

# Series 2500 Flanged Steel Safety Relief Valves

- Manufactured in accordance with ASME Code Section VIII
- NBBI capacity certified for air/gas, liquid & steam
- Meets API 526 & 527
- Flange Inlets 1" to 3"
- NACE, bellows and severe service options

 **Hydroseal**  
A Mallard Control Company



# Series 2500 Product Nomenclature

MODEL # EXAMPLE:

**25 M 15 F 20 A 1 C1 A O**

Series	Seat Type	Inlet Flange Size	Orifice Effective Area (in. <sup>2</sup> )	Outlet Flange Size	Inlet Flange Class (ANSI B16.5)	Flange Facing Inlet X Outlet	Material Code			Service Code	Cap Type	
							Body	Spring	Trim			
<b>25</b> NON-BELLOWS	<b>M</b> - Metal	10 - 1.0"	DR <sup>(1)</sup> - 0.120	20 - 2.0"	<b>A</b> - 150	<b>1</b> - RF X RF	<b>C1</b>	WCB	CS or AS	316 SS	<b>A</b> ASME SEC. VII AIR/GAS	<b>O</b> CLOSED
	<b>C</b> - Neoprene	15 - 1.5"	ER <sup>(1)</sup> - 0.227	25 - 2.5"	<b>B</b> - 300 LP. <sup>(2)</sup>	<b>2</b> - RTJ X RF	<b>C2</b>	WCB	316 SS	316 SS	<b>B</b> ASME SEC. VII STEAM	<b>L</b> OPEN LIFT LEVER
<b>B25</b> WITH BELLOWS OPTION	<b>E</b> - EPDM	20 - 2.0"	<b>F</b> - 0.317	30 - 3.0"	<b>C</b> - 300	<b>X</b> - SPECIAL	<b>C3</b>	WCB	Inconel®	316 SS	<b>C</b> ASME SEC. VII LIQUID	<b>P</b> PACKED LIFT LEVER
	<b>K</b> - Kalrez®	25 - 2.5"	<b>G</b> - 0.568	40 - 4.0"	<b>D</b> - 600		<b>C4</b>	WCB-NACE	Inconel®	316 SS	<b>F</b> NON-CODE AIR/GAS	<b>G</b> CLOSED W/ GAG
	<b>N</b> - Nitrile	30 - 3.0"	<b>H</b> - 0.911				<b>S1</b>	CF8M	SS	316 SS	<b>G</b> NON-CODE STEAM	<b>M</b> OPEN LIFT W/ GAG
	<b>S</b> - Silicone		<b>J</b> - 1.457				<b>S2</b>	CF8M	316 SS	316 SS	<b>H</b> NON-CODE LIQUID	<b>S</b> PACKED LIFT W/ GAG
	<b>V</b> - Fluoro-Carbon		<b>K</b> - 2.125				<b>S3</b>	CF8M	Inconel®	316 SS	<b>X</b> SPECIAL	ASME Code requires lift lever on air, steam, or water over 140°F
							<b>M1</b>	WCB	CS	Monel®		
							<b>M2</b>	CF8M	SS	Monel®		
							<b>H1</b>	WCB	CS or AS	Hast. C		
							<b>H2</b>	CF8M	SS	Hast. C		
							<b>X1<sup>(3)</sup></b>	SPECIAL	SPECIAL	SPECIAL		

Refer to table on page 3 for selection.

## O RING TEMPERATURE RANGE FOR SOFT SEAT OPERATION

SYMBOL	ELASTOMER	Temperature range	
		°F	°C
<b>C</b>	Neoprene	-45 to +300	-43 to +149
<b>E</b>	Ethylene propylene	-70 to +300	-57 to +149
<b>K</b>	Kalrez®	+30 to +550	-1 to +288
<b>N</b>	Nitrile (Buna N)	-65 to +225	-55 to +107
<b>S</b>	Silicone	-65 to +450	-54 to +232
<b>V</b>	Fluorocarbon	-15 to +450	-26 to +232
<b>T</b>	Teflon®	-300 to +450	-185 to +23

## Material Legend:

AS	Alloy Steel
CS	Carbon Steel
CF8M	SA-351 GR CF8M
SS	Stainless Steel
316 SS	316 Stainless Steel
Monel®	Monel® 400
Hast.C.	Hastelloy® C
Inconel®	Inconel® X750
WCB	SA-216 Gr WCB/WCC
WCB-NACE	SA-216 Gr WCB/WCC Nace MR0175.34

### Notes:

- (1) Restricted Lift
- (2) Light Pattern
- (3) Additional Materials Available

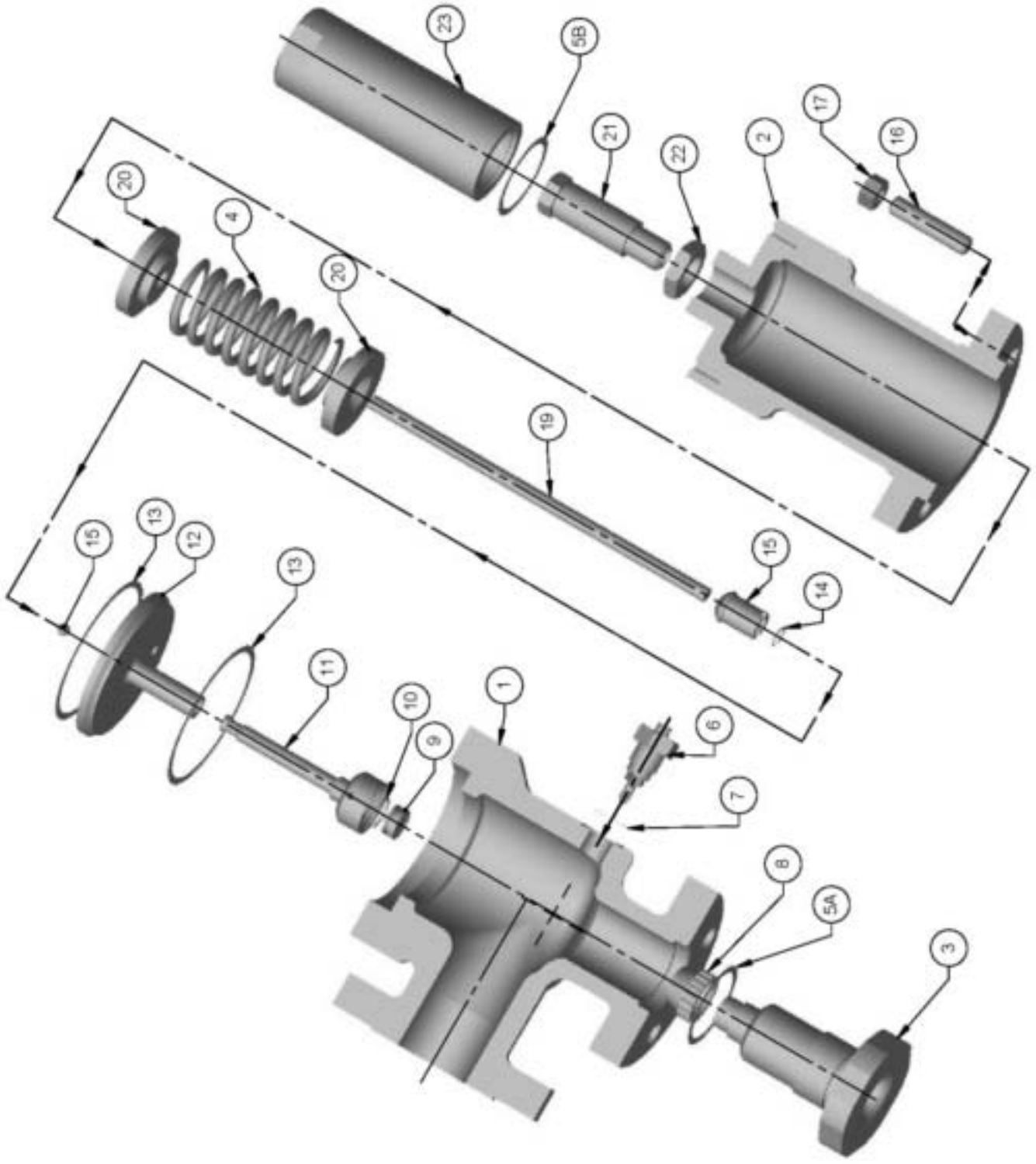


# 15F20

## INLET • ORIFICE • OUTLET

VALVE MODEL	API ORIFICE AREA [SQ IN]	INLET SIZE	OUTLET SIZE	INLET X OUTLET FLANGE PRESSURE CLASS	SET PRESSURE LIMITS [TEMPERATURE DEPENDENT]			DIMENSIONS CENTER TO FACE			WEIGHT LBS.
					100°F	450°F	800°F	A	B	C	
10DR20	0.120	1.0"	2.0"	150 X 150	285	185	80	4-1/8"	4-1/2"	20-1/2"	49
10DR20	0.120	1.0"	2.0"	300 X 150	285	285	285	4-1/8"	4-1/2"	20-1/2"	50
10DR20	0.120	1.0"	2.0"	300 X 150	740	615	410	4-1/8"	4-1/2"	20-1/2"	50
10DR20	0.120	1.0"	2.0"	600 X 150	1480	1235	825	4-1/8"	4-1/2"	20-1/2"	50
10ER20	0.227	1.0"	2.0"	150 X 150	285	185	80	4-1/8"	4-1/2"	20-1/2"	49
10ER20	0.227	1.0"	2.0"	300 X 150	285	285	285	4-1/8"	4-1/2"	20-1/2"	50
10ER20	0.227	1.0"	2.0"	300 X 150	740	615	410	4-1/8"	4-1/2"	20-1/2"	50
10ER20	0.227	1.0"	2.0"	600 X 150	1480	1235	825	4-1/8"	4-1/2"	20-1/2"	50
15F20	0.317	1.5"	2.0"	150 X 150	285	185	80	4-7/8"	4-3/4"	21-1/4"	54
15F20	0.317	1.5"	2.0"	300 X 150	285	285	285	4-7/8"	4-3/4"	21-1/4"	56
15F20	0.317	1.5"	2.0"	300 X 150	740	615	410	4-7/8"	6"	21-1/4"	64
15F20	0.317	1.5"	2.0"	600 X 150	1480	1235	825	4-7/8"	6"	21-1/4"	64
15G25	0.568	1.5"	2.5"	150 X 150	285	185	80	4-7/8"	4-3/4"	21-1/4"	55
15G25	0.568	1.5"	2.5"	300 X 150	285	285	285	4-7/8"	4-3/4"	21-1/4"	58
15G25	0.568	1.5"	2.5"	300 X 150	740	615	410	4-7/8"	6"	21-1/4"	66
15G25	0.568	1.5"	2.5"	600 X 150	1480	1235	825	4-7/8"	6"	22-7/8"	69
15G30	0.568	1.5"	3.0"	150 X 150	285	185	80	4-7/8"	4-3/4"	22"	60
15G30	0.568	1.5"	3.0"	300 X 150	285	285	285	4-7/8"	4-3/4"	22"	63
15G30	0.568	1.5"	3.0"	300 X 150	740	615	410	4-7/8"	6"	22"	70
15G30	0.568	1.5"	3.0"	600 X 150	1480	1235	825	4-7/8"	6"	24"	73
15H30	0.911	1.5"	3.0"	150 X 150	285	185	80	5-1/8"	4-7/8"	24-1/2"	60
15H30	0.911	1.5"	3.0"	300 X 150	285	285	285	5-1/8"	4-7/8"	24-1/2"	60
20H30	0.911	2.0"	3.0"	300 X 150	740	615	410	5-1/8"	4-7/8"	24-1/2"	65
20H30	0.911	2.0"	3.0"	600 X 150	1480	1235	825	6-1/16"	6-3/8"	29"	85
20J30	1.457	2.0"	3.0"	150 X 150	285	185	80	5-3/8"	4-7/8"	25-1/8"	75
20J30	1.457	2.0"	3.0"	300 X 150	285	285	285	5-3/8"	4-7/8"	25-1/8"	80
25J40	1.457	2.5"	4.0"	600 X 150	1480	1235	825	6-1/8"	6-3/4"	29-1/2"	105
30J40	1.457	3.0"	4.0"	300 X 150	740	615	410	7-1/4"	7-1/8"	32"	110
30J40	1.457	3.0"	4.0"	600 X 150	1480	1235	825	7-1/4"	7-1/8"	32"	112
30K40	2.125	3.0"	4.0"	150 X 150	285	185	80	6-1/8"	6-3/8"	25-7/8"	125
30K40	2.125	3.0"	4.0"	300 X 150	285	285	285	6-1/8"	6-3/8"	25-7/8"	125
30K40	2.125	3.0"	4.0"	300 X 150	740	615	410	6-1/8"	6-3/8"	30-3/8"	136
30K40	2.125	3.0"	4.0"	600 X 150	1480	1235	825	7-1/4"	7-1/8"	30-3/8"	138

MAX BACK PRESSURE AT 100°F: CONVENTIONAL VALVE: 285 psig  
 BELLOWS VALVE: 230 psig



**BILLS OF MATERIAL**

ITEM	QTY	PARTNAME	C1	C2	C3	C4	S1	S2	S3	M1	M2	H1	H2
1	1	BODY	ASME SA216 GR WCBWCC	SAME AS C1	SAME AS C1	SAME AS C1	ASME SA351 GR CF8M	SAME AS S1	SAME AS S1	SAME AS C1	SAME AS S1	SAME AS C1	SAME AS S1
2	1	BONNET	ASME SA216 GR WCBWCC	C1	C1	C1	ASME SA351 GR CF8M	S1	S1	C1	S1	C1	S1
3	1	NOZZLE	ASME SA479 316 OR SA351 CF8M	C1	C1	C1	ASME SA479 316 OR SA351 CF8M	S1	S1	MONEL®	MONEL®	HASTELLOY® C	HASTELLOY® C
4	1	SPRING	CARBON OR ALLOY STEEL	A313-92-T316*	INCONEL® X750	INCONEL® X750	STAINLESS STEEL	A313-92-T316*	INCONEL® X750	C1	S1	C1	S1
5	2	GASKET	SOFT IRON	ASME SA240 316	C1	C1	ASME SA240 316	S1	S1	C1	S1	C1	S1
6	1	LOCKPIN	ASME SA479	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
7	1	LOCK PIN GASKET	SOFT IRON	ASME SA240 316	C1	C1	ASME SA240 316	S1	S1	C1	S1	C1	S1
8	1	WARN RING	ASME SA479 316 OR SA351 CF8M	C1	C1	C1	ASME SA479 316 OR SA351 CF8M	S1	S1	C1	S1	C1	S1
9	1	DISK	ASME SA479 316 OR SA351 CF8M	C1	C1	C1	ASME SA479 316 OR SA351 CF8M	S1	S1	MONEL®	MONEL®	HASTELLOY® C	HASTELLOY® C
10	1	DISK RETAINING RING	ASTM A313-92-T302	INCONEL® X750	INCONEL® X750	INCONEL® X750	ASTM A313-92-T302	S1	INCONEL® X750	C1	S1	C1	S1
11	1	DISK HOLDER	ASME SA479 316 OR SA351 CF8M	C1	C1	C1	ASME SA479 316 OR SA351 CF8M	S1	S1	C1	S1	C1	S1
12	1	GUIDE	ASME SA564 GR 17-4PH	A479 316	C1	C1	ASME SA564 GR 17-4PH	A479 316	S1	C1	S1	C1	S1
13	2	GUIDE GASKET	SOFT IRON	ASME SA240 316	C1	C1	ASME SA240 316	S1	S1	C1	S1	C1	S1
14	1	STEM JOINT RETAINER	ASTM A313-92-T302	INCONEL® X750	INCONEL® X750	INCONEL® X750	ASTM A313-92-T302	S1	INCONEL® X750	C1	S1	C1	S1
15	1	STEM JOINT BALL	A493 GR 302	C1	C1	COBALT	A493 GR 302	S1	S1	C1	S1	C1	S1
16	6	BONNET STUD	ASME SA193 GR B7	C1	C1	320 L7M OR GR8	ASME SA193 GR B8	S1	S1	C1	S1	C1	S1
17	6	BONNET STUD NUTS	ASME SA194 GR 2H	C1	C1	C1	ASME SA 194 GR 8	S1	S1	C1	S1	C1	S1
18	1	STEM JOINT	ASME SA479	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
19	1	STEM	ASME SA479	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
20	2	SPRING PLATE	ASME SA479	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
21	1	ADJUSTING SCREW	PLATED CARBON STEEL	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
22	1	ADJUSTING LOCKNUT	PLATED CARBON STEEL	A479 316	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
23	1	CAP	ASTM A108	C1	C1	C1	ASME SA479	A479 316	S1	C1	S1	C1	S1
24	1	NAME PLATE	STAINLESS STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
25	1	DRAIN PLUG	ASME SA105	C1	C1	C1	ASME SA182 F316	S1	S1	C1	S1	C1	S1

**SOFT SEAT VALVE**

9A	1	DISK ASSEMBLY	ASME SA479 316	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	ASME SA479 316	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT
9B	1	SEAT O-RING	SEE SEAT MATERIAL TYPES	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	SEE SEAT MATERIAL TYPES	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT

**BELLOWS VALVE**

26	1	BELLOWS ASSEMBLY	INCONEL® 625	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	INCONEL® 625	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT	APPLICATION DEPENDENT
27	1	DISK HOLDER GASKET	SOFT IRON	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625	INCONEL® 625
28	1	BONNET VENT PLUG	ASME SA105	C1	C1	C1	ASME SA240 316	S1	S1	C1	S1	C1	S1

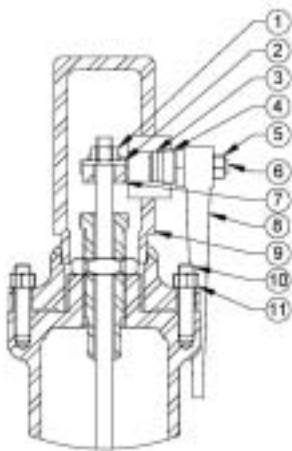
**OPEN LIFT LEVER ASSEMBLY**

1	1	CAP	CARBON STEEL	SAME AS C1	SAME AS C1	SAME AS C1	STAINLESS STEEL	SAME AS S1	SAME AS S1	SAME AS C1	SAME AS S1	SAME AS C1	SAME AS S1
2	1	NUT	PLATED CARBON STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
3	1	WASHER	PLATED CARBON STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
4	1	PIN	STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
5	1	LEVER	CARBON STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
6	4	CAP STUD	ASME SA193 GRB7	C1	C1	C1	ASME SA193 GRB8	S1	S1	C1	S1	C1	S1
7	4	STUD NUT	ASME SA194 GR2H	C1	C1	C1	ASME SA194 GR8	S1	S1	C1	S1	C1	S1

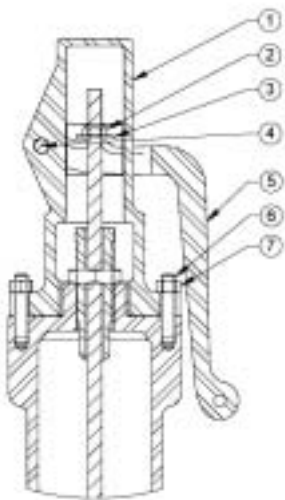
**PACKED LIFT LEVER ASSEMBLY**

1	1	NUT	STAINLESS STEEL	SAME AS C1	SAME AS C1	SAME AS C1	STAINLESS STEEL	SAME AS S1	SAME AS S1	SAME AS C1	SAME AS S1	SAME AS C1	SAME AS S1
2	1	WASHER	STAINLESS STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
3	1	PACKING	ELASTOMER OR GRAPHITE	C1	C1	C1	ELASTOMER OR GRAPHITE	S1	S1	C1	S1	C1	S1
4	1	PACKING NUT	STAINLESS STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
5	1	NUT	STAINLESS STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
6	1	SHAFT	ASME SA473 GR CF8M	C1	C1	C1	ASME SA473 GR CF8M	S1	S1	C1	S1	C1	S1
7	1	LIFT DOG	ASME SA473 GR CF8M	C1	C1	C1	ASME SA473 GR CF8M	S1	S1	C1	S1	C1	S1
8	1	HANDLE	ASME SA473 GR CF8M	C1	C1	C1	ASME SA473 GR CF8M	S1	S1	C1	S1	C1	S1
9	1	CAP	CARBON STEEL	C1	C1	C1	STAINLESS STEEL	S1	S1	C1	S1	C1	S1
10	4	CAP STUD	ASME SA193 GRB7	C1	C1	C1	ASME SA193 GRB8	S1	S1	C1	S1	C1	S1
11	4	STUD NUT	ASME SA194 GR2H	C1	C1	C1	ASME SA194 GR8	S1	S1	C1	S1	C1	S1

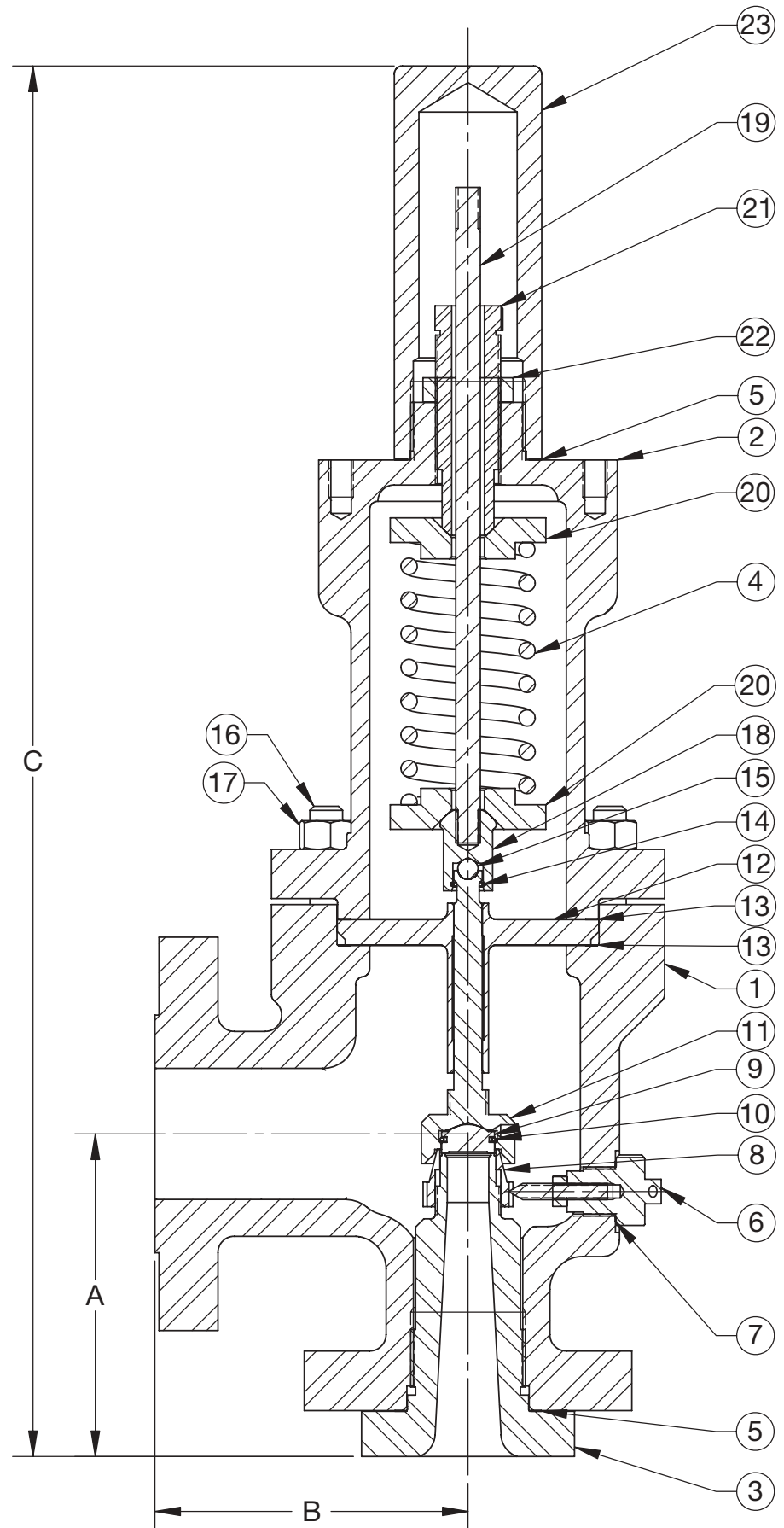
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Packed Lift Lever



Open Lift Lever



# Series 2500 Capacities Tables



## CAPACITIES IN ACCORDANCE WITH ASME SECTION VIII

Set Pressure PSIG	AIR (SCFM)							Set Pressure PSIG	WATER (GPM)						
	Kd = 0.878								Kd = 0.673						
	DR*	ER*	F	G	H	J	K		DR*	ER*	F	G	H	J	K
0.120 [SQ IN]	0.227	0.317	0.568	0.911	1.457	2.125	0.125 [SQ IN]	0.219	0.317	0.568	0.911	1.457	2.125		
15	63	120	167	299	479	767	1118	15	14	24	34	61	99	158	231
25	82	156	218	390	626	1001	1460	25	17	30	43	77	123	197	288
40	113	215	299	536	861	1376	2008	40	21	37	54	96	155	247	360
50	135	255	355	637	1022	1634	2384	50	24	42	60	107	173	276	403
60	156	295	411	737	1183	1892	2760	60	26	45	66	118	189	302	441
75	188	355	495	888	1425	2279	3324	75	29	51	73	132	211	338	493
80	198	375	523	938	1506	2408	3512	80	30	53	76	136	218	349	509
90	219	416	580	1039	1667	2666	3889	90	32	56	80	144	231	370	540
100	241	456	636	1139	1828	2924	4265	100	33	59	85	152	244	390	570
110	262	496	692	1239	1990	3182	4641	110	35	62	89	159	256	409	597
120	283	536	748	1340	2151	3440	5017	120	37	64	93	166	267	427	623
125	294	556	776	1390	2232	3569	5205	125	37	66	95	170	273	436	636
130	304	577	804	1440	2312	3698	5394	130	38	67	97	173	278	445	649
140	326	617	860	1541	2474	3956	5770	140	40	69	100	180	289	462	673
150	347	657	916	1641	2635	4214	6146	150	41	72	104	186	299	478	698
155	357	677	944	1692	2715	4343	6334	155	42	73	106	189	304	486	709
160	368	697	972	1742	2796	4472	6522	160	42	74	107	192	309	494	720
165	379	717	1000	1792	2877	4601	6710	165	43	75	109	195	313	501	731
170	389	737	1028	1842	2957	4730	6898	170	44	77	111	198	318	509	742
175	400	758	1056	1893	3038	4858	7086	175	44	78	112	201	323	516	754
180	411	778	1084	1943	3119	4987	7275	180	45	79	114	204	327	523	764
185	421	798	1112	1993	3199	5116	7463	185	45	80	115	207	332	531	774
190	432	818	1140	2043	3280	5245	7651	190	46	81	117	209	336	538	784
195	442	838	1168	2093	3361	5374	7839	195	47	82	118	212	341	545	795
200	453	858	1196	2144	3441	5503	8027	200	47	83	120	215	345	552	805
225	506	959	1336	2395	3844	6148	8968	225	50	88	127	228	366	585	854
250	559	1059	1477	2646	4248	6793	9908	250	53	93	134	240	386	617	900
275	612	1160	1617	2897	4651	7438	10849	275	55	97	141	252	405	647	944
285	633	1200	1673	2998	4812	7696	11225	285	56	99	143	257	412	659	961
300	665	1260	1757	3148	5054	8083	11789	300	58	102	147	263	423	676	986
325	718	1361	1897	3400	5457	8727	12730	325	60	106	153	274	440	703	1026
350	771	1461	2037	3651	5860	9372	13670	350	62	110	159	284	456	730	1065
375	825	1562	2178	3902	6264	10017	14611	375	65	114	164	294	472	756	1102
400	878	1662	2318	4153	6667	10662	15551	400	67	117	170	304	488	780	1138
450	984	1864	2598	4655	7473	11952	17432	450	71	125	180	322	518	828	1207
500	1090	2065	2878	5158	8280	13241	19313	500	75	131	190	340	546	874	1274
550	1196	2266	3159	5660	9086	14531	21194	550	78	138	199	356	572	915	1335
600	1302	2467	3439	6163	9893	15821	23075	600	82	144	208	372	598	956	1396
650	1408	2668	3719	6665	10699	17110	24957	650	85	150	216	387	622	995	1451
700	1515	2869	4000	7167	11505	18400	26838	700	88	155	224	402	646	1034	1508
720	1557	2949	4112	7368	11828	18916	27590	720	90	158	228	408	655	1047	1527
740	1599	3030	4224	7569	12151	19432	28342	740	91	160	231	413	664	1061	1548
750	1621	3070	4280	7670	12312	19689	28719	750	91	161	232	416	668	1069	1559
800	1727	3271	4560	8172	13118	20979	30600	800	94	166	240	430	690	1104	1612
850	1833	3472	4841	8674	13925	22269	32481	850	97	171	247	443	711	1138	1662
900	1939	3673	5121	9177	14731	23558	34362	900	100	176	254	456	732	1171	1710
1000	2151	4075	5682	10181	16344	26138	38124	1000	106	186	268	481	772	1234	1802
1100	2364	4478	6242	11186	17957	28717	41886	1100	111	195	281	504	809	1294	1890
1200	2576	4880	6803	12191	19570	31296	45648	1200	116	203	294	526	845	1354	1974
1250	2682	5081	7084	12693	20376	32586	47529	1250	118	208	300	537	863	1382	2015
1280	2746	5202	7252	12995	20860	33360	48658	1280	119	210	303	544	873	1398	2039
1300	2788	5282	7364	13195	21182	33876	49410	1300	120	212	306	548	880	1409	2055
1380	2958	5604	7812	13999	22473	35939	52420	1380	124	218	315	565	906	1452	2117
1400	3001	5684	7925	14200	22795	36455	53172	1400	125	220	317	569	913	1462	2133
1440	3086	5845	8149	14602	23440	37487	54677	1440	127	223	322	577	926	1483	2163
1480	3171	6006	8373	15004	24086	38518	56182	1480	128	226	326	585	939	1503	2193

\*Equivalent areas based on slope certifications.

# Series 2500 Dry Saturated Steam Capacities



## CAPACITIES IN ACCORDANCE WITH ASME SECTION VIII

Set Pressure PSIG	STEAM (LB/HR)						
	Kd = 0.878						
	DR*	ER*	F	G	H	J	K
	0.120 [SQ IN]	0.227	0.317	0.568	0.911	1.457	2.125
15	177	336	468	839	1347	2154	3142
25	231	438	611	1096	1759	2813	4103
40	318	602	841	1506	2418	3867	5640
50	378	715	998	1789	2871	4592	6697
60	437	828	1156	2071	3324	5316	7754
75	527	997	1392	2494	4004	6403	9340
80	556	1054	1481	2635	4230	6766	9868
90	616	1167	1628	2918	4684	7490	10925
100	676	1280	1786	3200	5137	8215	11982
110	735	1393	1943	3482	5590	8939	13039
120	795	1505	2101	3764	6043	9664	14096
125	824	1562	2180	3906	6270	10026	14624
130	854	1618	2258	4047	6496	10389	15153
140	914	1731	2416	4329	6949	11113	16210
150	973	1844	2573	4611	7402	11838	17267
160	1033	1957	2731	4893	7855	12563	18324
175	1122	2126	2967	5317	8535	13650	19909
180	1152	2183	3046	5458	8762	14012	20438
190	1212	2296	3203	5740	9215	14737	21494

Set Pressure PSIG	STEAM (LB/HR)						
	Kd = 0.878						
	DR*	ER*	F	G	H	J	K
	0.120 [SQ IN]	0.227	0.317	0.568	0.911	1.457	2.125
200	1271	2408	3361	6023	9668	15461	22551
225	1420	2691	3755	6728	10801	17273	25194
250	1569	2973	4149	7434	11934	19084	27836
275	1718	3255	4542	8140	13066	20896	30479
295	1837	3481	4857	8704	13973	22345	32592
300	1867	3537	4936	8845	14199	22708	33121
325	2016	3819	5330	9551	15332	24519	35763
350	2165	4102	5724	10257	16465	26331	38406
375	2314	4384	6118	10962	17598	28143	41048
400	2463	4666	6511	11668	18730	29954	43690
450	2761	5320	7299	13079	20996	33577	48975
500	3059	5795	8087	14491	23262	37201	54260
550	3357	6359	8874	15902	25527	40824	59545
600	3655	6924	9662	17313	27793	44447	64829
650	3953	7488	10449	18725	30058	48070	70114
700	4251	8052	11237	20136	32324	51693	75399
720	4370	8278	11552	20700	33230	53143	77513
740	4489	8504	11867	21265	34136	54592	79627
750	4549	8617	12025	21547	34589	55317	80684

\*Equivalent areas based on slope certifications.

## ASME / API CAPACITY FORMULAS

**AIR AT 10% OVER PRESSURE (ASME SECT VIII)**

$$W = 18.331APK_d$$

W = Air capacity (scfm)  
 A = Orifice Area  
 P = larger of:  
 (Set Pressure + 3 psi + 14.7 psi)  
 or  
 ((Set Pressure x 1.10) + 14.7 psi)  
 K<sub>d</sub> = Coefficient of Discharge (0.878)

**DRY SATURATED STEAM AT 10% OVERPRESSURE (ASME SEC. VIII)**

$$W = 51.5APK_d$$

W = Steam Capacity (lbs/hr)  
 A = Orifice Area (in.<sup>2</sup>)  
 P = larger of:  
 (Set Pressure + 3 psi)  
 or  
 ((Set Pressure x 1.10) + 14.7 psi)  
 K<sub>d</sub> = Coefficient of Discharge (0.878)

**GAS AT 10% OVERPRESSURE (API RP 520 - PART 1, ASME SEC. VIII DIV. 1 APPENDIX 11)**

$$W = CK_dAP \frac{\sqrt{M}}{\sqrt{ZT}}$$

W = Gas Capacity (lbs/hr)  
 C = Gas Correction Factor (ratio of specific Heats)  
 K<sub>d</sub> = Coefficient of Discharge (0.878)  
 A = Orifice Area (in.<sup>2</sup>)  
 P = larger of:  
 (Set Pressure + 3 psi)  
 or  
 ((Set Pressure x 1.10) + 14.7 psi)  
 M = Molecular Weight of Gas  
 T = Temperature (°F + 460)

**LIQUID AT 10% OVER PRESSURE (API RP 520 - PART 1, ASME SEC VIII)**

$$W = 38.0AK_dK_wK_v \frac{\sqrt{P-P_d}}{\sqrt{G}}$$

W = Liquid capacity, (gpm)  
 A = Orifice Area (in.<sup>2</sup>)  
 K<sub>d</sub> = Coefficient of Discharge (0.673)  
 K<sub>w</sub> = Back Pressure Correction Factor  
 K<sub>v</sub> = Viscosity Correction Factor  
 P = larger of:  
 (Set Pressure + 3 psi)  
 or  
 ((Set Pressure x 1.10) + 14.7 psi)  
 P<sub>d</sub> = Discharge Pressure (psig)  
 G = Specific Gravity of the liquid

Values for Water:  
 K<sub>v</sub> = 1.0  
 G = 1.0



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