	10301
		800-1600# 17-7 S.S.	1	10304
		75-100# 302 S.S.	1	10297
SPRING FOR G	75-100# 302 S.S.	1	10297	
	100-200# 302 S.S.	1	10298	
	200-600# 302 S.S.	1	10301	
	600-1000# 17-7 S.S.	1	10304	
10	ADJUSTING SCREW	307 CS	1	21264
11	O-RING	VITON®	1	10645
12	O-RING	VITON®	1	10379
13	SEAL WASHER	S.S./BUNA-N	1	10578
14	JAM NUT	STEEL	1	10598
15	CAP	ALUMINUM	1	21212
16	GUIDE	SA-29 CS	1	21279
17	GUIDE STEM	SA-29 CS	1	21280
18	SCREW	"E" ORIFICE 18-8 S.S.	1	11184
		"F", "G" ORIFICE 18-8 S.S.	1	11185
19	O-RING	VITON®	1	10278
20*	NAMEPLATE	ALUMINUM	1	11066
21*	DRIVE SCREW	18-8 S.S.	4	10075
22	SEAL WIRE & LEAD	STEEL & LEAD	1	10178

*Not Shown

Note: Optional Seal Materials Available. Consult Factory.